

The Fellows' Letters from Distant Countries: New Science, the "Other" and Imperialism

And thus have I made the best use of some of them [Eminent Members of the Royal Society], that I could devise; To spread abroad Encouragements, Inquiries, Directions, and Patterns that may animate, and draw on Universal Assistances.

The Great God prosper in You in the Noble Engagement of Dispersing the true Lustre of his Glorious Works, and the Happy Inventions of obliging Men all over the World, to the General Benefit of Mankind: So wishes with real Affections,

Your humble and obedient Servant

Henry Oldenburg¹

It was January 1, 1665 when *Philosophical Transactions* of the Royal Society first appeared. Henry Oldenburg (c. 1618–1677), its founder and editor, defined the Society's end to promote experimental knowledge, and created a network of far-flung correspondents—men of science, men of letters and of the church—to circulate scientific findings all over the world. The reading and discussion of their letters at regular meetings constituted a significant contribution to the intellectual and social vitality of late Stuart England.

Scholars' use of letter exchange as an indispensable tool to collaborate in the field of natural philosophy had been established in Europe by 1650. Charles Bazerman argues that, following the newly founded *Journal des Sçavans* in France,² *Philosophical Transactions* grew out of Henry

Oldenburg's personal relations,³ which soon made the Society one of the leading scientific institutions in early modern times. After a few years, it could benefit from 104 active Fellows, a wide network of foreign virtuosi, as well as the ability of its principal officers to use both research and epistolary materials effectively.⁴

The early issues appeared in the form of "Extracts"⁵ from Henry Oldenburg's correspondence with the Fellows of the Society. Initially, he heavily edited them, then, the articles appeared directly in the form of letters to the Society. As Bazerman posits, though, it took over a century for published materials to adopt the abstract argumentative tone and focus of scientific articles.⁶

Natural philosophy was not the only area of study in the prestigious journal. There was also space for the humanities, archaeology in particular, and for "Some Philosophical and Curious Books".⁷ Travel accounts, however, were paid special attention. In fact, England's international prestige as a maritime power had to be enhanced, and it was essential to go back to the glorious Renaissance tradition of exploration and colonialization to promote scientific innovation and change.

Past practices were tightly connected with the main travel writers in the sixteenth and early seventeenth centuries: Jerome Turler (1550–1602), Thomas Palmer (1540–1626), Robert Dallington (1561–1637), Robert Devereux (1566–1601), Edward Leigh (1602–1671) and Thomas Neale (1614–1646), to name but a few. It was virtually impossible to ignore the models that they had established. They had given "profitable instructions" for sea-voyagers,⁸ and urged them to base their visits abroad on "observation",⁹ "a method"¹⁰ and the "ripening" of "knowledge".¹¹ It was clear that, on the eve of the Enlightenment, the moral tone of their writings had to be mitigated.

Proof of the central position of religion in early manuals for sea-voyagers, and of the necessity for natural philosophers to change scientific direction, could be found in Thomas Palmer's *An Essay of the Meanes how to make our Travailes, into Forraine Countries* (1606).¹² For him, "[r]egular travailing" was "an honorable or honest action of men", but "the maintenance and exercise of true religion and Godliness" was the most "preferable" "thing in the world".¹³ Over ten years later, Bishop Joseph Hall (1574–1656) thundered that it was "the Travell of Curiosity" that he quarrelled at, as it was morally unacceptable.¹⁴

Direct observation and knowledge slowly gained importance, and James Howell's *Instructions & Directions for Forren Travell* (1650) became one

of the tracts which paved the way for the more scientific travel writings in late Stuart years. The underlying idea was that the perfect traveller had “bin first an University Man” who could use “the Map and Globe to find out the Longitude and Latitude of all places”: “[r]eligion”, however, was still pivotal, and history, literature, drama, as well as “a passable understanding of the *Latine* tounge”,¹⁵ were indispensable to benefit from travel.

The application of the Galilean method to most branches of learning gave new foundations to travel in the 1660s. For Judy Hayden,¹⁶ it was Bacon’s *The Advancement of Learning* (1605), and his appeal to build on the recent “Proficience in Navigation and discoveries”, that persuaded Oldenburg to include “inquiries” on—and descriptions of—distant countries in *Philosophical Transactions*.¹⁷ Perspectives immediately changed, and scientific observation of the “Other” in distant worlds obliged voyagers to use more advanced technology, pay closer attention to cross-cultural issues, as well as reflect more seriously on political life, ethnography and the natural world. Of course, progressing in the field of sea and ocean studies—making use of the latest developments in mathematics, geometry and astronomy—was the key to break with the past, and impose new cultural models.

2.1 ON “ARITHMETICALL NAVIGATION”: NEW DIRECTIONS, TOOLS AND MAPS FOR LEARNED SEAMEN

The Royal Society played a crucial role in this field. Its Fellows showed that knowledge about foreign lands and populations was still to be unearthed, and that scientific research was inextricably linked with the travelling experience.¹⁸ As a result, there was strong cross-fertilization between science and the arts, and higher educational standards were set.

The first issues of *Philosophical Transactions* were based on the principle that the “Art of Navigation” was “one of the most useful in the world”, and that there were still “many things to be known and done”.¹⁹ Early in 1625, Thomas Addison (fl. 1625) had already published a volume called *Arithmetical Navigation*.²⁰ Illustrations and detailed “catalogues of directions” for “Sea-men” accompanied most articles in the Society’s journal, and “Eminent Mathematicians” urged future travellers

1. To observe the Declination of the *Compass*, or its Variation from the *Meridian* of the place, frequently; marking withal, the *Latitude* and *Longitude* of the place, wherever such Observation is made, as exactly as may be, and setting down the *Method*, by which they made them.
2. To carry *Dipping Needles* with them, and observe the Declination of the Needle in like Manner.
3. To remark carefully the Ebbings and Flowings of the Sea, in as many places as they can, together with all the Accidents, Ordinary and Extraordinary, of the Tides; as, their precise time of Ebbing and Flowing in Rivers, at *Promontories* or *Capes*; which way their current runs, what perpendicular distance there is between the highest Tide and lowest Ebb, during the Spring Tides and Neap-Tides; what day of the *Moons* age, and what times of the year, the highest and lowest Tides fall out: And all considerable Accidents, they can observe in the Tides, chiefly neer Ports, and about Islands, as in St. *Helena's* Island, and the three Rivers there, at the *Bermudas* &c.
4. To make Plotts and Draughts of prospect of Coasts, Promontories, Islands and Ports, marking the Bearings and Distances, as neer as they can.
5. To found and marke the Depths of Coasts and Ports, and such other places nere the shoar, as they shall think fit.
6. To take notice of the Nature of the Ground at the bottom of the Sea, in all Surroundings, whether it be Clay, Sand, Rock, &c.
7. To keep a Register of all changes of Wind and Weather at all houres, by night and by day, shewing the point the Wind blows from, whether strong or weak: The Rains, Hail, Snow and the like, the precise times of their beginnings and continuance, especially *Hurricans* and *Spouts*; but, above all, to take exact care to observe the *Trade-Wines*, about what degrees of *Latitude* and *Longitude* they first begin, where and when they cease, or change, or grow stronger or weaker, and how much; as near and exact as may be.
8. To observe and record all Extraordinary *Meteors*, Lightnings, Thunders, *Ignes fatui*, Comets, &c. marking still the places of their appearing, continuance, &c. [...];
9. To carry with them good Scales, and Glasse-Violls of a pint or so, with very narrow mouths, which have to be fill'd with Sea-water in different degrees of *Latitude*, as often as please, and the weight of the Vial full of water taken exactly at every time, and recorded, marking

