The East India Company, the Company's Museum, and the Political Economy of Natural History in the Early Nineteenth Century

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Abstract: At the turn of the nineteenth century, at its headquarters in the City of London, the Honourable East India Company established a new museum and library. By midcentury this museum would contain one of Europe's most extensive collections of the natural history, arts, and sciences of Asia. This essay uses the early history of the company's museum, focusing in particular on its natural history collections, to explore the material relationship between scientific practice and the imperial political economy. Much of the collections had been gathered in the wake of military campaigns, trade missions, or administrative surveys. Once specimens and reports arrived in Leadenhall Street and passed through the museum storage areas, this plunder would become the stuff of science, going on to feed the growth of disciplines, societies, and projects in Britain and beyond. In this way, the East India Company was integral to the information and communication infrastructures within which many sciences then operated. Collections-based disciplines and societies flourished in this period; their growth, it is argued, was coextensive with administrative and political economic change at institutions like the East India Company. The essay first explores the company's practices and patterns of collecting and then considers the consequences of this accumulation for aspects of scientific practice—particularly the growth of scientific societies—in both London and Calcutta.

> ***Power may be localized, but knowledge, to be most useful, must be centralized.***
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> **—J. S. Mill,** ***Considerations on Representative Government*** **(1861)**

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In addition to the cotton, tea, and other well-known commodities of the East India Company's nineteenth-century cargoes, the company was also trading in serpents. These came in many colors and several grades: "venomous," "harmless," "common," "rare," and so on.[1] Like cotton, the serpents would be a "raw" material for the production of manufactures in Britain—key foreign ingredients for publications and exhibitions. But, in contrast to the cotton manufactures that flowed back to the Indian market, the company's productions in natural history and other sciences were more often destined for consumption within the European market. The serpents would have been imported from as far away as Malaya, China, and New South Wales. But while other commodities would have been sold onward on the London exchanges, the serpents would be separated out and stored in the cellars of the company offices in the City of London. From there, specimens might be traded, or offered as gifts, but often they would enter the East India Company's growing archive of natural and artificial productions. In the basements and display rooms of Leadenhall Street, these snakes and reptiles would join all kinds of flora and fauna, rocks and minerals, archaeological objects and works of art, manuscripts and records, and so on, that were accumulating in the processes of trade and rule.

From its establishment in 1801, the East India Company's museum and library operated—like the East India Company itself—within a peculiar zone between public and private property and between British and British Indian government. It was a London institution but was funded with tax revenue from India; it was the property of a government, but that government was owned by shareholders; it was open to the public but was thousands of miles from a key public that it was said to serve; it was a company's museum but was closely tied to Britain's major public collections. Known officially as the Honourable East India Company's Museum, but often called simply the India Museum, it would grow by midcentury to contain one of the most extensive collections of information on Asia in Britain, if not all of Europe. When the East India Company was disbanded in 1858 and the company's territories came under direct Crown rule, the collections would be moved to Whitehall. When that reconfigured India Museum began to be dissolved in the late 1870s, its collections would be largely absorbed into the British Museum, Kew Gardens, and the new national museum complex in South Kensington. Like the British Museum, the company's museum was a popular attraction. Its displays were shipped to international exhibitions around the globe. But these were also working collections, intended to contribute to the growth of the sciences. The museum's stores held the data out of which publications and new collecting projects would be generated.

Of the little that has been published about the company's museum and library, the most significant works are the documentary surveys of different parts of the collections by Ray Desmond and Mildred Archer, both archivists with the India Office Records at the British Library.[2] So far, the museum is largely absent from the historiography of the East India Company's

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[1] See, e.g., "Venomous Serpents Received from the Asiatic Society of Bengal," Natural History Museum (NHM), London, Z Mss IND (ii) no. 29 (unnumbered, undated); and "Serpents: Hon. Company's Collection: Thomas Cantor," NHM Z Mss IND (ii) no. 32 (undated). For the epigraph see J. S. Mill, *Considerations on Representative Government* (1861), rpt. in *J. S. Mill: Utilitarianism, Liberty, and Representative Government*, ed. H. B. Acton (London: Dent, 1972), p. 357.

[2] Raymond Desmond, *The India Museum, 1801–79* (London: Her Majesty's Stationery Office, 1982) (hereafter cited as **Desmond, *India Museum, 1801–79***); Mildred Archer and John S. Bastin, *The Raffles Drawings in the India Office Library, London* (Kuala Lumpur: Oxford Univ. Press, 1978); Archer and Graham Parlett, *Company Paintings: Indian Paintings of the British Period* (London: British Museum, 1992); Archer, *Natural History Drawings in the India Office Library* (London: Her Majesty's Stationery Office, 1962); Felix Driver and Sonia Ashmore, "The Mobile Museum: Collecting and Circulating Indian Textiles in Victorian Britain," *Victorian Studies*, 2010, 52:353–385; D. T. Moore, "Geological Collectors and Collections of the India Museum, London, 1801–79," *Archives of Natural History*, 1982, *10*:399–428; and Deborah Swallow, "The India Museum and the British-Indian Textile Trade in the Late Nineteenth Century," *Textile History*, 1999, 30:29–45.

engagement with science. In general, the vast majority of writing on East India Company science is about developments in India.[3] The case of the company's museum therefore offers not only a new take on the East India Company as an institution of science but also a better understanding of how its "colonial" science was not bounded by a center/periphery divide.

Building on the work of Desmond and Archer, as well as archival material from the British Library, the British Museum, and the Natural History Museum, London, this essay uses the early history of the company's museum to explore the relationship between science and the imperial state via the company's role in accumulating what could be called the stuff of science: specimens, records, observations, data, and information of many kinds.[4] As a hinge between the imperial and the domestic branches of state, and between government and private enterprise, the East India Company's broad range of scientific projects offers a route into the strange land of state science in nineteenth-century Britain. It also provides a new perspective on the political and economic links between the growth of science in Britain and the growth of the British Empire in this period.

This essay therefore focuses on the intersection of imperial institutions and the material culture on which scientific practice depended. In many respects, the East India Company's growing archive of the natural and artificial world is entirely typical of the changes occurring within global scientific practice at the time. The company's museum encapsulates the kinds of changes Peter Burke was referring to when he noted that the amount of new information gathered or collected in Europe between 1750 and 1850 "was staggering, especially the knowledge collected by Europeans about the fauna, flora, geography and history of other parts of the world."[5] Historians have argued that the sciences in this period underwent dramatic changes: from the emergence of new empirically oriented and data-intensive disciplines such as geology, paleontology, meteorology, oceanography, and physical botany to the multiplication of scientific societies and the expansion of professionalization to the invention of new methodologies.[6] The accumulative, transregional, and (sometimes) centralizing features highlighted as characteristic of the period are also integral to many models of imperial and colonial science.[7]

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[3] David Arnold briefly discusses the museum and its "vast quantities" of specimens in his survey of science in colonial India: David Arnold, *Science, Technology, and Medicine in Colonial India* (New York: Cambridge Univ. Press, 2000). For work that treats developments in India see, e.g., Richard Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens, and the Origins of Environmentalism, 1600–1860* (Cambridge: Cambridge Univ. Press, 1995); Matthew H. Edney, *Mapping an Empire: The Geographical Construction of British India, 1765–1843* (Chicago: Univ. Chicago Press, 1997); Arnold, *Colonizing the Body: State Medicine and Epidemic Disease in Nineteenth-Century India* (Berkeley: Univ. California Press, 1993); and Bernard S. Cohen, *Colonialism and Its Forms of Knowledge: The British in India* (Princeton, N.J.: Princeton Univ. Press, 1996).

[4] This essay chronologically extends the literature on commerce, collecting, and science in the early modern period. See, e.g., Pamela H. Smith and Paula Findlen, eds., *Merchants and Marvels: Commerce, Science, and Art in Early Modern Europe* (New York: Routledge, 2002); Lisa Jardine, *Worldly Goods: A New History of the Renaissance* (New York: Norton, 1998); and Harold J. Cook, *Matters of Exchange: Commerce, Medicine, and Science in the Dutch Golden Age* (New Haven, Conn.: Yale Univ. Press, 2007).

[5] Peter Burke, *A Social History of Knowledge*, Vol. 2: *From the* Encyclopédie *to Wikipedia* (Cambridge: Polity, 2012), p. 12. Susan Faye Cannon had made the same point when she argued that in the sciences within that time period, one of the "fundamental matters in which basic change took place had to do with evidence: The mass of data to be explained was much greater by 1850." Susan Faye Cannon, *Science in Culture: The Early Victorian Period* (Kent: Dawson, 1978), p. 225.

[6] For a review of the literature on the growth and scale of data collection in the sciences, and particularly on "Humboldtian Science" in its relation to global economic history, see Jessica Ratcliff, "The Great Data Divergence: Global History of Science within Global Economic History," in *Global Scientific Practice in an Age of Revolutions, 1750–1850*, ed. Daniel Rood and Patrick Manning (Pittsburgh, Pa.: Univ. Pittsburgh Press, 2016).

