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Fallon, Richard

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*Citation for published version (Harvard):*

Fallon, R 2023, 'The Lectures of Benjamin Waterhouse Hawkins in Britain', *Archives of Natural History*.

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## The Lectures of Benjamin Waterhouse Hawkins in Britain

RICHARD FALLON

Arts Building, University of Birmingham, Edgbaston, Birmingham, B15 2TT, UK (email: r.l.fallon@bham.ac.uk)

**ABSTRACT:** Benjamin Waterhouse Hawkins, celebrated in Britain and the United States for his models and illustrations of extinct animals, also had an extensive lecturing career. This paper provides an intimate look at the little-studied subject of Victorian palaeontological lecturing by examining reports of Hawkins's lectures in Britain, delivered between the 1850s and the early 1880s. Unabbreviated transcriptions of his lectures are rare, but newspaper reports are numerous. Hawkins spoke on comparative anatomy, geology, palaeontology, and art, his most prominent themes being the origin of dragon myths and the impossibility of human evolution. Above all, he was known for his ability to sketch natural forms rapidly and accurately as he spoke. Hawkins saw significant success in metropolitan centres, but he also built rewarding relationships with provincial towns. This allowed for substantial engagement with civic scientific communities, leading to the productive movement of artistic and fossil materials and the promotion of local science initiatives in the press. Hawkins's fervent anti-evolutionism aroused attention, although his alternative scheme of life's development, "the unity of plan", led to some confusion, and he became embittered by the spread of evolutionary naturalism. Hawkins's career faded in the 1880s, but memories of his lecturing style lingered with audiences at the century's close.

**KEYWORDS:** Science lectures – palaeontology – civic science – visual education – anti-evolutionism – newspapers

The scientific artist Benjamin Waterhouse Hawkins (1807–1894) is known primarily as the architect of the models of extinct animals built at the Crystal Palace, which opened in Sydenham in 1854 (Secord 2004; McCarthy 2004; Dawson 2016: 181–88; Witton and Michel 2022). He is also remembered for beginning a similar display in New York's Central Park, which was halted and controversially demolished in 1871 (Bramwell and Peck 2008: 80–82).<sup>1</sup> In his lifetime, however, Hawkins was most active as a skilful lecturer who draped auditoriums with posters and sketched animal forms in chalk on the blackboard (Figure 1).

Hawkins drew “with remarkable ease and without the slightest interruption to his lecture” (Anonymous 1857m), a feat known to elicit the “frequent applause of all present” (Anonymous 1858b). The *Bury and Norwich Post* deemed him an impromptu artist without “equal in rapidity, freeness, and boldness of design” (Anonymous 1862f). During the 1850s and the 1860s, Hawkins practiced his chalkmanship across Britain, lecturing on art, geology, palaeontology, and anatomy. He took these performances to the United States, where he spent most of the decade 1868–78, before returning to Britain for a few more years of lecturing (Appendix). His only book-length biography lists information about some of these lectures (Bramwell and Peck 2008: 40, 103–4, 108–9) but focuses on other aspects of his life. This paper uses newspaper reports to examine Hawkins’s British lectures; in so doing, it investigates his interactions with civic scientific communities and the way these were reported in the press.

Previous scholarship has analysed how the earth sciences were first made comprehensible and enticing through literature and art (Rudwick 1992; O’Connor 2007; Bedell 2009). In comparison, oratory has received relatively little attention, despite growing interest in the rhetorical strategies of the Victorian lecture circuit. Finnegan (2021: 3) sees prominent science lecturers as less intent on communicating knowledge than on using “the affective power of speech” to make auditors “more sympathetic” to the speaker’s conception of science’s role in society. Fyfe and Lightman (2007: 8) consider the Victorian science lecture “an early form of multi-media experience” that engaged with audiences through sophisticated aural and visual means, while geographers of science have demonstrated the necessity of firmly situating these experiences in their physical contexts (Withers and Livingston 2011). Hawkins has only played a minimal role in this scholarship (Finnegan 2011: 166). Attending to his lectures, which relied on artistic showmanship as much as words spoken, and which frequently integrated location into content, enriches our knowledge of the affective and geographical components of palaeontological oratory.

This paper focuses on his British lecturing, as Hawkins’s performances in the United States merit separate analysis. There, Hawkins received prestigious artistic and scientific commissions, the likes of which were drying up for him at home; his lectures, delivered chiefly at metropolitan educational and social establishments like New York’s Cooper Union and the Century Club (Bramwell and Peck 2008, 36–39), must be understood in a different context from those delivered in Britain, where Hawkins spoke substantially in provincial mechanics’ institutes and philosophical societies. This is not to imply that Hawkins’s British venues were shabby. The mid-Victorian era was a time of increased prosperity in which

instructive entertainment became a hot commodity. Vigorous civic pride outside London inspired the formation or expansion of local scientific institutions; concurrently, expanding railway networks allowed lecturers like Hawkins to traverse the country and potentially even make a living in the process (Fyfe and Lightman 2007: 5–7).