withal the degree of *Latitude*, and the Day of the Month: And that as well of water in the Top; as at a greater Depth.²¹

Evidence that the Fellows of the Royal Society had a deep interest in navigation, as well as in the advancement of sea and ocean studies, could also be found in the article written by eminent scientist Robert Boyle, and published in *Philosophical Transactions* in 1666. “Other Inquiries concerning the Sea”²² was centred on the necessity of acquiring information about “the Odors, Colours and Tasts” of “Sea-water”, on its “Depth”, as well as on the difference between its “Bottom” and “the Surface of the Earth”.²³ Precise answers to some of those queries were given several years later, in 1693, when his experiments on the “Freshness and Saltness” of sea water were completed, and given high resonance in volume 17 of the journal.²⁴

The author of several longer tracts on this topic²⁵, Robert Boyle was not the only natural philosopher who used the “experimental and mathematical way of enquiring into nature”.²⁶ Sixteenth and early seventeenth-century publications like *The Rutter of the Sea* (1520), *The Safeguard of Sailers* (1584) or *The Light of Navigation* (1612)²⁷ had been written by French and Dutch authors—Pierre Garcie (ca 1435–ca 1520), Cornelis Antoniszoon (b. ca 1499) and Willem Blaeu (1571–1638)—who wanted to share their theoretical and practical acquisitions with their contemporaries,²⁸ yet it is undeniable that the letters published in *Philosophical Transactions* were unique. Based on experiments aimed at grounding possible hypotheses and theories,²⁹ they also supported the nation’s expansion needs abroad.

At the turn of the century, in 1695, another two important scientists, Isaac Newton (1642–1727) and Edmund Halley (1656–1742), published “The True Theory of the Tides” in issue 19 of the prestigious journal.³⁰ Preceded by Halley’s 1686 “An Historical Account of the Trade Winds, and Monsoon, Observable in the Seas between and Near the Tropicks”,³¹ the article was based on the relation between the “Theory of the Moon and Planets”, “the unknown Laws of the Motion of Comets, and of the Ebbings and Flowings of the Sea”.³² Learned readers became convinced that this type of study could be instrumental in giving “[d]irections for Sea-men, bound for far Voyages”,³³ so advanced technology immediately became a key element in the field.

Sophisticated observation instruments that mariners could use in dangerous sea travels were listed in long appendices at the end of the earliest *Transactions*. There was a “Globe of Firr, or Maple”, a “square wooden

Bucket”,³⁴ a “pendulum watch”,³⁵ Newton’s “new telescope”,³⁶ Leibniz’s “portable watch”³⁷ as well as Halley’s “Magnetical Compass”.³⁸ They were all carefully represented, or described, for learned and “Industrious” readers, and connected with 1684 “Directions for the use of tide Tables”.³⁹

Charting and mapping seas, oceans and far distant countries became *the* issue. Again, Renaissance England had established a tradition in the field, but the adoption of the Ptolemaic system seemed to make Richard Arnold’s *Mappa Mundi* (1550), Thomas Blundeville’s *Brief Description of Universal Mappes and Cardes* (1589) and William Camden’s *Angliae and Iberniae Nova Descriptio* (1592)⁴⁰ rather dated and incomplete works, which could be seen as “abstract accumulations of data on local aspects” retaining only “temporary rather than permanent features”.⁴¹

The Royal Society’s correspondents went beyond individual experience and hypotheses to acquire certainties and ultimate truths: they could rely on the principles of New Science, but generally continued to include narratives and detailed explanations in their geocartographical representations. “An Advertisement of a way of making more lively Counterfaits of Nature in Wax”, together with “a new kinde of Maps in a low relieve” by the writer and diarist John Evelyn (1620–1726) appeared in volume I of *Philosophical Transactions*:

I have also seen a new kinde of *Maps* in a low *Relievo*, or Sculpture: For example, the Isle of *Antibe*, upon a square of about eight foot, made of Boards, with a Frame like a Picture: There is represented the Sea, with ships and other Vessels Artificially made [...], after a new and most admirable manner. The Rocks about the Island exactly form’d, as they are upon the Natural Place [...]: in *fine*, Men [and] Beasts [...]. This new, delightful, and most instructive form of *Map*, or *Wooden Country*, you are to look upon either *Horizontally*, or *sidelong*, and it affords equally a very pleasant object.⁴²

More news about maps was given in the following years. D.K. Smith⁴³ makes clear that, although cartography had been introduced to a widespread, literate public at the end of the sixteenth century, there was a significant change in surveying, measuring and recording from 1650 onwards.⁴⁴ In fact, between 1674 and 1686, *Philosophical Transactions* published “a New Mapp of *Nova Zembla* and *Weigats*”⁴⁵; it supported “the Learned Mr. John Greaves” (1602–1652) when he showed his “dissent from the traditions of the Antients”, and altered “the Latitudes, if not the

Longitude” of Constantinople,⁴⁶ as well as hailing a “Large and Curious Map of Great *Tartary*” as “the Discovery of a New World”.⁴⁷

From that moment on, scholars laid the foundations for the development of scale maps, of the bird’s-eye perspective, and of the rise of panoramic representations of cities and coasts. Space could thus be perceived more realistically, and travellers became instrumental in the new imperialistic plans of late Stuart England.

2.2 CORRESPONDING WITH THE FELLOWS: SCIENTIFIC ACCOUNTS AND EARLY TRAVEL NARRATIVES

A more scientific, experimental approach to travel also implied a new vision of odeporic writing. Texts were expected to inform readers and be useful; so, especially at the beginning of the process, it seemed difficult to reconcile the use of scientific details and jargon to narrative forms.

