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BETWEEN CABINET OF CURIOSITIES AND RESEARCH COLLECTION: THE HISTORY OF THE ROYAL SOCIETY'S 'REPOSITORY'*

The Royal Society's museum or 'repository' was one of the most celebrated and 'visible' aspects of the Society in its early years. Whereas only through personal introduction was it possible actually to attend a meeting of the Society, the repository became one of London's tourist attractions in the late seventeenth and early eighteenth centuries: many evidently visited it and formed an impression of the Society not least on this basis.[1] In addition, one of the most lavish publications that emanated from the Society in its early years was the catalogue of the collection compiled by Nehemiah Grew and published in 1681 as *Musaeum Regalis Societatis. Or a Catalogue & Description of the Natural and Artificial Rarities Belonging to the Royal Society and preserved at Gresham Colledge*, a grandiose folio published by subscription and replete with engraved illustrations of objects in the collection. This book became part of the literature of museums at the time — joining works like Ole Worm's *Museum Wormianum* (1655) or Ulisse Aldrovandi's catalogues of his collection — and, as was the case with these books and the objects which they chronicled, it reified the collection in book-form so that its fame spread even more widely than it did from travellers' reports. The German scholar,

* On the relationship between this chapter and my earlier essay, 'The Cabinet Institutionalized: the Royal Society's "Repository" and its Background', in *The Origins of Museums: the Cabinet of Curiosities in Sixteenth- and Seventeenth-century Europe*, ed. Oliver Impey and Arthur MacGregor (Oxford, 1985), pp. 159 – 68, see above, Preface.

[1] See, for instance, Lorenzo Magalotti, *Travels of Cosmo III, Grand Duke of Tuscany, through England (1669)* (London, 1821), pp. 188 – 9; Evelyn, *Diary*, iv, 34, 133, 195; Joseph Hunter, ed., *The Diary of Ralph Thoresby* (London, 1830), i, 298, 340; Ned Ward, *The London-Spy Compleat*, ed. Ralph Strauss (London, 1924), pp. 60 – 1; Edward Hatton, *A New View of London* (London, 1708), ii, 666-86; C. Erndtel, *De Itinere suo Anglicano, 1706* (Amsterdam, 1711), p. 59; *British Curiosities in Nature and Art* (London, 1713), pp. 43 – 6; John Macky, *A Journey through England* (2nd ed., London, 1722), i, 260 – 2.

Plate 4. The title-page of Nehemiah Grew's Musaeum Regalis Societatis *(1681), with a facing frontispiece celebrating Daniel Colwall as 'Founder' of the collection. The copy reproduced here is John Evelyn's, now British Library shelf-mark Eve.b.46; at the foot of the title-page is Evelyn's shelf-mark, 'C.71'. Reproduced by permission of the British Library.*

Zacharias Conrad von Uffenbach, for instance, visiting England in 1710, came with expectations formed by reading Grew's book in addition to the *Philosophical Transactions*.[2] The repository therefore contributed significantly to the Society's early image, and this is one good reason for investigating its history.

But it also worthy of study because it illustrates some important themes in the Society's early development. It gives an interesting insight into the aspirations and performance of an early scientific institution, and into a transitional phase in the evolution of the concept of institutional — as against private — collections. Equally important is what one can learn from the history of the collection about what might be described as a conflict between 'virtuoso' and 'scientific' values in the scientific community of the day. The virtuosi formed the clientele on which a voluntary institution like the Royal Society depended, and, because of this, the Society was under pressure to mould itself in their image, even if this clashed with the scientific programme of some of its leading organizers. Moreover this was a matter of special significance in connection with the matter under study here, for a cabinet of curiosities was the quintessential appendage of a successful virtuoso, and these cabinets exemplified in a pronounced form the characteristics of the virtuoso movement classically outlined by W. E. Houghton in his study of 1942.[3] As he pointed out, virtuosi were typified by their love of the rare, the exotic, the marvellous and the inexplicable; they were also characteristically snobbish and elitist, and, as has more than once been pointed out, such traits were fundamentally antipathetic to many of the aims espoused by Baconian scientists of the late seventeenth century. The history of the Royal Society's 'repository' illustrates some of the tensions that could result.

Thirdly, and perhaps most important, the museum's history illuminates what seems to me a significant and neglected theme, the way in which ideas about the function of a scientific institution and the facilities which it could usefully provide were modified through experience, which revealed some approaches as more feasible than others in a way that could not have been predicted without actually trying them out. In the case of the repository, this is illustrated with particular clarity on the question of whether it was realistic to aspire to a 'complete' collection of natural things — as did a significant core of the Society in its early years — or whether this was beyond the capacity of a voluntary body with other demands on its limited resources: as it was, the assemblage remained relatively selective, and it became apparent to those who actually used it for scholarly purposes how

[2] W. H. Quarrell and M. Mare, trans. and ed., *London in 1710: from the Travels of Zacharias Conrad von Uffenbach* (London, 1934), p. 98. On earlier catalogues, see Oliver Impey and Arthur McGregor, eds., *The Origins of Museums* (Oxford, 1985), and Sir David Murray, *Museums, Their History and their Use* (Glasgow, 1904).

[3] W. E. Houghton, 'The English Virtuoso in the Seventeenth Century', *Journal of the History of Ideas*, 3 (1942), 51 – 73, 190 – 219. See also Lawrence Stone, *The Crisis of the Aristocracy, 1558 – 1641* (Oxford, 1964), pp. 715 – 7; Hunter, *Science and Society*, pp. 66 – 8.

the rarities that it contained could be supplemented by common objects from other sources to build up a comprehensive classification of natural things.

The history — or prehistory — of the Society's museum begins in its earliest years. From the first, the Society accumulated equipment relevant to its research interests — for instance, Robert Boyle presented an air pump in May 1661 — while it also early began to acquire items of the kind common in the private cabinets of virtuosi. In June 1662, for instance, Lord Berkeley presented a bird of paradise, and John Evelyn records the gift of a piece of elephant skin in September of the same year.[4] In this diary entry, Evelyn uses the word 'Repository' to describe the Society's collection, although this word first appears in the minutes only in October 1663. I should perhaps note that from that point 'repository' was the Society's standard term for referring to its collection, with 'Museum' being used as the Latin equivalent of this.[5]

The occasion on which the word was first used in the minutes was a Council meeting on 19 October 1663, when Robert Hooke, the Society's Curator of Experiments, was ordered to 'have the keeping of the repository' and the west gallery of Gresham College, where the Society met, was 'appointed' for it. At a meeting of the Society two days later, Sir Robert Moray, one of the leading lights of the institution, promised a piece of copper ore from Sweden and all Fellows were 'desired to bring in ores of several kinds, to be put in their repository', while a week later another prominent member, John Wilkins, Dean of Ripon, swelled the collection by a donation of seventeen objects: these are listed in full in the minutes and they ranged from burning glasses and a wind-gun to an ostrich egg and 'a strange bone, with a rib in the middle'.[6] Indeed, it may well be that it is at this point in late October to early November 1663 that the repository should be seen as first being established.

Further developments occurred early in 1664, when the Society seems to have given serious thought to how best to build up a collection of specimens appropriate to its enterprise. At a meeting on 9 March that year it was ordered that two medical Fellows of the Society, Christopher Merrett and Walter Charleton, should 'consider and make a catalogue of what is most desirable of all sorts of animals for the repository of the Society, both exotic and domestic; and withal, to give directions, how to prepare them as to their skins, when dead'. In addition, four other Fellows, Thomas Povey, Daniel Colwall, Peter Balle and Abraham Hill, were requested 'to take care of sending into foreign parts for such animals, as they should be directed, from time to time, by Dr Merret and Dr Charleton' — that Povey was a civil servant and Colwall and Hill both London citizens may suggest that they

[4] Birch, *History*, i, 23, 85; Evelyn, *Diary*, iii, 334.

[5] Birch, *History*, i, 316. For 'Museum', see, e.g., ibid., iv, 171.

[6] Ibid., i, 316, 321, 324. Cf. also ibid., i, 322.

were thought to have suitable contacts for this — while Charleton went on to suggest that the Society should obtain the carcasses of any of the exotic birds in the King's aviary which might die. In addition, Merrett moved 'that in the first place notice should be taken, and a collection made, of all the rare productions of England, as to beasts, birds, fishes, vegetables, minerals, &c.', and he followed this up on 30 March by proposing someone to act not only as an assistant to the Society's 'operator' but also as 'a collector of the curiosities of England, as to plants, birds, and fish'.[7] No appointment was to occur at this stage, but these references are significant, as they suggest that what at least some Fellows had in mind at this stage was a fairly comprehensive collection, of domestic as well as exotic phenomena, and arguably something rather different from the somewhat haphazard collection of curiosities that the Society had acquired so far.

Then, on 10 August 1664, Thomas Povey, who had been nominated Chairman of the Committee for Correspondence that the Society had set up earlier that year, 'was requested to procure for the society a collection of all sorts of curious woods, minerals, and petrified substances; which he promised to do'; he also promised to bring in 'shells found in mines with minerals in them' from his brother, who had recently returned from Jamaica.[8] It was evidently because the Correspondence Committee was mainly concerned with the compilation of enquiries concerning exotic places that this topic seemed to fall within its remit, and one might feel that there was some potential conflict between this and the concern for domestic items evidenced earlier in the year. The minutes of the first meeting of this committee, on the 19th of that month, record that 'It was recommended to Mr Povey, to treat with Mr Hubbard about his Collection of Curiosities'. Mr Hubbard's collection was evidently a large and celebrated cabinet of rarities, that of Robert Hubert, alias Forges, which was then on display in London, and about which more will be said shortly, since the Society was indeed to acquire it in 1666. Moreover it may well be that Povey was asked to make this approach because he himself was among Hubert's benefactors, who had gratefully acknowledged in print the generosity of 'that Honourable Mr. *Povey*, one of the Royal society of Philosophers, and Treasurer to his Royal Highnesse the Duke of *York*'.[9]

Little is then heard of the repository for the rest of 1664 and the whole of 1665, in the latter year not least because of the intermission of the Society's activities imposed by the Great Plague in the latter part of 1665 and the beginning of 1666, as members prudently retired to the country. Early in

[7] Ibid., i, 392, 393, 403. Cf. also 396. The person whose services Merrett suggested might have been Thomas Willisel, who instead helped Merrett prepare his *Pinax Rerum Naturalium Britannicarum* (1666): see C. E. Raven, *John Ray, Naturalist* (2nd ed., Cambridge, 1950), p. 77.

[8] Birch, *History*, i, 458. For the committee and its minutes see above, 'An Experiment in Corporate Enterprise'.

[9] *A Catalogue of part of those Rarities Collected in thirty years time with a great deal of Pains and Industry, by one of his Majesties sworn Servants, R.H. alias Forges, Gentleman* (London, n.d.), p. 13. Cf. ibid., p. 11.

1666, however, when the Society reconvened, the repository was high on the agenda. As the Secretary, Henry Oldenburg, reported to Robert Boyle in a letter of 27 January, 'those of the Society, that are now in London, doe endeavour to gett a good Collection of Naturall and Artificiall Curiosities for the Societies repository; and they hope, to make shortly an acquest of a very good stock of that kind, which will looke as something towards a foundation, and will invite generous men to increase it from time to time'. On 3 February Robert Hooke comparably reported to Boyle how 'I am now making a collection of natural rarities, and hope, within a short time, to get as good as any have been yet made in the world, through the bounty of some of the noble-minded persons of the Royal Society'.[10]

Sure enough, this was the first topic to be considered by the Council when its meetings reconvened on 21 February. On that occasion, it was decided that the sum of £100 which has been given to the Society by its Treasurer, Daniel Colwall, partly at this stage and partly in December 1663, should be used 'to pay for the collection of rarities formerly belonging to Mr Hubbard'. Hence, through this acquisition, the Society's collection suddenly received an artificial boost which was retrospectively regarded practically as a foundation: Colwall was celebrated as the 'Founder' of the museum in Grew's catalogue, to which his engraved portrait is prefixed.[11] By 21 March, the collection was evidently installed: Hooke told Boyle how 'Our collection of rarities at *Gresham* college is now very well worth your perusal, and I hope to increase it every day', while at a meeting of the Society on that date, a committee of ten Fellows was 'appointed to take care of the well ordering, preserving, and increasing the stock of the said repository'.[12]

That this should have occurred when it did was not coincidental, for this 'foundation' was a deliberate response to the problems which resulted from the eight-month break in activities imposed by the Plague, in the course of which the Society's initial momentum had been lost. Clearly the need was felt for a gesture which would assist in visibly galvanizing the Society and showing its vitality, and we learn from a further letter from Oldenburg to Boyle that various facilities were planned at this time, 'as the Collecting a Repository, the setting up a Chymicall Laboratory, a Mechanicall operatory, an Astronomicall Observatory, and an Optick Chamber', though he complained how 'the paucity of the Undertakers is such, that it must needs stick, unlesse more come in, and putt their shoulders to the work'.[13]

[10] Oldenburg to Boyle, 27 Jan. 1666, *Oldenburg*, iii, 32; Hooke to Boyle, 3 Feb. 1666, in Boyle, *Works*, vi, 505.

