

**Benjamin Neeve Peach, LL.D., F.R.S., 1842–1926.**

THE death of Benjamin Neeve Peach — the most brilliant Scottish geologist of his time—awakens a keen sense of loss in a wide circle of scientific friends at home and abroad. For more than half a century he has been linked with Scottish geology, exercising a profound influence on its development by his own contributions to the science, and by stimulating younger men to carry out research.

Born at Gorran Haven near Megavissey, on the south coast of Cornwall, on 6th September 1842, he inherited from his father a great love of natural science. His father, Charles W. Peach, was a born naturalist, who, from his home in Northamptonshire, obtained an appointment in the Coast Guard Service. In accordance with the rules of the Service, his station was frequently changed, which gave him excellent opportunities for collecting marine organisms along the shore and searching for fossils in the rocks. Throughout his career he made important discoveries. Full of enthusiasm, he attended meetings of the British Association, where his communications impressed some of the leading scientific men of the time.

The vivid portrait of the father, drawn by Robert Chambers, who published it in *Chambers's Journal* after the meeting of the British Association at York in 1844, is worth quoting.

“But who is that little intelligent-looking man in a faded naval uniform, who is so invariably seen in a particular central seat in this section? That is perhaps one of the most interesting men who attend the Association. He is only a private in the Mounted Guard at an obscure part of the Cornish Coast. . . . Yet Charles Peach is a votary of natural history—not a student of the science in books, for he cannot afford books; but he is a diligent investigator by sea and shore, a collector of Zoophytes and Echinodermata. . . . These he collects, preserves, and describes; and every year he comes up to the British Association with a few novelties of this kind, accompanied by illustrative papers and drawings. . . .

“On the present occasion he is unusually elated, for he has made the discovery of a *Holothuria* with twenty tentacula, a species of the Echinodermata which Edward Forbes, in his book on Starfishes, had said was never yet observed in the British seas. . . . Honest Peach, humble as is thy name and simple thy learning, thou art an honour



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even to this assemblage of nobles and doctors; nay more, when I consider everything, thou art an honour to human nature itself; for where is the heroism like that of virtuous, intelligent, independent poverty; and such heroism is thine!"

About thirty years after the Association meeting at York, Charles W. Peach was awarded the Neill Medal by the Royal Society of Edinburgh for the triennial period 1871–1874, for his contributions to Scottish Zoology and Geology and for his recent contributions to Fossil Botany.

With such a father, it is not surprising to find that young Peach showed at an early stage the instinct of the naturalist. Near Fowey, in Cornwall, he joined his father and brothers in hunting for fossils in the Devonian rocks. On his father's promotion to Peterhead in 1849, he came to know the contents of every rock-pool along the shore for miles. When the family removed to Wick in 1853, he took a keen interest in the material collected by his father for studying the marine zoology of Caithness and in hunting for fossil fishes in the Caithness flagstones. When stationed at Wick, his father was the first to discover a suite of fossils in the Durness limestones in the north of Sutherland. Sir Roderick Murchison, then Director-General of the Geological Survey, at once recognised the importance of this discovery, and, as a mark of his appreciation of this "find" and of the scientific aptitude of the son, he completed the education of young Peach at the Royal School of Mines, London. The scientific training at that institution profoundly influenced him, in particular the teaching of Huxley and Ramsay, afterwards Director-General of the Geological Survey. Huxley's lucid expositions, the completeness of his demonstrations, and his masterly presentation of the evidence bearing on evolution, gave young Peach a decided bent towards palæontology. Ramsay, with his ripe experience in the field, taught him to take broad, comprehensive views of geological problems, keeping a sharp outlook for breaks in the succession and estimating their value. Peach passed through his classes with such distinction that on Murchison's recommendation he joined the Geological Survey.

His first official duty was to assist in the determination of fossils in the London office, under the palæontologist Salter, whose precise methods and wide range of knowledge left a lasting impression on the young geologist. He was transferred to Scotland in 1862, and was associated with James Geikie and John Young (afterwards Professor of Natural History in Glasgow University) in mapping the glacial

deposits of the Lothians. At that early date he noted the occurrence of materials from the Highlands in the drifts of the Lammermuirs—a fact which impressed his Director, Ramsay, as to the movement of the Highland ice. Peach was then convinced that the phenomena of the boulder clay could only be satisfactorily explained by the action of land ice. Thereafter, with the other members of the staff, he mapped the solid geology as well as the drifts.

In 1867, under Archibald Geikie as Local Director, a separate Scottish staff was organised, with which he was associated during the rest of his official career. For some years it fell to his lot to survey several of the Scottish coalfields, large areas of the Lower Old Red Sandstone with the associated volcanic rocks, and portions of the Ordovician and Silurian tableland of the Southern Uplands. In 1879 he was appointed Acting Palæontologist in Scotland in addition to his work in the field, with permanent headquarters in Edinburgh. It was then that he assigned to Dr Kidston the plants, and to Dr Traquair the fish-remains collected by the Survey from the Old Red Sandstone and Carboniferous systems; while he reserved for himself the most of the other organisms for determination. This arrangement, affecting three such eminent specialists, resulted in important advances in Scottish palæontology during the succeeding years.