Written by Joshua Childrey (1623–1670), and “[c]ommunicated by that Ingenious Travailor Mr. *Richard Smithson*”, “An Accompt of a passage by Sea to the *East-Indies*” appeared in *Philosophical Transactions* in 1669.⁴⁸ It was very unlike a traditional piece of odeporic literature. It was the product of the latest research in the field of navigation, and it was putatively based only on facts. Numerous references to the cardinal points, as well as to the latitude and longitude during the various phases of navigation, totally excluded information about the members of the crew and their experience aboard:

Near *Affrica* the *South-East*-winds hold to 28. or 29. Degr. *Southern Latitude*; but towards *Brasile* from the *Tropick of Capricorne* to 32 degrees they are variable, and to the Southward of 32. Westerly; as you may perceive by this following accompt.

May 29. Lat. 24.47'. Longit. (by the plain Sea-chart) from the *Lizard*, 11. Degr. West; Variation 10d 7' East: fair Weather; the Wind from SW to W. We sailed 50. miles.

June 1. Little wind, at SW.

June 2. Latit 26. o Calme all day, and a great Storm all night at South.

June 3. Strong wind at SSE. At 1. At night it came to E b S, and blew with the same violence till next day noon. At 6 in the Evening I saw *Mercury* very near the *Moon*, newly past Conjunction, as I supposed.⁴⁹

It was clear that the author, “Mr. *Joshua Childrey*”, knew both the winds and sophisticated technology in the field of navigation, and that his cultured readers would appreciate what may be defined as a purely scientific, informative text. Once again, though, it was hardly possible to compare this piece of writing to other similar works from the past. In the Renaissance period, for instance, travel books had included detailed narratives of the “the first discovering”⁵⁰ of faraway countries, also “Vocabular [ies] of certaine words”⁵¹ used by the local populations. A few years before the Civil War, William Bruton’s *Newes from the East-Indies*⁵² (1638) appeared in the form of a modern journal, where it was possible to gain extensive knowledge about the “Lawes, Manners, and Customes” in “*Bengalla*”.⁵³

It took the Fellows of the Royal Society and their correspondents some years to find the perfect balance between scientific accuracy and cross-cultural issues. Early in 1665, in volume 1 of *Philosophical Transactions*, the Society’s correspondents had only been asked about the Turks’ use of “Opium”, their skills in “Poisoning”, as well as their “Arts and Trades”⁵⁴; in 1670, things seemed to have changed. “Certain Missionaries” provided readers with detailed information about “many Monasteries and ancient Churches” in “the *Upper Egypt*”, but Turkey and the Middle East were mentioned at the end of the article:

Our time being limited, we only could stay in *two places*, our design not being curiosity, but to satisfy the charge of the Mission among the Christian *Cophthes* of that Countrey, which are in great number there, and have many Monasteries and ancient Churches, but poor. We have passed many places, where was neither Priest nor Church, but only the poor people like Sheep without a Shepherd. I hope shortly to return thither, and not to come back again with so much hast, after I shall have made a little voyage up on the Red Sea, wither I go every year to visit the poor Slaves in the Gallies of the Turks, &c. *F. Brothais*.⁵⁵

Science seemed to have completely replaced religion in directions of how to write about travel, yet theological disputes and socio-cultural implications would be two of the main issues for English learned voyagers for many years. In 1684, Rev. Thomas Smith (1638–1710), a Fellow of the Royal Society since 1677, clarified “what opinions the *Turks* [had] of our *B. Saviour* and of the *Christian Religion*”,⁵⁶ thus showing his interest in the other versions of the Alcoran in the Middle East.⁵⁷ His long paragraph

on the Persians' idea of Christ was a metaphor for the Society's contradictory attitude towards other civilizations:

They confess that *Christ* was born of a pure spotless Virgin, the Virgin Mary, chosen by *God* and sanctified above all the women in the World; and that the Angel Gabriel was dispatched out of Heaven to acquaint her with the news of it. That such a kind of miraculous and supernatural birth never hapned to any besides, and that *Christ* was conceived by the *Holy Ghost*, and that he wrought mighty miracles, for instance, that he cleansed lepers, gave sight to the blind, restored sick persons to their health, and raised the dead.

[...] [Yet], [t]hey blaspheme indeed with a brutishness and stupidity only befitting *Turks*, the mysteries of the *holy Trinity*, and the divinity of our *B. Saviour*, and deny that he was put to death, and say that another in his shape was crucified by the *Jews*, and that he himself was assumed into Heaven in his body without dying at all, and consequently they will not own, that he satisfied divine justice for the sins of the World, so great an affinity is there between the heresy of *Socinus* and profess't *Mahometanism*.⁵⁸

Again, curiosity for the East may have had its roots in the volumes which circulated in the sixteenth and seventeenth centuries. Although most of them could be considered as historical and biographical works,⁵⁹ their interdisciplinary links with cartography and geography were to pave the way for the richer travel accounts of the late Stuart period.

In fact, the letters that *Philosophical Transactions* published in the closing decades of the century seemed to respond not only to scientific, but especially cross-cultural queries. In 1686, for instance, "A Voyage of the Emperor of *China* into the Eastern *Tartary*" was the first article, which referred to the Emperor's passion for Europeans books⁶⁰ and for "the Constellations that then appeared above the Horizon".⁶¹ Read to the Fellows of the Royal Society in 1695, "A Relation of a Voyage from *Aleppo* to *Palmyra*"⁶² also included a long introduction in Latin, and it was replete with details on the city of Tadmor, its heritage and "Curiosities".⁶³

Of course, the type of balance that the Society's correspondents had been expected to achieve could also be found at a stylistic level: there were no longer technicalities, or forms of jargon, also contents were generally divided into sections. As regards "a Voyage from *Aleppo* to *Palmyra*" in particular, references to the exact measurement of the archaeological areas in the region combined with the peculiar "mixture of Remains of the greatest State and Magnificence, together with the Extremity of Filth and

Poverty”.⁶⁴ It was now time for readers to go beyond “Curiosities”, and learn about new civilizations.

