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THE ROYAL SOCIETY AND THE TARTAR LAMB

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SUMMARY

The Tartar, Scythian or vegetable lamb—a zoophyte, or creature on the borderline between an animal and a plant—was a subject of interest to the Royal Society for many years. For convenience, the material connected with it has been arranged under three main headings on a broadly chronological basis.

JOSEPH'S COAT: LAMBSKINS

The *Journal Book of the Royal Society* reports that on 22 August 1666:

> Sir Theodore de Vaux produced papers that were read, containing a Relation of a Furred Robe made of the Skin of the Tartarian Boramez, conceived to be a Plant-animal: which Robe is there said to be kept in the Oxonian Library, to which it was given by Sr. Richard Lee, Ambassador into Russia in Queen Elizabeths time.
>
> Dr. Wren was desired to inform himself of this Robe, and to view it at his Return to Oxford: And the Amanuensis was ordered to take a Copy of the said Papers to be filed up.[1]

Although nothing further is known, de Vaux's account probably derived from 'Mr. Smyth's Relation of the Tartar Lambskinne garment in Bodleiana, Oxon.', written in July 1624 by Edward Smythe, whose wife was related to Sir Richard Lee. Finding 'no expression made of the raritie or worth of this garment' when he saw it in Sir Thomas Bodley's study or closet, Smythe decided to record its real value, particularly as Lee had often given him 'the true relation of all the premises from his owne mouthe'. As ambassador to Russia (from July 1600 to April 1601), Sir Richard Lee had been authorized by Elizabeth to broach with Boris Godunov the re-opening of the Persian trade route to the Russia Company merchants. In Smythe's words, he:

> amongest other novelties of the cuntry found by the information of the inhabitants, that in Tartaria, a cuntrie neere adioyning to Muscovia and Russia, and vnder the gouernement of the Emperour of Russia, there did some yeres growe out of the ground certaine livinge creatures in the shape of lambes, bearing wooll vppon them, very like to the lambes of England, in this manner; viz., a stalke like the stalke of an hartichocks did growe vp out of the ground, and vppon the toppe thereof a budd, which by degrees did growe into the shape of a lambe, and become a liuinge creature, resting vppon the stalke by the navell; and as soone as it did come to life, it

> would eate of the grasse growinge round about it, and when it had eaten vp the grasse within its reach it would die. And then the people of the cuntry as they finde these lambes doe flea of their skins, which they preserue and keepe, esteeminge them to bee of excellent vse and vertue, especially against the plague and other noysome diseases of those cuntries.

Godunov had wanted to purchase a large agate pestle and mortar belonging to Lee, who diplomatically presented it to Christopher Reitinger, previously his and then the Tsar's physician, 'to beate his physicke in it for the Emperour'. In return, Godunov sent the departing Lee his own 'gowne or long cloake, made after the fashion of that cuntrie with the skins of those Tartar lambes'. Lee died in 1609, bequeathing his 'gowne of the Tartar lambe given me by the Emperor of Muscovia to the Library newlie created by Sr Thomas Bodley as a monument fitt to goe where the tartar bookes are which I gave to that place and writts of this Marrickle'; although it did not reach the Bodleian Library until December 1612.[2]

Lee's lambskin cloak, sometimes referred to as Joseph's coat (Monconys, for example, in 1663), is described by several Continental visitors. The travellers Jean Fontaine and Louis Schoenbub aptly characterized it in 1630 as 'toga pellibus agninis, quae crescunt in terra Tartariae, facta, magnitudinis sunt peltis cuniculi' (i.e. a cloak made from the skins of a sheep growing in Tartary, the size of rabbit pelts).[3]

John Evelyn, after visiting 'that miracle of a Youth, Mr. Christopher Wren', at Oxford on 10 July 1654, was shown what he calls 'Josephs parti colourd Coate' among other items in the Bodleian Library.[4]

Francis Bacon also noted, in his comments on zoophytes, in the *Sylva sylvarum* (1627) that:

> There is a Fabulous Narration, that in the Northern Countries, there should be an Herbe that groweth in the likenesse of a Lambe, and feedeth upon the Grasse, in such sort, as it will bare the Grasse round about. But I suppose, that the Figure maketh the Fable; For so we see, there be Bee-Flowers, &c. And as for the Grasse, it seemeth the Plant, having a great Stalke and Top, doth prey upon the Grasse, a good way about by drawing the Iuyce of the Earth from it.

