Journal of the History of Collections 13 no. 2 (2001) pp. 125–144

The Ashmolean as a museum of natural history, 1683–1860

Arthur MacGregor

For a period of almost two centuries the Ashmolean Museum at Oxford functioned as an integrated scientific institution, combining a conventional museum display with a chemical laboratory and a school of natural history. The history of the collection of naturalia is examined here in terms of three principal phases: during the earliest of these the character of the displays as revealed by contemporary catalogues was largely conditioned by the collection's genesis in a seventeenth-century cabinet of curiosities; in the second phase, centred early in the second half of the eighteenth century, the impact of Linnaeus began to make itself felt; in the third phase, occupying the second quarter of the nineteenth century, the entire collection was redisplayed as an exposition of natural theology. Finally, by 1860 the natural specimens were transferred from the Ashmolean, leaving a much reduced collection of man-made objects from which the Museum in its current form was later relaunched.

EVERYONE who knows the present-day Ashmolean Museum, with its rich displays of art and archaeology, knows too that the origins of the Museum's collections lay in the cabinet of curiosities amassed by the Tradescants, father and son, during the earlier part of the seventeenth century and donated to the University of Oxford by Elias Ashmole in 1683. While there has long been a generalized appreciation of the multi-faceted character of the early displays in the Ashmolean and although the continuing survival of the early catalogues has been a matter of record, it has only been with the publication of those inventories in recent months, including translations of their Latin texts, that they have become accessible for wide study.[1] From the details contained in the early catalogues and from a number of surviving donors' lists and other manuscript sources, together with the Museum's first printed catalogue of 1836,[2] we can now flesh out something of the development of the collections up to the point where nineteenth-century university-wide rationalization and reform led to the extinction of the Ashmolean as predominantly a museum of natural history and to the transfer of those elements of its collections in the 1850s to Oxford's newly founded Natural Science Museum.

What follows is an attempt to reconstruct the now-vanished character of the Ashmolean from its inception as a proto-scientific institution to its reduction to a repository of man-made curiosities in the mid nineteenth century; following the removal in 1860 of the Ashmolean's coin collections to the Bodleian Library and of the ethnographic specimens in 1886 to the newly founded Pitt Rivers Museum, it was from this much reduced rump that the reconstruction of the Ashmolean in its present-day form was launched.

The pre-history of the Ashmolean's natural history collections

It was of course as practical plantsmen that John Tradescant the elder (died 1638) and his son of the same name (1608–62) earned their livings and their considerable reputations. Numerous introductions of exotic species are credited to them by authors such as Thomas Johnson and John Parkinson,[3] and it is clear that the garden they established at Lambeth from the late 1620s functioned as a collection of living rarities to complement the curiosities of art and nature exhibited in their museum, aptly titled The Ark. Little evidence survives to suggest that the Tradescants were very systematic in acquiring natural specimens for their museum: in a plea for new materials circulated in 1625 the father reveals a preoccupation only with impressive size and with curiosity, as, for example, a 'Seacowes head the Bigest that Canbe

Gotten . . . the Greatest sorts of Shell fishes . . . Great flying fishes & Sucking fishes withe what els strang[e]'.[4]

None the less, by virtue of the ever-increasing range, the wide geographical scope and the rarity of many of the exhibits, the Tradescant collection came to be acknowledged as an important scientific resource, so that John Ray, for example, in his revision of Francis Willughby's *Ornithology* (1678), made use of the specimens there to verify certain features of the dodo and other exotic birds which were then to be found nowhere else in England.[5]

In the catalogue of the collection, published with Ashmole's sponsorship in 1656 and compiled in part by Ashmole and Dr Thomas Wharton in association with the younger Tradescant, the importance of the natural history element is immediately apparent.[6] None the less, the nature of some of the entries makes quantification somewhat speculative. Amongst the birds, for example, are some thirty entries for 'Whole Birds', but they include descriptions such as 'Birds of Paradise . . . whereof divers sorts, some with, some without leggs',[7] and 'Many rare and beautifull Indian birds, not found described in authors'. A sub-section for eggs includes 'Divers sorts of Egges from Turkie: one given for a Dragons egge', and 'Easter Egges of the Patriarchs of Jerusalem'. Other sub-sections list 'Feathers' (including 'Two feathers from the Phoenix tayle'); 'Claws', in which category the most exotic of the twenty-five specimens must be that of 'the bird Rock; who as Authors report, is able to trusse an Elephant'; and 'Beaks, or Heads' of various specimens, amongst which are six referenced to Markgraf's *Historia Naturalis Brasiliae* (1648).

Brazilian specimens are again prominent among the four-footed beasts, with others from Greenland, Cape Verde, India and Arabia; several undoubted African specimens are also present. A number of heads, skins and other body parts are listed in addition to (presumably) whole specimens, as well as 'Divers Horns answering to those, by Authors attributed to the Ibex, Gazella, Hippelaphus, Tragelaphus, Cervus palmatum, Camelopardis, &c.'[8]

Two pages of 'Fishes and their parts' include fragments of sea-horses, dolphins, whales, narwhal (*Unicornu marinum*) and walrus, as well as true fishes of the more sought-after varieties such as remora and sun-fish. Five pages of 'Shell-creatures' follow, 'wherof some are called *Mollia*, some *Crustacea*, others *Testacea*', acknowledged as including 'both *univalvia* and *bivalvia*'. The 'Severall sorts of Insects, terrestrial' that conclude the zoological section are similarly divided up according to class – 'anelytra, coleoptera, aptera, apoda'.

The contents of several pages of entries headed *Fossilia* are again very mixed, as acknowledged by subheadings for 'Earths, Coralls, Salts, Bitumens, Petrified things, choicer Stones, Gemmes'. Rather more native sources are acknowledged here, including Yorkshire, Staffordshire, Cambridgeshire and Kent

Some eight pages of 'Outlandish Fruits from both the Indies' conclude the account of the *naturalia*, together with 'Seeds, Gummes, Roots, Woods, and divers Ingredients Medicinall, and for the Art of Dying'; the latter are arranged by colour and include both organic and inorganic materials.

Scattered elsewhere are a few miscellaneous items such as the 'Indian morrice bells' recorded there by Johnson, made, we are told, in the Cannibal Islands of the West Indies from the dried and hollowed-out cases of fruits into which pebbles had been inserted to make them rattle.[9] Whole plant specimens appear to have been rare in the museum itself: if there were herbaria in the collection we cannot detect them.[10]

The founding of the Ashmolean

In the era when Elias Ashmole inherited the Tradescant collection and formally proposed its donation to Oxford, the University was in propitiously receptive mood. Ancient academic mistrust of empirical studies had begun to subside during the second half of the seventeenth century, and the study of 'philosophical history' formally entered the curriculum. As part of his 'Propositions' submitted to the University with a view to founding the Museum, Ashmole nominated Dr Robert Plot to be the Reader in this subject and held out the prospect that he would in time endow the chair; although the endowment was never forthcoming, Plot was appointed the first keeper of the Ashmolean in a move that underlined the integral role within the University curriculum that the Museum was expected to play.

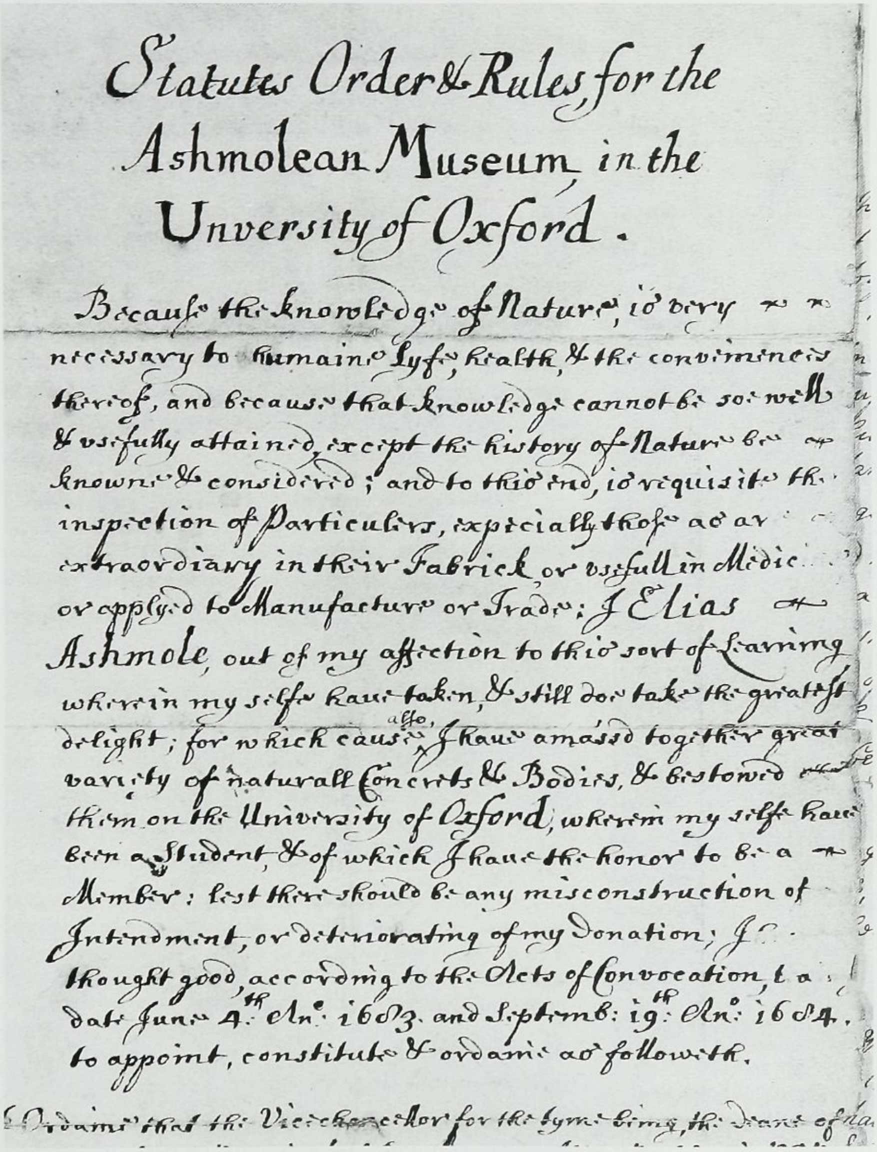
It was as a resource for exploitation in researches of this kind that the Tradescant collection recommended itself to Ashmole and it was its usefulness in this respect that he stressed in the formal document

marking the founding of the Museum (Fig. 1), where the initial display at the formal opening on 21 May 1683 was formed almost entirely by Tradescant material:

> Because the knowledge of Nature is very necessary to humaine Lyfe, health, & the conveniences thereof, and because that knowledge cannot be soe well & usefully attained, except the history of Nature be knowne & considered . . . I Elias Ashmole, out of my affection to this sort of Learning . . . have amass'd together great variety of naturall Concrets & Bodies, & bestowed them on the University of Oxford . . .[11]

The sentiment was reciprocated by the University and given poetic expression by the Vice-Chancellor, who wrote of the Museum as 'a new Library which may containe the most conspicuous parts of the great Book of Nature, and rival the Bodleian's Collection of Mss. and printed volumes'.[12]

As well as establishing the basis on which the donation was being made, Ashmole produced a tightly drafted set of regulations for the running of the new institution. These included provision for the drawing-up of the catalogues which form the basis of


Statutes Order & Rules, for the Ashmolean Museum in the Unversity of Oxford.

