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Classical authors and “scientific” research in the early years of the Manchester Literary and Philosophical Society, 1781–1800

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ABSTRACT

While a clear distinction was drawn between “classical learning” and “modern science” at Oxford and Cambridge Universities in the early nineteenth century, we see no such contrast being made in other spaces of knowledge making, such as the Manchester Literary and Philosophical Society. Drawing on Bacon’s insistence that his inductive method should apply across all fields of knowledge, early members of the Society interpreted “science” as referring to any systematic inquiry utilising an empirical approach. An investigation of the ways in which classical authors were used within the researches of early members of the Society raises important questions about how we should think about empirical method and scientific research in early nineteenth-century England. Frequently understood as primarily engaged in researching natural knowledge, the members of the Manchester Society concerned themselves with a wide range of subjects across all branches of knowledge. Crucially, classical authors were drawn upon as sources of empirical evidence across all types of inquiry, from investigations into the colours of opaque bodies to the origins of party feeling. It is possible to identify a common approach – “history as empirical method”, which, this article suggests, was developed from Bacon’s call for a “just story of learning”.

KEYWORDS

Classical learning; ancient authors; classical studies; literary and philosophical societies; science; history of knowledge

1. Introduction

The traditional framework for understanding the relationship between classical authors and the emergence of modern science – the “Quarrel” (of the ancients and the moderns) – assumes the existence of a hostile relationship. The Quarrel metaphor forms an important part of the conceptual underpinning of what Stephen Gaukroger has termed the “Enlightenment Interpretation” of the emergence of modern scientific culture in the West.¹ This interpretation highlights “Copernicanism and Darwinism” as “the two most formative scientific events of the modern era”; Gaukroger describes the “twofold” victory they are usually credited with: “In the first place they were successful

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in the face of fierce opposition from established religion. In the second, they replaced firmly held philosophical views that had persisted since antiquity, and which had the authority of two millennia.” It is important to realise that this “quarrel” or “battle” has generally been seen as having only one outcome. “If we think of Copernicanism as marking the beginning of the struggle with non-scientific disciplines,” Gaukroger writes,

and Darwinism marking the start of the final stage of this struggle, then it is tempting to think of their triumphs as indicating the *sui generis* nature of scientific values. That is, what they seem to indicate is that, unlike the cognitive values and norms of theology or the humanities, basic scientific values and norms are open to no refutation from outside.²

Gaukroger has written a series of books seeking to challenge the first of these myths: namely, the necessary opposition between science and religion. He and many other scholars have shown that religion and science were not only not opposed to each other for much of the early modern period and afterwards but were rather mutually supportive and even integral to each other’s continued success.³ There has, however, been much less resistance voiced to the second claim: namely, that the battle between ancient and modern knowledge was won decisively by the moderns. Historians of science often point to the motto of the Royal Society here – namely, “*nullius in verba*” – and claim that it was the mission of the Royal Society “to substitute direct experience for ancient authority.”⁴ This was supposedly in response to Francis Bacon’s accusation that “the Idols of the Theater – or, more prosaically, the habit of paying allegiance to conventional systems of thought – were retarding the advancement of learning.”⁵ Under this view, Bacon is presented as the champion of modern learning, dismissing ancient knowledge. Many years ago, the work of Steven Shapin and others set out to challenge this claim, showing that, in the words of Tracy Spaight, “nearly all of what we believe to be true about the world [...] is held not on the basis of personal experience but on the hearsay of our teachers and textbooks. In securing knowledge about the world, we routinely and unavoidably rely on the testimony and competence of others [...] Trust makes social and cognitive order possible.”⁶ Despite this, however, and the inroads into the history of science made by other social and cultural historians, the “Enlightenment” *sui generis* metanarrative of the emergence of modern science has remained remarkably tenacious. As recently as 2020, Warwick Anderson could still complain: “for many years, the history of science and other technical knowledge practices has been encased in an exceptionally compressed and durable European historiography, conveying a sense of inevitability or destiny that presents a particular challenge to those of us wanting to crack it open.”⁷

Although the so-called Quarrel of the Ancients and the Moderns is most commonly associated with the seventeenth century,⁸ if we think of it using Gaukroger’s chronology, from Copernicanism to Darwinism, then we can see it continue to define the relationship between classical authors and science well into the nineteenth century. In his study of William Whewell, *Defining Science*, Richard Yeo quoted the classical scholar, Francis Newman, who referred to the sense of “two hostile systems” comprising those advocating “ancient” and those advocating “modern” knowledge in early nineteenth-century Britain.⁹ “As the comments of Francis Newman suggest,” Yeo wrote, “the argument about liberal education in this period seemed to repeat an earlier controversy: the *querelle* between the ancients and the moderns in the seventeenth century.” In early nineteenth-

century Britain, the legacy of the older conflict was visible in the contrast between classical studies as traditional and scientific subjects as modern and progressive.¹⁰

However, as I will suggest in this article, despite the power of this narrative, a crucial part of what Gaukroger has identified as the dominant “Enlightenment” interpretation of the success of modern science – the Quarrel – was, in reality, located in very particular and limited settings, at least within a British context. While Yeo refers to the relevance of the quarrel metaphor for the debate about “liberal education” in “early-nineteenth-century Britain,” I will suggest that the confines of the debate were much narrower than this: specifically, the “ancient” English universities of Oxford and Cambridge. It was here that almost all of the “hostile” debates pitting modern sciences against classical studies took place. This was particularly the case with Oxford, where classical studies formed the almost exclusive focus of undergraduate studies. While study of the classics was important at Cambridge, equal, if not greater, emphasis was placed on mathematics. The primacy which historians have given to Oxford and Cambridge when discussing classical learning in early nineteenth-century England has meant that other contexts, where different attitudes prevailed, have tended to be neglected.¹¹

Formal educational institutions like the ancient universities were not the only places where classical authors and those espousing “modern” scientific discourse and ideas came into contact. Antiquarian studies remained an important part of the research of the Royal Society of London until well into the nineteenth century. And, as we will see, the phenomenon which excited contemporaries was the development, for the first time, of institutions dedicated to scholarly research and the advancement of knowledge outside the capital, with a particularly strong concentration in the industrial north. Between 1780 and 1840, so-called literary and philosophical societies sprang up in towns and cities across the country. An article by the geologist Charles Lyell, written for the *Quarterly Review* in 1826, had as its chief aim the celebration of the “recent establishment of numerous literary and philosophical institutions [...] throughout the country.” Praising the growth of the Lit and Phils as a development “without parallel in the history of contemporary nations,” Lyell acknowledged the “great harmony of design” evident in their foundation and described them as institutions dedicated to the “advancement” of the “various arts and sciences” and the carrying out of “deep research.”¹² It was the first time that learned societies had flourished outside of London. If we focus, not so much on formal educational institutions but rather on spaces of knowledge making, such as provincial literary and philosophical societies, we find evidence of common approaches and connections formed between different types of knowledge which tend to be considered in isolation from each other by historians.¹³

2. “Science” as method, not content

In the rest of this article, I will be primarily considering how classical authors and modern science were discussed in one of these societies – the Manchester Literary and Philosophical Society, founded in 1781 – in the first twenty years of its existence. Before proceeding, it is important to note that there have been considerable efforts made in the historiography to fit the Lit and Phils into the “Enlightenment interpretation” which Gaukroger has outlined, and which has been discussed above. The emergence of literary and philosophical societies between c. 1780 and 1840 has traditionally

been connected with the Industrial Revolution.¹⁴ They have been seen as driving nascent specialisation within the field of knowledge, in particular the development of the natural and physical sciences as distinct and powerful bodies of knowledge, and as drivers of industrial and economic growth. Trevor Fawcett complained back in the 1980s that “Societies of this kind have so often been considered solely in a context of industrialization and the history of experimental science.”¹⁵ In his work on the “Industrial Enlightenment” in Birmingham and the West Midlands, Peter Jones associates the development of Lit and Phils with the rapidly “accelerating rate of knowledge production” in what he terms the “science and technology interface.”¹⁶ The economic historian Joel Mokyr likewise viewed the Lit and Phils as evidence of the growing “belief in the possibility of continuous betterment of society” associated with the rapid development of science and industry and the triumph of Baconian induction which was associated with it.¹⁷ “The Industrial Enlightenment,” writes Mokyr, “and the intellectual activities it spawned were distinctly provincial events, located in institutions such as the scientific societies in smaller English towns [...] These institutions were often located near centers of industry and [...] served as clearinghouses for useful knowledge between natural philosophers, engineers and entrepreneurs.”¹⁸ Mokyr’s account implies that the Lit and Phils were primarily concerned with “solving technological issues.”¹⁹ A similar view is expressed if we turn to the history of provincial science.²⁰ In his work on the Newcastle Literary and Philosophical Society, founded in 1793, Derek Orange repeatedly describes it as a society chiefly concerned with facilitating communications between men of science to further the production of “useful knowledge.”²¹ This is despite the fact that, at its first meeting, the Newcastle Society was described as “our new society for literary conversation and writing essays.”²²

