

twelve years ago he restored the old mansion of Burwell Hall, and rebuilt it much on the lines of Springfield House, Ipswich, his then residence, and thereafter he made his home at Burwell.

He was elected a Fellow of the Geological Society of London in 1857 (but did not communicate any papers to the Society); he was also elected a Member of the Geological Club in December, 1882.

Mr. Colchester married in 1840 Miss Kate Bright, a daughter of the well-known Maldon family of that name, and in 1890 celebrated his golden wedding, with all his numerous family around him. The surviving four sons and four daughters were present at his funeral with several of his grandchildren.

During Mr. Colchester's long life of 85 years he retained his mental and bodily activity almost to the last, and whilst carrying on an enormous amount of business engagements he found time to form numerous pleasant and lifelong friendships with eminent geologists, and to attend the meetings of the Societies in London and those of the British Association for many years.

PROF. H. A. NICHOLSON, M.D., D.Sc., F.R.S., F.L.S., F.G.S.

BORN SEPTEMBER 11, 1844.

DIED JANUARY 19, 1899.

(WITH A PORTRAIT, PLATE IV.)¹

HENRY ALLEYNE NICHOLSON was born at Penrith; his father, Dr. John Nicholson, was a well-known Oriental scholar, and his grandfather was President of Codrington College, Barbados. He received his early education under Francis Newman and at Appleby Grammar School, and then went to the University of Göttingen, where he worked under Professor Keferstein, the distinguished zoologist. From 1862 to 1867 he studied medicine at the University of Edinburgh, and graduated in this latter year as Bachelor of Medicine and Master of Surgery, taking first-class honours in all subjects, and obtaining the University Gold Medal for his graduation thesis, "On the Geology of Cumberland and Westmoreland"; this was subsequently published, with a dedication to his friend and teacher, Professor Harkness, of Queen's College, Cork, in whose company in the field Nicholson worked out the geology of the districts in question. In addition to the more strictly medical studies of the University he worked earnestly at the Natural Sciences under the teaching of Goodsir, Allman, and Balfour, and graduated as Bachelor of Science in 1866, receiving the Baxter Scholarship in the Natural Sciences, and in the following year he took the degree of Doctor of Science. In 1869 he proceeded to the degree of Doctor of Medicine, and was awarded at the same time the Ettles Medical Scholarship of the University, as the most distinguished student of his year in medicine.

The first position occupied by Professor Nicholson after the conclusion of his brilliant student career was that of Lecturer on

¹ For permission to reproduce this excellent portrait of our lost friend we are indebted to the editors of "Alma Mater," and to its publishers, Messrs. W. & W. Lindsay, Aberdeen.—EDIT. GEOL. MAG.



Yours very sincerely
H. Alleyne Nicholson

THE LATE PROFESSOR H. A. NICHOLSON, M.A., M.D., F.R.S.,
University of Aberdeen.

Natural History in the Extramural School of Medicine at Edinburgh, and for a short time also he practised medicine. In 1871 he was appointed to the chair of Natural History in the University of Toronto, which he held for three years. During this period he carried out successfully, not only his professorial duties, but also, at the request of the Provincial Government of Ontario, an investigation into the Fauna dredged up from Lake Ontario, and an examination of the fossils of the Silurian and Devonian rocks of the province, of which he made an extensive collection. They were described and figured in two lengthy Reports, which were published by the Government of Ontario. Professor Nicholson was also entrusted by Dr. Newberry, the State Geologist of Ohio, with the description of the Fossil Corals and Polyzoa of that State, and his Report on them, accompanied by five quarto plates of figures, drawn by Nicholson's own hand, appeared in the second volume of the "Palæontology of Ohio."

During his residence in Toronto, also, his "Manual of Palæontology" was first published, and the first part of the Monograph of the British Graptolites was issued in the same year (1872).

It will be readily understood that to a man like Professor Nicholson, with superabundant energy for original scientific work, the somewhat isolated position of Toronto would be less favourable for his special pursuit than a centre of learning within the British Isles, and it is not therefore surprising that he should have availed himself of an opportunity of returning homewards, which occurred in 1874, when he was appointed Professor of Comparative Anatomy and Zoology in the Royal College of Science, Dublin; but before he reached that city he was offered the more acceptable position of Professor of Biology in the Durham College of Physical Science and Medicine. For two sessions he lectured at Newcastle-on-Tyne, and then he accepted the offer, unsolicited on his part, of the Chair of Natural History in the University of St. Andrew's.

