An overlooked contributor to palaeontology—the preparator Richard Hall (b. 1839) and his work on an armoured dinosaur and a giant sea dragon

by Mark R. Graham¹, Jonathan D. Radley², and Dean R. Lomax³

¹The Natural History Museum, Cromwell Road, London, SW7 5BD, UK; m.graham@nhm.ac.uk; ²Warwickshire Museum, Market Place, Warwick, CV34 4SA; ³Department of Earth and Environmental Sciences, The University of Manchester, Oxford Road, Manchester, M13 9PL, UK

Received 26 August 2020. Accepted 12 November 2020.

The work of Richard Hall, a fossil preparator at the British Museum (Natural History) in the late 19th century, has been largely unrecorded. It included the excavation, preparation and restoration of two important specimens: the dinosaur Polacanthus foxii and the ichthyosaur Temnodontosaurus platyodon. The painstaking reconstruction of the dorsal shield of Polacanthus took seven years to complete and enabled a supplemental note redescribing the specimen to be published in 1887. The significance of the discovery in 1898 of the Temnodontosaurus to the town of Stockton in Warwickshire was such that it featured in an article in Nature. It has entered the local folklore and remains celebrated on the town’s road signage and features as the logo of Stockton Primary School.

Introduction

During the late nineteenth and early twentieth centuries a significant number of fossil vertebrate specimens were acquired for the national collections at the British Museum (Natural History) (BM(NH); now the Natural History Museum London), from both UK localities and overseas. Whereas the provenance of such material was recorded in the museum records and, in the case of published specimens, the scientific literature, all too often scant or no detail was recorded as to whom had undertaken the excavation, preparation and mounting of specimens. Where such information exists at all, it is often to be found in museum archives, although not necessarily associated with the specimen records. Accounts of discoveries and excavations of more spectacular specimens were sometimes covered in the local press, but these reports are seldom picked up and held together by museums, and so, over time, the contributions of the people whose work facilitated scientific study and research are lost and forgotten.

One such individual was Richard Hall. Born in 1839 in Raglan, Monmouthshire, Wales, he was working at the BM(NH) as an Assistant Mason in 1885 and became a Mason (fossil preparator) in 1889. Except for one of his work diaries from 1885, some correspondence relating to the excavation and recovery of an ichthyosaur in 1889 and a single Geological Department junior staff group photograph from 1900 (DF PAL/106/13 in the Natural History Museum, London, archives), there is nothing in the museum archives relating to his work. He received a passing mention in a scientific publication of 1887 relating to several years’ work he performed on reconstructing the dorsal shield of Polacanthus (Anonymous 1865a, attributed to Owen). Remarkably (yet not unusually in those times), he was never publicly associated with the difficult excavation, recovery and mounting of a large articulated specimen of the ichthyosaur Temnodontosaurus platyodon (Conybeare 1822) from Stockton in Warwickshire, UK. The find and its excavation were photographed and covered in articles in the local newspaper and the journal Nature, but while “the Stockton ichthyosaur”, as it came to be known, entered the local folklore and was placed on public display at the BM(NH), Richard Hall’s part in the story was unrecorded until now.

Background

During the course of research into the history of fossil collecting and preparation at the British Museum of Natural History (BM(NH); Graham 2019),
a short reference to “Mr Hall, assistant mason in the Department of Geology” was found in relation to the preparation and restoration of the armoured dinosaur, *Polacanthus foxii* Anonymous, 1865, collected from Lower Cretaceous deposits on the Isle of Wight, UK (Hulke 1887).

The NHM’s archives contain little material associated with Mr. Hall but there exists his hand-written work diary from 1885 and a Geological Department junior staff photograph from 1900 that shows him standing in the middle of the back row (Figure 1). Nothing connected with his long and patient work between 1881 and 1887 on *Polacanthus* is recorded except for Hulke’s passing reference:

“The great dorsal shield ([Figure 2])… was represented by several hundred disconnected pieces, many of these being of less size than one cubic inch [16 cm$^3$]. It was also evident that many had been lost. In this mutilated condition the reconstruction of the shield appeared hopeless, but at length, under the guidance of the heads of the Palaeontological Department, this has been accomplished by Mr. Hall and Mr. Barlow (“Masons”), who brought to the task a painstaking perseverance and skill worthy of the highest praise” (Hulke 1887: p.169).

Caleb Barlow (1840–1908) is also shown in Figure 1, second from the right in the front row and was the mason (preparator) appointed by Sir Richard Owen. He worked at the Museum from 1874 to 1908 and is the first recorded person to have been engaged in professional fossil preparation at the Museum (Graham 2019).

However, in the museum archives for 1898 there is correspondence between Hall and Dr. Henry Woodward, the Keeper of Geology at the museum, which concerns the inspection and recovery in August and September of that year of a large ichthyosaur from Lower Jurassic rocks at Stockton in Warwickshire, UK. The specimen was a largely complete and articulated example of the ichthyosaur *Temnodontosaurus platyodon* (Conybeare 1822), referred to at the time as an example of the genus *Ichthyosaurus*. Its discovery created much interest among the local community and press, and an account of the find was published that year in the journal Nature (Anonymous 1898a). What is missing from the accounts of the excavation is any recognition of the significant role played by Richard Hall, who was sent by the museum to excavate, secure and recover the fossil for the BM(NH). As with his earlier work on *Polacanthus*, this contribution in bringing the Stockton ichthyosaur, as it came to be known, to public display was also destined to slide into obscurity in terms of the official record.

