

RESEARCH ARTICLE

# Presidential Address ‘Some years of cudgelling my brains about the nature and function of science museums’: Frank Sherwood Taylor and the public role of the history of science

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## Abstract

Frank Sherwood Taylor was director of the Science Museum London for just over five years from October 1950. He was the only historian of science ever to have been director of this institution, which has always ridden a tightrope between advocacy of science and advocacy of its history, balancing differently at different points in its history. He was also president of the BSHS from 1951 to 1953. So what happened when a historian got his hands on the nation’s pre-eminent public museum of science? To what extent did his historian’s training and instincts affect his policies whilst director, and with what effect in the longer term? Taking this exceptional case, I suggest, enables us to consider how museum accounts of the past of science relate to historiographies of science otherwise available in the culture. In this discussion, drawing on new archival research, I consider the role of history within a key policy paper he wrote in 1951. I analyse and contextualize its main themes before considering, by way of conclusion, his legacy.

My only – but quite good – excuse for lecturing is that you asked me to do so: my qualification is some years of cudgelling my brains about the nature and function of science museums

Frank Sherwood Taylor, address to the Museums Association Conference, 20 June 1951.<sup>1</sup>

How do particular accounts of the past of science come to circulate in public at different times? I argue that the public media of science – publications, museums, broadcasting and films – have been crucial sites for the construction and presentation of the history of science, each medium differing in significance in different periods, and for different publics. For general audiences, museums – not least the Science Museum, South Kensington – have been particularly significant as places of encounter with the past of science and

<sup>1</sup> Frank Sherwood Taylor, ‘The physical sciences and the museum’, *Museums Journal* (1951) 51(7), pp. 169–76; also address to the Museums Association Conference, 20 June 1951, MS Taylor 206 History of Science Museum Oxford.

technology. In this paper I take a particular moment in the Science Museum's history to explore key issues of the museum's account, specifically the case of Frank Sherwood Taylor, who was its director for just over five years from October 1950, dying in post in January 1956. He was the only historian of science so far to have been appointed director of this institution. He was also president of the British Society for the History of Science at the same time, from 1951 to 1953, the only president other than myself to have held office during his employment by the museum, though we may hope that more will follow in our footsteps.<sup>2</sup> For all of these reasons, Sherwood Taylor seems an apt subject for a presidential address by a historian of science and sometime president working at the Science Museum. If there is an element of autobiography here it comes from the fact that doing history in this organization, which is one of the nation's pre-eminent temples to science, has often seemed far from straightforward.<sup>3</sup> At the heart of that difficulty lie historiographical questions: what accounts of science and of its history have seemed true to the museum's directors and staff at different times? How have those accounts related to the museum's celebratory function of promoting contemporary and future science and technology? In short, my guiding question is: what *did* happen about the public presentation of science's history when a historian of science got his hands on the Science Museum?

### Frank Sherwood Taylor

Born in 1897, Sherwood Taylor was a late chemistry graduate, delayed by service in the First World War, who went on to develop serious historical interests, being awarded one of the first doctorates in the history of science, on ancient Greek alchemy, under Charles Singer at UCL in 1931.<sup>4</sup> He was one of the founders not only of the BSHS but also of the Society for the History of Alchemy and Chemistry, and for some time editor of *Ambix*. His career posts included early science teaching in secondary schools and at what later became Queen Mary College; historical work came to the fore with the directorship of the Oxford Museum of the History of Science from 1940 and that of the Science Museum.<sup>5</sup> In 1941 he became a prominent convert to Roman Catholicism, publishing and broadcasting about his faith.<sup>6</sup>

His brief tenure at the Science Museum was extraordinarily energetic. It is true that he merely inherited from his predecessor, Herman Shaw, the museum's hosting of the dramatic and influential Festival of Britain Science Exhibition. But he did make major innovations, including in audience study, where he approached the educational psychologist

<sup>2</sup> Robert Anderson, president from 1988 to 1990, left the Science Museum for the Royal Scottish Museum in 1984, having served in the Science Museum's Chemistry Department, latterly as keeper, since 1975.

<sup>3</sup> Timothy Boon, 'Parallax error? A participant's account of the Science Museum, c.1980–c.2000', in Peter Morris (ed.), *Science for the Nation: Perspectives on the History of the Science Museum*, Basingstoke: Palgrave MacMillan, 2010, pp. 111–36.

<sup>4</sup> Frank Sherwood Taylor, 'Greek alchemical texts in relationship to later Greek thought' (UCL), 1931. Some accounts have the thesis as early as 1924, but from context 1931 would seem to be the correct date. The source of the confusion may be his 1925 BSc thesis, 'The theoretical basis and practical methods of transmutation of metals as practised by the early alchemists before 800 A.D.'. See A.V. Simcock, 'Alchemy and the world of science: an intellectual biography of Frank Sherwood Taylor', *Ambix* (1987) 34(3), pp. 121–39, 124 and n. 18.

<sup>5</sup> Simcock, op. cit. (4), p. 129. See also Robert Bud, 'Modernity and the ambivalent significance of applied science: motors, wireless, telephones and poison gas', in Robert Bud, Paul Greenhalgh, Frank James and Morag Shiach (eds), *Being Modern: Science and Culture in the Early 20th Century*, London: UCL Press, 2018, pp. 95–129, 117.

<sup>6</sup> See Simcock, op. cit. (4), pp. 132–3. Amongst Sherwood Taylor's books on religious themes were *Man and Matter: Essays Scientific & Christian*, London: Chapman & Hall, 1951; *The Fourfold Vision: A Study of the Relations of Science and Religion*, London: Chapman & Hall, 1945; *Two Ways of Life, Christian and Materialist*, London: Burns Oates, 1947. Broadcasts included *Study and Belief*, Tuesday 8 April 1947, 22:00, BBC Home Service, and *Belief and Unbelief*, Tuesday 18 November 1947, 22:15, BBC Home Service.



**Figure 1.** Frank Sherwood Taylor (right) with minister of education George Tomlinson on the occasion of the opening of the Agriculture Gallery, July 1951. © Science Museum Group.

Philip Vernon to study children's responses to the museum.<sup>7</sup> He also promoted the expansion of its iconography collection, insisting on the purchase of Philip de Louthembourg's then unknown *Coalbrookdale by Night*, infuriating the deputy keeper of chemistry, who complained about its romantic and misleading depiction of metallurgy.<sup>8</sup> He curated exhibitions and during his time at South Kensington even delivered the Royal Institution Christmas Lectures.<sup>9</sup> This historian-director moved from the Museum of the History of Science in Oxford, an instrument-centred university institution with its emphasis on the early modern era. The Science Museum, by contrast, was a public museum known for its predominantly nineteenth- and twentieth-century technical museum collections in engineering, transport and the physical sciences. But his move into the modern era was by no means as strange as it might seem. Before he started at the Oxford museum, he had left the chemistry-teaching post at Queen Mary to pursue a career as the author of science textbooks, popular-science books including *Science Front*, 1939. History-of-science works included *The March of Mind: A Short History of Science* from the same year and the posthumous (1957) *A History of Industrial Chemistry*. His scholarly

<sup>7</sup> Kristian H. Nielsen, "'What things mean in our daily lives': a history of museum curating and visiting in the Science Museum's Children's Gallery from c.1929 to 1969", *BJHS* (2014) 47(3), pp. 505–38

<sup>8</sup> Scott Anthony, 'Ambition and anxiety: the Science Museum, 1950–1983', in Peter Morris (ed.), *Science for the Nation: Perspectives on the History of the Science Museum*, Basingstoke: Palgrave MacMillan, 2010, pp. 90–110, p. 94.

<sup>9</sup> Ceri Pitches, 'Threading through history: the vertical transmission of Davy, Faraday and Tyndall's lecture demonstration practices', *Science Museum Group Journal* (2016) 6(6), at <http://journal.sciencemuseum.ac.uk/browse/issue-06/threading-through-history> (accessed 7 May 2020).

publication record is also extensive, including eighteen papers in *Ambix* published from the mid-1930s, up to and throughout his Science Museum time.<sup>10</sup>

My account starts with why Sherwood Taylor's argument for history matters and a comparison of his statement of the museum's purpose with two influential earlier examples. I then turn to a close analysis of five aspects of his document 'Report on the Science Museum in 1951', which included ambitious statements about history. In a third section I analyse the terms used throughout the report and reach a tentative statement and characterization of Sherwood Taylor as a historian of science as expressed in his museum policy. My conclusion briefly discusses the fate of his arguments.

### Sherwood Taylor's case for history

My guiding question about a historian-director's influence on the public account of the history of science at the Science Museum is of more than local interest. Anna Mayer, writing about interwar Cambridge, has proposed that institution-based historiography 'makes visible the rationales of historiographical shifts, enabling us to engage in novel and concrete ways with the assumptions that underpin some ... practices that left a lasting legacy on the study of science'.<sup>11</sup> In the present case of the Science Museum, though, we are able to assay the account of science's past presented not simply to the few dozen historians of science then in the Academy, but to over a million visitors to the museum in 1951.<sup>12</sup>

When considering the historiographical slant of different science media, it is important to be sensitive to the specific qualities and grammars of each medium under consideration. The fact that an academic text proceeds within the conventions of word-on-page sequential argument and case studies, perhaps with illustrations, may set a standard for explicitness not enjoyed by film, radio, television or exhibition. But that should not detract from the fact that those other media also articulate accounts of science's past. Film and television use script, performance, sequence, camera angles, lighting and editing to construct such accounts. The possible historiographies, and indeed accounts of contemporary science also, are intrinsic to, and constrained by, the medium. And so we see that Sherwood Taylor's arguments for how science and its history should be conveyed within the museum were enmeshed in a set of 'grammatical' concerns about buildings, arrangements of collections and objects, the density of objects within displays, exhibition furniture, lighting and the rest, and how they were thought to relate to the museum's visitors of several kinds. For this reason, it is necessary for our argument to go beyond merely extracting his pronouncements on history and to consider how they were related to broader museum policy.