A study of Hawkins's audiences as much as his lectures, this paper takes its data from a medium of scientific communication that has rarely been the primary focus of historians of the earth sciences. By surveying newspaper reports from what Walker (2006: 382) calls the "Heyday of the Provincial Newspaper", 1855–1880, a period that coincides with Hawkins's career, it is possible to uncover traces of otherwise forgotten scientific activities. Few of his lecture scripts were published unabridged, and even those that were typically give little sense of the visual showmanship and varied audiences revealed by newspaper reports (Hawkins 1856). Online journalism archives provide unparalleled access to accounts of his memorable lecturing manner as it was experienced. Whether diligently summarising Hawkins's lectures or providing terse sketches, reporters in major London dailies and provincial weeklies alike refracted his performances through their own concerns. They applied localised standards of evaluation on subjects like oratorical technique, the popularisation of science, and evolutionary theory. Using newspaper reports, which provide the largest quantity of evidence regarding Hawkins's lectures, we can begin to reconstruct these multifarious scientific encounters.

## HAWKINS THE LECTURER

Hawkins's lecturing career took off in the mid-1850s with talks on the extinct animals he had reconstructed at the Crystal Palace. The published text from an 1855 lecture at Manchester Town Hall titled "Visual Education Applied to Geology, and Illustrative of the Extinct Animals of the Ancient World" (Hawkins 1856), is typical. The lecture was an elementary introduction to geohistory, presented as an epic story written in rock by "GOD Himself" (194), which Hawkins punctuated with facts contradicting the "Development Theory" (196), a then-current term for evolution. Providential nationalism drove the narrative, showing, firstly, how the planet was divinely fitted for human habitation, and then demonstrating that the unearthing of fossils was "intimately mixed up with" discoveries of the coal seams that had powered the British Empire's commercial fortunes (202). Hawkins closed by commending the Crystal Palace's visual ideals, "which Pestalozzi found so improving" (207). The visual pedagogy of Swiss educationalist Johann Heinrich Pestalozzi (1746–1827), intended to convey "knowledge directly through the senses" (Secord 2004: 140–41), underlay

the Palace's uneasy marriage of "commercial capitalism and rational education" (139). This theory motivated the controversial refusal to provide signage explaining Hawkins's gigantic models.

Beyond the Palace, Pestalozzian pedagogy justified Hawkins's emphasis on freehand sketching. His ideal lecturing conditions, as quoted by Bramwell and Peck (2008: 85), were extremely precise, requiring a huge and specially treated screen "that will receive the chalk markings and allow of the quickest obliteration with a damp sponge", along with mobile "library steps" to reach the top. Hawkins also made extensive use of posters designed by himself (Anonymous 1854b; Rudwick 1992: 159–65). The *Lancaster Gazette* observed that his profusely illustrated lectures conveyed "an amount of information to the unscientific", a clear recognition of his educational ideals (Anonymous 1858b), while the *Manchester Courier* gushed that "his lectures would be understood almost as well by deaf persons as by those who are able to hear his descriptions" (Anonymous 1858g). Admittedly, strict proponents of the Crystal Palace's founding visual ideals could hardly have been cheered by the necessity of supplementary "descriptions".

With its basis in visual education, Hawkins's career makes for an insightful contrast with that of Hugh Miller (1802–1856). Miller, Britain's most eminent geological lecturer in the 1850s, took his own life just as Hawkins's career was beginning. A devout Anglican, Hawkins's theistic and non-evolutionary view of geohistory resembled that espoused by Miller, an evangelical Scottish Presbyterian. Miller, however, was renowned for the beautiful prose of his lectures, delivered without visual accompaniment. Hawkins, like Miller, shunned the increasingly ubiquitous magic lantern, but deemed it "presumption" to imitate Miller's "vivid" and "poetical" word-paintings of prehistoric landscapes (1856: 197), instead making artistic spectacle his unique selling point. This decision to prioritise the visual was not necessarily appreciated, especially at socially elevated venues. As Finnegan observes (2011: 166), Hawkins's foregrounding of accessible visual education when speaking to the respectable middle-class Edinburgh Philosophical Society, an institute attuned to Miller's literary eloquence, may have motivated the rejection of his offer to return. Likewise, the *Hampshire Advertiser* lamented that Hawkins's lecture at the cultured Hartley Institution in Southampton lacked the verbal wizardry of "the late Hugh Miller" (Anonymous 1865b: 6). Nonetheless, some journalists, whether inspired by Hawkins's visual bravura or by recourse to conventions developed in response to Miller's imaginative immersion, were swept up.

Thanks to Hawkins, the *Standard* rhapsodised, “we are transported in mind” to Mesozoic England, through which “we wander, under his direction” (Anonymous 1857c).