[11] Birch, *History*, ii, 64. For the earlier gift, see ibid., i, 337, and, for Colwall's portrait, Grew, *Musaeum*, frontispiece. It is perhaps worth pointing out here that it is apparently due to pure misunderstanding that James Granger in his *Biographical History of England* (2nd ed., London, 1775), iii, 402–3, claims that Colwall was himself the collector of the museum that Grew was to catalogue.

[12] Birch, *History*, ii, 73; Hooke to Boyle, 21 March 1666, Boyle, *Works*, vi, 506.

[13] Oldenburg to Boyle, 24 Feb. 1666, *Oldenburg*, iii, 45. On the 'operatory', see also Hooke to Boyle, 13 Feb. 1666, Boyle, *Works*, vi, 505.

Of these possibilities it was the repository which — thanks to Colwall's generosity — came to fruition, and the significance of the establishment of the greatly enlarged museum for the fortunes of the Royal Society itself is made clear by various reports of the purchase in the correspondence of the Society's members. John Evelyn, for instance, told his sister-in-law: 'We are meeting afresh at Gresham College: and have purchased for us, since these days of separation, the fullest, and certainly noblest collection of natural raritys of all kinds that is this day in Europe to be seen: Tell Mr Bohun [the family tutor], The Royall Society is not at an end, florit floreat'. Oldenburg comparably referred to the purchase of this 'very handsome Collection of Naturall things' as something 'which may be some part of an Establishment', thus alluding to the need for an institutional base of facilities for the Society which much preoccupied its organizers at this time.[14]

Various reasons may be suggested as to why it was the repository which materialized, rather than the various other facilities which Oldenburg told Boyle were being considered in February 1666. It may have had something to do with the availability of Hubert's collection at the time, as we shall see, while the Society may rightly have sensed that they were getting a bargain. £100 seems extraordinarily cheap for the thousands of items in Hubert's collection, considering that John Evelyn was to value the not dissimilar collection of William Courten at £8,000 only a few years later (it may be, however, that, when it came to a sale, complete collections were less valuable than their component parts: it is interesting that the University of Oxford could have had the rarities of the Bristol collector, William Cole, 'scandalously cheap' for about £60 at the end of the century).[15] In addition, the Society's organizers may have seen a collection of rarities as a higher priority than the other facilities whose installation was also considered, in the context of the appetite for Baconian collecting and recording which bulked so large in the Society's programme at this stage.[16]

They may also have seen the collection as a likely source of public acclaim for the Society, and in this they were justified by the high opinions of it immediately expressed. Evelyn's and Hooke's views have already been quoted, while perhaps most striking of all is the estimate of Walter Charleton, the medical Fellow whose role in the early planning of the Society's collection has already been noted. For in his *Onomasticon Zoicon* of

[14] Evelyn to Mrs G. Evelyn, 29 Jan. 1666, quoted from a nineteenth-century bookseller's catalogue which I have not been able to locate in L. G. Sharp, 'Sir William Petty and Some Aspects of Seventeenth-century Natural Philosophy' (Oxford D.Phil. thesis, 1977), p. 256, n. 4; Oldenburg to Boyle, 24 Feb. 1666, *Oldenburg*, iii, 45.

[15] Evelyn, *Diary*, iv, 532; Anthony Turner, 'A Forgotten Naturalist of the Seventeenth Century: William Cole of Bristol and his Collections', *Archives of Natural History*, 11 (1982), 35.

[16] See above, pp. 36 – 7, and 'An Experiment in Corporate Enterprise'. See also P. B. Wood, 'Methodology and Apologetics: Thomas Sprat's *History of the Royal Society*', *British Journal for the History of Science*, 13 (1980), 1 – 26.

1668, Charleton not only referred to a number of specimens in the collection but also gave it the following glowing description in his preface: '*Hic* enim tantus ostenditur Rerum Naturalium cumulus, ut vix dies sufficere possit ad immensam earum varietatem vel perfunctoriè visendum; ad singulatim diagnoscendum, vix annus'.[17]

Since the Society's purchase in spring 1666 undoubtedly swamped the scattering of objects that it already possessed, we should turn at this point to consider what is known of the ready-made collection that it thus acquired. The cabinet of Robert Hubert, alias Forges, had been on display 'at the place formerly called the *Musick House*, near the West end of St Paul's Church': in fact, this music house which Hubert had run in London House Yard, adjacent to St Paul's, was the first such enterprise in London, and the curiosities may initially have been a side attraction. By the early years of the Restoration, however, we are told that the collection was attended by a 'great Concourse of people', and passing references in letters — such as one to Oldenburg from the virtuoso, William Balle — suggest that it was quite well-known.[18]

Indeed, after the famous cabinet of the Tradescants which was to form the basis of the Ashmolean Museum, Hubert's was perhaps the most celebrated collection of curiosities in England at this time, and it was the only one apart from the Tradescants' to be dignified by a printed catalogue: of this various recensions were issued, reaching a climax with a 76-page version published in 1665.[19] Hubert is an elusive but intriguing figure, possibly of immigrant stock.[20] From the printed catalogue of his collection it is apparent that, like

[17] Walter Charleton, *Onomasticon Zoicon* (London, 1668), sig. a3v, and ibid, pp. 84, 96, 112, 113, 114, 115, 116, 186, 246 – 7, 290.

[18] See *A Catalogue of Many Natural Rarities, with Great Industry, Cost, and thirty Years Travel in Foraign Countries, Collected by Robert Hubert alias Forges, Gent.* (London, 1665), title-page; Sir John Hawkins, *A General History of the Science and Practice of Music* (London, 1776), iv, 378 – 9; J. R. Magrath, ed., *The Flemings at Oxford, Vol. 1, 1650 – 1680*, (Oxford Historical Society, 44, 1904), 62, n. 3; Hubert, n.d. (n. 9), p. 27; Balle to Oldenburg, 14 April 1666, *Oldenburg*, iii, 90.

[19] Careful collation of the different versions suggests that the earliest recension is the undated catalogue of part of the collection referred to in n. 9, of which a copy survives in the Bodleian Library, Oxford (MS Ashmole 967): an undated facsimile of this was issued in 1922 with a prefatory note signed 'D.M.' [David Murray?] which explains that it was reprinted by Professor John Ferguson for distribution to his friends. In addition, there are two dated versions of the catalogue: that dated 1665 has been cited in n. 18; that dated 1664 has an almost identical title-page except that, in describing where the collection was on display, it omits 'formerly' (probably accidentally: cf. p. 27 of the undated catalogue), and adds 'at the *MITER*' after '*Musick House*'. Of this 1664 version there are two issues, of which the later has an addendum describing new acquisitions (a copy of this will be found in the British Library, shelfmark 957.e.13); the content of the addendum is then incorporated in the text of the final, 1665, recension, to which is appended a catalogue of the rarities on show at the university garden in Leiden.

[20] R. E. G. and E. F. Kirk, *Returns of Aliens in London* (Huguenot Society, 1900 – 8), index s.v. 'Hubbard'.

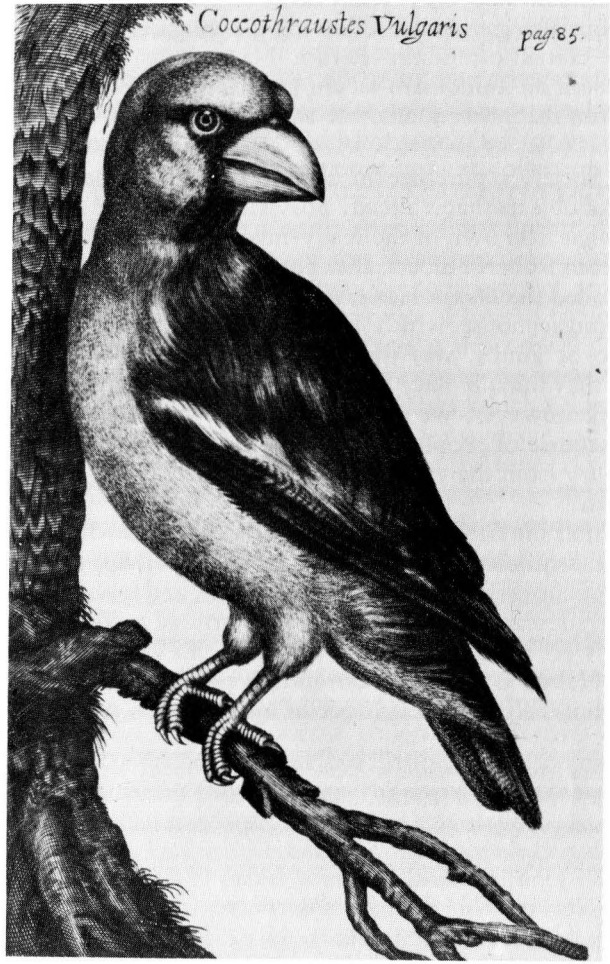
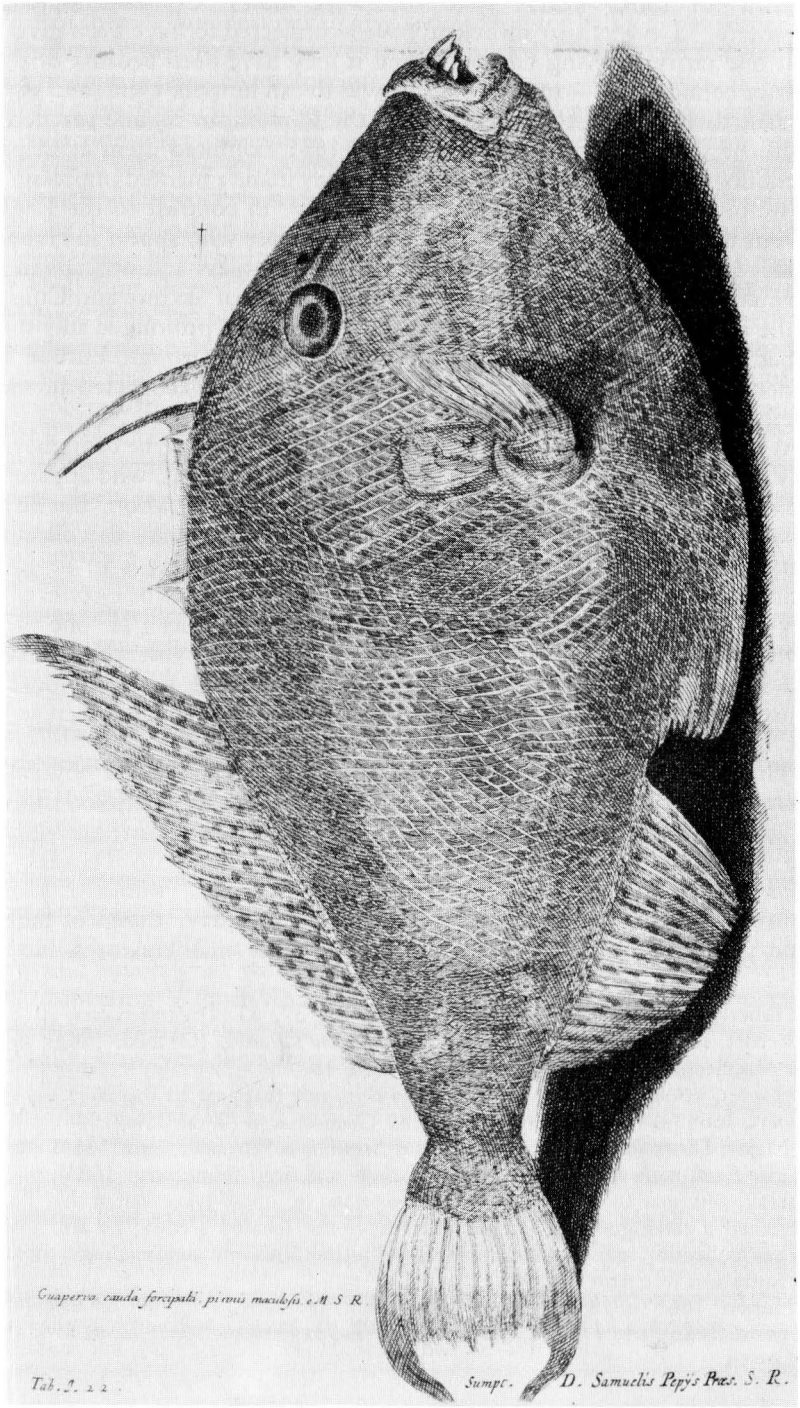