Because the knowledge of Nature, is very necessary to humaine Lyfe, health, & the conviniences thereof, and because that knowledge cannot be soe well & usefully attained, except the history of Nature be knowne & considered; and to this end, is requisite the inspection of Particulars, especially those as are extraordinary in their Fabrick, or usefull in Medic... or applyed to Manufacture or Trade: I Elias Ashmole, out of my affection to this sort of Learning wherein my selfe have taken, & still doe take the greatest delight; for which cause also, I have amass'd together great variety of naturall Concrets & Bodies, & bestowed them on the University of Oxford; wherein my selfe have been a Student, & of which I have the honor to be a Member: lest there should be any misconstruction of Intendment, or deteriorating of my Donation; I ... thought good, according to the Acts of Convocation, bearing date June 4th An: 1683. and Septemb: 19: An: 1684. to appoint, constitute & ordaine as followeth.

I Ordaine that the Vicechancellor for the tyme being, the Deane of ...

Fig. 1. Draft of Ashmole's Statutes for the administration of the Ashmolean Museum, 1686.

the first part of the present survey. Responsibility for care of the collection was to be vested in a board of six Visitors appointed *ex officio* to the Museum – the heads of Christ Church and Brasenose College, the Regius Professor of Medicine, the Junior and Senior Proctors, and the Vice-Chancellor of the University – each of whom was required to oversee the well-being of one part or another of the collection. Ashmole's statutes specified that the entire collection should be 'distributed under certaine heads; and a number to be fixed to every particular; & accordingly to be registred in the Catalogue of them'. The titles of the respective offices of the Visitors were each assigned to one of the six catalogues, compiled in accordance with statute jointly by Plot (Fig. 2), appointed in 1683, and his assistant Edward Lhwyd (Fig. 3), who ultimately was to succeed to the keepership from 1691 to 1709; henceforth the Visitors would carry out a stock-check on the occasion of their annual visitation, 'each Visitor comparing his part & seeing that all particulars are safe and well conditioned, & answering to the Catalogue'.[13]

Fig. 2. Robert Plot (1640–96), first keeper of the Ashmolean; artist unknown. Museum of the History of Science, Oxford; photo, Giles Hudson.

Fig. 3. Edward Lhwyd (*c.*1660–1709), Plot's deputy and successor as keeper. From the Book of Benefactors, Ashmolean Museum.

An additional stipulation ought to have had important consequences for our knowledge of the early natural history collections, but sadly no evidence survives to indicate that it was ever instituted. This was a ruling that:

> . . . whatsoever naturall Body that is very rare, whether Birds, Insects, Fishes or the like, apt to putrefie & decay with tyme, shalbe painted in a fair Velome Folio Booke, either with water colors, or at least desgn'd in black & white, by some good Master, with reference to the description of the Body itselfe, & the mention of the Donor, in the Catalogue; which Booke shalbe in the Custody of the Keeper of the Musaeum, under Lock & Key.

Two other statutes had a direct bearing on the natural history collections. One concerned the disposal of duplicate specimens of a given sort, for which it was decreed that:

> . . . it may be lawfull for the Keeper of the Musaeum aforesaid, with the Consent of three of the Visitors, whereof the Vicechancellor to be one, to exchange it for somewhat wanting; or to make a present of it to some Person of extraordinary quality.

Amongst the other regulations well-suited to the new institution, the latter stipulation sits uncomfortably; it does no more, however, than perpetuate the practice common amongst all owners of private

cabinets of the day. The other statute in question would have had a particular relevance to the stuffed specimens:

> That as any particular growes old & perishing, the Keeper may remove it into one of the Closets, or other repository; & some other to be substituted.[14]

This provision was one that certainly was resorted to on more than one occasion.

The early years of the Ashmolean

Within a year of the Ashmolean's opening Lhwyd had completed the catalogue of over 600 shells (assigned to the Senior Proctor).[15] The others followed over the space of the next decade or so, and once completed the texts of all six catalogues were copied by a scrivenor into a single volume which was to form a security copy in case of loss of the others, and which was placed in the care of the Vice-Chancellor.[16]

Apart from the Senior Proctor's catalogue, only one other inventory of natural history specimens survives today from the original series, namely that assigned to the Dean of Christ Church and dealing with minerals and gems (as well as man-made curiosities and paintings).[17] From the Vice-Chancellor's consolidated copy of 1696–7 the texts of two more can be recovered, assigned respectively to the Professor of Medicine (dealing with materia medica, marine plants and gourds) and to the Principal of Brasenose (zoological specimens);[18] both are also known from amended copies drawn up in the mid eighteenth century (see below).

In addition, brief details of donations to the Museum were recorded between 1683 and 1766 in a folio volume with vellum leaves titled the Book of Benefactors.[19] In some instances, whimsical sketches of donations illustrate the initial letters of the various entries, providing valuable glimpses of now-lost specimens.

Minerals and fossils

Perhaps more than any other category of material represented in the early collections, the minerals and gems enshrine some of the most retrospective aspects of the displays. Many of these specimens can be equated with items listed in the Tradescant catalogue of 1656, where their presence had nothing to do with the 'new science' of the seventeenth century but owed everything to the established conventions of the Renaissance *Kunstkammer* collection and to the classical sources that in turn provided the conventional wisdom concerning their supposed properties.

In this category may be counted a number of specimens listed in the Book of the Dean of Christ Church, including minerals and fossil corals to which the classical canon applied a variety of conventional names and to which it attached a number of specific attributes. There were, for example, several *ombriae* in various shapes, some of them mounted in precious metal, acknowledging their primarily amuletic interest: these were held to originate in rain and thunderstorms, and to be sovereign antidotes to poison. *Asteriae* or *astroites* were also present – their surfaces patterned with millefiori-like star-shaped elements – treasured for their efficacy as 'victory stones'. A single specimen of swallow stone (*Lapis chelidonius*), traditionally said to be found within the heads of swallow nestlings and prized as a means to 'strengthen the brain', acknowledges another belief on which the curators must surely have had cause to speculate and to begin to question the received tradition.

Some evidence for this process can be found in the descriptions of a number of fossil fish teeth. Of the toad-stones (*Lapis bufonites*, derived from the palatal teeth of certain bony fishes[20]), for example, several are recorded as having been collected in the Oxford region, under circumstances which might have discouraged any suggestion of supernatural origins. Hence one group of fourteen of them, recovered from a quarry at Garford, Berkshire, are described as 'plate-like toad-stones or fish teeth', suggesting that their fossil origin was well appreciated, even if the traditional terminology was preserved. Similarly, a specimen described as a 'barbed fish-tooth or *glossopetra*', found in a sand-pit at Sandford, Oxfordshire, is clearly recognized for what it is (in fact deriving from the shark family), even though its long-outdated name, owing more to myth than to science, is preserved.

Plot and Lhwyd both occupied positions of scholarly authority at a period when the true nature of fossils remained open to debate. Plot has been characterized as an adherent of the belief that all fossils and minerals were sports of nature, produced within the earth by a 'plastic virtue or petrifying fluid'; the formation of kidney-stones and gall-stones

within the body provided an analogous mechanism.[21] Seeking no direct biological counterparts for the 'formed stones' he encountered, Plot had a tendency to give equal weight to any formal resemblances between curiously shaped stones and organisms (or even objects) from the everyday world. Lhwyd's treatment of the fossil record was more penetrating, although it remained embedded in an earlier system of beliefs that explained true fossils as products of the spawn of marine animals, evaporated from the sea and deposited in the rocks through the action of rain. None the less, Lhwyd evidently vacillated in his beliefs, being 'at times almost convinced . . . that many of those vertebrae and shells . . . are the spoils of once living animals'.[22] In the texts of the Ashmolean catalogues one can almost see this process of enlightenment at work.

Other essential ingredients of the well-stocked *Kunstkammer* can also be recognized. The *aetites* or eagle-stone, for example, is represented in the Ashmolean collection by one specimen, 'ash-grey in colour and with another stone or a lump of clay inside it'. Once again the curators of the collection show themselves familiar with the commonplace nature of these hollow geodes enclosing a loose body within, while continuing to acknowledge – perhaps out of no more than piety for the founder – the special significance formerly attributed to it.

Some specimens were still prized for their perceived resemblance to other natural objects: several items are termed Cats' Eyes (*Oculus belli*), including one 'obscured as if by a cataract', and six as Wolfs' Eyes (*Lycophthalmi*), for which Gessner is cited as authority. The same ability of nature to mimic appearances accounts for the presence of various specimens of 'Florentine marble', polished specimens showing simulacra of landscapes, churches, ruined cities, etc. Several examples too are recorded of *Ludus Paracelsus* or *Ludus Helmontii* - naturally formed cubes of mineral looking intriguingly like playing dice. Lhwyd (a Welshman), no doubt, was responsible for the observation in relation to 'Thirty-two tesserae, of metallic colour', that 'Their shape is natural and they are found in all the laminar stones of Wales'.