At the end of the 1850s, Hawkins expanded his repertoire, having lost his position at the Crystal Palace Company and become substantially reliant on lecturing. In the “The Age of Dragons”, he controversially argued that global dragon myths all stemmed from contact between humans and surviving prehistoric reptiles (Secord 2022) (Figure 2). This notion had been seeded early on, when he registered his “conviction” that pterodactyls had “been contemporary with man” (Hawkins 1856: 206). Anti-evolutionism also turned into a major preoccupation. His alternative scheme for explaining animal relationships was “unity of plan” (Anonymous 1862d): the divinely scheduled fitting of quasi-Platonic vertebrate archetypes to their environments in a non-evolutionary manner (Figure 3). This framework adapted the eclectic transcendental anatomy of Richard Owen (1804–1892) (Rupke 2009: 128–29), the concepts of which Hawkins potentially imbibed when, nominally assisted by Owen, he carried out the research for his Crystal Palace models (Dawson 2016: 183–88). This being said, Hawkins had expressed interest in the archetypal shapes underlying natural forms since the 1840s (Secord 2004: 147, 154). When criticising evolution, he especially stressed the gulf separating humans from apes (Dawson in press), an orthodox stance in the 1850s, the entrenchment of which left Hawkins scientifically isolated in Britain by the end of his career.

## AUDIENCES

Attendance numbers for Hawkins’s performances are rare, although *Jackson’s Oxford Journal* recorded “nearly 600 persons” at one crowd-pleasing lecture (Anonymous 1860e). A significant proportion of his lectures were delivered as multi-part courses, allowing us to gauge whether interest was retained. Hawkins’s series on extinct animals in November 1859 at Bury St Edmunds Athenæum, where Hawkins enjoyed an almost uniquely felicitous career, provides a paragon of success. As reported by the *Bury and Norwich Post*, it attracted an “almost ... unprecedentedly large gathering” on the first night (Anonymous 1859m), while the second was “as crowded as on the previous occasion” (Anonymous 1859o). At a more unusual lecture targeted at working-class residents, “The use of Natural History in Every-day Life”, the “hall was completely filled by the operatives of the town and neighbourhood” according to the *Ipswich Journal* (Anonymous 1859n). The controversial subject of human evolution also proved attractive. Hawkins’s lecture about the gorilla was a critical success,

with the Bury Athenæum “perfectly crammed” and many people “unable to obtain admission” (Anonymous 1862a). Success was also feasible in busy metropolitan environments such as Edinburgh: although the Philosophical Society rejected his offer to return, Hawkins’s series in the Queen Street Hall was “crowded to excess” (Anonymous 1862c).

Competition in London, centre of superabundant entertainment opportunities (Hays 1983: 92), was particularly volatile. Hawkins’s four-part series on “The Extinct Animals of the Antediluvian World” in the Crystal Palace’s New Concert Room, beginning on New Year’s Eve, 1856–57, was lauded by the London papers for its educational ideals. Initial numbers for this didactic “experiment” were tolerable, with the *Morning Post* seeing the turnout as “confirmatory of the success” Hawkins had enjoyed “in the provinces” (Anonymous 1857a). Attendance improved as the series progressed (Anonymous 1857b), and, according to the *Post*, the audience at the third was yet “more than usually numerous”, despite the cold (Anonymous 1857c). The final lecture was likewise “well attended, and evidently gave general satisfaction” with James Tennant (1808–1881), Professor of Geology at King’s College, confirming the “success that had attended this new experiment” (Anonymous 1857d). In spring 1858, however, when an updated series began, the *Standard* doubted that Hawkins, “the education ‘pet’”, could compete with Easter amusements like “Punch and Judy” (Anonymous 1858d), although the *Daily News* praised his lucid “*vivâ voce*” explanation of Crystal Palace’s “uncouth antediluvian monsters” (Anonymous 1858c). Most of Hawkins’s lectures would take place outside London, suggesting that he preferred not to jostle with so many alternative attractions. When he did speak in the capital, he more often delivered sessions at the studious London Institution (Figure 4) than at the increasingly populist Crystal Palace.

Prehistoric monsters were not guaranteed to draw crowds outside of London either. Attendance at Liverpool Collegiate Institution, an early foray, was “meagre” (Anonymous 1856d). Reflecting the unreliable draw of Hawkins’s fame, the Tory *Ipswich Journal* remarked scornfully that recent lectures “frequently alluded to in these columns” were “not duly appreciated by the inhabitants of Stowmarket” (Anonymous 1859j). Low attendance did not necessarily mean scanty reporting. After a well-attended two-part lecture to Chester Music Hall in February 1857, which made a “net profit” of around £20 for the Mechanics’ Institution (Anonymous 1857h), Hawkins likely expected equal success when he returned in June. Instead, he drew a “not very numerous” audience, perhaps because the title of his series

was almost identical (Anonymous 1857j). This did not discourage the *Cheshire Observer* from printing an enthusiastic synopsis. Its lengthy reports, published in a progressive weekly which proclaimed the role of “cheap newspapers” in “advancing civilisation” (Anonymous 1854a), demonstrate the enthusiasm palaeontological knowledge could potentially elicit, no matter how small the turnout. Other newspapers expressed growing interest. Hawkins’s artwork was displayed at Newcastle’s Literary and Philosophical Society’s *conversazione*, the *Newcastle Courant* terming it “rather curious and antique” (Anonymous 1856b). The tone betrays little familiarity with “etchings of antediluvian [*sic*] animals, or what were termed, ‘specimens of animals extinct in the world’”. When Hawkins gave his explanatory lecture, the *Courant* commented that “to those members of the Literary Society who were not previously acquainted with the animals in question, the lecture was exceedingly interesting” (1856c). The Crystal Palace was, after all, at the other end of the country.

