Connecting the Senses: Natural History and the British Museum in the *Stereoscopic Magazine*

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For this forum on touch and objects I want to consider the connection between touch and sight by examining one of the early photographic ventures at the British Museum and efforts to mediate between popular and specialist access to the natural history collections. Part of the Victorians' fascination for natural history came from its appeal to the senses. Acknowledging the link between tactile and visual experiences as a component of intellectual discovery was an essential part of this, and the contemporary craze for stereoscopic photographs offered a chance to exploit this association.[1] Yet the medium's capacity to evoke the sense of touch by recreating objects and surfaces in three dimensions — and thus connect the tactile to the visual — usually receives only cursory attention in historical surveys.[2] I trace here how the stereoscope structured a complex relationship between the senses and the imagination. In this exploration, my analysis of the role of the tactile in the presentation of museum objects addresses the *impression* of touch — conjured optically and in the mind's eye.[3] Focusing on the *Stereoscopic Magazine*, I compare the relative merits of the stereoscope to create the illusion of immersion for the viewer and to effectively convey the tactile qualities of the objects portrayed.

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[1] Fa-ti Fan, *British Naturalists in Qing China: Science, Empire, and Cultural Encounter* (Cambridge, MA: Harvard University Press, 2004), p. 122; see also Fiona Candlin, 'Touch, and the Limits of the Rational Museum *or* Can Matter Think', *Senses & Society*, 3 (2008), 277–92.

[2] A notable exception, of course, is Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century* (Cambridge, MA: MIT Press, 1990).

[3] On the materiality of museum objects, and sensory studies, see Elizabeth Edwards, *Raw Histories: Photographs, Anthropology and Museums* (Oxford: Berg, 2001); *Sensible Objects: Colonialism, Museums and Material Culture*, ed. by Elizabeth Edwards, Chris Gosden, and Ruth B. Phillips (Oxford: Berg, 2006); David Howes and Constance Classen, *Ways of Sensing: Understanding the Senses in Society* (London: Routledge, 2014).

In September 1864 the British Association for the Advancement of Science assembled in Bath for its annual meeting. The conference showcased new research from all the sciences, while considering how to bring science to a non-specialist audience. Consequently, when John Edward Gray, Keeper of Zoology at the British Museum, presented the opening address for the zoological section, he reflected on the subject of public museums and their uses — an issue of importance to the general public as well as to naturalists. In a period in which the natural sciences were transitioning from an avocation to a profession, the British Museum was the imperial and global centre for the advancement of natural history, and was regarded as a principal locus of hands-on research. Drawing on the museum's vast collections, naturalists' work encompassed the comparative study of the anatomy of different organisms. This involved interventions ranging from animal dissections to microscopy — thus highlighting the significance of both touch and sight to the natural sciences, and also the role of instruments in the Victorians' desire to extend and connect the senses for this purpose. As George Fleming stated in his preface to Auguste Chauveau's *Comparative Anatomy of the Domesticated Animals*, 'there are four principal objects to be constantly borne in mind by the student' of comparative anatomy: first and second are the need to learn the general facts of anatomy and commit them to memory; third is 'the education of the sense of touch, and of the hand in the use of instruments'; and fourth is 'the education of the eye in the knowledge of the several tissues of the body in various positions and, varying circumstances'.[4] As Fleming explained, attentiveness to the interoperability of these senses is especially crucial: 'The education of the eye is a gradual and tedious process, but one which is pretty certain to be satisfactorily accomplished if the student do[es] but use his hands properly' (p. 242).

Gray concurred with this view on the rapport between vision and touch in the natural sciences in his paper on the use of museums. However, he identified two categories of museum audiences, each with distinct needs. What the largest class of visitors — the general public — wants, he advised, is an arrangement of interesting objects in a moderate space 'so as to afford the greatest possible amount of information [...] at a glance':

[4] A. Chauveau, *The Comparative Anatomy of the Domesticated Animals*, trans. and ed. by George Fleming, 2nd English edn (New York: Appleton, 1905), p. 242.

> On the other hand, the scientific student requires under his eyes and in his hands the most complete collection of specimens that can be brought together, and in such a condition as to admit the most minute examination of their differences.[5]

He concluded that by trying to combine these purposes in one consecutive arrangement, modern museums were failing both audiences and thus rendering their collections 'less useful to science and less interesting to the public at large' (p. 284). While Gray emphasized the alliance of sight and touch as essential to scientific enquiry, he entirely discounted the public's desire for similarly complex encounters.