There is archival evidence of how, in this work as director, he looked in three directions: upwards towards his employers (in this case the Board of Education and the Museum's Advisory Council), downwards towards his staff (and principally senior staff) and outwards towards the audiences for their work. Most all, for this study there is a rich record in the

<sup>10</sup> John Christie comments that 'his thesis work with Singer had scholarly competence particularly in history of alchemy, and he was able to cover Chinese and Islamic alchemy as well as ancient Greek and European'; email to the author, 3 January 2023.

<sup>11</sup> Anna-K. Mayer, 'Setting up a discipline, II: British history of science and the "end of ideology", 1931-1948', *Studies in the History and Philosophy of Science* (2003) 35, pp. 41-72, 42-3.

<sup>12</sup> Visitor figures from director's quarterly report to Advisory Council, 8 January 1952, Science Museum Archives Z193/2 (hereafter Z193/2). For numbers of professional historians of science, Sherwood Taylor remarked, 'In this country we have one professorship partly directed to this subject and half a dozen lectureships and readerships, all comparatively newly founded'. Frank Sherwood Taylor, 'Presidential Address 1953: reflections on the writing of the history of science', *Bulletin of the British Society for the History of Science* (1954) 1, pp. 239-245, 243.

formal presentations to the museum's Advisory Council, whose function was 'not to run the Museum, but to advise the Minister (of Education)'.<sup>13</sup> Its membership was of senior administrators and scientists, many with industrial careers.<sup>14</sup> Tony Giffard, Earl of Halsbury, a distinguished industrial scientist, chaired it.<sup>15</sup> The only member with patent historical interests was Herbert Dingle, Sherwood Taylor's associate in the cabal that formed the BSHS, a physicist then occupying the chair in HPS at UCL. It is in the nature of formal meetings that papers must be prepared and discussions must ensue, and so the archives of these meetings provide an explicit account of how he was thinking in this period when the museum was still dusting itself down after its wartime closure and reopening during the financial austerity of the post-war years.<sup>16</sup> In this essay I supplement Sherwood Taylor's immanent account of science and history within these committee papers by reference to his short book *Concerning Science*, published the year before he became Science Museum director.<sup>17</sup> This provides a more explicit account of his views of science in relation to other aspects of culture, including history and faith.

### A new policy wrought in comparison with old

It is striking that Sherwood Taylor approached policy, even though he was so innovative, via the historian's approach of looking to the past of the museum to frame his view of its potential future. In the Advisory Council papers there are extensive references to the 1912 Bell report, which had set out ambitions for the Science Museum after its separation from the V&A in 1909, and to the 1923 annual report of the Advisory Council, when the museum had been preparing to move into its first purpose-built home, the familiar colonnaded building on Exhibition Road.<sup>18</sup> Let us take our cue from Sherwood Taylor and look at how the museum expressed its purpose at the two reference points he used and, in a recapitulation of his technique, compare them with his policy for the museum.

The statement of purpose from the Bell report in 1912 was:

So far as it is possible by means of exhibited scientific instruments and apparatus, machines and other objects, the Collections in the Science Museum ought to afford illustration and exposition of the various branches of Science within its field and of their applications in the Arts and Industries. The museum ought also to be a worthy and suitable house for the preservation of appliances which hold honoured place in the progress of Science or in the history of invention. Where objects that fall under these various categories are suitably arranged and displayed, visitors of widely different types find advantage in examining them.<sup>19</sup>

In brief: objects are the medium of the museum, whose subject territory is science and its applications. It has historical collections. Display makes objects valuable to visitors. The annual report of the Advisory Council for 1923 was much more focused on the approach for the individual galleries. It stated that

<sup>13</sup> Science Museum Advisory Council terms of reference, Z193/2.

<sup>14</sup> Minutes of Advisory Council, July 1951, Z193/2.

<sup>15</sup> Anthony, *op. cit.* (8), p. 96.

<sup>16</sup> See Roland Venable Vernon *et al.*, *Advisory Bodies: A Study of Their Uses in Relation to Central Government, 1919-1939*, London: Allen & Unwin, 1940.

<sup>17</sup> Frank Sherwood Taylor, *Concerning Science*, London: MacDonald, 1949.

<sup>18</sup> Sherwood Taylor used this as the basis for 'Report on the broad strategy of the Science Museum', presented to the 9 October 1951 meeting of the Advisory Council, Z193/2. On the Bell report see Tom Scheinfeldt, 'The first years: the Science Museum at war and peace', in Morris, *op. cit.* (8), pp. 41-60.

<sup>19</sup> Quoted in 'Present problems of the Science Museum', p. 6, Z193/2

the aim of the Science Museum is firstly to form in each group [of objects shown] a series of carefully selected objects representing the principal stages of development in the branch of science or technology which the group represents; and secondly to show a collection showing the current practice of the groups.<sup>20</sup>

The main innovation, compared with the Bell report eleven years before, was the centrality of the idea of ‘development’ to the museum’s ideology and displays. This, the museum’s core structural idea in this period, came to be written throughout its publications and displays between the wars and beyond, even if it was rarely explicitly stated in gallery texts. Its separation of the contemporary from the historical also functioned within this developmental ideology; here current technology was simply the apogee of the development seen in the existing collections.<sup>21</sup>

We may compare the purpose statement from Sherwood Taylor’s 1952 annual report, which focused more on the presentation of science in the context of the needs of visitors:

The Science Museum should bring before the public, in a pleasing and intelligible form, the principles and practice of science as such and of the particular branches of science within the Museum’s field, the applications of these sciences to the Arts and Industries, and the total effect upon the life of man. This is to be achieved by the exhibition of scientific instruments, apparatus, machines and any objects or representations that may contribute to these purposes ...<sup>22</sup>

New here, another twenty-nine years on, the key differences were a public to be pleased, and statements about the ‘principles and practice of science as such’, and their total impact on society.

### Report on the Science Museum in 1951: postwar development and present problems

I now turn to the route to that latter policy. In his first months in post, working with the deputy keeper of physics, David Follett, in his role as secretary to the museum’s Advisory Council, Sherwood Taylor deliberately made time to develop his policy on the museum’s approach to history within the context of his proposed general policy for the institution.<sup>23</sup> It is pertinent to our discussion that substantial reform schemes were important to Sherwood Taylor’s work practice; at the Museum for the History of Science in Oxford, he had proposed a very ambitious scheme for the expansion of teaching history of science. This had foundered shortly before his move to London, and had perhaps precipitated it.<sup>24</sup> After just nine months in office as Science Museum director in July 1951 he presented his eighteen-page ‘Report on the Science Museum in 1951’ to the first post-war meeting the Advisory Council. We may see this as his formal statement of intent. It was in its second part, ‘Present problems of the Science Museum’, that he laid out his thinking. This section is framed by the earlier quoted statement from the Bell report articulating the museum’s

<sup>20</sup> Board of Education, *Report for the Year 1923 on The Science Museum*, London: HMSO, 1984, p. 5.

<sup>21</sup> I plan to submit a paper exploring the pre-war grammar of Science Museum displays to *Isis* in 2023.

<sup>22</sup> Anon., *Science Museum Report of the Advisory Council for the Year 1952*, London: Science Museum, p. 29.

<sup>23</sup> On Follett’s role see *Report of the Advisory Council for the Year 1952*, op. cit. (22); anon., ‘Obituary: Sir David Follett’, *The Times*, 13 May 1982, p. 14.

<sup>24</sup> J.A. Bennett, ‘Museums and the establishment of the history of science at Oxford and Cambridge’, *BJHS* (1997) 30(1), pp. 29–46, 38.



**Figure 2.** The Science Museum's Electrical Engineering Gallery in 1937, embodying the developmental display model. © Science Museum Group.

purpose, and then uses Bell's headings to structure its exegesis (although, for the sake of clarity, I do not follow this sequence here).

For Sherwood Taylor, the Bell committee's statement of purpose could be allowed to stand, but it was, for him, problematic and insufficient, particularly its approach to science and history. It is in this problematizing tendency that we see the 'urbane intellectual', as Scott Anthony describes him, at work.<sup>25</sup> The framing and language throughout strongly feature problems and difficulties and suggest that he arrived at the museum with a rather different frame of mind from his immediate predecessors, all of whom had been internal applicants.

I consider here his explicit focus on history, his definition of science, his suggestions about how to organize the museum by historical period, the creation of a reserve collection for study by experts, and his arguments for the creation of galleries for the general public that would use vivid techniques to convey broad historical developments.

