

## OBITUARY

### PROFESSOR H. H. SWINNERTON

Henry Hurd Swinnerton, C. B. E., D. Sc., F. Z. S., F. G. S., was born on the seventeenth day of September 1875 in Bungay, Suffolk. He was the son of the Wesleyan Minister, the Reverend G. F. Swinnerton, and spent his early life moving from one parish to another. As a boy he first attended the Woodhouse Grove School, near Leeds and then, when his father was transferred to South Wales, he was placed in Kingswood School, Bath. On obtaining matriculation of the University of London at the age of nineteen, he became assistant master at Trowbridge High School. During his spare time in this capacity, he continued his studies by means of what was called the 'University Correspondence Course.' Zoology was his great love and his ambition was to obtain an honours degree in that subject. To satisfy the requirements of the University of London, he decided to study Botany and Chemistry along with Zoology. Since he lacked laboratory facilities, the tutor of the correspondence course suggested he should replace Chemistry with Geology and so, by chance, he made his first real contact with a subject which was to rival and ultimately replace his love for Zoology.

By travelling to Bristol on Saturday afternoons, he made himself familiar with the minerals, rocks and fossils in the show-cases of the museum. His regular visits to the museum ultimately attracted the attention of the Curator. This was how he met Edward Wilson, a kindly, dedicated man, who realised that here was an exceptional young man and gave him the use of a small quiet room in which Swinnerton could carry out his work on Saturday afternoons. The only way in which Swinnerton could repay Edward Wilson was by collecting fossils from the Bradford Clay. This he did on his weekends, cycling out to localities and afterwards preparing the fossils for the Museum.

Throughout his correspondence course his tutor was anonymous, but one day he received a private letter from him explaining that the 30 hours allotted by the correspondence college for this purpose was already consumed. However, the letter went on to say that the tutor was prepared to help Swinnerton to pursue his studies to completion. The letter was signed by Dr. A. Morley Davies. Thus began yet another lifelong friendship between palaeontological enthusiasts. Morley Davies invited young Swinnerton to spend his Christmas holidays in London and introduced him to Professor G. B. Howes. This professor was so impressed by Swinnerton's drawings of dissections that he recommended him for a studentship at the Royal College of Science. The value of the Studentship was 18/- per week during term time. So, in 1897, Swinnerton went to London, determined to fulfil his ambition. Two years later he graduated at the Royal College of Science with a first class honours degree in Zoology.

The influence of Wilson and Morley Davies must have been profound, as Swinnerton spent his spare time furthering his knowledge of Geology. He often spoke of the generosity of these two men and how in London he would visit Morley Davies at his home in the evenings to be taught the use of the petrological microscope. Likewise Professor Howes had Swinnerton's interests at heart and made him his personal assistant in a momentous piece of research work on the development of the skeleton of Sphenodon (the Tuatara Lizard, the only surviving representative of the reptilian Order Rhynchocephalia). Howes had received a superb collection of embryonic material from New Zealand, and this included a dozen live eggs of Sphenodon. With Swinnerton's assistance these eggs were successfully hatched out in trays of damp sand placed under the heating pipes of the Professor's room. In this way Swinnerton became associated with the first sight of a baby Sphenodon ever produced in Europe. Moreover, this fired his life-long thirst for research.

In those early days working for Professor Howes he became accustomed to dealing with problems as they presented themselves and never to allow the lack of facilities to hold up the progress of his research. His remarkable hands held the skill of the surgeon, which enabled him to extract the most delicate traces of fossilised material of all kinds. The records show that his skill as a dissectionist was in a class of its own. His work on the skull of the stickleback was a remarkable piece of work. In this he exercised his superb knowledge of comparative anatomy over the surgical revelation of the cranial details of the stickleback. His thesis on this work was rewarded with the degree of D.Sc. in 1902. This achievement was even more remarkable when one appreciates the financial and domestic difficulty which dominated his life in this formative period. In the middle of his work on the stickleback, he was faced with the problem of finance. He had no financial resources to assist him in this work and he was forced to seek employment. Consequently, he was glad to accept the post of Science Master at his old school in Bath. At Kingswood School he completed his dissections and his thesis. Nevertheless he treasured the memories of this part of his long and eventful life and he often referred to them as the best of his days. He kept all his student notebooks and in looking at these today one is left in no doubt, by the beautiful drawings of Zoological dissections and of minerals, of rocks and particularly of fossils, that this had all been truly a labour of love.

