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'Only meer Love to Learning'

A rediscovered travel diary of naturalist and collector James Petiver (*c.*1665–1718)

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This paper analyses a rediscovered diary compiled by James Petiver, recording a journey he made in 1691. During his two-month trip, Petiver left his home in Kendal, travelled to Yorkshire, and subsequently visited Oxford, Essex, and London to botanize and to view scientific collections. Petiver's diary represents a nascent early modern form of scientific peregrination – 'science on the move' – that was prevalent in England from 1650 to 1750. Not yet formal fieldwork, not as sybaritic as the experience of the Grand Tour, scientific peregrination was a means of developing empirical expertise of naturalia *in the field. My analysis of Petiver's diary represents a form of humanistic fieldwork, giving insights into the natural history specimens, mode of travel, noted antiquities, and other evidence that allows us to reconstruct the mental world of the early modern virtuoso and scientific collector. The paper includes an online annotated edition of the diary.*

James Petiver (*c.*1665–1718)[1] FRS was a botanist and entomologist who, with the patronage of Sir Hans Sloane, became apothecary to the Charterhouse in 1700, establishing an independent shop at White Cross Street, Aldersgate. Petiver's interest in botany was no doubt linked to his expertise in *materia medica* and medicinal plants; a genus of plants, *Petiveria*, belonging to the family of *Chenopodiaceae*, is named after him.[2] As D. E. Allen stated, 'by as early as 1690 Petiver's reputation was such that he was in frequent correspondence with the country's leading naturalists and a member of a circle of fellow enthusiasts who met informally in and around London.'[3] The botanist John Ray (1627–1705) thought Petiver 'a man of greater correspondence in Africa, India, and American then any one I know of besides'.[4] Recent scholarship has revealed, for example, that Petiver had a long exchange of letters with the Catalan botanist Joan Salvador.[5] He was also an inveterate collector: 'By 1697 Petiver's herbarium alone amounted, on his own reckoning, to between 5000 and 6000 specimens, and he was ready to start reaping some scientific acclaim for the huge investment of time and effort by describing in print some of the contents of the by then famous Museum Petiverianum.'[6] At his decease, Sloane bought his library and collection for £4,000; some 200 volumes of his *hortus siccus* (albums of dried plants) are now in the Sloane collection at the Natural History Museum in London.[7]

In accumulating his *Museum Petiverianum*, Petiver has been characterized as a 'stay at home' naturalist, primarily relying on correspondence, local field expeditions, and exchanges of specimens in the post.[8] Indeed, after he established his shop, Petiver and his fellow apothecaries went on proximal simpling trips to gather medicinal plants and to visit local collections and gardens at Greenwich, Hampton Court, Primrose Hill, and Fulham Palace gardens. However, Petiver went further afield, as he was specifically sponsored by Sloane to travel to the Netherlands in 1711 to attend the auction of Paul Hermann's collections that Sloane coveted.[9] Hermann was Botany Professor at Leiden, and during his visit, Petiver had the degree of doctor of medicine conferred upon him by the University. He also visited Bristol in 1712 and in 1715 travelled to Cambridge on a botanizing trip with James Sherard. Sherard had been Hermann's assistant at Leiden during 1694–5, and placed Petiver in communication with him, as well as with other Dutch intellectuals, natural historians, and collectors such as Fredrik Ruysch (1638–1731) of Amsterdam.[10]

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But Petiver was in some ways more adventuresome earlier in his career than has previously been realized. In the collection of the Spanish and Portuguese Jews Congregation at London Metropolitan Archives is a previously unknown diary, recording a journey he made early in his career in 1691 before he was established in London. During this expedition of just over a month, Petiver left his home in Kendal, travelled to Ingleborough in Yorkshire, and subsequently to Oxford, Essex and London in order to botanize and to view scientific collections.[11] Petiver's description in his diary of another visit he made to the synagogue at Creechurch Lane in London led to the manuscript being incorporated into Judaic archives.

It is argued here that Petiver's diary represents a nascent early modern form of scientific peregrination – 'science on the move' – that was prevalent in England from 1650 to 1750. Not yet formal fieldwork nor as self-indulgent as the experience of those on the Grand Tour, scientific peregrination was a means of developing empirical expertise of *naturalia* in the field.[12] It was travel involving aesthetic appreciation and the development of connoisseurship – not just of architecture and the fine arts but encompassing also the curiosity cabinet, the proto-natural history museum. My documentation and analysis of Petiver's diary in this paper thus amounts to a form of humanistic fieldwork, giving the historian insights into the natural history specimens, mode of travel, noted antiquities and other empirical evidence that allows us to reconstruct the mental world of the early modern virtuoso and scientific collector.

The *peregrinatio*

The origins of the scientific peregrination can in part be attributed to the *peregrinatio medica*, a time-honoured tradition in the early modern period, as medicine was the subject for which foreign travel was most valuable; medical students encountered and brought back new techniques, knowledge, and *materia medica* to their respective homelands.[13] Indeed, Thomas Bartholin, when recalling in the 1670s his own *peregrinatio medica* observed that: 'Today there are many travellers; indeed, it seems as if the whole of Europe is on the move'.[14] Young medical students would travel abroad not only to earn professional credentials but also to attain accomplishments towards becoming gentlemen of quality – a cosmopolitanism to add polish to their English education. Sir Thomas Browne wrote to his son in 1661, advising him to lose his *pudor rusticus* abroad by practising a 'handsome gard and Civil boldness which he that learneth not in France travaileth in vain'.[15]

But by the time of Petiver's journey in the late seventeenth century, I would argue that natural history tours had developed into a separate enterprise, apart from the reasons of *politesse* and medical pedagogy. For example, Greengrass, Hildyard, Preston, and Smith have analysed the scientific travels from 1660 to 1663 of John Ray (1627–1705), the eminent naturalist and botanist, and of Ray's pupil, the wealthy Francis Willughby (1635–1672) of Trinity College Cambridge.[16] On returning to England, Ray and Willughby made plans to publish the results of their studies in natural history; their observations made during their journey to the Continent in the 1660s would later result in the first scientific work of ornithology that organized species according to their physical characteristics – the *Ornithologia libri tres* (1676). Their travels were rigorous, encyclopaedic and empirical, the preface to Ray's later published travelogue reinforcing the image of 'diligent natural philosophers, engaged in the pursuit of activities conducive to the public [and scientific] good'.[17] In 1698, physician and naturalist Martin Lister (1639–1712) wrote a guidebook of his *Journey to Paris*, intending it specifically to appeal to and to benefit fellow natural philosophers. He admitted to his readers that they might have known from guidebooks everything he could possibly say about *politesse* and palaces, asking rhetorically,