### **An explicit focus on history**

The document frequently returns to historical issues; starting on its first page proper, he asserted strongly that 'the Museum has to decide generally and in each case how far the

<sup>25</sup> Anthony, *op. cit.* (8), p. 194.

historical method is valuable'.<sup>26</sup> He was determined that the museum's historical treatment should go beyond collecting and displaying only objects 'which hold honoured place in the progress of science or the history of invention', such as Stephenson's *Rocket*, and he chose to extend Bell's recommendation that the museum should create 'a historical collection to illustrate the growth of Physics' to all of science and industry.<sup>27</sup> He resolved, 'It may be taken as agreed, then, that the historical treatment of Science and Technology is part of the Museum's duty: and, indeed ... its primary function of the illustration and exposition of these subjects cannot be performed without it'.<sup>28</sup> He amended the prewar language of 'lines of development' to, quite explicitly, 'historical treatment'. He argued from the growth of the discipline of history of science, saying that 'it may be noted that the organized study of the history of science has greatly increased since 1912, and that we should arguably go further in its prosecution than was recommended in the 1912 Report'.<sup>29</sup> He concluded, 'difficult though it be, our business is to show science and the scientific principles of industry as integrated by their past and present internal logic and also by the laws of their growth'.<sup>30</sup>

### Defining science

That language of 'internal logic' and 'laws of their growth' implies an internalist interpretation of science as a rational pursuit separate from the contexts of its production. Such a view is not surprising in a scientist-historian of his generation schooled in chemistry before undertaking his historical doctorate. He put the question of how to interpret science at the core of what the Science Museum should address:

Almost all our present-day problems concern the choice of methods for giving effect to these [Bell report] purposes; none the less it is open to us to question whether this statement of purposes includes all that the Science Museum ought to attempt ... the emphasis ... is on 'the sciences' whereas we feel the need to present 'science' as a method of thought and action.<sup>31</sup>

He developed his argument via a discussion of 'integration of display':

A principal difficulty of showing the relations of Science and Industry is our inheritance of the easy way of showing those subjects as a large number of separate collections. How is such a section as 'Glass technology' to be shown (1) to depend on Chemistry, Fuel-technology, and the dozen departments of Physics and Engineering (2) to contribute to building, insulation, chemical technology, optics and the like? The relationships are too many and complex to be solved by mere adjacency: cross references, if given, are rarely followed up. We have need here of a new technique.<sup>32</sup>

This argument against the museum's prevailing display organization by disciplines embodies the difficulties of presenting his conception of 'science as a method of thought

<sup>26</sup> Frank Sherwood Taylor, 'Report on the Science Museum in 1951' to Advisory Committee meeting, 11 July 1951, Z193/2, p. 6. He divided illustration and exposition into principles, subjects, items to be displayed, methods of display, and how the interrelated nature of science and industry might be shown.

<sup>27</sup> Sherwood Taylor, op. cit. (26), p. 12.

<sup>28</sup> Sherwood Taylor, op. cit. (26), p. 12.

<sup>29</sup> Sherwood Taylor, op. cit. (26), p. 12.

<sup>30</sup> Sherwood Taylor, op. cit. (26), p. 7.

<sup>31</sup> Sherwood Taylor, op. cit. (26), p. 6.

<sup>32</sup> Sherwood Taylor, op. cit. (26), p. 10.



and action' within the museum grammar of spatial display of objects separated into disciplines. It was also – perhaps unwittingly – to antagonize the museum's senior staff, for whom control of museum display spaces was the main site for the exercise of their power.<sup>33</sup> The standard account of his time at South Kensington is captured by Peter Morris and Robert Bud: 'Within a short time of his appointment at the Science Museum, Sherwood Taylor was in conflict with his most senior curatorial staff. Unlike them he was interested in the place of science in culture, in alchemy and in religion'.<sup>34</sup> I would argue that we don't know enough about the keepers to be confident that they were not concerned with culture, variant sciences or faith, although we shall encounter below some of their sophistication. But the fact that it was really controversial for him to question the museum's disciplinary organization is shown by the lengthy continuing discussion devoted to it in these documents. Neither continuation of pre-war allocations, nor an analysis of social and material significance of specific fields, nor their speed of growth, nor their interest and comprehensibility to the public could produce a satisfactory rationale. He alluded to prolonged discussions resulting in an assignment of space 'based simply (*and not quite unanimously*) on the opinions of the Director and Keepers, and might be seen very differently by others'.<sup>35</sup>

More philosophically he stated that,

Any science or industry can be regarded at any one time as a series of operations, the character of which is determined (i) by the constitution of things, expressed in our scientific laws, (ii) by human desires for knowledge or power, (iii) by the resources available for the achievement of those desires.<sup>36</sup>

His *Concerning Science* book, which was at pains to separate science from other aspects of culture, is more specific in presenting his philosophy of science, which is revealed to be a conventional empiricist account:

Science is knowledge obtained by (1) making observations as accurate, definite, relevant and verifiable as possible, (2) recording these intelligibly, (3) classifying them according to the subject being studied, (4) extracting from them by induction general statements (laws) which assert regularities concerning the whole class, (5) deducing other general statements from these, (6) verifying these statements by further observation, (7) propounding theories which connect and so account for the largest possible number of these laws.<sup>37</sup>

He addressed the question of experiment separately, arguing that its use 'is so important that what we have here called "science" is often, though incorrectly, termed "experimental

<sup>33</sup> This is well exemplified by the mid-1950s arguments over whether the top floor of the museum should be used for aircraft or for a planetarium; see David Rooney, "'A worthy and suitable house": the Science Museum buildings and the temporality of space', in Morris, op. cit. (8), pp. 157–75, 167–70.

<sup>34</sup> Peter Morris and Robert Bud, 'Obituary: Frank Greenaway', *Science Museum Group Journal* (2014) 1(1), at <http://journal.sciencemuseum.ac.uk/browse/2014/obituary-frank-greenaway> (accessed 7 May 2020). Scott Anthony's account is that Sherwood Taylor failed to make the necessary alliances with his senior staff, so that in making the appointment of his successor, Halsbury complained of the museum being like a 'rudderless ship'; Anthony, op. cit. (8), p. 96, quoting TNA CSC5/563, Halsbury to Snow, 12 May 1956.

<sup>35</sup> Sherwood Taylor, op. cit. (26), p. 17, my emphasis. The arguments continued: a sequence of memos in Z183 on 'Allocation of space to collections' is dated to a year later, in summer 1952.

<sup>36</sup> Sherwood Taylor, op. cit. (26), p. 7.

<sup>37</sup> Sherwood Taylor, op. cit. (17), p. 17.

science”. An experiment is simply the making of observations under conditions deliberately arranged so as to give the answer to a particular question.<sup>38</sup>

In the museum document he stated that the ‘inter-relationship of scientific law, human need, and human resources, developing over a period of years or centuries’, was to be the proper subject for museum displays of science and industry.<sup>39</sup> And, though he argued in the Advisory Council paper for the importance of scientific laws (including Boyle’s and Faraday’s), he conceded on practical grounds of space, staff and safety that the museum would not be able to educate visitors about them, even though he noted that Philadelphia’s Franklin Institute and Paris’s Palais de la découverte had shown this to be possible by having active programmes of lectures and demonstrations.<sup>40</sup> He rounded off this part of the argument by reasserting the centrality of object display, stating that ‘for the present, the Museum is not called on to provide an elementary education in science ... its chief work is to illustrate the development of the means of science and industry, namely apparatus and machinery’. With that word ‘development’, he continued the museum’s pre-war collecting and display practice.<sup>41</sup>

### Organizing the museum by historical period instead of by discipline

Referring to the difficulties created by disciplinary arrangement, Sherwood Taylor argued that ‘a major decision of policy is involved in the decision to treat early science and technology by subjects rather than periods’.<sup>42</sup> He suggested that it might be possible to organize the museum according to a historical principle: ‘we may as reasonably wish to ask “how did the eighteenth century fare with respect to science or the lack of it?” as to ask “what was electricity or chemistry or printing like in the eighteenth century?”’<sup>43</sup> He proposed that the museum could have a series of historical halls, starting with a ‘Hall of Primitive Science’, and include a “Hall of Seventeenth Century Science” and so on up to modern times’.<sup>44</sup> He argued, ‘Such an arrangement would be as logical as our current historical surveys of individual sciences’ and, nodding to display design, ‘would allow much of the material to be arranged in a background suitable to its period’. He also stated that the V&A had recently moved to a period-based approach ‘with very happy results’. But then he conceded, of his suggestion, that ‘its logic is historical rather than scientific which is perhaps inappropriate in a science museum’, which may well betray prior and unrecorded discussions.<sup>45</sup> But we should note this language of opposition between a historical and a scientific logic. He tentatively suggested two compromises, using his definition of science as ‘a method of thought and action’:

(1) to treat the prescientific period of thought and action concerning those matters that are now the subject of science in a separate gallery, and begin each of our separate collections at the period when science began to affect it, (2) to construct an introductory collection briefly to illustrate the state of science in each, leaving the separate subjects to be treated in the main collections. This has been essayed – though not fully – in the Children’s Gallery.<sup>46</sup>

<sup>38</sup> Sherwood Taylor, *op. cit.* (26), p. 25.

<sup>39</sup> Sherwood Taylor, *op. cit.* (26), p. 7.

<sup>40</sup> Sherwood Taylor, *op. cit.* (26), p. 7.

<sup>41</sup> Sherwood Taylor, *op. cit.* (26), p. 7.

<sup>42</sup> Sherwood Taylor, *op. cit.* (26), p. 13.

<sup>43</sup> Sherwood Taylor, *op. cit.* (26), p. 13.

<sup>44</sup> Sherwood Taylor, *op. cit.* (26), p. 13.

<sup>45</sup> Sherwood Taylor, *op. cit.* (26), p. 13.

<sup>46</sup> Sherwood Taylor, *op. cit.* (26), p. 13.

