

BIOGRAPHICAL MEMOIRS

William George Fearnside, 1879-1968

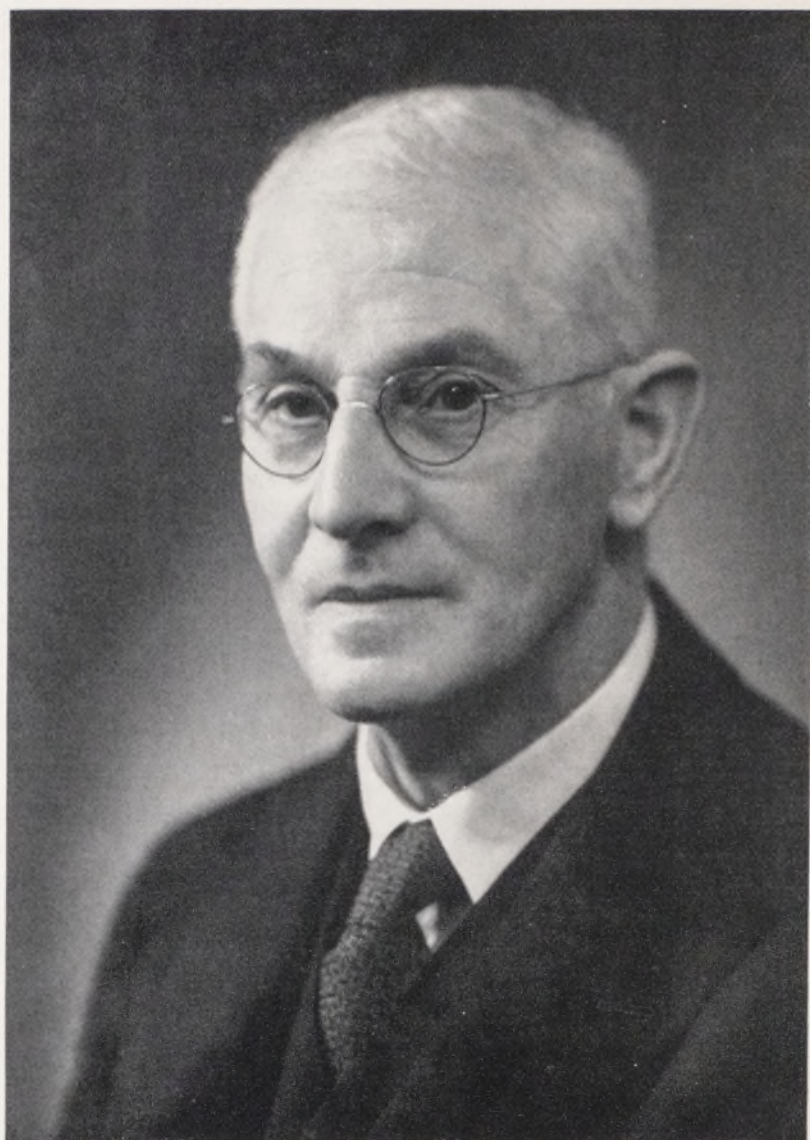
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Biogr. Mem. Fell. R. Soc. 1969 **15**, 83-98, published 1 November 1969

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L. S. Fensides

WILLIAM GEORGE FEARNSIDES

1879-1968

Elected F.R.S. 1932

THE unique position which Fearnside occupied among the great Cambridge geologists of this century arose from his eminence in both the academic and applied fields of geology. Throughout his long life, he combined a vital curiosity in everything around him, acute observation, a quite exceptionally retentive memory and an unusual flair for the correlation of observation and knowledge in diverse fields. His exuberant personality and his remarkable physical and mental vigour had already made him something of a legendary figure in his own lifetime.

Family history

William George Fearnside ('Bones' to his Cambridge contemporaries and to most British geologists) was born at White Hall, Horbury, in the West Riding of Yorkshire, on 10 November 1879. The family is of lowland Scots origin, believed to have come from the neighbourhood of Peebles, and the oak chest which stood in the hall of his Sheffield house had travelled to and fro on the wagon bringing wool to the West Riding towards the close of the eighteenth century. A Fearnside settled in Yorkshire around the turn of the century and by about 1850 'Bones's' paternal grandfather William was carrying on business as a butcher in Dewsbury. Of William's four children, the eldest son inherited his father's business, while the second son, Joshua, was apprenticed to the grocer next door, to whose business he eventually succeeded. After his marriage to Maria Green of Horbury, Joshua left Dewsbury, and it was among the Greens at Horbury that young Fearnside grew up. Both families have largely died out, for the other Dewsbury Fearnside remained unmarried and the Greens have few descendants today, though they were then a large and prosperous clan, all living in and around Horbury, farming in a small way and connected with the textile trade and with small mining ventures and the like. Predominantly hard-headed and practical people, there was an artistic streak in the Green family, especially in the womenfolk, and Fearnside himself inherited more of this than he allowed most of his acquaintances to see.