> [W]hy do you trouble us with a Journey to Paris, a Place so well known to every body here? For very good Reason, to spare the often telling my Tale at my return. But we know already all you can say, or can read it in *The Present State of France,* and *Description of Paris*; two books to be had in every Shop in London. 'Tis right, so you may; and I advise you not to neglect them, if you have a mind to judge well of the Grandeur of the Court of France, and the immense Greatness of the City of Paris. These were Spectacles I did indeed put on, but I found they did not fit my Sight, I had a mind to see without them; and in Matters of this Nature, as vast Cities and vast Palaces, I did not care much to use Microscopes or Magnifying Glasses.[18]

For Lister, such expansive overviews or specialist treatments would distort his purposes. He thus directed the reader to his interests in natural history using his mature judgment and own eyes, offering

'clean Matter of Fact, and some short notes of an unprejudiced Observer'.[19] Inclining 'rather to Nature than Dominion', Lister, of course, demonstrated his connoisseurship with his informed analysis of items in cabinets of curiosities, as 'the cultivated traveller was expected to visit the public and private cabinets of his hosts'.[20] But he also admitted that he

> . . . took more pleasure to see Monsieur Breman in his White Waistcoat digging in the Royal Physick Garden, then Monsieur de Saintot making room for an Ambassador; and I found my self better disposed, and more apt to learn the Names and Physiognomy of a Hundred Plants, than of Five or Six Princes. After all, I had much rather have walked a Hundred Paces under the meanest Hedge in Languedoc, than any the Finest Alley at Versailles or St. Clou, so much I prefer Fair Nature and a warm Sun, before the most exquisite Performances of Art in a cold and barren Climate.[21]

Petiver's sensibilities were similar to those of Lister's, albeit on a more modest scale. While Lister's father had been an MP, Lister received a fellowship to Cambridge under Royal Mandate and studied medicine in Montpellier. Petiver, however, had not attended university. As the son of a haberdasher, he was self-made though he did have a grandfather who arranged for his apprenticeship and helped set him up in business; Petiver also knew Latin well as part of his trade. Despite his accomplishments, William King's class-snobbish satire of the Royal Society, the *Transactioneer* (1700) ridiculed Sloane's patronage of Petiver. In the satire, the thinly disguised Sloane character states: 'I can never be to seek where to begin, as long as there is such a Personage as Mr. J–Pet–r in the Philosophical World. He is a F. of the R.S. indeed! I made him so. 'Tis my way of Rewarding my Friends and Benefactors.'[22]

The travel diary

Although there were significant differences in their life circumstances, the same spirit of scientific enquiry pervaded both Lister and Petiver's travel accounts. In what he termed his *Praefatiuncula* or short preface to his also elaborately named *Adversariorum Hodoeporicum* (journal of his itinerary), Petiver noted:

> Some will expect that I should give a Reason why I tooke this Jorney in hand, in truth I had noe other occasion, nei[ther] was there any thing in the world that compelled me to goe, but only meer Love to Learning: We have Learning indeed at home, but in noe such perfection as they have it in the Colledges, or at London; Therefore I was resolved with my self to goe and see Their Fashions, methods, and waies in their Philosophy and natural Learning [natural philosophy] (where to my Inclination most lead me).[23]

On 20 July 1691, Petiver began his journey in the morning, with '4 Ginnies and 20s of money' in his pocket.[24] After his botanizing in the Yorkshire Dales for cloudberries, lingonberries, and alpine sedums was cut short by thunder and lightning, Petiver walked to the 'Ingenious Dr Richardsons at North-Byerley', noting that he 'staied till about 2 of the Clock the next afternoon, he hath a fine Collection both of Exotic and Spontaneous plants. A Catalogue would be superfluous in this place.'[25] Richard Richardson (1663–1741) of North Bierley in Yorkshire was a keen botanist with greenhouses full of specimens, although sadly the hall he inhabited was demolished in the 1960s; the extensive gardens, however, have survived. Richardson was also a friend of Sloane, who is said to have 'provided the seed from which the cedar tree which was a Bierley landmark grew after being nurtured in Richardson's greenhouse (said to be only the second hothouse in England).'[26] Petiver noted that in addition to his plants, Richardson kept in spirits 'a little crocodile, a tarantula, and a phalangium' (venomous spider, or more probably a scorpion).

Petiver would remain in touch with Richardson throughout most of his professional career. Pasted in the front of Petiver's diary is a hitherto unknown letter from Petiver to Richardson, and the diary's bookplate bears the Richardsons' manorial arms, and the name of the renowned book collector Frances Mary Richardson Currer (1785–1861). Currer was the granddaughter of Richard Richardson, whose library she inherited and built to 15,000 volumes. Although the diary is not given a separate entry in Currer's privately published catalogue of her collection at Eshton Hall in Skipton, Yorkshire, there was an entry for her grandfather's correspondence (1691–1775) in thirteen volumes mentioning James Petiver; the small diary may have been bound within.[27] As Colin Lee notes, Sotheby's eventually sold the library in 1862 while the 'Richardson correspondence was bought by Bernard Quaritch and then dispersed'.[28]

Indeed throughout his life, Petiver frequently exchanged specimens and publications with Richardson by post, sending him copies of his own works such as his *Gazophylacium Naturae et Artis*,[29] published in octavo in five *Decades* between 1702 and 1709, with a separate catalogue of their contents.

The plates have figures of 610 plants and animals drawn after dried specimens, with a second volume published in 1711. In the letter tipped in to the travel diary, Petiver wrote to Richardson:

> I am very sensible you may justly blame me for being so rude, as not sooner to acknowledge your very acceptible present of dry Specimens which I have so long receiv'd: I was in hopes Mr Buddle[30] had in part done it for me, as I desired him, for which reason I did design to deferr it till after Christmass (this being a very busy season with us) and then to have sent you what you want of my Gazophylacick Tables[31] with 20 others of East India Shells . . .

Such transactions were the expression of a norm in the Republic of Letters. Fulfilling social obligations by the bartering of intellectual property, returning favours and sending presents was a means of a mutual paying of respect that enhanced one's reputation as a gentleman and a scholar. Richardson's correspondence network was also wide; for example, he gave Sloane some 'admirable drawings of [fossilized] plants found in the North Bierley coal pits'.[32] Petiver and Richardson were participating in a widespread 'culture of collection' and acquisitiveness in the early modern period. Petiver's acquisitions, however, were inseparable from the seventeenth-century Republic of Letters; his work, education, travels and correspondence represented a cross-cultural exchange of knowledge and specimens between English, French, and colonial natural historians.