As it turned out, financial pressures ensured that the Children's Gallery continued to act as the museum's historical introduction, as Kristian Nielsen has shown had been amongst its original purposes in 1931.<sup>47</sup>

### Collecting, and a reserve collection for study by experts

Sherwood Taylor made a dramatic proposal for this museum, which until 1939 had shown virtually its entire collection. He stated the principal functions of a historical museum to be '(1) Preservation, whether of honoured relics or less spectacular material for historical studies; (2) Presentation to the public of science and technology as growing entities'.<sup>48</sup> In his mind, this translated into the need for a change of attitude towards collecting. The museum, he argued, 'has generally collected but little more than is likely to be able to be shown', unlike the other national museums that collected 'every significantly different variety of the objects in question. They do not show all of these, but keep the majority in reserve for study'.<sup>49</sup> He directly stated that 'the present Director questions this policy ... the Science Museum, as the national museum of science and industry, is the natural home for such collections'.<sup>50</sup> And so he pressed for the creation of reserve collections – not for the general audience, though:

The preservation of extensive historical collections is ... chiefly important to the historian, the scholar and the scientist desiring to make a survey of the origins of his subject, while the display of broad historical developments is chiefly required by the general public without specialized knowledge. The difference between their requirements is chiefly in respect of the quantity of material to be acquired, and its presentation.<sup>51</sup>

### Galleries for the general public: vivid technique to convey broad historical developments

In his argument for displays for the non-specialist public, he discussed objects, design and other potential display components.<sup>52</sup> He was in favour of dioramas, illuminated photographic transparencies and film shows. He considered full-size room sets and other reconstructions to be 'very powerful', citing the coal mine display then nearing completion, and the complete preserved wheelwright's shop; for him 'the extension of this method was 'obviously desirable'.<sup>53</sup> His section on 'methods of display' favoured, in place of traditional cases, 'building a structure or arrangement of cases specifically to accommodate the objects to be shown', enabling a more effective integration and better lighting, whereby 'the eye is

<sup>47</sup> Nielsen, *op. cit.* (7).

<sup>48</sup> Sherwood Taylor, *op. cit.* (26), p. 12.

<sup>49</sup> Sherwood Taylor, *op. cit.* (26), p. 12.

<sup>50</sup> Sherwood Taylor, *op. cit.* (26), p. 12.

<sup>51</sup> Sherwood Taylor, *op. cit.* (26), p. 12.

<sup>52</sup> Objects, for all their authenticity, brought the disadvantages of irreplaceability and, sometimes, sheer scale. Models were therefore favoured, although staffing and financial factors limited the numbers that could be produced, especially working models, which were 'a powerful means of gaining public attention for any exhibit and should be multiplied: they also help to explain scientific principles to the many who may not read labels'. Sherwood Taylor, *op. cit.* (26), p. 8.

<sup>53</sup> Sherwood Taylor, *op. cit.* (26), p. 9. He championed historic books, though he conceded that 'the presentation of books in museum cases with other exhibits is not easy to do well'. He finished his list with museum publications and the Library. *Ibid.*

perpetually attracted by new forms and colours'.<sup>54</sup> Again, he approved of active displays – that is, demonstrations in the style of the Palais de la découverte – on the grounds that

the essential characteristic of the laboratory, workshop or factory is change. The experiments are begun, operated and concluded; the machines work; the plant produces something ... We are to consider whether more opportunities should not be afforded for visitors to see the real thing being done ... in fact we are not showing these subjects unless we do this, and it is along these lines that the typically scientific museum display must be developed.<sup>55</sup>

Here Sherwood Taylor's way of thinking about more vivid displays joined with his concern for the experimental method's importance to science. It makes sense, then, that his Royal Institution lectures prominently featured re-enacted historical experiments.<sup>56</sup>

He summarized concerns for the display of history to the general public, who were, he asserted, 'interested in (1) Famous prototypes such as the "Rocket" [locomotive] or the "Turbinia" [turbine-propelled ship]. (2) Beautiful objects, such as the George III silver microscope'. Under a third category, he articulated how display of 'less spectacular' objects was expected to expound history: '(3) public interest in these depends on our ability to demonstrate the significance of successive differences'.<sup>57</sup> The intended historical account is shown here, as in the interwar period, to be one of technological development, although more explicitly as is revealed by that phrase 'the significance of successive differences'. We may note that development was described without using the evolutionary metaphor, consistent with the linguistic practice of his interwar predecessors.<sup>58</sup>

### Sherwood Taylor's history of science

I want now to look beyond this document to factors and events that help us to understand Sherwood Taylor's historiography better. To summarize what I have described so far: he saw 'science' as the core category, not 'the sciences'; science as a 'method of thought and action'. Engineering and technology were applied science, though they had pre-scientific phases. Science had impacts on people's way of living and on their mode of thought. In its historiographical components, this dispersed definition has much in common with those of other members of the cohort that established the British Society for the History of Science in 1947, as we shall see.

His epistemology, laid out in *Concerning Science*, distinguished science from other domains of thought and action. He contrasted scientific conclusions derived, as we have seen, from observation with those of other disciplines where conclusions were, for him, drawn from testimony (as in history and matters of belief), and those that are normative or ethical, symbolic or unconsciously reached. Each of these had their place (in art, poetry, music, personal conduct and, above all, faith) but not in science, except when 'they have been verified by scientific observations and thinking'.<sup>59</sup> As we know,

<sup>54</sup> Sherwood Taylor, op. cit. (26), p. 10.

<sup>55</sup> Sherwood Taylor, op. cit. (26), p. 10, emphasis in the original.

<sup>56</sup> In the resulting book, unable to find a printable analogue for these demonstrations, he featured a series of specially commissioned illustrations from the artist Alfred Reginald Thomson. Frank Sherwood Taylor, *An Illustrated History of Science*, London: Heinemann, 1955.

<sup>57</sup> Sherwood Taylor, op. cit. (26), p. 13.

<sup>58</sup> See, for example, Henry Lyons, 'The aim and scope of the Science Museum', *Museums Journal* (1924) 24, pp. 114–18. Compare Arthur MacGregor, 'Exhibiting evolutionism: Darwinism and pseudo-Darwinism in museum practice after 1859', *Journal of the History of Collections* (2009) 21(1), pp. 77–94.

<sup>59</sup> Sherwood Taylor, op. cit. (17), pp. 42–56.



**Figure 3.** Silver 'universal double microscope' with ornate decoration by George Adams the Elder, Fleet Street, London, c.1763, the kind of beautiful object that museum visitors would want to see, according to Sherwood Taylor. © Science Museum Group.

the post-1960s discipline of history of science later challenged his confident separation of science from these other 'different kinds of thinking', but in making the distinction he was typical of many scientist-historians of his generation. Whereas the post-1960s HPS/STS discipline assumes science to be imbricated in material reality, society, economy and culture, affected by as well as affecting them, he retained a place for culture – faith, history, the arts and human conduct – by separating them from science and maintaining that they had a fundamentally different epistemological foundation. The curious aspect of this compartmentalization to our eyes is that he placed the history of science on the science, rather than the culture, side of the division, where history would serve the purpose of reinforcing science's separation from the rest of culture. Here the place he made for his Roman Catholic faith may provide a clue to his style of thought. Peter Bowler reports that Sherwood Taylor, raised as a conventional Anglican, became uncomfortable with the way that science pushed him towards materialism; adopting Roman Catholicism in 1941 was for him a resolution to that tension.<sup>60</sup> Tony Simcock argues that 'his mature views as a Catholic had grown out of a lifelong interest in mysticism and alchemy, his studies of which played no small part in urging him along the road to Rome'.<sup>61</sup> Sherwood Taylor mentioned in an autobiographical essay, 'I did not merely investigate but hoped, for I saw how glorious a world was that of William Blake or of Milarepa the Tibetan hermit, in comparison to the world of monotonously vibrating particles to which I learned to refer phenomena'.<sup>62</sup> But he also fits the other category that Bowler mentions when he

<sup>60</sup> Peter Bowler, *Reconciling Science and Religion: The Debate in Early-Twentieth-Century Britain*, Chicago: The University of Chicago Press, 2001, p. 42.

<sup>61</sup> Simcock, *op. cit.* (4), p. 133.