William George was the elder son of Joshua and Maria Fearnside. His younger brother, Edwin Greaves, became a noted neurologist who, after serving with the R.A.M.C. in the first World War, returned in 1917 to take

charge of the 'Home of Recovery' at Golders Green set up by the Ministry of Pensions for shell-shock cases. Greaves was drowned whilst on holiday in Anglesey in 1919, and is commemorated at Cambridge in the E. G. Fearnside's Scholarship for clinical research on diseases of the nervous system. A much younger and favourite sister, Marguerite, had died as a child in 1904.

In 1911, he married Beatrix, daughter of William Whitehead Watts and his first wife Louisa (*née* Atchison), and he is survived by his wife and elder daughter Marguerite. His younger daughter, Elizabeth, who became a Junior Commander in the A.T.S. and was with the first group to land in North Africa and later in Italy, was killed in a motor accident near Genoa in 1945.

Early years and education

Fearnside was educated at the Wheelwright Grammar School at Dewsbury, travelling in daily from Horbury. By all accounts he was a healthy, active and more than normally intelligent boy who in due course became Head of School. He was an enthusiastic naturalist and amassed a notable collection of land and freshwater snails, so that years later he could criticize some undergraduate project on the ground that they 'hadn't got half the number of species they ought to have found'. Geology was not specifically one of his hobbies, but he was profoundly impressed by a small-scale pit disaster at that time, when a careless or perhaps criminally unscrupulous miner had broken through into his neighbour's workings and thereby eased his own drainage difficulties at the cost of several lives. Young 'Bones' already had some grasp of the underground geometry of the local Coal Measures and could visualize the three-dimensional relationships involved.

He had won a West Riding County Major Scholarship in 1895 and entered Sidney Sussex College as a commoner in 1897, later being elected a scholar. Like any normally active undergraduate at a small college in those days, he took part in most athletic activities. He rowed 5 in the winning Sidney Trial Eights in 1899; he also played rugby; and many years later at a dinner in Manchester he was able to remind a Minister in the post-war Labour Government: 'You used to teach me boxing at Cambridge.' He was also a strong swimmer and about this time won a Royal Humane Society certificate for rescuing two children from the incoming tide on the Yorkshire coast. It is probable that his parents had no very realistic idea of the cost of living at Cambridge and that he was often a bit short of money; it is also probable that his reaction was to make a virtue of necessity and effect to despise such relaxations as he could not readily afford. Certainly walking and cycling were activities at which he excelled; he seems to have covered a great part of East Anglia in these ways and on many occasions cycled back to the West Riding at the end of term.

Brought up in a strict Wesleyan family atmosphere, he found the rather High-Church college chapel somewhat uncongenial and on one of his roof-climbing escapades he removed the clapper from the chapel bell and

dropped it down the Master's chimney, though whether this selection was by accident or design is not recorded. This had an appropriate sequel when, some time after the chapel was rebuilt, a new bell was presented by Fearnside, who perhaps nostalgically specified the tone B♭. As an undergraduate, he used to play the organ at the Wesleyan chapel in the town, but it was probably some years later as a young don that he accepted Cyril Rootham's offer to give him singing lessons. Rootham was delighted with a voice that could so effortlessly fill the Guildhall, but it is said that Mrs Rootham and the neighbours awaited this particular pupil's visits with some apprehension.