[7] Examples range from Stage 1 of George Basalla's (now rejected) developmental model, to Bruno Latour's (perennially popular) cycles of accumulation at centers of calculation, to Kapil Raj's more recent argument that historians should stop talking about centers and peripheries and focus instead on systems of circulation. George Basalla, "The Spread of Western Science," *Science*,

Under a wide umbrella of scholarship, the movement of data and specimens around the globe remains a central subject of analysis. While perspectives vary, there seems to be consensus that new knowledge practices emerged in tandem with the growing global information and communication infrastructures of imperial and commercial expansion.[8] The remainder of this essay will draw out some of the ways in which imperial institutions such as the East India Company shaped and participated in those changes. Focusing on the role of state bodies in the processes of scientific accumulation, the question posed here is, How was doing science then tied up with the broader political economic landscape?[9]

The first section describes the establishment of the museum and sets it within the context of broader developments in state administration. The second section traces the early growth of the collection, paying particular attention to how the East India Company's fluctuating boundaries of influence were reflected in the history of the museum's stores. Section III turns to the connection between the East India Company's collections and the growth and changes in scientific practice in Britain. Here, the focus is on the multiplication of collections-based scientific societies, such as the Zoological Society and the Geological Society, in the first half of the nineteenth century. But if the East India Company's scientific accumulation contributed to a surplus of data in Britain, which in turn fed the formation of some collections and institutions in Europe, it also in some ways restricted the growth of other collections in the colonies. Therefore Section III also takes a closer look at the relationship between the company's museum and collections in other parts of the company's territories, particularly Bengal.

I. COMPANY SCIENCE AND STATE ADMINISTRATION: ESTABLISHMENT OF THE MUSEUM AT EAST INDIA HOUSE

Founded in 1600 as a chartered monopoly with close ties to the Crown, the East India Company had since its inception functioned as a quasi-independent state body.[10] By the early eighteenth century the East India Company had its own military. By 1760 it had gained control over significant portions of the Mughal state apparatus of eastern Bengal. From there, the company's formal and informal control over territories across Asia would continue to grow for another century. In the mid-1790s, after five eventful decades of commercial and territorial expansion in South Asia, the East India Company found itself also needing to expand its footprint in London. Since the 1640s, the company had occupied buildings in Leadenhall Street, a

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1967, *156*:611–622; Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society* (Cambridge, Mass.: Harvard Univ. Press, 1987); and Kapil Raj, "Beyond Postcolonialism . . . and Postpositivism: Circulation and the Global History of Science," *Isis*, 2013, *104*:337–347. See also Simon Schaffer, Lissa Roberts, Raj, and James Delbourgo, eds., *The Brokered World: Go-Betweens and Global Intelligence, 1770–1820* (Sagamore Beach, Mass.: Science History, 2009).

[8] Miles Ogborn, *Indian Ink: Script, Print, and the Making of the East India Company* (Chicago: Univ. Chicago Press, 2007); and Christopher A. Bayly, *Empire and Information: Intelligence Gathering and Social Communication in India, 1780–1870* (Cambridge: Cambridge Univ. Press, 1996). Bayly employs the concept of the information order, arguing that information cultures and practices should be understood as "autonomous forces for economic and social change": *ibid.*, pp. 3–6. He draws here on Manuel Castells, *The Informational City: Information Technology, Economic Restructuring, and the Urban-Regional Process* (Oxford: Blackwell, 1989). For a broader history of communications imperialism in the twentieth century see, e.g., Dwayne R. Winseck and Robert M. Pike, *Communication and Empire: Media, Markets, and Globalization, 1860–1930* (Durham, N.C.: Duke Univ. Press, 2007); and Herbert I. Schiller, *Mass Communications and American Empire* (Boston: Beacon, 1969). On information infrastructures and the political economy of information see Dan Schiller, *How to Think about Information* (Urbana: Univ. Illinois Press, 2007).

[9] For explicitly political economic approaches to scientific practice see, e.g., Jack R. Kloppenburg, *First the Seed: The Political Economy of Plant Biotechnology, 1492–2000* (Cambridge: Cambridge Univ. Press, 1988); and Lucille Brockway, *Science and Colonial Expansion: The Role of the British Royal Botanic Gardens* (New York: Academic, 1979).

[10] Philip J. Stern, *The Company-State: Corporate Sovereignty and the Early Modern Foundations of the British Empire in India* (New York: Oxford Univ. Press, 2011).

short walk from the Royal Exchange and the financial center of London. Within the company's offices, known as India House, the managing Court of Committees (or Court of Directors) had since this time maintained some kind of cabinet of curiosities. During Cosimo III de Medici's tour of England in 1669, for example, he stopped for an afternoon at India House, "which is full of curious things both animal and vegetable . . . kept here to gratifie the curiosity of the public." And Robert Boyle recalls how, during one visit to India House, he was allowed to fondle a large pile of uncut diamonds "in order to gratifie my Curiosity."[11] Now, in the 1790s, as the Court of Directors set about the design of an impressive new structure for India House, and as they simultaneously began redesigning the company's growing bureaucracy, one element involved a vague plan to designate a permanent space for an expanded "oriental repository." The company's historiographer, Robert Orme, had already requested that the new offices have a much-expanded library. But now the plan began to expand to encompass a general storehouse for material of all kinds from across the East. Charles Wilkins (1749–1836), a long-serving company employee and a Sanskrit scholar, drafted the proposal that would eventually be adopted. Wilkins had been a writer, translator, and printer in Bengal between 1770 and 1786. He had also, with William Jones, helped to found the Asiatic Society of Bengal in 1784. Now back in London, Wilkins seems to have been drawn to the idea of creating something like the Asiatic Society (whose members had explicitly modeled themselves on the Royal Society of London), but back in Britain and with better institutional provisions. Through his old patron Warren Hastings, the former governor-general of Bengal, Wilkins submitted to the Court of Directors "A Sketch of a Plan for an Oriental Museum proposed to be established at the India House."[12]

Wilkins's proposal described an archive of "maps, charts, plans, views, manuscripts, printed books, coins, medals, statues and inscriptions." It also included three "cabinets" divided along lines found in the British Museum's departments: "natural productions," "artificial productions," and "miscellaneous articles." Under natural productions, Wilkins proposed to collect any and all items from the animal, plant, and mineral kingdoms that might be "an object of commerce." This, importantly, would seem to have included just about everything. He offered a wide-ranging list of examples—from tusks, wools, and silkworms to edible birds' nests and sugarcane to cochineal and indigo to Bombay steel, petroleum, and fossils. Each item should be accompanied by "an abstract of its natural history." Artificial productions would include "samples of all the manufactures of Asia . . . Models of various machines and tools . . . and also implements of husbandry, and instruments used in their sciences, mathematical, astronomical, musical, etc. etc." Objects that are "only" curious, and "such things which cannot be classed under any of the former heads," should nevertheless not be rejected but should instead be added to the third cabinet—that of miscellany. Signaling the active and productive role expected of such a collection, Wilkins's sketch also included a printing office with the means of producing "foreign" (non-Latin) typefaces and the formation of a parallel society "similar to that now flourishing in Calcutta."[13]

Wilkins's description bears the stamp of the slightly earlier discourse surrounding the formation of the Asiatic Society of Bengal, which had been founded by a group of East India

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[11] Lorenzo Magalotti, *Travels of Cosmo III of Tuscany . . . through England* (1669) (London: J. Mawman, 1821), p. 324 (I thank Anna Winterbottom for this reference); and Robert Boyle, *Experimenta & observationes physicae wherein are briefly treated of several subjects relating to natural philosophy in an experimental way* (London: Printed for John Taylor . . . and John Wyat, 1691), p. 33.

[12] The proposal is reprinted in J. Forbes Watson, *On the Measures Required for the Efficient Working of the India Museum and Library with Suggestions for the Foundation, in Connection with Them, of an Indian Institute for Enquiry, Lecture, and Teaching* (London: His Majesty's Stationery Office, 1874), App. B, pp. 55–56.

[13] Desmond, *India Museum, 1801–79*, p. 10.

Company servants in Calcutta. William Jones, in his first several annual addresses to the Asiatic Society, would stress the importance of investigating, via collecting, both the "natural" and the "artificial" productions of Asia. Although he highlights the "love of learning" as a driving force in a way that Wilkins did not, Jones also stressed, as Wilkins did, that the pursuit of science and art went hand in hand with the pursuit of commerce:

> The civil history of their vast empires, and of India in particular, must be highly interesting to [British rulers]; but we have a still nearer interest in knowing all former modes of ruling these inestimable provinces, on the prosperity of which so much of our national welfare, and individual benefit, seems to depend. A minute geographical knowledge, not only of Bengal and Bahar [Bihar], but, for evident reasons, of all the kingdoms bordering on them, is closely connected with an account of their many revolutions: *but the natural productions of these territories, especially in the vegetable and mineral systems, are momentous objects of research to an imperial, but, which is a character of equal dignity, a commercial, people.*[14]

Like Wilkins, Jones saw "commercial interest" across the breadth and scope of virtually the entire world of learning.