In her work on antiquaries and antiquarian societies, Rosemary Sweet has pointed out that Lit and Phils heard papers on many topics, including antiquities and *belles-lettres*. “[T]he provincial literary and philosophical societies,” she writes, “embraced all forms of learning and scholarly inquiry: antiquarian papers would feature alongside scientific inquiries into the qualities of the local water.”²³ Jon Mee and Jennifer Wilkes have likewise argued recently that Lit and Phils were “concerned not just with the science and technology interface, but also with polite letters and general ‘improvement.’”²⁴ Nor were the Lit and Phils alone in this. Historians such as David Miller and Palmira Fontes da Costa have stressed the extent to which the Royal Society also continued to hear papers on a wide range of subjects, including antiquities, throughout the eighteenth century.²⁵ Yet this argument about breadth is still framed within a narrative stressing growing divisions and nascent specialisation within the field of knowledge: in particular, the separation of the natural and physical sciences from the arts and humanities. This process is often figured as a battle between new and old knowledge, another iteration of the Quarrel metaphor, which only ends with the victory of the former over the latter. Thus, while Sweet acknowledges that papers on antiquities were given alongside more narrowly scientific papers at both the Lit and Phils and the Royal Society,²⁶ she points to the contemporary foundation of specialist societies: the Linnaean Society for botany in 1788, the Mineralogical Society in 1799, and the Geological in 1807. “The ties between antiquities and natural history were weakening,” she writes.²⁷ Mee and Wilkes write similarly of “fault-lines beginning to appear in the intellectual landscape that underpinned the Lit and Phils, corresponding to the ‘disaggregation’ of the

eighteenth-century version of the Republic of Letters often identified with the early decades of the nineteenth century.²⁸ They argue for the gradual emergence of “a more strictly differentiated knowledge economy, where the arts and sciences started to split asunder.” Other historians, like Jon Klancher, see this rupture between arts and science as more dramatic. They point to the eclipsing of models of participatory science represented in the Lit and Phils by more heavily administered didactic forms embodied in popular scientific lectures like Humphry Davy’s at the Royal Institution from 1800 onwards.²⁹

When we read the Lit and Phils’ own publications, however, what strikes us most strongly is the absence of a sharp distinction between science, on the one hand, and the arts and humanities on the other, or even between “theoretical” and “useful” knowledge. These were divisions which have been artificially imposed by subsequent historiography, examples of what Nicholas Jardine has termed “evaluative anachronism.”³⁰ As their name implies, Lit and Phils were committed to the promotion of knowledge in all its forms, and the terminology and categories they employed reflect this. At its foundation in 1781, the Manchester Lit and Phil defined which topics fell under its purview and which did not: “The subjects of conversation,” it declared, “[shall] comprehend Natural Philosophy, Theoretical and Experimental Chemistry, Polite Literature, Civil Law, General Politics, Commerce, and the Arts.” The only areas deliberately excluded as potential subjects of controversy were “Religion, the practical branches of Physic, and British Politics.”³¹ Moreover, I will suggest that, in addition to endorsing a broad range of subject areas, the Lit and Phils promoted a particular mode of enquiry which applied to *all* domains of knowledge. We do not see the clear methodological division between studies of the natural and human world (between sciences and humanities), which, as Bruno Latour reminds us, structures categories of knowledge today.³² Nor do we see a gradual move in this direction, hinted at in the works of Mee, Mokyr, and others.

If we pay close attention to the ways in which the word “science” is used, as urged more than thirty years ago by Andrew Cunningham,³³ we see a clear assertion that the domain of “science” should apply not only to the natural world but also, following the arguments of Locke, to the domain of human understanding and conduct and to man-made productions or “arts.” In a paper, “On the Comparative Excellence of the Sciences and Arts,” read before the Society on 28 March 1787, the lawyer and banker William Roscoe writes as follows:

To the acquisitions made in improving the rational and moral powers we give the name of science; whilst the sentimental faculty is the foundation of the pleasures we receive from the study of the polite arts [...] Science, then, is either moral, or natural: the first, immediately connected with the conduct of human life; the second, more remotely so through the medium of the works of nature.³⁴

For another example of this, we may look at the position adopted in a paper by the Society’s secretary, Samuel Harvey, “Observations on Alphabetical Characters,” read before the Manchester Society on 23 March 1792. Citing James Burnet, Lord Monboddo’s *History of the Origin and Progress of Language* (1774), he declares “all the works both of nature and of art are compounds, which the sense presents to the mind: these it is the business of science to analyze and resolve into their first principles, or constituent

parts.”³⁵ In this formulation, science was not concerned exclusively or even primarily with exploring aspects of the natural world. Rather, it was to understand, to “analyze” “all the works both of nature and of art,” both natural and man-made phenomena.

Just as Staffan Bergwik and Linn Holmberg have argued with regard to the ancient, medieval, and early modern periods, I would suggest that “science [. . .] basically meant systematized knowledge” to the members whose research we will be looking at, something much closer to the German “*Wissenschaft*.”³⁶ In this understanding of the word, “science” properly refers to the practice of forming in empirical terms questions concerning any topic, whether related to the natural world, human conduct and understanding, or man-made objects. I would like to suggest here that the understanding of science as displayed by the members of the Manchester Lit and Phil in its early years reflects an important shift which Stephen Gaukroger has noticed from the mid-eighteenth century onwards, and which he refers to as the “naturalization of the human.” “The new scientific culture of the second half of the eighteenth century,” writes Gaukroger, “was effected primarily by means of a process of naturalization of the human, that is, the formulation in empirical terms of questions about the human realm that had up to that point taken a non-empirical form. This changed conceptions of what science was and what it should be doing.”³⁷ Crucially, as Gaukroger makes clear, this shift was closely related to the Lockean concept of sensationalism, which changed the way that people thought about the sources of human knowledge and human understanding. We should not, he cautions, interpret the extension of the language of “science” to questions of human understanding and culture as a “victory” of natural philosophical principles and method over other domains of knowledge and practices. Rather, he argues, we should think of it as a reconceptualization and expansion of science itself.³⁸

Many papers presented to the Manchester Lit and Phil showed great interest in categorising, ordering, and relating fields of inquiry, “resolving into their first principles, or constituent parts,” in the words of Lord Monboddo. In the paper discussed above on the comparative excellence of sciences and arts, William Roscoe argued for “a more general acceptance” of the term “natural philosophy” “than that in which it has been, of late, understood.” It should be “applied to the whole system of nature,” he argued, “as well intellectual as material. The faculties of the human mind are as much a part of that system, as the form of our bodies, and seem therefore equally to be included under the study of natural philosophy.”³⁹ What we see here, I would suggest, is an expansion of natural philosophy, an expansion of the category of “science,” to fully integrate inquiries into human nature, understanding, emotions, and experiences. In a paper from the first volume of the Manchester Society’s *Memoirs* (1785), entitled “On the Advantages of Literature and Philosophy in general, and especially on the consistency of Literary and Philosophical with Commercial Pursuits,” the surgeon Thomas Henry refers to what he terms the “philosophical historian.” In his own words, he means a historian who treats the past “scientifically,” who “does not content himself with the mere relation of facts; he endeavours to trace effects to their causes, to show the principles by which change over time has taken place.”⁴⁰ In his paper, Henry writes about the possibility of pursuing any object “scientifically” and defines this as “enter[ing] into the exact arrangement and classification of the different [elements]” of a body of knowledge.⁴¹

Not only did early members of the Manchester Lit and Phil propose a common empirical framework for pursuing knowledge in any field of inquiry, they also actively

promoted the study of multiple domains of knowledge, believing research pursued in one of them to benefit and enhance study in another. In another paper from the first volume of the Society's *Memoirs*, "On the Affinity subsisting between the Arts," the Unitarian minister Thomas Barnes makes clear that all possible subjects for discussion at the Manchester Lit and Phil may be regarded as "sciences." He also promoted an inclusive, expansive approach, criticising "the man who has travelled only one path of science." "His ideas," Barnes declared, "must necessarily be very confined, and he will, probably, fall under the charge of pedantry and affectation."⁴² In this vein, he condemned "the mere mathematician, the mere grammarian, or the mere any thing." They are like men "with a microscopic eye" who "see one little object very distinctly" but otherwise "sit enveloped with darkness."⁴³ In this expansive view of the sciences, members of the Society were consciously drawing on a classical understanding of connections between different branches of knowledge, as we can see from the Ciceronean motto chosen by Barnes: "*Omnes Artes, quae ad Humanitatem pertinent, habent quoddam commune vinculum, et quasi cognatione quadam inter se continentur*" (In truth, all the arts which concern the civilising and humanising of men have some link which binds them together, and are, as it were, connected by some relationship to one another).⁴⁴ We see a similar approach adopted in Barnes' discussion of "the nature and essential characters of poetry," also included in the first edition of the *Memoirs*. His aim in the paper is "[t]o settle with precision the limits which divide poetic from prosaic composition." He wishes to test a number of "different hypotheses" and to emerge with a more "philosophical" view of poetry, with "its boundaries exactly drawn, and [its] limits ascertained, [...] its general and larger characteristics clearly represented."⁴⁵