<sup>62</sup> Sherwood Taylor, *Man and Matter*, *op. cit.* (6), p. 18.

suggests that ‘this kind of reaction was, perhaps, more typical of those non-scientific intellectuals who, faced with what was perceived as a choice between Marxism and formal religion, opted for the latter’.<sup>63</sup> He considered that materialistic and faith-based viewpoints led to fundamentally different views of the past: ‘the Marxist and the Catholic will agree on dates and facts but not on selection of material or its interpretation’.<sup>64</sup>

If we follow this suggestion that his very public espousal of faith, including in miracles and the Virgin birth, aligned with his anti-materialism, then it is also possible to discern an ambivalence, even dislike of, science. Jim Secord has written that Herbert Butterfield, a Methodist, ‘considered the scientific revolution not as an uplifting prelude to Enlightenment, but as a tragic cultural watershed ... he [wanted people] to understand the creation of science as a profound tragedy, offering humanity the prospect of “nothing save a future of brave new worlds”’.<sup>65</sup> Jim Bennett writes of Sherwood Taylor’s time in Oxford that he

built his case for ‘the need to teach the History of Science’ at the University in 1946 from the assertion that ‘it is indisputable that the rise and extension of natural science is the most important movement of modern times and has raised the greater part of the problems that now call for solution’.<sup>66</sup>

Problems requiring solution may, rhetorically, fall somewhat short of tragedy, but it is possible that for both Butterfield and Sherwood Taylor faith and spirituality were able to supply a lack they each perceived to be characteristic of science. We also see this in the bookending chapters of his 1940s volume *Science Past and Present*. Making the case for studying the history of science, he asserted science to be ‘the principal cause of human society being such as it is to day’, proceeding to list some of its impacts in descriptive rather than approbatory language. He continued by lamenting that ‘power has been placed [by science] in man’s hands by which he can work his will with unprecedented speed, and science has done nothing to prepare him ethically for its use’, a problem that had been accelerated because ‘religion has declined where science has flourished’.<sup>67</sup> He concluded pessimistically on science’s incapacity to act ethically in relation to modern warfare, quoting Bernard of Cluny, ‘Hora novissima, tempora pessima sunt; vigilemus’ (the current age is the worst of times: let us keep watch).<sup>68</sup>

Given all of this, it is striking that such arguments about important aspects of his own life and world view made no appearance in his museum policy documents. It may be that here we see a capacity to compartmentalize his museum work about science as separate from his broader philosophy of culture, just as, in *Concerning Science*, he argued for faith, history, the arts and personal conduct to be considered distinct from science.<sup>69</sup> He also seems to have compartmentalized his museum work from his beliefs about how the discipline should develop. For him the ideal future museum would be applied history of science, though within his scientific definition. All the same, his estimate of the state of the discipline of history of science was astute; he lamented that ‘the history of science is not [yet] a subject whose facts have been ascertained, reduced to order and generalized and

<sup>63</sup> Bowler, op. cit. (60), p. 42.

<sup>64</sup> Sherwood Taylor, op. cit. (12), p. 242.

<sup>65</sup> James A. Secord, ‘Inventing the Scientific Revolution’, *Isis* (2023) 114(1), 50–76, p. 72.

<sup>66</sup> Bennett, op. cit. (24), p. 1.

<sup>67</sup> Frank Sherwood Taylor, *Science: Past and Present*, 2nd edn, London: William Heinemann, 1949, pp. 1–2

<sup>68</sup> Sherwood Taylor, op. cit. (67), pp. 355–6.

<sup>69</sup> The relative power relations of science, history and Catholicism in the USA in the same period, as described by David Hollinger, were instructively different; David A. Hollinger, ‘Science as a weapon in *Kulturkämpfe* in the United States during and after World War II’, *Isis* (1995) 86(3), pp. 440–54.

are only waiting to be taught'.<sup>70</sup> In terms of books, he argued that 'the history of science is written by amateurs for amateurs', stating rhetorically, 'I sometimes wonder why people believe that they can write the history of science by inspiration, when in any other field they would take care to verify their facts'.<sup>71</sup> At a time before avoidance of teleology had become a cornerstone of HPS, he was both Whiggish, stressing the value of the historian's scientific understanding in order to be able to 'recognise past anticipations of or failures to anticipate the modern view', and anti-Whiggish, complaining about scientist-historians who 'see science as the crown of human progress ... present[ing] a very incomplete picture ... whatever was not on the way to modern science is ignored or dismissed, too often with a sneer'.<sup>72</sup> His prescription was the creation of an encyclopedic book on the whole subject as a foundation, and the establishment of departments of history of science to create the cohort of scholars to do the extensive work necessary to create a mature discipline.

In the following short discussions, I highlight some key components of his historiography by drawing on some of the events and activities of his Science Museum period.

### Sherwood Taylor's anti-materialism

Sherwood Taylor consistently argued for the significance of science for society, which – once again descriptively rather than approbatively – he called 'the first political and economic influence of our time' because of 'the social and intellectual impact of science upon mankind'.<sup>73</sup> The absence of any allusion to the reverse impact of society on science amplifies the case for seeing his as an essentially intellectualist account of science, one akin to that of Alexander Koyré, for whom, as John Christie has written, 'science was a kind of pure thought, approximate to philosophy'.<sup>74</sup> And so it is not entirely surprising to discover that Sherwood Taylor, along with Dingle, had been active in Michael Polanyi's anti-Marxist Society for Freedom in Science (SFS), which was busy repudiating historical-materialist accounts of science found in the works of Boris Hessen, Lancelot Hogben and J.D. Bernal, for example.<sup>75</sup> For the SFS, it was essential to reject the Marxist view in order to make the argument for scientists to be able to determine their own research programmes.<sup>76</sup> Anna Mayer argues that 'anti-Marxism formed a defining feature of the process by which the image of scientific work as a disinterested journey of the mind came to be institutionalized'. In the case of Cambridge, this anti-Marxism took the form of controlling access to lectureships, excluding historical materialists and appointing their own-people.<sup>77</sup> It is possible that there was something of this in Sherwood Taylor's appointment to the Science Museum, which, Scott Anthony has shown, was promoted by C.P. Snow, who was also mentor to Rupert Hall, another in the anti-Marxist tendency.<sup>78</sup> I have discovered no explicit statements of Sherwood Taylor's party-political affiliation, but his

<sup>70</sup> Sherwood Taylor, op. cit. (12), pp. 244–5.

<sup>71</sup> Sherwood Taylor, op. cit. (12), p. 240.

<sup>72</sup> Sherwood Taylor, op. cit. (12), pp. 241, 243.

<sup>73</sup> Frank Sherwood Taylor, 'Report on the broad strategy of the Science Museum', Advisory Council meeting, 9 October 1951, p. 2, Z193/2

<sup>74</sup> J.R.R. Christie, 'The development of the historiography of science', in R.C. Olby, G.N. Cantor, J.R.R. Christie and M.J.S. Hodge (eds.), *Companion to the History of Modern Science*, London: Routledge, 1990, pp. 5–22, 17.

<sup>75</sup> Such authors saw science 'as a form of intellectual production, tied to the economic preoccupations, class interests and ideological values of particular historical periods and cultures'; Christie, op. cit. (74), p. 18.

<sup>76</sup> See also Elena Aronova and Simone Turchetti (eds.), *Science Studies during the Cold War and Beyond: Paradigms Defected*, Basingstoke: Palgrave Macmillan, 2016, pp. 6–7.

<sup>77</sup> Mayer, op. cit. (11), p. 41.

<sup>78</sup> Frank A.J.L. James, "'The Springtime of science": modernity and the future and past of science' in Bud et al., op. cit. (5), pp. 130–46, 141–2; Anthony, op. cit. (8), p. 94.

espousal of Roman Catholicism in one of its most conservative eras – long before the liberalization of Vatican II – linked to his opposition to historical materialism identifies him as at least a small-‘c’ conservative in this Cold War era.<sup>79</sup>

Sherwood Taylor had been in 1945 the author of the SFS’s first pamphlet, *Is the Progress of Science Controlled by the Material Wants of Man?*.<sup>80</sup> This was a detailed rebuttal of *The Development of Science*, a 1943 pamphlet written anonymously by R.G. Forrester, published by the Association of Scientific Workers (ASW).<sup>81</sup> This used historical examples to argue for the post-war continuation of the planning of scientific work on the grounds that history provided applicable evidence of the social circumstances most favourable to scientific advance.<sup>82</sup> As we see in *Concerning Science*, Sherwood Taylor, typically for an anti-Marxist, opposed the extension of science into government:

A few years ago there was a tendency ... to say that the world is so badly and inefficiently organised and governed because the scientist has little or no place in politics ... [but] it does not seem that scientists will rule any better than ordinary men; probably they will rule worse, because they tend to think too much about things and too little about people.<sup>83</sup>

Both Forrester and he were using historiography to fight a battle about present and future science. Sherwood Taylor’s pamphlet, which started with a close critique of the historical arguments in the ASW pamphlet, concluded by proposing that the works of J.G. Crowther, Hogben, Bernal – even his own earlier popular-science efforts – should be deleted, and that those interested in science’s history should be sent instead to read the original texts of the great scientists; as Mayer notes, this was to replace a social account with antiquarianism.<sup>84</sup> We may observe that this helps explain the fact that Sherwood Taylor mounted four exhibitions of historic books in his time at the Science Museum, including *A Hundred Alchemical Books* in 1952.<sup>85</sup> For a historian rejecting the historical-materialist view, and therefore emphasizing that the true history of science is to be found recorded in written texts, this makes perfect sense.

Sherwood Taylor’s attitude to materialistic explanation can also be seen in his recommendations for the development of history of science as an academic discipline in his BSHS Presidential Address, *Reflections on the Writing of the History of Science*, given in May 1953.<sup>86</sup> His argument about the needs of the discipline, which he portrayed as being in its infancy, early discussed the sources for the study of science. He stated that ‘the apparatus of teaching and research in our subject consists of museums and writings’. But he continued that books and archives ‘are necessarily more important because they can be in the student’s hand, because they survey aspects of the science of the past that are not expressed in any objects’, and because ‘they reach back to distant times from which scarcely any relic of science has survived’.<sup>87</sup> This, again, implies a purely

<sup>79</sup> Compare Hollinger, op. cit. (69), pp. 449–50.

<sup>80</sup> Frank Sherwood Taylor, *Is the Progress of Science Controlled by the Material Wants of Man?*, Society for Freedom in Science, Occasional Pamphlet 1945(1); see Mayer, op. cit. (11), p. 58.

<sup>81</sup> Robert Bud, personal communication with John Forrester.