As governor-general of Bengal, Hastings had not extended any particular support to the infant Asiatic Society, although he did allow its regular meetings to be held in the company's courtrooms. Back in London, however, Hastings was enthusiastic about folding such ambitions under the wing of the East India Company. He wrote to the Court of Directors to urge "the formation of a new and untried system for ingrafting the knowledge of India on the commercial persuits of the Company." Echoing the early orientalism of Jones and Wilkins, Hastings, too, stressed the importance of knowledge acquisition to the enlightenment of foreign trade and rule. Whereas other trading companies ("men associated for the purposes of pecuniary gain") had typically held "bounded views" focused narrowly on profit, the Court of Directors were, in forming a museum and library, proving to be of a different character. As Hastings puts it—and note that he does so in the language of trade—the company had "joined a desire to add the acquisition of knowledge (and wonderful will be the stores which the projected institution under such auspices will lay open to them) to the power, the riches, and the glory which its acts have already so largely contributed to the British Empire and Name." Once the new Leadenhall Street buildings were completed (see Figure 1), Wilkins was hired as curator and librarian. The Court of Directors then sent out a public dispatch (a company-wide announcement) declaring "the allotment of apartments for the purpose of an Oriental Repository" and making a broad solicitation for contributions from its servants abroad.[15]

Hastings had taken up the cause of the museum plan just after he was acquitted of all charges of corruption in a scandalous and very public trial of impeachment. The East India Company's reputation in Britain had been shaken by the sensation of Hastings's trial, which dug up deep concerns over the character of company rule in Bengal.[16] Ennobling projects such as the museum and library may thus have held a special appeal for both Hastings and the

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[14] William Jones, "A Discourse on the Institution of a Society . . . " (1783), in *Works of William Jones*, ed. John Shore Teignmouth, Vol. 3 (1807), pp. 1–10, on pp. 5–6, 12 (emphasis added).

[15] British Library India Office Records (IOR): e/1/101 Misc. letters received, 15 Nov. 1799, F 236, in Desmond, *India Museum, 1801–79*, p. 13; and IOR: E/4/658 India and Bengal Despatches, 5 June 1805, fols. 29–40, in Desmond, *India Museum, 1801–79*, p. 19. The request for contributions was eventually published in the *Bengal Gazette* of 26 June 1806.

[16] Nicholas B. Dirks, *The Scandal of Empire: India and the Creation of Imperial Britain* (Cambridge, Mass.: Harvard Univ. Press, 2006).

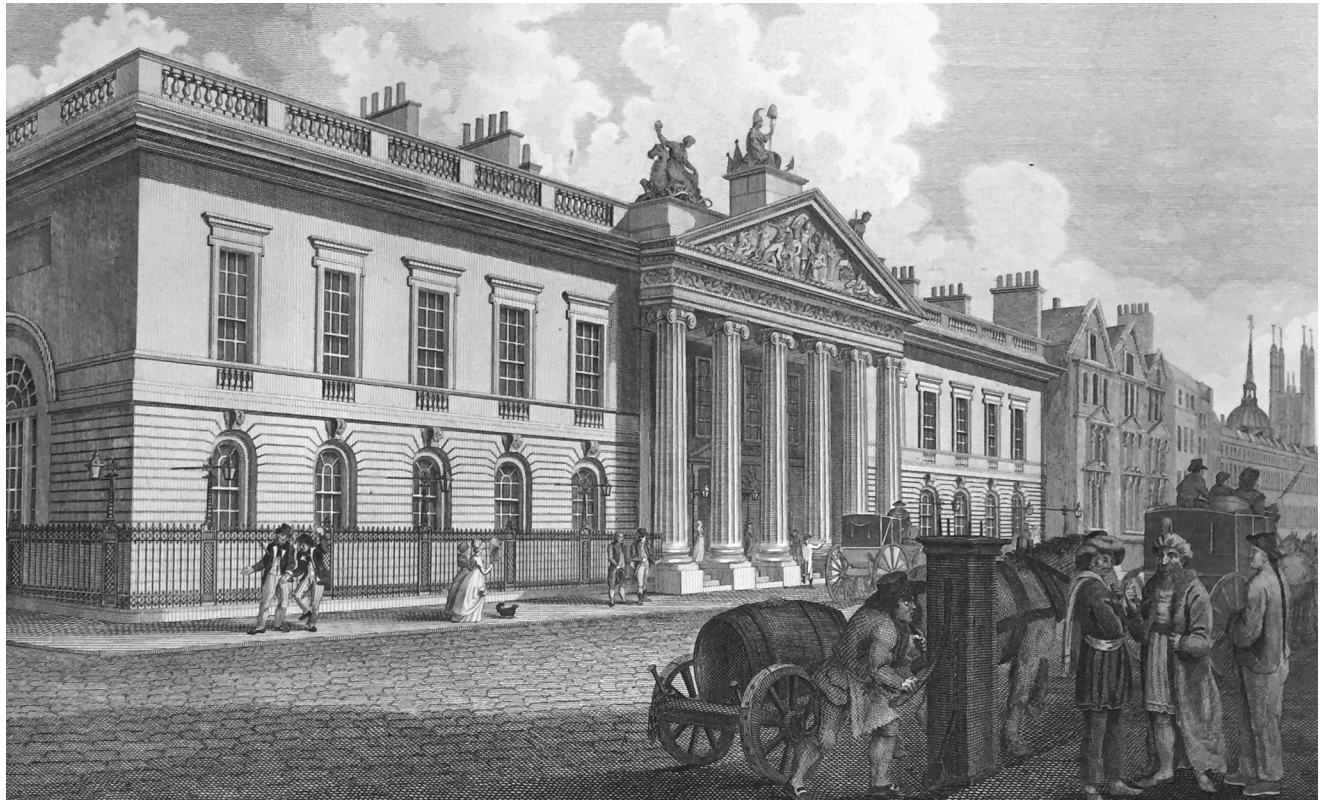

Figure 1. Outside East India House, circa 1833. Source: London Metropolitan Archives, Harben Bequest.

Court of Directors at this particular time. From the perspective of domestic politics, it would seem to have been an appropriate moment to invest in schemes supposed to benefit both the British public and the moral character of company servants.

But the new museum was also part of a broader tendency within the administration toward both greater centralization in London and greater information collection in general. Collecting by company servants did not, of course, begin with the establishment of an official repository in London. Since the earliest days of English transoceanic trade, company officers—like their counterparts in the Royal Army and Navy—had provided a steady stream of collectibles from abroad. It was expected that company servants would engage in private trade on a very restricted scale, and they could usually find space on a ship to accommodate small quantities of private cargo. Given the healthy commercial market for foreign works of art, curiosities, and specimens of natural history, company servants likely sought to profit in this sector as well. Much of the accumulation from private collecting by Europeans in India remained within families, either in the colonies or back in Britain.[17] Perhaps unsurprisingly, then, the Court of Directors' request for donations—offers to purchase collections would only come later—was not greeted enthusiastically. At first the colonial offices in Calcutta did not even bother to publish or distribute the directors' further requests; it took several more prods from London before, five years later, the Bengal government began to respond.

The establishment of a repository in London thus represents a twofold change in the practice of material accumulation within the company. First, the Court of Directors now appeared to be interested in intervening in and controlling (or depersonalizing, as Ursula Klein might put it) what had long existed as an individual, unofficial practice.[18] Second, the control that was sought would centralize the processes of accumulation (and, eventually, production). Both of these issues figure into what was, from the directors' perspective, a central problem of imperial administration: how to manage the relative independence that geographical distance gave both individual officers and colonial administrations abroad. That struggle had always been in part about information access and control.[19] But in the early nineteenth century the directors sought in new ways to centralize an increasingly wider spectrum of communications. The formation of the library and museum might, for example, be compared to the contemporaneous formation in 1806 of a new college for the training of East India Company officers in Hertfordshire. That institution (which would become Haileybury College) would effectively overshadow a new college at Fort William in Calcutta that had been founded (apparently against the Court of Directors' wishes) by the governor-general just six years earlier. Before the Hertfordshire college opened, such training could be found only in Calcutta, where a small educational industry run by native pandits had taken root. By 1810, however, officer education would be brought back to Britain, where writers would gain their foundational skills in Persian, Bengali, and other languages of the subcontinent.