In his earlier paper, Barnes attempts to do this for the whole of knowledge. In a discussion of the "Affinity subsisting between the Arts," he attempts "to range the different branches of knowledge in their proper order, and to apportion to each, their proper share of attention and regard."⁴⁶ In doing so, however, he remains wedded to an idea of the essential unity of knowledge. Barnes credits Cicero with the inspiration for his paper:

the sciences are sisters, *affectionate* sisters! and, as the Roman Orator, in our motto, has beautifully expressed it, '*Quasi cognatione quadam inter se continentur.*' To be in the good graces of any one of them, you must pay some respectful attention to the *rest*.⁴⁷

And for this to happen, there needed to be a common framework, a shared empirical approach. Even the metaphysician, Barnes argues, often pictured working as a "mole," "blindfold," buried in the depths of his ideas, "may need the taper of the other sciences."⁴⁸ He dismisses the idea of categorising knowledge narrowly into particular disciplines. Rather, he argues that scholars should choose a key research question and draw on all the different fields of knowledge to help them answer it. "Every man should have one object continually in view, to which he should refer all his knowledge; and yet, with this aim, let him rove abroad, through the various walks of literature." "General science," writes Barnes, "collects the scattered rays, reflected from a thousand objects, into one focus, and blends all the variegated colours of the rainbow, into one white, and luminous point."⁴⁹

Indeed, it is a shared "scientific" or "philosophical" method, a common language of empirical enquiry, based on "hypothesis," "facts," and "analysis," which links the various branches of enquiry and underpins the Society's conception of the unity of knowledge. In a paper given on 18 February 1784, the physician and president of the

Lit and Phil, Thomas Percival, commented on the nature and importance of different kinds of evidence in research:

In all our enquiries into truth, whether natural or moral, it is necessary to take into previous consideration, the kind of evidence which the subject admits of; and the degree of it, which is sufficient to afford satisfaction to the mind. Demonstrative evidence is absolute, and without graduation, but probable evidence ascends, by regular steps, from the lowest presumption, to the highest moral certainty. A single presumption is, indeed of little weight; but a series of such imperfect proofs may produce the fullest conviction. The strength of belief, however, may often be greater, than is proportionate to the force of number of these proofs, either individually or collectively considered.⁵⁰

Barbara Shapiro has made similar observations about scholars of history and natural history in late sixteenth- and seventeenth-century England, pointing to shared methodological concerns and theories of knowledge. “What was critical,” she writes, “to the elevation of historical and natural findings from mere opinion to moral certainty was the quantity and quality of the evidence and the credibility and impartiality of the investigator or observer.”⁵¹

3. Using classical texts “scientifically”

From Thomas Percival’s discussion of different types of evidence, just quoted, we can see that the Lit and Phils were very alive to the question of how the claims they were making could be validated. Like the Royal Society, on whom it seems likely they, to some extent, modelled themselves,⁵² the early members of the Manchester Lit and Phil acknowledged readily the need for authoritative and reliable second-hand testimony where demonstrable evidence was not possible. While such second-hand testimony included “facts” submitted by correspondence or hearsay from living contemporaries, it also included evidence from written authority, including classical authors, many of whom were cited countless times in papers read before the Manchester Society on a wide variety of subjects.

3.1. Classical authors as part of educational science

At the bottom of this is a sharp contrast in understandings of what education is about. As historians of science have tended to focus on the ancient universities when writing about classical education, they have largely accepted the dominant image of the classical scholar as the isolated university pedant, precisely the figure they present Bacon and the Royal Society as opposing. This is an important part of the metanarrative of the “Quarrel” which pits the ancient universities (representing classical learning) against progressive, modern science. According to this view, the Lit and Phils (together with the Royal Society and other metropolitan scientific institutions) are seen as being in the vanguard of the culture of modern science and, as such, should have had little to learn from classical authors.

The first point to make here is that classical learning of the type believed to be pursued at Oxford and Cambridge was indeed rejected by the members of the Manchester Lit and Phil in its early years. In an essay read before the Society in November 1793 and published in its *Memoirs*, with the title “On the Uses of Classical Learning,” the Anglican

clergyman George Gregory complained that classical scholarship was all too often reduced “to a few barren and fruitless verbal Criticisms [...] to the regulating of a few phrases or correcting in a few instances the quantity and metre of an obscure Author.”⁵³ The Lit and Phils have rarely been discussed as educational institutions or as bodies seriously interested in the theory of education. However, I want to suggest that a close engagement with classical authors was seen by the early members of the Manchester Society as important for the education and practice of a “man of science.” It was not the ancient world or knowledge derived from reading ancient authors *per se* which was dismissed but rather the particular way of treating it they associated with the cloistered scholar. In his essay, Gregory went on to argue that the usefulness of a classical education to men of science depended entirely on the spirit in which it was treated. Instead of the “senseless definitions [...] introduced by the School of Aristotle,” he wrote, “facts [must be] appealed to with confidence, as the only basis of solid argument.”⁵⁴ Referring to Baconian induction, Gregory argued that classical sources were only valuable in so far as they were investigated according to the “more logical and less confused method of investigating truth [which] has been adopted of late years.”⁵⁵

While admitting that the scientific significance of ancient writers had reduced in importance with the increase in modern discoveries, their work, he claimed, was still valuable to contemporary men of science. “Whoever expects to find in the ancients the perfection of science will be disappointed,” Gregory wrote,

but this will not warrant in us a total rejection of all the assistance which may be derived from this source [...] I should wish to see the ancients studied for their matter, as well as for their language – But the information which they convey, is too commonly made a secondary consideration. The attention of youth is directed to the elegant latinity of Caesar and of Horace, not to the facts, observations, or precepts, which are contained in these valuable authors.⁵⁶

Referring to the ways in which men of science in France and Germany engaged with the substance of the classics, he suggested that “the example of some of our enlightened neighbours on the continent, may [...] be worthy of our imitation.” “They study the ancients,” he declared, “but they study to read and imitate them.”⁵⁷

Crucially, though, men of science on the continent also learned modern languages and studied works of modern science. “[T]hey make themselves masters not only of the ancient, but of the modern languages,” wrote Gregory, “they can converse with the well-informed of other nations, and they can read their works.”⁵⁸ The kind of education Gregory was advocating was an open and broad one, encompassing all subjects but treated from the point of view of scientific method just as we saw promoted above by Thomas Barnes. Men educated in this way “are less likely to be the slaves of prejudice than the cloistered pedant,” wrote Gregory.⁵⁹ To a thorough instruction in classical authors approached in a scientific way must be added the best of modern writers who have added to the body of knowledge and different subject domains developed by the ancients. “If a man would be accomplished he must not stop” at the classics; “he must not expect to find in the ancients what they do not contain,” or “see in Homer, more than Homer knew.”⁶⁰

It is worth pausing for a moment to consider where this attitude towards the classics may have come from. As Arnold Thackray pointed out as long ago as 1979, many

prominent early members of the Manchester Lit and Phil had been educated either in dissenting academies (in particular, Warrington) or the Scottish universities (in particular, Edinburgh and Glasgow); or, indeed, in both.⁶¹ The educational trajectory of the Society's first president, Thomas Percival, may serve as an example. After spending time as a student at the Unitarian Warrington Academy, he studied medicine at Edinburgh and Leiden. Crucially, a very different approach towards classical authors prevailed in these institutions when compared with the ancient universities. The disdain we see expressed for the minute focus on the "niceties of language" (seen to characterise classical studies at Oxford and Cambridge) by members of the Lit and Phil is strongly reminiscent of similar remarks made by prominent figures at the Scottish universities. As George Jardine, Professor of Rhetoric and Logic at Glasgow, declared in 1825:

We do not, in this part of the kingdom, attach to classical learning that high and almost exclusive degree of importance which is ascribed to it elsewhere; thinking it of greater consequence to the students, to receive instructions in the elements of science, both mental and physical, than to acquire even the most accurate knowledge of the ancient tongues; of which all that is valuable may, it is thought, be obtained without so great a sacrifice of time and labour.⁶²

This same contrast was drawn with considerably greater venom in a series of attacks on classical scholarship at Oxford in the pages of the *Edinburgh Review* in the early part of the nineteenth century.⁶³ In an article published in July 1821, Daniel Keyte Sandford, Professor of Greek at Glasgow, condemned classical learning at Oxford as "a species of hereditary slavery" producing "pedants." "It is under this sort of oppression," he continued, "that men forget the use of their understandings"; they are "more solicitous to show what they *know* than what they think, they reason from memory and speak in quotations."⁶⁴ The alternative presented was the type of curriculum pursued at the Scottish universities. As Sydney Smith, Richard Payne Knight, and John Playfair declared in 1810, Oxford could no more rival Edinburgh "as to science and philosophy, than [...] Edinburgh can rival Oxford in the antiquity, the wealth, and the splendour of its establishments."⁶⁵ In the Scottish universities, Sydney Smith argued, "every science is taught which is liberal, and at the same time useful to mankind."⁶⁶ This included Latin and Greek and classical studies, more broadly. "We don't oppose science to literature," the three reviewers stated, "we do not wish to exclude either the one or the other [...] but to cultivate them both."⁶⁷