Yet further items are included in this section on account of their material although they had other claims as curiosities: a series of archers' thumb-rings, for example, in chalcedony and agate, as well as arrowheads, knife- and sword-handles, necklaces, crucifixes, intaglios and prepared spheres in various hardstones. In the case of the prehistoric stone artefacts, the Ashmolean curators played a part in finally laying to rest the tradition that these were natural phenomena. In his *Natural History of Stafford-shire*, Plot drew on ethnographic evidence available to him in the Ashmolean to confirm that the stone axes whose status was still disputed were indeed man-made objects: 'how they may be fastened to a *helve*', he wrote, 'may be seen in the *Musaeum Ashmoleanum* where are several *Indian* ones of the like kind'.[23] Lhwyd, on the other hand, was to encounter in the Scottish highlands the widely-held superstition that flint arrowheads were the agency by which 'elf-shot' cattle fell under the influence of witches and elves, and by reference to stone-tipped arrows from contemporary stone-using cultures in North America he was able to demonstrate conclusively their man-made origin.[24] These episodes illustrate persuasively the contention that in the early Ashmolean 'man and nature were considered together as two elements in a single system'.[25]

If the catalogue entries otherwise signal little advance in the composition of the collection from the Tradescants' day, the early operation of the Museum is shown in a more positive light by a letter sent to Plot by Martin Lister (*c.*1638–1712) in the founding year of 1683, from which there emerges a rare illustration of the functioning of the Ashmolean as an integrated institution (including the ground-floor School of Natural History and basement chemical laboratory in addition to the museum display, housed on the upper floor), all under the control of Plot as the University's first professor of chemistry. Lister's letter accompanied a gift of shells (see below), but in the following passage he refers to a number of mineral specimens which clearly were destined for analysis in the laboratory rather than for display:

> I pray add this to the rest of yo[ur] Obligations, if you will get the Iron ores, (w^{ch} I have sent) or any w^{ch} you have (w^{ch} may be done in a little quantity in Small covered Crucibles) w^{ch} are not in my Collection Carefullie calcined or Nealed, and the time noted, when they first begin to own y^{e} Loadstone. It will be for my Credit & our Country Man Gilberts, for on this, his Account of the Loadstone very much depends, and therefore he is very Cautious & particular in the manner of Calcination, he requires 12 Hours in the Calcination, but I have known

some take 24 Hours, before they would acknowledge the Loadstone. Our Curator [at the Royal Society] now is so very idle & conceited, y^{t}, altho' I sent up 17 ores ready prepared, yet I find they are yet prejudiced & believe I Imposed upon them, & those y do not, begin generally to think that all mineral Bodies whatsoever will yeild to [any] Loadstone after calcination. but I doubt not if the Experiment be Carefully tryed, they will find neither true, for I have purposely had some stones 5 days & as many Nights in the fire, without gaining any thing upon them, because not Iron.[26]

Lister's enthusiastic support for the founding of the Ashmolean has been commented upon elsewhere;[27] here he clearly reveals his ambition that the Museum might emerge as a more effectual alternative to the Repository of the Royal Society.[28] Although the laboratory was indeed to build an independent reputation for itself, its activities throughout most of the eighteenth century relied very little on the resources of the museum.[29]

Not unnaturally, given the continuing uncertainty as to their origins, fossils (other than the familiar if imperfectly understood bodies mentioned above) played little part in the Tradescant collection.[30] More than any other element, however, the collections of fossils were expanded in a significant and systematic manner during the early decades of the Ashmolean's existence, due in part to gifts from Plot but more particularly to Lhwyd's work in the field. A number of those listed in the Book of the Dean of Christ Church are provenanced to sources in the Oxford area – Garford, Sandford, Witney, Marcham, Faringdon – and one is referenced to Plot's *Natural History of Oxford-shire*.[31] At the conclusion of a dozen such entries is an interpolation by Lhwyd to the effect that 'I found these stones . . . near my home, and also a number of others of equal elegance. We placed all these with a large number of others of the same kind which are stored separately . . .'

The cabinets in which Lhwyd arranged his carefully classified specimens – including many of those described in his *Lithophylacii Britannici Ichnographia*[32] (Fig. 4) – evidently were stored on the ground floor of the Museum (otherwise taken up by the School of Natural History), or at least they were so when the Museum received its well-documented visit from the earnest young German traveller and diarist, Zacharias Conrad von Uffenbach, in 1710, a year after Lhwyd's death. On that occasion, Uffenbach was conducted around the collection by Lhwyd's successor, David Parry:

When Mr. Parry arrived he showed us the stones down in the hall of the Ashmolean. They are in three very large low presses. There is a splendid quantity and variety of these stones, such as I have never in all my life seen together before. It is unnecessary to describe them here; moreover it would be impossible, as this has been very well done by the collector himself, Mr. Lluyd in his *Lithophylacium* in octavo; as only 125 copies of this book were printed for some of his own friends, at a cost of one guinea, and none of these are now available, Mr. Parry, who helped Mr. Lluyd in his collating, is going to publish it again, and in a greatly augmented edition. I must say of the classification (of the stones) that following the description in the book they are faultlessly arranged according to class and species, and also so conveniently that the larger stones are to be seen uncovered in the big drawers, the smaller ones in round boxes according to size. Those placed thus together are numbered, so that one can find them in the catalogue, and also that they might not get mixed up with each other, as might happen if they were lying loose.[33]

The remainder of the mineral collection, on the main (upper) floor of the Museum, also received more-than-usual praise from the normally acerbic Uffenbach:

In one corner stood a cabinet in which were many beautiful *lapides pretiosi*, such as I have seldom seen in such profusion and in the centre were several fine *lapides florentini*; an uncommonly good *glosso-petra*, about seven inches long and two wide at the back, a lovely light green stone, almost like jasper and various beautiful crystals also, amongst them two pieces with moss imbedded in them. A splendid topaz, bigger than a walnut. An amethyst, as large again as the above, but faulty.[34]

Lhwyd had also been instrumental, it seems, in attracting a collection of some fifty minerals and ore specimens, gathered by the Swedish mineralogist Johan Angerstein (1672–1720) while on a tour of south-west England and Wales in 1702–3. Lhwyd supplied Angerstein with letters of introduction and no doubt the small but valuable collection was given to him in gratitude from the Swede. Many of the entries are glossed with the German and Swedish terms for the ores concerned, most of which are provenanced to the mines where they were collected: the precision of the entries in this respect contrasts with the difficulties posed by Angerstein's phonetic spellings of Cornish place-names in particular, although many of the mineral sources have now been deciphered.[35]

So prolific, indeed, was the influx of 'formed

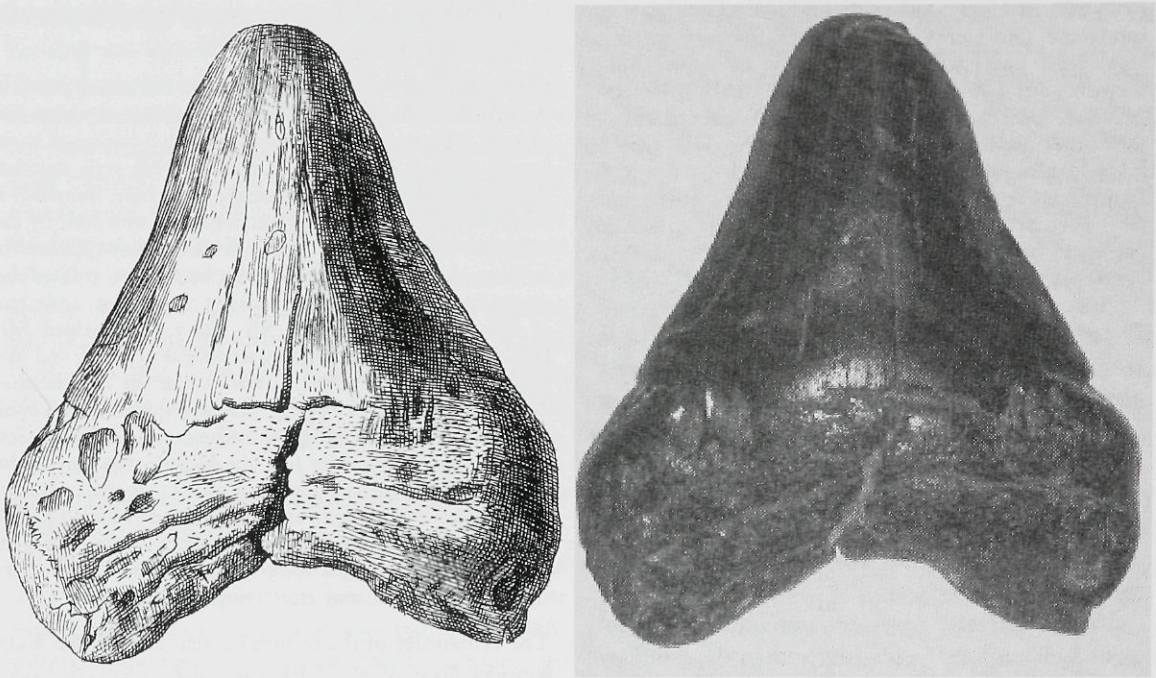


Fig. 4. a: Lhwyd's 'Glossopetra maxima', 4 inches long, from his *Lithphylacii* (1699); b: the surviving specimen in the Oxford University Museum of Natural History.

stones' under Lhwyd's regime that a plan emerged to sell off sets of duplicate specimens, the proceeds being earmarked to fund further research. Such a plan was formulated as early as 1691 by Lhwyd and culminated in the following advertisement appearing in the pages of the *Philosophical Transcations* for 1708:

> Whereas in the perusal of the late eminent Mr. Ray's Physico theological Discourses, Dr. Lister's Treatise de Cochlites Angliae, Dr. Robert Plot's Natural Histories of Oxfordshire and Stafforshire, Dr. Woodward's Essay, some papers in the Philosophical Transactions, and several other Books; the Discourses on Formed Stones, and their Origin, are not so clearly understood, for want of a competent knowledge of those Bodies: notice is hereby given, that the Curious in that part of Natural History may for one Guinea, be supply'd with Specimens of all the following figur'd Fossils, by Alban Thomas, Librarian of the Ashmolian Repository in Oxford.[36]

A list of fifty-two varieties is appended to the advertisement, identified by both their Latin and their popular names; 'Each Fossil (as also the place where found)', it continues, 'will be named according to Mr Lhuyd's *Lithophylacii Britannici Ichnographia*.'

