

JOSEPH HENRY COLLINS 1841-1916; CORNWALL'S GREATEST GEOLOGIST?

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INTRODUCTIONS

In any list of Cornish geologists and mining engineers who have made a contribution to geology, both locally and nationally, Joseph Henry Collins would have to be placed at or near the top of the list.

He was a mining engineer, a geologist and a businessman who was involved in the local mines and china clay operations and in international consultancy. He also found the time to publish an extraordinary range of authoritative scientific papers and books on subjects as diverse as mineralogy and palaeontology, and to participate in the founding of several national professional and learned societies.

He was perhaps not fully appreciated by the national scientific establishment of his day, but the verdict of time has been to show that he made an extraordinary contribution to Cornish geology.

PUBLICATIONS

Many of his works are still frequently referred to in modern publications. In 'Minerals of Cornwall and Devon' by Embrey and Symes, published by the British Museum (Natural History) in 1987, no less than 35 of Collins papers are referred to; and three of Collins' books have been republished in facsimile editions in the last 10 years - A handbook to the Mineralogy of Cornwall and Devon (1871), the Hensbarrow Granite District (1878) and Observations on the West of England Mining Region (1912). There can be very few, if any, 19th century geologists whose publications have stood the test of time so well. A selection of Collins' publications are listed at the end of this note, further lists will be found in Embrey and Symes (1987) and in the Obituary published in the 84th Annual Report of the Royal Cornwall Polytechnic Society (Volume 3, New series, 1917, 89-101), but neither are complete.

COLLINS' LIFE AND ACHIEVEMENTS

Joseph Henry Collins was born in London on the 16th March 1841, but he was of Cornish extraction, his family being descended from a branch of the Collins family of Trewardhale in Blisland, on the west side of Bodmin Moor. Both of his parents were born in Devon, but on his mother's side he was of French descent.

His father was not wealthy and was a sculptor, so Joseph Henry was educated partly at Birbeck School and partly at Working Men's College in London. He was a born scholar, so that by extensive reading in the sciences he was able to enter a competition in 1867 for one of the much-prized Royal Exhibitions, to allow him to study at the Royal School of Mines. Owing to some official blunder, he was never informed of his success and only learned about it a year afterwards, by which time it was too late to take up the scholarship.

However, nothing daunted, we find that Joseph Collins was able in 1868 to secure an appointment as Lecturer and Assistant

Secretary to the Miners' Association of Cornwall and Devon, to succeed Dr Clement Le Neve Foster. After two years, he resigned the travelling lectureship to the Miners' Association to become the full-time Secretary of the Royal Cornwall Polytechnic Society in Falmouth, although he retained the secretaryship of the Miners' Association.

During this period he wrote the 'Handbook to the Mineralogy of Cornwall and Devon' and edited the Western Chronicle of Science. Between 1873 and 1876 he published a series of textbooks for students on mineralogy and coal and metal mining.

In 1873 he began his connection with the St Austell area and managed tin mining operations at Rock Hill, near Bugle. In his book on the Hensbarrow granite, he refers to Rocks and Beam tin mines, information which must have sprung from personal knowledge acquired at this time. Also in 1873, Collins took up an appointment as Public Analyst to the County of Cornwall, as well as for most of the Cornish Boroughs, so he must have become a skilled analyst by that time. For a short period he became consulting engineer to the Perran Iron mines, although this does not appear to have lasted very long.

During the 1870s he began his connections with the china clay industry by managing a number of pits in the St Dennis, St Austell and Bodmin areas. He was part owner of Wheal Burn china clay works, known more familiarly in recent years as Mid-Cornwall, and invested a great deal of time and money in exploring the deposit by means of boreholes - the first record of systematic exploration for china clay. His lack of capital, and an absence abroad, forced him to sell the property and others reaped the reward of his endeavours to put the clay works on a firm footing. He provided us with the first detailed account of the china clay industry, with his book on the Hensbarrow granite district, published in 1878.

He became Honorary Secretary of the Royal Institution of Cornwall during the 1870s, and was said to have been a very popular lecturer, who was much in demand by all the learned societies in Cornwall.

In the winter of 1875 he commenced a correspondence with a number of the noted mineralogists of the day and this led to Collins taking the lead in founding the Mineralogical Society in 1876, for which he was the founding Secretary, and Editor of the magazine, until he left the country in 1881.

In Volume 1 of the Mineralogical Magazine, Collins contributed two papers on the ultrabasic intrusion at Duporth in St Austell Bay. One was concerned with the serpentinous mass as a whole, and the other dealt with a fibrous mineral found at the locality in veins, which Collins named Duporthite', which recent research has shown to be a mixture of talc and chlorite (see paper by Power and Scott, 1995, this part). Collins was fond of creating new mineral names, frequently using localities in Cornwall - such as Duporthite, Carclazite and Penwithite. Some have stood the test of time, but others have failed to secure widespread recognition.

During this period Collins also took an interest in Cornish stratigraphy and palaeontology, and was largely responsible for promulgating the idea that most of the stratified rocks in West Cornwall were Silurian in age - a mistaken belief that persisted until the discoveries by E M L Hendriks in the 1930s of fossil plants, indicating that the beds were of Devonian age.

Collins contributed a large number of palaeontological papers to the Transactions of the Royal Geological Society of Cornwall and the Journal of the Royal Institution of Cornwall, and in 1880 he discovered a magnificent specimen of an Orthoceratid in St Austell Bay, at Ropehaven, which later formed the basis for a paper published by the Royal Institution of Cornwall in 1912. This specimen is now on display in the Rashleigh Gallery of the Royal Cornwall Museum in Truro.