Broader political economic developments are also reflected in the East India Company's increasing centralization and accumulation of what would become the stuff of science. Political historians tracing the growth of Britain's modern bureaucracy describe, during the early nineteenth century, the increasing "flow of information from the localities to the centre," "the centralization of knowledge," and a concomitant "reconfiguration of power within the state." David Eastwood writes that the increasing flow of information through the English state—its growing appetite for information and the new means available for gathering it—forms "one of

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[17] Maya Jasanoff, *Edge of Empire: Lives, Culture, and Conquest in the East, 1750–1850* (New York: Knopf, 2005).
[18] Ursula Klein, "Savant Officials in the Prussian Mining Administration," *Annals of Science*, 2012, *69*:349–374.
[19] See Ogborn, *Indian Ink* (cit. n. 8); and Bayly, *Empire and Information* (cit. n. 8).

the most spectacular trends emerging in the eighteen-thirties."[20] Around this time, a new breed of proto-technocrats pushed what Jon Agar calls the "informationalizing" of the state. The fast-growing bureaucracy of the British colonies pursued new means of organized information collection—surveys, censuses, forms—with such fervor that the imperial archive took on a whole new status, both enabling new forms of governance and justifying those methods of rule as particularly enlightened.[21]

John Stuart Mill, the political philosopher and lifelong East India Company bureaucrat, would in 1861 see the growing importance of central bureaucracy and centralized state decision making as a step forward. According to Mill, this would lead to better governance for two reasons: a central store of information is necessary for forming the knowledge on which good decisions would be made; and those employed in the central offices "probably [had] personally great superiority" over those in provincial roles. While the *exercise* of decisions would remain the domain of the peripheries, the *making* of decisions must come from the center: "power may be localized, but knowledge, to be most useful, must be centralized."[22]

Mill, a great fan of the company's museum, was here arguing for the role of some degree of central governance in any representative democracy. But the case could just as readily have been made by Joseph Hooker of Kew Gardens, Francis Beaufort at the Admiralty Hydrographic Office, Richard Owen at the British Museum, or the East India Company's curator Thomas Horsfield, all of whom argued ceaselessly for the importance of centralized stores of both expertise and information to the progress of the sciences.[23]

II. POLITICAL ECONOMY AND MATERIAL CULTURE: GROWTH OF THE COLLECTIONS

If the Court of Directors were only partly successful in their attempts to solicit the free collecting labor of their servants, the museum was immediately useful as a repository for "official" plunder collected in the process of military campaigns. Some of the first items to enter the museum came from the company's territorial expansion in the southern tip of the subcontinent. The last of the Anglo-Mysore Wars was fought in 1799, when a coalition of East India Company, British, and Malayali forces defeated the French-backed kingdom of Mysore. Along with territorial and political acquisitions, the company also amassed a vast collection of manuscripts, works of art, treasures, and curiosities during the invasion of the defeated maharaja Tipu Sultan's palace. According to London guides of the 1820s, the company's museum had become a popular attraction; the crowds were most drawn to things like weapons, armor, thrones, and jewels. Especially popular was Tipu's Tiger, the infamous automaton of a growling Bengal tiger mauling a squealing company officer.[24]

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[20] David Eastwood, "'Amplifying the Province of the Legislature': The Flow of Information and the English State in the Early Nineteenth Century," *Historical Research*, 1989, 62:276–294, on pp. 291–292, 293. See also Oz Frankel, *States of Inquiry: Social Investigations and Print Culture in Nineteenth-Century Britain and the United States* (Baltimore: Johns Hopkins Univ. Press, 2006).

[21] Jon Agar, *The Government Machine: A Revolutionary History of the Computer* (Cambridge, Mass.: MIT Press, 2003); and Ann L. Stoler, *Along the Archival Grain: Epistemic Anxieties and Colonial Common Sense* (Princeton, N.J.: Princeton Univ. Press, 2009).

[22] J. S. Mill, *Considerations on Representative Government* (1861; New York: Liberal Arts Press, 1958), p. 357.

[23] On Hooker's complaints about individual colonial collectors see Jim Endersby, *Imperial Nature: Joseph Hooker and the Practices of Victorian Science* (Chicago: Univ. Chicago Press, 2008). Mill's enthusiasm for the company museum can be seen in John Stuart Mill, *Memorandum of the Improvements in the Administration of India during the Last Thirty Years, and the Petition of the East-India Company to Parliament* (London: Printed by order of the Court of Proprietors of the East-India Company, by Cox & Wyman, 1858).

[24] See, e.g., John Wilkes, ed., *Encyclopaedia Londinensis* (1815), p. 452; and J. Britton, *Illustrations of the Public Buildings of London*, Vol. 2 (London, 1828), p. 88.

Displayed alongside the spoils of war or of strong-arm diplomacy was also plunder of another kind: a rapidly growing archive of the natural and artificial worlds of Asia. One case was filled with colorful stuffed flamingos, ibises, herons, and eagles. Along another wall were jars of snakes and lizards (and a "snake-lizard") preserved in spirits.[25] A dozen other cases were devoted to natural history as well. By 1820, natural history collecting was integrally connected to company efforts at political economic expansion. During this period the inflow of specimens to the cellars at Leadenhall Street followed a clear pattern: as company knowledge and influence was tested in a new area, a mass of specimens would be dredged up in the process, then carefully packed into crates and shipped back to the City.[26]

Between the end of the Napoleonic Wars and the East India Company's dissolution in 1858, while the company was investing in certain forms of development within the subcontinent, it was also pursuing expansion to the north and northwest, as well as into parts of Africa, Southeast Asia, and China. Some of this was propelled by interimperial rivalry, especially the growing influence of the Russian Empire in Central Asia and the Sikh Empire in the northwestern corner of the subcontinent. But the East India Company was also responding to weakening trade between India and Britain; for some company officials, capital growth was best encouraged by fostering new trade links between India and the East.

Some of the first major collections of geology and natural history came from the company's expansion in Southeast Asia. The British presence in the Malay Archipelago had been relatively minor until 1811, when the East India Company and the Royal Navy jointly invaded Dutch Java during the Napoleonic Wars. This was one of several Dutch colonies that the British had taken over when the Netherlands were formally annexed by France. These territories were supposed to be returned to the Dutch if and when the French were defeated, but local company administrators such as William Farquhar and Thomas Stamford Raffles pressed both their London superiors and Parliament to keep at least part of the possessions in British hands. At that time, information on the region was scarce in Britain, and as part of his campaign Raffles used the resources of his office as lieutenant-governor of Java to support surveys and collecting efforts in the region between 1813 and 1819. But the greater amount of material came from the plundering of the vast collections already made under Dutch rule by Thomas Horsfield and the Bataviaasch Genootschap van Kunsten en Wetenschappen (the Batavian Society for Arts and Sciences, founded in 1778). Horsfield was an American doctor, trained at the University of Pennsylvania, who had been working for the Dutch in Batavia (Jakarta) since 1801.[27]

During this turbulent period, the Dutch would lose much of their archives and one of their most active collectors. In the process of beginning a British survey of the island, Lieutenant-Colonel Colin Mackenzie, then surveyor general of Madras, gathered the maps, plans, charts, and surveys of the previous government, all of which eventually made their way to London. Meanwhile, Raffles, the lieutenant-governor of Java, befriended Horsfield and became his new patron.

From 1812, Horsfield began collecting explicitly for the company's museum. Crates of specimens were regularly shipped back to London; at the same time, with Raffles's permission, Horsfield also began collecting for Joseph Banks. When Napoleon was defeated in 1815, and

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[25] NHM Z Mss Ind (ii) no. 55.

[26] Some of the major expeditions are briefly discussed, in their political contexts, in David Arnold, *The New Cambridge History of India: Science, Technology, and Medicine in Colonial India* (Cambridge: Cambridge Univ. Press, 2000), pp. 20–26.

[27] John Bastin, *The Natural History Researches of Thomas Horsfield (1773–1859), First American Naturalist in Indonesia* (Singapore: Oxford Univ. Press, 1990); and Bastin, "The Geological Researches of Dr. Thomas Horsfield in Indonesia, 1801–1819," *Bulletin of the British Museum*, 1982, *10*:75–115.

it became clear that Java would soon be returned to the Dutch, Raffles and Horsfield began working to move the entire collection back to London before questions of ownership could get complicated. In a roundabout fashion, Horsfield sold the Dutch collection to the East India Company by exchanging the material for a significant salary advance.[28] He would move to London with the last of this material in 1819, in order to join the museum and begin work on publications (see Figure 2). He would go on to become director of the company's museum after Wilkins's death in 1836.