We see precisely this kind of approach being advocated in a paper setting out "A Plan for the Improvement and Extension of Liberal Education in Manchester," which was read before the Manchester Lit and Phil in April 1783 by Thomas Barnes and proposed the establishment of a "College of Arts and Sciences" in the city. He saw an intimate knowledge of ancient authors as an essential (though not exclusive) part of the education of young men who were to be engaged in commerce and industry. Once again, however, it is the attitude taken towards the classics which matters. As Barnes makes clear, "The shreds and fragments [...] which a boy picks up, in conning over the Latin and Greek authors are not surely deserving of the name of regular and systematic science."⁶⁸ He must move from mere linguistic analysis to a systematic study of the content and information contained in the ancient authors. "It is surely desirable, that he shall *now* rise, from words to things, from language to sentiment. All that he has yet been doing, is

preparatory to real knowledge. Language, of itself, is but a scaffolding to science.”⁶⁹ Thus, we see proposed a thorough training in “the LEARNED LANGUAGES [. . .] which shall connect occasional remarks, on the history, mythology, philosophy, common manners, jurisprudence, &c. of ancient times, with the authors which shall be read.”⁷⁰ In other words, it was not the grammar of the ancient languages which was to be studied, but rather the information the works contain. This can be seen by the clear focus on the different domains of knowledge to which classical authors were seen to contribute: “history, mythology, philosophy, common manners, jurisprudence.” In the same syllabus, students were also to be introduced to modern writers on similar subjects: history, law, logic, morals, *belles-lettres*, natural philosophy, chemistry, mathematics. Classical authors here were not to be taught as a separate subject or domain of knowledge, but rather to give students access to a wide range of other subject areas. Classical authors are source material, authorities for the subjects of history, culture, law, natural philosophy, etc., just as modern authors are. Here, we once again see the importance of links to the dissenting academies, for this curriculum was very similar to the one developed for the Manchester Academy (as Warrington became known when it moved to Manchester) when it was established three years later in 1786.⁷¹

William Roscoe, the Liverpool banker and abolitionist, made a similar case for the value of classics when read for the information they could furnish: “a knowledge of the ancient languages,” he wrote, “is of great advantage in many departments of science.” While he praised the general training of mind, the “facility, and accuracy of distinction,” which only “the exercise of the mind in the abstruser parts of grammatical study” can bestow, he also stressed that “by a proper selection of authors we may advance our real knowledge in any particular science.”⁷² Like Gregory, he made a plea for a wide-ranging education, comprising both ancient and modern authors: “[we] may derive much wisdom and pleasure from the productions of [ancient and] modern writers; the study of both is compatible, if we study both as we ought.”⁷³ As well as a study of the classics for information and in combination with a wide range of modern authors, the early members of the Manchester Lit and Phil also recommended studying classics in a very different context from the ancient universities: in conversation, in society, in the world. One paper given in 1796 by the prominent abolitionist and member of the Clapham sect Thomas Gisbourne, entitled “On the benefits and duties resulting from the institution of societies for the advancement of literature and philosophy,” argued that societies like the Manchester Lit and Phil placed a wide range of men and women who would not normally have access to universities “within the reach of libraries stored with the information, ancient or modern, of which [they] stand in need.”⁷⁴ Such societies “bring literature and philosophy from the college and the closet into public view,” Gisbourne wrote, “into the walks of common life, into scenes which would otherwise have been merely the haunts of business or of dissipation; and subject numbers to the influence and enrich them with the treasures of learning and science, to whom little was previously known of either but the name.” The mission to “liberate learning” was particularly important for the Manchester Society given the significant influence exercised in its early years by local dissenting families, in particular Unitarians, who were excluded from Oxford and Cambridge for refusing to subscribe the Thirty-Nine Articles of the Church of England.⁷⁵

In sharp contrast with the image of classical learning as an isolated, pedantic business, a paper delivered by Unitarian minister George Walker, a future President of the Society, on 15 November 1799, entitled “A Defence of Learning and the Arts, against some

charges of Rousseau,” described “learning” and “civility” as “issuing from the same source” and traced this shared origin back to the ancient world. Walker praised the “urbanity” of Greece and Rome but distinguished this carefully from what he called the “peculiar politeness of later Europe” which he disliked and, to some extent, opposed to learning;⁷⁶ in particular, he associated his encomium on the ideal scientific persona with Cicero’s definition of urbanity, which is closely associated with learning, albeit in the cultured and sociable context of the *urbs*. Representing his ideal in this respect were the philosopher emperors Marcus Aurelius and Antoninus Pius. The “scientific man,” he writes, is he “who has studied man as well as books, which alone deserves the name of true science.” Such a man is “possessed of more nice discernment, more accuracy in weighing everything in the scale of sober judgement, more facility in resolving, combining, comparing, deciding.” “I do not,” he stressed, “ascribe this praise to the verbal critic, the mere mathematician, or the simple sciolist of any form.”⁷⁷ It was this view of classical authors, as being linked with urbanity and civility, which led early members of the Manchester Lit and Phil to recommend the classics explicitly as part of an education designed for young men who were to pursue careers in commerce and industry. In doing so, they formed part of a broader debate in eighteenth-century Britain about the need for learning to be grounded in social interaction and conversation; to avoid, in the words of Jonathan Swift, “the Itch of Dispute and Contradiction.”⁷⁸

4. Classical authors used “scientifically” in the research of the Manchester Lit and Phil

When Gregory declared in his paper on “The Uses of Classical Learning” that he wished “to see the ancients studied for their matter, as well as for their language,” he was articulating the dominant view among members of the Manchester Lit and Phil in its early years. Yet, we should be careful when interpreting close attention paid to the language of classical authors as evidence of pedantry. In a paper, already discussed, Samuel Harvey stresses the importance of careful textual emendation for ensuring that the works of ancient authors are as reliable as possible for those seeking to use them as sources of facts and examples in their research. Citing John Jortin’s *Life of Erasmus* (1758), he criticised the failure of “Wits and [...] fine Geniuses, real or pretended” to understand this point and lamented “that nothing hath more contributed to bring literature into contempt” than their tendency “to condemn as school-learning and pedantry, citations from Greek and Latin authors, and philological remarks.”⁷⁹

4.1. Research on the ancient world itself

Some papers delivered to the Manchester Lit and Phil were purely concerned with inquiries about the ancient world. Rosemary Sweet has highlighted not only the importance of classical antiquarianism to the Royal Society and the Lit and Phils, but also the “rigorous and systematic collection of data [...] and empirical observation” which characterised research in this area.⁸⁰ She describes how “antiquaries regarded their discipline as a science, one that was as rigorous in its critical approach to evidence as was natural history.”⁸¹ “Amongst both scholarly communities excessive speculation and theorisation was frowned upon,” writes Sweet, “the emphasis was upon reporting and describing.”

Arguments had to be supported with evidential proof and proper referencing and citation of authorities was crucial to both disciplines. In the history of the Newcastle Lit and Phil, produced for its centenary in 1893, we are told that, in the early years of the Society, “the antiquities of the district came in for a large share of attention.” In fact, the author continues, “there was scarcely a discovery of Roman remains during the first 20 years of the Society’s existence which was not communicated to the members at a monthly meeting.”⁸²

We are used to thinking of the ancient world in terms of its literature, history, moral philosophy, and archaeology. This reflects the decision of the academy today to place it firmly in the category of the humanities; another example of the dichotomising effect of the Quarrel metaphor. However, if we look more closely at the research undertaken by the Manchester Lit and Phil explicitly in relation to the ancient world, we see that there was an equal (if not greater) interest in understanding ancient knowledge about the natural world. A good example here is Richard Watson’s paper on “Orichalcum” in Vol. II of the *Memoirs* (1785), whose chosen topic is inspired by the writings of Cicero. Here we see the remarks of classical authors treated firmly as empirical evidence:

we have a proof, from the writings of *Cicero*, that the *Romans*, in his time, understood by the term *Orichalcum*, a metallic substance resembling gold in colour, but very inferior to it in value. He puts the following case: ‘whether, if a person should offer a piece of gold to sale, thinking that he was only disposing of a piece of *Orichalcum*, an honest man ought to inform him that it was really gold, or might fairly buy for a penny what was worth a thousand times as much.’⁸³

Yet while the topic is essentially ancient (What did Cicero and others mean by Orichalcum?), Richard Watson’s key interest in this paper is to correctly identify the mineralogical substance referred to by Cicero (which he asserts to be brass) and to prove that “the Romans knew the method of making brass, by melting together calamine and copper.”⁸⁴ It is clear he is also engaging in a comparative assessment of the ancient and modern knowledge of brass-making, and he confesses, “I am sensible, that in advancing this opinion, I differ from authors of great credit, who esteem the art of making brass to be wholly a modern invention.”⁸⁵ In other words, it would be incorrect (and anachronistic) to describe this paper as an exercise in classical studies (in the modern sense of the word). If it has to be classified, it would, I suggest, be best understood as an exercise in the history of the art of brass-making.