At St. Andrew's, where Professor Nicholson remained seven years (1875–1882), he may be said to have created the study of Natural History, and he likewise took a very active part in the extension of University teaching to Dundee, and for several years delivered systematic courses of lectures to the Ladies' Educational Association of St. Andrew's, Dundee, and Cupar. At the same time he found opportunity to carry out an immense amount of original work, more particularly in the investigation of Fossil Corals, on which subject, in addition to numerous minor papers, he published two elaborate monographs—one "On the Structure and Affinities of the 'Tabulate Corals' of the Palæozoic Period," in 1879; the other "On the Structure and Affinities of the Genus *Monticulipora* and its Subgenera," in 1881. Another important monograph of this period, produced in collaboration with Mr. R. Etheridge, jun., is that on the Silurian Fossils of the Girvan District in Ayrshire. To this original work may be added a popular volume on "The Ancient Life-History of the Earth," fresh editions of the Manual and Text-Books of Zoology, and, in 1879, a second edition of the Manual of

Palæontology, largely rewritten and so increased by the addition of new matter as practically to be considered a new book.

In the Summer session of 1878–9, Professor Nicholson delivered, at the request of the Senate of the University of Edinburgh, the course of Natural History lectures, in the stead of Professor Sir Wyville Thomson, incapacitated by illness, and he also conducted the course during the two following sessions. On the resignation of Sir W. Thomson, Nicholson became a candidate for the Chair, but Professor Ray Lankester, now the Director of the British Museum of Natural History, Cromwell Road, received the appointment, which he shortly after renounced, and the position was then given to Dr. Cossar Ewart. By many of the friends of Professor Nicholson, the slight shown to him by his own University in thus passing over his undoubted superior claims as a teacher, was attributed to the influence of a small faction, whose opposition was stirred up by the independence of Nicholson's views as to the all-sufficiency of the Darwinian theory of Evolution.

In 1882 Professor Nicholson accepted the appointment of Regius Professor of Natural History in the University of Aberdeen, which he held for the remainder of his life. In addition to his official work, he still continued his researches on fossil Corals and Monticuliporoids, and contributed several papers on these organisms to the *Annals and Magazine of Natural History* and to the *GEOLOGICAL MAGAZINE*. Some of these papers were written in conjunction with Dr. A. H. Foord and Mr. R. Etheridge, jun. But the most important original work produced at this time was the monograph of the British Stromatoporoids published by the Palæontographical Society (1886–1892). The seventh edition of the *Manual of Zoology*, which had been wholly recast and almost entirely rewritten, appeared in 1887, and two years later a third edition of the *Manual of Palæontology*, in which the additions were on a still more extended scale, was published. In this edition the first volume, containing the "General Introduction" and the "Palæontology of Invertebrates," was the work of Professor Nicholson, whilst the second was written by Mr. R. Lydekker.

Coming to a more recent period, the passing into law of the new University Ordinances in Scotland involved a large amount of extra work in connection with the reorganization of the University classes, and to this object Nicholson devoted all his available energy, to the entire exclusion of original research, which he looked forward to resuming at a future opportunity. As part of the revised system, he introduced courses of lectures on Systematic and Practical Geology and advanced laboratory work in the same science, and he voluntarily undertook this geological teaching without extra remuneration. Such practical zeal on behalf of his favourite science was not lost on his students, for the numbers attending the geological course increased from twenty when first started to eighty at the end of three or four years.

Professor Nicholson's ability as a teacher and lecturer was pre-eminent. It has been said of him by an old friend that he was

a 'heaven-born' teacher; however this may be, the writer can testify that his lectures, in the early days of his professorial career, were characterized by the same fluent delivery, without a shadow of hesitation, by the same clearness of exposition, making a complex subject appear simple to the understanding, and by the same fulness of illustration, which distinguished them throughout the succeeding years. It is not surprising that these lectures secured the attention of full classes of University students, so that discipline was never called for, and they proved equally as attractive and fascinating to the mixed general audience who heard the courses of Swiney lectures on geological subjects, which, on the appointment of the Trustees of the British Museum, were given by Professor Nicholson for several successive years (1878-82, 1890-94) at South Kensington. Although the delivery of the lectures appeared to be without effort, and as it were natural on the part of the lecturer, they involved no small expenditure of mental energy, and their success was due largely to the careful preparation bestowed on them beforehand. The various subjects were illustrated by numerous well-executed diagrams, all the work of Nicholson's own hand, and these were supplemented by chalk sketches on the blackboard drawn with ready aptitude as occasion required, and, when possible, by demonstration of actual specimens. Nothing was omitted which would be of service in elucidating the subject of a lecture, and the time allotted for it passed all too quickly, at all events on the part of those who listened.