Plate 5 (above). A Grosbeak or Hawfinch, Coccothraustes vulgaris, *from Walter Charleton's* Onomasticon Zoicon *(London, 1668), p. 85, drawn from the Royal Society's specimen. For the gift of this specimen to the Society, see Birch,* History, *ii, 139. See also Grew,* Musaeum, *p. 61, and Charleton, op. cit., p. 84. Reproduced by permission of the British Library.*

Plate 6 (opposite). 'Guaperva cauda forcipata, pinnis maculosis e M[usei] R[egalis] S[ocietatis]', a plate drawn from a specimen in the Royal Society's repository for Francis Willughby's De Historia Piscium Libri Quattuor *(Oxford, 1686), plate I22. This was one of fifty plates paid for by Samuel Pepys, then President of the Society (see Birch,* History, *iv, 428). Reproduced from a copy in the British Library, shelf-mark 457.e.10, formerly owned by Sir Joseph Banks, whose faint pencil notes appear at the top of the page. Reproduced by permission of the British Library.*



such other collectors as the Tradescants, he had travelled widely — he claimed for thirty years — to the West Indies, Constantinople and elsewhere.[21] He was also sufficiently well-connected to have been given at least one rarity by King Charles I, and it may have been because of these courtly connections — in the 1660s he was to call himself 'Gent. and sworn Servant to His Majesty' — that when the Republican regime reached its zenith he took his rarities abroad and in 1651 exhibited them at Leipzig, Hamburg and probably elsewhere, where they made a marked impression.[22] How long he stayed abroad is unknown, but, in contrast to the English flavour of the Tradescants' list of benefactors, those who appear in Hubert's catalogue include a disproportionate number of rulers and officials in the German-speaking countries — such as the Electors of Saxony and Cologne or the Emperor Frederick III — perhaps suggesting a prolonged stay there. Other provenances are also cosmopolitan, spread through Europe and evidently bearing out his claim that his rarities were 'collected in many foreign courts during his exile'.[23]

At the Restoration, Hubert returned to England. At first, he brought over only part of his collection, which was visited by Charles II, who apparently promised Hubert the post of Gentleman Usher on this occasion, 'but he lost it by his absence, when sent into divers parts of Germany to collect the remainder of his rarities'. In 1662, on his return, Hubert is to be found petitioning the King for the place of 'Page of the back stairs or Groom of the Privy Chamber to the Queen'. His allusion to the Queen as 'one of the choicest rarities of her sex in this our age', however, evidently backfired, and his application proved unsuccessful.[24] Instead, he probably devoted himself entirely to the display of his rarities, as the details given in the published catalogues suggest.

What is evidently the earliest published catalogue explained how, apart from the basic tour of the collection, 'those that are more curious, and will be at some more Charge' could come for additional sessions: on Monday and Thurday he showed sea plants, corals and shells; on Tuesday and Friday, 'things of the Land' (metals, minerals, crystals, 'things of strange nature and operation'); and on Wednesday and Saturday, 'things of the Sea, Land and Ayre', 'strange Bones', teeth, eggs and small creatures. He also

[21] Hubert, 1665 (n. 18), title-page, pp. 13, 25, 37, 63. On the travels of other collectors, see Arthur MacGregor, ed., *Tradescant's Rarities* (Oxford, 1983); Impey and MacGregor, *Origins of Museums* (n. 2), ch. 18.

[22] Hubert, 1664 (n. 19), p. 41 (this item does not reappear in the 1665 version); Hubert, 1665 (n. 18), title-page; P. J. Sachs, *Gammarologia* (Wratislaw, 1665), p. 53; J. D. Major, *Dissertatio Epistolica de Cancris et Serpentibus Petrefactis* (Jena, 1664), pp. 63, 85; *See-Farth nach der Neuen Welt ohne Schiff- und Segel* (Hamburg, 1683), p. 109; Murray, *Museums* (n. 2), i, 127. In his *Dissertatio* (p. 63), Major claims that Forges published a catalogue in German, but I have not located a copy; he also says of Forges' collection 'quod ex Britanniae Regis (durantibus intestinis cladibus) thesauris depromptum ferebatur'.

[23] Hubert, 1665 (n. 18), pp. 69 – 71. Cf. John Tradescant, *Musaeum Tradescantianum* (London, 1656), pp. 179f.; *Calendar of State Papers Domestic 1661 – 2*, p. 390.

[24] Loc.cit.

promised that 'if any Nobleman or person of quality be desirous to see alone with their Families and Friends, all, or most of them [the rarities]: The owner of them will endeavour to give satisfaction for half a day together' by keeping away the crowds, if given a day's notice. He also offered tours in three or four languages for foreign ambassadors.[25]

At least by 1664 Hubert seems to have been looking for a purchaser for his collection, as is shown by a passage in that year's recension of his catalogue in which he wrote of his miscellaneous, undescribed curiosities: 'if the owner of this collection of Rarities does sell them to any Noble minded party, he then, God willing, will write at large a more ample declaration to the expressing of each thing in particular, to honour that vertuous person that shall buy them'.[26] It may well have been the hope of a sale that stimulated him to publish an inventory of his collection, though the addendum to the 1664 catalogue and the extended version published in 1665 show that he was still adding to it at this point: indeed, some of his most spectacular acquisitions — such as 'an extraordinary great *Cameleon*, about 27 or 28 inches long' — reached the cabinet now. He may also have been selling individual items, like other collectors later who also acted as dealers, such as William Courten, since a few items which appeared in earlier recensions of the catalogue do not recur in the last.[27] Be that as it may, however, the fact that he issued these catalogues means that we not only know more about Hubert's collection than most at the time, but also the values that underlay it.

As his published remarks display, Hubert almost epitomizes those characteristics of the virtuoso movement which contemporary commentators noted and criticized, its cult of 'Rarity *for Rareness-sake*' and its deliberate pursuit of 'all things opposite to the vulgar sort'.[28] Hubert's was a classic virtuoso cabinet, trading on the rare and exotic nature of its content and on the social cachet of his august benefactors and patrons. As his earliest catalogue put it, 'You may see every afternoon, that which hath been seen by those that are Admirours of Gods Works in Nature, with other things that hath been seen by Emperours, Empresses, Kings and Queens, and many other Soveraign Princes'. Later there is reference to 'Several sorts of Rare shells of great Princes: as of the Emperor, the Queen of *Sweeds*, and of other Kings and Soveraigns', while Hubert elsewhere assured his clients how they were inspecting 'a Rarity that was esteemed very much by divers persons beyond Seas'.[29]

Mainly, however, the stress was on the marvellous quality of the items. 'First of Fishes Heads, the least of these Heads are as big as a mans Head', his earliest list opened, while a section of 'Other Rarities' included 'A Gyants

[25] Hubert, n.d. (n. 9), pp. 25 – 7.

[26] Hubert, 1664 (n. 19), p. 59. Cf. Hubert, 1665 (n. 18), pp. 55, 68.

[27] Ibid., pp. 36 – 7. For items that disappear, see, e.g., that said to have been presented by Charles I, above, n. 22; on Courten, see British Library MSS Sloane 3961 – 2.

[28] See Houghton, 'The English Virtuoso' (n. 3), pp. 204, 213 and passim.

[29] Hubert, n.d. (n. 9), pp. 1, 24; Hubert, 1664 (n. 19), p. 46.

Thighbone 4 foot long, it is an Extraordinary Rarity' or 'A Tamanduaquaca, or the Aunt-bear, it is as big as a Spaniel, and participates of the shape of five or six Creatures; it is a very strange wild Beast in *Brasil*, and hard to be procured'. So often is the strange and wondrous quality of items protested that it becomes almost wearisome. Again and again we return to 'a very strange Rarity', such as 'A *Poyson-fish* of East *India*, it is so venemous that thirteen men in a ship dyed by eating one of them', or 'A great *Crab*, having its shell covered with Oysters that are grown to it, a Rarity, worth considering'. Only occasionally is this varied by biographical detail, as with 'a sprig or large bush of black Feathers', for which the Emperor Mathias was said to have given 2000 Reichs dollars — almost £500 sterling — 'in Rarity and beauty exceeding that of the great Turks or Sultans, which the Master of these Rarities saw at *Constantinople*'.[30]

Moreover, though Hubert's collection included some native items, it is clear that what he valued most highly were exotic objects from far-off places: armadillos (one of them formerly owned by King James I), chameleons, crocodiles, humming birds, saw-fish, turtles, lizards or tropical shells. In this he was again typical, for these were the characteristic desiderata of virtuoso cabinets, prestige accruing from ownership of such far-off things in a way that would not have been the case with others more commonplace. Also typical of such collections was the interest in specimens in which art and nature seemed miraculously to come together. Hubert had a whole section concerning slabs of polished stone which appeared to depict landscapes — 'Natural Landskips in Stone' — as well as items like 'A cross of wood grown by Nature in *Bohemia*, given by Doctor *Moretus*, professor in the Mathematicks in the University of *Prague*', or 'A Cross of wood, growing in the form of St *Andrews* Cross, given by Doctor *Pinker*, one of the privy Council to the Prince Elector of *Sax*[ony]', or even stones shaped like 'the secret parts of a woman' or a sweetmeat.[31]

Within the sequence of catalogues that Hubert put out a slight shift of emphasis may be discerned: the naive stress on oddity and on the social cachet of the objects is at its most overt in the earliest, whereas a degree of sophistication enters into the subsequent recensions, including more elaborate descriptions of the characteristics and habitat of the specimens included. In his last recension of 1665, Hubert even had the idea of stressing the scholarly potential of his cabinet by including a catalogue of the rarities that were on show in the university garden at Leiden, '*to shew the difference of both the Collections*'.[32] Possibly Hubert did this with the intention of angling at the Royal Society, who by this time had expressed interest in the collection, while an even clearer bait was the fact — stressed on the title-pages of his 1664 and 1665 catalogues — that this was a collection exclusively of 'Natural Rarities'. It thus contrasted with the Tradescant collection, for instance, with its heavy showing of ethnographical curiosities, coins and other human artefacts. Quite apart from the prestige accruing

[30] Hubert, n.d. (n. 9), pp. 1, 8 – 9, 12; Hubert, 1665 (n. 18), pp. 13, 16, 23, 60.
[31] Hubert, n.d. (n. 9), pp. 17, 18; Hubert, 1665 (n. 18), pp. 35, 58 – 9, 66 and passim.
[32] Hubert 1665 (n. 18), p. 72.

from its public acclaim and its large size — which offered a ready-made museum overnight — Hubert's collection thus had a particular appeal to a Society devoted to research into natural history.[33]