After some more botanizing in Rotherham and Monkfield in Yorkshire, where Petiver noted (*inter alia*) specimens of *Carduus nutans* or musk thistle, and *Conyza cerulea aeris* (now *Erigeron acris* or bitter fleabane), he travelled to Wollaton Hall, the seat of the Willughby family, the Lords Middleton. Petiver commented:

> . . . now I began to Comb my head and stroak my Beard and contemplate the gratefull prospect: the Building was High, 4 Square, at every Square a Tower, and a great Tower riseing in the midst all of freestone built with most exquisit Architecture, the Court walls are set about with Leaden Potts gilded with Gold, with Belvedera growing in them.[33]

Wollaton Hall was indeed a classic Elizabethan prodigy house, Robert Smythson's *tour de force*, built between 1580 and 1588. In her travels in 1697, Celia Fiennes remarked that from the 'Leads [of Nottingham Castle] you have a very fine prospect . . . you see Sir Thomas Willoughbys Fine house [Wollaton] on the other side of town'.[34] Mark Girouard even provocatively claimed 'that the design of Wollaton Hall deliberately imitates that of Solomon's Temple, as derived from textual accounts'.[35]

But Petiver was not there primarily for the architecture, magnificent as it was: it was the collections within, primarily the library and the natural history museum, that claimed his attention. The Willughbys had long been known as book collectors, and modern bibliophiles chiefly remember their medieval collections.[36] However, the naturalist and FRS Francis Willughby added a substantial number of scientific works to the library. A catalogue from the Willughby family archives at the University of Nottingham is thought to describe the contents of the library in 1690; as Oswald and Preston have indicated, 'it is at the end of a book originally used by Francis Willughby and many of the books were clearly acquired by him for his library. The library survived at Wollaton until most of the books were sold in 1925 at Christie's.'[37] In the list are the *Philosophical Transactions of the Royal Society*, works on magnetism by the Jesuit polymath Athanasius Kircher (*Magnes sive de arte magnetica opus tripartitum*, 1641), Bacon's experiments on temperature (*De Calore at Frigore*), Francesco Redi's *Observations on Vipers* (1664), as well as several other landmark works in natural philosophy. William Poole has also commented that 'The library as it stood when listed in *c.*1690 was a mixture of a practical, a literary, and a learned library, and it is this mixed quality that renders it particularly noteworthy. It is polyglot, and not merely for show'; Poole characterizes it as 'remarkable'.[38] Petiver echoes these views in his visit in 1691: 'hence we are carried into the Library. it is well furnished with Bookes I think it is as good as any of the Collegiate Liberary's at Oxford (I do not compare it with the Publick Liberary . . .).'[39]

But what particularly sent Petiver 'into an Extasie indeed' was the natural history collection:

> . . . I had never seen such a Collection of Naturall Things before (here are the Globes, the Spheres.) here are Trophies both from the East and west Indies, as well of Sea as the Lands, in Short it is a well furnished Museum, there are a great deal of Strang: Animals, some whole, and some in part, there is a good Collection of Coynes, and Medalls, of sea-shells of Birdsegge shells, and the best Collection of Insects in England . . . from hence wee are carried into the Laboratory, where they prepare their Chymical Preparations, from hence into a secret arched little Roome, where two men may sit and Study the arch is all laid over with Curious green shells . . .[40]

Petiver was clearly delighted by Willughby's collection, and that of his mentor, John Ray. As mentioned, Willughby was Ray's student at Cambridge and had travelled with Ray to the continent to collect specimens. Ray is also recorded as accompanying Willughby on a simpling expedition in England to collect bird, plant, and fish specimens from June until September in 1667. Their collection of birds' eggs, the oldest in Britain, is still extant in the holdings of Willughby's descendant, Lord Middleton. The cabinet also contains several fossils and shells.[41]

Their collection was indeed vast. In a letter to Lister of 18 June 1667, Ray mentioned that he had spent the past winter 'reviewing and helping to put in order Mr. Willughby['s] collections of Birds, Fishes, Shells, Stones, and other fossils, seeds, dried plants, coines etc.'[42] Willughby's daughter Cassandra also mentioned 'a fine collection of valuable medals, and other rarities which my father had collected together of dryed birds, fish, insects, shells, seeds, minerals and plants and other rarities . . . when we had them at Wollaton it was a vast business for us to clean, label, and put them in order . . .'[43]

Petiver also commented on the quality of Willughby's insect collection, while Ray had mentioned to Lister in a letter of 31 October 1668 that:

> I have not entirely neglected those other families of insects, namely coleoptera[44] and anelytra.[45] But whereas Mr. Willughby has worked with unfailing diligence for many years past in seeking them out, and in examining, describing and comparing them, I have operated in this area only incidentally and for amusement.[46]

Willughby, Ray and Lister indeed accomplished detailed studies of ants, spiders, and beetles.[47] Ray later published the *Methodus insectorum* (1705) and *Historia insectorum* (1710), which contained substantial material from Willughby's manuscript history of insects.[48]

Furthermore, Petiver mentioned the chemical preparations undertaken. While most stately homes had kitchens in which home medicaments were distilled, a separate laboratory was more unusual.[49] On the other hand, as I have shown elsewhere, Willughby's commonplace book in the Middleton Collection at the University of Nottingham reveals that in the late 1650s, he and Ray were engaged in significant 'chymical experimentation' at Trinity College, Cambridge.[50] While Ray and Willughby reproduced procedures in Jean Beguin's *Tyrocinium chymicum* and the *London Pharmacopoeia* to learn how to make medicines (a more typical set of procedures in university chemistry), they were also engaged in (al)chemical chrysopoeic investigations into the transmutation of matter, aided by foreign chemists paid by Trinity College who tutored fellows in the subject. Although it is now well known that Sir Isaac Newton performed extensive chemical work at Trinity College from 1669 until 1695, it seems there was a well-established 'chymical culture' at Trinity decades earlier. The existence of the laboratory that Petiver saw at Wollaton Hall indicates the source of its construction and its rationale; it was created simply to allow Willughby and Ray to continue their research.