In his palæontological work Peach devoted special attention to the palæozoic Arthropods. His first great opportunity came about 1880, when Mr Macconochie lighted on a band of shale in the Lower Carboniferous Rocks at Glencartholm, in the Scottish Border, which yielded a large number of new forms, including fishes, crustaceans, and arachnids. In a series of papers published in the *Transactions* of the Royal Society of Edinburgh (1880–1882) he described new forms of Phyllo-pods and macrurous Decapods, and the remains of scorpions, the last occurring in great abundance in that band. From the finely preserved specimens he inferred that these ancient scorpions did not seem to differ in any essential character from those now living. As regards the horny test, they were as highly specialised as their descendants at the present day. He pointed out that, though the genus was named *Eoscorpius* by Meek and Worthen, the dawn of the scorpion family must have been earlier than Carboniferous time. He suggested that their remains would yet be found in the Devonian and Silurian plant-beds when thoroughly searched. This suggestion was proved to be a true forecast by later discoveries in Scotland.

In the field Peach achieved his greatest triumphs. Gifted with an

eagle eye, with rare original power in interpreting evidence in the field, and with consummate mastery of detail, he became the dominating force in the Scottish staff. Sir Archibald Geikie selected him as his companion when investigating special geological problems in the field. They traversed the Old Red Sandstone areas in Caithness, Orkney and Shetland, Cambrian tracts in North and South Wales, and certain belts of metamorphic rocks in the north of Ireland. These excursions led Sir A. Geikie to place implicit confidence in Peach's interpretation of field evidence.

In 1883 Peach was placed in charge of the survey of the North-west Highlands, and the whole work was carried out under his supervision. He recognised the extreme importance of the contributions of Nicol, Lapworth, and others to the solution of the geological structure of that region. He clearly realised that some of the structures were new to Britain, and that the thrusting of the rock-masses had occurred there on a stupendous scale. He saw that the detailed mapping would result in establishing certain fundamental principles in the architecture of one of the oldest mountain chains of Europe. The great controversy between Murchison and Nicol was solved. Nicol's contention was proved to be right, that there is no conformable passage from the Cambrian limestones into the Eastern Schists in the North-west Highlands. The remarkable assemblage of fossils in the Cambrian limestones in the North-west Highlands, first discovered by his father, proved a fascinating subject of study. In his presidential address to the Geological Section of the Dundee Meeting of the British Association he suggested the probable palæogeographical conditions that prevailed in Cambrian time to account for the American affinities of the Durness fauna.

In 1888 the re-examination of the Southern Uplands began, in the light of the succession established by Professor Lapworth based on the graptolites. The traverses across the uplands proved beyond doubt that Lapworth's graptolite sequence rested upon an impregnable basis. As Acting Palæontologist Peach had to determine the large collection of graptolites made by the Survey, and he cordially acknowledged the great advance in Scottish geology accomplished by Lapworth.

Before retiring from the Service he shared in the revision of the Scottish coalfields. He mapped the southern part of the city of Edinburgh, including Arthur's Seat, and he has left behind a complete and most interesting account of the history of this old Carboniferous volcano.

After his retirement from the Service, he devoted several years to the preparation of his great monograph on *The Higher Crustacea of the Carboniferous Rocks of Scotland*, published by the Geological Survey in 1908. Since the publication of his papers in the *Transactions* of the Royal Society of Edinburgh (1880–1882) large additions had been made to the Survey collection of these forms. The detailed study of the fresh materials led him to the conclusion that the higher Crustacea of the Carboniferous rocks had closer affinities with the Schizopods than with the macrurous Decapods. He shows how the various forms throw light on the conditions under which they lived, and how they underwent modification to suit environment. The monograph is illustrated by twelve plates of figures reproduced from his own drawings. Over 2000 specimens belonging to the Geological Survey, as well as specimens from private collections, were examined in the preparation of this work.

In recent years he devoted much time and thought to the problems connected with the crystalline schists of the Central and Eastern Highlands. Abandoning his former interpretations of the structure of the Dalradian Highlands, published in the *Memoirs* of the Geological Survey, he adopted views that are certain to meet strong opposition. But where the geological evidence is indefinite, as in that region, there is room for much speculation. Always a formidable opponent and a keen controversialist, he was nevertheless one of the most kind-hearted of men.

One of the prominent features of his character was his readiness to help younger investigators. From his wide range of knowledge and experience he gave valuable information and advice, and, when asked, examined the sections in the field to test the accuracy of the observations. Younger men admitted that contact with his strong personality proved a great stimulus to research.

He thoroughly enjoyed life. In early manhood he gloried in his strength. When visiting the volcanic districts of the Siebengebirge and the Eifel with some of his colleagues in 1868, he swam across the Rhine in twelve minutes before breakfast. The feat was done at Königswinter—a turbulent part of the river, as he thought. To the last he retained his youthful buoyancy of spirit, and his delight in retailing his fund of stories. He was a keen angler. When granted a day's fishing in a Highland river he usually captured about a dozen salmon in the fishing season.

In recognition of his contributions to geology he was awarded by

the Geological Society, London, the Wollaston Fund, the Murchison Medal, and the Wollaston Medal—the last being the highest honour in the gift of the Society. At the Anniversary Meeting of the same Society in 1892 he received the Murchison Centenary Prize, gifted by an anonymous donor, for continuing and extending the work to which Murchison had devoted himself in Scotland. From the Royal Society of Edinburgh he obtained the Neill Medal. The University of Edinburgh conferred on him the honorary LL.D. degree. He was specially gratified by the recognition of his services to others on his retirement from the Geological Survey, when, at a public dinner, the Chairman, Professor James Geikie, presented him with a cheque for £300, subscribed by a large circle of scientific friends.

He died on 29th January 1926, after an illness of several weeks' duration. His intimate friends mourn the loss of a geologist of great original power, a frank, generous, warm-hearted friend, and a most lovable man.

J. H.