For all this, however, Hubert's catalogue remained dominated even in its later recensions by the values of the rare and the marvellous: even the descriptive material that was added to these was often of a somewhat sensationalist nature. Hence to us it may seem surprising that it should have seemed desirable for the accumulation that the catalogue chronicled to be transferred to the possession of a body which prided itself on its serious mission to reform knowledge, and still more so that it should have been described with the kind of superlatives already quoted from the correspondence of the Society's activists at the time of its purchase. It is therefore worth pausing here to consider the rationale of this acquisition. To start with, we should beware of underestimating the extent to which those active in the Royal Society shared the values that Hubert exemplified and to which he appealed: Evelyn, for one, certainly falls into this category.[34] More important, it is clear that the same exotic or abnormal objects could be approached from different points of view, as 'wonders' to be rather superficially and mindlessly admired, or as specimens worthy of serious scholarly scrutiny. There was thus much to interest the serious researcher in Hubert's, as in other, private collections of the time, and it is not surprising that such cabinets were extensively consulted by naturalists of the day like John Ray.[35]

On the other hand, it seems to have been felt that the transference of the collection from private to institutional ownership would somehow alter its character and make it more worthwhile: this exemplifies that aspiration to permanence through institutionalization which, as we have seen in the Introduction, was so central to the Royal Society in its early years. When reference was made to the repository and Colwall's benefaction to it in the *Philosophical Transactions* in October 1666, potential donors to the collection were urged on with the assurance that their gifts would there be 'preserved for After-ages, (probably much better and safer, than in their own private Cabinets)', and a background to this may be found in the attitudes of virtuosi like Evelyn and John Aubrey. We have already noted Aubrey's concern to vest his writings and other possessions in a 'publick Repository', while Evelyn, writing to Samuel Pepys in 1689 about collections of books and other rarities, bewails at more than one point the tendency of worthwhile collections to be neglected or dispersed on the death of their founder.[36] Undoubtedly the sense that institutions had a collective life beyond that of individuals seemed to offer a guarantee of security for

[33] Ibid., title-page. For the Tradescant rarities, see *Musaeum Tradescantianum* (n. 23), esp. pp. 36f.
[34] See Hunter, *Science and Society*, p. 67.
[35] Raven, *John Ray* (n. 7), p. 229; Impey and McGregor, *Origins of Museums* (n. 2), pp. 151, 157.
[36] *Phil. Trans.*, 1 (1666), 321; see above, Introduction, pp. 6 – 7; Evelyn to Pepys, 12 Aug. 1689, in Evelyn, *Diary and Correspondence*, iii, 294 – 311.

valuable accumulations which might otherwise be dispersed, and it is interesting to note the comparable proclivity of benefactors earlier in the century to vest interesting objects in public institutions like Oxford and Cambridge colleges.[37]

As far as the content of the collection is concerned, there is no reason to doubt that virtuosi like Evelyn were perfectly happy with the general physiognomy of the Hubert collection, merely wanting it to be swelled by acquisitions to become an even bigger and better cabinet of rare and exotic items. For others, however, this was not the case, for some seem to have hoped that the collection which the Royal Society would build on the basis of Hubert's might be qualitatively different from his — in other words, that institutionalization might actually produce a different kind of collection from existing private ones, which would serve a new and important role in the reform of knowledge.

This was implicit in the hope expressed in the *Philosophical Transactions* that the repository 'in progress of Time will be employed for considerable Philosophical and Usefull purposes', while the implication of this was spelt out in other statements which make clear an intention to substitute a more egalitarian and complete view of the world for the élitist and partial one of the virtuosi.[38] Though the basis of the Society's museum was a private cabinet, there is no mistaking the disdainful attitude towards such collections displayed by Thomas Sprat in a passage in his *History of the Royal Society* dealing with transplantations, where he wrote: 'the chief Progress that has hitherto bin made, hath bin rather for the *collection* of *Curiosities* to adorn *Cabinets* and *Gardens*, than for the solidity of *Philosophical Discoveries*'. Robert Hooke comparably complained how 'the use of such a Collection is not for Divertisement, and Wonder, and Gazing, as 'tis for the most part thought and esteemed, and like Pictures for Children to admire and be pleased with, but for the most serious and diligent study of the most able Proficient in Natural Philosophy'.[39]

Now there was an opportunity for a serious collection to play a major role in the promotion of the scholarly ends for which the Society had been inaugurated, and Sprat described 'a General Collection of all the Effects of *Arts*, and the Common, or Monstrous *Works* of *Nature*' as 'one of the Principal Intentions' of the Society 'as soon as they were reduc'd into a *Fix'd Assembly*'. Indeed, this falls into place among the Society's grandiose ambitions in its early years for reformulating knowledge about the natural world, and it is no coincidence that it was in the context of a major effort to promote the collaborative study of natural history at home and abroad that Oldenurg reported to Boyle on the purchase of the Hubert rarities.[40]

The link of the foundation of the repository with these high hopes on the Society's part is made clearest by the juxtaposition of aspirations for the

[37] See Michael Hunter, 'The Cabinet Institutionalized', in Impey and MacGregor, *Origins of Museums* (n. 2), pp. 160 – 1.
[38] *Phil. Trans.*, 1 (1666), 321.
[39] Sprat, *History*, p. 386; Hooke, *Posthumous Works*, p. 338.
[40] Sprat, *History*, p. 251; Oldenburg to Boyle, 27 Jan. 1666, *Oldenburg*, iii, 32.

collection with one of the most ambitious projects associated with the Society at this time — the attempt to construct a new, rational language which would accurately and clearly reflect reality. The classic text in this connection, John Wilkins' *An Essay Towards a Real Character, and a Philosophical Language* (1668), was the outcome of work closely associated with the Royal Society, who encouraged Wilkins to persevere with his task in spite of such setbacks as the destruction of the entire first impression of a substantial part of the book in the Fire of London. Moreover, in attempting to improve his work, Wilkins enrolled the help of the naturalists John Ray and Francis Willughby, requesting their 'best Assistance for the regular Enumeration and defining of the Families of Plants and Animals' for the tables that he included, in which concepts and natural phenomena were classified as a basis for the language.[41]

These tables played a central role in Wilkins' project, because he hoped that through them language could at the same time describe and define natural phenomena, thereby serving an important taxonomic purpose as well as a linguistic one. What he aspired to was a universal system of classification which would accurately mirror the natural order, and this broad ambition was as important to him and other language-planners as narrower linguistic ones: Wilkins saw these tables as 'the great foundation of the thing here designed'. Moreover, Wilkins considered this an ongoing task rather than a completed one, as he made clear in dedicating his *Essay* to the Royal Society. For, apologizing for the imperfections of his work, he expressed the hope that the Royal Society might be able to improve on it through its collaborative efforts. Moreover in this connection he singled out 'those Tables that concern the species of *Natural bodies*; which if they were (so far as they are yet known and discovered) distinctly reduced and described, This would very much promote and facilitate the knowledg of Nature, which is one great End of your Institution'.[42]

It is thus significant that when Thomas Sprat referred to the repository in his *History of the Royal Society*, he used the opportunity to bring in a reference to this aspiration to create a new, universal language. Alluding to Robert Hooke and the collection, he wrote: 'This *Repository* he has begun to reduce under its several heads, according to the exact Method and Ranks of all the *Species* of *Nature*, which has been compos'd by Doctor *Wilkins*, and will

[41] Wilkins to Willugby, 20 Oct. 1666, in John Ray, *Philosophical Letters*, ed. William Derham (London, 1718), p. 366. See also Raven, *John Ray* (n. 7), pp. 181 – 3. On Wilkins' scheme and its background see Vivian Salmon, *The Works of Francis Lodwick* (London, 1972), esp. ch. 2; J. R. Knowlson, *Universal Language Schemes in England and France, 1600 – 1800* (Toronto, 1975), ch. 3.; Vivian Salmon, 'John Wilkins's *Essay*: Critics and Continuators', *Historiographia Linguistica*, 1 (1974), 147 – 63; and M. M. Slaughter, *Universal Languages and Scientific Taxonomy in the Seventeenth Century* (Cambridge, 1982).
[42] Wilkins, *An Essay* (London, 1668), sig. a1v and p.1. See also the works cited in n. 41, especially Slaughter.

shortly be publish'd in his *Universal Language* '. Wilkins likewise referred to the repository in the Epistle Dedicatory to his *Essay*, going on from the remarks just quoted about the desirability of a proper taxonomy to add: 'And besides, the ranging of these things into such an order as the Society shall approve, would afford a very good method for your *Repository*, both for the disposal of what you have already, and the supplying of what you want'.[43]

To this end, the idea was that casual donations and even Hubert's cabinet should merely form the basis of a larger, more complete collection of natural things. Hence, though some may have been happy with the repository much as it was, others clearly saw it as needing to be converted into a tool to help achieve this universal, accurate taxonomy of nature. The notion of 'completeness' recurs in remarks about the repository. Hooke wanted 'as full and compleat a Collection of all varieties of Natural Bodies as could be obtain'd', while Sprat proclaimed, with characteristic optimism, that the Society had 'already drawn together into one Room, the greatest part of all the several kinds of things, that are scatter'd throughout the *Universe*'. Wilkins in his Epistle Dedicatory similarly referred to 'the compleating of that Collection, so generously begun of late, by the bounty of *Mr Daniel Collwal*, a worthy Member of this *Society*. And by this means, I should not doubt, but that in a very short space, you would have the most usefull *Repository* in the World'.[44]

Such ideas thus echoed the discussions of the proper content of the Society's repository that had occurred in 1664, when it had clearly been felt that 'all sorts of animals' should be included in it, and comparable attitudes were quite widely shared. Thus the view of the repository of Sir John Hoskins, an active and influential Fellow, was that 'Nothing should bee wanting, not clay, peble &c so to find likenesse and unlikenesse of things upon a suddaine'; he was enthusiastic about the preparation of an inventory so that 'when once tis knowne (to the members at least) what wee have every body will readily give what wee have not and so it will swell vastly'. Later, in 1683, the journalist and tradesman John Houghton 'brought in a bundle of seeds of different sorts, which he collected towards furnishing a particular thesaurus of seeds in the repository', thus displaying a comparable ambition for a comprehensive assemblage of specimens.[45]

Inevitably, this entailed the realization that piecemeal gifts were unlikely to suffice as the basis for such a collection, and already in 1664 the Society had considered appointing someone to add to the collection systematically, though nothing came of this. In 1669, however, the Society did employ the

[43] Sprat, *History*, p. 251; Wilkins, *Essay* (n. 42), sig. a1v.
[44] Sprat, *History*, p. 251; Hooke, *Posthumous Works*, p. 338; Wilkins, *Essay* (n. 42), a1v.
[45] See above, pp. 125 – 6; Hoskins to Aubrey, 25 March 1674, Bodleian Library MS Aubrey 12, fol. 214; Birch, *History*, iv, 200.

botanizer, Thomas Willisel — possibly the man who had been suggested for the job in 1664 — for this purpose. His task was acquire botanical, zoological and mineralogical specimens around the British Isles, and a committee which included Hooke was asked to inform Willisel 'of such natural things, as may be had in England, and were yet wanting in the society's repository'.[46] In addition, an elaborate testimonial for Willisel was drafted, which stressed how 'tis none of the smallest importance, to search after and collect whatever Nature may have stored every respective Contry [sic] with, be they Minerals, Vegetables or Animals', and requested all to whom he showed it to give him free passage and to assist him in his work, 'which so much tends to the discovery of Nature, and the Application of the works thereof to the Benefit of Mankind'.[47]

The aspirations for the repository therefore form part of the Royal Society's broader aim to build up a complete and accurate description of the natural world through the accumulation of particulars, an enterprise which seemed all the more important when it was believed (naively, as it was to turn out) that language could be reformed to reflect this. It was for this reason that the collection could seem as important for its potential for serious savants as it did in its actuality for casual virtuosi, acquiring a potentially crucial role in the Society's corporate plans for the reform of knowledge.

What actually happened? In fact, things did not go according to plan from the start, due in part to a degree of impracticality in the aspirations themselves; in part to the Society's debilitating lack of resources, which stunted so many of its early plans; and in part to the conflicting values of those associated with the collection. It is symptomatic that the employment of Willisel proved shortlived, and instead the Society was dependent on gifts to add to the collection: as we shall see, it was these — together with the inherited physiognomy of the Hubert collection — that gave the repository the character which is apparent from Grew's catalogue of it, which will be analysed shortly and which was at odds with the high hopes of the 1660s.