Lastly, although it is not of certain provenance, the 'secret arched little Roome, where two men may sit and Study the arch . . . all laid over Curious green shells', may have been an early shell grotto. As Jackson notes, the first British grottoes were built as indoor rooms, often in the area below the stairs leading to the first-floor reception rooms, or *piano nobile*.[51] We know from correspondence that Willughby's daughter Cassandra occupied herself with shell decoration.[52] William Stukeley, the antiquary with interests in early gardening, noted in his later *Itinerarium curiosum* (1724) that Wollaton had a 'pretty summer house pannll'ed and cield' with looking glass', which had beneath it a 'a water house with grotesque work of shell, etc.'[53]

Petiver stayed at the hall for five days, botanizing in the fields around it, finding hoary mullein, mouse ear, and cotton thistle, though he made only general comments without identifying species, which may indicate that his discoveries were less impressive.[54] Cassandra Willughby recorded that 'the garden which formerly belonged to the house was (after the fashion of the times) but a little piece of grownd, in which was the plan of the house planted with box trees.'[55] The garden was planted symmetrically, the 'gardens taking their axis from the centre of the house'.[56] Although Cassandra noted that her younger brother Thomas 'made a pretty phisick garden to receive those plants which he had brought from Cambridge . . . as large a collection as I believe any private garden had', this must have been established after Petiver's visit.[57] That Petiver never saw it seems likely, as Thomas Willughby received the assistance of Mr Pratt, the Keeper of the Chelsea Physick Garden; surely Petiver would have made a note of Pratt's work in his diary.[58]

After some short visits to Sir Gervase Clifton, Petiver went to the Chartley estate of Robert Shirley, 1st Earl Ferrers (1650–1717), noting in particular the hothouses 'as large as many a Countrey-mans barne', with orange, lemon, and pomegranate trees, as well as yucca plants, and a passion flower which he described as 'a flower of an odd form and beauty'. Petiver's comments were not unusual, as the strange morphology of the flower was thought by botanist John Parkinson to symbolize the instruments used in Christ's Passion.[59] The bloom's strange appearance made it all the more valuable to virtuosi and collectors, since in the early modern period a dramatic or multicoloured flower or a double flower was always more sought-after than a white or single bloom.[60] As Rebecca Bushnell has demonstrated, gardening offered a means for people to 'create rarities in their gardens,' and was a means of social ascent. As Ferrers's passion flower vines climbed, so did he.[61]

Nearby were the gardens of Philip Stanhope, 2nd Earl of Chesterfield (1633–1712), an FRS distinguished for his work on mathematics. Chesterfield also had renowned gardens at his seat at Bretby, Derbyshire – particularly their hydraulics. Petiver noted:

> His Gardens are fine, or rather finer than my Lord Ferras's, in the midst of one waterwork stands Perseus with Medusa's head in one hand, and a Display of water in the other, on his right hand is a Dolphin and a Triton, and on his left hand is another Dolphin and Triton, throwing water at each other about the borders of the Pond stands pretty Boies or Angels, spouting water at each other.

In his memoir for 1705, Chesterfield wrote:

> I went and stayd at Bretby in the summer, where I mayd many water-works in my garden . . . I invited the French generall Monsieur de Tallard, who was kept prisoner at Nottingham, to come to Bretby, where he seamed to be extreamly pleasd with the gardens and his entertainement, and sayd, in a compliment, that, setting the King of France's gardens aside, there was not finer gardens in France.[62]

Celia Fiennes visited in 1698 and recorded the gardens in some detail, noting in 'one garden there are 3 fountaines wherein stands great statues, each side on their pedistalls is a Dial, one for the sun, the other a Clock which by the water worke is moved and strikes the hours and chimes the quarters, and when they please play Lilibolaro on the Chymes'.[63] In 1702 the earl was employing the same workmen at his estate at Melbourn, Derbyshire for manufacturing and laying pipework (perhaps repairs) for the waterworks: there was a family link between the two estates, Chesterfield's eldest daughter, Lady Mary, having married Thomas Coke in 1698.[64] The waterworks were designed by the French hydraulics engineer Grilly, more elaborate than those he designed at Chatsworth, the water fountains metaphors for the *fons vitae,* or the fertile puissance, the 'Fountains of Life'.[65] The elaborate waterworks of Italian Renaissance gardens had been visited and extolled by John Evelyn reflecting a mentality attuned to machines and aesthetics, and knowing and making entangled harmonic processes. English virtuosi in their gardens clearly emulated such an outlook.

After experiencing these heights of culture, Petiver reported enjoying refreshment in Chesterfield's cellar, before travelling to Oxford where he spent ten days. He noted:

> My business in this City was, To see the Colledges, and their Liberaries, the Physick Garden; Museum, and the Laboratory, and what other Rarieites I could see. I staied ten daies here, 5 daies I spent in viewing the places above said, and what other Rarieties the City did afford me, the other 5 daies I spent with the Ingenious Mr Floyd keeper of the Museum, we went about Thirty miles into the Country, a Lithoscoping [or Gathering formed Stones].

'Mr Floyd' was Edward Lhwyd (1660–1709), the Welsh keeper of the Ashmolean Museum, who would go on to write the first field guide to English fossils. In a letter to Lister of 16 June 1691, Lhwyd wrote:

> I formerly told you I had some thoughts of attempting a Lithologia Oxoniensis whereby I meant a Methodical Enumeration \& Description/ of such stones as I could discover w[–h]ithin 20 or 30 miles of Oxford, without any respect had to Countys. considering first their matter ex. gr. Free stone, flint, Peble, Selenite, fluor, Siderites &c. & then their figures. Mr Ray approves of the Design very well, but would not have me confine my self to so narrow a compasse; but take in all of my knowlege that may be found in England. I answear that [–that] a Lithologia Britannica might indeed be a Book of very good use both in regard of the Discoverys that would be made . . .[66]

Following Ray's advice, Lhwyd subsequently published the *Lithophylacii Britannici Ichnographia* (1699), one of the first field guides to fossils; 'the book could easily be taken into the field and used there because of its handy octavo size'.[67] Although originally conceived as a guide to Oxford fossils, this study in Latin of 'formed stones' was 'arranged as a drawer-by-drawer guide to the cabinet of fossils which the author had collected and had deposited in the Ashmolean as deputy keeper and keeper'.[68] Lhwyd and Lister were close friends, and about 200 pieces of correspondence

between them are extant. Serving as a mentor, Lister helped Lhwyd bring his *Lithophylacii* to press, supervising the production of the illustrations and lending his friend a number of copperplates.

