The Reverend William Whewell, D.D., late Master of Trinity College, Cambridge, and a Fellow of this Society, was born on the 24th of May, 1794. His career affords one more, and a very striking illustration in addition to those which the biographical annals of our country so abundantly present, of what may almost be regarded as the normal progress from an origin altogether devoid of external advantages, and in the humbler walks of life, to eminence and distinction as well as social position, wrought out by innate talent rendered effective by energy and persevering application, and sustained by high moral qualities. Beyond his immediate parents, little is known of his family. His father, a man of probity and intelligence, pursued the calling of a joiner or housecarpenter in Lancaster. His mother appears to have been a person not only of excellent principle and good sense, but of some considerable mental culture. Their family consisted, besides himself, of a brother who died at an early age, and three sisters. His own health in early youth was feeble, and afforded no prognostic of the robust frame and stalwart vigour which so strikingly characterized his manhood. On the other hand, from his earliest years he manifested a remarkable fondness for reading, and exhibited such general promise of future ability, as induced his parents to remove him from the Grammar School in Lancaster, where he received the first rudiments of instruction, to that of Heversham, where he might obtain the advantage of an Exhibition for admission to Trinity College, the Vicarage of Heversham being in the gift of that body. This he secured, and was in consequence admitted at that College as a sub-sizar in the October term of 1812, and was subsequently elected as a full, or foundation sizar, and obtained a scholarship. In 1816 he graduated as second Wrangler and Smith's Prizeman, the first honours being carried off by a competitor (Mr. Peacob of Caius College) by whom to have been surpassed could no way be considered as a defeat. His undergraduateship, meanwhile, had been distinguished by obtaining the Chancellor's prize in 1813 for the best English Poem on the subject of Boadicea—a spirited production, which may be read with pleasure as something beyond a college exercise, and evidencing that strong vein of poetical talent which showed itself on many subsequent occasions.

In the year following his graduation as B.A., he was elected a Fellow of his College with whose interests and glory he ever afterwards considered his own as identified, and was very soon engaged in lecturing in Mathematics as assistant tutor, and subsequently in 1823 as full tutor of one of the "sides" of that numerous establishment, the tutor's chair on the other "side" being filled by Dr. Peacock, afterwards Dean of Ely. This important office he filled during the ensuing sixteen years, being joined in the performance of its duties during the last six with the Rev. Charles Perry, afterwards Bishop of Melbourne. Soon after taking his Master of Arts' degree, he entered into Holy orders, and in

due course graduated as Doctor of Divinity. He accepted no College living, however, or special cure of souls—not from any want of appretiation of the importance of the ministerial office, or doubt of his own aptitude for its exercise, but from a conscientious persuasion that his true sphere of utility would be found in the entire devotion of his powers to the furtherance of the objects of the University as a place of education, and to the improvement of its system of instruction in those great branches of mental culture in which it was beginning to be felt at that epoch that such improvement was not only possible, but largely needed. Such prospects we have seen amply realized; but it should not be forgotten for the credit of that illustrious establishment, that the movement in advance then making originated within itself, and was in no way forced upon it by any pressure from without. Thenceforward, then, his career may be considered as identified with the great cause of University improvement, and in a larger and more expansive point of view with that of philosophical, moral, and religious *culture* in the widest and best acceptation of the words.

During the period when he was pursuing his studies at Cambridge, the mathematical department of the University *curriculum* was in what might be called a transitional state. A perception had begun to be entertained of the absolute necessity of including within its range a knowledge of those powerful methods of investigation so familiar to the Continental mathematicians, but which could hardly be said to be known in England, and which at Cambridge had by some even been regarded with dislike, as innovational. In this latter feeling, in common with most of its younger members, he was far from participating, but on the contrary was only desirous to forward the movement which he saw commencing.