This interweaving of ancient and modern knowledge on topics closely connected with the industrial concerns of members of the Manchester Lit and Phil was a common occurrence. The paper by calico printer Thomas Kershaw, “On The Comparative Merit of the Ancients and Moderns with Respect to the Imitative Arts,” read on 19 February 1783, is one example;⁸⁶ “Remarks on the Knowledge of the Ancients Respecting Glass,” presented by the surgeon and Fellow of the Royal Society Dr William Falconer of Bath, on 17 December 1783, was another.⁸⁷ In May 1788, Falconer delivered another paper, entitled “Observations on the Knowledge of the Ancients respecting Electricity.”⁸⁸ Once again, this paper is not straightforwardly understandable as ancient history, for it is not simply concerned with what ancient authors thought or knew. At all points, the information about electricity which it is possible to discern from a careful reading of classical

authors is compared with current knowledge; it is used as a measuring stick to see how far knowledge has advanced.

The sense that modern authors still have not arrived at a secure and complete understanding of the phenomenon of electricity is clear from the cautious tone of Falconer's essay. "Some of its [electricity's] effects were observed by them [the ancients], but their observations led them to believe, that it was a peculiar property of certain bodies only, and not that it was, *as it now appears to be*, one of the most general and active agents of the natural system."⁸⁹ Ancient writers like Theophrastus are taken seriously on the subject of electricity and quoted at length; for example, Theophrastus's belief that cloudy amber is the form of amber that conducts the least electricity is carefully considered, before Falconer states cautiously, quoting a modern authority, "Dr Milner on Electricity,"⁹⁰ "the contrary is now thought to be the case, as the cloudy amber is thought to be the most strongly electric *per se*."⁹¹ Even though Theophrastus's conclusions are not ultimately endorsed, the classical author is still very much part of the conversation. In some cases, it appears, there is relatively little difference between the state of knowledge in ancient times and when Falconer was writing. He records Plutarch observing "that balls of fire were seen to rest on the points of soldiers' spears"⁹² in relation to the effects of lightning, and then continues,

we know, that in our own times, in the Mediterranean sea, it is common for balls of fire to rest on the rigging of the ships, which appearances were formerly called by the names of Castor and Pollux; and in later times, the fires of St Helmo, and are thought to foretell good weather.⁹²

Thomas Cooper, a calico printer in Bolton and future chemistry professor in the U.S.A., uses ancient sources similarly, to assess the relative stage of development reached by contemporary painters and calico printers in a paper titled "Observations on the Art of Painting, among the Ancients," read before the Society on 21 December 1785.⁹³ It is a belief in the fundamental sameness of human nature across the ages that underpins his belief in the value of ancient testimony. "In ascertaining [. . .] the degree of credit, due to the praises bestowed on any performance in a branch of the Fine Arts", he writes, "we must take into consideration the general state of the art at the time, and the competence of the person who bestows the praise."⁹⁴ "No slight degree of probability," he continues,

may be attained on both these points, by attending to a circumstance not generally noticed, viz. that in an advanced state of the art, and when the observer is acquainted with his subject, the praise will seldom be given in loose, general and comprehensive expressions, but the terms in which it is conveyed will be characterised and determinate, and often technical [. . .] [H]is praise may fairly be adopted in its full extent, and regarded as evidence upon the point in question.⁹⁵

In line with Samuel Harvey's comments, discussed above, Cooper notes that his method of "crowding the page with a multiplicity of quotations and references" from ancient authors would be dismissed as "pedantry" by some. In reality, he writes, it is the only method consistent "with my design of collecting, in a small compass, all the material facts upon the subject, and advancing none but in conjunction with the authority upon which it rests."⁹⁶

5. History as empirical method

What links all such papers is a conscious comparison of ancient and modern knowledge. The boundaries are clearly drawn, and yet this is not another exercise in the old Quarrel. Arguments in these papers are rarely framed in terms of explicit rivalry between ancient and modern authors. As the titles express, the intention is to present and assess (through reference to relevant classical authors) the extent of knowledge in a particular subject in the ancient world, and to what degree more recent authors had added to (or indeed declined from) that level. I would suggest that this was a conscious and deliberate exercise in history as empirical method; something explicitly recommended by Bacon in *On the Advancement of Learning* and his *Novum organum* when he insisted that his “new philosophy” (based on observation and experimentation) could only proceed once a thorough “history of learning” had been produced: in other words, a full, evidence-based analysis of everything that had previously been discovered and known in every branch of learning.⁹⁷ While Bacon is still frequently hailed as *the* pioneer of modern natural science,⁹⁸ Robin Valenza and others have shown that, while Bacon certainly developed a new empirical method, he did not intend it to be restricted to the natural world but rather to be used across all serious fields of inquiry including questions of human language, mind, and culture.⁹⁹ Moreover, when explaining this point, Bacon himself claimed that Aristotle’s logic had also applied across all domains of knowledge. “It may be asked,” Bacon wrote,

whether I speak of natural philosophy only, or whether I mean that the other sciences, logic, ethics, and politics, should be carried on by this method. Now I certainly mean what I have said to be understood of them all; and as the common logic, which governs by the syllogism, extends not only to natural but to all sciences; so does mine also, which proceeds by induction, embrace everything. For I form a history and tables of discovery for anger, fear, shame, and the like; for matters political; and again for the mental operations of memory, composition and division, judgement and the rest; not less than for heat and cold, or light, or vegetation, or the like.¹⁰⁰

Bacon is often thought of as the empiricist *par excellence*, dismissing the authority of written texts and classical authors, in particular. While he did reject the version of Aristotle’s syllogistic logic used by scholars in the ancient universities, he expressed the need to examine critically the classical authors (including Aristotle) to find out what they knew in each branch of knowledge. Such an examination was vital if the “histories” and “tables of discovery” in the many areas of learning specified by Bacon were to be filled up. It is worth concentrating on Bacon’s use of the term “historical.” I would argue that it best captures what he understood to be the essence of his inductive method. “[A]ll of this,” he writes, referring to an examination of what was already known in the different branches of knowledge, “I would have handled in a historical way, not wasting time, after the manner of critics, in praise and blame, but simply narrating the fact historically, with but slight intermixture of private judgment.”¹⁰¹ As Brian Wormald has argued, this was to be the foundation upon which the “new science” would be built and without which it could not be established. Highlighting Bacon’s statement that “Knowledges are as pyramides whereof history is the basis,”¹⁰² Wormald writes that, for Bacon, science “must be founded on historical data whether of the human or the natural kind.”¹⁰³ History is

likewise mentioned by Gaukroger as one of the most prominent drivers of naturalisation: the conversion into empirical form of questions previously posed in non-empirical form.¹⁰⁴

Bacon makes the point himself when discussing the difference between reading the individual works of the Church Fathers and reading them systematically as part of a critical and “scientific” history of the Church. “For the works of St Ambrose or St Augustine will not make so wise a bishop or divine as a diligent examination and study of ecclesiastical history.” In the same way, a scientific “history of learning would be of like service to learned men” and the critical, contextual analysis of ancient authors would be a crucial part of this.¹⁰⁵ Bacon used a metaphor from ancient Rome to explain what he meant. Ancient authors should be treated as “consuls” who advise, rather than “dictators” who compel:

[K]nowledge derived from Aristotle, and exempted from liberty of examination, will not rise again higher than the knowledge of Aristotle [. . .] let great authors have their due, as time, which is the author of authors, be not deprived of his due – which is, further and further to discover truth.¹⁰⁶

History as empirical method was pioneered by Bacon and was widely employed by early members of the Manchester Lit and Phil across all subjects in their research. In this regard, they were not alone. Palmira Fontes da Costa has stressed the efforts undertaken at the Royal Society in the eighteenth century to “establish and maintain a repository of particular experiences” as part of a “Baconian ‘programme’” across a wide range of research topics.¹⁰⁷ Several of the Manchester Society’s early members were F.R.S. and it is likely the organisation and publications of the Manchester Lit and Phil were to some extent modelled on those of the Royal Society. Scottish universities, which, as we have seen, also formed part of the wider intellectual network of the Manchester Society, were also seen to pursue Baconian induction across all subjects in their curriculum. In 1810, Sydney Smith, Richard Payne Knight, and John Playfair wrote in the *Edinburgh Review* of Scottish students cultivating “that knowledge which is derived, by induction, from experience and observation.” “It is plain,” they continued, “that where the Organum of Aristotle is appealed to once, the Organum of Bacon should be consulted a hundred times.”¹⁰⁸

In papers delivered by members in the early years of the Manchester Lit and Phil, we frequently encounter explicit references to Bacon’s method and the need to treat ancient authors as sources of empirical evidence. In a paper presented to the Society on 14 May 1784, “On the Pursuits of Experimental Philosophy,” Thomas Percival begins by quoting Bacon’s *Novum organum* to the effect that “the order of nature” refers to both things and the human mind (*re vel mente*).¹⁰⁹ He is keen to correct misconceptions about Baconian induction, in particular the notion that it comprises “mere experimental amusements” with “those who are engaged in such pursuits, deeming nothing demonstration, that is not made ocular.”¹¹⁰ While condemning “the futility of the syllogistic mode of philosophizing, instituted by [. . .] Aristotle” and opposing “Lord Verulam [Bacon], the brightest luminary of science, [. . .] that reverence for speculations, purely intellectual, by means whereof men have withdrawn too much from the contemplations of nature, and the observations of experience,” he repeats Bacon’s views about the value of classical authors as sources of empirical knowledge, when read in the right way.¹¹¹ He notes

Bacon's own endorsement of the Greek philosopher Heraclitus, who "gave a just censure, saying, men sought truth in their own little world, and not in the great and common world."¹¹² In contrast to the syllogisms of Aristotle, Percival wrote, "the improved species of logic [...] first recommended and introduced [...] by Lord Verulam," is dependent on a knowledge of what has previously been written. "It is obvious," he declared, "that the force of this inductive method of reasoning must depend on the advancement, which has been made, in the different branches" of knowledge:

Indeed, it presupposes a store of particular facts, gradually accumulated, but sufficiently ample, and fit for reduction into their proper classes. Time and observation will be continually diminishing the number, and consequently enlarging the boundaries of these classes, by discovering other relations between them, and pointing out the connection of phaenomena, deemed, at first, distinct and independent.¹¹³

This is the role of the history of learning recommended by Bacon; it comprises the foundation upon which future discoveries are to be made. Before we can proceed, we must first know where we stand.