An auditor’s desire for palaeontological information could even exceed what Hawkins was able to provide: according to the *Hampshire Advertiser*, one notably abstract lecture failed, unlike the memorable efforts of Miller, to communicate “what kind of a world” his extinct subjects actually “lived in” (Anonymous 1865b: 6). Likewise, at the Truro Institution, Hawkins spent so much time on “copious descriptions of the four divisions of the Animal Kingdom” that he barely had time to discuss extinct animals, leaving the *Royal Cornwall Gazette* lamenting the “uncompleted” lecture (Anonymous 1860b). When Hawkins remembered to mention these animals, rather than dwelling on abstruse taxonomic principles, certain aspects of prehistory were notably more appealing than others. The *Lancaster Gazette* commented unfavourably on Hawkins’s lecture “Cats—ancient and modern” delivered at Kendal Town Hall, declaring it “neither interesting nor particularly instructive”, whereas his “well attended” presentation on pterodactyls and dragons at the Literary and Scientific Institution the day before was “listened to with great interest” (Anonymous 1866b).

Establishments hosting Hawkins’ lectures usually allowed their members to attend for free and rarely charged more than a shilling per lecture for non-members. Attendance from the right sort of people was eagerly noted. The first Chester lectures attracted a “fashionable and delighted audience” according to the *Cheshire Observer*, crediting a “witty lady of Chester” for comparing Hawkins’s rapid survey of deep time to illustrating “the Falls of Niagara in the size of a tea-cup” (Anonymous 1857g). The Liberal *Bury and Norwich Post* reported that Hawkins attracted the “gentry and tradesmen of the town and the *élite* of the neighbourhood” to the Sudbury Institution (Anonymous 1860c), while the Tory *Essex*



*Standard* wasted few words on Hawkins's "able lecture" on dragons there two years later, which attracted a "smaller than usual" audience, but focused attention on the respectable presence of the mayor and other esteemed attendees (Anonymous 1862g). Hawkins was adept at appealing to different audiences. The *Liverpool Mercury* indicated a significant (and atypical) juvenile presence at Liverpool Free Library and Museum, where Hawkins delivered an accessible lecture "for the sake of the younger portion of his audience" (Anonymous 1875b). A performance aimed at one demographic could inspire an invitation to address a more exalted one. After speaking at Leeds Mechanics' Institution and Literary Society (Anonymous 1856e), Hawkins returned a month later to deliver a technical private lecture to a "party of gentlemen of the medical profession" (Anonymous 1856f).

The ability to attract the working classes bolstered any institution's civic credentials for rational recreation. The success of a special working-class lecture at Bury Athenæum, where the audience was "composed almost exclusively of those for whom the lecture was intended" (Anonymous 1859o) appears to have been rare, with Hawkins's audiences more regularly consisting of varied strata of the middle classes. His first of a series at Ipswich Mechanics' Institution "intended for the benefit of the classes in connexion with the Institution" (Anonymous 1859g), encouraged hopes in the *Ipswich Journal* that the next session would "be even more fully attended", lecturers of such "real merit" being "seldom met in our town" (Anonymous 1859h). There was a "numerous and increasingly attentive audience" by the series' conclusion, prompting the *Journal* to call for more projects from the Institution (Anonymous 1859i). Regular readers would have been familiar with the Institution's laments that "a society of such obvious usefulness" was allowed to "linger on in a comparative state of poverty" based on "flimsy" financial objections (Anonymous 1857k). Indeed, the decision, in 1858, to hire a "larger admixture of paid Lecturers" like Hawkins, was a financial gamble (Anonymous 1858a). By puffing his performance, the *Journal* attempted to facilitate local working-class education, although it should be noted that, in 1857, at least, only 122 of the 647 members were actually mechanics (Anonymous 1857e), a statistic in line with the "petty-bourgeois" usership of mechanics' institutes (Shapin and Barnes 1977: 34).

Where Hawkins built successful relationships, newspaper reports made for flattering reading. When he returned to Bury St Edmunds, the chair, local scholar the Rev. Lord Arthur Hervey (1808–1894), stated that "the recollection of the former lecture delivered in that hall" rendered "any introduction from him unnecessary" (Anonymous 1859b). Continuing success prompted another series in November 1859, advertisements for which claimed that prior

visits had “given so much gratification” (Anonymous 1859k) and highlighted Hervey’s personal recommendation (Anonymous 1859l). The attendance was, according to the *Bury and Norwich Post*, proof of Hawkins’s considerable local “estimation” (Anonymous 1859m). This reputation eased his transatlantic crossing: in March 1868, at the dawn of Hawkins’s American career, Edward Cecil Hartsinck Day (1833–1895) of Columbia College called him one of “the most prominent, and certainly one of the most popular” British natural history lecturers in a letter to the *New York Times* (Day 1868). Day based his testimonial on having attended a performance by Hawkins “in a small country town in England”, to which he owed “so much, though conveyed to me in but one or two short hours”.