2.3 CONFRONTING THE “OTHER”: (BIASED) DESCRIPTIONS OF TURKEY, JAPAN AND NEWFOUNDLAND

On the eve of the Enlightenment, *Philosophical Transactions* continued to voice its correspondents’ preconceived ideas about Middle Eastern populations. In the long “Extract of the Journals of two Several Voyages of the English Merchants of the Factory of *Aleppo*, to *Tadmor*”,⁶⁵ the Turks seemed to generate strong mistrust because of their weapons—a “*Bandiero*” and “*Hanjarr* or Turkish Dagger”—as well as the continuous risk of war that they represented.⁶⁶ However, the reason why it was so difficult to accept their special “Otherness” could be found in their morals and manners. In the city of Soukney, for instance, which was famous for its “Hot Waters”, men and women bathed in “the same little dirty Hole” “at different hours”, which was their “only mark of Modesty”.⁶⁷

“Ingenuous” travellers continued to go to the Far East. Francis Caron’s *A true Description of the Mighty Kingdoms of Japan and Siam* had been translated from the Dutch, and appeared in England in 1663⁶⁸: readers were able to enjoy one of the longest and most detailed analyses of Japanese civilization ever published, but a few years later, in 1669, *Philosophical Transactions* made the picture even clearer. In “Some Observations Concerning *Japan*”, racial issues were the starting point of the article:

10. The *Japanese* are proper enough of stature, and not uncomely in features; they have somewhat prominent bellys. They are exceeding active, and want no Judgement; they are also military and valiant.
11. No Arts are to be met with amongst them, that are not known in *Europe*, except that of making *Lacca*, of which there is some so fine and curious [...].
12. The Colours, with which they dye their stuffs, never fade. I have seen one of them, which our *Vermillon* and *Couleur de feu* come near to. It is extracted out of a Flower, like to Saffron, and one pound of it costs an incredible price. To try, whether the Colour will not change by

- Lixvium* or Lye, they apply an hot Iron to it; and if it there it holds, they assure themselves of the durableness of the Colour.
13. They have Mathematicians amongst them, and believe in Iudiciary Astrology [...].
 14. *Japan* yeilds divers sorts of good merchantable Commodities; but chiefly all sorts of silken Stuffs, unwrought Silk, Amber, Precious Stones, Musk, Copper Steel, Lack-work.
 15. The Country is very well peopled and exceeding rich, being exceedingly stored with Gold-mines [...].
 16. Their Buildings are very good and commodious. [...].
 18. They use the divertisements of Comedies, which are more brave than those of *Europe*. [...] They love hunting, and Gaming, as Dice, Cards, Chess &c. At all times of the day, and in all their visits they take Thea and Tobacco.
 19. Their Language is altogether different from the *Chinese*. [...] They write neither from the right to the left, nor from left to the right, but downward.
 20. Their Government is Despotique; the Religion Pagan; the Christian hated upon no other accompt, but that some of those that there professed it, would perswade the *Japonese* to acknowledg a Superiority above the dignity Royall, disposing of Crowns and Scepters. Their morals are very good, their *faults* being punish't as their *Crimes*, even Lying and Detraction. Their left hand is the more honourable, as they take horse on that side.⁶⁹

This information matched Caron's conviction that "Women [were] ordinarily true and modest",⁷⁰ that "every crime, how small soever, [was] punished with death; especially theft",⁷¹ and that "[w]hen a Gentleman, or Soldier [was] condemned to die, he [was] allowed the honour to kill himself, by cutting up his belly with his own hands".⁷²

More travel accounts on Japan circulated in England until 1684, and most of them were by Jean-Baptiste Tavernier (1605–1689).⁷³ In 1674, however, Dirick Rembrantz van Nierop (1610–1682) contributed to *Philosophical Transactions* with "A Narrative of Some Observations made upon several Voyages" to celebrate "the Discovery of the famous Land of *Jesso* near *Japan*".⁷⁴ "A Relation of Sailing through the North *America* to the *East Indies*" was also included, where readers could also find a description of the native population in Newfoundland:

The Natives are generally all short and thick, very hairy, their brows and lipps painted black or blew, their ears bored thorow, and with silver Ear-rings hanging in them. As for their Religion, they gave no other token of any, but that sitting by the Fire, and drinking, they spill thereabout some drops on several places, as if they offer'd to that Element before they would drink. They seem'd to be a kind of *Banditi*, masters all alike. The men have each two wives, of which they are very jealous. Both men and women love strong drink. Their houses are of wood, and cover'd with Bark. They have very little Householdstuff; Japan-gowns are their best ornament, and they have only a few teguments to cover themselves with in the night. [...] Their victuals are, Fish, Whale-fat, red Rose-buds dryed by them for winter-provision. They are lazy, not tilling the ground, sustaining themselves by hunting, shooting, and fishing. They trade with *Japan*, and their language is mixed with the *Japonian*. They are very subtle in trading, but not thievish.⁷⁵

England was literally flooded with accounts of American Indians in those years. An early American colonist, Daniel Denton (c. 1626–1703) confirmed that the Natives lived “principally by Hunting, Fowling, and Fishing”, and that they were “great lovers of strong drink”.⁷⁶ On the eve of the Enlightenment, when morals and religion gained importance, Cotton Mather (1663–1728) used his *A Monitory, and Hortatory Letter*⁷⁷ to stop the main forms of corruption in Newfoundland, whereas Morgan Godwyn (fl. 1685) advocated “the necessity of *Instructing* [the] *Negro's* and other *Heathen* in the *Christian Faith*”.⁷⁸ It was clear that the intention of Britons was to appropriate those lands, and to deprive the local population of their traditions and religious faith.

The patronizing tone that characterized those writings was in perfect harmony with the approach that the members of the Royal Society had to distant countries and their native populations. As argued earlier, they served the pre-imperialistic plans of late Stuart England, and meant to utilize science to show that the white man was naturally superior, and that he had the right to dominate the “savages” in the New World.

Clear signs of racial discrimination were first found in the “Observations” that Martin Lister (1602–1670), a Member of the English Parliament from 1640 to 1648, and a contributor to *Philosophical Transactions*, “made at the *Barbado's*” in 1675. Based on the conviction that “the blood of *Negro's* is almost as black as their skin”,⁷⁹ issue 6 in his article initiated the scientific discourse on difference, and could be associated with Thomas Glover’s description of a “most prodigious Creature, much resembling a man”, whose head was “pyramidal, and slick without

hair". His narrative was centred on Virginia, and it was published in the Society's journal in 1676:

[A]bout half a stones cast from me appeared a most prodigious Creature, much resembling a man, only somewhat larger, standing right up in the water with his head, neck, shoulders, breast, and waste, to the cubits of his arms, above water; his skin was tawny, much like that of an *Indian*; the figure of his head was pyramidal, and slick without hair; his eyes large and black, and so were his eye brows; his mouth very wide, with a broad, black streak on the upper lip, which turned upwards at each end like mustachoes; his countenance was grim and terrible; his neck, shoulders, breast and wast, were like unto the neck, arms, shoulders, breast and wast of a man; his hands, if he had any, were under water; he seemed to stand with his eyes fixed on me for some time, and afterward dived down, and a little after riseth at somewhat a farther distance, and turned his head towards me again, and then immediately falleth a little underwater, and swimmeth away so near the top of the water, that I could discern him throw out his arms, and gather them in as a man doth when he swimmeth. At last he shoots with his head downwards, by which he casts his tayl above the water, which exactly resembled the tayl of a fish with a broad fane at the end of it.⁸⁰