6. "Scientific" histories of learning in Manchester

In the final section of this article, I will discuss a range of papers delivered to the Manchester Lit and Phil in the first twenty years of its existence which evince this way of treating classical authors: as sources of empirical evidence for constructing "scientific" histories of learning in different areas of knowledge.¹¹⁴ One such paper looks at the history of physiognomy and was delivered before the Society by the calico printer Thomas Cooper. Endorsing Bacon's method, Cooper concludes that the boundaries of knowledge will be extended only by "contenting ourselves with slow but sure advances, and by relying on fact and experiment in preference to conjecture and hypothesis."¹¹⁵ From his manner of proceeding in this paper, it is clear that, for Cooper, ancient authors, carefully studied, can furnish many valuable facts regarding what he terms "the science of physiognomy;" a species of inquiry, he laments, "which though practised by Pythagoras, defended by Socrates, approved by Plato, and treated by Aristotle, is hardly mentioned at present, but in conjunction with magic, alchemy and judicial astrology."¹¹⁶ Proceeding with a detailed analysis of references to physiognomy in ancient authors, he concludes that, "in the time of Socrates, it appears not only to have been studied as a science, but adopted as a profession."¹¹⁷ He praises Aristotle's work on physiognomy, claiming it has "served as a foundation for almost every physiognomical treatise that hath since been published."¹¹⁸ He identifies Theophrastus as composing a "distinct treatise on a most important branch" of physiognomy

which evinces such a degree of accurate observation, and lively description as will preserve it in the rank of classical performances so long as, the science of man, and the prominent features of human society, shall continue to be regarded as objects of attention.¹¹⁹

Cooper notices a long list of Roman writers on physiognomy as well including Cicero, Sallust, Suetonius, Seneca, Pliny, Aulus Gellius, Petronius, Plutarch, and others.¹²⁰ He identifies his own work as an exercise in "the history of human learning" such as Bacon called for. In this instance, the history of physiognomy, in the mind of Thomas Cooper, helps to mount a defence of it in the present, by highlighting that more is

known than many modern writers are aware of. In particular, he complains of what he considers inadequate accounts of the current state of the science in the *Encyclopaedia Britannica* and *Chambers's Dictionary*.¹²¹

A similar approach can be seen in a paper from the same volume of the *Memoirs*, "Observations concerning the vital principle" by the Scottish physician and head of the Manchester Infirmary, John Ferriar.¹²² In this paper, Ferriar seeks to challenge the growing influence within medicine of pneumatology, a theologically inspired theory which held that the basic physiological processes of human bodies derive from an invisible and immaterial force implanted by God. He begins his paper with the reflection that while "[t]he immateriality of the soul was admitted by the most ancient philosophers," they struggled to explain "the reciprocal action of the soul and body on each other, in the phaenomena of sensation and voluntary motion [. . .] on that supposition."¹²³ The works of Plato, Pythagoras, the Stoics, Aristotle, and Cicero are marshalled to challenge the argument several "eminent physiologists of [his] own times," including Robert Whytt, Albrecht von Haller, Alexander Monro, and William Smith, were making in favour of "the vital principle."¹²⁴ "If the living power be supposed to be an immediate act of the Deity," he writes,

this is liable to still stronger objections; for the consequence would be, as it is urged by one of Cicero's speakers, *cum miseri animi essent, quo plerisque contingerit, tum Dei partem esse miseram, quod fieri non potest*. If it be said that the living principle, on this hypothesis, is the connecting medium between the mind and the body, this supposes the Deity to act subordinately to the human mind, which cannot be admitted.¹²⁵

Having established, to his satisfaction, the state of current knowledge through an extensive and detailed analysis of ancient and modern writers, Ferriar proceeds to discuss his own very recent experiments on animals which attempted to discover, in particular, the role of blood in preserving life. It is interesting that, in these experiments, he describes himself as following not so much in the footsteps of Harvey and Hunter but of Galen.¹²⁶

The use of history as empirical method, to establish the current state of knowledge after Bacon's model, is visible in Lit and Phil papers concerned with a wide range of different questions. These included papers dealing with areas of direct professional interest to members of the Manchester Society, for example, in the art of dying. As with papers on other topics, the impetus for an exploration of what ancient authors knew about the chemistry and processes of dying came from the belief that the current level of knowledge and expertise was not yet secure or complete. As the chemist Thomas Henry put it in his 1790 paper "Considerations relative to the Nature of Wool, Silk, and Cotton," "Much room is [. . .] still left for the improvement of the art."¹²⁷ Aligning himself with Bacon's belief in the value of history as empirical method, Henry expresses himself as follows: "While men do not understand the grounds on which they should proceed, many errors must arise, many needless materials must be employed, and much expense, which might be spared, must be incurred."¹²⁸ To rectify this situation for the art of dying, he promised to lay before the Society not merely "such facts as I have been able to collect, and observations I have had opportunities of making," but also "information, as I have extracted from the best writers on the subject," both ancient and modern. All this was with a view to forming "a just theory of dying; and especially of those processes where mordants are employed."¹²⁹ While acknowledging his debt to

modern writers on the subject (he mentions, in particular, Heller, Macquer, d'Aphigny, and Berthollet), Henry especially recommends what he terms Edward Hussey Delaval's "ancient history of dying" "prefixed to his ingenious treatise on light and colours," which had been presented to the Manchester Lit and Phil some five years previously.¹³⁰ So impressed was he by Delaval's study of ancient authors (which will be considered in more detail below) that he "could not refrain from relating" Pliny's "description of the art of what is now called calico printing."¹³¹

Entitled "An Experimental Inquiry into the Cause of the Permanent Colours of Opake Bodies" and having nothing ostensibly to do with ancient history, Delaval's paper makes the same case for a critical history of learning in the particular field in which he was working in order to establish on an empirical basis what was already known. "In proportion as the Principles of any Science are unknown or misconceived, the advancement of the Arts and Manufactures, which depend on them, must of course be impeded: for, without those guides, no addition or improvement can be attained."¹³² He justifies his considerable attention to the ancient history of dying as follows: "So far, indeed, are we from having advanced towards a state of perfection, that if we cast our views back to the remotest regions of Science, we shall find, from such a retrospect, that the most ancient nations possessed an excellence in all those Arts, which the ablest moderns cannot dispute with them."¹³³ Ancient paintings which survive are treated similarly as evidence through reliable contemporary witnesses. What is particularly instructive about the way in which Delaval handles ancient authors is his explicit insistence that he is not resorting to them "to advert to their condition at that period [. . .] nor to consider them in any other respect, than that which regards the beauty, and durability, of the colours [used in dying], abstracted from any other circumstances whatsoever."¹³⁴ In other words, he was treating the ancient authors he cited not as sources of information about the ancient world *per se*, but only for the raw facts about colours, dyes, and processes which could be used to contextualise (and potentially augment) existing knowledge.¹³⁵

Other papers, while not pursuing a comprehensive "history of learning" of their particular area of interest, nonetheless drew frequently on ancient authors for quotations, facts, and examples to support their argument. One such paper, by Samuel Argent Bardsley, appears in Vol 5, Part 1 of the *Memoirs* (1798) and offers readers "Cursory remarks, moral and political, on party-prejudice."¹³⁶ Arguing that party prejudice has been a consistent feature of human behaviour throughout history, Bardsley begins by setting out myriad examples of party feeling in the ancient world. He consults Thucydides, Caesar, Plutarch, Sallust, and many others for this purpose as well as to illustrate his more general points.¹³⁷ "Amidst the horrors and confusion of a revolution or a sedition," he writes,

the voice of moderation and humanity will have little chance of being heard. In those turbulent periods, the most settled habitudes and affections undergo a total transformation. The admirable description, by Thucydides, of the sedition at Corcyra, affords a melancholy but instructive lesson of the change wrought in men's minds by the spirit of party.¹³⁸

In a paper entitled "Observations on Longevity" by Anthony Fothergill, read to the Society on 15 January 1783, examples of long-lived persons from antiquity were included

as part of detailed observational tables of the longest-lived individuals who were known.¹³⁹ These tables listed such facts as “Names of the Persons,” “Age,” “Place of Abode,” “Living or Dead,” and “Where recorded”; alongside “James Hayley, 112, Middlewich, Cheshire, Died March 17, 1781” etc., there is also recorded, “Hippocrates, Physician, Island of Cos” with “Lynche on Health, Ch. 3,” specified as the scholarly reference for this particular example, showing once again the widespread tendency for researchers in all areas of knowledge, including natural sciences and physiology, to make empirical use of ancient authors.¹⁴⁰ In the commentary on the tables, the paper begins with reflections on life expectancy in the reign of Vespasian before moving to a discussion of conditions in contemporary Cornwall.