Fearnside had gone to Cambridge to read Natural Sciences with the intention of becoming a chemist, but on F. H. Neville's advice he included geology in his Part I Tripos studies, and he was converted to geology under McKenny Hughes, Marr, Harker and Woods. He graduated with first-class honours in Part I of the Natural Sciences Tripos in 1900, and gained the only First in Part II Geology in 1901, winning the Harkness Scholarship (which in the three succeeding years went to E. B. Bailey, R. H. Rastall and O. T. Jones). On leaving Cambridge that summer, he went as an indentured apprentice to Westinghouse in Pittsburgh, but following a literally violent altercation with the foreman, he left abruptly and worked his way round much of eastern America selling papers on trains and eking out a livelihood in various ways to see something of the country before working his way back to England on a cattle-boat. Arriving almost penniless at Southampton, he was obliged to pawn his watch for the fare back to Horbury and reached home only to learn that his father had died of a stroke and that he was now the lonely young head of the family. Later that year, he was back again in Cambridge, where he established himself as a very successful free-lance supervisor and coach in geology. He was elected a Fellow of Sidney Sussex College in 1904.

Among Cambridge teachers, it was to Neville and Marr that he always referred with gratitude and respect, but the dominant influence in his post-graduate career was undoubtedly that of W. W. Watts, whom he met as his External Examiner in the Tripos, and between these dissimilar characters there developed over the years a deep understanding and mutual regard.

Cambridge 1901-1913

The ensuing decade must have been one of the happiest periods of his life; it covered his marriage to Watts's daughter Beatrix, his closest association with the college that meant so much to him throughout his life, and the most productive of his work on the Lower Palaeozoic rocks of Wales and Scandinavia. He became Taylor and College Lecturer at Sidney in 1908, and in the following year he was appointed University Demonstrator in Petrology.

The most important of his contributions to Lower Palaeozoic geology were made in North Wales. As early as 1902, he had presented to the British

Association in Belfast a preliminary account of work around Penmorfa on the succession from Upper Cambrian to the *gracilis* fauna of Tyddyndicwm; and in 1903 at Southport, a brief summary of the Llanvirn rocks with tuning-fork graptolites around the Snowdon Syncline. But intensive investigation began in the Arenig district, even today a remote and sparsely populated area which being open, as he wrote, to the full blast of westerly gales, 'receives its full share of weather'; nearly twenty square miles of bleak mountainous country presented him with something of a physical as well as geological challenge. It constitutes the type area Sedgwick's Arenig Group, but had remained largely undescribed (though Fearnside made generous acknowledgement of such unpublished work as was available). His singular flair as a collector provided the faunal assemblages for this not particularly fossiliferous sequence from Upper Cambrian to the Upper Ordovician (*Dicranograptus*) shales, intercalated with massive volcanic ashes and intruded by andesitic dolerites and porphyrites. Despite the title used in his 1903 paper, he did not in this paper recognize Hick's Llanvirn Series, including the *bifidus* shales in his Arenig and the *murchisoni* fauna in his Llandeilo; but with this readily-made adjustment, his sixty-year-old work remains the standard description of the type area and continues to provide a firm basis for correlation in Britain and overseas. It also showed clearly that the bulk of the volcanicity around Arenig Fawr is of what would now be termed Llanvirn and Llandeilo age, and in consequence that the Arenig lavas are not Arenigian in age.

With his interests thus focused around the Cambro-Ordovician boundary in the rather fluid state of classification at that time, he secured a grant from the Worts Fund at Cambridge in 1906 and spent several months in Scandinavia, journeying from Skåne and Öland up to Dalarne, and from Östergötland through Västergötland to the Oslo and Eker districts of Norway, visiting all sections where Lower Arenig rocks rest upon rocks of Tremadoc age. Since there was no detailed account of these strata in the English language, he provided a long review incorporating much original observation (1907) and concluding with a plea for the inclusion of the Tremadoc in the Ordovician system following the practice of Scandinavian geologists. This suggestion the British have never adopted, though it is again being strongly advocated in many quarters today. This was the first of repeated visits to Scandinavia, where he had many friends and to which he was always drawn both for its geology and its scenery.

He now moved back again to the Tremadoc and Penmorfa area, fully equipped by his Scandinavian researches to undertake the revision of Sedgwick's Tremadoc Group in its type area. As a result, much more exact correlation with European stratigraphy then became possible, though it was another twenty years before the more complete counterpart of the 'Dictyograptus-kiffen' was recognized in Shropshire. His interest in structures found expression in his investigation of the pisolitic iron-ores above the Penmorfa Thrust, the old workings for which yielded the data

to plot the contour lines and demonstrate the nature of the 'augen'. As Marr remarked at the discussion of this Tremadoc paper, Fearnside had now 'shown definitely what were the Arenig Beds of Arenig and the Tremadoc Beds of Tremadoc, for which all students of the Lower Palaeozoic rocks, at home and abroad, must thank him'.