Lhwyd's journey with Petiver to go fossil hunting in the environs of Oxford was thus one of the first steps he took towards the creation of his *Lithophylacii*. As Petiver began his peregrinations in late July, their joint field expedition probably took place the following month. Indeed, on 25 August 1691, Lhwyd wrote Lister:

> I shall shortly have leasure [–to] enough to be absent from the Museum; & then I designe to table[69] my self one week at Cirencester, & an other at Glocester; leaving a Friend in the mean while at the Museum. I think I mention'd in my last a curious tooth-stone somewhat of the bignesse & shape of a ravens beak; very elegantly streaked lengthways with eminent striæ: & of a bright shineing atrorubent colour; which I had found in a gravelpit at Faringdon a market Town of Berkshire. I have lately gone to the same pit in hopes to finde such an other[70]

Since Farringdon is 15 miles from Oxford, this could tally with Petiver's description of his expedition with Lhwyd, or they may indeed have gone as far as Cirencester and Gloucester, some 30 to 40 miles away. Lhwyd's comments about Farringdon refer to the Farringdon Sponge Gravels, which form sediment that is a deferred deposit. The gravels and the fossils that they contain result from erosion of rocks during the Cretaceous era. In plate 16 of his *Lithophylacii*, Lhwyd indeed portrayed a 'pliosaur tooth occurring as a derived Jurassic fossil in the Lower Cretaceous Sponge Gravels of Faringdon, Oxfordshire. 1319 is a crocodile tooth from the same horizon and locality.'[71] Petiver may have recorded one of the first scientific peregrinations that resulted in the discovery of dinosaur fossils.

During his visit to Oxford, Petiver mentioned visiting certain of his 'countreymen,' in particular, 'Mr. Archer'. John Archer matriculated at Queen's College in 1690; he was the nephew of William Nicholson, the English divine and antiquary. Archer was also an acquaintance of Lhwyd, and later held his own natural history expedition, in 1693. Like Petiver, he visited Richard Richardson at North Bierley, suggesting it was a regular stop on the scientific peregrination. In a letter on 25 November 1693 to Lhwyd, Archer wrote:

> I have not wholly neglected our mountains, but see a great \many/ plants which were strangers to me (though I think none undescribed). But alas the wetness of the weather did imbitter all the pleasure I had in simpling, and I was in a great measure dissapointed of the satisfaction I promis'd my selfe in veiwing the products of my native soyl [i.e. Kendal, Westmorland]. But of Exoticks I had the good fortune to behold (not without admiration) the choicest collection that ever I see; (and for which I must, as I am in gratitude bound, returne you my abundant thankes as well as for all the unspeakable favours you have afforded me) I mean in the garden of the truly ingenious Dr Richardson; whose civility to me was so extraordinary, that 'tis not possible I should ever forget it.[72]

During his time in Oxford, Petiver, also botanized 'about the City in the Fields', finding *Ladanum segetum quorundum flore rubro* (*Galeopsis angustifolia* or the red hemp-nettle, now scarce), *Anagallis flore caeruleo* (pimpernel), *Orchis Spiralis alba odorata*, or lady's traces/tresses, and *Buglossum luteum* (now, *Helminthotheca echioides*, known as bristly oxtongue), and perhaps because he was really peckish, *Sium latifolium* (the greater water parsnip), and *Onobrychis viciifolia*, common sainfoin, a foraging legume for small ruminants.[73]

After his botanizing, he 'buskled [bustled] for London', stating: 'My Business at London was 1. To see their Physick-Gardens; 2. To see their Museums; 3. To talk with Learned men'.[74] Petiver first saw Chelsea Physic Garden but was not impressed, characterizing it as 'a pretty Collection but not such as many boast it to be'.[75] This might be dismissed as an appraisal due to the insouciance of youth, but Petiver probably was accurate in his criticism, displaying the discernment of a garden connoisseur. John Watts became Chelsea's Curator in 1680, and in 1682 he made an exchange of plants with Professor Hermann at Leiden. In the early part of his tenure Watts appeared capable. On 7 August 1685, John Evelyn wrote:

> I went to see Mr. Watts, keeper of the Apothecaries' garden of Simples at Chelsea, where there is a collection of innumerable varieties of that sort; particularly, besides many rare annuals, the tree bearing Jesuits' bark, which has done such wonders in quartan agues. What was very ingenious was the subterraneous heat, conveyed by a stove under the conservatory, all vaulted with brick, so as he has the doores and windowes open in the hardest frosts, secluding only the snow.[76]

However, an account of London gardens 'wherein they excel, or are deficient' by J. Gibson, made in December of the same year as Petiver's visit, noted of Chelsea:

> Their perennial green hedges and rows of different coloured herbs are very pretty, and so are their banks set with shades of herbs in the Irish stitchway, but many plants of the garden were not in so good order as might be expected, and as would have been answerable to other things in it.

After I had been there, I heard that Mr. Watts, the keeper of it, was blamed for his neglect, and that he would be removed.[77]

Standards had clearly declined. Petiver later served as Demonstrator at Chelsea from 1709 to 1718, again under the patronage of Sloane; he was required to 'demonstrate' or introduce different species of plants as *materia medica* for medical apprentices on a monthly basis in the summer.[78] He purportedly was well regarded and published articles about the Physic Garden in the *Philosophical Transactions*.[79]

Other gardens also occupied Petiver's visit to London, such as those of Captain Foster and Mr Clements. As these also appear in Gibson's accounts, Petiver was embarking on a regular garden tour for botanists visiting London, much as Lister made note of sites that would be interesting to virtuosi in Paris. Foster was a sharp-dealing Lambeth nurseryman who specialized in selling citrus trees, his customers including the Viscount Hatton and Elias Ashmole.[80] Petiver noted at 'Capt. Fosters at Lambeth . . . a pretty aviary there with several birds; as well Aquatick as Terrestrial', a feature echoed by Gibson, who noted 'his Virginia and other birds in a great variety . . . add much to the pleasure of his garden'. In a recent article, Arthur MacGregor has shown that by the mid-eighteenth century, 'exotic birds and animals were to be found in the possession of a range of owners from wealthy grandees to humble citizens, as well as specialist traders who emerged to supply this growing market . . . exotic species, alive or dead, had begun to penetrate households great and small by the mid 1700s.'[81] It seems, however, that even in the 1690s, London nurserymen were also keeping animals from the New World, so the exotic animal trade flourished in London even earlier, the animals serving as living garden ornaments.