It is no coincidence that the introduction of photography at the British Museum occurred when issues of access were being aired in public. The advent of photography presented an opportunity to enhance but still control public dissemination of the collections. However, while the Museum initiated its own photography programme, undertaken by prominent photographer Roger Fenton and the first in any major museum, this official scheme soon stalled.[6] Any success enjoyed by the British Museum's early foray into photography was due to commercial initiatives, prompted initially by Fenton and then pursued by several publishers and print sellers with the cooperation of individual museum keepers, including Richard Owen and William Carpenter.[7] The most innovative of these ventures was by Lovell Reeve, the London publisher, expert in molluscs and shells, and dealer in natural history specimens. Reeve's *Stereoscopic Magazine* incorporated many views of objects in the British Museum — also photographed by Fenton — and thus connected the world of rarefied knowledge, which public museums still represented for most Victorians, with new and diverse consumers. Photographs, especially stereoscopic ones, appeared to give privileged access to nature. For naturalists and the general public, therefore, they were particularly

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[5] J. E. Gray, 'On Museums, Their Use and Improvement', *Annals and Magazine of Natural History*, 3rd ser., 14 (1864), 283–97 (pp. 284–85).

[6] See John Hannavy, 'Roger Fenton and the British Museum', *History of Photography,* 12 (1988), 193–204; also Anthony Hamber, *'A Higher Branch of Art': Photographing the Fine Arts in England, 1839–1880* (Amsterdam: Gordon and Breach, 1996).

[7] 'Messrs Colnaghi's Terms for the Sale of Photographs', London, British Museum, Index to Trustees' Minutes, 10 May 1856– C.8997; British Museum, Officers' Reports, 13 November 1857– f.219; British Museum, Officers' Reports, 12 December 1857, f.298.

intriguing as records of specimens and also collectible objects in their own right.[8]

From the first issues of his *Stereoscopic Magazine* in 1858, Reeve included significant natural history displays, including the Museum of Practical Geology in Jermyn Street and the Succulent House at Kew.[9] From 1859, photographs of the British Museum collections became a familiar feature. For the cost of two shillings and sixpence per issue, a variety of exotic objects could be encountered in museums and other public sites, and London's most reputable firms were involved in the production. A portable stereoscope, adapted for use in books, was manufactured by instrument makers Negretti & Zambra and sold with the magazine.[10] The stereo-pairs were printed by the society photographer Arthur Melhuish under the supervision of astronomer and meteorologist James Glaisher.[11] Tapping into the growing market for stereographs, Reeve's publication was likely to do well. Yet the technical aspects were challenging as the spatial illusion created by the stereoscope was inconsistent. It depended on the choice of subject and also on the way the camera was positioned to create a point of view that would maximize the impression of three-dimensionality. This effect relied on prominent objects or forms appearing to push out into the foreground or middle area of the composition. The more of these visual cues in the image, the more the optical effect was amplified (Crary, pp. 122–25). When there were insufficient objects, the simulation of three-dimensional space was less satisfactory. Correspondingly, the impression of tactility for the viewer relied on the physical characteristics and intricacy of the objects portrayed. The illusion created by the stereoscope was most compelling, therefore, when it incorporated both spatial and tactile effects.

Two factors would be crucial to the success of the *Stereoscopic Magazine*: the identification of suitable subjects and their mode of presentation. Most importantly, the subjects were chosen to optimize the

[8] Robert E. Kohler, 'Finders, Keepers: Collecting Sciences and Collecting Practice', *History of Science*, 45 (2007), 428–54 (p. 432).

[9] For a useful introduction to Reeve's promotion of stereoscopy in the context of his overall publishing career, see Amy E. Stark, 'Lovell Reeve (1814–1865), Publisher and Patron of the Stereograph', *History of Photography*, 5 (1981), 3–15.

[10] 'The Stereoscopic Magazine', *The Guardian*, [n.d.], LRP/6/1 Press Cuttings 1851–1910, Archives, Royal Botanic Gardens, Kew (RBG).