Even the administration of the collection proved problematic. Contrary to the implication of Charleton's grandiose account of 1668, which has already been quoted, in that year the rarities were actually in Hooke's rooms at Gresham College 'as in a storeroom', as we learn from the Italian visitor

[46] See above, p. 126; Birch, *History*, ii, 358, 371, 378 – 9, 395, 396, 398, 425 – 6, 431, 433. The Royal Society's accounts for 1669 – 70 record the payment to Willisel of an allowance totalling £30 for a journey to Scotland and 'to furnish his Journey for collecting Naturall Rarities in England &c.' On Willisel, see Raven, *John Ray* (n. 7), p. 151, and John Aubrey, *The Natural History of Wiltshire*, ed. John Britton (London, 1847), p. 48.
[47] D.M. 5. 41, a different and longer version of the certificate than that given in Birch, *History*, ii, 378 – 9, with which it overlaps verbally and for which it is possibly a draft: it is in Oldenburg's hand.

Lorenzo Magalotti.[48] This was due to the Society's lack of resources and vulnerability to circumstances beyond its control. In June 1666 steps had been taken for the newly extended collection to be displayed in the west gallery of Gresham College, where the Society had met since 1660. But the situation changed in the aftermath of the Great Fire, when the college was commandeered by the City and the Society moved to Arundel House in the Strand.[49] Only after the Society's return to Gresham late in 1673 were fresh steps taken to display the rarities. Moreover it seems likely that, in the meantime, some objects disintegrated or were lost: certain items which had appeared in Hubert's catalogues failed to recur in Grew's, and, since these included fragile objects like stuffed humming-birds, this may well have been due to neglect.[50]

From 1675, however, decisive steps were taken to put things right. First, in February that year, Hooke was ordered to remove the Society's repository and library to the north (or short) gallery of the college. Hooke noted in his diary, however, that the Council 'Seemd to Quarrell' about this, and by June it had been decided that the west gallery would be more suitable, the only snag being that the room had first to be vacated by its previous users, the East India Company, which took some months to achieve.[51] Finally, on 3 February 1676, a committee who had been appointed to deal with the matter signed an order that 'the said Curiosities, now in the custody of Mr Robert Hook, be on Monday next removed into the said Galery', and by 6 March they could report to the Council that they had had the rarities moved to the gallery 'and there ranged them in order', so that all that was required was to have them catalogued and to appoint a keeper for them.[52]

Cataloguing too, however, had proved problematic from the outset. A committee had been appointed to deal with 'ordering' the rarities in spring 1666, but the task of compiling a catalogue was given to Robert Hooke, in addition to all the work that the Society expected him to do in preparing

[48] W. E. K. Middleton, ed., *Lorenzo Magalotti at the Court of Charles II: his 'Relazione d'Inghilterra' of 1668* (Waterloo, Ontario, 1980), p. 140. It was presumably in connection with this that in 1668 Hooke was paid 14. 10s 'for fitting the place in Gresham-college for the society's repository': Birch, *History*, ii, 300; cf. ibid., iii, 310 for a reference to 'the rooms where they had hitherto been'. D.M. 5. 20 has an undated note concerning Hooke's expenditure of £9 for 'making a window to the Room where the Repository was formerly kept'; the Royal Society's accounts for 1669 record the payment of £6 for four chests of drawers for the repository (and £6.3.0 to Hooke 'for work done at Gresham College').

[49] Birch, *History*, ii, 96, 113 – 4.

[50] Compare Grew, *Musaeum*, pp. 61-2, with Hubert, 1665 (n. 18), pp. 9 – 10: whereas Hubert had 'several' humming birds, Grew mentions only two, one of which lacked its head.

[51] Birch, *History*, iii, 191, 224, 227, 228, 242; Hooke, *Diary*, p. 149.

[52] Royal Society Miscellaneous Manuscripts 16.39 (minutes of the meeting on 3 Feb. 1676: this refers to an earlier Council order setting the committee up which apparently does not survive); Birch, *History*, iii, 310. See also Royal Society accounts, 1676 – 7, for bills for work done in the repository.

experiments for its weekly meetings, and his responsibilities outside the Society. Sprat's reference to Hooke's arrangement of the repository according to Wilkins' classification of nature has already been noted. In addition, in 1668 Hooke was urged to finish 'the printed list of the collection bestowed by Mr Colwall on the society' with a view to its being inserted in a new edition of Sprat's *History* which was projected at that time: nothing, however, seems to have materialized.[53] Even at a more mundane level, the documentation of the collection got off to a bad start. In 1663, Hooke had been told that, as keeper of the repository, he 'should always affix some note to the things in it, by which it might be known what they are, and by whom they were presented', while in the same year it was suggested that the names of benefactors to the Society should be kept in a register, a promise which was reiterated in connection with the repository in 1666 and again in 1674.[54] But no such record appears to have been kept: Grew was asked to make a list of benefactors in 1682, while the fact that in the early eighteenth century such a register had to be compiled retrospectively from the Society's minutes suggests that till then no such record ever existed.[55]

Efforts to produce a catalogue redoubled in the 1670s, partly in conjunction with the moves to place the objects on display at that time, but partly also because the publication of a systematic, learned catalogue remained crucial to the museum's function in the context of the ambitions of Wilkins and others. We learn from letters from John Aubrey to his friends in 1674 – 5 that Aubrey was then in the process of writing a catalogue 'according to that incomparable Method of Dr Wilkins Philos[ophical] Grammar', which he had presumably completed by July 1675, when he apologized to Sir William Petty for not having had time to write it out fairly.[56] Meanwhile, Hooke and his assistant, Henry Hunt, seem also to have been at work. On 25 February 1675 Hooke had been ordered 'to perfect the catalogue' of both the repository and the Society's library, and on 9 March that year Hooke refers in his diary to the fact that he 'set Harry about Repository', noting that Hunt had the *Museum Wormianum* and other books.[57] Nothing has survived of Aubrey's, Hooke's or Hunt's work, but it is perhaps worth noting that Grew was to produce a lengthy catalogue with

[53] See above, pp. 127 and 137; Birch, *History*, ii, 266. For a reference to stones and minerals presented by Moray being 'reduced into order' by Hooke, see ibid., ii, 108.

[54] Ibid., i, 322, 344; iii, 158; *Phil. Trans.*, 1 (1666), 321.

[55] Birch, *History*, iv, 171; D.M. 5.85f., 101f.; Royal Society MS 416.

[56] Aubrey to Anthony Wood, 31 March 1674, Bodleian Library MS Wood F 39, fol. 261v; Aubrey to Petty, 17 July 1675, Bowood House Petty MSS, Letters, vol. 6, 2nd series, no. 21. The implication is that Aubrey was answerable to Petty concerning the catalogue, which may suggest a link with the reform effort in the Society at this time, with which Petty was closely connected: Hunter, *Royal Society*, pp. 37 – 8.

[57] Birch, *History*, iii, 191; Hooke, *Diary*, p. 152 (9 March 1675). Hooke also has a puzzling reference to talk of a 'salary for repository' from the London merchant, Sir John Lawrence (on whom see Hunter, *Royal Society*, catalogue entry 301).

surprising speed, as we shall see, and it is conceivable that he utilized notes on the collection that these men had already made.

Early in 1676, the committee which had just arranged for the museum to be installed in the west gallery at Gresham College turned its mind to the cataloguing and care of the collection. From overlapping texts whose status and mutual relationship is not entirely clear, it seems that they first ordered that Grew and another fellow, Abraham Hill, 'be desired to make a Catalogue of all the said Rareties' and that Richard Shortgrave, the Society's operator, should be their keeper: then, however, both tasks seem to have been given to Grew, the doctor and botanist who had been employed by the Royal Society as a researcher in the early 1670s (Shortgrave was, in fact, to die in 1676).[58] At a Council meeting on 18 July 1678 this was confirmed — possibly partly as a means of dispelling tension between Hooke and Grew in the aftermath of the death of Oldenburg — and it was 'Ordered, That Dr *Grew* be desired, at his leasure, to Make a Catalogue and Description of the Rarities belonging to this Society'.[59] Grew must have worked on this over the next few months, reading parts of it at meetings of the Society in April and May 1679, when it was stated that they were 'fitted for the press'. Then, on 5 July that year, an imprimatur was given to Grew's book at a further Council meeting which is otherwise unrecorded. Subsequently, a proposal for subscriptions to the volume was brought to a meeting in February 1680, and in 1681 it was published by subscription.[60] Finally and belatedly, therefore, a catalogue had been achieved, and it is to this book, and the collection as described in it, that I now wish to turn.

In the first place, it is significant how far Grew's aspirations for the repository in his preface echoed the broader taxonomic aims of authors like

[58] D.M. 5.71 (n.d.), an order to the same people as those listed in Birch, *History*, iii, 310 – 11, except that the MS version lacks the name of Milles, and it gives the quorum, which Birch leaves blank, as two. However, the instructions given differ. The committee was ordered to take into its custody the Society's books, rarities and other possessions; Grew and Hill were to catalogue the rarities, and the committee to make an inventory of the Society's other possessions; and Shortgrave was to be the keeper. It also adds that this committee was to take responsibility for supervising all bills concerning experiments, etc. In the minutes of the committee meeting on 3 Feb. 1676 in Miscellaneous Manuscripts 16.39, Grew had already been 'ordered to have the keeping of the same'.

[59] See Grew, *Musaeum*, unsigned last page of prelims: there is no reference to a Council meeting on that date in Birch (but cf. Hooke, *Diary*, p. 367, where Hooke records how Grew requested 'An Establishment' on that date). See also below, 'Early Problems in Professionalizing Scientific Research', pp. 275 – 6.

[60] Birch, *History*, iii, 480, 481, 486, iv, 16. The imprimatur to the book is dated 5 July 1679 (there is again no corresponding entry in Birch). For a copy of the proposal for the book, see British Library Harleian MS 5946, fols. 162-3. See also below, 'Early Problems', n. 72.