During Horsfield's tenure as curator (the position now split from that of librarian, which was given to the Oxford Sanskrit professor Horace Hayman Wilson), the museum's scientific collecting would accelerate. In addition to a growing number of small donations from company servants across the empire, the 1830s and 1840s saw major collections arriving in the wake of the First Opium War (1839–1842), the first Anglo-Afghan War (1839–1842), and the Anglo-Sikh Wars (1845–1849), as well as from diplomatic missions to Abyssinia, Tibet, Nepal, and Bhutan. Within British India, the museum gained a large number of geological, paleontological, and botanical specimens during the construction of a massive new agricultural canal system in the Ganges Delta. To give a sense of these dynamics, the geographical and political origins of the zoological collections as of 1851 are described in Table 1 and Figures 3 and 4. These deal only with the zoological material as described in the museum's first published catalogue. But similar patterns can also be extracted from the manuscript catalogues of botanical, geological, and mineralogical collections.[29]

By 1840 it would not be uncommon for specific instructions from the museum to be sent out to officers on campaigns. For example, a memorandum addressed to the Tibetan Boundary Commission stressed "the importance which Government attach to the labors of the scientific department of this Mission" and listed "a few points which have an immediate reference to the interest of the Museum of Natural History in this House"; the memorandum went on to ask for several dozen specific mammals to be collected. Collections resulting from exploration in new territories were always especially prized. Meanwhile, the Court of Directors (or, more likely, the museum staff via the chairmen) kept close tabs on the movements of such collections through various ports—noting, for example, when only portions of a collection were received in London while other parts had been siphoned off into collections in the colonies.[30]

In these ways, the patterns of inflow into the company's museum cellars during the first half of the nineteenth century were generated through processes having to do with the broader political economic history of the company. In contrast, scholars have sometimes explained the expansion of the archives of data on which nineteenth-century science was based in terms of processes largely internal to the scientific community in Europe. Susan Faye Cannon, for example, points to the Prussian naturalist Alexander von Humboldt's unique charismatic force and his prolific output as an explanation for why empirical, data-intensive ("Humboldtian") sciences took off with such force in this period. Michael Dettelbach argues that Humboldt's own methods were inspired by those of Antoine-Laurent Lavoisier and that he in turn became a model for the likes of John Herschel, William Whewell, Charles Darwin, Mary Somerville, and so on. Jim Endersby makes a case for the great personal influence of Joseph Hooker on

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[28] Bastin, *Natural History Researches of Thomas Horsfield (1773–1859)*, p. 61.

[29] See, e.g., the botanical collections of Eudelin de Jonville, made after the conquest of Ceylon in 1796; or John Forbes Royle's collections made in the Himalayas and the Middle East (deposited in 1831); or William Griffiths's specimens collected in Assam and Burma (deposited in 1843). NHM Z Mss Ind (i) and (ii).

[30] IOR: L/F/2/113: Finance & Home Committee, Nov 1847, in Desmond, *India Museum, 1801–79*, p. 61; and I OR: E/4/763 India and Bengal Despatches, 16 Sept. 1840, fols. 1155–1172, in Desmond, *India Museum, 1801–79*, p. 55.

Figure 2. Watercolor of a slow loris (label: "nycticebus coucang") from the Java collection of Thomas Horsfield, circa 1811–1824. Source: British Library NHD1/157.

the growth of the collections at Kew Gardens. From one perspective, then, following from Humboldt's example or the force of metropolitan men of science, data collection expanded in Britain because, as Cannon puts it, "in area after area, scientific spokesmen called for more data, and the scientific community labored to respond."[31]

But such analyses are not easily squared with the initial picture of how and why data was coming into London. The image of "scientific spokesmen" driving the growth of data collection by "calling for more data" may fit the example of the Magnetic Crusade of the 1830s and 1840s, in which François Arago and the British Association for the Advancement of Science (BAAS) rallied for a new global survey of the earth's magnetism. It may similarly be appropriate in the context of William Whewell's successful call to organize the collection of tidal data around the world in the 1830s.[32] But where does the will of the scientific community come into the decision of the Court of Directors to establish a museum or to send their surgeons along on

[31] Cannon, *Science in Culture* (cit. n. 5), p. 225. See also Michael Dettelbach, "Global Physics and Aesthetic Empire: Humboldt's Physical Portrait of the Tropics," in *Visions of Empire: Voyages, Botany, and Representations of Nature*, ed. David Philip Miller and Peter Hanns Reill (1996; Cambridge: Cambridge Univ. Press, 2010), pp. 258–292; and Endersby, *Imperial Nature* (cit. n. 23).

[32] On the Magnetic Crusade see John Cawood, "The Magnetic Crusade: Science and Politics in Early Victorian Britain," *Isis*, 1979, 70:493–518; Cawood, "Terrestrial Magnetism and the Development of International Collaboration in the Early Nineteenth Century," *Ann. Sci.*, 1977, 34:551–587; and Gregory A. Good, "Between Data, Mathematical Analysis, and Physical Theory: Research on Earth's Magnetism in the Nineteenth Century," *Centaurus*, 2008, 50:290–304. On Whewell's collection of tidal data see Michael S. Reidy, *Tides of History: Ocean Science and Her Majesty's Navy* (Chicago: Univ. Chicago Press, 2008).

Table 1. Zoological Acquisitions of the Honorable East India Company's Museum, as Listed in Thomas Horsfield's *Catalogue of the Mammalia in the Museum . . . of the East India Company* (London: W. H. Allen, 1851)

The Interior of the Indian Subcontinent
1799: Last Anglo-Mysore War: EIC gains large parts of southern India
1808: The King of Tanjore's collection of drawings of mammals and birds
1808, 1817, 1819: Francis (Buchanan) Hamilton: Collections from the survey of Mysore
1818: Last Anglo-Maratha War: EIC gains large parts of central India
1831, 1850: Col. H. W. Sykes: Collections from the statistical survey of the Deccan
The Northern Frontier: Tibet, Nepal, Sikkim, Bhutan, and the Himalayas
1815–1816: Anglo-Nepalese War: EIC gains portions of Nepal and Sikkim
1827: Capt. J. D. Herbert: Birds from the Geological Survey of the Himalayan Mountains
1832: Nathaniel Wallich: Skins of mammals from Nepal
1837: John McClelland: Natural history specimens from the Deputation to Assam
1840: Major R. Boileau Pemberton: Specimens from the Mission to Bhutan in 1837–1838
1842: Ganges Canal Project begins: EIC builds new infrastructure
1843: Hugh Falconer, Ganges Canal Project: Collection of birds from northern India
1843: H. Hodgson, assistant to the British Resident in Nepal: Specimens from Nepal
1845–1846: First Anglo-Sikh War: EIC gains large new northern territory
1848: H. Hodgson: Mammalia from Sikkim and Darjeeling
1848: Col. F. Buckley: Insects from the Himalayas
1850: Capt. R. Strachey: Large collection from the Tibetan Boundary Commission
The Western Frontier: The Middle East and East Africa
1839–1842: First Anglo-Afghan War
1842–1843: William Griffiths: Collection gathered in Afghanistan during the war
1843: Capt. W. C. Harris: Collections from the Mission to the Court of Shoa, Abyssinia
1846: Col. W. H. Sykes: Corals from the Persian Gulf
1851: Cmndr. Jones, Indian Navy: Collection from Mesopotamia
The Eastern Frontier: Southeast Asia and East Asia
1811: EIC Invasion and Occupation of Dutch Java
1812: Richard Parry: Drawings of mammals and birds from Sumatra
1812, 1819: Thomas Horsfield: Collections from Java

Table 1 (*Continued*)

The Eastern Frontier: Southeast Asia and East Asia
1812, 1817: Thomas Stamford Raffles: Collections from Java
1820–1821: Thomas Stamford Raffles: Collections from Sumatra
1823: George Finlayson: Collections from Crawford mission to Siam and Hué, Cochinchina
1824: First Anglo-Burmese War: EIC gains large territories from the Burmese Empire
1833: John Reeves: Collections from China (Macao)
1840: John William Helfer: Mammals and birds from Tenasserim (Burma)
1840–182: First Opium War: EIC extends trade into SE Asia and China
1843: William Griffith: Mammals, birds, fishes, and reptiles from Burma
1840–1842: Theodore Cantor: plants and animals collected during the First Opium War
1849: Lieut. James W. J. Taylor: Specimens from Singapore and Burma

Note.—The material is organized by region and date of arrival at the museum in London, with contemporary political or military context shown in italics. The list is not complete: very small donations, donations of unknown origin, and mixed collections forwarded from the Bengal or Madras governments were excluded.

military campaigns with the task of filling its stores?[33] The answer depends, of course, on how we define the scientific community; but the problem is that in this period that boundary itself was a subject of intense debate. It would seem that, despite what some contemporaries such as Charles Babbage may have wanted to claim, Britain's scientific culture was then constituted as much by company administrators, officers, and private and local traders in the colonies as by the metropolitan members of the Royal Society or the BAAS. Furthermore, the shape of the company's collection—the scale and scope of this growing data archive—seems best explained not by reference to the research needs or interests of any particular science community (however it is defined) but, rather, by broader political economic changes, especially the contingencies of the company's expansions and contractions and the fact that plunder-collecting and victory-surveys of the kind first seen during the Napoleonic Wars were to become an institutionalized practice within the East India Company. To understand those developments, we will need to look further than the influence of even the powerful scientist-bureaucrats such as John Barrow, Joseph Banks, or William Herschel.