## CIVIC SCIENCE

Hawkins often exhibited specimens provided by local savants, enhancing the visual quality of his lectures while courting civic scientific pride (for which see Finnegan 2009: 67–90). He declared that Bury’s small museum, for instance, was “one of the best and most clearly arranged collections he had ever seen” (Anonymous 1857m); he was even more complimentary about the fossil collection of the Yorkshire Philosophical Society, adding that the members need not qualify their pride with “the word provincial” because their collection was “a credit to any scientific society” (Anonymous 1856a). Hawkins used both public and private collections, displaying “some specimens from the Ipswich Museum, which, he said, were excellent of their kind; as well as one or two others from the small, but, he remarked, unique, collection of Mr. Deane” (Anonymous 1859h). Specimens were not necessarily pre-vetted. Two men “occasioned much merriment” by bringing their “pet flying dragene” [*sic*] known as “draco volrus” to Hawkins’s lecture on dragons (Anonymous 1866b). Their *Draco volans* had potentially travelled along colonial trade channels to Kendal from Southeast Asia, and Hawkins, too, facilitated the movement of specimens. Soon after his return to Britain, Liverpool Museum lent “the bones of an enormous lizard”, the bipedal American dinosaur “*Laelaps Aquilunguis*”, to the London Institution for a late revival of “The Age of Dragons” (Anonymous 1879a). The use of *Laelaps*, then poorly known in Britain, indicates that Hawkins’s time in the United States encouraged him to Americanise a lecture framework originally based on British fossils. Regardless of whether Hawkins was involved in the specimen’s transportation from the United States, he was one of the first popularisers of American dinosaurs in Britain.

More typically, Hawkins highlighted pertinent local fossils, telling auditors at Chester that, although the county's "ancient families", indicated by fossilised footprints of the amphibian *Labyrinthodon*, "could not vie in beauty with the modern inhabitants", they were still a scientific legacy to be "proud of" (Anonymous 1857j). His most uniquely situated lecture was "On the Ancient Natural History of Oxford and Its Neighbourhood" (Anonymous 1860e). Here, Hawkins spoke in the venerable tradition of the recently deceased geologist and charismatic lecturer William Buckland (1784–1856), to whom his performance was compared not unfavourably. An anecdote about the speculative hump Hawkins had given to his Sydenham model of Oxford saurian *Megalosaurus bucklandi*, vindicated by a subsequent discovery (Witton and Michel 2022: 119), was recounted in detail. *Jackson's Oxford Journal* concluded that many attendees "doubtless ... were surprised at the appearance" of the "former inhabitants of our vicinity", presumably acquiring new cause for local pride. The *Hampshire Advertiser* felt somewhat cheated when Southampton's geology did not receive any such personal touch (Anonymous 1865b: 6).

Visits from Hawkins had lasting material benefits. Edward William Binney (1812–1882), president of Manchester Geological Society, illustrated one of his own papers with a drawing by Hawkins, possibly sketched during a previous visit, depicting the footprints of "a Chelichian of enormous size" from near Tintwistle (Anonymous 1857l). The following year, while Hawkins was lecturing nearby, Binney commissioned him to restore for display "the fragments of a gigantic ichthiosaurus [*sic*] which have lain useless at our museum" (Anonymous 1858h). Likewise, the geologist Edward Charlesworth (1813–1893) of the Yorkshire Philosophical Society lectured in February 1857 using a sketch of a Whitby *Ichthyosaurus* made by Hawkins the previous November (Anonymous 1857f); three months later, Charlesworth referred to the sketch when analysing the specimen (Anonymous 1857i). Speaking at the British Association for the Advancement of Science meeting in Leeds, he was once again equipped with "admirable pictorial restorations by Mr. Waterhouse Hawkins" (Anonymous 1858i). Even the eminent Owen, sceptical about his ostensible collaborator's Crystal Palace restorations (Owen 1854: 17), used Hawkins's saurian illustrations at the Museum of Practical Geology (Anonymous 1858f). Hawkins's success in Bury most likely prompted the Athenæum's Committee to purchase its "complete set" of his scale "models of extinct animals" for their museum (Anonymous 1861c). Soon after, Hawkins, "with his usual kind interest" in Bury's collections, donated "a water colour drawing" of extinct cave life to an exhibition in the museum connected with a deceased local savant (Anonymous 1861e).