[11] Lovell Reeve to Arthur Melhuish, 9 July and 20 September 1858; Lovell Reeve to Negretti & Zambra, 26 April and 14 January 1859, LRP/1/23 Indexed Letter Book, November 1847–September 1872, Archives, RBG.

stereoscopic experience. Usually, architecture was considered pre-eminent for this purpose, followed by three-dimensional works of art such as statuary. Reeve incorporated these elements in many of his views of the British Museum, including, for example, the Elgin Marbles and the Assyrian Gallery. Because of his own interests, he was also keen to have stereos of natural history displays and specimens, which he guaranteed would be both 'curious and beautiful as pictures, and valuable as scientific illustrations'.[12] He also advised that 'eminent men in the several departments of Art, Science, and Literature' would be commissioned to write scholarly descriptions to accompany each stereo-pair and their professional judgement called upon for the selection of subjects (p. 408). Reeve believed that critics' growing disdain for the medium, due to the poor presentation and frivolous subject matter of other publishers, meant the value of stereoscopic photographs for serious study had been entirely underestimated.

Part of Reeve's challenge was to appeal to a diverse audience by harnessing touch to vision in the visitor's encounter with natural history as part of the museum experience. This accorded with Fleming's view on the gradual education of the eye through the application of touch — but was also the very thing that Gray argued was futile in the existing arrangement in public museums. By using stereo-pairs — with their appeal to the tactile — and combining them with explanatory notes, Reeve would enhance the way natural history was presented in his new magazine. This would broaden knowledge and interest in a way that was neither merely entertaining nor soberly didactic but a satisfying merger of both. In other words, he adopted a heuristic approach to cognitive understanding by connecting the visual experience with the perception of touch — a process, he reckoned, for which the stereoscope was better suited than any other medium.

A key component of Reeve's approach was the commentary supplied by the relevant experts, which accompanied the stereographs. Its purpose was to provide facts about the objects portrayed and also to guide the viewer as to how best examine and fully appreciate their physical qualities in order to get the most out of the stereoscopic experience. Yet this was not always so. Richard Owen, Superintendent of Natural History at the British Museum — who was famed for his work on

[12] Lovell Reeve, 'The Stereoscopic Magazine', *Literary Gazette*, 24 April 1858, p. 408; Lovell Reeve, 'Stereoscopic Magazine', *Notes and Queries*, 2nd ser., 17 July 1858, front matter.

the extinct fauna of Britain's colonies — contributed the text for the stereo-pair of the *Megatherium* (*Fig. 1*).

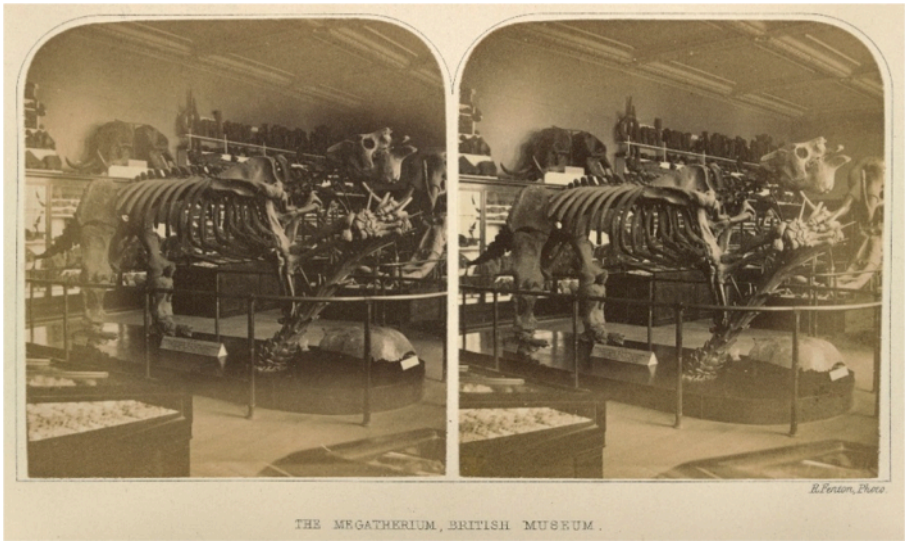

Fig. 1: Roger Fenton, *The Megatherium, British Museum, Stereoscopic Magazine*, August 1859. By permission of the State Library of Victoria, Melbourne.

Disappointingly, Owen's text only makes passing references to the actual objects encountered in this view.[13] When examined through the stereoscope, cases of bones surrounding the megatherium not only protrude forward but also stretch back into the gallery. This leads the eye into the depth of the space where the smooth ivory tusks of a mastodon push towards the viewer. Surrounded by cabinets crowded with countless fossils, the viewer has the opportunity to experience the claustrophobic effect of the British Museum's natural history galleries as a virtual encounter.