Petiver also recorded visiting the collection of 'Mr Coniers an Apothecary': '. . . this Collection as I was credibly informed [was worth a] thousand Pounds, The Collection is not so . . . respected for its fineness as for the Antiquity of the Things he hath. he hath Severall Chinesian writeings, and very many old Manuscripts'.[82] The collection also contained river shells and fossils.[83]

John Conyers was described by his friend John Bagford as 'an Apothecary formerly living in Fleet Street who made it his chief business to make curious Observations and to collect such Antiquities as were daily found in and about London'.[84] In his excavations, Conyers found Roman-period Samian and Castor pottery and was able to date his finds stratigraphically. He wrote: 'I might see the Epochs or beginnings of things and in these various heighths of ground poynt & shew with my finger the Romans concernes lay deepest, then higher those of more recent or fresher concerne'.[85] Conyers lived close to St Paul's Cathedral, and visited the site during its rebuilding, picking up Roman bricks, pottery, and coins, even finding an Early Stone Age hand-axe in the 1690s with the remains of a mammoth in Grays Inn Lane.[86]

In his visit to Conyers, Petiver displayed typical interdisciplinary interests of seventeenth-century apothecaries, physicians and natural philosophers. Antiquaries developed an object-oriented approach to the past as they went along, with an emphasis on the preservation and excavation of the material remains they found in the landscape. Natural historians also had an object-oriented approach, preserving and excavating flora and fauna they found in scientific peregrinations, and the two interests were often combined into one collection. In Conyers's collection, animal remains, fossils, and antiquities thus were cheek-by-jowl.

As Woolf has shown, two impulses or practices were at the heart of early modern English antiquarianism.[87] The first stemmed from the humanist tradition, inherited from Continental philologists like Guillaume Budé (1467–1540) and their Italian predecessors such as Lorenzo Valla (1406–1457). English intellectuals in this group, such as John Leland (1502–1552), analysed the etymology of words and sought linguistic and verbal remains to understand the historical record. The second form of antiquarianism, which became more prevalent by the end of the seventeenth century, consisted of those scholars who considered the landscape in their analysis of ancient objects and buried artefacts. Conyers encompassed both: his 'Chinesian manuscripts' linguistic, the objects in his collection archaeological.

Conyers may have been influenced by developments at Oxford and the Royal Society. In his appraisal of England's political, religious, and cultural scene following the Restoration, Gilbert Burnet singled out the esteemed state of learning at Oxford University, and 'chiefly the study of the oriental tongues'. Burnet's remarks concerned Arabic and Hebrew, but as Poole has shown, Chinese works such as those that Petiver

viewed were also of interest due to the artificial language schemes of John Wilkins at Wadham College. Wilkins published his *Essay Towards a Real Character and Philosophical Language*, in which a universal language of flexible, convenient, and memorable symbols would form a new *lingua franca* with language directly embodying the object it described, so preventing disagreement about the meaning and interpretation of words – not only important for describing the natural world, but also for solving theological disputes.[88] The resulting growing research into linguistics and classification of language led to a hieroglyphic interpretation of Chinese, and some scholars such as Samuel Hartlib and Robert Hooke proposed that 'Chinese was itself an ancient artificial language'.[89]

The early Royal Society was also involved in projects that integrated natural history and antiquarianism, particularly before the establishment of the Society of Antiquaries in 1717.[90] Royal Society luminaries of greater stature than Conyers applied the methods of the antiquary to natural history, and in particular to the study of fossils and geology.[91] In a lecture to the Royal Society, Robert Hooke remarked:

> There is no Coin can so well inform an Antiquary that there has been such or such a place subject to such a Prince, as these [fossil shells] will certify a Natural Antiquary, that such and such places have been under the Water, that there have been such kind of Animals, that there have been such and such preceding Alterations and Changes of the superficial Parts of the Earth. And methinks Providence does seem to have design'd these permanent shapes. As Monuments and Records to instruct succeeding Ages of what past in preceding [ages].[92]

The work of a natural historian, in Hooke's eyes, was similar to that of an antiquary in studying man-made objects.

It was also not unusual for apothecaries like Conyers and Petiver to be antiquaries in this period – just as they also served as natural historians. The apothecaries' and physicians' habit of interpreting symptoms seems to have made them sensitive to visual evidence; after all, 'like artists, they were trained observers'.[93] Reading clues to make diagnoses also ripened early modern physicians' and apothecaries' ability to understand and contextualize the empirical details of ancient artefacts and the processes by which they were created. Though Hansen's recent analysis of English virtuosity claims that antiquarianism and nascent archaeology were fundamentally bound up with an appreciation of the classics, the empiricism of the physician and apothecary represents a fundamentally different set of skills from those used in philology.[94] Rosemary Sweet has also drawn attention to the contribution of eighteenth-century antiquaries and classicists to the development of archaeology, but it seems that we have look amongst the seventeenth-century physicians and apothecaries to trace the discipline's origins.[95] Petiver in his scientific peregrination was participating in these intellectual developments.

Unfortunately, Petiver was not as forthcoming about what he found in the Royal Society repository at Gresham College, referring to it only as 'very fine' and mentioning that 'Dr Grew, hath writ a Catalogue of the Things, and described them very well, therefore I shall say noe more of them'.[96] Fortunately, however, he was more forthcoming about the museum of William Courten (Curtein, or Charleton) (1642–1702) at the Temple, on which his comments are worth reproducing in full:

> This was the finest Collection that ever I saw and well may I say so, that never have been out of England, for those that have been at Leyden, Paris, Rome, and divers other places of the World, told me that it was the best Collection in Europe; he showed us one folio Booke that cost him three hundred pounds, It had Birds, fishes, Insects, Shells and Stones, drawn in it to the very life, he bought it at Paris, it was drawn by the french kings Painter . . . All his Insects are kept in Drawers a covered with transparent glass, to keep them from the injuries of the Air, he hath most if not all the Serpents mentioned by Authors, kept in clear glasses full of Spirit of wine, his Medalls, coynes, shells, formed stones, and many other Rarities, lie upon either black, red or green velvet; here you might have seen divers of the shells called Nautilus, curiously polished, with Venus and Cupid, on one side, and Bacchus and the nine muses on the others, ingraven to the life, he shewed us one Trochus of which he said he divers times refused Eight Ginnies for it; his Maid told me the Things in this Museum cost Ten Thousand pounds, by this short Account you may see the Excellencie of this Museum.[97]

Courten's notably accessible museum of curiosities in a suite of ten rooms at the Temple included works of art, specimens of flora and fauna, and archaeological objects, was 'celebrated as one of the finest cabinets of natural and artificial rarities in Europe'.[98] In gratitude for letting him examine shell specimens, the naturalist Martin Lister dedicated his *Historiae Conchyliorum* (1685–92) to Courten, and proposed him as a candidate for fellowship of the Royal Society.[99] Courten was, in fact, known to most of the leading virtuosi of the day, including the philosopher John Locke. He was born in London in 1642, into a merchant family

. . . that had previously enjoyed considerable wealth and honour, but subsequently suffered financial ruin. These circumstances meant that, although he came from what had been an extremely wealthy and well-connected family, Courten was of more modest means himself, and much of his life was overshadowed by lawsuits and financial wrangles.[100]

He may have adopted the name Charleton to avoid his creditors.