III. MATERIAL CULTURE AND SCIENTIFIC PRACTICE: THE COMPANY'S MUSEUM AND THE GROWTH OF SCIENTIFIC SOCIETIES

Through the 1830s, 1840s, and 1850s, more and more rooms in Leadenhall Street would be taken over by the collections (see Figure 5). Displays expanded to fill parts of the office spaces left vacant by institutional change, such as the loss of the India trade monopoly in 1818 and

[33] Note the similar questions to be asked about the Admiralty's decision to expand surveys or to establish a Hydrographic Office for the centralized production of geographical, magnetic, and hydrographical surveys.

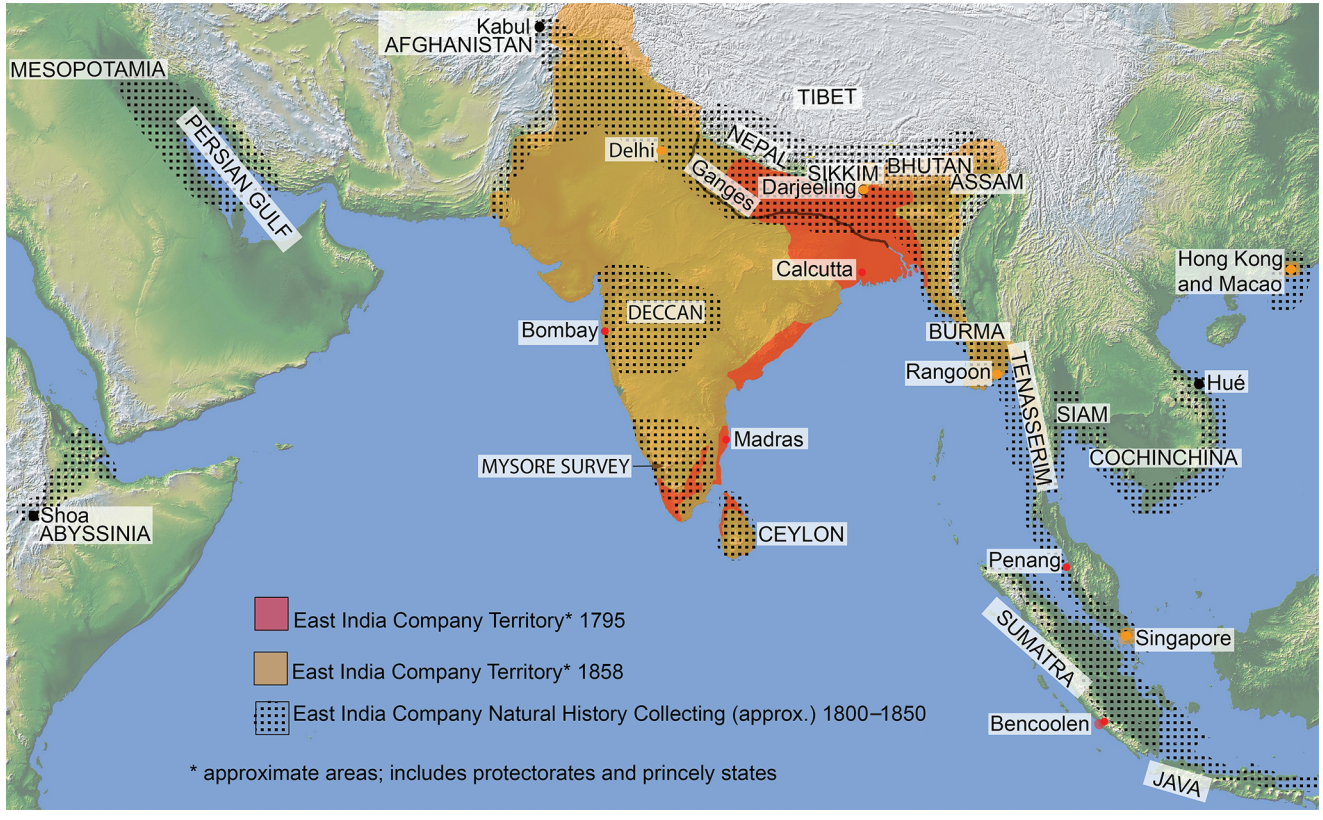

Figure 3. Map showing the approximate geography of the collections described in Table 1, together with an indication of the regions under East India Company rule in 1795 and 1858.

Figure 4. Illustration of trades (husband and wife pairs) contributing to the production of natural history materials in southern India circa 1828. From left to right: sport hunters, bird catchers, and trappers. Source: British Library Add.Or.49.

that of the China trade in 1833. One of Horsfield's first successes was to gain more space, at the expense of the surveyor's offices on the third floor, for the expansion of natural history displays. In 1845, the pay office on the first floor was also given over to displays: it was filled mainly with the Siwalik Hills fossils gathered by Hugh Falconer and Proby Cautley. Two huge Assyrian reliefs arrived from Baghdad in 1855 but were too heavy to be moved anywhere but the former tea sale room on the ground floor. Installations of models, crafts, inscriptions, and coins were added to the library. Corridors and stairways were lined with works of art. In 1856, after the return of nearly 6,000 square feet of displays from a series of international exhibitions, storage space was also severely overcrowded. Horsfield's requests for more dry cellar space in the basements were denied.

By and large, beyond public display, the collections would be used in much the same way as the collections at Kew or the British Museum. Mostly they would form the basis of publications that added to the collective archive of flora and fauna and of geological, paleontological, and ethnological and archaeological data. Often these publications, such as Horsfield's own *Plantae Javanicae Rariores* (1852), offered a survey of a region's plants in catalogue form. Others, such as Patrick Russell's much earlier *Account of Indian Serpents, Collected on the Coast of Coromandel* (1796), combined a list of species with chapters about the uses or features of the animal subjects (such as descriptions of various snake poisons and potential antidotes).[34] Russell also went beyond description, as did many other company authors, to propose a system

[34] Thomas Horsfield, *Plantae Javanicae Rariores* (London: W. H. Allen, 1852); and Patrick Russell, *An Account of Indian Serpents, Collected on the Coast of Coromandel; Containing Descriptions and Drawings of Each Species; Together with Experiments and Remarks on Their Several Poisons* (1796).

Figure 5. Inside the museum at India House. Source: *Illustrated News of the World*, 15 May 1858.

of classification (based on scale designs). From the late 1850s, after the company was folded into the British Government, the entire collection would be relocated to government offices in Whitehall, just next door to the armed services' own museum, the Royal United Services Museum (itself a fascinating parallel to the company's museum).

Meanwhile, back in the 1830s and 1840s, even as storage space became more and more scarce, Horsfield and the Court of Directors continued to encourage company servants to send materials back to London. An oft-repeated justification for moving collections from the colonies to London was climatic: specimens and manuscripts would rot in the tropical heat and

humidity, worried Horsfield; storage facilities gave inadequate protection and care. Ironically, the company's own voracious collecting would lead its London stores to some neglect. Even worse, with the cellars in Leadenhall Street packed full, crates of data would sometimes be left in the warehouses in New Street, vulnerable to "city dust, rats & other vermin."[35]

Even the stores beneath Leadenhall Street were not in the best condition. In February 1858, for example, wanting to consult material from Afghanistan for his own work, Joseph Hooker, the director of the Royal Botanical Gardens at Kew, received permission to access the cellar store: "I found the Collections to be of enormous bulk; some are in unopened Chests; others are partially arranged, & the confusion is so great that it will be difficult to determine where, or by whom, many were collected—they have also suffered to such a degree from damp and the ravages of worms that it is to be feared many are irretrievably ruined." So worried was Hooker about the state of the specimens that he offered his services and the storage facilities at Kew, asking only that the company pay for the processing costs and that Kew be granted first rights to duplicate specimens. Six months later (by which time Parliament had acted to liquidate the East India Company and transfer its functions to the Crown), eleven cartloads of plants were moved from Leadenhall Street to Kew. Six years later, Hooker had overseen the processing and archiving of over 110,000 company specimens.[36]

This was not the first time Kew had received data through the East India Company's museum, nor was Kew the only repository to benefit from the overflows of Leadenhall Street. From its very beginning, the company's museum often operated less as a final resting place for inflows from the empire than as a sorting house or sieve. Well-preserved specimens and rare items were first offered to (or requested by—as sometimes happened when the museum put duplicates on display) the "other national collections," as Horsfield referred to the British Museum and Kew. The many different grades of other unwanted specimens would wend their way outward across Britain to Europe and abroad. While Kew, the British Museum, and then, usually, Cambridge and Oxford were the first in line within a hierarchy of outflow recipients, a surprisingly broad number and type of institutions were in the queue to receive the museum's donations. To take just one example, in 1830 Horsfield presented the Swiss botanist and professor of natural history Augustin Pyramus de Candolle with "a selection of mammalia and birds from the collections deposited at the India House," to be given as a gift to the "Public Museum of Geneva." Most were taken from Horsfield's own collections from Java, and they were not in the best shape: "In receiving these specimens I pray you may be pleased to consider that, from the effects of an Indian Climate, many of the subjects may be found unfit for the preparation required for preserving them in a Museum; it is however hoped that they may prove useful for reference and examination, in a scientific point of view."[37]

Back in London, the Linnean Society, the Zoological Society, and the Geological Society were also regularly fed from the Leadenhall Street stores. The Horticultural Society helped to distribute seeds that came through the museum's doors. Smaller municipal societies also benefited, such as those at Manchester, Liverpool, the Isle of Wight, Cornwall, Dublin, Boston, and Philadelphia—and even farther afield in Missouri. Most of the company material

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[35] See, e.g., Court of Directors dispatch, 11 Sept. 1850, in Desmond, *India Museum, 1801–79*, p. 40 (encouragement to send materials to London); and Royal Botanical Gardens, Kew, Herbarium Presentations to 1900, Vol. 1, 5 Feb. 1858, fols. 249–251 (quotation).