Yet Owen clearly understood that the performance of the stereoscope was reliant on the visual primacy of the objects closest to the viewer — as if almost within touch. Subsequently, he attempted to engage the viewer with the immediacy of the specimens portrayed. In his description of the Fossil Gallery published in December 1860, he draws attention to the location of Fenton's camera, which, he points out, has the effect of bringing very conspicuously into the foreground a 'well

[13] Professor Owen, 'Notes on the Stereograph of the Skeleton of the Megatherium', *Stereoscopic Magazine*, August 1859, pp. 193–98.

articulated skeleton of the extinct Gigantic Irish Deer (*Megaceros hibernicus*)' (*Fig. 2*).[14]

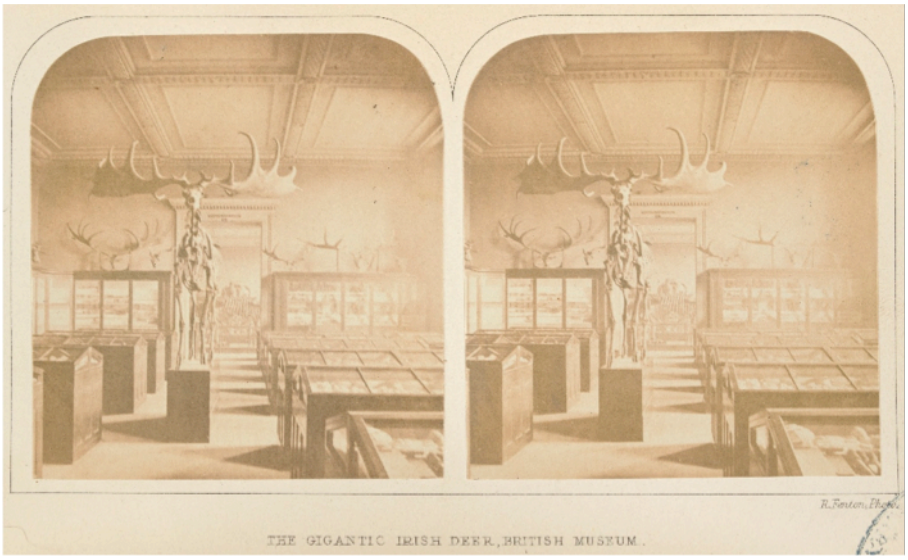

Fig. 2: Roger Fenton, *The Gigantic Irish Deer, British Museum, Stereoscopic Magazine,* November 1859. By permission of the State Library of Victoria, Melbourne.

The constraints of photographing in the long galleries of the British Museum, however, meant that this immersive effect was not always successfully realized. The extended view in this image, down onto and across rows of symmetrical display cabinets, produces a less-than-absorbing experience when seen through the stereoscope. Although not particularly alluring or useful for the viewer in terms of the tactile characteristics of the objects on display, this perspective serves to situate the viewer within the gallery and demonstrates how the stereoscope conveyed the orientational aspect of the tactile by creating a heightened awareness of just where and how the body of the viewer is positioned within the physical space.

More engaging for the viewer — and probably a more useful heuristic in Reeve's estimation — was the description of Fenton's view of the Reptile Room, most likely contributed by Albert Gunther, Assistant Keeper of Zoology (*Fig. 3*). Here, the writer meets the viewer at the

[14] Professor Owen, 'Notes on the Stereograph of the Gigantic Irish Deer', *Stereoscopic Magazine*, November 1859, pp. 3–6 (p. 3).

threshold of the gallery and recounts the path the photographer has taken 'in order to get a display of objects of [...] conspicuous [...] definition in the foreground'.[15]

Fig. 3: Roger Fenton, *The Reptile Gallery, British Museum, Stereoscopic Magazine,* February 1860. By permission of the State Library of Victoria, Melbourne.