<sup>82</sup> Association of Scientific Workers, *The Development of Science*, London: Association of Scientific Workers, 1943, p. 2.

<sup>83</sup> Sherwood Taylor, op. cit. (17), pp. 73–4.

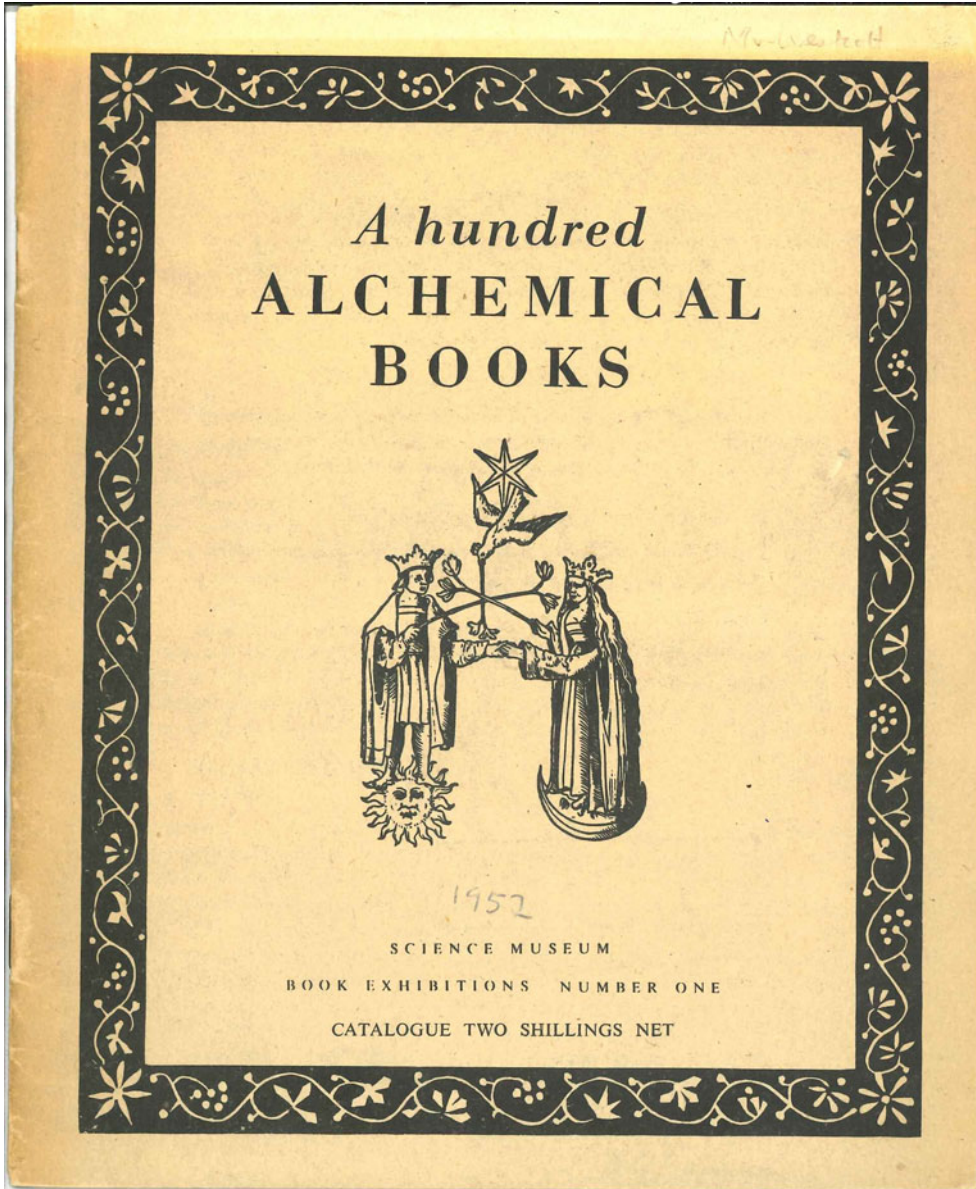
<sup>84</sup> Sherwood Taylor, op. cit. (80); Mayer, op. cit. (11), p. 58.

<sup>85</sup> Peter Morris and Eduard von Fischer, ‘Appendix 1: temporary (special) exhibitions, 1912–1988’ in Morris, op. cit. (8), pp. 317–24, 319–20.

<sup>86</sup> Sherwood Taylor, op. cit. (12). Members of the nascent history-of-science discipline might have been the same people who might have visited the museum’s reserve collections, but that’s not a point he makes.

<sup>87</sup> Sherwood Taylor, op. cit. (12), p. 239.





**Figure 4.** Catalogue for Sherwood Taylor's Alchemical Books exhibition, June–September 1952. © Science Museum Group.

intellectual account of science that swerved away from the materiality of scientific objects. Apart from a brief approbatory reference to the Science Museum's collections handbooks, Sherwood Taylor's address carried no more references to museums and objects.<sup>88</sup> The work to be done, as in his 1945 pamphlet for the SFS, demanded a shift

<sup>88</sup> 'I should not feel I had done justice to the great Institution which I serve if I did not also mention the 95 handbooks issued by the Science Museum, many of which contain full and accurate histories of their subject in

to the antiquarian study of texts, not towards the materiality of the tools of science and machines.

It is in this anti-materialist context that it is interesting to consider Sherwood Taylor's management of an outburst by his confederate, Herbert Dingle, at the January 1952 Advisory Council meeting. Here, in the midst of a seemingly pedantic complaint about the name 'The Science Museum', Dingle argued,

In so far as we are fortunate enough to have some influence on the visitors to our museum ... the picture of 'science' that will unconsciously come into the minds of the readers of Marxist literature when they come across that word [science] is that which meets their eyes on the ground floor of 'The Science Museum', and the Marxist argument will then be irresistible. Since we have something like a million visitors a year... the effects of this must be considerable ... the Museum should not deliberately inculcate the idea that 'science' is another name for steam engines and aeroplanes.<sup>89</sup>

Sherwood Taylor's handling of the situation is instructive; it is clear that he was not keen to discuss the Marxist account with the Advisory Council and so for the same meeting, having seen Dingle's memorandum in advance, he prepared, with Follett's assistance, a paper in response. He may well have taken the same view as Natural History Museum director Gavin de Beer (another BSHS founding member), whom he consulted on the memorandum: 'I am astonished that anyone who like Dingle appears to hold views so antagonistic to Marxist thought, should be responsible for a proposal that is so ruthlessly totalitarian'.<sup>90</sup> Sherwood Taylor's paper concentrated on gently pouring cold water on Dingle's suggestions for renaming and linking science museums of all kinds. The closest he came to addressing Dingle's statement on Bernalism was to state, 'Whether, in fact, the spectacle of our Museum induces a belief that "science" coincides with "technology", is a question in answer to which I can produce no direct evidence'. It would, in any case, he argued, be impractical to move heavy industrial machines away from the ground floor entrance of the museum to upper floors in order to show science first.<sup>91</sup> But the upshot of Dingle's intervention was that the Advisory Council chairman encouraged the director to consider expansion of the museum to cover 'scientific methodology, psychology, physiology and allied subjects', which was much more in line with Sherwood Taylor's preferences.<sup>92</sup>

### Science as a unity

It is tempting to see Sherwood Taylor's emphasis on 'science' as opposed to 'the sciences' and his use of the term 'science as such' as explicable in the context of the unity-of-science movement as discussed by Peter Galison, Harmke Kamminga and Geert Somsen.<sup>93</sup> But the fact is that his argument for 'science as such' nowhere mentions wider debates on the unity of science. It would seem, rather, that in rejecting the

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addition to descriptive catalogues of objects. These are, I think, volumes which, considering their low price, are too rarely at the hand of the scientific writer.' Sherwood Taylor, op. cit. (12), p. 240.

<sup>89</sup> Herbert Dingle, 'The scope and co-ordination of our museums of science', October 1951, paper presented at the 8 January 1952 meeting of the Science Museum Advisory Council, Z193/2, p. 3.

<sup>90</sup> De Beer to Sherwood Taylor, 1 November 1951, Z185.

<sup>91</sup> 'Director's report upon Professor Dingle's memorandum', October 1951, Z185.

<sup>92</sup> Science Museum Advisory Council Minutes for 8 January 1952, Z193/2, p. 5.

<sup>93</sup> Harmke Kamminga and Geert Somsen (eds), *Pursuing the Unity of Science: Ideology and Scientific Practice from the Great War to the Cold War*, London: Routledge, 2016; Peter Galison and David Stump, *The Disunity of Science: Boundaries, Contexts, and Power*, Stanford, CA: Stanford University Press, 1996.