About the period when he entered on his tutorial duties, a very general sense had come to be entertained of this necessity; but a great obstacle to the introduction of an improved course of mathematical reading existed in the absence of elementary works in our own language adapted for the purpose of university teaching, in which the principles of the analytical methods as applied to physical subjects were exhibited, and a yet greater in the utterly unphilosophical and inadequate mode of treatment in what were termed "the branches" current in the University. The primary difficulty had been removed by the translation by Peacock and his coadjutors of the treatise of Lacroix on the differential and integral calculus published in 1816, and followed by a copious collection of examples illustrative of its application to problems of pure mathematics and the theory of curves in 1820. But the want of *readable* elementary works in all the branches, and especially in that of dynamics, such as might, as it were, break the abruptness of the transition, and bridge over the interval between the modes of treatment of that subject in the 'Principia' of Newton and

in the modern analytical processes, was severely felt. Accordingly we find him in the period of his tutorship, from its very commencement, engaged in the production of a number of elementary treatises devoted to this object, and to conveying the primary principles of mechanical philosophy in a sound and logical form, as well as to affording an insight into the modern ways of handling them, such as his 'Elementary Treatise on Mechanics' (1819); his 'Treatise on Dynamics' (1823); his 'Introduction to Dynamics,' 'First Principles of Mechanics,' and 'Treatise on the free motion of a Point and on Universal Gravitation" (1832); his 'Elementary Treatise on Mechanics,' and 'Analytical Statics' (1833), and his 'Mechanical Euclid' (1837). Of these works, the first mentioned has been considered by one excellently qualified to judge of its merits as "a work of great value, and very far in advance of any then existing text-book, for the clearness and correctness of its treatment of bodies in contact, and in the precision with which the assumptions involved in the laws of motion and the composition of forces are stated, and illustrated." At the end of the last named (the Mechanical Euclid) is attached a section "on the Logic of Induction," in which the leading idea which forms the foundation of his great work on the Philosophy of the Inductive Sciences, published three years later, viz. that Induction consists in *superinducing* upon an assemblage of observed phenomena, a conception—the creation of the mind, which is not *in* the phenomena, but which serves to bind them under a common aspect, and so give them an ideal unity—is anticipatorily introduced.

By these works, and by the influence which, as moderator in the years 1820, 1828, and 1829, he was enabled to exercise on the course of the examinations for degrees, he contributed materially to that improvement he so much desired to see established in the mathematics of the University.

It would give but a very inadequate idea, however, of the extent of his reading and of his extraordinary intellectual progress at this period of his life, to measure them by these productions. A more wonderful variety and amount of knowledge in almost every department of human inquiry was perhaps never in the same interval of time accumulated by any man; embracing not only Mathematical and Physical Science in all its forms, but extending over Classical and Continental literature, Metaphysics and History, Ethics, Social and Political Economy, together with Botany, Architecture, Engineering, and a host of other subjects—and that not by merely a general and superficial acquaintance, but one which an exact and conscientious application such as most men devote to some favourite branch of study, alone can give. Nothing short of such a store of precise and varied information could have qualified him for the production of those great works on the History and on the Philosophy of the Inductive Sciences which have placed his name among the brightest in the annals of our Philosophy, and the former of which appeared in

the year 1837, during the continuance of his tutorship, and the latter about three years later. These works were preceded (in 1833) by his Bridgewater Treatise 'On Astronomy and general physics considered in reference to Natural Theology.' But that a great change in his views as to the origin of our fundamental axioms must have taken place between the production of these and the last-mentioned work, may be inferred from a remarkable passage in that Treatise*, in which he distinctly refers the origin of even the axioms of Mathematics to experience, *i. e.* to a slow process of inductive observation, growing with our growth, and not to any innate *à priori* intuition.

Dr. Whewell was one of the founders of the Cambridge University Philosophical Society, whose initiation dates from November 15, 1819, its first Meeting for the election of Officers being held on December 13 of that year, when Professor Farish was chosen President, and Dr. Whewell was placed on the list of its Council. In 1820 he contributed his first paper to its Transactions, "On the position of the Apsides in orbits of great excentricity." To the Transactions of this body he continued to contribute, up to within a short period of his death, papers on a great variety of subjects,—on Dynamics, on Mineralogy and Crystallography, on Logic and Philosophy (more especially on the Platonic philosophy of ideas), and on the mathematical exposition of the doctrines of Political Economy, in which the formulæ embodying the results of those doctrines, as applied to questions of supply and demand, price, currency, &c., are derived from what he cautiously terms "The Equilibrium Theory" in analogy to the "Equilibrium Theory" of the Tides, distinguishing very justly between this and their true or dynamical theory, which takes account of momentary changes in the amount and incidence of the acting causes, and allows for the time requisite to enable them to work out their effects—a distinction of the most important kind, and one which goes to exhibit all the *quantitative* conclusions deduced in this science on the other hypothesis as tentative and provisional.