The departments of Science for which Professor Nicholson felt the strongest predilection were Field Geology and Invertebrate Palæontology. For the study of the former, no scenes more favourable could have been chosen than those surrounding his birthplace and the home of his boyhood in the Lake District; here most of his holidays were spent, and rest and renewed vigour obtained in working out in detail the complicated geological structure and collecting the fossils from the rocks for subsequent study. As already mentioned, his graduation thesis consisted of an essay on the Geology of Cumberland and Westmoreland; but previous to this, he had already published, in conjunction with Professor Harkness, a paper of "Additional Observations on the Geology of the Lake Country," and also "On the Coniston Group," announcing the discovery of a rich Graptolite fauna in the Coniston Flags of Sedgwick. Other papers on the Green Slates and Porphyries between Ulleswater and Keswick and on the Borrowdale Series and Coniston Flags appeared in 1871 and 1877. A still more important memoir on the Stockdale Shales, in which the work and the honour were shared equally with his friend Professor J. E. Marr, was brought out in 1888. In this paper the Stockdale Shales were shown to be capable of division into a series of zones based on lithological characters and their contained fossils, mainly graptolites, and additional evidence was thus furnished of the value of these organisms as a means of comparison of Lower Palæozoic rocks of distant areas. A shorter paper by

the same authors, which appeared subsequently, dealt with the age and the fossils in the various formations in the Cross Fell Inlier.

Professor Nicholson's researches in Invertebrate Palæontology were concerned mainly with Graptolites, Corals, Monticuliporoids, and Stromatoporoids. He first devoted his energies to the Graptolites, with which some of the beds in the Lake District are crowded, and described those in the Skiddaw Slates, pointing out their close resemblance to the forms in the Quebec Group of Canada. Then followed papers on *Ptilograptus*; *Helicograptus*, a new genus; the Distribution in time of the British species and genera of Graptolites; the Graptolites of the Coniston Flags; British species of *Didymograptus*; and on the genus *Climacograptus*, with notes on the British species of the genus. These detached papers were succeeded by the first part of a detailed monograph on the Graptolites of Britain, in which the history, morphology, the nature and functions of the base, mode of existence, geological distribution, and definition of the various genera of the group were ably treated. Further work was interrupted by Nicholson's residence in Canada, and not again resumed (save in a brief but important paper jointly with Professor Marr, dealing with the phylogeny of the group, which appeared in the *GEOL. MAG.*, Dec. IV, Vol. II, 1895); the task thus relinquished passing thenceforward into the hands of his friend Professor Chas. Lapworth. It is well known that the study of the Graptolites in the rocks of this country is very difficult on account of their compressed condition of preservation, and it required much critical acumen on Nicholson's part to decipher their characters so correctly as he has done.

The marvellous abundance and variety of forms of Corals and Monticuliporoids in the Palæozoic rocks of North America induced Nicholson to make large collections of them during his stay on that side of the Atlantic, and they furnished the materials for many years' study after his return. At the time when he began his work on these organisms, the practice of making thin sections to show their interior structure had not come into vogue; Nicholson was one of the first to appreciate the advantages of this method of investigation, so he procured a lapidary's wheel, and with unwearied diligence set himself to make thin slices, in various directions, of all the forms he studied, and then mount them for the microscope. By this means he was enabled to ascertain the real structure of the fossils, and to define their characters with a precision not previously attainable. The fresh knowledge thus obtained of the actual anatomy and systematic relations of the Palæozoic Corals and Monticuliporoids, formed the basis of the two elaborate monographs on these groups, and gave to them a special value and interest. Nicholson's determinations of the systematic affinities of some of these forms were, as he himself acknowledged, of a tentative character, and the tendency of recent opinion with respect to the Monticuliporoid group is to associate it with the Polyzoa rather than with the Corals, where it had been placed by Nicholson, but this in no wise affects the accuracy of his descriptions and figures of the various forms of the group given in these monographs.