Courten travelled on the continent intermittently for twenty-five years from 1659 to 1684, sending boxes of specimens of natural history and art for safe-keeping to Fawsley Lodge, Nottinghamshire, owned by his aunt, Lady Mary Knightly. Some of his long absences from England 'may have been undertaken out of necessity, both to escape creditors and to make manifest his renunciation of matters concerning the Courten estates'.[101] It was during these lengthy sojourns on the Continent, however, that Courten built up his remarkable collections of natural and artificial specimens. Evelyn recorded on 16 December 1686 that he

. . . carried the Countess of Sunderland to see the rarities of one Mr Charlton in the Middle Temple, who showed us such a collection as I had never seen in all my travels abroad, either of private gentlemen, or princes. It consisted of miniatures, drawings, shells, insects, medals, natural things, animals (of which divers, I think 100, were kept in glasses of spirits of wine), minerals, precious stones, vessels, curiosities in amber, crystal, agate, etc; all being very perfect and rare of their kind, epsecially his books of birds, fish, flowers, and shells, drawn and miniatured to the life. He told us that one book stood him in £300 . . . This gentleman's whole collection, gathered by himself, travelling over most parts of Europe is estimated at £8000. He appeared to be a modest and obliging person.[102]

Petiver's and Evelyn's descriptions were echoed by Martin Lister, who remarked to his friend Edward Lhwyd that 'I have seen several collections of shells since you was here; but Mr Charleton is \now/ at a stand, & seemes to be wearie of the expence that way yet he hath purchased of late from Ceylon 12 or 14 Animals verie well preserved in sp. of wine; rare things!'[103] Sloane, who bought Courten's collection, recorded several nautilus shells in his conchological inventories, including the famous specimen now at the Natural History Museum carved with bacchanalian cupids by Johannes Belkien, as well as one carved with the name of the Dutch Republic and 'Tromps fleets upon it', a reference to Maarten or Cornelius Tromp, supreme commanders of the Dutch navy in the seventeenth century.[104]

Courten's rather obsessive collector's habit is shown in some of his private papers, recently examined by Sachiko Kusukawa. These include, for example, a lengthy 'catalogue of my plants sent from Montpellier, February 1678', featuring 'lists of plants given to me by Mr Pearl out of Dr Magnol's garden' in Montpellier, as well as flora from the mountains of Provence.[105] When in Montpellier, Courten also indicated that he had bought for his collection drawings of *naturalia* by Guillaume Toulouze, a master embroiderer and designer who published in 1656 his *Livre de boucquets de fleurs et oyseaux* for the benefit of fellow professional embroiderers.[106] As Elizabeth Hyde has demonstrated, there was a proliferation of floral pattern-books for artisans due to current fashions for floral motifs in the decorative arts, but 'those who could afford to do so commissioned professional painted images of their beloved blossoms' from their gardens or from the celebrated gardens of others.[107] Courten also bought drawings of flowers by Nicolas Robert (1610–1685), an engraver and miniaturist of King Louis XIV and the most successful painter of flower studies in France. 'The quality and refinement of his embroidery designs first brought him to the attention of Gaston d'Orléans, brother of Louis XIII'.[108] Robert subsequently went on to make engravings for the *Histoire des plantes*, an inaugural publication of the French Royal Academy of Science, founded by Louis XIV in 1666. Courten clearly collected the best, and the books of natural history illustrations that Petiver and Evelyn both described in their visits to his museum were probably these works of Toulouze or Robert.

After visiting remarkable collections, Petiver concluded his journey with visiting what he termed 'remarkable men', noting 'the first that I was with Dr Woodward an Ingenious younge man and a Gental Schollar . . . The next was Dr Lister a Learned and Brave Naturalist, indeed, as . . . many of his Writings doe Testifie'.[109] John Woodward (1665–1728) became Professor of Physick at Gresham College, and Lister served as vice-president of the Royal Society.[110]

Woodward's and Lister's interests were at the forefront of contemporary research, for in the late 1600s several luminaries in the early Royal Society debated the origins of fossils; it is thus not surprising that Petiver as a young natural historian made a special effort to see them. Past historiography, particularly the work of Martin Rudwick and Rhoda Rappaport,

has sketched the broad outline of the controversy.[111] Ray, Hooke and Woodward, argued that fossils were remnants of past animal and plant life, although they differed in their opinions of 'how fossil-bearing strata had been deposited'.[112] Since the Christian creed taught that all species were created in Genesis, any ideas of species becoming extinct were considered heterodox. On the other hand, Robert Plot (1640–1696), secretary of the Royal Society and first keeper of the Ashmolean Museum, stated that fossils were not always remains of living creatures, but could be created spontaneously by nature as part of her inherent 'generative powers'.[113] His conviction conformed with the views of early modern naturalists who postulated that metals and minerals were spontaneously nurtured and generated in deep mines considered to be Mother Nature's womb, and that stones resembling living creatures could be generated without any organic origins.