7. Conclusion

A detailed consideration of the ways in which classical authors were used within the researches of early members of the Manchester Lit and Phil raises important questions about how we should think about empirical method and scientific research in late eighteenth- and early nineteenth-century Britain. Frequently understood as primarily engaged in researching natural knowledge, we have seen that the members of the Manchester Lit and Phil concerned themselves with a wide range of subjects across all branches of knowledge. Crucially, classical authors were drawn upon, with due consideration for their historical context, as sources of empirical evidence, facts, and examples across all species of inquiry, from investigations into the colours of opaque bodies and human life expectancy to the essential characteristics of poetry and the origins of party prejudice. It is possible to identify a common approach – “history as empirical method” – used in a wide range of papers, which, I have suggested, was developed from Bacon’s call for a “scientific” “history of learning” in his *On the Advancement of Learning* and *Novum organum*. Beyond the specific context of the Lit and Phils, the arguments presented here should provoke wider questions about the kinds of materials historians include within their understanding of what constituted valid and authoritative sources for scientific research in the late eighteenth and early nineteenth centuries. This involves rethinking not merely the limits imposed on the ways in which classical authors were drawn upon (and the types of inquiry which made use of them), but rather our very understanding of what “science” meant in this period. While the contrast between “classical learning” and “modern science” was articulated at the ancient universities of Oxford and Cambridge, no such fundamental contrast was made in other institutional spaces, such as the Manchester Lit and Phil. Indeed, as we have seen, drawing on Bacon’s own insistence that his inductive method should apply across all fields of knowledge, early members of the Society interpreted “science” as referring to any systematic inquiry utilising an empirical approach. In other words, if classical authors were read “scientifically,” then they could be considered valid sources for research.

In turn, we should also rethink what we mean when we refer to “classical studies” and “classical scholarship.” While Lit and Phil members did engage in research specifically about the ancient world (and drew on classical authors as part of this), the vast majority of papers which used classical authors did so in relation to topics and areas of inquiry which had nothing to do with researching conditions in ancient Greece or Rome. Often, there were explicit comparisons drawn between the perceived state of knowledge

in a particular field in the ancient and modern worlds, in an attempt to gauge more accurately the current state of knowledge; on other occasions, classical authors were simply referenced as authoritative sources of information on a wide range of questions without a specific discussion of conditions in the ancient world.

Finally, these findings should encourage reflection on the ways in which we write the history of knowledge today. Too often we tend to write semi-isolated histories of science, histories of humanities, and histories of social sciences which reflect the priorities, categories, and hierarchies of the contemporary academy, rather than the views and perceptions of the times being studied. As we have seen in this article, “science,” “classical learning,” and even “history” itself were invested with meanings quite different from those we give them today by the early members of the Manchester Lit and Phil. This realisation should make us strive for historically more accurate and nuanced understandings of these terms in the specific contexts in which we research them.

Notes

1. Gaukroger, *The Emergence of Modern Scientific Culture*, 20.
2. *Ibid.*, 19.
3. See, for example, Gaukroger, *The Emergence of Modern Scientific Culture*; Turner, *Between Science and Religion*; Brooke, *Science and Religion*; Brooke and Cantor, *Reconstructing Nature*; Dixon, *Science and Religion*.
4. Spaight, “A Social History of Truth”, 123. The motto of the Royal Society is often mistranslated as “There is nothing in words” and is assumed to set up an opposition between facts based on direct experience and words in books; taken from Horace, *Epistles* 1.1.14, the whole quotation is “*Nullius addictus judicare in verba magistri*”, which translates: “I am not compelled to swear to any master’s words”. As such, it is not a wholesale rejection of the authority of written words, but rather an injunction to think for yourself and to subject all accounts written by others to appropriate scrutiny and criticism. See Sutton, “Nullius in Verba’ and ‘Nihil in Verbis”’.
5. *Ibid.*, 123.
6. *Ibid.*, 123.
7. Anderson, “Decolonizing Histories in Theory and Practice”, 371.
8. For a full account of the late seventeenth-century Quarrel, see Levine, *The Battle of the Books*.
9. Newman, *The English Universities*, xxxiii–xxxiv, cited in Yeo, *Defining Science*, 209.
10. Yeo, *Defining Science*, 214.
11. The history of classical education in nineteenth-century England has tended to focus on formal educational institutions such as the public schools and ancient universities. See, for example, Stray, *Classics Transformed*; Smith and Stray, *Teaching and Learning in Nineteenth-Century Cambridge*; Hallett and Stray, *British Classics Outside England*; Stray, *Oxford Classics*; Stray, *Classics in Britain*.
12. [Lyell], “Scientific Institutions”, 152–3, 157. It is worth noting here Lyell’s choice of the word “arts”, which highlights the connections of some provincial institutions to the Society for the Encouragement of Arts, Manufactures and Commerce (later the Royal Society of Arts), founded in 1754.
13. The history of academic knowledges has tended to reflect the disciplinary distinctions of the late twentieth- and early twenty-first-century Western academy with influential sub-divisions, including the history of science, history of medicine, and, more recently, history of humanities.
14. Thackray, “Natural Knowledge in Cultural Context”, 676.
15. Fawcett, “Self-Improvement Societies”, 19.

16. Jones, *Industrial Enlightenment*, 110, 113.
17. Mokyr, *The Enlightened Economy*, 33.
18. *Ibid.*, 48.
19. *Ibid.*, 9.
20. However, we should note that Arnold Thackray challenged the view that natural science was promoted in Manchester because of the need of industrialists to solve technological problems. Rather, he argued that science acted as a species of “social certification” and “legitimation” for “marginal men”, primarily medical men in Manchester. See Thackray, “Natural Knowledge in Cultural Context”, 678.
21. Orange, “Rational Dissent and Provincial Science”, 221.
22. Losh, *The Diaries and Correspondence of James Losh*, vol. I, 31, cited in Mee and Wilkes, “Transpennine Enlightenment”, 607.
23. Sweet, “Antiquaries and Antiquities in Eighteenth-Century England”, 196.
24. Mee and Wilkes, “Transpennine Enlightenment”, 599.
25. Miller, “Into the Valley of Darkness”; da Costa, *The Singular and the Making of Knowledge at the Royal Society of London in the Eighteenth Century*.
26. David Miller also notes a “gradual decline” in the level of overlap between the memberships and subject matter of the Society of Antiquaries and the Royal Society over the course of the later eighteenth century. Miller, “Into the Valley of Darkness”, 158.
27. Sweet, “Antiquaries and Antiquities in Eighteenth-Century England”, 12.
28. Mee and Wilkes, “Transpennine Enlightenment”, 607.
29. See, for example, Klancher, *Transfiguring the Arts and Sciences*.
30. Jardine, “Writing off the Scientific Revolution”, 312.
31. *Memoirs of the Literary and Philosophical Society of Manchester*, vol. 1, xii–xiii. It is a sign of how far the Lit and Phils were from focusing solely on natural science and the technological needs of the Industrial Revolution that the vast majority placed “literature” first in their name. The Leeds Philosophical and Literary Society (founded 1819) is a notable exception. It is also worth noting that “philosophy” in the designation “Lit and Phil” did not necessarily refer exclusively to natural philosophy. Moral and political philosophy were also subjects of conversation and the word “philosophy” continued to retain its older sense of any systematic study, more akin to the German *Wissenschaft*, well into the nineteenth century.
32. On the importance of this division between the natural and the human world, “nature and culture”, in the structuring of knowledge in modernity, see Latour, *We Have Never Been Modern*, 3.
33. Cunningham, “Getting the Game Right”; see also Miller, “Into the Valley of Darkness”, 61; da Costa, *The Singular and the Making of Knowledge at the Royal Society of London in the Eighteenth Century*, 3.
34. Roscoe, “On the Comparative Excellence of the Sciences and Arts”, 244; 246.
35. Harvey, “Observations on Alphabetical Characters”, 148.
36. Bergwik and Holmberg, “Concluding Reflections”, 294.
37. Gaukroger, *The Natural and the Human*, 8.
38. *Ibid.*, 329.
39. Roscoe, “On the Comparative Excellence of the Sciences and Arts”, 249–250.
40. Henry, “On the Advantages of Literature and Philosophy in general”, 17.
41. *Ibid.*, 18.
42. Barnes, “On the Affinity subsisting between the Arts”, 73.
43. *Ibid.*, 74.
44. *Ibid.*, 72.
45. Barnes, “On the Nature and Essential Characters of Poetry”, 56.
46. Barnes, “On the Affinity subsisting between the Arts”, 74.
47. *Ibid.*, 73.
48. *Ibid.*, 75.
49. Percival, “Speculations on the Perceptive Powers of Vegetables”, 114.