[36] Royal Botanical Gardens, Kew, Herbarium Presentations to 1900, Vol. 1, 5 Feb. 1858, fols. 249–251; and Desmond, *India Museum, 1801–79*, p. 64.

[37] NHM Tring MSS Horsfield (unnumbered). For more on Candolle and Swiss collections see Thierry Hoquet, "Botanical Authority: Benjamin Delessert's Collections between Travelers and Candolle's Natural Method (1803–1847)," *Isis*, 2014, *105*:508–539. This essay describes Delessert's private French collection as a "center of distribution."

organized by Hooker was sent on to other repositories around the world. The majority of the Siwalik Hills fossils of Hugh Falconer were sent to the British Museum, but the company also produced plaster-cast copies and shipped them on to Oxford and Cambridge, the Saint Petersburg Academy of Science, the Military Academy at Addiscome, and institutions in Australia, Sweden, the United States, Germany, India, and beyond. Altogether, Ray Desmond reckons, sixty-four universities, museums, societies, and individuals benefited from the company's disgorging.[38] The East India Company thus became one prominent participant in an economy of barter, exchange, purchase, and donation of material that extended among hundreds of repositories across the world.

The proliferation of scientific societies in the first half of the nineteenth century was connected to this economy. Just in London, the following societies were formed: the Royal Horticultural Society (founded 1804, chartered 1861), the Geological Society (f. 1807, c. 1825), the Royal Astronomical Society (f. 1820, c. 1831), the Society for the Diffusion of Useful Knowledge (f. 1826), the Zoological Society (f. 1829), the Geographical Society (f. 1830, c. 1859), the British Association for the Advancement of Science (f. 1831), the Entomological Society (f. 1833), the Ethnological Society (f. 1843), and the Hakluyt Society (f. 1846). Privately organized and funded through individual membership subscriptions, Britain's thriving scientific societies figure prominently in the standard picture of a uniquely British form of private, civic scientific enterprise. Here, the Grand Amateurs thrived, and space and resources were created for the dedicated practice of science in a time before university science faculties or other professional positions existed. Meanwhile, Parliament was notoriously stingy in offering support even to the Royal Society and the British Association.[39]

In fact, however, through means less direct than outright funding, state resources such as those flowing out of the company's museum fed the growth of these societies in several important ways. First, scientific clubs and societies benefited greatly from the free labor of state employees: company servants, members of the military, politicians, and government bureaucrats. To take the Zoological Society as an example: the first president (and on many accounts the "founder") was the former lieutenant-governor of Java, Sir Stamford Raffles. As a group, the founding members listed in the society's charter are remarkably diverse, but the aristocracy and state servants are well represented. The list includes a landed aristocrat (Nicholas Vigors), a liberal M.P. and "fashionable aesthete" (Charles Baring Wall—son of the private merchant Charles Wall), a tax bureaucrat (Joseph Sabine), a secretary of state (Henry Landsdowne), and a Whig politician who was both First Lord of the Admiralty and governor-general of India for the East India Company (George Eden). The role of wealthy amateurs and the political elite within the society culture of the nineteenth century would become the subject of much debate and much criticism.[40] Nevertheless, all of these bodies certainly had connections to the state, bringing them at least partly within the orbit of political culture. In the case of the Zoological Society, such connections to the Crown would be especially fruitful, since it was through such channels that Queen Victoria was persuaded to grant the society a portion of Regent's Park for its growing menagerie.

More importantly for the subject of this essay, many, but not all, of the new societies of the time formed themselves explicitly around collections and collecting. Much of the early work of the Zoological Society, for example, was devoted to getting their collections off the ground.

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[38] Desmond, *India Museum, 1801–79*, p. 53.

[39] Marie Boas Hall, *All Scientists Now: The Royal Society in the Nineteenth Century* (Cambridge: Cambridge Univ. Press, 1984).

[40] See, e.g., the debate over the "political appointments" in the Royal Society, a topic sharply raised by Charles Babbage: Charles Babbage, *Reflections on the Decline of Science in England and on Some of Its Causes* (1830; London: Pickering, 1989).

One of the very first orders of the first council meetings in 1825 was to secure arrangements with the keepers of the menageries at the Tower of London and the Exeter Exchange for the temporary housing of "such animals as may be presented to the society, until their own establishment is completed." The next several items record the status of their current small collection, including several new presents offered to the society (two "rapacious birds" from Joshua Brooks and a deer taken by a naval captain from an island off the coast of Calcutta). The remainder of the business involved setting up the four main committees to manage the society's finances, its menagerie, the museum, and the library. When the Zoological Society received its royal charter in 1829, the investments already made in accumulating a collection were key to its standing and status. The charter notes both that the society had been formed for "the introduction of new and curious subjects of the Animal Kingdom" and that the members had already "subscribed and expended considerable sums of money for that purpose." Similarly, the Geological Society's charter, adopted in 1827, stresses that the members had already "expended considerable sums of money in the purchase and collection of Books, Maps, Specimens and other objects and in the publication of various works."[41]

The collections of these societies would grow, in part, out of the company's own collections, as well as through surveys and voyages conducted by the Admiralty and other arms of the state. Thus the proliferation of societies in Britain during this period is not only a reflection of the key role played by private initiatives and resources in shaping Britain's Victorian scientific culture. It is also about how scientific culture reacted with a material culture that was being transformed by state administration and imperial expansion. Here, again, and as with the East India Company in general, the boundaries between public and private are not so clear. What is clear, however, is that the expansion of scientific societies in Britain was also a reflection of the expanding accumulative drive of imperial administrative practices.

At the same time, it should be emphasized that the East India Company's accumulation in London was itself feeding off of and competing with other collections around the empire. The fate of numerous colonial collections would be tied to the fluctuations of the company museum's appetite.[42] Perhaps no colonial institution was more closely tied to the museum than the Asiatic Society of Bengal, the collections of which would eventually form the first national museum in British India in 1875. The dynamic between the company's museum in London and the Asiatic Society of Bengal was, during this period at least, quite the reverse of that with the London societies described above.[43] As has already been mentioned, the formation of a collection had been a central feature of the Asiatic Society's projected activities. In the eighteenth century the Asiatic Society's small collection would be stored in the home of one or another officer, but once the society found a permanent physical home in 1806 plans for a museum soon followed. Nathaniel Wallich (1786–1854), a Danish surgeon and director of the company's botanic gardens in Calcutta, would become the first curator of the Asiatic Society's collection. In a letter to the Asiatic Society in 1814, he stressed the importance of accumulating material collections to the overall purpose of learned societies: "A collection of the substances which are the objects of science and of those reliques which illustrate ancient times and manners, has always been one of the first steps taken by Societies instituted for the dissemination of

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[41] Zoological Society of London Library: GB 0814 FA Council Meetings, 5 May 1825 (early business); *The Charter, By-laws, and Regulations of the Zoological Society of London, Inc., March 27, 1829* (London: Waterlow and Sons, 1829); and *The Charter of the Geological Society of London, with the Bye-laws Adopted at the General Meeting, May 1, 1827* (London, 1827).

[42] Rogério Miguel Puga, "The First Museum in China: The British Museum of Macao (1829–1834) and Its Contribution to Nineteenth-Century British Natural Science," *Journal of the Royal Asiatic Society*, 2012, 22:575–586.

[43] A similar focus on extraction of data or materials is described in Brockway, *Science and Colonial Expansion* (cit. n. 9).

specific or universal knowledge. Such a collection was one of the first objects also of the Asiatic Society." Like many of his contemporaries, Wallich believed that scientific value is gained in the very process of accumulation: "It is, however, in the departments of science that a Museum in this country would be found most specially serviceable, and the facility of its accumulation is proportionable to the extent of its utility. In Natural History, Botany, Anatomy, Chemistry, Mineralogy and other branches, a collection would accumulate rapidly if once commenced; and from the first moment of its accumulation would furnish additional matter to the stock of knowledge."[44] Wallich thus made a strong case for the importance of a collection to the practice of science in a given location—the importance of access to the stuff of nature—placing material accumulation at the center of his strategy for the local growth of scientific practice.