Amongst the other sources for fossils recorded in the Book of Benefactors is John Woodward, 'professor of medicine at Gresham College [who] generously offered this museum various specimens of rare fossils from his abundant collection of remains from the period of the Flood' (Fig. 5). His entry, dated 1716, continues: 'We hope that one day he will give more', but no further benefaction was forthcoming from Woodward.[37]

Shells

As mentioned above, the shells were the first element of the collection to receive detailed treatment in the catalogues. Amongst the authorities cited by Lhwyd for the identifications assigned to the specimens in the Book of the Senior Proctor is one that held a special significance, namely Martin Lister's *Historiæ Animalium Angliæ*, published in London in 1678, and the author's *Appendix* to that work which appeared seven years later. Not only did Lhwyd (who, up to that point, had no detailed knowledge of shells) have access to Lister's important (and extensively illustrated) work in the form of a copy presented to the Museum by the author, but the Ashmolean also possessed the very collection on which the volume is based, presented by Lister in the Museum's open-

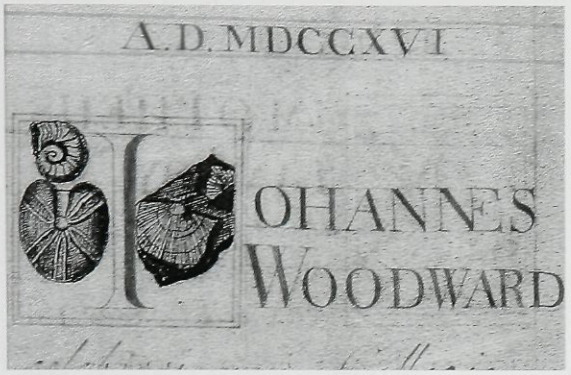


Fig. 5. Fossil specimens 'from the period of the flood', donated by John Woodward, 1716. From the Book of Benefactors, Ashmolean Museum.

ing year. A manuscript catalogue in the Museum, titled 'Viri Cl[arissimi] M. Lister M. D. Conchæ & Fossilia quæ in Historia Animalium Anglicarum Describuntur', is sub-titled '[Liber] Sen^{ris} Proc^{ris} Pars altera', indicating that the list, in Lister's own hand, was incorporated as an annexe to the Museum's principal catalogue of shells.[38] The gift of Lister's shells, the manuscript inventory cross-referenced to his printed volume, and all his associated notes, would have transformed Lhwyd's capacity to understand the collection as a whole, added to which he would have enjoyed from time to time the benefit of Lister's own advice, for the latter was a close friend of Plot and ultimately of Lhwyd too. The catalogue is prefaced by a copy of a letter from Lister to Plot which accompanied the gift:

> I have Sent you a Small present to make in my name, and after your obliging manner to the most Illustrious Universitie of Oxford. It is a Collection of Certain English Things belonging to the Histories of Nature. I am not a little proud, If it is in my Power to Contribute to the musæum; w^{ch} I doubt not, but will in a Short time exceed even the most renown'd ones of Italy or Europe.
>
> There are many Things indeed in my Present which seem common; but yet those would take up much Time to collect; and even those common Things are not known till they are well distinguisht; & how difficult that is to do, those that Exercise themselves in these matters well understand. But yet I think I may affirm, that there are some things of value, because not to be Sampled for any price; I will not say, there is but one of the Kind, but I cannot tell, when any one shall be so happie as to light upon them again.

The attention directed by Lister to 'even those common Things' in Nature is a long way from the ethos of the Tradescant collection, where rarity was, as we have seen, a primary consideration. The donation was an important affirmation of faith in the new institution: sadly, no single specimen from Lister's collection can be identified today.

Zoological specimens

The original text of the zoological catalogue, as preserved in the Vice-Chancellor's consolidated copy, lists 158 quadrupeds, 'viviparous as well as oviparous, terrestrial, aquatic, amphibious, and parts of them'; 105 birds (including some represented only by beaks, legs or claws); 11 eggs; 43 fishes; plus a number of serpents and insects.

Some parts of the collection can be traced back to the Tradescant museum – Cows' tails from Arabia, a Wildcat from Virginia, horns of a Roebuck from Cape Verde, and others. The founding collection was quickly added to by a number of benefactors: William Charleton of Middle Temple gave a tortoise egg, the skin of a zebra came from Charles Harris and collections of animals in spirits from James Pound and from Smart Lethieullier. A glimpse of the latter is recorded in a drawing in the Book of Benefactors, as are impressions of the insects given by Thomas Shaw (Fig. 6a) and a lizard from Henry Johnson (Fig. 6b).

Although documentary confirmation is lacking, we may imagine that the zoological specimens would have been featured in the anatomy lectures which took place in the school of natural history, since the subject as taught in the eighteenth century corresponded with elements of what we would now term comparative anatomy.[39]

The possibility that the catalogues themselves might have functioned as active research tools rather than merely as indexes to the collection is hinted at by the frequent citation of published authorities for the identifications attributed to the natural history specimens. In the zoology section, for example, are to be found references to Aldrovandi's *Ornithologia* (1599) and *De Piscibus et Cetis* (1613), Bontius's *Historiæ Naturalis & Medicæ Indiæ Orientalis Comentarii* (1658), Clusius's *Exoticorum* (1605), Grew's *Musæum Regalis Societatis* (1681), Hernandez's *Rerum Medicarum Novæ Hispaniæ Thesaurus* (1651), Jonstonus's *Historiæ Naturalis* (1650–65), Ligon's *True and exact History of Barbados* (1657), Nieremberg's *Historia Naturæ* (1635), Piso's *De Indiæ*

Fig. 6. Illustrations from the Book of Benefactors. a: butterflies from Thomas Shaw (1716); b: a 'giant scaly lizard called an Asraw' from Henry Johnson (1717). Ashmolean Museum.

Utriusque Re naturali et medica (1658), Piso and Markgraf's *Historia Naturalis Brasiliæ* (1648), Rondelet's *Libri de Piscibus Marinis* (1554), Salviano's *Aquatilium Animalium Historiæ* (1554) and Willughby's *Ornithology* (1678) and *De Historia Piscium* (1686). Another possibility is that these were added with a view to publishing a catalogue of the collections: as a recent model the curators had before them (as we have seen) Nehemiah Grew's catalogue of the Repository of the Royal Society and it would have been entirely natural that they should have contemplated a publication of their own which would undoubtedly have shown their own institution to advantage.

Marine plants, corals, sponges, etc.; woods, leaves and fruits

The list of *materia medica*, somewhat perfunctory in character, that formed the particular province of the Regius Professor of Medicine is followed by an inventory of over 170 specimens beginning with marine organisms and moving on to 'woods, leaves, fruits, and other exotica' to which much more attention has been given by the compiler. Several notes incorporated in these entries clearly indicate that they were originally the work of Lhwyd. Here he had again to seek far afield for his reference sources, quoting several of the above sources in addition to Johannes Bauhin's *Historia plantarum universalis nova* (1651) and the *Historia naturale* of Ferrante Imperato (1599; 2nd edn. 1672). He also adds a number of observations of his own: a description of the deformed branch of an ash tree is accompanied by a note that 'We have seen a Willow in Montgomeryshire [*Agro Montis Gomerici*] laden with about twenty branches of this sort', while an entry for a type of marine moss, referenced to John Ray's *Historia plantarum* (1686), is glossed to the effect that 'we have seen great quantitites of it growing on the Isle of Anglesey [*Insula Monensi*]'.

Apart from the items included under the *materia medica*, very few plant specimens are included among the early holdings of the Ashmolean. A possible explanation may lie in the pre-existence in Oxford of a physic garden, founded by the University in 1621 with a benefaction from Henry Danvers, later Earl of Danby (1573–1644). Its first curator had in fact been John Tradescant the Elder, although surviving evidence of his influence there is scarce and indirect.[40] His successors in the post were Jacob Bobart the elder (1599–1680) and his son, Jacob the younger (1641–1719), who were avid plant-collectors in their own right and it may be that the garden rather than the Museum became the customary repository for herbaria. Alternatively, the Ashmolean's library may have provided a storage facility for which no comprehensive catalogue was compiled. Evidence that some such material did find its way into the collections is provided by an entry of 1689 in the Book of Benefactors for Edward Morgan from Glamorgan, the celebrated former keeper of the botanical gardens at Westminster:

> . . . when he heard from Edward Lhwyd (under-keeper of this Museum) that the collection lacked a *hortus siccus* or a collection of [dried] plants, he bequeathed to the Museum three large folio volumes containing some 2,000 specimens of plants (almost all of which he had grown himself in the aforementioned garden).[41]

Natural curiosities of miscellaneous origin

Straddling the divide between nature and curiosity – and indeed denying that such a divide existed – are items that are remarkable only on account of their associations: 'An orange, from the orange-tree that grows on Zebulon's tomb', for example – a piece inherited directly from the Tradescant collection, and noteworthy only for its association with the Old Testament patriarch. A specimen is included of 'blood which fell, like rain, for two hours on the Isle of Wight in 1177' (also first recorded in the Tradescant collection): explanation of such a horrific phenomenon was of course quite beyond contemporary capacities, although now attributed to red dust sucked into the atmosphere and redeposited by natural (rather than supernatural) agency. The same process can be detected behind another exhibit – 'Various seeds which (it is thought) fell in the form of rain over Paulers Perry in Northamptonshire'.

Occupying a similarly ambivalent position between two kingdoms was 'One of the horns of Mary Davis of Saughall, in the district of Wirral in Cheshire, which she used to shed every few years, like a deer' (Fig. 7). This was 'sent by Mr. Ashmole to be laid up in his Repository' in 1685.[42]

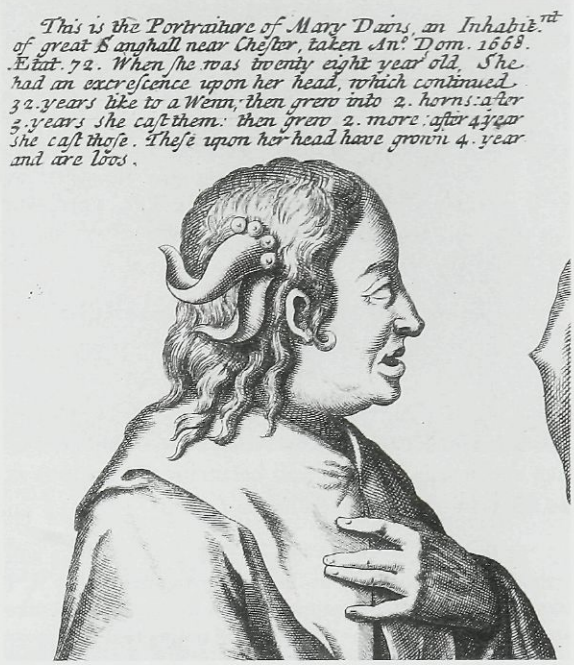


Fig. 7. Mary Davis, the horned woman of Saughall, from Ormerod's *History of the County Palatine of Chester* (1819).

The Ashmolean in the later eighteenth century

Following its initial period of buoyancy, the fortunes of the Ashmolean faltered erratically as the eighteenth century progressed. Lhwyd's successor David Parry (keeper 1709–14) showed early promise but proved dissolute and died young. John Whiteside (keeper 1714–29) was industrious, giving much-admired lectures in experimental philosophy in the laboratory while evidently keeping the Museum in good order; in doing so he successfully re-established for a period something of the coherent ideal of the original institution. Thereafter, however, George Shepheard's two-year regime (1729–31) and the even shorter reign of Joseph Andrews (1731–2) left little impact on any part of the Ashmolean.[43] The nadir of the Museum's fortunes fell under the keepership of Dr George Huddesford (keeper 1732–55), who contributed nothing to it personally but who:

> . . . put in a scholar for 5£. who made a perquisite of shewing the curiosities, which lay in the utmost confusion. Lhwyd's fossils were tumbled out of their papers, and nobody regarded or understood them till his catalogue of them was republished by Mr. Huddesford the late librarian, son of Dr. Huddesford.[44]

The final act of George Huddesford's keepership, in securing the succession of his twenty-three-year-old son William, could easily have brought about the ultimate collapse of the Museum, but William Huddesford instead proved an exemplary curator, reforming and recataloguing[45] the collections, reviving the lapsed record of benefactions[46] and securing additional natural history collections for the Ashmolean at this time (as well as publishing the new edition of Lhwyd's *Lithophylacii* mentioned above).