Lister's and Glover's extracts reproduced the accounts written by other European invaders in the Americas. Careful depictions of the alien faces and conduct they saw, the texts reminded readers of "the archetypal human monstrosities" who lived in unexplored countries,⁸¹ and expressed strong pre-Adamic views. For Paracelsus (1493–1541) and Giordano Bruno (1548–1600), Native Americans were not descended from Adam, thus they were sub-human creatures without a soul; for Robert Boyle, "the Empire of Man over the inferior creatures" needed to be based on the association between natural philosophy and colonial conquest.⁸²

If scientific learning had the same authority as the Bible, and colonial issues were continuously discussed by the Fellows of the Royal Society, the description of oddities and curiosities in distant countries attracted the readers' attention, but were not absolutely central. Anna Suranyi in *The Genius of the English Nation: Travel Writing and National Identity in Early Modern England*⁸³ argues that English travellers' interest in the "Other" contributed to the construction of their national identity⁸⁴; as regards the new trends of scholarship in this field, both textual analysis and theoretical perspectives confirm that the Society's intention of aiding their

contemporaries in mastering those distant places explains why travel accounts were the object of such close scrutiny.⁸⁵

2.4 THE SAVAGES' SKILLS FOR THE BENEFIT OF ENGLAND: NATURAL KNOWLEDGE AND IMPERIALISM

It may be for this reason that in 1665, vol. I of *Philosophical Transactions* also included a list of general "Enquiries concerning Agriculture". The Society's aim was made clear in the introductory paragraph:

Whereas the *Royal Society*, in prosecuting the *Improvements of Natural knowledg*, have it in design to collect *Histories of Nature and Arts*, and for that purpose have already, according to the several Inclinations and Studies of their Members, divided themselves into divers *Committees*, to execute the said design: Those Gentlemen, which do constitute the *Committee* for considering of *Agriculture*, and the *History* and *Improvement* thereof, have begun their work with drawing up certain Heads of *Enquiries*, to be distributed to persons *Experienced in Husbandry* all over *England*, *Scotland*, and *Ireland*, for the procuring a *faithful* and *solid* information of the *knowledg* and *practice* already obtained and used in these Kingdoms; whereby, besides the aid which by this means will be given to the general End of collecting the aforementioned History, every place will be advantaged by the helps, that are found in any, and occasion ministred to consider, what improvements may be further made in the whole matter. Now, to the End, that those *Enquiries* may be universally known, and those who are skillful in Husbandry, publickly invited to impart their knowledg herein, for the *common* benefit of their Country.⁸⁶

Although specific reference was made to the necessity for Britons to share their expertise and technical competence for the "*common* benefit of their Country", the appeal that those "*Enquiries* may be universally known" showed that it was essential to circulate information on distant countries.

Once again, travel was a precious resource. In 1666, Richard Norwood (1590–1676) wrote to the Society's Fellows from the Bermudas to show that men dug "Wells till they almost [came] to a Level with the superficies of the Sea, and [...] [found] *fresh* water or *salt*"⁸⁷; in 1673, an unknown but "Intelligent person residing in *Jamaica*" sent "a box, that had in it a Cacao-tree painted to life": the picture contained "the whole History of the Cacao", as well the "Manner of Curing [it]".⁸⁸

Learning new agricultural techniques, thus contributing to the scientific and economic growth of England, was extremely important in those years. One of Henry Oldenburg's most assiduous correspondents, Samuel Hartlib, had written a dense volume entitled *The Compleat husband-man: or, a Discourse of the whole Art of Husbandry; both forraign and domestick* in 1659; in 1675, Joseph Blagrove advised readers, who intended "to undertake that profitable Labour and Improvement", how to enrich "Barren, Molly, Spiry Meadows".⁸⁹

Of course, England had been prolific in this field since the Elizabethan era.⁹⁰ The news at the end of the seventeenth century was that new scientists were open to foreign systems and knowhow, and that detailed, reliable information depended on learned travellers' interactions with the local populations abroad. Evidence of the utilitarian attitude that they had towards the "Other" could be found, for instance, in "Observations Made upon several Voyages", where Dirik Rembranz van Nierop suggested that newcomers "should treat the Natives with all kindness, show their merchandise, [and] observe how they digg, &c".⁹¹

It was clear that the Fellows of the Royal Society were no different from the authors of the many travel accounts circulating in England in those years. Recent research confirms that the indigenous myriad languages and dialects caused serious communication problems at the beginning of the process,⁹² but that close scientific observation helped to focus on facts. In 1676, Thomas Glover, the "Ingenious Chirurgion" who has already been mentioned, provided the Fellows of the Royal Society with further information about the Natives' "manner of planting and ordering Tobacco"⁹³; the following year, John Winthrop the Younger (1637–1707), Governor of the Colony of Connecticut from 1698 to 1707, wrote both on their "Culture and Use of Maiz" and their making sugar "of the Juice of the Maple, in *Canada*".⁹⁴ The passage below is taken from issue 15:

The Savages of *Canada*, in the time that the Sap rises, in the *Maple*, make an Incision in the Tree, by which it runs out; and after they have evaporated 8 lb of liquor, there remains one pound as Sweet, and as much *Sugar*, as that which is got out of the canes [...].

The Savages have practiced this Art, longer than any now living among them, can remember. There is made with this *Sugar*, a very good Syrup of Maiden Hair, and other Capillary Plants, which is used in *France*.⁹⁵

Taking cues from Todorov, it is apparent that learned English travellers systematically connected “difference” with “inequality” when describing the “Other”,⁹⁶ but that, at the same time, they utilized their visits to overseas countries to increase England’s scientific knowledge.