Images related to Hawkins's work were independently circulated in local initiatives too: according to the *Lancaster Gazette*, a paternalistic public subscription provided Joseph Wildman (1804–1859), a geologist and former “cotton-warp dresser” (Simpson 1852: 332), with lecturing tools, including “coloured” photographs of the extinct animals “modelled by Mr. Waterhouse Hawkins” (Anonymous 1859c). Wildman, a “diligent” local “working man” and author of a booklet on *Facts and Lessons of Geology* (1858), delivered his lecture at Lancaster's Music Hall in front of “a very large assembly of all classes” (Anonymous 1859e). The funding initiative that had equipped Wildman likely pleased the *Gazette*, which had previously taken advantage of the “good humour” at Hawkins's lecture for the Kendal Natural History Society to advise members to “value more highly” the efforts of local but “not less talented” speakers, even if they lacked expensive props (Anonymous 1858b). In this case, Hawkins's props had ended up in the hands of just such a local, proletarian speaker. On the rare occasion when he spoke with principally artisan audiences, Hawkins even presented himself as the product of self-help philosophy. At Bury, he “commenced by introducing himself as a working man, and one who had, he might say for years of his life, worked from 18 to 20 hours a day” (Anonymous 1859o). Hawkins then raised the uplifting example of Miller, a former stonemason who had devoted his spare time to geology.

Hawkins's financial precarity, while not quite that of a “working man”, as he implied, nonetheless meant that he could only rarely present himself as a benevolent subsidiser of local scientific communities. The *Hampshire Advertiser* pointedly noted that Hawkins was not among those who had lectured gratuitously to the Salisbury Literary and Scientific Institute in the season of 1863 (Anonymous 1863a); he did, however, consistently lecture for free at the impoverished Sudbury Literary and Mechanics' Institution. The dire financial straits of the latter were frequently mentioned in the local papers, Hawkins's generosity being all the more appreciated because it was known that “his services are in great demand, and his charges are pretty high” (Anonymous 1860c; 1861f; 1862f). Little wonder, then, that Hawkins's comfort was closely attended to in Sudbury. He also “generously” lectured at Manchester to raise funds for the widow of the late savant Antoine Claude Gabriel Jobert (1797–1855) (Anonymous 1855b). Bramwell and Peck (2008: 94) highlight Hawkins's “extraordinarily high” charges on less philanthropic occasions: enjoying near-celebrity status for a time in the United States, he asked the Peabody Institute in Baltimore for \$100 per lecture, and \$12.50 for expenses on each occasion.

Perhaps because his reputation among the elite scientific community in Britain was precarious at best, Hawkins did not present his own deductions as unassailable. Decking the lecture halls with illustrations, he invited audiences to “test the truthfulness” of his claims, especially his bold hypothesis about the origin of dragon myths (Anonymous 1859m). He may even have incorporated the results of exchanges with his audience into future lectures. At Kendal, when queried as to why dragons breathed fire, Hawkins conjectured that pterodactyls’ diet of “putrid fish” might have given their jaws a phosphorescent glow (Anonymous 1866b). Four months later, the *Hull Packet* reported that Hawkins had proposed that the “flaming mouth” of the dragon represented the putrid breath of the saurian (Anonymous 1867b). Whenever feasible, he gave audiences the latest geological news. At Colchester Literary Institution, after mentioning the Carboniferous “fossilized lizard” unearthed by Charles Lyell (1797–1875) “two or three years ago”, he told his audience that “within the last two weeks” a “very large crocodile” had been found “in the old red sandstone”, signifying an even greater antiquity for the reptile class than previously suspected (Anonymous 1859a). His knowledge impressed the *Essex Standard*, which declared that Hawkins’s lecture “possessed an authority and weight seldom appreciable in a theoretical treatise”.

## EVOLUTIONARY CONTROVERSIES

From his earliest lectures, Hawkins refuted evolutionary theories, most notably those promulgated by the French naturalist Jean-Baptiste Lamarck (1744–1829) and the anonymous author of *Vestiges of the natural history of creation* (1844), journalist Robert Chambers (1802–1871). The *Morning Post* reports Hawkins as railing against the “erroneous suggestions of the development theory” at the first Crystal Palace series, as well as speaking “warmly” on the topic of the *Vestiges* (Anonymous 1857a). At Chester he lamented that “a good style of writing” could help a book based on “absurd notions” (namely *Vestiges*) through “eleven editions” and he appealed “to the ladies” regarding the unsavoury notion of an ape “progenitor” (Anonymous 1857g). These wryly sexual jokes about evolutionary consanguinity were part of his regular arsenal of mockery. At Bury Athenæum he “ridiculed” the “profane and insulting theory of gradual development” (Anonymous 1859b), hoping to dispel the “mysticism” of a theory that made “the horse grow out of the star-fish or something of that kind” (Anonymous 1859o). Following Miller’s death in 1856, Hawkins provided one of the most vociferous refutations of evolution on the scientific lecturing circuit.