The youthful new keeper showed a commendable willingness to seek the advice of more experienced scholars in tackling the task that faced him. One of these, Smart Lethieullier (1701–60) wrote encouragingly to Huddesford in December of the year of his appointment: 'I cannot help expressing the Pleasure I have in hearing that you earnestly apply yourself to the Digesting into some sort of order the confus'd heap of natural Bodies which are under your Care in the Musaeum'.[47] He goes on to offer advice on the

treatment of one of the most sensitive elements of the collection, Lhwyd's renowned cabinet. Of this he writes:

> . . . if compar'd with the printed catalogue [i.e. the *Lithophylacii*], many articles would be found wanting. May they not be suppli'd with specimens of the things he describ[e]s taken from other cabinets? The more full it appears the less neglect will seem to have been in the former keepers of it.

Such a course might, indeed, have shielded Huddesford's predecessors (including his own father) from criticism, but a more defensible course of action was urged three years later (at which time, it seems, Huddesford had had some success in rediscovering lost specimens but was still balancing his options as to the others) from Mendes da Costa:

> . . . such as it is, retrieved by you with great assiduity and indefatigable Labour, I would never Augment; that is, I would never replace anything lost in it . . . I would take some few drawers of the Cabinet, and noting that they were of my replacing, I would . . . replace therein the specimens lost which I could Acquire, and those I could not Acquire I would place a Label in them informing future Students I could not replace them, and have therefore left them in that manner. This proceeding would claim you the Approbation of the Learned as being a just proceeding.[48]

Another important mentor and a benefactor to the Ashmolean under Huddesford's keepership was William Borlase (1695–1772), rector of Ludgvan and author of a very creditable *Natural History of Cornwall* (1758). Like Lister before him, Borlase was to send to the Museum the entire collection of specimens on which he had based his published text (Fig. 8); along with the collection itself came his original manuscript and a copy of the printed work. The majority of the entries in the Museum's catalogue are cross-referenced to the published volume.[49] None of Borlase's specimens (some 250 are listed) can be identified today and indeed Huddesford had to report to him that some at least fell victim very quickly to the sulphurous atmosphere in the early Museum, promoted by the open coal fires. Of the Mundics sent by Borlase, the keeper had to write that he was '. . . sorry to find [them] so perishable a treasure – some of the best specimens being crumbled to peices'; Borlase replied that the process was an inevitable one, due to the presence in the specimens of plentiful 'Salts Vitriolic Arsenical &c', and later Huddesford had to write that the same specimens were now 'gone to decay in spite of varnish and every other care'.[50]

Fig. 8. Cabinet made by the University to house William Borlase's mineral benefaction, *c.*1758. The apex is bears a painted inscription, 'GUL.^{S}. BORLASE A.M. F.R.S. D.D.' The cabinet survives today in the University Museum of Natural History.

A second mineral collection came from Thomas Pennant (1726–98), with whom Huddesford enjoyed a close personal friendship. Some of the thirty-nine specimens in the list (seemingly in Pennant's own hand) which accompanied the specimens come from the collector's native Flintshire, while a section on 'Foreign Fossils' includes a miscellany such as 'osteocolla' from Sicily, 'black sand vomited out of Ætna', and 'A soapy Earth with which the Sicilian Peasants wash their clothes'.[51]

The largest of these acquisitions, totalling 563 assorted fossils and including shells, plants, fragmentary fish specimens, etc., came from Joshua Platt (1698–1765), described as 'Tributorum Exactor Oxon.'[52] Huddesford evidently was on friendly terms with Platt, finding him indeed the only person in Oxford who shared his interest in fossils, and had already purchased a smaller collection from this local tax-gatherer and fossil-hunter before the arrival of his sizeable benefaction. In the list in Platt's hand that accompanied them, the donor ventures some observations of his own which are at odds with the received authority of the irrascible John Woodward, particularly on the matter of Woodward's interpretation of the fossil record as evidence for the Deluge. Most of Platt's specimens are from the Oxford region; a few come from further afield in England while two or three are of foreign origin.

If the minerals and fossils occasionally proved vulnerable, how much more so were the zoological exhibits, and especially the skins and stuffed specimens. Many of these dated from the earliest days of the Tradescant collection, at which period the techniques of taxidermy were yet in their infancy. During the intervening century they had been subject to untold assaults from moulds, pests, natural decay due to inadequate preparation and the attentions of visitors unconstrained by protective glass cases – a refinement sorely wanting in the early museum. Perhaps the most notorious – and certainly the most widely misrepresented – incident in this prolonged process of decline took place during the Visitation of 8 January 1755, when a considerable number of specimens were condemned as unfit for further display.[53] The event attracted no direct notice at the time but its effects were recorded by William Huddesford later that same year. As a basis for assigning new inventory numbers to the reduced number of specimens for which he had assumed control, Huddesford turned back to the consolidated catalogue of the Vice-Chancellor, drawn up in 1696–7: he renumbered the surviving specimens firstly against their entries in the Vice-Chancellor's list, before transferring the numbers to the new catalogue, where they were accompanied by a description, for the most part copied verbatim from the original text. The following note, inserted into the consolidated catalogue, explains the fate of those items to which no new number was assigned:

> Illa quibus nullus in Margine assignatur Numerus e Museo subducta sunt Cimelia, annuentibus V. Can.^{rio} aliisque Curatoribus, ad ea Lustranda convocatis die Jan.^{ii} Oct^{vo} Convocatis [*sic*] An: Dñi. 1755.
> [Those items to which no number is assigned in the margin are withdrawn with the approval of the Vice-Chancellor and the other Visitors, who met on 8 January 1755 to examine them.]

In an article published almost a decade ago, focusing on the most famous casualty – the dodo (Fig. 9) – of what he aptly refers to as the 'cull' of specimens instituted on that occasion, R. F. Ovenell showed how generations of commentators were misled by the above passage, and particularly by the term 'Lustranda', into envisaging a great bonfire of decaying specimens.[54] While some of these misguided authors (including the present writer) undoubtedly acted out of mere ignorance, others, Ovenell suggests, were motivated by an agenda that sought to denigrate the University for its alleged long-standing neglect of its collections, a failure seemingly symbolized most dramatically – celebrated, almost – in this mythical conflagration. Ovenell leaves no doubt, however, that no incendiary excesses were committed by the Visitors; rather, faced with inexorable decay in the specimens that evidently had reached critical levels, they found themselves obliged to resort to the ultimate sanction of Ashmole's statutes and simply to remove the offending specimens from display.

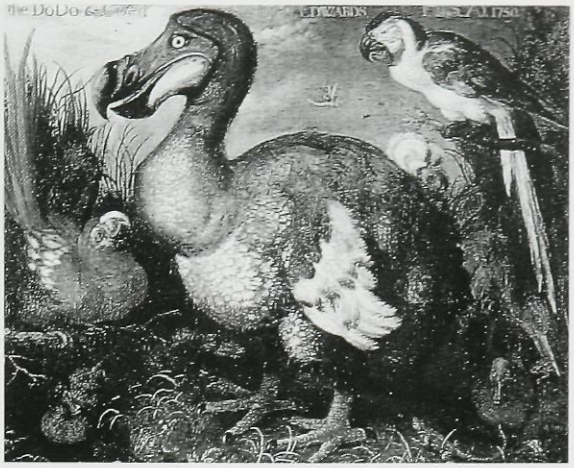


Fig. 9. The dodo, by Roelant Saveray. The painting is from the Old Ashmolean collection (see Fig. 14), but the specimen illustrated is not that from the Tradescant collection. University Museum of Natural History, Oxford.

William Huddesford's ambitions for the reform of the Museum extended to a comprehensive rearrangement of the natural specimens. On 17 December 1766 Borlase wrote to him that he was 'entirely of the opinion that you should classify all the Fossil, Vegetable and Animal curiosities in the manner of Linnaeus', although Borlase also retained a regard for the system adopted in the catalogue of the Repository of the Royal Society by Nehemiah Grew, 'who tho his names are become obsolete yet in things and sublime speculation was I think a better philosopher than any of them.'[55] Huddesford was later to write to Borlase of his ambition to compile a 'History of the Foundation of the Museum, its progress, and Lives of its Keepers and a catalogue of its cheif treasures digested

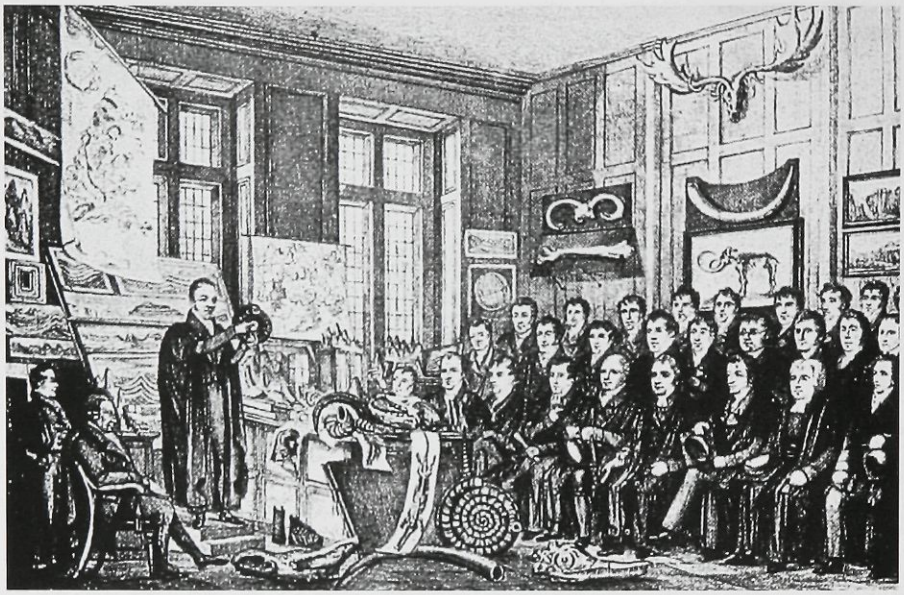


Fig. 10. William Buckland conducting a special lecture in the school of natural history at the Ashmolean, 15 February 1823. His audience here consists of senior members of the University rather than undergraduates.

according to the Linnaean System', towards which, he continued, 'I have try'd part of the Animal Kingdom and found it possible.'[56]

How far these plans had progressed by the time of Huddesford's premature death in 1772 is unclear, but none of his successors in the eighteenth century harboured any kindred ambitions with respect to the natural history exhibits, which quickly reverted to their former somnolent state. Elsewhere in the Museum building, however, a more buoyant mood prevailed in the school of natural history and in the laboratory. The period in the 1780s and 1790s has been characterized as one of high-quality scientific work and of popular experimental courses within the Museum,[57] while the appointment in 1803 of John Kidd (1775–1851) as the first Aldrichian Professor of Chemistry and of his successor Charles Daubeny (1795–1867) (who eventually ocupied the chairs of Botany and Rural Economy in succession to Chemistry) introduced two pivotal figures in the renaissance that took place in the natural sciences at Oxford in the early nineteenth century.