Of course, agriculture was not the only field they were interested in. “Of the way, used in the *Mogol’s* Dominions, to make Saltpetre” appeared in *Philosophical Transactions* early in 1665, and readers were able to learn more about the way Eastern populations extracted and worked it.⁹⁷ Twenty years later, Mr John Conyers’ “Observations Concerning some of the Most Considerable Parts of *Asia*” included a long paragraph on “the strongest glue in the world”, as well as on the Persians’ “exquisit[e]” skill in “damaskining with vitriol”.⁹⁸ Detailed information about lesser known regions and other types of skills was also published in 1678. The special technique that men used to kill fowl on the remote island of Hirta, the largest one in the archipelago near Scotland, was described as follows:

The way of their climbing, when they kill their Fowls, is thus; They go two and two with a long Rope, not made of Hemp, but of Cow Hides salted, and the Thongs cut round about, and plaited six or nine fold [...]. Each end of the Rope tyed about each one of their Middle, and that is foremost goes till he comes to a safe standing, the other standing firm all that time to keep him up, in case his foot should have slip’d: When the foremost come, either below or above him when his business is; and so they watch time about; seldom any of them being lost, when this is observed.⁹⁹

Dr. Edward Smith (1665–1720), a Fellow of the Royal Society, published “An Account of a strange kind of Earth, taken up near *Smyrna*, of which is made Soap” at the end of the century, in 1695.¹⁰⁰ At that moment in time, it was clear that, although *Philosophical Transactions* was based on science, technology and the arts, it was travel that created new stimuli and trends, as well as a different conception of cultural communication. In fact, if the members of the scientific communities in Medieval times and in Renaissance England were firmly convinced of the positive value of “secrecy”, in the late Stuart Age, learned institutions like the Royal Society introduced new perspectives, sharing knowledge with larger and larger social groups.

Of course, it was still possible to find evidence of the cognitive links between past and present: the idea of textual authority, typical of the Middle Ages, collided with empiricism; astrology and alchemy had its

disciples among thinkers like Newton and Boyle; representations of monsters in the fifteenth-sixteenth centuries lingered well into the Restoration years. Travel helped Britons to go beyond the past and prepare for their prestigious international future. This was the starting point of one of the greatest socio-cultural phenomena of the Augustan Age: the Grand Tour of the Old Continent.

NOTES

1. This passage is taken from Oldenburg's *Epistle Dedicatory* of *Philosophical Transactions of the Royal Society* in *Phil. Trans.*, 1 (1665–1666). For further reference to the key role that travel had for the Fellows of the Royal Society, see “Directions for Sea-men, bound for far Voyages”, 140–141: “It being the Design of the *R. Society*, for the better attaining the End of their Institution, to study *Nature* rather than *Books*, and from the Observations, made of the *Phaenomena* and Effects she presents, to compose such a history of Her, as may hereafter serve to build a Solid and Useful Philosophy upon; They have from time to time given order to several of their Members draw upon both *Inquiries* of things Observable in forrain Countries, and *Directions* for the Particulars, they desire chiefly to be informed about. And considering with themselves, how much they may increase their *Philosophical* stock by the advantage, which *England* enjoys of making Voyages into all parts of the World, they formerly appointed Eminent Mathematicians [...] to think upon and set down some Directions for Sea-men going into the *East & West Indies*, the better to capacitate them for making such observations, as may be pertinent and useful for that purpose.”
2. On the foundation, development and historical value of the *Journal des Sçavans*, see William E. Burns, *The Scientific Revolution: An Encyclopedia* (Santa Barbara: ABC-CLIO, 2001), 156.
3. For detailed information on Henry Oldenburg, his relations with Samuel Hartlib (ca 1600–1672), Menasseh Ben Israel (1604–1657), John Milton (1608–1674) and Robert Boyle (1627–1691), and the early phases of *Philosophical Transactions*, see Charles Bazerman, “Letters and the Social Grounding of Differentiated Genres”, in *Letter Writing as a Social Practice*, ed. David Barton and Nigel Hall (Amsterdam: John Benjamins Publishing, 2000), 15–31. See pages 24–26 in particular.
4. See Hunter (1994), 31; 119–121.
5. As the manuscripts housed at the Royal Society show, the earliest letters sent to *Philosophical Transactions* were heavily edited by Henry Oldenburg. Those that were published throughout the eighteenth century, instead,

- were only slightly amended. The texts included in the Appendix provide evidence, however, that the term “extract” was only purely formal.
6. Again, see Bazerman, 24–28.
 7. *Phil. Trans.*, 1 (1665–1666): 145–146.
 8. See Susan Lamb, *Bringing Travel Home to England: Tourism, Gender, and Imaginative Literature* (Cranbury: Associated University Presses, 2009) 21; and David McInnis, *Mind Travelling and Voyage in Early Modern England* (London: Palgrave Macmillan, 2012), 21.
 9. Anon. (Robert Devereux), *Profitable Instructions; Describing what special Observations are taken by Travellers in all Nations, States and Countries; Pleasant and Profitable* (London, 1633), 5: “The best scholler is fittest for a Traveller, as being able to make the most useful observation: Experience added to learning, makes a perfect Man”.
 10. Thomas Neale, *A Treatise of Direction, how to Travell Safely and Profitably into Forraign Countries* (London, 1664), 10: “Travailing [is to] learne experience, and teach prudence. Not as many braine-sicke Travellours doe in these times, which live from day to day as the proverb is; and being overheated by a furious brain, doe skip in forraigne Countries, without a method or discretion, from one place to another: or inflamed with an incessant desire of dancing up and downe, practice nothing else, but to advance their unruly and headlong passions”.
 11. Anon. (Robert Dallington), *A Method for Travell. Shewed by taking the view of France...* (London, 1605), 4: “He [...] that intends to Travell [...] must determine, that the end of his *Travell* is his ripening in knowledge, and the end of his knowledge is the service of his countrie”.
 12. Anon. (Thomas Palmer), *An Essay of the Meanes how to make our Travailes, into forraine Countries, the more profitable and honourable...* (London, 1606).
 13. *Ibid.* 8–9.
 14. Bishop Hall, *Quo vadis? A Just Censure of Travell as it is commonly undertaken by the Gentlemen of our Nation...* (London, 1617), 5.
 15. James Howell, *Instructions And Directions For Forren Travell. Shewing by what cours, and in what compass of time, one may take an exact Survey of the Kingdomes, and of Christendome, and arrive to the practicall knowledg of the Languages, to good purpose...* (London, 1650), 9; 12.
 16. See Hayden.
 17. *Ibid.* 7.
 18. On the new scientists’ immense work of data collecting, and on the state of the art of geography and cartography in late Stuart England, see Hayden, 54–55.
 19. *Phil. Trans.*, 2 (1666–1667): 433.