Interspersed among these Welsh and Scandinavian researches is a joint paper (with Bernard Smith and Gertrude Elles) on the Lower Palaeozoic rocks of Pomeroy, resulting from the visit of a small field-party in 1905 and presented for publication two years later. In 1910 he read a short paper (with J. E. Marr) to the British Association on the Lower Palaeozoic rocks of the Cautley district, adding considerably to Marr and Nicholson's earlier account in respect of the Lower Llandovery and Caradoc strata. By now an established authority in this field, he was invited to contribute the chapter on North and Central Wales to the *Geologists' Association Jubilee Volume* (1910) and led two excursions for the Association in 1910 and 1912. In totally different fields, he wrote the chapter on geology for Marr and Shipley's *Natural history of Cambridgeshire 1904* (for years the best available account) and described the geomorphology and glacial history of the Howgill Fells (with J. E. Marr), 1910. It was also during this Cambridge period that he assisted C. T. Heycock and F. H. Neville in their classic work on the constitution of the copper-tin series of alloys, carried out in the old Sidney College laboratories.

Throughout this period, he had entered very fully into the corporate life of his college, both as a bachelor Fellow for seven years and for another two years as a married Fellow when he and his young wife kept open house in Glisson Road for his undergraduates and colleagues. A large number of notable geologists, many of them Sidney men, passed through his hands and became his lifelong friends and associates.

Sheffield 1913-1945

In 1913, Fearnside left Cambridge to accept the newly established Sorby Professorship of Geology at Sheffield University and returned to his native Yorkshire. A glance at the titles in his list of publications reveals the abrupt change in his activities which this brought about. Mainly this was because he was convinced that an essential function of a provincial department of this nature was to give assistance to local industry, then the principal benefactors and patrons of the university; he re-orientated his own interests and directed those of his students to this end. But the change was reinforced by the outbreak of the first World War within a year of his appointment, when he was called upon to advise on the provision of increased supplies for the steel industry and the location of alternative sources for those cut off by the war.

Not that he ever lost his interest in the Lower Palaeozoic rocks. In the inter-war years most of his Long Vacations were spent working around Ffestiniog and the Moelwyns, where his uncomplaining family learned to

locate him for lunch by the clink of his hammer. But with so much else on hand, his work never reached what he considered a satisfactory state for publication. Research students were *rarae aves* at a provincial university in those days, but he placed one on the Nantlle Slate Belt and another at Penrhyndeudreth, publishing jointly with them; and there were few papers on the Lower Palaeozoic read at the Geological Society over the next forty years to the discussion of which he did not contribute vigorously and often critically. North Wales also formed the subject of one of his Presidential Addresses to the Geological Society in 1944 (though this was never published) and he led the memorable Excursion to North Wales and Shropshire (C6) at the International Geological Congress in 1948.

Almost immediately after his arrival in Sheffield, he presented a paper to the Surveyors' Institution on the influence of water in macadam road construction. This had a distinctly mixed reception, one speaker contrasting 'scientific theorists' with 'practical road-makers' and particularly disputing his claim that much potholing was due to the occurrence of water pockets above the sub-crust, within a few inches of surface, and his condemnation of slag as road metal; but a year later, this paper earned him the Institution's gold medal.

Influenced by his work with Heycock and Neville on Cu-Sn alloys, Fearnside surveyed the subject of structural analogies between igneous rocks and metals in his Sorby Lecture to the Sheffield Society of Engineers and Metallurgists in the following year. This far-sighted essay, published in a journal not readily accessible to most geologists, is being rediscovered and appreciated by petrologists today. Between 1860 and 1880, Sorby had applied petrological principles to originate the science of metallography which Fearnside then realized was reaching a position to repay the debt. He indicated the petrological significance of structures formed in metals and alloys under known and controlled conditions and hinted at comparable analogies between structures due to annealing and working of metals and those of metamorphic rocks. Today perhaps even more than in 1914, this field 'may prove a veritable Rosetta Stone'.

There followed through the remainder of the war period a series of publications on supplies of refractories, iron ores and other minerals, and on structural and other aspects of the Yorkshire and Derbyshire coalfields. Special reference should be made to his comprehensive survey of mineral requirements of the British iron and steel industry, presented as an address to the Society of Engineers in 1916, for which he was awarded the Society's Bessemer Premium.