With the election in 1813 of William Buckland (1784–1856) as the University's first reader in mineralogy (and from 1818 reader in geology), the Ashmolean basement was furnished with new cabinets for the teaching collections to support Buckland's popular lecture series (Fig. 10).[58] All the Museum's early collections of fossils seem to have been transferred to Buckland's care at this time, while the early catalogues are annotated in such a way as to suggest that many of the semi-precious stones were also placed in 'the new mineral cabinets'. Buckland himself added copiously to the extent and the value of the teaching collection under his care, but in a real sense it was already lost to the public displays. This separation was to be given definitive expression in 1830 when Buckland was provided with accommodation for himself and his collections in the neighbouring Clarendon Building, newly vacated by the University Press.[59]

Natural theology and regeneration at the Ashmolean

The final chapter in the history of the Ashmolean as a natural history museum opens with the appointment of a new keeper who, together with his successor, transformed the institution beyond recognition. The enormous impact made by John Shute Duncan (Fig. 11) (keeper 1823–9) and his brother, Philip Bury Duncan (Fig. 12), who followed him in the keepership (1829–54) has been described at length elsewhere.[60] When he took over the Museum, John Duncan had found:

> . . . that the skins of animals collected by the Tradescants had fallen into total decay, that cabinets for those objects

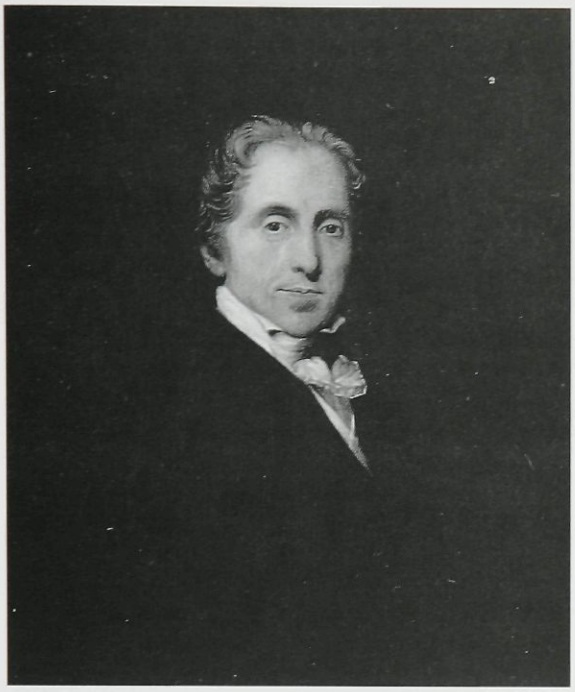


Fig. 11. John Shute Duncan (1769–1844), keeper of the Ashmolean, 1823-9. Ashmolean Museum.

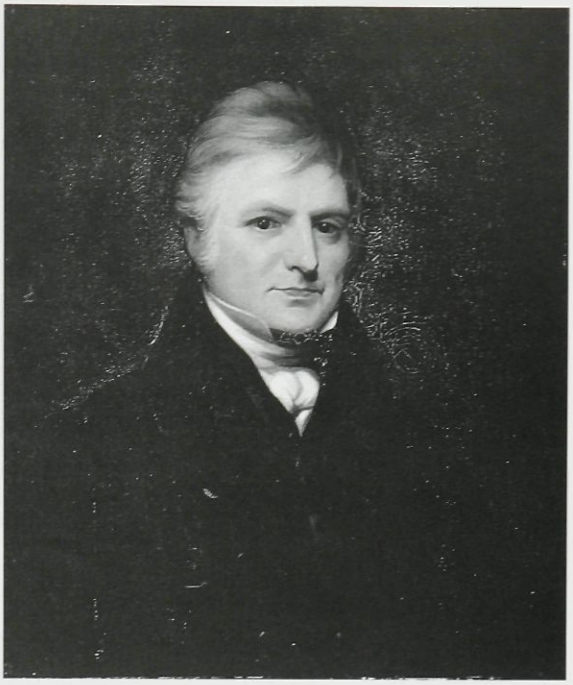


Fig. 12. Philip Bury Duncan (1772–1864), keeper of the Ashmolean, 1829-54. Ashmolean Museum.

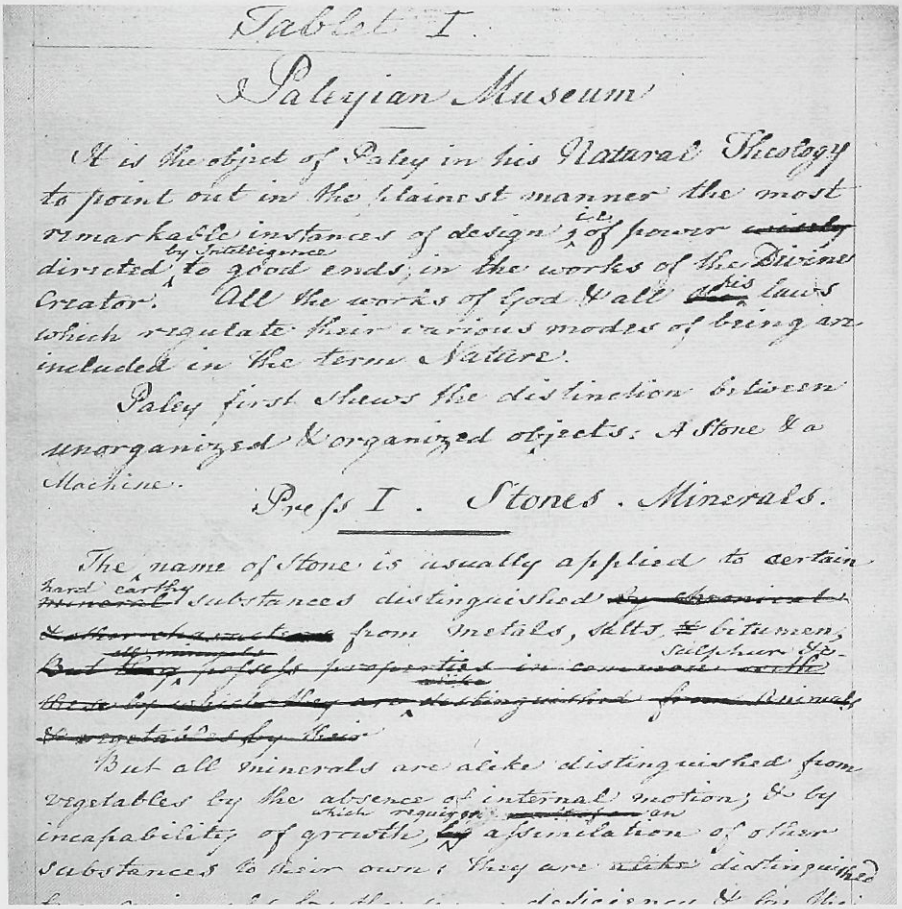
which were liable to injury from time were wholly wanting, and that the apartment dedicated to the exhibition of them had become much dilapidated.[61]

Although there is plenty of evidence that John Duncan quickly set about refurbishing the dusty institution he had inherited, he expressed his ambitions at first in modest terms, as being 'to improve the Collection & introduce a little taste for Natural History, & to attempt a slight & very general illustration of Paley & Cuvier'.[62] Within a short time, however, a much more radical scheme emerged which resulted in a complete reorganization of the collections. Particular emphasis was now given to the display of the natural history elements, but in enhancing the profile of the natural specimens the Duncan brothers' concern was primarily theological rather than scientific, for under their successive regimes the entire collection was arranged with a view to supplying 'evidences' for the existence of a divine Creator.

A preoccupation with 'natural theology' had run like a thread through English writing in the natural sciences since the seventeenth century, but it found its most eloquent exponent in William Paley (1743–1805), Archdeacon of Carlisle, to whose works the Duncans looked for their inspiration. Paley's impact on the displays was evidently of the most direct and literal kind: from a surviving manuscript volume titled 'Paleyian Museum',[63] containing drafts for 'tablets' or labels designed to underline the messages conveyed by the contents of individual cabinets, we can see that they were characterized by lengthy, verbatim extracts taken from Paley's *Natural Theology*.[64] 'Tablet 1' (Fig. 13), headed 'Paleyian Museum', evidently served to introduce the whole exhibit:

> It is the object of Paley in his Natural Theology to point out in the plainest manner the most remarkable instances of design, i.e. of power directed by Intelligence to good ends, in the works of the Divine Creator. All the works of God & all his laws which regulate their various modes of being are included in the term Nature.

The texts of the remaining labels, recently published in full,[65] leave no doubt about the comprehensive nature of the Duncans' programme. Surviving correspondence and the *Catalogue of the Ashmolean Museum* (1836) which is their joint monument[66] reveals the overwhelming extent to which the zoolo-



Tablet I.

Paleyian Museum

It is the object of Paley in his Natural Theology to point out in the plainest manner the most remarkable instances of design, i.e. of power directed by intelligence to good ends, in the works of the Divine Creator. All the works of God & all his laws which regulate their various modes of being are included in the term Nature.

Paley first shews the distinction between unorganized & organized objects. A Stone & a Machine.

Pres I. Stones. Minerals.

The name of Stone is usually applied to certain hard earthy Substances distinguished from Metals, Salts & bitumen; Sulphur &c.