20. Thomas Addison, *Arithmetically navigation: or, An Order thereof: Compiled and published for the advancement of Navigation: More particularly, For the benefit of English Mariners, or Sea-faring men that delight therein...* (London, 1625).
21. *Phil. Trans.*, 1 (1665–1666): 141–142.
22. *Ibid.* 315–316.
23. *Ibid.* 315.
24. *Phil. Trans.*, 17 (1693): 627–641.
25. Some of them are: *Tracts Written By the Honourable Robert Boyle. About the Cosmicall Qualities of Things. Cosmicall Suspitions. The Temperature of the Subterraneall Regions. The Temperature of the Submarine Regions. The Bottom of the Sea...* (Oxford, 1671); *Tracts Consisting of Observations About the Saltness of the Sea: An Account of a Statical Hygroscope And its Uses...* (London, 1674); and *General Heads for the Natural History of a Country, Great or Small; Drawn out for the Use of Travellers and Navigators...* (London, 1692).
26. On this topic, see Rose-Mary Sargent, “Learning from experience: Boyle’s construction of an experimental philosophy”, in *Boyle Reconsidered*, ed. Michael Hunter (Cambridge: Cambridge University Press, 2009), 57–73. The quoted phrase is on page 58.
27. Here we refer to Anon. (Pierre Garcie), *The Rutter of the Sea with Havens, Rodes, Soundings, Kennings, Windes, Floods, and Ebbes...* (London, 1520); Anon. (Cornelis Antoniszoon), *The safeguard of Sailers, or great Rutter...* (London: 1584); and William Iohnson, *The Light of Navigation. Wherein are declared and lively pourtrayed, all the Coasts and Havens, of the West, North and East Seas...* Amsterdam 1612.
28. See David D. Waters, *English Navigational Books, Charts and Globes Printed Down to 1600* (Coimbra: UC Biblioteca Geral, 1985), 251; and John R. Short, *Making Space. Revisioning the World, 1475–1600* (Syracuse: Syracuse University Press, 2004), 109–111”.
29. Evidence of the experimental method used by the Fellows of the Royal Society and its correspondents can be found in *Phil. Trans.*, 2 (1666–1667): 565–567; 3 (1668): 656–659; 14 (1684): 578; and 16 (1686–1692): 220.
30. *Phil. Trans.*, 19 (1695–1697): 445–457.
31. *Phil. Trans.*, 16 (1686–1692): 153–168.
32. *Phil. Trans.*, 19 (1695–1697): 447.
33. *Phil. Trans.*, 1, (1665–1666): 141.
34. *Ibid.* 147–149.
35. *Phil. Trans.*, 4 (1669): 937–976.
36. *Phil. Trans.*, 7 (1672): 4032–4034.
37. *Phil. Trans.*, 10 (1675): 287.
38. *Phil. Trans.*, 13 (1683): 208–221.

39. *Phil. Trans.*, 14 (1684): 458–462.
40. Here we refer to Anon. (Richard Arnold), *Mappa Mundi. Otherwise called the Compasse and Circuet of the Worlde and also the Compasse of every Ilande, coplehendid in the same* (London, 1550); Thomas Blundeville, *A Briefe Description of Universal Mappes and Cardes, and of their Use...* (London, 1589); and William Camden, *Angliae et Hiberniae. Nova Descriptio Veteribus et recentioribus nominibus distincta ad doctissimi viri Guiliel...* (London, 1592).
41. See Bernard Klein, “The Overseas Voyage in Early Modern English Writing”, in *Renaissance Transformations: The Making of English Writing (1500–1650)*, ed. Margaret Healy and Thomas F. Healy (Edinburgh: Edinburgh University Press, 2009), 128–144. The quoted phase is on page 139 (Klein 2009).
42. *Phil. Trans.*, 1 (1665–1666): 99–100.
43. D.K. Smith, *The Cartographic Imagination in Early Modern England. Re-Writing the World in Marlowe, Spenser, Raleigh and Marvell* (Aldershot: Ashgate, 2008).
44. *Ibid.* 10.
45. *Phil. Trans.*, 9 (1674): 3.
46. *Phil. Trans.*, 15 (1685): 1295–1300.
47. *Phil. Trans.*, 16 (1686–1692): 492.
48. *Phil. Trans.*, 4 (1669): 1003.
49. *Ibid.* 1006.
50. Anon. (Pietro Martire d’Anghiera), *The History of Travaile in the West and East Indies, and other countreys lying either way, towards the fruitfull and riche Moluccaes...* (London, 1577), 11.
51. Cornelius Geraldson, *An Addition to the Sea Journal, or, Navigation of the Hollanders unto Java, containing the appearance, shewes, or resemblances of the Cape of Bona Speranza, of the road of S. Bras, of the Promontorie of S. Iustus, and of the Cape of S. Augusta, with the true shapes of the coastes of Madagascar, Sumatra, and Java...* (London, 1598), 7.
52. William Bruton, *Newes from the East-Indies: Or, A Voyage to Bengalla, one of the greatest Kingdomes under the High and Mighty Prince Pedesha Shassallem, usually called the Great Mogull...* (London, 1638).
53. *Ibid.* 1.
54. *Phil. Trans.*, 1 (1665–1666): 360–362.
55. *Phil. Trans.*, 6 (1671): 251–253. Apart from this particular passage, however, it is possible to read about navigation to the East Indies in the cited *Phil. Trans.*, 9 (1674): 197–208.
56. *Phil. Trans.*, 14 (1684): 433: “What opinions the Turks have of our *B. Saviour* and the *Christian* Religion, I shall briefly shew, as they lye dispersed in several chapters of the *Alcoran*, according to which they frame

- their discourse whensoever either zeal or curiosity puts them upon this topick. For *Mahomet* upon his setting up to be the Author of a new Religion, finding such a comparable part of the World professing the doctrine of *Christ*, with all the mysteries of faith therein contained, was cast upon a necessity of saying something both concerning it and him”.
57. Ibid. 434: “I could never see any *Turkish* translation of the *Alcoran*; they cry up the elegance of the style, which being Enthusiastick and high-flown, by reason of the tinckling of the periods, is very delightful to their ears, who seem to be affected with rhyme mightily. Though I suppose it is upon a more politick accompt, that they are so averse, as to the translating it into their vulgar language, not out of respect to the sacredness of the original only, whose full commanding expressions they think cannot be translated without a great diminution of sense; but to keep it in a greater veneration among people, who might be apt to slight and disesteem it, should it become thus uncommon among them. [...] The *Persians* on the contrary think it no disparagement to the *Arabick*, or profanation of the sense to translate this cursed book into their own language, and copies are frequent among them.”
 58. Ibid. 435.
 59. Here we refer to Giovanni Tommaso Minadoi, *The History of the Warres betweene the Turkes and the Persians. Written by Iohn-Thomas Minadoi, and translated into English by Abraham Hartwell...* (London, 1595); Anon., *Newes from Turkie and Poland. Or a True and Compendius declaration of the proceedings betweene the great Turke, and his Maiestie of Poland, from the beginning of the Warres, until the latter end...* (The Hague, 1622); and Samuel Clarke, *The Life and Death of Nebuchadnezzar the Great, the first founder of the Babylonian Empire...* (London, 1665).
 60. *Phil. Trans.*, 16 (1686–1692): 45: “The Inhabitants of *Coree* came to present to the Emperor a *Sea-calf* which they had taken, the Emperor caused me to see it, and asked whether our *European* Books had spoken anything of this fish; I told him we had a Book in our Library at *Pekin* which had explain’d the Nature of it, and dispatched presently a Currier to our Fathers at *Pekin*, who brought it me in a few days”.
 61. Ibid. 49: “As the Night was so fair, and the Heavens very clear; he willed me to Name in the *Chinese* and *European* Languages, all the Constellations that then appeared above the Horizon, and he himself first named all those he already knew; then unfolding a small Map of the Heavens, which I had some years since presented him, he put himself upon inquiring the Hour of the Night, by the Stars in the Meridian: Pleasing himself to shew to all, the Knowledg he had acquired in these Sciences.”
 62. *Phil. Trans.*, 19 (1695–1697): 83–110.
 63. Ibid. 85.