This perfectly accords with the stereo-view, which locates the viewer at one end of the long room in preparation for inspecting the collection. Then, carefully guiding the viewer through the space, the writer describes the contents in sequence. Most striking is the way the text contrasts the tactility of different natural objects, such as the description of the rattlesnake's tail with its 'row of horny joints fitting loosely one into another' (p. 40). Likewise, the writer notes that 'the table-cases [...] so well seen in the stereograph' will enable the viewer to appreciate 'the Echini [...] armed with long spines; the Sea-Pancakes, so depressed that there scarcely seems to be any room for internal organs; and the curious Gorgon's Head, with its innumerable branches' (p. 42). Inspired by the sense of physical immersion created by the stereoscope, the writer attempts to direct the viewer's eyes (and body) through a space of rendered perspectives and evoke the sensation of touch using the visual cues provided. Unlike the view of the Fossil Gallery, here the camera has

[15] 'The Reptile Room, British Museum', *Stereoscopic Magazine*, February 1860, pp. 39–42 (p. 39).

been positioned lower so the viewer can look right through the glass-sided display cases. While some objects inside are too small in the photograph to identify from Gunther's description, the cabinets are evidently filled with natural curiosities. When seen through the stereo-viewer, their tactile characteristics become more pronounced and they are clearly perceived as objects that one could pick up and feel their weight and surface textures. This evocation of volume and tactility is reinforced through the rotund forms and scaly hides of a collection of crocodiles, mounted around the top of the walls — with their harpoon-like tails and rows of sharp ridges along their backs that jab out into the gallery space.

The gratification derived from stereo-views due to the illusion of touch was immensely attractive to Victorian audiences and helped define the *Stereoscopic Magazine* as a commodity contrived for both visual consumption and tactile delight. It was perhaps most effective, therefore, when it combined the study of natural history with the genre of still life.

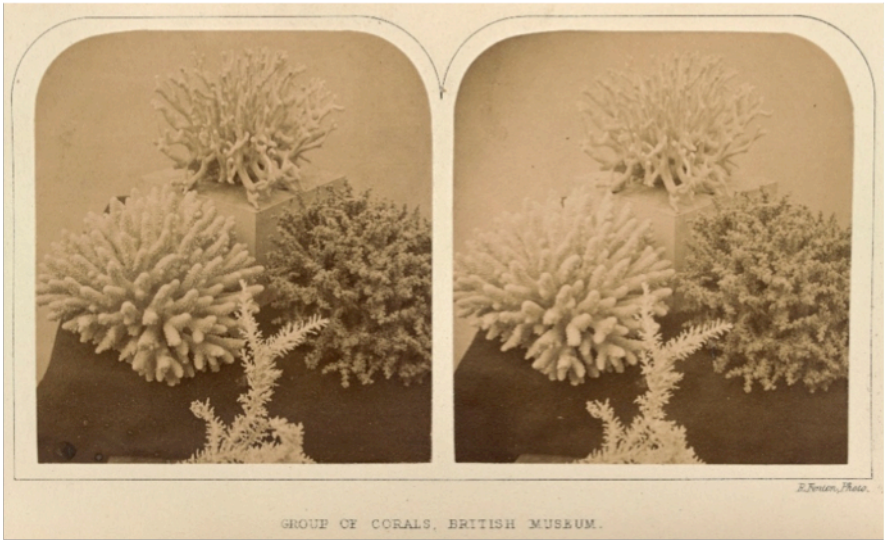

Fig. 4: Roger Fenton, *Group of Corals, British Museum, Stereoscopic Magazine*, October 1859. By permission of the State Library of Victoria, Melbourne.

Group of Corals, British Museum, which was published in October 1859, prefigured a series of still-life studies (*Fig. 4*).[16] Of all the British Museum

[16] A more elaborate still-life study, *Fruit with Ivory and Silver Tankard*, was published in the October 1860 issue and identified as the 'First of a Series Taken for the Magazine by Mr. Fenton', *Stereoscopic Magazine*, October 1860, pp. 117–18.

studies, this arrangement most successfully conveys the stereoscopic effect. Significantly, the gallery vista as stereo-view — with its sometimes odd perspective and resulting lack of detail — has been completely abandoned. The viewer's entire attention is directed to the elaborate form and convoluted structure of the specimens. The profusion of fine spicules pokes out towards the viewer and draws the eye back into the depths of each coral mass. When viewed through a stereoscope, close-up views of such intricate objects are far more successful at conveying volume than images that rely on groups of more austere objects. For example, *The Assyrian Gallery*, published in May 1860, resembles a stage set of two-dimensional planes placed one behind the other in the receding space (*Fig. 5*). The simple forms of the Assyrian sculptures provide very few points of visual convergence and, coupled with the sparseness of the gallery, offer a paucity of details for the stereoscopic effect to work satisfactorily.[17]

Fig. 5: Roger Fenton, *The Assyrian Gallery, British Museum, Stereoscopic Magazine,* May 1860. By permission of the State Library of Victoria, Melbourne.