Many other men would have emerged from such a background having little patience with a potential scholar who lacked enthusiasm for knowledge. On the contrary, Swinnerton emerged only too anxious to use every means in his power to enthuse even the most backward of his students. Thus he was destined to become one of the finest teachers that this country has ever seen. His seductive influence in the lecture theatre and in the laboratory was to have a profound influence on the studies of men and women who had no initial intention of entering the realm of natural sciences.

In 1902 he was appointed to a lectureship in the Natural Science Department of the University College of Nottingham. This was the turning point in his fruitful career as a natural scientist. When he arrived, the College had no formal library facilities, but he found ways and means of obtaining the literature he required for his lectures and his personal work. He never allowed his environment to dominate his scientific ambitions, and he used every device imaginable, not the least his personal charm, to obtain access to books and materials for his work. In this he was helped by John Wesley Carr, the Curator of the Public Natural History Museum of Nottingham. Carr had received his training in the Sedgwick Museum and had developed in the Museum at Nottingham a very excellent collection of vertebrate and invertebrate fossils. Eventually Carr was appointed Professor and Head of the Natural Sciences Department in the University College, and Swinnerton for the first time had a professor to whom he could appeal for assistance in developing his ideas. Eventually potential graduates entered the department and in 1902 students were being entered for the London External B.Sc. degrees in Botany, Zoology and Geology.

For many years the heavy load of teaching, and building up departmental collections, absorbed Swinnerton's time. But he never wasted time. Time to him was an exceedingly precious thing and he organised his life from day to day and always had something concrete to show for his efforts. The development of the Natural Sciences in Nottingham, as elsewhere, during the early part of this century was aided by the growth, in schools, of the subject which was broadly called Nature Study. The various educational authorities were anxious to promote nature studies in schools and as a consequence Swinnerton was asked to supply courses of study for practising teachers. He recounts how many of these scholars took advantage of these courses as it meant free travel from the surrounding countryside into Nottingham on Saturday mornings. Many were prepared to accept the attendance at his classes with the prospect of indulging in the City's entertainments in the afternoon. Despite this, his enormous ability as a lecturer awakened in these reluctant scholars a new and wider interest in nature; and soon the afternoons were characterized by field excursions to ponds and rivers and quarries rather than to shops and the venues of sport in Nottingham.

With characteristic foresight Swinnerton included the lectures on soil, rock weathering and geomorphology in the Nature Study course for teachers. The class grew so large that it eventually led to



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the foundation of Geography on a departmental basis. It is not unimportant to record that D.H. Lawrence was among the many students who attended Swinnerton's lectures on these Saturday mornings. In addition, F.M. Burton, a headmaster, and A.T. Metcalf, a solicitor, became well-known names associated with the interests which Swinnerton stimulated in the somewhat neglected studies of the Permian-Triassic rocks of Nottinghamshire. In 1911, having built up a tremendous local reputation as a lecturer, Swinnerton was asked to become the Head of a new Department and the choice of its title was left to him. When considering this, he decided to call it the Department of Geology and Geography. In doing so, he had to subtract these subjects from the Nature Study course to allow the remainder to form the basis of a new Biology Department. This was a hard decision, as it meant losing direct contact with the teaching of Zoology. Nevertheless, he continued to assist this department by carrying out dissection work and preparing teaching material for students who wished to study biology. He used to recall that his only compensation for making this hard decision in the partition of the old Natural Sciences department was the fact that he was for the first time able to take charge of his departmental finances. In other words, he was now allowed to spend up to £10 without seeking special permission from the college Council. This is a very interesting reflection upon the amount of money which was allocated to heads of departments in those distant days. Moreover, his resources were confined to very restricted spaces in the building. In fact he had to secure any space he could find and eventually he found that his research work had to be carried out in a windowless basement of the building. It is therefore interesting to note, in passing, that with such primitive conditions he nevertheless succeeded in carrying out an amazing amount of delicate work. He had virtually no material to begin with when he started to teach geology and therefore he had to collect minerals, rocks and fossils. This gave him the excuse to be out in the countryside and he regarded this as pleasure and not work. He had no assistance apart from one laboratory assistant. It is therefore not surprising that his scientific approach to this problem resulted in teaching techniques which have influenced many other departments of geology throughout the country. He believed in the practice which circumstances forced upon him, that undergraduates should work as much as possible on their own. To assist them he produced schedules of work which exercised their imagination and at the same time trained them to systematise their studies in the laboratories.