In 1881 Joseph Collins accepted an appointment as chief chemist and metallurgist to the Rio Tinto mines in Spain, which meant he had to sever all the ties with scientific activities in Cornwall which he had developed over the previous 13 years. However, Collins suffered from ill health in Spain, probably due to malaria, and after three years was obliged to return to this country.

He then set up, with two of his sons, a Consulting practice in London, offering services in the fields of mining engineering, geology and chemistry. Gradually his sons took over the overseas work for the consultancy, which enabled Joseph Collins to return to Cornwall in 1904. He became Chairman and General Manager of the cost-book company which worked Wheal Kitty and Penhalls mines at St Agnes. He was also a Director of East Pool and Agar mine, the surface buildings of which have recently been restored by the Trevithick Trust, and was largely responsible for putting that mine on a sound footing, due to the re-location of the Great Lode in the northern part of the sett.

Not content with having founded the Mineralogical Society almost single-handed; he became involved in the founding of the Institution of Mining and Metallurgy, of which he was Vice-President at the time of its formation in 1892.

Collins was at one time both Secretary, and then later, President of the three principal learned societies in Cornwall - the Royal Geological Society of Cornwall, the Royal Institution of Cornwall and the Royal Cornwall Polytechnic Society. He received the Henwood Gold Medal from the Royal Institution of Cornwall and the Bolitho Gold Medal from the Royal Geological Society of Cornwall. He was elected an Honourary Member of the Imperial Mineralogical Society of St Petersburg. He also had terms of office as President of the Mineralogical Society and of the Institution of Mining and Metallurgy.

Many contemporary writers commented that he attended all the meetings of the various institutions in Cornwall, and nearly always contributed to the discussions that followed the presentation of papers.

Joseph Collins married in 1863 and had five sons and four daughters. Four of his sons - Henry, Arthur, George and Edgar, became mining engineers; the second son, William, after a brilliant career at Cambridge - became Bishop of Gibraltar in 1904, and died at sea off Smyrna in 1911. Arthur, one of the mining engineers, was murdered in a gunfight at Telluride, Colorado, in 1902, by a gang from the Western Federation of Miners, with whom he had come into conflict over the principle of the 'open shop'.

Collins was instrumental in introducing the filter press and the monitor to the china clay industry - arguably two of the most important technical innovations ever applied to the industry. He also, according to Justin Brooke (pers. comm.) had the distinction of forming the last cost-book company to be formed in Cornwall, in 1909, the South Tregrehan Syndicate, which proposed driving an adit to exploit the tin lodes at Tregrehan, near St Austell.

His connection with St Austell is particularly strong, as not only did he manage several tin mines and china clay operations in this area, but he also lived a Crinnis House, near St Austell, for the last 12 years

of his life, almost certainly completing the writing of 'Observations on the West of England Mining Region' there.

One of his last papers was written jointly with Joseph Coon on the topazfels at St Mewan Beacon, near Blackpool china clay works, now a Site of Special Scientific Importance.

He died at Crinnis and is buried in Campdowns cemetery, between Crinnis and Charlestown. Apart from his gravestone there are no memorials to Collins anywhere in Cornwall and, apart from his writings, there is no other commemoration of any kind.

SELECTED LIST OF COLLINS PUBLICATIONS

- 1871/1892. *A Handbook to the Mineralogy of Cornwall and Devon*. London and Glasgow 1871, 2nd Edition 1892; facsimile reprint of 2nd Edition, D Bradford Barton, Truro, 1969.
1872. *A first book of Mining and Quarrying*. Longman, London.
1873. *Elementary Mineralogy for Students*. Collins' Elementary Science Series. London and Glasgow.
1875. *Principles of Metal Mining*. Collins' Elementary Science Series. London and Glasgow.
1876. *Principles of Coal Mining*. Collins' Elementary Science Series. London and Glasgow.
1878. *The Hensbarrow Granite District*. Lake and Lake, Truro; facsimile reprint, Cornish Hillside Publications, St Austell, 1992.
1878. *On the Serpentine of Duporth*. Mineralogical Magazine, Volume 1, 222-225.
1878. *On Duporthite*. Mineralogical Magazine, Volume 1, 226-227.
1878. *Mineralogy, Volume 1. General Principles*. Collins' Advanced Science Series. London and Glasgow.
1883. *Mineralogy, Volume 2. Systematic and Descriptive*. Collins' Advanced Science Series. London and Glasgow.
1884. (with H F Collins) *On the Geological Age of Central and West Cornwall*. Journal of the Royal Institution of Cornwall, Volume VIII, 162.
1885. *On the Geology of the Rio Tinto Mines*. Quarterly Journal of the Geological Society of London, Volume XLI, 245-265.
1893. *A Working List of the Palaeozoic Fossils of Cornwall*. Transactions of the Royal Geological Society of Cornwall. Volume XI, 421-479.
1909. *Notes on some Geological Features observable at the Carpalla Claypits in the Parish of St. Stephens*. Quarterly Journal of the Geological Society of London, Volume LXV, 155-159.
1912. *Description of a fossil (cf. Actinoceras Devonicans) from Rope Haven, St Austell Bay*. Journal of the Royal Institution of Cornwall, Volume XIX, 36-39.
1912. *Observations on the West of England Mining Region*, being an Account of the Mineral Deposits and Economic Geology of the Region, Volume XIV of the Transactions of the Royal Geological Society of Cornwall; facsimile reprint, Cornish Mining Classics, Truro, 1988.
- 1914 (with J F Coon). *On the Topaz Rock of St Mewan Beacon, Cornwall*. Transactions of the Royal Geological Society of Cornwall. Volume XV, 43-54.