By including still-life studies in the *Stereoscopic Magazine*, Reeve ensured that the natural objects portrayed — very often shells — were enticingly displayed. These were drawn from Reeve's own collection and

[17] 'The Assyrian Gallery, British Museum', *Stereoscopic Magazine*, May 1860, pp. 75–78.

were often duplicates of specimens held in the British Museum. In this way, nature's curiosities procured from all corners of the globe were made not just intelligible to the general public but collectible as well. *Group of Shells by Fenton* appeared in the magazine in August 1861 (*Fig. 6*).

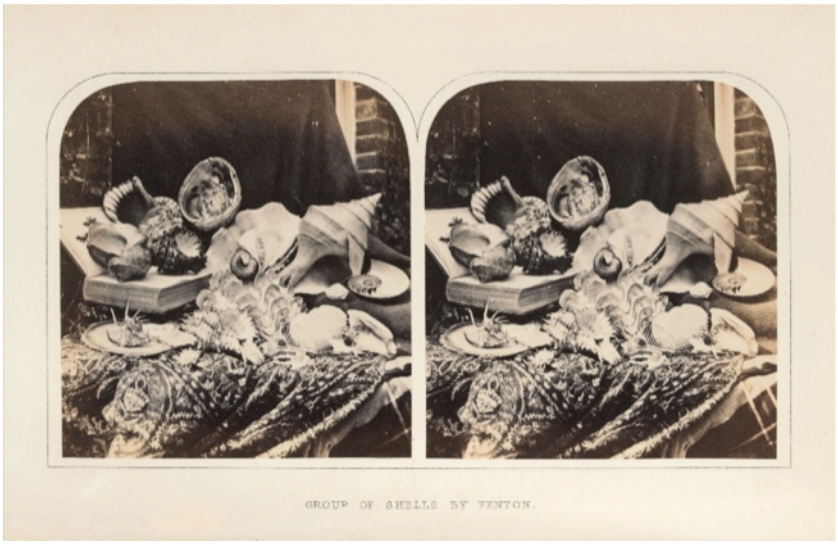

Fig. 6: Roger Fenton, *Group of Shells by Fenton, Stereoscopic Magazine,* August 1861. By permission of the State Library of Victoria, Melbourne.

It provides an object lesson in attentive looking by emphasizing the desirability of the shells' multifaceted forms and surfaces, with their knobbly, jagged exterior shapes and smooth spiral structures — displaying symmetry and asymmetry within a single form — and their coarse exterior armour shielding lustrous mother-of-pearl interiors.[18] Distinguished by the ornamental quality of their individual forms and delicate surface textures, this group of shells was gathered together for two apparent purposes: to highlight the diversity of these intriguing objects, and to contrast and thereby maximize the visual and tactile allure of individual specimens. Every shell in this ensemble is described in the accompanying text. Some were first named by Reeve himself, including the *Helix cambojiensis*, or fine reversed snail, which, having been carefully positioned in the centre of the composition — 'resting on the outer

[18] 'Group of Shells by Fenton', *Stereoscopic Magazine,* August 1861, pp. 33–36; Svetlana Alpers, *The Art of Describing: Dutch Art in the Seventeenth Century* (Chicago: University of Chicago Press, 1983), p. 72.

furbelowed surface of [a] *Tridacna* valve' — stares out disarmingly like a glass eye inviting the viewer to visually caress the pleated surface on which it lies (p. 35). With the shells set also within the folds of an 'embroidered China cloth' and a sturdy British plaid, the image encapsulates not only the pleasure and prosperity that the Victorians derived from nature but is also emblematic of Britain's global reach.

The *Stereoscopic Magazine* was well suited to the materialism of the nineteenth century, due to its commercial appeal and affordability. The inclusion of natural history displays and collections of rare specimens — especially close-up studies — gave the viewer a heightened sense of the tactile and spatial qualities of these often desirable objects. Formal pictorial conventions were less imperative than achieving this tangibility. As I've suggested in this article, Reeve's stereos were designed to be educational by providing modern audiences with complex experiences of nature and culture brought together at the British Museum. Stereoscopic photography opened up the possibility for combining the factual and the experiential. By appealing to both touch and vision, Reeve advocated the use of the medium not merely as a passive reflection of the external world but also to stimulate a more profound engagement with objects of natural history as a virtual hands-on investigation.