During the summers of 1826 and 1828 he took part with Mr. Airy in a series of experiments for ascertaining the mean density of the earth, by comparing the rates of the same pendulum in deep mines and at the surface. These experiments, made in the Dolcoath Mine, near Cambourne, in Cornwall, were excellently planned, and, so far as they went, admirably conducted; but by a singular fatality were in both instances cut short in their progress, and frustrated of their result, by accidents which could not have been foreseen and provided against—in the one case by the combustion in mid-air (from some cause never explained) of the basket containing the pendulums and other apparatus, in the act of raising them from the bottom of the mine to the surface—in the other, by the mine itself becoming deluged with water, owing to the

* Bridgewater Treatise, p. 336, ch. ix. *et seq.*

sudden subsidence of a mass of rock "many times as large as Westminster Abbey." These failures, however, are the less to be regretted, as, had they not occurred, the third and successful attempt made by the Astronomer Royal in 1854, in the Harton Coal-pit, near South Shields, at a greater depth, and with the immense advantage of electric communication between the clock above and the pendulum below, might never have been undertaken.

In 1828 Dr. Whewell was chosen Professor of Mineralogy, as the successor of Professor Clarke, a position for which he had prepared himself by a residence in Germany, under the instructions of Professor Mohs. The subject, especially its crystallographical department, had previously, however, attracted much of his attention, as is evinced by his elaborate memoir "On a general method of calculating the Angles made by any planes of Crystals," communicated in 1824 to the Royal Society (of which so early as 1821 he had become a Fellow). Several papers on the same department of Mineralogical Science were also communicated by him to the Cambridge Society in 1822, 1827, and 1828. This appointment, however, he held only for four years, and resigned it in 1832, when he was succeeded by Professor William Hallows Miller.

In 1827 he became a Fellow of the Geological Society, of which, such was the general sense of his proficiency in that science, in 1838, he was elected to the office of President. To this Society he communicated (in 1847) a paper on the distribution of the Scandinavian boulders. In the Meetings of the British Association, too, he took a lively interest, and was President of that body in 1841. He was the originator, or one of the originators of that system of Reports on the present state and progress of the several branches of science, which have from time to time been so usefully and instructively published in their annual Proceedings. In 1831 we find him writing to a friend on this subject. "The advice I gave them (the managers of the York Meeting) was to this effect: that the meeting should select eminent persons in each department of science, and beg them to make, by the next annual meeting, reports as to the present condition of their respective provinces, and the points where research will apparently be most useful; that the purport of these reports and the degree of interest which they may excite should be the guide and basis of future operations of the Association, if it continue; and that, at any rate, such collection of reports, if it can be procured, be printed—by which means their Wittenagemote will not have met in vain." This idea being acted on, he himself contributed from time to time, Reports on the Tides and on the Mathematical theories of Heat, Magnetism, and Electricity.

The subject of the Tides engaged a large portion of his attention, and gave occasion for a series of researches on the progress of the Tide-wave in different regions of the ocean, communicated to the

Royal Society, and printed in their Transactions from 1833 to 1850. His labours on this branch of physical inquiry were distinguished in 1837 by the award of one of the Royal Medals. In point of general result, these investigations may be considered as having afforded a clear and satisfactory view of the Atlantic Tides, while those of the Pacific (to which only a single memoir—the 13th in order—is devoted) remain still, in many of their features, enigmatical, and perplexed with difficulties which can only receive their elucidation from a long series of discussion carried out on the same principles, and based upon far more extensive observational data than he then commanded, or than we yet possess. One of the most curious and unexpected results of these inquiries is, that there exist two points in the North Sea, one between Harwich and Amsterdam, the other near the entrance to the Baltic, in which there is no rise and fall of the tides. Of these points, thus first theoretically indicated, the former has been subsequently verified by observation; the other does not appear to have been sought for.