In due course there was a steady stream of students taking geology as a subject for the intermediate examination of the University of London. They were excellent students. Many went on to degree courses and eventually to finalise at honours levels in Geology. In one of his letters he records how

"places in the first class Honours results now became a regular event. Indeed, one year, the whole of the University Honours list in Geology was made up of our students. Four of whom were in the First Class. It is natural that some of them decided to take up Geology for a career and willingly repaid by instalments the money that had been expended upon them by the Board of Education. Among these may be mentioned F. G. Percival (1912), who became geologist to the Tata Iron and Steel Company of India; A.E. Trueman (1912); F.T. Ingham (1919), who became Director of the Geological Survey of Cyprus; S.H. Straw (1923), who became Lecturer in Palaeontology in the University of Manchester; and S. G. Clift (1923), who was for many years lecturer in the Department of Geology at Nottingham. The case of A. E. Trueman was outstanding. He entered the College as a normal student taking a degree course; his main interest was zoology and he wished to take an Honours degree in that subject. For some years, however, there had been no demand and therefore no degree course in that subject. Meanwhile my commitments in Geology and Physical Geography had increased to such an extent that I felt unable to cope with a merely temporary revival of Honours Zoology. In conversation with Dr. Holden, he quickly grasped the situation and kindly offered to discuss the matter with Trueman, who soon realised that in the study of fossils he would find an outlet for his zoological interest. He therefore decided to take Honours Geology with special Palaeontology and subsidiary Zoology. In 1914 he gained a First Class Honours degree in the University of London. Trueman was medically unfit for National Service and I accordingly pressed Principal Heaton to give him help to stay on and do research. He therefore put his name forward for one of the new D.S.I.R. grants which were being initiated at that time. This effort was successful and the grant was given for two years.

For some time I had been making a careful study of the development of the ammonite septum. As numerous measurements were needed to put my conclusions to the test, I enlisted the help of Dr. Shaw of the Physics Department, a great expert on measuring instruments, to devise and construct for me a suitable one for my purpose. I then set Trueman to make the measurements, a piece of work which he carried out with the greatest precision. The resulting paper was read before the Geological Society in 1918 (Q. J. G. S. vol. 73). This work gave him an insight into the value of measurements in the study of fossils and was put to excellent instructive uses in later years. When Trueman got his degree it was his intention to go as a missionary to China. (An unfavourable medical examination prevented the late Sir Arthur Trueman from embarking on this career). It was at this time that Professor Franklin Sibly, later to become Sir Franklin Sibly, who had been the external examiner for Trueman, wrote to ask me the whereabouts of this young man. He said he had been so impressed with Trueman's answers to the examination that he would like to have him in his own department at Cardiff. Thus was Trueman launched upon his brilliant career. From Cardiff he went to Swansea as Professor of Geology, then to Bristol for four years and finally to Glasgow. He eventually left Glasgow to become Chairman of the University Grants Committee."

This quotation is worthy of inclusion in this biography of Swinnerton, as it reflects the great pride he took in the development and in the achievements of his students. He took this pride without any feeling of credit and this was the hallmark of his great influence over every student who came into contact with his precise, imaginative and instructive methods of teaching. He worked his students very hard and believed that they should derive pleasure from their studies. In this they were aided by Swinnerton's imaginative and graphic approach to every aspect of Geology.

His deep sense of religious belief and his earnest wish to do all he could for young people also occupied a great deal of his spare time. He was very interested in Sunday School work and was a Superintendent in the local Methodist Church. An interesting outcome of this interest was the fact that he once visited a Conference held in London and there met Leonard V. Dalton. In conversation he discovered that Dalton was interested in oil geology and out of this emerged the suggestion that two of his students should go to Venezuela to work for a few months for the oil company with which Dalton was then associated. The two students who decided to accept this invitation were F. G. Percival and Arthur Radford. Percival has already been mentioned, but Arthur Radford went on to study social sciences and eventually became the first Professor of Social Science in the University of Nottingham.