But all minerals are alike distinguished from Vegetables by the absence of internal motion; & by incapability of growth, which organs an assimilation of other Substances to their own. They are alike distinguished

Fig. 13. 'Tablet 1' from the 'Paleyian Museum'. Ashmolean Museum.

gical collections had been reconstituted under their regime. It has been calculated that of over 2,600 zoological specimens listed in the text, fewer than 120 can be traced to the original collections.[67] Major donations of bird specimens, for example, were made by the Revd Dr Charles George Perceval in 1825 (over 100 British specimens); by Major Stacy (57 specimens from Bengal) and by Dr George Such (over 100 miscellaneous birds) in 1829; by the East India Company in 1830 (78 Indian specimens) and by the Revd C. Kuper (169 British, Continental and South American birds).[68] The birds, along with the reptiles, fish, insects and crusteaceans, were displayed on the Museum's upper floor, while on the ground floor the area vacated on the departure of the school of natural history for the Clarendon Building was now incorporated into the display space, being given over to the mammals (Fig. 14). An earlier *Introduction to the Catalogue of the Ashmolean Museum* of 1826 includes a number of tables which seemingly reflect the method of classification initially involved, although its tentative nature is emphasized by a footnote:

> N.B. This arrangement is experimental, requiring the confirmation of further observation. Remarks of Naturalists who may visit the Museum will be thankfully received. A book to receive such remarks will be produced when required.[69]

Further acquisitions of *naturalia* added in later years included Lord Saye and Sele's natural specimens, which came to the Museum in 1847, and a collection of shells which arrived seven years later from Lady Harvey, widow of Admiral Sir John Harvey.[70]

Throughout the period of the Duncans' curatorship the man-made specimens, which had little to contribute to the Paleyian manifesto, were totally subordinated;[71] many of them, indeed, spent all of this period in storage.

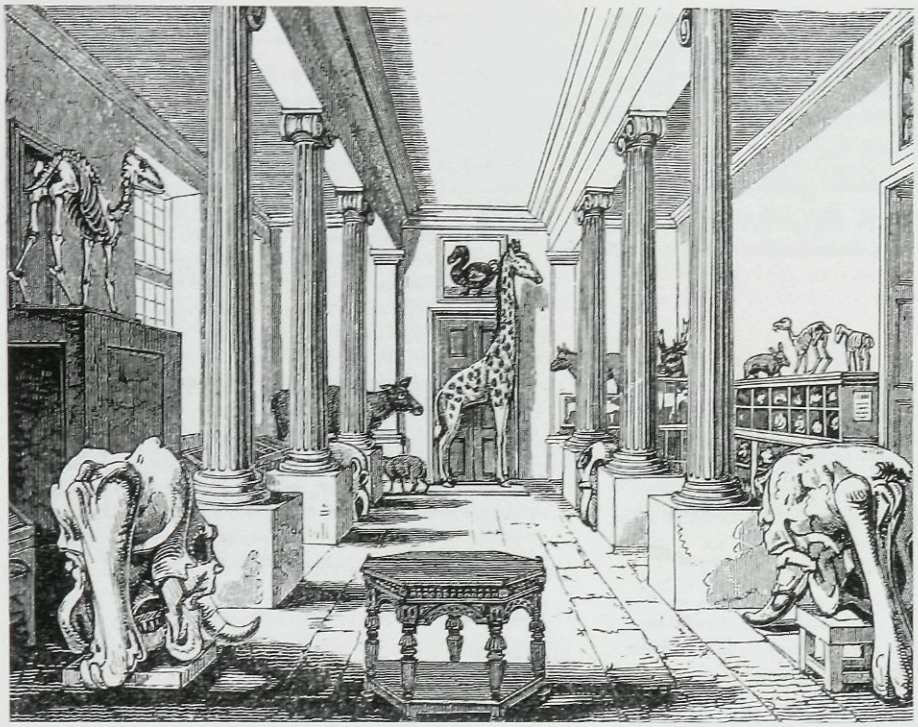


Fig. 14. Frontispiece from the *Catalogue of the Ashmolean Museum* (1836), showing the ground-floor gallery filled with zoological specimens. (The dodo represented behind the giraffe's head is the painting reproduced here in Fig. 9, and not the stuffed specimen which had disintegrated in the previous century).

The end of the Ashmolean as a museum of natural history

In 1854, at the age of eighty-two, Philip Duncan resigned the keepership of the Ashmolean, to be succeeded by John Phillips (1800–74), whose career had begun with the curatorship of the museum of the Yorkshire Philosophical Society at York and had since carried him to professorships in geology at King's College, London, and Trinity College, Dublin.

The geological collections in the Clarendon Building had quickly become crowded out with acquisitions added by Buckland and by his successor Hugh Edwin Strickland (the latter was to die in 1853, killed by an express train while examining a railway cutting on the new Manchester, Sheffield and Lincolnshire railway).[72] The Harvey collection of shells was joined by a valuable donation of similar material in 1855 from Sir Walter Trevelyan. A large deal cabinet with forty-four drawers was constructed at a cost of £12 to contain the enhanced shell collection, which was housed in one of the lower side rooms of the Museum.

In preparation for the move to the new Natural Science Museum, Phillips received a grant of £200 to organize and to catalogue the collection, but it seems to have been to little effect: the consensus is that by the time it reached its new home much of the integrity of the collection had been lost.[73] Indeed, in a very literal sense, much of the original collection had been lost entirely, through a variety of vicissitudes stretching back over two centuries. By the time the Ashmolean was finally deprived of its natural collections, with the opening of what is now the University Museum of Natural History, the collection was already largely of nineteenth-century origin, with only some tokens surviving from the earlier period. The institutional continuity usually stressed in historical accounts of the University is important, but it masks the fact that in terms of its collections the Ashmolean must truly be counted among the great lost museums of natural history.

Address for correspondence

Dr Arthur MacGregor, Ashmolean Museum, Oxford OX1 2PH.

Acknowledgements

The text reproduced here is an expanded version of a paper with the same title, delivered to the 13th international conference of the Society for the History

of Natural History, held at the Naturalis Museum, Leiden, on 10–11 May 2001. The theme of the conference was 'Lost, stolen or strayed: the fate of missing natural history collections'. I am grateful to my colleague Philip Powell for comments on the section dealing with the fossil collections and to Gina Douglas, Librarian at the Linnean Society, who introduced me to the *Introduction* to my own museum.

Notes and references

1 Arthur MacGregor, with Melanie Mendonça and Julia White, *Ashmolean Museum: Manuscript Catalogues of the early Museum Collections, 1683–1886 (Part I)* (Oxford, 2000); reviewed in *Journal of the History of Collections* 13 no. 1 (2001), pp. 99–100.

2 Ashmolean Museum, *A Catalogue of the Ashmolean Museum, Descriptive of the Zoological Specimens, Antiquities, Coins and Miscellaneous Curiosities* (Oxford, 1836).

3 Thomas Johnson, *The Herball or Generall Historie of Plantes gathered by John Gerarde . . . very much Enlarged and Amended by Thomas Johnson* (London, 1633), *passim*; John Parkinson, *Paradisi in Sole Paradisus Terrestris* (London, 1629), *passim.*

4 Public Record Office, London (hereafter PRO), SP 16/4, 155–6; quoted in full in Arthur MacGregor (ed.), *Tradescant's Rarities. Essays on the foundation of the Ashmolean Museum, 1683, with a catalogue of the surviving early collections* (Oxford, 1983), pp. 19–20.

5 John Ray, *The Ornithology of Francis Willughby* (London, 1678), pp. 154, 193–4.

6 John Tradescant, *Musæum Tradescantianum: or, a collection of rarities preserved at South-Lambeth neer London* (London, 1656).

7 The question of whether Birds of Paradise did or did not possess legs (many prepared skins having had them removed before export to the West) still exercised collectors at this time.

8 Tradescant, op. cit. (note 6), p. 7.

9 Johnson, op. cit. (note 3), p. 1546.

10 In a letter of 1625, however, the elder Tradescant had expressed an interest in receiving 'all sorts of . . . fruts Dried As . . . tree Beanes Littil Red & Black In ther Cods whithe what flower & seed Canbe gotten the flowers Layd Betwin paper leaves In a Book Dried': John Tradescant to Edward Nicholas, PRO SP 16/4, 155–6; reproduced in full in MacGregor, op. cit. (note 4), pp. 19–20. One *hortus siccus* in the Bodleian Library is traditionally assigned to the Tradescants, but the only hand so far recognized in it is that of Ashmole (ibid., p. 356, no. 444).

11 Bodleian Library, Oxford, MS Bodley 594, p. 111; reproduced in full by M. Welch in MacGregor, op. cit. (note 4), pp. 53–5. For the transfer of the collection from Tradescant to Ashmole see ibid.; also P. Leith-Ross, *The John Tradescants, Gardeners to the Rose and Lily Queen* (London, 1984; reprinted 1998).

12 Arthur MacGregor and Anthony Turner, 'The Ashmolean Museum', in L. S. Sutherland and L. G. Mitchell (eds.), *The History of the University of Oxford* V *The Eighteenth Century* (Oxford, 1986), p. 643.

13 R. F. Ovenell, *The Ashmolean Museum 1683–1894* (Oxford, 1986), pp. 49–50.

14 Ovenell, op. cit. (note 13), p. 50.

15 Ashmolean Museum, AMS 7; MacGregor, op. cit. (note 1), pp. 125–51.

16 Throughout the period in which the recently published transcripts (MacGregor, op. cit. (note 1)) were being prepared, the Vice-Chancellor's security copy (AMS 11) was missing from its shelf in the Ashmolean Library; it was rediscovered (having been mis-shelved in the reserve collection) too late for it to be used in that publication, but it is planned to include it in a future volume. Its constituent texts provide a more comprehensive account of the initial holdings than can be recovered from the surviving originals, which are now incomplete, damaged and illegible in places, and extensively amended.

17 Ashmolean Museum, AMS 8, 'Liber Dñi Decani Ædis Christi'; MacGregor, op. cit. (note 1), pp. 33–65. Two further catalogues surviving from the earliest series deal respectively with antiquities and curiosities including ethnographic specimens (given to the Junior Proctor) and with coins and medals (assigned to the Vice-Chancellor in his capacity as a Visitor). See further ibid., pp. 15–31, 67–123.

18 Ashmolean Museum, AMS 11; see note 16.

19 Ashmolean Museum, AMS 2; MacGregor, op. cit. (note 1), pp. 1–13.

20 Although commonly identified as coming from the ray family, my colleague Philip Powell observes that toad stones principally derive from the Jurassic semionotid *Lepidotes*; certain smaller examples (e.g. Edward Lhwyd, *Lithophylacii Britannici Ichnographia* (Oxford, 1699), no. 1395) may derive from pycnodonts.

21 Hugh Torrens, 'Early collecting in the field of geology', in O. Impey and A. MacGregor (eds.), *The Origins of Museums: the cabinet of curiosities in sixteenth- and seventeenth-century Europe* (Oxford, 1985), p. 209. It comes as no surprise, therefore, to find several examples of stones recovered from the internal organs of men and animals (and even fish) in the lists of mineral specimens held in the Ashmolean.