For such societies in Calcutta, as for those in London, the price of maintenance was often a key barrier to the accumulation of collections. Managing a collection entailed a whole host of costs beyond those of holding meetings and publishing transactions: finding space for storage, hiring a librarian or curator, and paying for the materials for mounting, preservation, and catalogue publication. At least in Calcutta, as Wallich was happy to point out, collecting itself was relatively easy: "Many objects with which we are exceedingly familiar in this country are new or imperfectly known to general science and . . . each . . . would contribute some interesting supply to the extensive results of western enquiry."[45]

And, as Wallich had expected, the society's collection grew quickly—"from *China*, from New South Wales, from the Cape, and from every quarter of the Honourable Company's possessions, specimens of natural history, of mineralogy and geology, have flowed in faster than they could be accommodated." But as collections grow so do their costs, and by 1836 the society, now in debt, was considering putting the collection up for sale. Having grown too big to be funded by a voluntary organization, the collection was proposed as a foundation for the creation of the Government of India's first national museum. The problem, however, was that India already had a national museum; it just happened to be in London. When approached with the request to fund a national museum by establishing government support for the Asiatic Society collections, the governor-general of Bengal, the same George Eden who had cofounded the Zoological Society, passed the decision on to the Home Government, since the Court of Directors were already supporting a library and museum "at considerable expense." Although Eden believed that "such institutions in Europe, however perfect, do not supersede the necessity of providing similar in India," he sensed that it was unlikely that the Court of Directors would then fund a similar institution in India.[46]

Upon hearing that the question would be passed back to London, the society requested an interim stipend of 200 rupees per month in order to keep its collections in basic maintenance. When the question of a national museum in India finally came in front of the Court of Directors, they replied in 1839 that the court would not object to continuing to provide that small sum "for the cost of preparing specimens and maintaining the collection in order." It was silent on the idea of a national museum, although it also permitted the Bengal government to spend some small amount of funds on purchases for the Asiatic Society's museum, so long as "on all such occasions, you will forward to our Museum [i.e., the one at India House] a selection from the articles which may have been so procured."[47]

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[44] Nathaniel Wallich to Royal Asiatic Society, 2 Feb. 1814, in Rajendralala Mitra, *Centenary Review of the Asiatic Society of Bengal, from 1784 to 1883* (Calcutta: Asiatic Society of Bengal, 1885), p. 35.

[45] *Journal of the Asiatic Society of Bengal*, 1836, *6*:493.

[46] *Ibid.*; and Mitra, *Centenary Review of the Asiatic Society of Bengal* (cit. n. 44), p. 39.

[47] Mitra, *Centenary Review of the Asiatic Society of Bengal*, p. 40.

Meanwhile, back in London, Horsfield kept surveillance on the Asiatic Society's *Transactions*, which published lists of new arrivals. He would at times aggressively seek the transfer of material collected by officers on duty. He also interpreted the Asiatic Society's new collection grant as a contract binding it even more clearly to a subordinate position under the London museum. As he reiterated in a letter to the society chasing up some missing materials from Bhutan and Nepal:

> We now call your attention to several points respecting the relation in which the Asiatic Society is placed towards the Company's Museum in England in consideration of this grant: . . . For any naturalist or officer who may accompany any mission or deputation on behalf of Government, the most full and complete series resulting from his labors . . . the most valuable and interesting results of scientific deputations and missions on behalf of Government . . . are to be dispatched to England for the Company's Museum by the earliest opportunity.[48]

Thus, if the proliferation of scientific societies in Britain during the first half of the nineteenth century can be seen as a feature of the broad accumulation by imperial states in Britain, elsewhere in the company's empire the force exerted over material by Leadenhall Street was sharply felt.

But the transregional picture of company collections is more complicated than Horsfield's demands on the Calcutta museum might suggest. For one thing, the Asiatic Society of Bengal's collections were growing overall, as were those of the branch societies in the Madras and Bombay presidencies. Madras, too, was by the 1830s receiving small but regular government subsidies for collections, and it, too, was regularly sending materials back to London. Within the company's expanding territories, Calcutta in particular emitted its own gravitational pull, attracting many donations from across the company's territories. This would, for example, be the case for parts of the so-called British Museum in Macao, a library and natural history museum founded by three East India Company supercargoes in 1829. The collections of the library and museum grew largely from the donations of company personnel, but private British traders and Portuguese locals also contributed. The Macao museum grew steadily for several years until 1833, when the East India Company finally lost its China monopoly; at that time the supercargoes packed it up, along with the rest of the company's offices, for transfer back to Calcutta. Some of the material was then donated to the Asiatic Society; for example, the trader Robert Inglis donated his collection of birds to the society's museum. But much of what would become the well-known parts of this collection—John Reeves's collection of fishes, for example—would soon make their way to India House in London. As the *Journal of the Asiatic Society of Bengal* noted sourly, "It had been proposed to transfer the whole [Macao] collection to Calcutta, and as far as concentration is beneficial, it is to be regretted that this munificent intention had been abandoned."[49]

Overall, then, across the remainder of the company's lifespan and beyond, it would be in London where things accumulated at the greatest speed and in the greatest number. But that

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[48] Dispatch, 16 Sept. 1840, in Desmond, *India Museum, 1801–79*, p. 56.

[49] On the British Museum in Macao see Puga, "First Museum in China" (cit. n. 42); the *Journal of the Royal Asiatic Society of Bengal* is quoted on p. 585. At the time of the founding of the Macao museum the East India Company was increasingly reliant on the growing trade links between India (importing textiles, exporting opium), China (importing opium, exporting tea), and Britain (importing tea, exporting textiles). Barred from residing on the mainland, British traders would often make their home in Macao during the breaks between trading seasons, and the Portuguese enclave had become an important cultural center for non-Chinese in the region.

should not be taken to suggest that there was anything static or simple in the flows of information and communication on which these collection geographies were built. For one thing, material was also being exported from Europe into colonized regions by way of the same imperial infrastructures. By and large these were "artificial productions" rather than "natural productions"; Alexander Macleay's decision to ship his important collection of insects from London to Sydney in 1824 was unusual.[50] Much more common were the shipments of books, artworks, and scientific instruments imported from Europe by officers or traders.[51] Similarly, many of the native elite had by the early nineteenth century amassed renowned collections of European art and artifacts.[52] And some material would also circulate from one continent to another and back again. The company's plunder from the sacking of Tipu Sultan's palace included his substantial collections of European books, artworks, and scientific instruments. Observations and data from the Maharaja of Travancore's observatory were shipped to Britain in the 1840s and, thirty years later, would be returned to India. In the 1870s and 1880s this, too, would be the fate of at least part of the (now former) East India Company's collections, which by 1890 would be entirely dispersed.

CONCLUSION

In his very Humboldtian argument that progress depended on, and emerged by virtue of, the quality, size, and scope of the material available, Nathaniel Wallich captured the importance of collections to conceptions of scientific practice at this time. This essay has described just a few of the ways in which state bodies like the East India Company influenced the structure, scope, and distribution of such collections. The formation of the East India Company's museum was just one act in a much longer-running drama of authority and control played out between agents in the colonies and administrators in London. This act would, however, have specific consequences for the sciences across the center/periphery divide.

This essay has argued that in Britain in this period a key relationship between the state and science existed at the level of the economics and material culture of science. One of the most basic connections between science and empire lies in the role of institutions such as the East India Company as providers of the material culture of science: the stuff of the empire would become the stuff of science. Much of that material was directly connected to military, trade, or diplomatic campaigns, but once specimens and reports arrived in Leadenhall Street, passing through the museum stores, this plunder would go on to feed the growth of the sciences throughout Europe and beyond. While it did consistently (at least up until the 1870s) build up its own stores, the museum was also a sieve or filter, or a central distribution warehouse, always changing, feeding other institutions as much as its own. At the same time, the centralizing drive of figures such as Mill and Horsfield would serve to restrict, in some ways, the accumulation of scientific materials in other colonial regions. In this capacity, the East India Company transformed the stuff of science, and the nature of scientific practice, across the British Empire.

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[50] In 1825 the entomological collection that would become the nucleus of the University of Sydney's Macleay Museum was shipped from Britain to Sydney when its owner, Alexander Macleay, took up residence as the colonial secretary for New South Wales.

[51] See, e.g., the collections of Claude Martin in late eighteenth-century Oudh: Jasanoff, *Edge of Empire* (cit. n. 17).

[52] E.g., in Asaf ud-Daula's "mirror palace" in Lucknow, the Nizam had amassed, as one visitor put it, "English objects of all kinds—watches, pistols, guns, glassware, furniture, philosophical machines, all crowded together": *ibid.*, p. 77.