One had to work with Swinnerton in order to understand how he was able, throughout his life, to keep up a steady stream of important publications on a great variety of topics. Mention has already been made of his superb contribution to our knowledge of *Sphenodon* and also to the anatomy and life history of the stickleback. These were purely zoological publications and they led to his interest in the development of the pectoral fin of fishes. This produced an important publication in Natural History in 1905. By 1910, his ideas were beginning to formulate regarding the relationship of geology to scenery and a very important paper was written describing the relationship of the Bunter Sandstone to the geomorphology of the County. With his great keen eye for detail, he discovered organic remains in the Trias of Nottingham; and this he published in 1910. Moreover, he became impressed by the record of footprints in the Triassic rocks and wrote a most illuminating and attractively assembled paper on what he characteristically called "The Palmistry of the Rocks."

Year after year saw a steady stream of papers, ranging from the palaeogeographic significance of dreikanter at various horizons in the Trias to palaeontographical problems concerning trilobites. By 1928 he was heavily engaged in planning the new department, which was to be instituted in the new University College building which was being erected in Highfields Park. This building, now known as the Trent Building, housed most of the departments of the University College. Space was limited, but with characteristic foresight Swinnerton secured one of the most attractive parts of the building in which to install the Department of Geology and Geography. Concerning this, he used to attribute this to the inability

of other heads of departments to read architectural plans.

The early thirties saw the growth of his interest in Lincolnshire and the opening phases of his work on the faunas of the Jurassic and Cretaceous. No-one has improved upon his account of the cephalopod fauna of the pre-Red Chalk deposits or added a great deal to his work on the Lower Cretaceous of that county. An earlier study of belemnites, collected and submitted to him from East Greenland, formed the prelude to his monumental monograph of this neglected group of fossils which was published by the Palaeontographical Society. Hundreds of specimens were examined, photographed and described in detail over the twenty years or so which he spent on this task along with a multitude of other lines of research. For example, he published papers on the development of underground waters from the Spilsby Sandstone and thus was involved in the sinking of important boreholes into this formation. In this way he made significant contributions to our stratigraphical knowledge of this poorly exposed formation. The problem of the Lincoln Gap intrigued him and this stimulated a series of important papers on the geomorphology of Lincolnshire and the East Midlands.

Endowed with a remarkable memory, he collected and collated knowledge which resulted in a stream of publications and lectures on archaeological and antiquarian subjects. Even so, his disciplined mind maintained the patient meticulous progress of his palaeo-zoological studies. During the Second World War, he collected thousands of specimens of Gryphaea from trenches dug for defence purposes in the Lias. Single handed, he cleaned and described this vast collection in order to establish beyond doubt his earlier views on the variations which develop in a single community of invertebrates. This and other examples he used to establish the principles he developed in his Presidential Address to the Geological Society of London in 1939.

He was the author of sixty-four important scientific papers and numerous articles. Seven books also bear his name. In 1954, at the age of 79, he was asked to write a philosophical book on geology and asked me to assist him as editor. This I readily agreed to do, little believing that within six months I would be presented with a manuscript of over 60,000 words - a fantastic achievement of authorship by any set of standards. A year later the book appeared in print and became a 'best-seller', which was translated into several languages and serialised. This remarkable piece of work indicated that he was a man whose mind and enthusiasm for knowledge would endure to the end. Indeed, at the age of 87 he was part author with his old friend and colleague, Professor Kenneth Edwards, of the superb book on the Peak District. In his ninetieth year he published his final thoughts on the Gryphaea plexus.

It is impossible to unearth all the outside services that Professor Swinnerton rendered to the community at large. He was chairman of the Joint Recruitment Board and of many boards of school governors. Of particular interest to himself was his association with the Nottingham High School for Girls. He was the first chairman of its Board of Governors and today his work on behalf of the emancipation of educational facilities for young ladies is revered and treasured by all. He thought little of personal honours and it was a source of unexpected pleasure for him to find that at national level he was recognised as an outstanding citizen when he was made a Commander of the Order of the British Empire. The University of Nottingham also recognised this by making him the first member of staff of the University to receive the honorary degree of Doctor of Science.

The life of Henry Hurd Swinnerton was a happy one. He derived happiness from the every-day discharge of his duties to his college, his students and his colleagues. High moral standards he demanded from everyone, but never was he intolerant or lacking in understanding when misfortune affected others. His old students revered him, and rightly so, but he never made claims upon them in any shape or form. The Methodist Church was his spiritual home and his practical mind and inexhaustible generosity was applied to its welfare and the care of its congregation. To be out in the fields with his hammer and knapsack was his idea of real pleasure as all things natural held a hidden meaning to him. His was a long life, from which he asked nothing and to which he gave everything.