**Historical setting**

In the latter part of the nineteenth century the village of Stockton was well known for its quarries, dug in the Early Jurassic Blue Lias Formation as raw material for the cement industry (Old et al. 1987; Ambrose 2001). According to the Nature article of 1898, there were three manufacturing cement firms working...
at that time. Good fossil specimens were regularly found, including isolated vertebrate material as well as invertebrates. The village’s “late rector” [likely the Reverend William Tuckwell, who was appointed in 1878 and known as the Radical Parson (Littlebeams undated)] had educated the quarrymen through lectures and conversation about the fossils they unearthed (Anonymous 1898a).

The rector had predicted to the quarrymen that a “perfect monster” would someday be unearthed and urged that, should they ever come across a head or row of vertebrae, they would cease digging and call in experts to direct the excavations. The prediction came true when one of the pickaxe-wielding workers announced that he was “grapplin’ along a lot of backbones”, stopped work and called in the foreman. The quarry owner, Sir Maurice Lakin of Leamington, recognised it as an important find and chose to donate the specimen to the national collections (Anonymous 1898a), and so Richard Hall was duly despatched from the Geology Department to Stockton to complete the excavation and secure the fossil.

**Inspection, excavation and recovery**

Upon arrival, Hall based himself at the nearby Blue Lias Inn hotel from where he wrote to Charles W. Andrews, the palaeontologist and marine reptile specialist at the BM(NH), noting that the excavation was “a formidable job” and that he “had it rough for a few days”. He described the numerous visitors to the quarry as being “plentiful as bees which hinders me” and requested additional sacks of plaster in order to encase the underside of the block containing the fossil in readiness for transportation to London (Hall 1898a).

During the course of excavation, photographs were taken of Hall and others working on the specimen and copies have been retained at and published online by the Lapworth Museum of Geology, University of Birmingham (Figure 3). Although no names seem to have been recorded with the images, it was possible, by reference to the BM(NH) Geological Department photograph of 1900, for (MRG) to identify Richard Hall by his distinctive face and moustache.

On 2 September 1898, Hall also wrote to Dr. Woodward at the museum, explaining that he had been afraid to write earlier as he could not say what success he was likely to have “lifting the animal from his bed” (Hall 1898b). He had removed two sections of the tail which had to be sawn off the bedrock and encased it all round in plaster of Paris strengthened with longitudinal and transverse irons and bonded with wire. “I have not lost sight of the animal many hours since I have been here” he wrote. Three days later, in an update to Woodward, he reported “satisfactory but slow progress in the sawing - the whole of the tail, the 4 paddles sawn off and cased in plaster ready for packing and the pelvis, body and head to do which is much harder and will take a lot of sawing”. Hall referenced the intense heat in which he had been toiling and hoped that, “all things favourable”, he would be able to put the specimen “on rail about Thursday night” (Hall 1898c).

The following week, on 8 September, Hall reported that he could begin to see the end of the job, having nine sections cased with plaster and partly packed although the head and body he noted “takes a great deal of cutting and is extremely difficult to get out in casing” (Hall 1898d). By now he had used 8 cwt (406 kg) of plaster and a quantity of iron to strengthen the jackets. Turning his attention to the transport logistics, Hall discussed with the quarry owner how to get the weighty objects back to the museum and was advised to have it lifted and loaded into one of the
covered trucks in their quarry sidings for despatch to London Euston railway terminus. The final tally recorded for transportation on 15 September 1898 was for "5 CWT fossils, 8 CWT plaster, 11 pieces, 19 feet [5.8 m]" (Hall 1898e).

An account of the area's geology and fossil discoveries was printed by a local cement company (CEMEX 2016), noting that the Stockton ichthyosaur find had been reported at the time of its discovery in the Leamington Spa Courier of 13 August 1898 (Anonymous 1898b: p. 7). The local newspaper article was headed "A Testimony of The Rocks", from which Cemex quoted the following extract:

"The lime quarries are situated about 2 miles from Southam on the road to Dunchurch and are entered by a gate on the left hand where the road to Long I[ch]tington to Stockton and Napton crosses.

When first entering the field there is little to show that anything unusual is taking place, but a walk 200 yards brings us to the edge of the quarry, where a crane is busily at work removing the lias to the surface. Trestlework bridges intersect the intervening spaces, which have been dug out to enable the quarrymen to convey, by means of barrows, the lias from the opposite side and also to deposit the debris.

It was on one of the platforms, 20 feet from the surface and reached by ladder, that the fish lizard was discovered lying with its head due north. The tip of its tail was first brought to light and the quarrymen noticing that this was in good preservation took unusual precautions in unbedding the remainder". (CEMEX 2016: p. 2).