The Monograph of the British Stromatoporoids will probably be regarded as Nicholson's most important contribution to Palæontology. The dubious character of these fossils is plainly indicated by the various conflicting opinions held about them by many leading palæontologists, and even our author found it needful to abandon his own earlier views of their nature. Nothing daunted, however, he continued his researches, and gathering his materials from the Silurian and Devonian rocks of Britain and North America, also from the Silurian of Esthonia and the Devonian deposits of Germany, he made personally more than a thousand microscopic slides from the specimens. The wonderful variety and beauty of the minute structures shown in these slides were represented in perfect detail in the drawings, made by Nicholson himself, which occupied the twenty-nine quarto plates and the woodcuts in the text of this monograph. As the result of these extended investigations, Nicholson was enabled to show conclusively that the Stromatoporoids belonged to a special division of the Hydrozoa, a relationship which had been already suspected by Lindström and Carter. It is satisfactory to know that the grand series of specimens and the microscopic sections made from them, which formed the basis of this model monograph on the Stromatoporoids, have passed into the possession of the British Museum (Natural History), Cromwell Road, and we believe that the typical specimens of Nicholson's collection of Graptolites are also in the same institution.

Professor Nicholson further took great interest in the nature of certain anomalous organisms which are concerned in the formation of some of the Palæozoic Limestones, such as *Solenopora*, Dyb., *Mitcheldeania*, Weth., and *Girvanella*, Nich. & Eth., and described and figured them very fully, and he also very satisfactorily cleared up the doubtful points relating to the structure of the genus *Parkeria*, Carp.

But Nicholson's services to his favourite sciences were not confined to original researches, for his Manuals and Text-books of Zoology and Palæontology may deservedly be considered as important adjuncts to their advancement. They are characterized by clearness and perspicuity of style, and by the number and excellence of the figures and diagrams with which they are illustrated. That they are widely used is shown by the number of editions which have been called for, and in each successive edition there is such a large amount of additional matter as to entitle the book to be regarded as new. This is well exemplified in the "Manual of Palæontology," the first edition of which was a single volume of 601 pages and 401 figures, whilst the third edition comprises two volumes, with 1,624 pages of letterpress and 1,419 figures. Only the first of these volumes, which deals with Invertebrate Fossils, is by Nicholson's own hand; it is rendered especially valuable to the practical student by the careful descriptions and figures of the microscopic structures of the different kinds of organisms occurring in the rocks, so that they can be recognized in thin sections. This volume is the most complete general work on Invertebrate Palæontology which has appeared in the English language.

Only some of the principal works of Professor Nicholson have been mentioned above; besides these, a large number of separate papers on geological and palæontological subjects were contributed by him to the journals of scientific societies and to scientific periodicals. So far as can be ascertained, there are of these 138 entirely written by Nicholson, and 27 joint papers, his co-workers in the latter having been Mr. R. Etheridge, jun., Dr. A. H. Foord, Professors Harkness, Lapworth, and Marr, and Dr. Murie.

Professor Nicholson was elected a Fellow of the Geological Society in 1867, of the Linnæan Society in 1876, and of the Royal Society in 1897. In 1879 the Council of the Geological Society awarded to him the Lyell Fund and in 1888 the Lyell Medal, "in appreciation of his valuable researches among the older Palæozoic rocks, both in the Old and New World, and of his continued and patient investigations into the organization of some of the obscurer forms of life which abounded at the period of the deposition of these rocks."

Even beyond the intellectual ability and high qualifications which characterized Professor Nicholson as a teacher, his geniality and sympathetic disposition won for him the hearty respect and admiration of his students and friends. All those who were brought in contact with him were charmed and attracted by the genuine cordiality and frankness which speedily removed the feeling of restraint and enlisted one's full confidence in him. To fellow-workers in his favourite branches of science he always extended the true spirit of comradeship; there are many of them who, like the writer, can look back with gratitude to the needful initiatory help and advice, given by Professor Nicholson at a critical time, which determined one's course in the path of science. His kindness and generosity knew no limits; he was always ready to impart to other workers the particular methods which he had found advantageous by his own experience in wresting the secrets from Nature, and not infrequently he gave them confidence and encouragement by associating them with himself in some original researches.

Professor Nicholson's capacity for work was enormous; he devoted himself to it without stint, and it may be feared that the impaired health of the last few years of his life was due in part to the overstrain produced by too persistent mental exertion. But none of his friends at a distance were aware of his critical condition, for within a week of the end he was able to be at his post at the University, and the news of his death came with startling suddenness, producing a feeling of keen regret as for the loss of a dear friend.

It is an untimely fate which has snatched Nicholson away whilst in the maturity of his intellectual powers and experience, but his works remain to bear witness to his devotion to science; and by his students and friends in his own country, in Canada, and in the world beyond, his memory will be kept green as that of a brave, loyal, and sympathetic man.

G. J. HINDE.