With exception of this series of researches, his labours as a direct contributor to Physical Science may be considered as having terminated with his acceptance of the professorial chair of Moral Philosophy (or, as it is officially designated, of Moral Theology and Casuistry) in 1838. The work of Paley on Moral Philosophy, in which the basis of moral obligation is made to rest on expediency (taken in its largest sense, as that which on the whole, and on a broad and general view of human relations, is most conducive to human happiness), was at that time the text-book followed in the University. This view of the foundation of morals was, however, peculiarly distasteful to him, and the whole tenor of his teaching on this subject was devoted to the expulsion of what has been termed the utilitarian theory of morals, and the substitution for it of the inward teaching of a divinely implanted conscience, enlightened and guided by reason—obeying in this, as in his views of Physical Science, that strong leaning towards the Platonic or ideal system of philosophy which refers all our knowledge, in so far as it assumes a regular and systematic form (as other than the recollection of individual facts), to innate and primarily implanted conceptions coordinated with facts by the operation of the mind. Thus, as in geometry we coordinate our perceptions of the external world in accordance with our innate conception of Space—so, in this view of morality we coordinate our judgment of human action, and of our own emotions and desires in reference to the innate and originally implanted idea of Right; assuming that its fundamental axioms and leading propositions have found their utterance (though hitherto imperfectly, and only in the most usual and simplest cases of their application) in those positive laws which regulate the conduct of man towards his fellows in all civilized communities. These views are embodied in his sermons on the Foundation of Morals, his

'Elements of Morality,' his 'Lectures on the History of Moral Philosophy in England,' and more especially his 'Lectures on Systematic Morality' (1846). The two views are no doubt ultimately reconcileable, or rather essentially those of one body of truth approached from different ends of the vista: since if it could be shown that any *legitimate* conclusion as to moral duty drawn from the *à priori* system were incompatible with the production of general happiness and wellbeing, such conclusion could not but be deemed an insuperable objection to its truth; and since the ultimate reference to the enlightenment and guidance of reason (as distinct from innate or inspired intuition)—if it have any meaning at all—can only mean a reference to what experience teaches the general reason of mankind to expect as the probable result of any proposed course of action on the general happiness. But the difficulty is far greater to ascend to the general axioms of morality from the facts of history and social life in the way of induction, in the face of so much acknowledged confusion in the results of human action in the more complicated affairs of life, than to start from an *à priori* and divinely inspired principle of right, interfered with in its application by the disturbing agency of passion and ignorance, in rendering an account of so much evil intermixed with so much good. Nor does this consideration appear to have been altogether without its weight in his choice of a starting-point, if we may judge from a passage in the work last cited (Systematic Morality, p. 133. Ch. 29 *et seq.*). The just celebrity of these works, and of his philosophical treatises, with his other eminent claims to scientific distinction, procured him the honour of nomination by the French Academy as a correspondent in the department of "Sciences Morales et Politiques—Section de Philosophie."

In 1839 he retired from the tutorship of his college, devoting himself thenceforwards entirely to those pursuits which he felt to be more congenial to the natural bent of his genius and to his personal habits, than the practical routine of education. What, and how expansive, and at the same time how definite and sober were his views on the subject of the higher education in general, and of that which ought to be the more especial object of a University education, may be gathered from a series of essays and treatises published from 1835 to 1845 on this subject, one of which, a brief essay entitled 'Thoughts on the Study of Mathematics as a part of a liberal education' (1835), involved him in a controversy with a very formidable antagonist (if we are not mistaken, the late Sir Wm. Hamilton), who, in an elaborate article in the Edinburgh Review (No. 126), laboured to show that so far from being an essential and important means of cultivating "the noblest faculties in the highest degree," such studies effect this purpose "at best in the most inadequate and precarious manner," and that, in point of fact, they "have less claim to encouragement than any other object of education." Dr. Whewell, however, was quite as

strenuous an advocate for the importance of classical as of mathematical studies as part of a course of liberal education, as well as for admitting, if not insisting on, the study of natural history and other branches of Natural Science as a means of developing the intellectual faculties, and of jurisprudence, not only for its intimate connexion with sytematized morality, but as one of the best exercises in, and exemplifications of, applied logic.