50. For a broader discussion of shared processes and procedures (including those for ensuring the validity and credibility of evidence presented in research papers), see William C. Lubenow's discussion of what he terms "commensurability" or "like-mindedness" shared across learned societies in nineteenth-century Britain. See Lubenow, *Only Connect*.
51. Shapiro, "History and Natural History in Sixteenth- and Seventeenth-Century England", 25–6. See also Shapiro, *A Culture of Fact*.
52. There are noticeable similarities between the governing statutes of the Manchester Lit and Phil (and other provincial societies) and those of the Royal Society; the arrangements for selecting papers for publication and the declaration that the authors alone (and not the society) were responsible for what they wrote also mirror closely those in operation at the Royal Society. As Thackray tells us, of the 588 members of the Manchester Lit and Phil he included in his prosopographical analysis in the first 70 years of the society's existence, some 31 (5.3%) were F.R.S. This included many of the society's officers. See Thackray, "Natural Knowledge in Cultural Context", 707–8.
53. Gregory, "On the Uses of Classical Learning", 128.
54. *Ibid.*, 109.
55. *Ibid.*, 109.
56. *Ibid.*, 127.
57. *Ibid.*, 129. This reference to continental scholarship likely reflects the important connections some of the more prominent members of the Manchester Lit and Phil enjoyed in its early years, with scholars based in Germany and the Netherlands in particular, through having completed their own studies there.
58. *Ibid.*, 129.
59. On the figure of the university pedant, including its role in explicitly gendered criticism and the language of effeminacy, see Ellis, *Masculinity and Science in Britain, 1831–1918*, 28–38.
60. *Ibid.*, 129.
61. Thackray, "Natural Knowledge in Cultural Context", 690. On dissenting academies, see Rivers and Burden, *A History of the Dissenting Academies in the British Isles, 1660–1860*.
62. Jardine, *Outlines of Philosophical Education*, v, cited in Morris, "A Manly Desire to Learn", 39.
63. See [Playfair], "Traite de Mechanique Celeste. Par P.S. La Place"; [Payne Knight], "The Oxford Edition of Strabo"; [Smith], "Edgeworth's Professional Education"; [Payne Knight, Playfair, and Smith], "Calumnies Against Oxford"; [Sandford], "Classical Education". On the *Edinburgh Review* attacks on Oxford, see Stray, *Classics Transformed*, 24; Ellis, *Generational Conflict and University Reform*, 86–8; 118–23.
64. [Sandford], "Classical Education", 303.
65. [Payne Knight, Playfair, and Smith], "Calumnies Against Oxford", 167.
66. [Smith], "Edgeworth's Professional Education", 51.
67. [Payne Knight, Playfair, and Smith], "Calumnies Against Oxford", 183.
68. Barnes, "A Plan for the Improvement and Extension of Liberal Education in Manchester", 19.
69. *Ibid.*, 31.
70. *Ibid.*, 38.
71. On the curricula of dissenting academies, see Rivers and Burden, *A History of the Dissenting Academies in the British Isles, 1660–1860*.
72. Roscoe, "On the Comparative Excellence of the Sciences and Arts", 254.
73. Gregory, "On the Uses of Classical Learning", 130.
74. Gisbourne, "On the benefits and duties resulting from the institution of societies for the advancement of literature and philosophy", 72.
75. *Ibid.*, 76.
76. Walker, "A Defence of Learning and the Arts, against some charges of Rousseau", 446.
77. *Ibid.*, 457.
78. Roscoe, *The Works of Jonathan Swift*, vol. 5, 581.
79. Harvey, "Observations on Alphabetical Characters", 156.

80. Sweet, *Antiquaries*, 9. Just as the Royal Society's *Philosophical Transactions* in these years were "peppered with papers on Roman roads, Roman coins [...] and [...] points of classical etymology, so the Lit and Phils [...] heard papers on Roman roads [...] alongside meteorological observations, botanical notes or treatises on electrical experimentation" (10).
81. Sweet, "Antiquaries and Antiquities in Eighteenth-Century England", 196.
82. Watson, *The History of the Literary and Philosophical Society of Newcastle-upon-Tyne*, 153.
83. Watson, "On Orichalcum", 47.
84. *Ibid.*, 53.
85. *Ibid.*, 49.
86. Kershaw, "On the Comparative Merit of the Ancients and Moderns with Respect to the Imitative Arts", 405–12.
87. Falconer, "Remarks on the Knowledge of the Ancients Respecting Glass"; see examples of similar papers delivered before other Lit and Phils. James Yates gave a paper before the Literary and Philosophical Society of Liverpool on 7 February 1834 entitled "On the Use of Cotton, among the Ancients". See *Report of the Proceedings of the Literary and Philosophical Society of Liverpool, for 1844–45*, xx.
88. Falconer, "Observations on the Knowledge of the Ancients respecting Electricity". It was his son, William Falconer, who would go on to edit the edition of Strabo's *Geography* which was heavily criticised by Richard Payne Knight in the *Edinburgh Review* in July 1809. See Payne Knight, "The Oxford Edition of Strabo".
89. *Ibid.*, 278 (emphasis added).
90. Milner, *Experiments and Observations in Electricity*.
91. Falconer, "Observations on the Knowledge of the Ancients respecting Electricity", 279.
92. *Ibid.*, 290.
93. Cooper, "Observations on the Art of Painting; among the Ancients".
94. *Ibid.*, 534.
95. *Ibid.*, 533.
96. *Ibid.*, 597.
97. See Bacon, *De dignitate et augmentis scientiarum*, 431–2.
98. See, for example, Dear, "What is history of Science the history of?" which treats Bacon wholly in terms of his reflections on natural philosophy. *The Proficiency and Advancement of Learning* is only discussed in relation to natural philosophy; cf. Daston and Galison, *Objectivity*, 211, where they stress Bacon's contrasting the "dynamic advance of modern natural knowledge" with "the stasis of ancient learning".
99. See, for example, Valenza, *Literature, Language, and the Rise of the Intellectual Disciplines in Britain*, 1; Wormald, *Francis Bacon*, 218.
100. Bacon, *Novum organum*, 299.
101. Bacon, *De dignitate et augmentis scientiarum*, 431.
102. Bacon, *The Proficiency and Advancement of Learning*, 95.
103. Wormald, *Francis Bacon*, 292.
104. Gaukroger, *The Natural and the Human*, 119.
105. Bacon, *De dignitate et augmentis scientiarum*, 431–2.
106. Bacon, *The Proficiency and Advancement of Learning*, 85.
107. da Costa, *The Singular and the Making of Knowledge at the Royal Society of London in the Eighteenth Century*, 7.
108. [Payne Knight, Playfair, and Smith], "Calumnies Against Oxford", 162.
109. Percival, "On the Pursuits of Experimental Philosophy", 326.
110. *Ibid.*, 326.
111. *Ibid.*, 326–7.
112. *Ibid.*, 327.
113. *Ibid.*, 339.
114. Lorraine Daston and Peter Galison point to this being a wider tendency among writers in the second half of the eighteenth century and early years of the nineteenth. "Between circa 1750 and 1840, steady stream of histories of various sciences poured from the

- presses, all purporting to demonstrate the existence and extent of progress in those disciplines.” See Daston and Galison, *Objectivity*, 211.
115. Cooper, “Observations respecting the History of Physiognomy”, 408–62.
 116. *Ibid.*, 409.
 117. *Ibid.*, 414.
 118. *Ibid.*, 417.
 119. *Ibid.*, 418.
 120. *Ibid.*, 422–3.
 121. *Ibid.*, 429.
 122. Ferriar, “Observations concerning the Vital Principle”, 216–41.
 123. *Ibid.*, 217.
 124. *Ibid.*, 216.
 125. *Ibid.*, 227.
 126. *Ibid.*, 227.
 127. Henry, “Considerations relative to the Nature of Wool, Silk, and Cotton”, 349.
 128. *Ibid.*, 349.
 129. *Ibid.*, 349.
 130. *Ibid.*, 345–6.
 131. *Ibid.*, 346.
 132. Delaval, “An Experimental Inquiry into the Cause of the Permanent Colours of Opaque Bodies”, 132.
 133. *Ibid.*, 134–5.
 134. *Ibid.*, 136.
 135. *Ibid.*, 253.
 136. Bardsley, “Cursory Remarks, Moral and Political, on Party-Prejudice”.
 137. *Ibid.*, 13–14.
 138. *Ibid.*, 10–1.
 139. Fothergill, “Observations on Longevity”.
 140. *Ibid.*, 360.

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