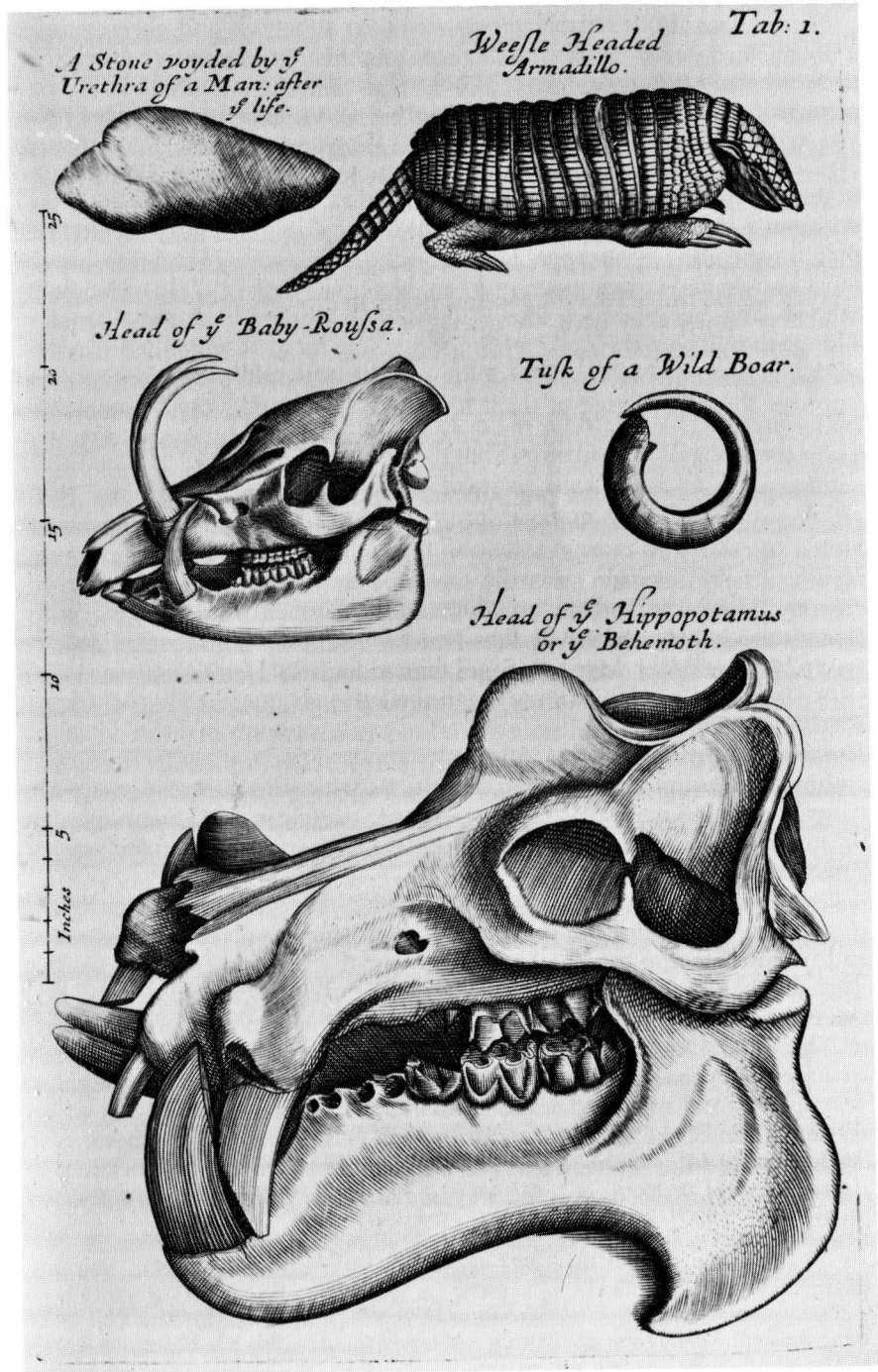


Plate 7. Tab. I from Grew's Musaeum Regalis Societatis *(1681), illustrating various specimens in the Society's collection. Reproduced by permission of the British Library.*

Wilkins (whose protégé Grew, in fact, was). Grew was optimistic that if sufficient data about natural things and their functions and characteristics was collected, 'a better History of them might be written in five years, than hath hitherto been done in two Thousand', and this was directly linked to a concern for taxonomy. 'It were certainly a Thing both in it self Desirable, and of much Consequence;' he wrote, 'To have such an Inventory of Nature, wherein, as on the one hand, nothing should be Wanting; so nothing Repeated or Confounded, on the other. For which, there is no way without a cleer and full Description of Things'. Significantly, he stressed that 'it were also very proper, That not only Things strange and rare, but the most known and common amongst us, were thus describ'd'. In addition, he echoed language-planners like Wilkins in his belief 'that the Names of Things should be always taken from something more observedly declarative of their Form, or Nature. The doing of which, would much facilitate and Improve the Knowledge of them many ways. For so, every Name were a short Definition. Where as if Words are confus'd, little else can be distinctly learn'd'.[61]

Perhaps the most obvious characteristic of Grew's catalogue is its erudition: its long descriptions of objects contrast with the brief entries in Hubert's catalogue or the *Musaeum Tradescantianum*, as he brought wide reading in the relevant scientific literature to bear on the objects in his custody. The Royal Society actually bought a number of standard works for Grew's use in his task: the *Museum Wormianum*, Ludovico Moscardo's *Note, ovvere Memorie del suo Museo* (1656), Lorenzo Legati's *Museo Cospiano* (1677), Giorgio de Sepi's 1678 catalogue of the collection bequeathed by Athanasius Kircher to the Jesuit College at Rome, and a volume of John Jonston's *Historiae Naturalis . . . Libri* (1650 – 3). Grew used these, together with older authors like Aldrovandi, Moffett and the Bauhins, and the most up-to-date contributions on particular topics — Lower, Kerckring and Swammerdam on anatomy, Willughby on birds, Lister on shells, and articles in *Philosophical Transactions* throughout.[62]

Equally significant is the detail into which Grew went in his lengthy and painstaking descriptions of specimens, which often involved measurements, and he justified the care he took to potential critics on the grounds that 'perhaps they have not so well considered the necessity hereof, for the cleer and evident distinction of the several Kinds and Species, in so great a variety of Things known in the World'. As a result, he was frequently able to criticize such predecessors as Jonston, Aldrovandi and Worm for inaccurate descriptions and misidentifications, thereby making a contribution to the accumulation of reliable information which — like such contemporaries as Willughby and Ray — he saw as playing a crucial role in the advancement of natural history. Indeed, in some ways this was the most valuable feature of his book.[63]

[61] Grew, *Musaeum*, preface.
[62] Ibid., passim; Royal Society accounts, 1679 – 81. Cf. Birch, *History*, iii, 450. On these museum catalogues, see Murray, *Museums* (n. 2), i, 84, 89, 104 – 7.
[63] Grew, *Musaeum*, preface and passim.

It was in certain of his lengthy descriptive passages that Grew's task arguably came closest to his existing research interests. Grew had made his name with the studies of plant physiology that were published separately in the 1670s and then collected together as *The Anatomy of Plants* in 1682. At the time when he undertook his catalogue of the Royal Society rarities, however, he was transferring his attention to animals. As an appendix to his *Musaeum*, he published a pioneering 'Comparative Anatomy of Stomachs and Guts Begun', a series of lectures given to the Royal Society in 1677, while in various displays at the Royal Society in the late 1670s he showed various parts of animals — skulls, tongues, gullets and the like — and commented on their functions. Moreover his sentiments on these occasions overlapped with a passage in the preface to the *Musaeum*, in which he justified description partly on the grounds that it stimulated new questions about the workings of animal organs and the like, thereby illustrating 'the Providence of Nature'.[64]

In his preface he also expressed his wish not to meddle with 'Mystick, Mythologick, or Hieroglyphick matters . . . as some have done: I thought it much more proper, To remarque some of the Uses and Reasons of Things'. Not surprisingly, he was hostile to the stress on the strange and inexplicable typical of collectors like Hubert and so well exemplified by the earlier catalogue. Quite apart from recognizing Hubert's giant's thigh-bone as the bone of an elephant, he was sarcastically dismissive of phenomena that had preoccupied virtuosi such as the strange power of the *Echineus remora*. He also made short work of items like the sticks unnnaturally formed in such shapes as that of a St Andrew's Cross, straightforwardly rationalizing them with the words: ''Tis probable, That these were bound together (as may be any other) when they were young, and with the Barque pared off, where contiguous; and so, by a kind of ingrafting, became coalescent'.[65] Hubert's curiosity about coconuts shaped like a mouth or a fish was quietly ignored, while Grew's hostility to the cult of rarity is further seen in his down-to-earth remarks on medicines, and how 'the greatest Rarity, if once experienced to be of good use, will soon become common'.[66]

There is also a contrast between Grew and Hubert concerning classification. Hubert had included in his catalogue sections such as '*Things of strange operation*';[67] Grew, on the other hand, was attempting a wholly natural arrangement, like other cataloguers of the time. Contrary to what

[64] Birch, *History*, iii, 333, 342, 475 – 6, 482 – 5 (the original manuscript of this survives as City of London Guildhall Library MS 1757, item 5); Grew, *Musaeum*, preface. See also below, 'Early Problems', pp. 275 – 6 and passim; Jeanne Bolam, 'The Botanical Works of Nehemiah Grew', *Notes and Records*, 27 (1973), 219 – 31.
[65] Grew, *Musaeum*, preface (for a comparable view, see John Ray, ed., *The Ornithology of Francis Willughby* (London, 1678), sig. A4) and pp. 32, 104 – 6, 184, 197 – 200. Cf. Hubert 1665 (n. 18), pp. 1, 24, 43.
[66] Grew, *Musaeum*, preface; Hubert, 1665 (n. 18), p. 46.
[67] Hubert, 1665, pp. 66 – 8.

has sometimes been claimed, he did not use the classification enshrined in Wilkins' *Essay*.[68] In view of the dissatisfaction which John Ray was by this time expressing about this, it would have been surprising if he had, though it is perhaps more surprising that he did not use Ray's classification either.[69] For instance, although Ray's edition of Willughby's *Ornithology* was available, Grew's arrangement of birds in the collection did not exactly follow that, his classification representing an eclectic blend of ideas derived from various treatises that he had studied.

On the whole, Grew's book was an inventory, which meant that his criteria of arrangement are rarely made explicit. But in one section he did feel the need to illustrate the taxonomy that he had employed, and this concerned the 600-odd shells in the collection. At the beginning of his section on this subject, he noted: 'According to the best Method I can at present think of, I shall here place them. And that it may be better judged, how far it is natural, or not, I shall afterwards digest them into Schemes'. The 'Schemes' take the form of seven analytical tables in which different types of shells are divided and subdivided according to their structural and decorative characteristics, and they fall into place among contemporary attempts to attain a sound classification of nature, illustrating clearly the relationship of Grew's book to the taxonomic efforts of scientists of the day.[70]

For all its merits, however, Grew's catalogue had its limitations, and these seem to a considerable extent to have been imposed on him by the collection for which he had been given responsibility. For one thing, the fact that he was cataloguing a finite collection cramped his style in terms of expounding classificatory principles. As he put it concerning the shells in the museum: 'The Reduction of all which to the Order of Nature, whoever shall go about [it], will find to be no little Task. Nor can it be perfectly done here, because as yet the Collection it self is not perfect'. In addition, though expressing in his preface the belief that nomenclature and classification should be closely related, Grew disavowed the intention 'actually to reform this matter' on

[68] Dorothy Stimson, *Scientists and Amateurs* (London, 1948), p. 111; Slaughter, *Universal Languages* (n. 41), p. 175.

[69] Raven, *John Ray* (n. 7), pp. 182f. and passim.

[70] Grew, *Musaeum*, pp. 124, 150 – 3, and see plate 8. It is interesting that tables in a partial Latin translation of Grew's book, British Library MS Sloane 1927, differ slightly from those in the published edition: see esp. fol. 41v. For the context, see Martin Lister, *Historiae Animalium Angliae Tres Tractatus* (London, 1678), esp. pp. 110, 154, [203]. See also his *Historiae Conchyliorum Libri I-IV* (London, 1685 – 88), and Jeffrey Carr, 'The Biological Work of Martin Lister' (Leeds Ph.D. thesis, 1974), ch. 4.