The Geological Publications of Professor H.H. Swinnerton

A - Papers

- 1900 with G.B. Howes Tuatara Proc. Zool. Soc., London, Vol. 70 pp. 516-517
- 1901 with G.B. Howes On the development of the skeleton of the Tuatara, Sphenodon punctatus  
Trans. Zool. Soc., London, Vol. 16, pt. 1, No. 1 Feb., pp. 1-86,  
text-figs. 1-7, Plates 1-6.
- 1902 A contribution to the Morphology of the Teleostean Head Skeleton Quart.J.  
Microscopical Sci., Vol. 45, pp. 503-593, Plates 28-31, text-figs. 1-5.
- 1903 The Osteology of Cromeria nilotica and Galaxias attenuatus.  
Zoologischer Jahrb., Vol. 18, pp. 58-70, text-figs. A-M.
- 1905 A contribution to the morphology and development of the Pectoral Skeleton of  
Teleosteans. Quart. J. Microscopical Sci., Vol. 49, pt. II, pp. 363-382,  
Plate 23, text-figs. 1-3.
- 1905 The Stickleback, its personal and family history. Trans. Nottingham Nats. Soc.,  
1905-6, pp. 34-40, Plate 4
- 1905 The changes and variations in the position of the pectoral fin during development  
Ann. Mag. Nat. Hist. Ser. 7, Vol. 15, pp. 319-321, text-fig. 1-4.
- 1910 The Bunter Sandstone of Nottinghamshire and its influence upon the geography  
of the county. Trans. Nottingham Nat. Soc., 1909-1910, pp. 17-28,  
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- 1910 Organic remains in the Trias of Nottingham. Geol. Mag., Vol. 57, p. 229
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- 1914 Periods of Dreikanter formation in South Notts. Geol. Mag., Vol. 61,  
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- 1915 Suggestions for a revised classification of Trilobites, Geol. Mag., Vol. 62,  
pp. 487-96, 538-45, text-figs. 1-3
- 1918 with A.E. Trueman The Morphology and development of the ammonite septum. Quart. J. Geol. Soc.,  
London, Vol. 73, pp. 26-58, Pls. 2-4, text-figs. 1-17



- 1918 The Keuper Basement Beds near Nottingham. Proc. Geol. Assoc., Vol. 29, pp. 16-28, text-figs. 2-5.
- 1919 The facial suture of trilobites. Geol. Mag., Vol. 56, pp. 103-110, text-fig. 1
- 1921 The use of graphs in Palaeontology. Geol. Mag., Vol. 58, pp. 357-64, 397-408, text-figs. 1-10
- 1925 A new catopterid fish from the Keuper of Nottingham. Quart. J. Geol. Soc., London, Vol. 81, pp. 87-99, Plates 7 and 8
- 1927 Earth movements and extinction. Geol. Mag. Vol. 64, pp. 529-32
- 1928 A new species of Semionotus from the Keuper of Nottingham. Geol. Mag., Vol. 65, pp. 40-69, text-fig. 1
- 1929 The physiographic sub-divisions of the East Midlands. Geography, Vol. 14, pp. 3-14, text-figs. 1-4
- 1931 A specimen of Phaneropleuron from Gloucestershire. Mem. & Proc., Manchester Lit. & Phil. Soc., Vol. 75, pp. 43-46, text-fig. 1
- 1931 Post-glacial deposits of the Lincolnshire coast. Quart. J. Geol. Soc., London, Vol. 87, pp. 360-375, Plates 29 & 30, text-fig. 1
- 1932 Early man in the East Midlands. Abbott Mem. Lecture, Univ. Nottingham 1932, pp. 1-12
- 1932 The prehistoric pottery sites of the Lincolnshire Coast. The Antiquaries Jour. Vol. 13, pp. 239-253, text-fig. 1-9
- 1932 Unit characters in fossils. Biol. reviews, Vol. 7, pp. 321-335, text-figs. 1-4
- 1935 The rocks below the Red Chalk of Lincolnshire and their cephalopod fauna. Quart. J. Geol. Soc., London, Vol. 91, pp. 1-46, Plates 1-4
- 1936 The physical history of East Lincolnshire. Presidential Address. Trans. Lincolnshire Nat. Union, pp. 1-10, 4 text-figs.
- 1937 with S. G. Clift and P. E. Kent The geology of the district, in A scientific survey of Nottingham and District. Brit. Assoc. meeting, Nottingham 1937, pp. 45-56, 1 plate
- 1937 The problem of the Lincoln Gap. Presidential Address. Trans. Lincolnshire Nat. Union, pp. 1-9, text-figs. 1-6
- 1938 Underground Water Pressure in the Spilsby Sandstone. Summary of Progress, Geol. Surv. G.B., 1936, pp. 54-61, Plate 1
- 1938 Development and evolution. Presidential Address Section C, Report Brit. Assoc. Cambridge Meeting, pp. 57-83, text-figs. 1-4