In May 1841 he published his 'Mechanics of Engineering,' a most useful and much-needed elementary treatise on the practical application of mechanical principles to questions of construction and machinery. In the summer of that year he married Cordelia, the second daughter of John Marshall, Esq., M.P., of Hallsteads and Patterdale Hall, Cumberland, and in October of the same year succeeded Dr. Wordsworth in the Mastership of Trinity College, which he retained during the remainder of his life. In this distinguished and important office (to use the words of one excellently qualified to judge), though "there were some who feared that the new Master would be imperious and overbearing, their fears were dissipated by the result. His government was, with scarcely an exception, the government of a constitutional monarch, not of a despot. Of his rights and privileges he was tenacious enough, but he preferred to delegate the active exercise of his power, and its consequent responsibility, to the several college officers, and was best pleased when all went smoothly without reference to him. He did not interpose *nisi dignus vindice nodus.* The Lodge was the scene of generous hospitality, and received a constant succession of distinguished guests." His wife, a most amiable and excellent lady, suffered for several years from a painful illness, during which his care and attention were unremitting though unavailing; and in December 1855 he was left a widower. From the deep grief and distaste for his usual philosophical pursuits, and from the melancholy associations of his college residence, he sought at length relief in a visit to Rome (resigning his Professorship of Casuistry), where, however, with characteristic eagerness for the continual accumulation of mental acquirement, he devoted much of his time to perfecting his knowledge of the Italian language, "taking lessons and writing exercises like the veriest schoolboy." Returning, and resuming his college duties, in 1858 he married Lady Affleck, widow of Sir Gilbert Affleck, a lady whose sweet disposition and engaging manners rendered her universally beloved, and contributed not a little to the increasing popularity with which he at length came to be regarded in the University,—the inherent dignity and loftiness of his character, and the splendour of his reputation, now universally recognized as adding lustre both to his college and to the University, overcoming somewhat of a contrary feeling which, in the earlier part of his career, had prevailed as the result of a certain uncompromising stiffness of demeanour and impatience of opposition.

In 1858 appeared his 'Novum Organum Renovatum,' and in 1860 his 'Chapters Critical and Historical on the Philosophy of Discovery,' being in part a reproduction of particular portions of his 'Philosophy of Inductive Science,' of several essays on Plato, Aristotle, &c., communicated to the Cambridge Philosophical Society, and of a series of 'Remarks on Induction with reference to Mr. Mill's Logic' (1849)—in part comprising several new and very striking chapters on the theological views suggested by physical discovery.

His devotion to the Platonic view of the ideal world seemed to grow with his growth and strengthen with his strength, and may be said to have culminated in his Platonic Dialogues, which appeared in 1860, 1861, and 1862, being in effect a translation of the most important portions of Plato's dialogues, accompanied with a kind of running comment, explanatory of such portions as might be judged irrelevant or tedious if translated at length—a work which he declares to have been "not lightly executed, but the labour of many years; each part gone over again and again."

In 1861 he was called upon by His Royal Highness the Prince Consort to deliver, for the express instruction of the young Prince of Wales (then a student of Cambridge), a short course of lectures on Political Economy. This, as we have seen, was a subject which had engrossed a large share of his attention at an earlier period, and which he never relinquished, being an ardent admirer of his distinguished contemporary and dear friend Professor Jones (whose posthumous works he edited), and whose volume on Rent he considered as the only work in which that subject is treated in its most general aspect, and on truly correct principles. Accordingly we find in these lectures, which he subsequently published, frequent reference to his views, and copious extracts from the work itself.

In 1865 he again became a widower. Stern and somewhat hard as he may have appeared to those who knew him but imperfectly, no man was ever more susceptible of the gentle and tender influences of female society, or had a deeper sentiment of domestic affection, and this last blow for a time completely overcame him. By very slow degrees, and cheered by the society of an attached relative of his former wife, he so far recovered as to be able to resume his philosophical pursuits, and to compose a short but highly interesting article on "Comte and Positivism," which appeared in MacMillan's Magazine. It was his last production. On the 24th February 1866, while riding a horse which had twice before thrown him (for though a bold, and even a reckless rider, he was by no means a first-rate horseman, riding negligently, and, in the present instance, probably greatly enfeebled, and perhaps affected by vertigo), he was observed by the ladies in a carriage, beside which he rode, to have lost the command of his horse, and to be partially unseated. Shortly after the horse appeared without his rider, and he

was taken up senseless, having received a concussion of the brain, unaccompanied however by any fracture. For a time hopes were entertained of his recovery, but they proved delusive. The fatal termination took place March 6, 1866; and on the 10th his remains were deposited, with every possible honour, and with an immense attendance on the part of the University, in the Chapel of Trinity College, at the feet of the statues of Newton and Bacon (the latter his own gift to the college). He left no family, and as he had throughout life identified himself with the University and the College in which he had won fame and acquired wealth, so, at his death, he devoted the bulk of the latter to increasing their efficiency. The particular light in which he regarded systematic morality had led him to a careful study of the principles of jurisprudence and of the law of nations, during the course of which he had been led to publish a translation of the great work of Grotius, 'De Jure Belli et Pacis;' and justly considering that international law as a branch of the higher education was far too much neglected in this country, he provided by his will for the liberal endowment of a professorship and studentships of that science in the University; while, for the future enlargement of his college, he left a large and valuable area of adjacent ground, purchased for the purpose during his lifetime, together with ample funds for building on the site.