Bernalist view, he was falling back on the positivistic account that he would have learned as a chemistry undergraduate, of science as a distinct human activity distinguished by its method, as articulated in *Concerning Science*. His commitment to the criterion of scientific method ‘as distinct from particular sciences’ may be seen in a November 1952 initiative. With the museum’s policy document complete, he initiated a discussion with two of his senior staff on the possibility of creating a gallery on this subject.<sup>94</sup> Making out that his request came from the Advisory Council, his commissioning memorandum cited four earlier discussions there on scientific method, all of which, we should note, he had initiated.<sup>95</sup>

The responses he received from Francis Ward (keeper of physics) and George Westcott (keeper of land and water transport) reveal them as having sophisticated and informed views of science. But the responses cannot have provided the endorsement that Sherwood Taylor craved. Ward was sceptical that there was a single scientific method, and he produced a list of how discoveries occur, with examples (in some cases several) provided of each:

- A Simply noticing things hitherto unobserved, or, if observed, not interpreted (Becquerel’s discovery of radioactivity).
- B Sheer investigation and measurement of phenomena (Coulomb’s law for electrostatics).
- C Orderly collection and marshalling of existing facts, leading to new generalisations and further applications of these generalisations (Kelvin’s laws of thermodynamics).
- D Successful application of the phenomena typical in one branch of science to another branch where similar considerations apply (Millikan’s measurement of the charge on the electron).
- E Application of new techniques to old problems (Powell’s discoveries in cosmic rays).
- F Investigation of causes of small discrepancies revealed by accurate measurement (the discovery of heavy hydrogen).<sup>96</sup>

The response from George Westcott, showing some historical sophistication, and giving an account of the procedure of science that might be thought a paraphrase of Sherwood Taylor’s *Concerning Science* definition, recast the director’s question as ‘Science, its (history), methods and relations with society’. Arguing that ‘it would be difficult and misleading to represent the present state of scientific method as something static and separate’, he also averred, implying a sympathy for Bernalism, that ‘all the elements of culture interact, so that science, and its methods, both influence and are influenced by society’.<sup>97</sup> His solution was to propose a series of nineteen dioramas illustrating historical scenes, along with appropriate instruments. Subjects ranged from a Sumerian temple scribe’s room with clay tablets to a mid-twentieth-century physics laboratory with a cyclotron and an electronic calculator. Sherwood Taylor soon abandoned the discussion, using

<sup>94</sup> This has also been described by Ali Boyle: “‘Not for their beauty’: instruments and narratives at the Science Museum, London”, in Silke Ackermann (ed.), *Scientific Instruments on Display*, Leiden: Brill, 2014, pp. 37–60.

<sup>95</sup> He cited his October 1951 ‘Report on the broad strategy of the Science Museum’, his response to Dingle’s memorandum, the 8 April 1952 document ‘The Bell report as seen in 1952’ (both of which are preserved in the same file, Z193/2), and the 1952 policy as quoted above; Sherwood Taylor memorandum to file, 24 November 1952.

<sup>96</sup> The headings are direct quotations and the examples are selectively quoted from: Francis A.B. Ward, ‘Scientific methods in general. Possible representation in the museum’, 1 December 1952, SMD ED79/143.

<sup>97</sup> G.F. Westcott to Sherwood Taylor, undated, ED79/143.

the pretext of lack of space in the museum, and left the idea of displaying scientific method ‘to be thought of by some future director and body of keepers’.<sup>98</sup>

### Unproblematic common interest of scientists and historians

There is a well-established reading of the history of the Science Museum that it is marked by a tension between, on the one hand, the needs of the collections, denoting history, and, on the other, its role in the celebration of science.<sup>99</sup> But it is noteworthy that Sherwood Taylor saw no conflict between scientists’ and historians’ views of the past of science. Revealingly, he wrote in his presidential address in 1953 that ‘the writer on the history of science ought to be a historian as well as a scientist’, not a historian first and a scientist second, as the post-1960s profession, with its war on Whiggery and disdain for the scientist–historians, would order things. On this point, Sherwood Taylor went on to argue that ‘we have seen in the works of Professor Butterfield how the historian can throw new light on the history of science, yet it is generally true to say that historian and scientist are at cross-purposes, asking the wrong questions of each other and giving them infertile answers’.<sup>100</sup> Here we see explicitly stated his alignment of history of science with science rather than with the humanities, where his epistemology founded science on observation and history on testimony.

We may recall that, in his discussion of the audiences for reserve collections, Sherwood Taylor assumed that a scientist would desire ‘to make a survey of the origins of his subject’; in other words, he assumed a commonality of interest between scientists, historians and scholars. Geoffrey Cantor has noted the close connections between the Royal Society and the early BSHS formed by Charles Singer, Sherwood Taylor and others in 1946–7. The majority of the people involved were scientist–historians – and that includes Sherwood Taylor, of course – and the society’s foundational meetings were held both at the Royal Society and at the Science Museum. Sherwood Taylor’s definition of science was close to Singer’s, which stated that ‘science ... is no static body of knowledge but rather *an active process* that can be followed through the ages’. Cantor describes Singer’s view as following Whewell and Sarton in believing that science displayed a unity throughout its history, ‘a pre-Koyréan perspective that envisaged science as the great unifying theme transcending national differences’.<sup>101</sup> In other words, for both men, science as a transhistorical phenomenon was not the product of its times, and it had an immanent logic. And so it makes sense that Singer, like his student Sherwood Taylor, also distanced himself from Marxism, in his case that of UNESCO’s Social Relations of Science Commission.<sup>102</sup>

### Conclusions

This elucidation of Sherwood Taylor’s ideas for the role of a particular version of the history of science in the potential reshaping of the Science Museum would be of little more

<sup>98</sup> Sherwood Taylor, note to file, 5 March or August 1953 (writing unclear). It may be the case that the abrupt closing down of this initiative was a product of the ill health that Tony Simcock, op. cit. (4), p. 131, mentions, presumably the lymphocytic lymphoma that was to kill him.

<sup>99</sup> Note for example, Neil Cossons’s formulation: ‘this tension, between the wish to preserve and record and the requirement to educate, between the voices of the past and the needs of the present and the future, has formed a continuing thread throughout the life of this Museum’; Neil Cossons, ‘Report of the director and accounting office’, *Science Museum Review*, London: Science Museum, 1993; see also Boon, op. cit. (3).

<sup>100</sup> Sherwood Taylor, op. cit. (12), p. 241.

<sup>101</sup> Charles Singer, *A Short History Of Science to the Nineteenth Century* (Oxford: Oxford University Press, 1941), p. 2, original emphasis. Geoffrey Cantor, ‘Presidential Address: Charles Singer and the early years of the British Society for the History of Science’, *BJHS* (1997) 30(1), pp. 5–23, 18–19.

<sup>102</sup> Cantor, op. cit. (101), p. 21.

than antiquarian interest if they had made no impression on the organization. There is value in reflecting on his ambitions and a case to be made for his influence, although it is indirect and partial.

Over the eighteen months from his first document, his initial vision was hammered into the published 1952 twenty-page *Policy of the Science Museum*, whose statement of museum purpose I quoted above. An intervening document, only three months after his big report, shows that material factors very soon impinged on Sherwood Taylor's ideals. Let me quote the downbeat and pragmatic conclusion he was beginning to reach:

As in war, so in museum work, strategy must be proportioned to resources. If the Museum were much better provided with space and staff, it would attain much more. Nothing is easier than to set down grandiose and indeed inspiring plans on paper: but were I to do so, science and our presentation of it would have so changed before their inception as to render them nugatory. This report rather sets out the organisation and trends which we consider to be fitted to a reasonable expectation of resources during the next ten years.<sup>103</sup>

In short, Sherwood Taylor was obliged to find compromises, mainly because of post-war financial austerity, that led to a requirement, for example, to cut staff and substantially delay the construction of the upper floors of the museum's Centre Block.<sup>104</sup> In addition, he was not a well man; Tony Simcock mentions a period of ill health in 1953, and he was often absent from work in his last eighteen months.<sup>105</sup> All this, combined with the complex path dependency and constraint of seeking to create a new museum within one whose pattern had been established before the war, led to a focus on the practicable. The 1952 policy expressed the more modest aims that the museum would keep in view:

- 1 to show fewer things, better lighted and displayed;
- 2 provide more working models, slow-running and sectioned exhibits;
- 3 to show more 'habitat-groups' (such as the mine or wheelwright's shop) in order to place the machine and the worker in their environment;
- 4 To design the museum furniture of the gallery to fit the collections they are to display.

The standard line on Sherwood Taylor's directorship, that he fatally alienated his senior staff, implies ineffectuality. But I would argue that the material constraints were more significant than any differences of opinion with the keepers, as the record shows that there was much agreement, alongside the inevitable disagreements. Taking the long view, the fruits of several of his initiatives can be seen in the museum as it has changed over the last seventy years, not necessarily directly, but perhaps more as catalysts for wider changes in the museum's practice. For example, he made common cause with the keeper William O'Dea in supporting more vivid display techniques. We may also note that he founded a succession of staff who also stressed the historical side of the museum's task, even as the academic HPS discipline changed dramatically in the Robbins era and beyond.

<sup>103</sup> Frank Sherwood Taylor 'Report on the broad strategy of the Science Museum', Advisory Committee meeting, 9 October 1951, Z193/2, p. 6.

<sup>104</sup> For delays in building see 'Report on the policy of the Science Museum in 1952', p. 4; for austerity-led staff cuts, see minutes of the Advisory Council meeting for 8 April 1952, Z193/2.

<sup>105</sup> Simcock, op. cit. (4), p. 131; 'Report of the Advisory Council for 1955', p. 1.