Throughout the first World War, Fearnside had been specially concerned with supplies and properties of refractory materials, and his vigorous advocacy played a decisive part in the establishment of the new Refractories Department at Sheffield in 1917. At his instigation, W. J. Rees had been brought in to act as research chemist, at first attached to the Geological Department and later becoming Head of his own independent Department.

He himself had much to do with the application in this country of Fenner's work on the inversion of silica when heated and the development of the semi-silica brick, based on the compensatory expansion and contraction respectively of silica and clay. These and other effects of heating were described in an address to the Coke Oven Managers' Association in 1917. He had also worked in association with Professor Turner in the Glass Technology Department and was an authority on the constitution of moulding sands.

Later he drew on aspects of his accumulated knowledge and experience of the Midlands coalfields to provide the subject of his Presidential Address to Section C of the British Association at Leicester in 1933 and to the Yorkshire Geological Society in 1936. At Leicester, he presented a comprehensive picture of the geological structure and the history of the whole Midlands area during the Upper Carboniferous, made possible by the interpretation of data from more than a score of Survey one-inch maps, supplemented by reduction of large-scale mine plans available to him and the evidence of thicknesses from numerous boreholes. The Midland province was presented as a single unit of Coal Measure deposition, and fold axes and fault patterns were plotted on small-scale maps covering an area of some 8000 square miles to display their complex variation in direction. 'The Pennine uplift is not a simple group of parallel pressure ridges; and having traced the loosening of its sheaf of structures through the Midlands and seen them almost box the compass in the coalfields on either side, I have concluded that as a synonym for north-south trend of structure, the name "Pennine" must disappear.'

Section C of the British Association had appointed him a member of the Committee enquiring into the Dolgarrog Dam disaster of 1925, when the Porth Llwyd village was buried 20 to 40 feet deep under piled boulders, and he published (with W. H. Wilcockson) a topographic study of the flood-swept course of the river valley. This vividly written account reveals some of his most characteristic attributes, and those who knew him will almost hear the voice of 'Bones' in the following extract: 'We have no direct measure of that velocity, but we have record that, following upon the breaking of the Coed-ty Dam, some 12 million cubic feet of water were released within the hour into a stream which was already carrying the flood discharge from the burst Llyn Eigiau, which was in course of emptying 120 million cubic feet of water during a day, as well as the run-off from the mountains after a fortnight of heavy rain; and all this water was passing through a cross-section which from about 3000 square feet just above the Rhaiadr diminished to as little as 1200 square feet at the foot of the rocky gorge; and we can, therefore, suspect a maximum rate of stream-flow through these narrows in the neighbourhood of 10 miles per hour. This, on the 1-in-2 slope below the Rhaiadr, was more than sufficient to ensure the sweeping out of every 500-ton or smaller block which happened to be loose, and their transport to the foot of the slope of the gorge at 1 in 4.'

Below the foot of the gorge the sides of the flood were unconfined; and on this slope, which slackens progressively, at once to 1 in 6, and at the old main road to 1 in 12 or less, the load of large boulders fell out and was accumulated.'

But from the 1920s onwards his major publications begin to decrease as more and more of his time, apart from teaching, was devoted to consulting work. At the risk of giving a totally inadequate picture of the activities filling such a busy professional life, a few examples may be cited below to illustrate the range of his work.

About 1930 he went out with Professor Statham to advise Attock Oil Company on the possibility of mining beneath the bed of the oil-bearing strata in a continuation of the Singu-Lanywa oilfield—a project that was subsequently abandoned when it was discovered that borings from the flank of the river could be deflected up dip. He paid a second visit in 1938 to the Company's fields in what is now West Pakistan, and assisted a subsidiary company in some English prospecting which, though it produced negative economic results, led indirectly to Cotton and Hudson's notable papers on the Namurian and Viséan rocks around Edale and Alport. However, his principal work in connexion with petroleum geology came through his retention as geological adviser by the Anglo-Iranian Oil Company during their exploratory work in Britain. His widely-publicized offer, some twenty years earlier, to drink all the oil found in Britain, represented a most unusual error of judgement as he himself was to demonstrate. To him belongs much of the responsibility, and the credit, for the selection of the areas for which A.I.O.C. obtained a licence in 1937, particularly the Eakring field where the first discovery of commercial oil was made in 1939 and where production still continues in a modest way. Though primarily concerned with the Carboniferous prospects of the East Midlands, he had taken an interest in all three areas originally tested by the Company, including the Permian of East Yorkshire with its potentially valuable potash deposits.