From late 1859, Charles Darwin's *On the origin of species*, rather than Chambers's *Vestiges*, was at the forefront of Hawkins's mind. His book *A comparative view of the human and animal frame* (1860) exhibited early signs of what became an obsession with refuting evolutionists' work on the similarities between humans and gorillas (Bramwell and Peck 2008: 84–85; Dawson in press). Interactions with major American anti-evolutionists like Arnold Guyot (1807–1884) appear to have helped fully entrench his opinions (Bramwell and Peck 2008: 83). Lecturing at Manchester Royal Institution during a brief return to Britain, he reflected on his “pain” at evolutionary naturalism's advancing tide (Anonymous 1875a). Almost six years later, speaking at Firth College, Sheffield, Hawkins still confidently stated that “as a geologist of many years standing”, he “could not agree” with “new theorists” like Darwin on the imperfection of the geological record and its purportedly evolutionary implications (Anonymous 1880c). When Hawkins lectured on the gorilla in 1881, the *Cheshire Observer*, by then drifting away from its progressive roots, assured readers that Hawkins had “no sympathy” with those who linked humans to apes (Anonymous 1881a).

Countervailing support for evolution was rarely voiced in newspaper accounts of Hawkins's lectures, although reported speech expressed various nuances. The *Birmingham Daily Post* was apparently satisfied with his argument at the Midland Institute that the “theory of development” was “entirely without foundation” (Anonymous 1862e). The *Caledonian Mercury* more neutrally noted that Hawkins had “endeavoured to show ... the unsoundness of Mr Darwin's theory” (Anonymous 1862b). The *Bradford Observer*, however, struggled to understand Hawkins's argument that animal form “showed purpose and design” but not “development” (Anonymous 1866a). This was not the most extreme confusion regarding his views. Hawkins, writing to the *Morning Post* in 1861, pointed out that he was not, as they had reported, a believer in the “Lamarckian transmutation of species” (Anonymous 1861d). Hawkins was dismayed to read in the conservative *Post*, which had published a mixed but sceptical review of *On the origin of species* the previous year (1860a), that he possessed “more than ordinary qualifications as the expositor of the theory of progressive development”, and to see the chalk sketches in which he “converted” a fish “first into an alligator and then into a pig” misunderstood as examples of transmutation (Anonymous 1861b). A lecture note page reproduced by Bramwell and Peck (2008: 40) provides a sketch resembling that mentioned by the *Post*. The articulately scripted argumentation of Hawkins's predecessor, Miller, had not laid itself so open to the risk of misinterpretation. That blackboard sketches of anatomical homologies could indeed be put to

the service of evolutionism would soon be demonstrated by the lectures of Hawkins's sometime-colleague, the scientific naturalist Thomas Henry Huxley (Wylie 2012: 66).

The Christian framework of Hawkins's thought was not so easily misunderstood. Affirmations of the work of God in nature were frequently punctuated by reports of cheers, which reached "[l]oud and deafening" heights at Chester (Anonymous 1857j). The *Bury and Norwich Post* approved of the "moral and Christian character" of Hawkins's lecture at Sudbury (Anonymous 1860c), and reported that his later explication of God's "design and unity of plan", in "which every intelligent Christian delights to admire", met with "the loud applause of the delighted audience" (Anonymous 1865a). Before Hawkins spoke at Ripon Scientific Society, the Lord Bishop of Ripon gave a speech advocating the conventionally concordist argument that "science and revelation would always be found to be in harmony with each other" (Anonymous 1867a). A presiding bishop was not a common feature at the lectures, but Hawkins often built his perorations around biblical quotations. Conclusory invocations of Genesis and Psalms were given disproportionate attention by the Anglican *Essex Standard* (Anonymous 1859a; 1859d; 1859f).

Vertebral unity of plan, Hawkins's main bulwark against evolution, could intrude into lectures on apparently unrelated subjects. The free lesson to the artisans of Bury may have been titled "The Use of Natural History in Every-Day Life", but, if the *Bury and Norwich Post*'s lengthy report is accurate, it was mostly taken up by a somewhat abstract "exposition" of the "beautiful pattern" of vertebrate form" and the skeletal "houses with which our souls were covered" with little time devoted to the utilitarian factors implied by the lecture's title (Anonymous 1859o). Theism and idealist anatomy were not necessarily stressed by reporters, when artistic exertions and exotic monsters had more impact. The *Hampshire Telegraph*, reporting on "The Remains of Extinct Animals found in Caves in Great Britain, together with the evidence of Human Life", a lecture touching on human antiquity and usually front-loaded with anti-evolutionary argumentation (Anonymous 1859o), ignored the content and merely praised Hawkins's "facility of communicating in a pleasing and instructive manner" (Anonymous 1860d). Three years later, the same newspaper paid more attention to his lecture on "The unity and plan throughout the series of Vertebrate Animals" but offered no indication that the "deeply interesting" question was controverted (Anonymous 1863b). As the 1860s wore on, Hawkins's traditionalist arguments often left journalists desiring a more innovative refutation of evolutionary theory. The *Bradford Observer* noted that Hawkins put

forward the same “theory of life propounded” on his previous visit, which was “quite as amusing”, although there was “nothing new enunciated” (Anonymous 1866a).