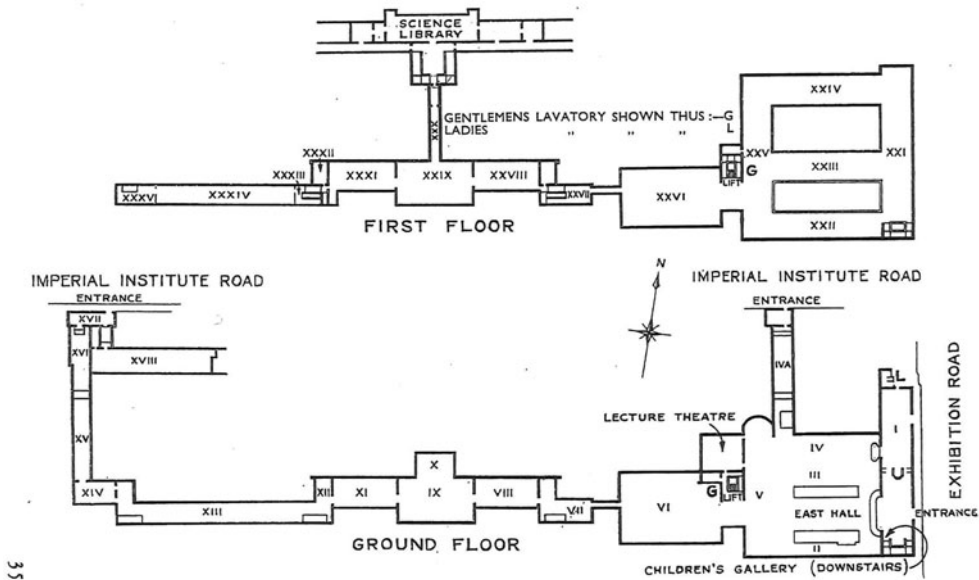
**Figure 5.** ‘Sealing Up Fire’, full-size reconstruction in the museum’s new mining display, 1952, one of Sherwood Taylor’s favoured, more vivid, kinds of display for general audiences. © Science Museum Group.

I cannot conclude without addressing the fate of his two major historical propositions. With regard to the formation of reserve collections, by the time of the publication of the 1952 policy, Sherwood Taylor’s principled preference for such collections had converged with the brute reality that the museum was forced to store approximately 50 per cent of the collection off site.<sup>106</sup> This was because the building of the museum’s Centre Block had required the demolition of existing galleries.<sup>107</sup> The preference for displaying fewer objects in more ‘pleasing and intelligible’ displays was also having an effect. In other words, a ‘reserve’ was becoming business as usual. But the idealism that the reserve should be a recourse for interested visitors has never gone away; in fact it is resurgent at the time of writing with the establishment of the Science Museum Group’s National Collections Centre in Wiltshire, when the reserve amounts to perhaps 95 per cent of the whole. It is also present in the aspirations of the AHRC’s Towards a National Collection initiative, which aims to make the nation’s collections fully accessible to anyone who would research them via their digital records.<sup>108</sup> In both cases we have somewhat dissolved the binary between expert and general publics, reflecting the recognition of lay expertise and more participative models of access.

<sup>106</sup> For external storage see John Liffen, ‘Behind the scenes: housing the collections’, in Morris, *op. cit.* (8), pp. 273–93.

<sup>107</sup> The ‘Western Galleries’, a separate building then running north–south, north of Imperial College Road, was additionally used to display the aeronautics collection.

<sup>108</sup> For which see [www.nationalcollection.org.uk](http://www.nationalcollection.org.uk) (accessed 4 November 2022). The history-of-technology project, of which I am principal investigator, is The Congruence Engine: Digital Tools for New Collections-Based Industrial Histories; see [www.sciencemuseumgroup.org.uk/project/the-congruence-engine](http://www.sciencemuseumgroup.org.uk/project/the-congruence-engine) (accessed 23 December 2022).



**Figure 6.** Museum plan from the 1932 guide book. Construction of the Centre Block removed from public use all of the galleries shown here west of Galleries VI and XXVI, enforcing the removal of an estimated 50 per cent of the collection to storage. © Science Museum Group.

With regard to the historicity of displays, that galleries might be organized by period, or that the museum have a historical introduction, or that displays should spell out the impact of science and technology on society, ultimately the record is good. In 1952, the only affordable way to do this was to enhance the Children's Gallery, which had had this purpose since its inception in 1931. More generally, though, the more highly designed new galleries did work harder to convey the relevance of their subjects. In 1978, the museum opened Exploration, its first cross-disciplinary gallery (other than the Children's Gallery). The year 1988 finally saw the opening of a historical introduction to the whole museum, in a gallery called Synopsis – thirty-six years late, you might say. And our more recent practice includes galleries by period, such as the industrial era in Making the Modern World (2000) and the early modern in Science City (2019), although we can be sure that this gallery, with its materialistic narratives – true to our contemporary discipline – of the mercantile and practical origins of London science, would certainly have troubled Herbert Dingle.<sup>109</sup>

If, as I have been arguing, historiographical concerns – however implicit – can be at the heart of how we think about the practice of technical museums, then how might contemporary practitioners respond to what we have learned from the example of Frank Sherwood Taylor? My argument implicitly suggests that we, like him, may choose to conceive policy via the historian's approach of looking to the past of the museum – in this case specifically to his prescription – to frame our view of its potential future. We can, in our turn, see Sherwood Taylor's statement of purpose – to quote myself – as 'problematic and insufficient, particularly its approach to science and history'. We may agree with him that science, not the sciences, should be the encompassing concern of science

<sup>109</sup> See Alexandra Rose and Jane Desborough, *Science City: Craft, Commerce and Curiosity in London 1550–1800*, London: Scala Arts & Heritage Publishers Ltd, 2020.

museums whilst immediately reaching for broader and more historically grounded definitions of the getting and harnessing of natural knowledge than his. In place of seeking to separate natural knowledge from its time, defining science by laws and method, we should – at one with the contemporary HPS/STS discipline – represent the differing locations of natural knowledge in differing times and cultures. In this frame, it is clear that there need be no intrinsic conflict for a technical museum between science's customary orientation to the future and our duties to our collections that are evidence of the past. But to achieve this synthesis it is necessary to have a sound research-informed approach to everything we do. There is no reason not to believe Western science to be one of the pinnacles of human culture, whilst also holding it to be a product of that culture.

And so we should, like Sherwood Taylor, urge museums to respond better to the growth of the HPS/STS discipline over the last few decades because, in contrast to 1953, the history of science is now a well-established discipline with an extensive literature addressing almost any theme a science museum might choose to treat, even if those accounts do not yet adequately embrace collections. It is possible indeed that our discipline, unlike the state he lamented, is now too much written by professionals for professionals. If so, science museums should be natural places for conveying the insights it has produced to broader publics. In this, of course, we are with his keepers Ward and Westcott, unconvinced that there is a single scientific method or that science is a trans-historical unity. Crucially, contemporary history of science is with the materialists rather than the internalists, and in two ways. Like the historical materialists, majority opinion in the modern discipline understands science, no less than technology, as a product of economy, society and culture as well as of material reality, even if few of us would want to be as reductive as a Hessen or a Bernal. The other concern with materiality is specific to us as the curators of objects: because of the development of STS and material-culture studies since Sherwood Taylor's time, we possess a diverse conceptual toolkit with which to address the materiality of the artefacts we care for, and their imbrication with the subjects we represent in our displays. And so, whilst he had little to say about the kinds of research that 'the historian, the scholar and [historically minded] scientist' might conduct in the reserve collection he proposed, it is precisely the potential of the collection to provide evidence for new, more material, kinds of history that feels like it would be the best fulfilment of Sherwood Taylor's programme, even if that is not the emphasis he would have chosen. Congruent with this, we may adduce historical criteria for welcoming back treatment of individual scientific disciplines, not as the sole organizational principle of the museum, as he rejected, but whenever a discipline is the appropriate unit of analysis, albeit with a more intimate account of the role of the objects we choose to display.

With reference to the unspoken relation of his religious faith to his ideas about museum practice, our discipline has long left behind the conflict thesis of science and religion. But, whether or not we are believers, few of us would turn to religion to address the ethical problems created by science, as he would have had us do. But we should acknowledge that faith, as a component of culture, has often had a role in the science and technology we represent, rather than leaving it at the door as he seems to have done. Equally, we should be courageous – in the culturally embedded accounts of science we favour – in explicitly addressing its ethical problems.

All this should enable us to follow him in the other major assumption I mentioned at the start: that the museum practice of historiographical thought is expressed in the grammar of museum exhibitions, and that experimenting with display technique as well as content is the means to better convey science and its history.

For all that Sherwood Taylor's preferences mainly saw only delayed application at the museum, it seems that much of what he proposed came to be the common sense of later



generations of staff. Some aspects, such as institutional clarity on what science is, the relevance of scientific method and whether science arose from practical needs, are rarely any more explicit in 2023 than they were in 1951. But if Sherwood Taylor has influenced the museum of today, it may well be via social factors, including the linked succession of curators who have held a candle for history, including Follett, who was director in the 1960s, Frank Greenaway (both of whom served as vice presidents of BSHS), Robert Bud, myself and the rest. Furthermore, the continuing diversification of HPS since his time – visible at the society’s 5 May 2022 seventy-fifth anniversary event at the museum – has impacted the museum in many subtle ways.<sup>110</sup> This is congruent with Sherwood Taylor’s demand that the history-of-science discipline should influence the museum, even though he would scarcely recognize our discipline’s current range of historiographies. And the route here is again social, as a healthy proportion of curators now come from the discipline and engage in the puzzle of doing history of science in the museum mode. Ultimately, it may be that it was simply in being a historian of science who wanted to change the Science Museum that Sherwood Taylor had his biggest impact.

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<sup>110</sup> See [www.youtube.com/results?search\\_query=British+Society+for+the+History+of+Science](https://www.youtube.com/results?search_query=British+Society+for+the+History+of+Science) (accessed 4 November 2022). The Science Museum is leading Congruence Engine, a project on linking historical industrial collections which is one of five ‘Discovery Projects’.

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