With the outbreak of the second World War, all his normal activities were intensified; coal production again figured largely, with various mineral supplies and refractories, and new demands arose such as the water-supply problems of military airfields which generally seemed to be sited in areas of minimal geological suitability. An interesting side-line concerned the sea-water magnesia process which was being used at the beginning of the war by the Steetley Company for the production of refractories. The demand soon came for increased output to provide magnesia for the magnesium metal used in incendiary bombs and light alloy castings. The process, in which half the resultant magnesia is supplied by the sea-water, involves treating hydrated dolomitic lime with sea-water, precipitating $\text{Mg}(\text{OH})_2$ while retaining calcium salts in solution. It was Fearnside's task to locate hard dolomite of suitable purity in sufficient abundance and sufficiently close to an acceptable supply of sea-water, and a new works solely for magnesium

metal was erected on the Cumberland coast. All this time Fearnside was also a very active President of the Geological Society for two of the difficult war years and was running his Sheffield Department with a reduced staff.

It came as something of a surprise to most of his colleagues to realize that during the war he had passed the normal age for retirement, and in 1945 he relinquished the Chair at Sheffield which he had occupied for thirty-two years. He had left Cambridge with regret, but he thoroughly enjoyed the challenge of creating the distinctive Department which reflected so exactly his own convictions. Through most of the first World War he worked single-handed and throughout his tenure he never had the assistance of more than one lecturer and one demonstrator, and he always refused to change the terms of his own appointment for any which might have restricted his right to take on outside work. There was no typist, and his wife undertook all his secretarial work even when he became Dean of the Faculty fifteen years later. She was his companion in much of his fieldwork, the tactful chaperone which convention then required on mixed student parties, and her charm as a hostess will long be remembered at Sheffield as at Cambridge. He said at the time of his golden wedding that if happiness meant marrying the right wife and being paid to do the work you like best, he was indeed a happy man.

Retirement, 1945-1968

Politically at least, Fearnside was no advocate of nationalization, but after the passing of the Act in 1947 his only way to continue getting down a coalmine was to join the National Coal Board, and he became geological adviser to the West Midlands Division of the Board. Here his main task was to direct an extensive surface boring programme to prove the subsurface extension of the four main coalfields of the area. To this, he brought an energy and enthusiasm which were an inspiration to his N.C.B. colleagues, and his expertise goaded the drilling contractors to work of the highest standard. When he left in 1958 (at the age of 79!), eighty-eight boreholes had been drilled, yielding 164 000 feet of core, and Lea Hall Colliery—the first to be sunk by N.C.B.—was going into production. Nor did his assistance stop at the geological proving of the colliery ‘take’, for his advice was sought on the actual process of shaft-sinking and waterproofing through 700 feet of Trent River gravels and Keuper and Bunter rocks. Lea Hall Colliery has two dry shafts, and before Fearnside’s death it had reached its planned annual output of one and a half million tons. This was undoubtedly one of the achievements of which he was proudest, and the Manager of the West Midland Division of the N.C.B. writes: ‘Professor Fearnside was looked upon with great respect and much affection by all those officials of the National Coal Board with whom he came in contact. He taught many of them more geology than they had ever learned in school or college. They fully appreciated the fact that his interest in mining was more than academic and that he understood the problems of the mining engineer as

few who are not actually engaged in the industry are able to do.' It was to his unconcealed satisfaction that the two or three days a week (and a lifetime's experience) which he devoted to work for the N.C.B. was taken over on his retirement by a sizeable permanent staff.

For the first fifteen years of his retirement from University life he travelled constantly about this country and the Irish Republic; he was actively engaged in the development of the gypsum mines at Mountfield, Sussex, was interested in barytes workings in Westmorland and elsewhere, but principally it was water-supply and foundation work that occupied his latter years. One of these jobs was to secure large quantities of water for an important industrial undertaking on the Humber, where his initial success was matched by the reliability of his forecasts of the likely trend. He took a keen interest in the effluent problem and the same company still use also a method of site and foundation preparation devised by him, which has since spread to other Lincolnshire firms.