22 See M. E. Jahn, 'The Old Ashmolean Museum and the Lhwyd collections', *Journal of the Society for the Bibliography of Natural History* 4 (1966), pp. 244–8; Cecil Schneer, 'The rise of historical geology in the seventeenth century', *Isis* 45 (1954), pp. 260–61. J. M. Edmonds, in 'Comments on specimens catalogued by Lhwyd', *Quarterly Journal of the Geological Society* 106 (1950), proceedings pp. vi–vii, estimates Lhwyd's collection at 1,778 specimens, and stresses that these initially did not form part of the Museum's property.

23 Robert Plot, *The Natural History of Stafford-shire* (Oxford, 1686), p. 397.

24 'They are just the same chip'd Flints the Natives of *New England* head their Arrows with at this Day', wrote Lhwyd, 'and there are also several Stone Hatchets found in this Kingdom, not unlike those of the *Americans*' ('Extracts of several letters from Mr. Edward Lhwyd . . . to Dr. Rich. Richardson . . . communicated by Dr. Hans Sloane', *Philosophical Transactions of the Royal Society* 28 no. 337 (1713), pp. 99–100.

25 MacGregor and Turner, op. cit. (note 12), p. 642.

26 Ashmolean Museum, AMS 19, 'Viri Cl[arissimi] M[artinus] Lister M. D. Conchæ & Fossilia quæ in Historia Animalium

Anglicarum Describuntur'; MacGregor, op. cit. (note 1), pp. 153–8, letter quoted on pp. 153–4.

27 See MacGregor and Turner, op. cit. (note 12), p. 640, quoting Arthur Charlett's assertion to Lister that 'it was your Letters, Gifts and offers that encouraged the then V[ice] C[hancellor] and B[isho]p Fell [then Dean of Christ Church] to undertake the erecting of that Noble building, so that to you is due our Thanks for every thing belonging both to the Fabric, Contentes and Uses thereof'.

28 Plot and Lister were both Fellows of the Royal Society. Plot also founded a Philosophical Society in Oxford which corresponded with the London-based Royal Society and with a similar society in Dublin, but which remained modest in its ambitions compared to the London body.

29 A. V. Simcock, *The Ashmolean Museum and Oxford Science 1683–1983* (Oxford, 1984), pp. 7–10.

30 In the *Musæum Tradescantianum* (op. cit. (note 6), pp. 17–26) the section titled 'Fossilia' includes, as well as a few true fossils (ammonites, belemnites, *dentes varii petrificati*), a much greater number of mineral specimens, linked only by their similarly having been dug from the ground (*fossata*).

31 Robert Plot, *The Natural History of Oxford-shire* (Oxford, 1677), pl. VIII fig. 9.

32 Lhwyd, op. cit. (note 20).

33 W. H. Quarrell and W. J. C. Quarrell, *Oxford in 1710, from the Travels of Zacharias Conrad von Uffenbach* (Oxford, 1928), p. 49; translated from Z. C. von Uffenbach, *Merkwürdige Reisen durch Niedersachsen, Holland und Engelland* (Ulm, 1753–4), vol. III, p. 128.

34 Quarrell and Quarrell, op. cit. (note 33), pp. 27–8.

35 Ashmolean Museum, AMS 4, fols. 9–10; MacGregor, op. cit. (note 1), pp. 225–7.

36 *Philosophical Transactions of the Royal Society* 26 no. 314 (1708), pp. 77–8. For earlier mention of this scheme see letters from Lhwyd to Lister dated 1691 and 1698 respectively, reproduced in Jahn, op. cit. (note 22), p. 246. Although the boundaries between them must have been blurred in the extreme, these specimens may have been seen as forming part of Lhwyd's private collection rather than that of the Ashmolean.

37 For Woodward's existing collection at Cambridge, see David Price, 'John Woodward and a surviving British geological collection from the early eighteenth century', *Journal of the History of Collections* 1 (1989), pp. 79–95.

38 Op. cit. (note 15).

39 Simcock, op. cit. (note 29), p. 9 and note 83.

40 See Leith-Ross, op. cit. (note 11), pp. 97–8.

41 Ashmolean Museum, AMS 2, fol. 12r; MacGregor, op. cit. (note 1), p. 7.

42 See Arthur MacGregor, 'Mary Davis's horn: a vanished curiosity', *The Ashmolean* no. 3 (1983), pp. 10–11. The phenomenon of 'horns' growing on human subjects is expertly analysed in Jan Bondeson, *The Two-headed Boy and other Medical Marvels* (Cornell, 2000), pp. 120–40.

43 For this era see MacGregor and Turner, op. cit. (note 12), pp. 647–33; Ovenell, op. cit. (note 13), pp. 108–44.

44 Richard Gough, *British Topography* (London, 1780), vol. II, p. 134.

45 These later texts take some account of changes to the collection in the interim and are not completely identical to their seventeenth-century forerunners. Three of them survive – AMS 10, The Book of the Regius Professor of Medicine (*materia medica*, marine plants and gourds), AMS 12, The Book of the Dean of Christ Church (minerals, gems, curiosities and paintings) and AMS 13, The Book of the Principal of Brasenose (zoological specimens): see MacGregor, op. cit. (note 1), pp. 159–215.

46 'Donations from 1757 to 1769, 1824 to 1829', in MacGregor, op. cit. (note 1), pp. 239–40. In contrast to the prestigious format of the earlier Book of Benefactors (op. cit., note 19), this record of donations is in notebook form.

47 Bodleian Library, Oxford, MS Ashmole 1822, fols. 3–4; see MacGregor and Turner, op. cit. (note 12), p. 653.

48 Bodleian Library, MS Ashmole 1822, fol. 92. Elsewhere, da Costa encouraged Huddesford to republish Lhwyd's volume (Jahn, op. cit. (note 22), p. 245); in the matter of retrieving the collection from the chaos in which he had found it, Huddesford wrote to Edward Wright on 24 March 1759: 'I have succeeded therein beyond my expectation', while conceding that 'from want of proper partitions in the drawers, and by the carelessness of the under-keepers, many are entirely lost' (ibid.).

49 Ashmolean Museum, AMS 20: 'Catalogue Borlase'; MacGregor, op. cit. (note 1), pp. 217–21.

50 Morrab Library, Penzance, MS OL.IV, 311–12; OL.VII.3; LB.III.364.

51 Ashmolean Museum, AMS 4, fols. 7–8: 'Mr Pennant's Catalogue, 1759'; MacGregor, op. cit. (note 1), p. 224.

52 Ashmolean Museum, AMS 1, inscribed '1765 November the 22d. I presented the following Collection of Fossils to the Ashmolean Museum Oxon. Joshua Platt Aged 67'; MacGregor, op. cit. (note 1), pp. 229–38.

53 The heaviest casualties seem to have been suffered by the birds, where only sixty-three of the original 105 entries received new numbers and only twelve additions are recorded from other sources in the meantime. The exercise of comparison is not straightforward, however, and precise quantification is difficult.

54 R. F. Ovenell, 'The Tradescant dodo', *Archives of Natural History* 19 (2) (1992), pp. 145–52. *Lustratio*, Ovenell points out, is used synonymously with the word *visitatio* - visitation – in the Ashmolean statutes, and carries no allusion to the purifying fire of classical ritual. The present-day Visitors, when they undertake an inspection of the Museum's galleries, are said to perlustrate, where ordinary mortals might be content to perambulate.

55 Bodleian Library, Oxford, MS Ashmole 1822, fol. 126.

56 Morrab Library, Penzance, OL.VII, 311–12. By this time Huddesford would have had a model for this sort of approach in the form of Daniel Solander, a pupil of Linnaeus himself, employed at the British Museum from 1763 on the compilation of a catalogue of the natural history specimens arranged on Linnaean principles.

57 Simcock, op. cit. (note 29), p. 9.

58 This illustration is discussed at length by J. M. Edmonds and J. A. Douglas, 'William Buckland, F. R. S. (1784–1856) and an Oxford geological lecture, 1823', *Notes and Records of the Royal Society* 30 (1976), pp. 141–67; the authors provide identities for all the figures represented in the audience.

59 R. T. Gunther (*Early Science in Oxford* (Oxford, 1923–67), vol. I, p. 205; vol. III, pp. 240–1, 244, 233 ff.) states that these overflow premises became known for a time as the Clarendon Science Museum; Ovenell too (op. cit. (note 13), p. 213) makes reference to the 'Clarendon Geological Museum'. These assertions are denied by Simcock (op. cit. (note 29), p. 13 and note 131).

60 Arthur MacGregor and Abigail Headon, 'Re-inventing the Ashmolean: natural history and natural theology at Oxford in the 1820s to 1850s', *Archives of Natural History* 27 (3) (2000), pp. 369–406.

61 P. B. Duncan, in Ashmolean Museum, op. cit. (note 2), p. vi.

62 Ashmolean Museum, AMS 42.

63 Ashmolean Museum, AMS 24.

64 William Paley, *Natural Theology: or evidences of the existence and attributes of the Deity, collected from the appearances of nature* (London, 1802).

65 MacGregor and Headon, op. cit. (note 60), pp. 375–81.

66 Ashmolean Museum, op. cit. (note 2). A less well-known fifty-one-page *Introduction to the Catalogue of the Ashmolean Museum*, also exists, prepared a decade earlier under the keepership of John Duncan. Although a small number of printed copies survives, its bibliographical obscurity suggests that it may never have been formally published: see MacGregor and Headon, op. cit. (note 60), p. 381. The locations of three further copies have been established since the publication of that article.

67 Ovenell, op. cit. (note 13), p. 205.

68 MacGregor and Headon, op. cit. (note 60), p. 382 and *passim*.

69 Op. cit. (note 66).

70 Ovenell, op. cit. (note 13), p. 212.

71 In a report to the Visitors of the Ashmolean, dated 1833 and titled 'Proposed arrangement of the Ashmolean Museum' (Ashmolean Museum, AMS 44 [10]), Philip Duncan made his attitude on this matter abundantly clear: 'The most important point in rearranging the Museum is the *total* separation of works of art from those of nature. Artificial productions not only distract the attention from the consideration of natural objects by interfering with & concealing them, but are themselves of very secondary importance in a Museum wh[ich] aims at the advancement of science.'

72 One potential acquisition that evaded the Museum was the large ornithological collection that had been formed by Strickland – said (*Dictionary of National Biography*) to have consisted of some 6,000 bird skins – and which he bequeathed to the Ashmolean: Strickland's principal executor was his influential father-in-law, Sir William Jardine (1800–74), whose zealous guardianship of his son-in-law's interests and his insistence on numerous conditions to the bequest eventually led to its withdrawal. For Strickland see Sir William Jardine, *Memoirs of H. E. Strickland* (London, 1858).

73 Ovenell, op. cit. (note 13), p. 213.