## CONCLUSIONS

On his final return to Britain in 1878, Hawkins’s career seemed buoyant. The improved “Age of Dragons” lecture at the London Institution was taken seriously by *The Times* (Anonymous 1879a) and a well-attended talk before the Abbey Institute, Reading, with the old-fashioned title “The Giants of the Ancient World”, was considered by *Jackson’s Oxford Journal* to be “an augury of a successful season” (Anonymous 1880a). The *Birmingham Daily Post*’s report on “The Age of Dragons” at the Midland Institute gave no indication that Hawkins’s well-worn thesis was over-familiar, describing it as a “very interesting” lecture that attracted a “large attendance” (Anonymous 1880b). Nonetheless, soon after a fiery lecture in Chester about “the most odious, most useless, and most atrocious animal”, the gorilla (Anonymous 1881b), Hawkins’s lecturing career fizzled out. Henceforth his life was dominated by financial, family, and health troubles (Bramwell and Peck 2008: 45–46) until his death in 1894.

Despite this ultimate decline, Hawkins’s most successful lectures left vivid memories (Anonymous 1869; 1875b; 1881a). The “peculiarly felicitous way” of rapidly sketching and talking “which has long distinguished this gentleman as a popular instructor” (Anonymous 1861a) remained the standard to which a younger generation of artistic orators could be held (Anonymous 1879b; 1890). His legacy was particularly evident in the natural history lectures of John George Wood (1827–1889). Like Hawkins, Wood, who started to make career of lecturing in the 1870s, deftly sketched animal forms on his black canvas while addressing his audience (Lightman 2007: 168). Indeed, Hawkins can be seen as an unacknowledged predecessor of the “nature study” programme that, soon after his death, became central to science education in British schools. Stemming from the same Pestalozzian theories that inspired Hawkins, promulgators of nature studies argued that, by spontaneously sketching animal forms on the blackboard, teachers could more effectively improve learners’ comprehension and retention (Wylie 2012: 66).

Whether speaking to medical gentlemen in Leeds, children in Liverpool, or mechanics in Bury, Hawkins modulated his approach to the perceived needs of the educational marketplace. Likewise, newspaper reporters who claimed to speak for their local readers



shaped impressions of Hawkins's lectures for their own ends, whether these were pragmatic, didactic, religious, or civic. Hawkins contributed to local scientific communities, leaving in his wake materials and memories while also drawing on the scientific interests of these communities to develop the content of his lectures. The networks and friendships he established were thus mutually beneficial. His warmest relations were institutions in Suffolk, not far from his London home, but he also met with considerable success in the industrial heartlands, including Birmingham, Manchester, and Liverpool. Overall, Hawkins lectured at dozens of locations in England, Scotland, and Wales. His engagement with more diverse locations than earlier geological and palaeontological lecturers makes his career an instructive case study, demonstrating the dexterity and adaptability required by a lecturer to stay competitive, as well as providing unique glimpses into the activities of scientific communities across Britain.

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<sup>1</sup> This famous episode is reconsidered in a forthcoming paper by Victoria Coules and Michael J. Benton, 'The curious case of Central Park's dinosaurs: the destruction of Benjamin Waterhouse Hawkins' Paleozoic Museum revisited', in the *Proceedings of the Geologists' Association*.

## ACKNOWLEDGEMENTS

This paper was completed thanks to a Leverhulme Trust Early Career Fellowship (grant ECF-2020-055). I am indebted to the valuable suggestions of Diarmid Finnegan, Robert M. Peck, and Anne Secord. I am also grateful to Gowan Dawson and Ralph O'Connor for comments on early versions of this essay. The work would have been impossible without the online *British Library Newspapers* archive.

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## FIGURE CAPTIONS

Figure 1. A photograph depicting Hawkins drawing on the blackboard. Private collection.

Figure 2.a. St. George and the pterodactyl, 1873/1868, Benjamin Waterhouse Hawkins Album, Academy of Natural Sciences of Drexel University Repository. ANSP Archives Collection 803.

Figure 2.b. Detail from the design for the end wall of a New York museum hall, illustrating Hawkins’s argument for the comparatively recent survival of pterodactyls, 1871, Benjamin Waterhouse Hawkins Album, Academy of Natural Sciences of Drexel University Repository. ANSP Archives Collection 803.

Figure 3. Plate X in Hawkins’s *A comparative view of the human and animal frame* (1860). Hawkins’s aim of showing the skeletal “unity of design ... fixed by the Almighty” (8) upon all vertebrates is illustrated through this “Cerberus-like animal” (25). Hawkins’s lectures highlighted anatomical unity through the more transient medium of chalk. University of Wisconsin-Madison Digitized Collections.

Figure 4. The London Institution, Moorfields: the interior of the lecture theatre in 1820. Engraving by G. Gladwin after B. Dixie. The Institution hosted one of Hawkins’s earliest lectures, when the “walls of the theatre were decorated with numerous diagrams”



(Anonymous 1855a), as well as one of his last, when he exhibited “enormous” American dinosaur bones (Anonymous 1879a). Wellcome Collection.