64. Ibid. 86: "The City it self appears to have been to a large Extent, by the space now taken up by the Ruines; but there are no foot-steps of any Walls remaining, nor is it possible to judge of the Ancient Figure of the place. The present Inhabitants, as they are poor, miserable, dirty people, so they have shut themselves up, to the number of Thirty or Forty Families, in little Hutts made of Dirt, within the Walls of a Magnificent Heathen Temple. Hereinto also we entred, the whole Power of the Village, if I may so call it, being gathered together at the Door, whether to stand upon their Defence, in case we proved Enemies, (for some of them had Guns in their hands) or out of meer Curiosity to gaze upon us, I know not."
65. *Phil. Trans.*, 19 (1695–1697): 129–160.
66. Ibid. 133: "When we had travelled two or three hours in this plain, we espied an *Arab* driving towards us [...]. [H]e told us he was of *Tadmor*, and that his Prince, the *Emir Melkam*, had that day made Friendship with *Hamet Shideed* another Prince, and that together they had four hundred Men; so they kept us company an hour or two, and enquired of our *Muletters* if we were not *Turks* disguised, with the intent to seize on *Melkam*; for we travelled with a *Bandiero*, the Impress being a *Hanjarr* or Turkish Dagger, and a Half-Moon. We told him we were *Franks*, which he could hardly believe, wondering that we travelled thus in the Desart only out of Curiosity."
67. Ibid. 148.
68. Francis Caron and Joost Schorten, *A true Description of the Mighty Kingdoms of Japan and Siam...* (London, 1663).
69. *Phil. Trans.*, 4 (1669): 983–986.
70. See Caron and Schorten, 45.
71. Ibid. 54.
72. Ibid. 53.
73. Here we refer to *More Observations of Monsieur Taverniers Voyages; Promised in the Next Foregoing Tract of Phil. Trans.*, 11 (1676): 751–758.
74. *Phil. Trans.*, 9 (1674): 197–208.
75. Ibid. 205.
76. Daniel Denton, *A Brief Description of New York: Formerly Called New-Netherlands. With the Places thereunto Adjoining. Together with the Manner of its Scituation, Fertility of the Soile, Healthfulness of the Climate, and the Commodities thence produced...* (London, 1670), 7.
77. Anon. (Cotton Mather), *A Monitory, and Hortatory Letter to those English, who debauch the Indians by Selling Strong Drink unto them...*
78. See Morgan Godwyn, *The Negro's + Indians Advocate, Suing for their Admission into the Church: Or A Persuasive to the Instructing and Baptizing of the Negro's and Indians in our Plantations...* (London, 1680), 3.
79. *Phil. Trans.*, 10 (1675): 400.

80. *Phil. Trans.*, 11 (1676): 625–626.
81. See James Axtell, *Natives and Newcomers. The Cultural Origins of North America* (Oxford: Oxford University Press, 2001), 18–20, particularly the passage when he refers to Gregor Reisch's *Margarita Philosophica* (1517) and his oddities in the Europeans' imagery of the "Other"; and Karen Ordhal Kupperman, *Indians and English. Facing Off in Early America* (Ithaca and London: Cornell University Press, 2000), 41–76.
82. On Pre-Adamism, Robert Boyle's idea of colonization, and the position of the Royal Society, see Malcolmson, 10–21. We may also consider Irving, 69–92; and Michael Hunter, *Boyle: Between God and Science* (New Haven: Yale University Press, 2009), 129; 169–171.
83. See Anna Suranyi, *The Genius of the English Nation: Travel and National Identity in Early Modern England* (Cranbury: Associated University Presses, 2008).
84. *Ibid.* 20.
85. See Malcolmson, 8–9.
86. *Phil. Trans.*, 1 (1665–1666): 91–92.
87. *Phil. Trans.*, 2 (1666–1667): 566.
88. *Phil. Trans.*, 8 (1673): 6007–6009.
89. Here we refer to Joseph Blagrove, *New Additions to the Art of Husbandry. Comprizing A New way of Enriching Meadows, Destroying of Moles, making Tulips of any Colour...* (London, 1675), 1.
90. We shall consider Anon. (John Fitzherbert), *The booke of Husbandry, Very profitable and necessary for all maner of persons...* (London, 1568); and Conrad Heresbach, *Four books of husbandry. Containing the whole arte and trade of Husbandry, with the antiquitie, and commendation thereof...* (London, 1578).
91. *Phil. Trans.*, 9 (1674): 203.
92. See Axtell, 46–78.
93. *Phil. Trans.*, 11 (1676): 623–636.
94. *Phil. Trans.*, 12 (1677–1678): 1065–1069.
95. *Phil. Trans.*, 15 (1685): 988.
96. Tzvetan Todorov, *The Conquest of America* (Norman: University of Oklahoma Press, 1984), 130.
97. *Phil. Trans.*, 1 (1665–1666): 103–104: "They work it in this manner: They make two Pits, flat at the bottom, like those where in common Salt is made; one of them having much more compass then the other, they fill *that* with Earth, upon which they let run Water, and by the feet of People they tread it, and reduce it to the consistency of a Pap, as so they let it stand for two days, that the Water may extract all the Salt that is in the Earth: Then they pass this water into another Pit, in which it christallizes into *Saltpetre*. [...]"

98. *Phil. Trans.*, 11 (1676): 711–715.
99. *Phil. Trans.*, 12 (1677–1678): 929.
100. *Phil. Trans.*, 19 (1695–1697): 228–230.

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