- 1938 The biological approach to the study of the cultural landscape. Address at the annual conference of the Geographical Association. *Geography* Vol. 23, pp. 84-89, text-figs. 1-8
- 1939 Palaeontology and the mechanics of evolution. Presidential Address, *Quart. J. Geol. Soc.*, London, Vol. 95, pp. xxxiii-lxx, 10 text-figs.
- 1939 Geology and water supply in the East Midlands. *British Waterworks Association 28th Annual General Meeting, Nottingham July* pp. 1-7, 1 plate
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- 1943 Belemnites from East Greenland. *Ann. Mag. Nat. Hist. Ser. 11, Vol. X,* pp. 406-410, 4 text-figs.
- 1945 A note on Lemming remains in Nottinghamshire. *Geol. Mag.*, Vol. 87, p. 185
- 1946 The Middle Grits of Derbyshire. *Geol. Mag.*, Vol. 88, pp. 118-120
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- 1949 Man as a maker of landscape. Abbott Memorial Lecture 1948-49. University of Nottingham, 14 pp.
- 1950 Submerged Forest at Sutton-on-Sea. *The Lincolnshire Historian*, No. 6, Autumn 1950, pp. 230-231, 1 text-fig.
- 1952 The story of early man in Nottinghamshire. *Trans. Thoroton Society*, pp. 63-74, 2 plates
- 1954 Proposed use of Plenary Powers for the purpose of validating the specific name "minimus" Miller J.S. 1826. *Bull. Zool. Nomenclature* Vol. 9, Pt. 9. Oct., pp. 284-5
- 1956 with W.R. Chalmers and M. Posnansky The Mediaeval Tile works of Lenton Priory. *Trans. Thoroton Soc.*, Vol. 60, pp. 83-97
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- 1936-1955 The Lower Cretaceous Belemnites. *Mon. Palaeontogr. Soc. London.* 86 pp., 18 Plates
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- 1964 The early development of Gryphaea. Geol. Mag., Vol. 101, No. 2, pp. 409-420, Text-figs. 1-3
- 1965 The Gryphaea plexus in the Lower Lias of the Vale of Belvoir, Nottinghamshire. Mercian Geologist, Vol. 1, No. 2, pp. 89-102, Text-figs. 1-5
- Numerous book reviews, obituaries and talks
- B - Books
- 1910 The Geography of Nottinghamshire. Cambridge County Geographies C.U.P. 153 pp., 54 illus., 10 text-figs., 9 maps
- 1923-1947 Outlines of Palaeontology. Arnold. 1st, 2nd and 3rd Editions, 393 pp., 367 text-figs.
- 1937 (Editor) Scientific Survey of Nottingham and District. Brit. Assoc. Nottingham Meeting Univ. of Nottingham, 111 pp., 4 plates
- 1947 Solving Earth's Mysteries. London, Harrop. 220 pp., 180 text-figs.
- 1949 with P.E. Kent The geology of Lincolnshire. Lincoln: Lincs. Nat. Union, 136 pp., 3 Plates, 22 text-figs.
- 1955 The Earth Beneath Us. London: Muller; also Penguin. ed. & German editions. 320 pp., 16 plates, 28 text-figs.
- 1960 Fossils. London: Collins New Naturalist Series. 274 pp., 24 Plates, 21 text-figs.
- 1962 with K.C. Edwards and R.H. Hall The Peak District. London: Collins New Naturalist Series (Chapters 2-3 particularly pp. 11-49, Plates 1-4, Colour Plates 1 and 2, text-figs. 2-6) 240 pp., 15 text-figs., 24 plates, 4 colour plates.
- ALSO
- 1935 The Story of Methodism in Sherwood, Nottingham

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