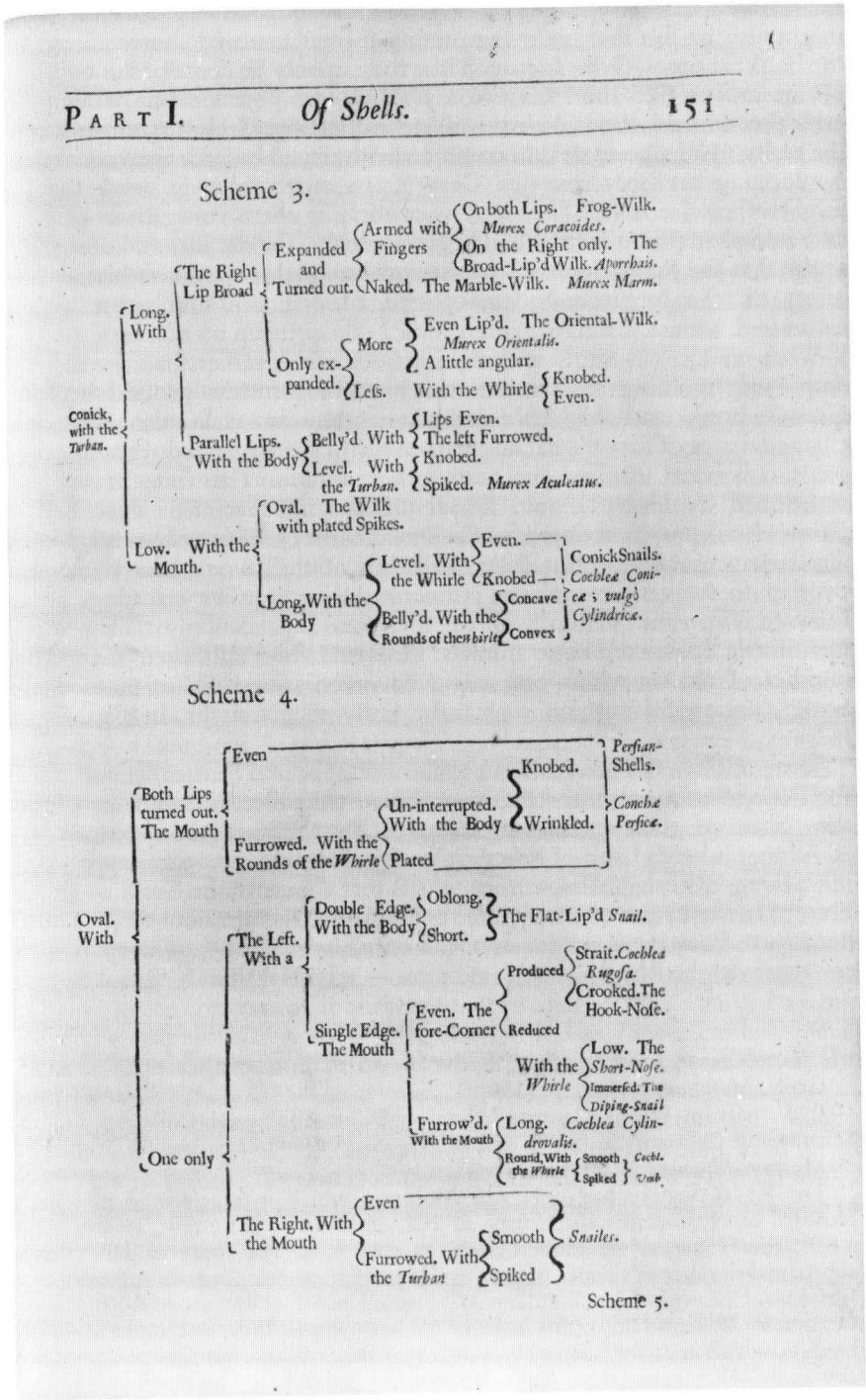


Plate 8. Two of the 'schemes' arranging shells according to their structural and decorative characteristics included in Grew's Musaeum Regalis Societatis, *p. 151. Reproduced from Sherard 652 by courtesy of the Department of Plant Sciences, University of Oxford.*

the grounds that he was not writing 'an Universal History of Nature'.[71] It might also be felt that his inventorizing format imposed shortcomings on the book: at times, Grew indulged in what can only be described as waffle in his attempt to find something to say about each object, while, despite his critical comments about Aldrovandi's classification, Grew's arrangement of the rarities had a good deal in common with that.[72] Indeed, the very task of cataloguing arguably diverted Grew from more valuable work that he might otherwise have done, such as continuing the investigations of plant and animal anatomy that he had begun earlier in the decade, and one might argue that the Royal Society's institutional needs here had a rather adverse effect on the intellectual development of one of those most closely associated with it.

What is more, in terms of the objects described, rather than the method employed in doing so, there is much more common ground between Grew's book and Hubert's, and it is almost as if the 'scientific' characteristics of Grew's catalogue to which I have referred were imposed on a collection inspired by quite other criteria. The fact that objects mentioned by Hubert could be identified with specimens described in Grew's book was first noted by Sir David Murray.[73] He only singled out a few instances of this, but fuller collation of the two works shows the overlap to be very extensive. Numerous items can be traced as going forward from one collection to the other, particularly fairly easily identifiable ones like exotic animals, birds and fish. This even included as number of objects which one might have considered out of place in the Society's scientific museum, such as the oddly-shaped sticks already referred to.

Some of Hubert's rarities seem to have disappeared (it is conceivable that the Royal Society acquired less than the whole collection, thus explaining the failure of such spectacular items as his Mummy to reappear).[74] In addition, Hubert's habit of referring to objects en masse at various points in his catalogue means that some specimens that appear in the Grew catalogue but not in the earlier one may have come from his collection. On the other hand, just from items whose donor is noted by Grew — quite apart from references in the Royal Society's minutes — it is clear that the Royal Society

[71] Grew, *Musaeum*, preface, p. [150].
[72] Ibid., passim; Wilma George, 'Alive or Dead: Zoological Collections in the Seventeenth Century', in Impey and McGregor, *Origins of Museums* (n. 2), p. 186.
[73] Murray, *Museums* (n. 2), pp. 132 – 3.
[74] The Royal Society had only one Mummy, which was presented by Henry Howard of Norfolk (Birch, *History*, ii, 202; cf. ibid., ii, 88; Grew, *Musaeum*, pp. 1 – 3); for Hubert's, see Hubert 1665 (n. 18), p. 1. For the possibility that a substantial number of rarities owned by Hubert passed into Sloane's collection, see Hawkins, *History of Music* (n. 18), iv, 379n, citing an MS collection on the history of London by William Oldys (this is then cited in *Biographia Britannica* (London, 1789), iv, 347, which adds the possibility that they reached Sloane via Courten). See also above, p. 133.

did add extensively to Hubert's collection, gaining benefactions especially from Fellows but also from merchants, travellers and others.[75]

Though numerical comparison is difficult and the ratio varies from section to section, the Royal Society's collection was between two and three times as large as Hubert's. In some sections, it was much more extensive: for instance, the section on sea-birds was much longer than Hubert's, with more native specimens represented, while the sections of seeds, mosses and earths were without parallel in the earlier collection, as were those of engines and instruments.[76] But despite this — and allowing for parts where Hubert's descriptions are very cursory — it is perhaps surprising how similar the physiognomy of the collection remained. Take, for instance, Grew's section on quadrupeds.[77] Some items are added, such as the skull and claws of a tiger, the skull of a hippopotamus (plate 7) and the skin of a rhinoceros. In other cases, donations meant that the Royal Society had multiple examples where Hubert had had only one or two: for instance, whereas Hubert had one rhinoceros horn, the Royal Society had three further specimens, one presented by the statesman, Sir Robert Southwell. But much remained the same — a sloth, a flying squirrel, armadillos, chameleons, crocodiles, lizards, salamanders, tortoises. In particular, what recurred was the collection's basic stress on non-indigenous specimens: with very few exceptions, exotic items outnumbered native ones. It thus retained strongly the character of a virtuoso cabinet, with its emphasis on the strange and the outlandish.

Indeed, in some respects it actually became more like a typical virtuoso cabinet than Hubert's had been. As has already been noted, Hubert's collection stood out — and perhaps seemed especially attractive to the Royal Society — because it was an assemblage exclusively of 'natural rarities', in contrast to the mixture of natural and artificial curiosities that was the norm in virtuoso collections of the day. As a result of the well-intentioned gifts of virtuoso Fellows and others, however, the Society's collection actually became more miscellaneous: by Grew's time it included such items as a box of 100 turned cups one inside the other, or two half-length figures in armour made up of parts of plants and insects inlaid in wax — both given by the virtuoso, Dudley Palmer — or a forest scene with animals 'all Cut in Papyr, in the compass of about three inches square'. It also gained a section of ethnographic curiosities — weapons, an Indian canoe, clothes, utensils like baskets, combs, and so on — which had not been paralleled at all in Hubert's.[78]

Hence the dependence of the repository on benefactors did much to define its character. Quite apart from the fact that it would have seemed churlish to refuse gifts and that these led to unnecessary duplication — as with the six saw-fish snouts that the Society ended up with, in addition to a

[75] Grew, *Musaeum*, passim; Birch, *History*, passim.
[76] Grew, *Musaeum*, part I, sect. 4; part II, sects 3, ch. 3, and 4; part III, sect 3, ch. 3; part IV, sect. 2.
[77] Ibid., pp. 10 – 48. Hubert, 1665 (n. 18), pp. 2 – 7, 33 – 9.
[78] Grew, *Musaeum*, pp. 378 – 9, and part IV, sects. 2 – 3, passim.

complete specimen — it is clear that it was principally odd or exotic objects which seemed to virtuosi to be worthy of a place in the collection. The 1666 announcement in *Philosophical Transactions* had specified the 'rare and curious' as what was required, and to a disproportionate extent it was the abnormal rather than the normal which materialized: two-headed calves rather than ordinary ones, African birds rather than British.[79] There was a preconceived expectation of what such a collection should contain, and in practice the valuation of ordinary items that we have surveyed among the Society's activists failed to work through to the mentality of well-intentioned donors.

It is also clear that it was the extraordinary rather than the ordinary which caught the attention of the visitors for whom the Royal Society, like Hubert previously, catered. On his visit to the collection in 1710, for instance, Z. C. von Uffenbach itemized as the 'things that pleased us most' unusual specimens, or specimens unusually well-preserved, rather than such things 'of a common sort' as were on show.[80] The same is true of English descriptions of the collection, such as that in the anonymous *British Curiosities of Nature and Art* (1713), which instanced such 'Animal Curiosities, as the Cameleon (that lives on the Air,) one Joint of the Vertebra of a Whale 30 l. Weight, &c.' Indeed, though based on Grew, the brief descriptions in the latter book are more reminiscent of Hubert's than his in their stress on the odd and the wonderful: for instance, 'The Webb of a Bermudas Spider, so strong as to snare a Bird', or 'The Tail of an Indian Cow, whose Hair is about a yard and quarter long: (This Creature is worshipped by the People, near the *Ganges*)'.[81]

At this point it does seem as if we have a conflict between what might be called 'scientific' and 'virtuoso' values, between the adulation of the exotic and the rare which characterized the virtuosi on the one hand, and, on the other, the aspiration to a comprehensive collection of objects, ordinary as well as extraordinary, seen in the public statements of the Society in the 1660s. The nature of the gifts which dictated the physiognomy of the repository thus illustrate clearly the way in which the Society's facilities were moulded — and perhaps trivialized — by the virtuosi who formed the rank and file of its support.

On the other hand, this is not the whole story, for, though the attitudes of the virtuosi may not have helped, there is reason to believe that the initial conception of a 'complete' collection was less realistic than had originally been thought, partly because of the limitations of the Royal Society's resources, and partly in its own right. The Willisel experiment exemplified the Royal Society's attempt to add to the collection in a systematic way, and the value of Willisel's work is illustrated by his success in bringing to light specimens in unexpected places which John Ray was able to incorporate in his definitive catalogue of English plants; Willisel was probably also responsible for the number of native examples which swelled some sections

[79] *Phil. Trans.*, 1 (1666), 321; Grew, *Musaeum*, pp. 27, 84 – 6 and passim.
[80] Quarrell and Mare, *London in 1710* (n. 2), pp. 99 – 101.
[81] *British Curiosities* (n. 1), sig. A5, p. 44. See also the other works cited in n. 1.

of Grew's catalogue of the repository by comparison with Hubert's, for instance that of sea-birds.[82] But — quite apart from the fact that the Royal Society could only afford to employ Willisel briefly — it is worth pointing out that systematic accumulation of specimens of all the natural phenomena even of England would have resulted in a collection of enormous size, which would have placed a huge burden on a society with only limited resources.