In a short article published in Nature (Anonymous 1898a) under the heading "A Dragon of the Prime" and which featured a full-length image of the ichthyosaur, the following descriptive account of its discovery and excavation was written:

"Slowly with due precaution a noble Ichthyosaur was uncovered. He lies 45 feet below the surface; 20 feet in length, the head 2 feet across and 3 feet 10 inches long. The paddles are unusually distinct, the front pair 2 feet 6 inches, the hind pair 1 foot 8 inches in length. The tail is abruptly curved, and some of the lumbar vertebrae are slightly displaced. The pelvic ring is missing, removed, perhaps, before the nature of the find was guessed, and still to be recovered. Crowds from all parts of the county throng to see it; and not a little vigilance is necessary to protect it from dishonest visitors, attempting to purloin teeth or fragments". (Anonymous 1898: p. 418–419).

Legacy

The magnificent specimen of Temnodontosaurus platyodon recovered and prepared by Hall has for many years been on public display in a glass case high up in the Fossil Marine Reptiles Gallery at the Natural History Museum London (Figure 4). It is recorded as specimen number NHMUK PV OR 2918 (Figure 5).

Displayed directly beneath it (Figure 4) are two other more widely recognised examples of T. platyodon which were discovered by the Annings at Lyme Regis, Dorset, UK many years before the Stockton specimen. NHMUK PV OR 1158, on the bottom of
the case, is the famous skull and fragmentary skeleton, comprising vertebrae and some pectoral elements, of the first ichthyosaur ever to be formally recognised by science. The skull was found in 1811 by Mary Anning’s brother Joseph and the remainder was discovered a year later by Mary herself (Torrens 1995). The large articulated specimen, NHMUK PV OR 2003, designated as the neotype by McGowan (1974) and displayed in dorsal view like the Stockton example, was found by Mary, sold to the geologist Thomas Hawkins (1810–1889) and subsequently purchased by the museum for £210 in 1834.

An image of an ichthyosaur skeleton became featured on road signage welcoming visitors to the village of Stockton some 25–30 years ago (Figure 6) after Warwickshire County Council’s highways department asked John Crossling, then geology curator at the Warwickshire Museum, for a suitable image to incorporate (J. Radley pers. comm.). Reference was made to Thomas Hawkins’ Book of the great sea dragons (Hawkins 1840), and the image selected was that from plate 17 (Figure 7). The specimen, NHMUK PV OR 2013*, was collected from one of the famous quarries in Street, Somerset, UK. This is a different species, *Ichthyosaurus somersetensis* (Lomax and Massare 2016), but effectively captures the spirit of the 1898 skeleton, its discovery and what it means to the village of Stockton. The Street skeleton too is on public display at the NHMUK (Figure 8B). Interestingly the artwork for the Stockton signage was adapted so that the distinctive kink in the tail of the specimen became gently curved, presumably for aesthetic reasons (Figure 8A). A caption on the road sign reads “Stockton quarrymen found this fossilised skeleton of an Ichthyosaurus in the summer of 1898”. Today a colourful and stylised version of the image also serves as the logo of the Stockton Primary School and can be seen on their website (Stockton Primary School 2020). Picking up on the area’s geological history, the nearby Blue Lias Inn, where Richard Hall stayed in the summer of 1889, has a sauropod dinosaur as a logo and on its pub sign (The Blue Lias Inn 2020), although no sauropod material has ever been recorded from the Lias of the UK.

**Conclusion**

While the discovery of the Stockton ichthyosaur and association with the village remains celebrated locally, Richard Hall’s part in the story has remained unrecorded. Regrettably, his work on both *Polacanthus* and later, the Stockton ichthyosaur was scarcely recorded, virtually unattributed to him and has been largely forgotten. Who can say what other specimens he may have prepared and conserved during what was a golden age for collecting in the UK, and to what extent his skills contributed to the study and publication of vertebrate fossils? Perhaps this short account of some of his work will serve as a lasting record of two major contributions.
Acknowledgements

The authors thank the Trustees of the NHM(UK) for access to libraries and archival materials and the Lapworth Museum of Geology, University of Birmingham, for material used in this paper. John Crossling (formerly Warwickshire Museum) kindly supplied information on the Stockton road sign.

References


ANONYMOUS 1865. A new Wealden dragon. Order, Sauria; Family, Dinosauria; Genus, Polacanthus; Species, Foxii. The Illustrated London News 47(September), 270.


HALL, R. 1898b. Letter from Richard Hall to Dr Henry Woodward. 2 September 1898. PAL/100/31/64. Archives of the Natural History Museum, London, UK.

HALL, R. 1898c. Letter from Richard Hall to Dr Henry Woodward. 5 September 1898. DF PAL/100/31/64. Archives of the Natural History Museum, London, UK.

HALL, R. 1898d. Letter from Richard Hall to Dr Henry Woodward. 8 September 1898. DF PAL/100/31/64. Archives of the Natural History Museum, London, UK.

HALL, R. 1898e. Letter from Richard Hall to Dr Henry Woodward. 15 September 1898. DF PAL/100/31/64. Archives of the Natural History Museum, London, UK.