He was but rarely involved in metalliferous mining, but at the age of 76 he went to Rhodesia to report on the prospects of some manganese deposits and characteristically seized the opportunity to renew his acquaintance with the geology of South Africa; while a year later he was in the Massif Central region of France prospecting for perlites used in the production of light-weight aggregates for plasterboard. A young colleague who accompanied him on that occasion recalls overhearing the valedictory comments of two French peasants they encountered on one of their traverses: 'C'est fou!' muttered the old man: 'C'est formidable!' rejoined Madame.

In his latter years especially, he was frequently consulted about foundations for the heavy buildings erected after the war in and around Sheffield, where his knowledge of underground workings and abandoned collieries was unique; and in the last year of his life he was actively advising on the special problems involved in the construction of the Lancashire-Yorkshire motorway and its approaches.

Personal

Fearnside was essentially a sociable extrovert, dynamic and forthright, and he had a wide circle of friends in all walks of life. It was a great sadness to him that latterly his deafness cut him off from most of the professional gatherings and discussions he had so enjoyed. He had been an enthusiastic supporter of Section C of the British Association and constantly attended various geological society meetings and excursions; he was a well-known and greatly appreciated figure at the Geological Society Club; and to visit Cambridge and dine at his old college gave him particular pleasure, though his habits were abstemious and his manner of life almost spartan. Admittedly, he tended to dominate any conversation, with a distinctly Yorkshire inflexion and vocabulary that became more pronounced in old age; but what invariably impressed everybody who met him and delighted his friends was his enthusiasm and vitality and his zest for knowledge. He was always a

voracious reader and even in the last year of his life his daily walks into the city usually included a visit to the City or University Library, hunting up something he had become interested in.

He had no sense of closed shop and delighted to impart information to scientists (especially geologists), and to laymen alike; the talk was typically provocative and stimulating. As a visitor at lunch in a college refectory he introduced himself to his neighbours, arguing about stainless steel, with the remark, 'You know, you're wrong!' followed by a well-informed discourse on current practice. A works manager conversing about his holiday resort was immediately asked the output of a local mine; and the somewhat aggrieved reply, 'How should I know?' produced from Fearnside the response, 'Good Heavens, man, you've got eyes in your head! All the lorries go through that town. Was there one every thirty minutes?—one every ten? Nothing else ever happens there.'

He openly despised anything he considered affected or merely fashionable, so that much in art, literature and music came under stricture; but once assured of their mental integrity, he would listen to young students in non-scientific disciplines and win their genuine respect by his interest and his quick grasp of their problems—and the knowledge he somewhat unexpectedly displayed of their subjects.

In search of geological evidence, 'Bones' could be quite ruthless, though he much preferred to get what he wanted with the willing co-operation of landowners and tenants. In his younger days he saw the inside of a Portuguese prison after an irate vineyard owner had turned his dog on him and Fearnside had dispatched it with his hammer. And when he was over 80 years old, he led a company director through an English estate to show him a critical exposure, pausing on the way back in front of the great house to remark genially, 'The owner told me yesterday he'd shoot me if he found me here again.' But usually he was notably successful in establishing cordial relations, and a senior member of the West Midlands Division of the N.C.B. remembers with gratitude his powers of persuasion with farmers and landowners during their extensive drilling programme for the Lea Hall Colliery.

There was something of the successful journalist's flair for just 'being around' when anything important was happening, though intelligent anticipation doubtless played as great a part as chance. Perhaps the most memorable instance was the dramatic appearance of Fearnside in his elderly Daimler on the evening in 1939 when A.I.O.C. tested and produced oil from Eakring No. 1 Well, and thus began the life of our only British oilfield.

Both at Cambridge and at Sheffield he was an inspiring and successful teacher. Direct and personal in style, his lectures covered ground that his students could never have found in textbooks. Above all, he was an ideal leader in the field and sociable evenings on field excursions were never dull if Fearnside was a member of the party. As Sorby Professor, he was content for the most part to provide ancillary courses for miners and

engineers: but his interest in his students was not the less for this and he knew and kept in touch with scores of them.

Writing he found increasingly distasteful and laborious and his output always owed much to the editorial assistance of his wife. His style had something faintly biblical about it, in construction and economy of words, and his vocabulary was unusual and vivid; but his inclination to include every fact and his caution in generalization made his sentences involved and even at times obscure. Scientific papers and company reports had to be produced, but he much preferred verbal communication. Consulting work and academic geology merged in his approach to either. A sentence from one of his Presidential Addresses expresses something of his attitude: 'In the older coal-fields, where mining records have been kept, there is such an accumulation of local three-dimensional information as can never be made available in the best exposed of mountain ground.' And a geologist with one of our oil companies wrote about his work as consultant: 'Though he never said so explicitly, his attitude was that he was paid to help us find out and understand all the relevant geological circumstances, but we were paid to decide what to do about it—and he was not going to do our work for us.'