The virtues of a 'complete' collection were especially questionable when it came to common species which could be equally easily studied in their natural habitat. Indeed, some had evidently pointed this out at the outset, as is suggested by William Balle's report to Henry Oldenburg in 1666 of his recollection of a discussion which presumably took place in 1664 over the proposal that 'all sorts of animals' should be included in the collection. 'As I remember', he wrote, 'when some were moving that all the curiosities of our owne land should bee first gotten others laughed att itt as too voluminous, to have ducks geese & hen &c.'[83] At that stage, this was clearly not a dominant view, as is shown by the efforts towards 'completing' the collection that followed. But, as with others of the Society's early grandiose schemes, like its hopes to improve technology, in the event difficulties came to light which illustrated a degree of naivety in the Society's original ambitions.[84]

It is thus interesting to find that, in practice, scientists as much as virtuosi consulted the repository for exotic specimens rather than common ones which were otherwise available. Of the items in the Society's repository cited by Walter Charleton in his *Onomasticon Zoicon* (1668), for instance, a disproportionate number were exotic species which he otherwise had no opportunity to examine, and from this point of view the collection certainly had a worthwhile role to play.[85] This is also illustrated by the fact that, insofar as Grew's selection of items for careful scrutiny was not random, he apparently devoted most attention to exotic objects which writers like Jonston had misdescribed because they had never actually seen. In addition, serious scholars as well as dilettantes could find a value in the monstrous: Bacon, after all, had stressed the need to study nature 'erring' or 'out of course' as a crucial way of penetrating her secrets, so it could be seen as genuinely important to preserve monstrosities and abnormalities as a resource for scholarly study.[86]

[82] Ray to Lister, 17 July 1670, in John Ray, *Correspondence*, ed. E.Lankester (Ray Society, 1848), pp. 61 – 2. Cf. also Skippon to Ray, n.d., ibid., pp. 85 – 6. Grew, *Musaeum*, part I, sect. 4.
[83] Balle to Oldenburg, 14 April 1666, *Oldenburg*, iii, 90. See also above, p. 125.
[84] See Hunter, *Science and Society*, ch. 4.
[85] See above, n. 17. Cf. e.g. Ray to Lister, 19 Dec. 1674, in Ray, *Correspondence* (n. 82), p. 112; Grew, *Musaeum*, passim.
[86] Bacon, *Works*, iv, 168 – 9. See also Katharine Park and L. J. Daston, 'Unnatural Conceptions: the Study of Monsters in Sixteenth- and Seventeenth-century France and England', *Past and Present*, 92 (1981), 20 – 54.

But for common objects, and especially for live, animate ones, the value of a museum was less clear, and arguably the Society's initial ambition for a museum had been somewhat misconceived. As it turned out, its organizers had been wrong to presume that it was either necessary or desirable to have a complete series of dead specimens laid out in the same room in order to achieve a satisfactory taxonomy of nature. Though the work of Francis Willughby and John Ray was to exemplify the period's real achievement in building up an accurate classification of nature, it soon transpired that such systematization was best achieved not so much through the accumulation of specimens, as had originally been believed, as by books like theirs, the content of which was not co-extensive with any collection. Indeed, it is revealing that, insofar as Willughby and Ray collected themselves, they did so in a functional and temporary manner, buying fish, dissecting them on the spot, drawing them and then throwing them away. Even items which they brought home from their travels abroad appear to have been jettisoned once they had been classified.[87]

The position of the Royal Society's museum vis a vis this broader enterprise is well illustrated by the relationship of the collection with Willughby's systematic *History of Fishes*, posthumously edited by Ray and jointly published by the Royal Society and Bishop John Fell of Oxford in 1686. The repository was the source of the specimens engraved in some twelve of the excellent plates that were provided for the book by subscription; the remainder were mainly taken from life, from fresh examples of common varieties acquired from the slabs of London fishmongers.[88] Moreover, as C. E. Raven observed, the Royal Society's specimens have a distinctly 'shrunken and eyeless' look about them, suggesting that preserved exhibits were decidedly inferior to live ones where the latter were available. Hence it was only appropriate that it was from fresh specimens of common species that Willughby and Ray were able to build up their basic taxonomy — carp, tench and mackerel, herring, bream and mullet — and it was into this that they had to fit the exotics — globe fish, square fish or mailed fish — with which Grew's catalogue shows the Royal Society's collection to have been so profusely supplied.[89]

Hence in the early history of the repository, we can arguably see a significant process of education going on as to what the strengths and weaknesses of a museum *were* in relation to understanding the natural world. A museum had a real value, but ironically this was not altogether what had initially been thought. As with so many other facets of the Society's early institutional ambitions, a process of trial and error was at work in which it became clear what a scientific institution could usefully achieve and what it could not. Thus modifications were introduced in the light of experience, and it is ironic that — even if for the wrong reasons — it

[87] George, 'Alive or Dead' (n. 71), p. 185, and a personal communication of 27 July 1983 from Dr George.
[88] Francis Willughby, *De Historia Piscium Libri Quattuor*, ed. John Ray (Oxford, 1686), plates G9, I2, 7, 10, 20, 22 – 4, N13, O3 – 4, X11 and passim. See plate 6.
[89] Raven, *John Ray* (n. 7), p. 357; Willughby, *De Historia Piscium* (n. 88), passim.

may have been the virtuosi rather than the scientists who had a better sense of what it was appropriate for a museum to contain.

If these reflections arise from the character of the repository at the time when it was reified in Grew's catalogue, its subsequent history further exemplifies the practical problems associated with administering a collection of this kind on the part of a voluntary institution. In terms of its content, gifts which are recorded in subsequent years continued to reinforce the 'monstrous' and exotic character of the collection.[90] As for its condition, the museum seems to have experienced a series of ups and downs, due to the fact that those who were supposed to look after the rarities rarely had as much time for the task as it required. In a letter of September 1681, John Evelyn told William London in Barbados that 'the Royal Society have lately put their Repository into an excellent method', and this was perhaps because the collection had been spruced up and rearranged while Grew was working on his catalogue.[91] But, though named 'praefectus Musei regalis Societatis' in 1682, Grew does not seem to have taken much interest in the museum after the publication of his catalogue: it is revealing that, though various possible appendages to that are mentioned, including an index and possibly an abbreviated version with the objects arranged 'in better order', none ever appeared in print.[92] Instead, responsibility for the collection devolved to the Society's more menial operators and clerks. It was apparently they who showed visitors round the museum, and they were also supposed to keep it in order, though their other commitments meant that this task was frequently not a priority for them. Moreover the difficulties that the Society had with individual employees — for instance, in the eighteenth century one was to abscond, while another was imprisoned for debt — deflected on the museum.[93] In addition, new acquisitions meant that a constant process of administration was required as the proper places for these had to be found, and catalogue entries made for them.[94]

This evidently explains the evidence that exists of neglect, perhaps best documented by the impressions of Uffenbach, who gave a critical account of his visit to the museum in 1710. As has already been noted, Uffenbach came to see the collection with expectations formed by Grew's catalogue, and he was shocked by what he saw. 'Hardly a thing is to be recognized, so wretched do they all look', he wrote, complaining how 'the finest instruments and other articles (which Grew describes), [are] not only in no

[90] See esp. Royal Society MSS 413 – 4.
[91] Evelyn to William London, 27 Sept. 1681, Evelyn, *Diary and Correspondence*, iii, 259.
[92] Birch, *History*, iv, 171, 250, 557; Francis Aston to Martin Lister, 29 March 1683, Bodleian Library MS Lister 35, fol. 92; see also below, 'Early Problems', n. 74.
[93] See A. D. C. Simpson, 'Newton's Telescope and the Cataloguing of the Royal Society's Repository', *Notes and Records*, 38 (1984), 187 – 214.
[94] See esp. Royal Society MSS 413 – 4. See also Simpson, 'Newton's Telescope' (n. 93), nn. 50, 54.

sort of order or tidiness but covered with dust, filth and coal-smoke, and many of them broken and utterly ruined'.[95]

On the other hand, this neglect can be exaggerated on the basis of accounts like Uffenbach's, as it is for instance by Richard Altick, who writes the collection off as 'decrepit' virtually from the start.[96] In fact, the process was more cyclical than inexorable. Within months of Uffenbach's visit the Society moved to new quarters — it was possibly partly in the expectation of this that the collection had been neglected — and shortly afterwards a purpose-built, galleried room measuring forty foot by twenty-three foot was erected to hold the rarities, probably to a design by Sir Christopher Wren. Then, in 1712 a committee was appointed 'to take care of the due placing of the Curiosities in the New Repository', while in the 1720s, we find an attempt being made to reduce new acquisitions more or less to Grew's arrangement.[97]

By the early 1730s, however, the condition of the collection was again poor, as was revealed by the findings of a further committee set up to deal with it, which complained of the 'Disorder' and poor condition of the specimens and expressed the fear that unless steps were taken, 'the greatest part of the Repository will soon perish & become useless'. Surveying the state of affairs, they reported how the birds, for instance, 'are generally in a very bad Condition; many of them having lost their feathers & several having nothing remaining beside their head & feet'.[98] They therefore took various steps to improve the condition and care of the exhibits, including the installation of locked cases; they also arranged for a register of benefactors to be kept. In addition, in the 1730s an entirely new scheme of classification was attempted by Cromwell Mortimer, the Society's Secretary, a doctor and former student of Boerhaave, who had been assistant to Sloane: this still survives at the Royal Society and it would repay detailed study.[99]

But it was not long before things began to go wrong again. In 1752, the museum was said to be in 'a ruinous forlorn condition', and in the 1760s it again had to be taken in hand, reinventorized and rearranged.[100] By the late 1770s the state of affairs may well once more have been deteriorating. Though the lack of space in the Society's new quarters in Somerset House was ostensibly the reason for the offer of the collection to the British

[95] Quarrell and Marc, *London in 1710* (n. 2), pp. 97 – 8.
[96] R. T. Altick, *The Shows of London* (Cambridge, Mass., 1978), p. 14.
[97] See J. A. Bennett, 'Wren's Last Building?', *Notes and Records*, 27 (1972), 107 – 118; Simpson, 'Newton's Telescope' (n. 93), pp. 193 – 4 and n. 50; Royal Society MS 413.
[98] D.M. 5.105 (before 'lost', 'nothing left' has been deleted). See also Simpson, 'Newton's Telescope' (n. 93), pp. 194f., and Royal Society MSS 414, 416.
[99] Royal Society MS 415/2 – 5. Simpson ('Newton's Telescope' (n. 93), p. 196) is therefore incorrect in stating that it is not known to survive.
[100] Simpson, 'Newton's Telescope' (n. 93), pp. 199, 201, and Royal Society MSS 415/1, 417, 419.

Museum in 1779, it may well have been felt that a collection was something with which a voluntary society was less able to cope than had optimistically been presumed in the 1660s.[101]

Ironically, at this transitional stage, an institution like the Royal Society may have been less able to look after a collection of rarities properly than an enthusiastic individual like Sir Hans Sloane with a burning commitment to the enterprise. It is symptomatic that during the revamping of the museum in the 1730s, Sloane's collection was held up as an example to the Royal Society on one occasion.[102] Moreover, matters were made worse by the fact that an institutional collection stimulated high expectations in visitors which were easily disappointed, as in the case of Uffenbach, whereas private collections obviously stimulated fewer pre-existent expectations and were therefore likelier to please. It is, in fact, interesting that Uffenbach juxtaposed his critical comments about the Society's collection with precisely the sort of observations about the difficulties of keeping public institutions afloat which are so appropriate to the early Royal Society.[103]

Hence, in addition to the process of education which led to the abandonment of the idea of a comprehensive collection of natural things, the history of the repository also revealed a further problem that had not been apparent at the outset, namely that looking after a museum necessitated work-a-day administrative tasks that were simply beyond the resources of a voluntary Society with plenty of other commitments. So, though the Society's ambitions have been echoed by historians like Sir Henry Lyons, who have seen the formation of the collection as an almost natural corollary of the Society's new, institutional role in the science of the day, in fact their assessment is anachronistic in the light of the Society's actual circumstances in its early years.[104] Once again, therefore, we find ambitions having to be modified in the light of experience, as the Society first scaled its plans down to a collection of a practicable size, and then abandoned the collection altogether to a more specialized body in the form of the British Museum.

[101] Simpson, 'Newton's Telescope' (n. 93), p. 202.
[102] Royal Society MS 490 (CMB 63), minutes of meeting of 8 May 1733, cited in Simpson, 'Newton's Telescope' (n. 93), p. 194.
[103] Quarrell and Mare, *London in 1710* (n. 2), p. 98. Cf. also Uffenbach's view of the Ashmolean, which he compared unfavourably with private cabinets such as that of Tobias Reymers of Luneburg, 'who is only a private person, [but] has certainly as many specimens again as one meets with here and far more important ones': W. H. and W. J. C. Quarrell, eds., *Oxford in 1710 from the Travels of Zacharias Conrad von Uffenbach* (Oxford, 1928), p. 26. For the collection of Reymers, see Murray, *Museums* (n. 2), i, 51. See also John Macky, *A Journey* (n. 1), i, 260.
[104] Sir Henry Lyons, *The Royal Society, 1660 – 1940* (Cambridge, 1944), pp. 49, 63 – 4. Cf. *The Record*, pp. 33 – 5.