Other investigators, like conchologist and arachnologist Martin Lister, were more equivocal. In his *Historiae Animalium,* Lister also noted, after claiming fossils were mere 'formed stones', that he did not completely 'disregard the fact that these are much like living things of which nature has wearied. Certainly I have thought about these possibilities, especially the influential doctrine of my greatest friend John Ray.'[114] Lister followed this comment by stating that he would 'stop these ruminations in the presence of the reader; they [the specimens] may speak for themselves. If yet it is able to be judged what these earthly stones are to be, I will consider it, nor will I make rash judgments.'[115] Lister even pointed out that on some fossil specimens, there were worm tubes on the surface or fossilised pearls, which might indicate that their origins could be from living creatures. Lister's comments led the geologist Charles Lyell in his *Principles of Geology* (1830) to note that he was one of the first to consider the extinction of species, and went on to say that:

> Lister and other English naturalists should long before have declared in favour of the loss of species, while Scilla and most of his countrymen hesitated, was natural, since the Italian museums were filled with fossil shells, belonging to species of which a great portion did actually exist in the Mediterranean, whereas the English collectors could obtain no recent species from their own strata.[116]

Perhaps to discuss such topics, Petiver noted that Lister 'invited me twice to Dinner, and Bestowed on me his Historia Conchyliorum. a folio worth Twenty Shillings'.[117] This was Lister's landmark *Historiae sive synopsis methodica Conchyliorum* [History of Molluscs], assembled between 1685 and 1692 (2nd edition, 1692–7). This first comprehensive study of conchology consisted of over 1,000 plates portraying shells and molluscs that Lister had collected from around the world, as well as an appendix of molluscan dissections and comparative anatomy. The detailed dissections of molluscs performed by Lister and his daughters Susanna and Anna – with the aid of microscopes – also meant that the *Historiae* established a new standard for conchology, such that the work was in constant use by natural historians and taxonomists throughout the remainder of the seventeenth, eighteenth and nineteenth centuries.[118]

Petiver concluded his travels with a brief foray into Essex to visit the naturalist John Ray and apothecary Samuel Dale, whom he discusses only briefly, referring to them as '2 good Naturalists' and 'bravely accomplished men'. Like Petiver, Dale was a nonconformist; he contributed nine papers to the *Philosophical Transactions* including an important account of the strata and fossils of Harwich Cliff. Dale also assisted Ray with his botanical work, administered Ray's will and donated Ray's library to the Chelsea Physic Garden collection.

Petiver's scientific peregrination would serve him well in his future career. During his time in London, Petiver familiarized himself with key areas of research and collections, and cultivated rare contacts as he did rare plants. Lister and Petiver continued to correspond, exchange specimens, and attend meetings at the Temple Coffee House when Petiver became established in London. Ray and Petiver subsequently worked together throughout most of their professional lives, publishing notes on flora and fauna received from Georg Josef Camel, a Jesuit based in the Philippines, in the *Philosophical Transactions* in 1699.[119] As mentioned, Petiver continued to correspond with Richardson. Along the way, he made observations on natural and artificial rarities: wildflowers, cultivars, libraries, natural history collections, and unusual garden and domestic architecture were appraised and recorded in his diary, serving as a type of chorography of late seventeenth-century natural philosophy. Like his fellow naturalists, his journey embraced both fieldwork and connoisseurship, done out of 'meer Love to Learning' and the cultivation of scientific virtuosity.

Petiver's journey also represented, as Mordechai Feingold termed it, the 'confabulatory life' of the scholar, the diffusion of scientific knowledge through informal discussion with colleagues.[120] Henry Guerlac has reminded us that 'as historians of ideas we are happiest when we can navigate from the firm ground of one document to the next, and we are prone to forget how great a part travel, gossip and word-of-mouth have played in the diffusion of scientific knowledge, indeed of knowledge of all sorts'.[121] Petiver's diary presents an example of the importance of the scientific peregrination, the intricate networks of communication, both written and oral, that it represented and the inner working of the Republic of Letters and Ideas.

Supplementary information

An annotated transcription of the diary is available at *Journal of the History of Collections* online.

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Notes and references

1 Stearns estimated his birthdate based on material in British Library (hereafter BL) MS Sloane 2360, fol. 5v. See R. Stearns, *James Petiver: Promoter of natural science, c.1663–1718* (Worcester, 1953), p. 247.

2 Stearns, op cit. (note 1), pp. 249–50.

3 D. E. Allen, 'Petiver, James (*c.*1665–1718)', *Oxford Dictionary of National Biography online*. Petiver was an early member of the influential group of naturalists who met regularly at the Temple Coffee House.

4 John Ray, letter to Edward Lhwyd, 11 June 1701, Early Modern Letters Online, Bodleian Library (hereafter Bodl.) http://tinyurl.com/83up2cc. For another view of Ray's comment, see K. A. James, '"Humbly dedicated": Petiver and the audience for natural history in early eighteenth-century Britain', *Archives of Natural History* 31 no. 2 (2004), pp. 318–29, at p. 320.

5 J. M. Camarasa and N. Ibanez, 'Joan Salvador and James Petiver: a scientific correspondence (1706–14) in time of war', *Archives of Natural History* 34 no. 1 (2007), pp. 140–73.

6 Allen, op. cit. (note 3).

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12 M. Greengrass, D. Hildyard, C. D. Preston, and P. J. Smith, 'Science on the move: Francis Willughby's expeditions', in *Virtuoso by Nature: The Scientific World of Francis Willughby FRS (1635–1672)*, ed. Tim Birkhead (Leiden, 2016), pp. 142–226, at p.145.

13 See Ole Peter Grell and Andrew Cunningham (eds), *Centres of Medical Excellence? Medical Travel and Education in Europe, 1500–1789* (Aldershot, 2010).

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17 Ibid., p. 152.

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19 Ibid., p. 3.

20 Ibid., p. 2; J. Levine, *Dr Woodward's Shield: History, science and satire in Augustan England* (Ithaca, NY, 1977), p. 122.

21 Lister, op. cit. (note 18), p. 3.

22 [William King], *The Transactioneer, with some of his philosophical fancies* (London, 1700), p. 33. King's satire of Petiver was also noted by Riley, op. cit. (note 8), p. 91.

23 Petiver, op. cit. (note 11), fol. 1v. Material in square brackets represents damage to the original; material in parentheses are authorial clarifications of primary source material.

24 Ibid., fol. 2r.

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26 M. Pointon, *Strategies for Showing: Women, possession, and representation in English visual culture* (Oxford, 1997), p. 95.

27 F. M. Richardson Currer and C. J. Stewart, *A Catalogue of the Library collected by Miss Richardson Currer at Eshton Hall* (London, 1833), p. 437.

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29 *Gazophylacium* is a Greco-Persian word meaning a 'depository of precious things'.

30 Revd Adam Buddle of Catherine Hall, Cambridge, BA 1681; MA 1685; Reader of Gray's Inn. He was a botanist.

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44 *Coeloptera* or beetles, from the Greek *koleos*, meaning 'sheath' and *pteron*, meaning 'wing'.

45 Beetles and insects without the chitinous forewings characteristic of beetles or *coleoptera*.

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