In *Who's Who*, Fearnside described his recreation as Travel, and he had travelled over most of western Europe, the United States and Canada, India and Burma, South Africa and Rhodesia, before the days of Royal Society and university grants. It was something for which he never grudged money and for which he gladly financed others. But he might well have added other hobbies to his list. Many of the existing features of the Fellows' Garden at Sidney date from the years of his association with the college, and to the end of his life, his own garden at Sheffield was beautifully kept. His musical taste was nurtured in the repertoire of Yorkshire choral societies and his first travels in Norway developed his fondness for Grieg, to whom he was introduced in the last year of the composer's life. His interest in art centred around landscape painting and reflected his intense love of the countryside; he was a regular visitor to the Summer Exhibition at the Academy and was something of a patron, but a work had to show observation and skilled draughtsmanship to earn his approbation. And he was a connoisseur of craftsmanship of many kinds, from cabinet-work to jewellery, especially interested in metalwork and pottery; in his travels in India and Africa he missed no opportunity of studying native methods of winning and working metals.

He was, of course, a prodigious walker; it was a necessary outlet for his energy and it was the only proper way to see the country, in England or abroad. Twenty to thirty miles a day was perfectly normal in his prime and he was completely indifferent to the weather; within a year of his death he was still regularly walking five or six miles a day and would do more if he felt the need to impress his grandchildren. Students on his field classes had their suspicions that the geological purpose was sometimes subservient to the desire to tire them out, which he could so easily do; and one foreign

visitor on an excursion to Arenig climbed wearily back into the bus on one occasion with the resigned comment, 'I think it is more gymnastics than geology'.

To the end of his life, he was keenly interested in current affairs, generally listening to two or three news bulletins a day and perusing about four daily papers. Always a shrewd businessman, he was a generous and usually anonymous benefactor to his school and his college, to his native town, to several scientific societies and university departments and to many individuals and charities. The Sorby Medal of the Yorkshire Geological Society was founded by him and a later benefaction was posthumously used by the Society to establish a Fearnside Prize for young geologists.

Fearnside was elected a Fellow of this Society in 1932 and served on the Council in 1936-37, and on Sectional and other Committees over many years. Other honours include: Honorary Fellow of Sidney Sussex College (1946); Hon. Member, Midland Institute of Mining Engineers, of the Coke Oven Managers' Association and of the Yorkshire Geological Society; Lyell Fund (1906) and Murchison Medal (1932) of the Geological Society of London; Council's Gold Medal, Surveyors' Institution (1914); Bessemer Premium, Society of Engineers (1917); Greenwell Medal, North of England Institute of Mining Engineers (1917). He was elected President of the Geological Society of London for 1943-45, having the unique distinction of never publishing either of his Presidential Addresses; President of Section C, British Association (1933) and of the Yorkshire Geological Society (1934, 1935); Vice-President of the Midland Institute of Mining Engineers (1928-1932). He served as Dean of the Faculty of Pure Science at Sheffield University from 1931 to 1934. It is characteristic of him that he rated as highly as such honours his many years of service on the councils and committees of most of these Societies, where his judgement and experience made him in considerable demand.

Few British geologists can have had a more active and eventful life. He died on 15 May 1968, at the age of 88, and a Memorial Service was held in the Chapel of Sidney Sussex College on 20 July 1968.

Fearnside left no 'Personal Record' with the Society, but in compiling this account I have had the help of numerous colleagues and associates. My thanks are tendered to Dr G. A. Chinner, Mr P. T. Cox, Professor H. J. Emeléus, F.R.S., Dr G. H. Mitchell, F.R.S., Mr N. M. Peech (Steetley Company), Mr E. S. Pinfold, Mr R. W. Scurfield, Sir James Stubblefield, F.R.S., the late Mr A. H. Tait, Mr W. H. Wilcockson and Mr W. Woodhall (Laportes). Above all, I am indebted to Mrs W. G. Fearnside and my wife.

The photograph is by Elliott and Fry.

O. M. B. BULMAN

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