To the worth and nobleness of his personal character it is scarcely possible to do justice within the brief compass of a notice like the present. Those who would appreciate it fitly will find it admirably delineated, and with a truth and fidelity which leave nothing to desire, in the biographical notice from which one passage has been already quoted above*. Of his works other than scientific, a brief mention will suffice. His 'Architectural Notes on the German Churches,' and 'Notes written during an Architectural Tour in Picardy and Normandy,' have been pronounced standard works on ecclesiastical architecture. The enumeration of the long list of churches visited, and noted by him according to a regular and systematic plan of annotation, in the course of a summer excursion, in the former of these works, will serve to give some idea of the surprising activity and energy with which he threw himself into everything he undertook. In 1847 he edited a collection of English hexameters and elegiacs by various authors, himself contributing a translation from the German of Goethe's Herman and Dorothea. Of the admission of these metres into our English verse he was always a strenuous advocate, justly apprehending their many and powerful claims to such reception, and turning a deaf ear to the prejudice which would refuse them their merited place in our literature. He translated also Auerbach's 'Professor's Wife.'

The essay on the 'Plurality of Worlds' (attributed to him, though

* William Whewell. In Memoriam. By G. W. Clark, M.A., Public Orator in the University of Cambridge. MacMillan's Magazine, No. 78.

published anonymously), can hardly be regarded as expressing his deliberate opinion, and should rather be considered in the light of a *jeu d'esprit*, or, possibly, as has been suggested, as a lighter composition, on the principle of "*audi alteram partem*," undertaken to divert his thoughts in a time of deep distress. Though it may have had the effect I have heard attributed to it, of "preventing a doctrine from crystallizing into a dogma," the argument it advances will hardly be allowed decisive preponderance against the general impression which the great facts of astronomy tend so naturally to produce.—J. F. W. H.

Nicholas Wood was born at Sourmires, a village near Newcastle-on-Tyne, April 24th, 1795. While at school, in the same neighbourhood, he attracted the notice of Sir Thomas Liddell, and through his influence was placed at Killingworth Colliery, to learn the practice of a coal-viewer. Here he made acquaintance with George Stephenson, who was beginning to develope that skill and ingenuity which afterwards made him famous. The two young men became intimate, and both worked energetically in carrying out the plans of the inventor of the future locomotive. Wood made the drawing of the first safety-lamp, and was fearless enough to accompany Stephenson in a trial of the lamp first constructed therefrom, at a "blower" in the mine. Taking the time and circumstances into account, this experiment must be recognized as a manifestation of a high degree of moral as well as physical courage on the part of the two operators. Some of Wood's earliest scientific papers, published in local journals about the year 1815, were on the use of the lamp in mines and on points in the controversy which its use had originated. In the fact that Stephenson afterwards placed his son Robert under Wood as a pupil, we have a further proof of the confidence existing between them.

In 1825, the year of the opening of the Stockton and Darlington railway, Mr. Wood published a 'Treatise on Railroads,' which, embodying what was then known of the principles and practice of railway construction, has passed through three editions, and is still regarded as a standard work, notwithstanding that in the first edition the author treats as "ridiculous expectations" the views of those who were sanguine enough to believe that locomotives could be made to run twenty miles an hour.

In 1827 Mr. Wood gave evidence before the Parliamentary Committee on the proposed railway from Liverpool to Manchester. His opinion was highly valued, especially on subjects connected with coal-mining, so that in parliamentary inquiries relating to such subjects he was usually summoned as a witness. With a growing reputation as geologist and mining-engineer, he communicated, in 1830 and 1831, to the Natural History Society of Northumberland, Durham, and Newcastle-on-Tyne, two papers, which were published in their 'Transactions' as valuable contributions to the then existing knowledge of the geology and palæontology of the district. The subject was extended and further elucidated in two papers read at the