Evelyn, a Councillor of the Royal Society during 1662 and 1663, restricted his remarks on the subject, made in the 'Terra, or philosophical discourse of earth', which he addressed to the Society in October 1662, to the laconic statement that some plants 'are found to destroy the vegetable vertue where they grow, for such are said to be woad, hemp, the Scythian lamb, &c.'. However, it was not until August 1664 that Samuel Collins, Tsar Alexis's physician at Moscow, emphatically refuted the fable of the Tartar lamb in a letter to Robert Boyle, as follows:

> Perhaps in some histories of these parts, you may have heard of a vegitative Lamb which devours all the grass about it, and then dyes; but this is as true as the story of Monocular people in Sir John Mandevils Travels, and such like Fables, which have not the least shadow of truth.[5]

This was roughly how matters stood when de Vaux's papers about Lee's Tartar lamb coat were read at the Royal Society in August 1666. It seems unlikely that Wren was able to resolve the question of the robe's purported zoophyte origins on viewing it at Oxford; but Hans Sloane (F.R.S., 1685), with the benefit of hindsight, might well have

done so. An entry in the Sloane 'Catalogue of Quadrupeds' reads:

> 174. The skin of the tartar Lamb, being an abortive Lamb in Tartary of W.CH are made caps in China, vid. the thesis of Kaempfer.[6]

'The Scythian lamb or the Borometz fruit' forms the first part of the 'Ten exotic observations' of Engelbert Kaempfer's M.D. Leyden thesis, published in 1694. Kaempfer (1651–1716), the great German traveller, scientist and natural historian, was confined at Bender Abbas in Persia, from 1686 to 1688, by a near-fatal illness and diplomatic delays as a member of the Swedish King Charles XI's embassy to the Shah of Persia. He made profitable use of his time by studying the Persian language, flora and the surroundings, incorporating his observations both in his thesis and in his *Amoenitates exoticae* (Lemgo, 1712). In the latter (pp. 505–508), Kaempfer states that he searched for the Scythian lamb plant 'ad risum et nauseam', and that what had been published about it was 'pure fiction and fable', referring, in particular, to Julius Caesar Scaliger's account in one of his *Exotericarum Exercitationum* (1557). Kaempfer concluded that the Scythian lamb, or 'borometz', came from the skins of aborted Karakul lambs, much prized for their 'curled elegance' in turbans and for trimming cloaks; that the lamb and its fleece had been erroneously identified as a zoophyte; and that its supposed transformation was founded on ignorant or embellished reports by travellers who first introduced the fable to Europe.[7]

A good description of these Tartar lambskins is provided by John Bell, a Scottish doctor who accompanied a Russian embassy to Persia (1715–18) and then to China (1719–22). He donated numerous Russian and Chinese objects from his travels to Sloane and to the Royal Society. Like Kaempfer, he searched in vain around Astrakhan in 1716 for the Tartar lamb plant 'with the skin of which the caps of Armenians, Persians, Tartars, &c. are faced', only to be laughed at by the locals who regarded it as a ridiculous fable. He writes that:

> At Astrachan they have great quantities of lamb-skins [from aborted lambs], grey and black; some waved, others curled all naturally, and very pretty, having a fine gloss, particularly the waved, which, at a small distance, appear like the richest watered tabby; they are much esteemed, and are much used for the lining of coats, and the turning up of caps in Persia, Russia and other parts.[8]

A later account of Tartar lambskins is associated with two fellows of the Royal Society. In 1768 Thomas Dimsdale (F.R.S., 1769) had been created Baron for successfully inoculating Catherine the Great and her son, the Tsarevich Paul, against smallpox. In the autumn of 1781, accompanied by his third wife, Elizabeth Dimsdale, the Baron revisited Russia in order to inoculate the Grand Dukes Alexander and Constantine. His wife, in her diary of the visit, remarks that on 6 October:

> Dr R- [probably Dr John Rogerson, Catherine's Scottish physician, and F.R.S. in 1779] made the Baron a present of a very fine Fur as black as Jet and glossy as sattin, called Baronetz, or Lambskin. The Tartars bring it from Astracan, as they trade very considerably in Furs with the Russians. I was informed this Fur was much valued, and worth seventy Pounds. But how cruel are they to procure it (and there is no doubt of the truth of it) to cut the little Lambs out

> of the Sheep a little before their lambing time, their Skin being then in the greatest beauty, with the hair lying in short pretty curls. One little lamb makes but a very little piece, they therefore sew many together to make a fine compleat Fur for use, which was what the Doctor gave the Baron, and we brought it home with us.

Yury Altukhov, in his modern work on population genetics, describes and illustrates this jacket-type of dressed Karakul lambskin, mainly from Kazakhstan, Uzbekistan and Turkmenia, regarded as the best because of its pattern and the uniformity of the chief qualitative criteria for a wool coat; viz. average curl length, clear concentric and symmetrical patterning, good lustre and silkiness, and a reasonably fine skin.[9]

TOY LAMB: FERN RHIZOME

The end of the seventeenth century marked another stage in the Royal Society's knowledge of the Tartar lamb. In the *Philosophical Transactions* for November 1698, Hans Sloane (Sec. R.S. 1693–1712) briefly describes a 'China Cabinet, full of the Instruments and Simples used by their Surgeons', sent to the Society by Edward Buckley, senior surgeon of the East India Company at Fort St George (Madras). In December 1698 he gave a fuller account of the 'China Cabinet's' contents, noteworthy for his accurate observations and his conclusions:

> Figure 5 represents what is commonly, but falsely, in India, called the Tartarian Lamb. This was more than a Foot long, as big as ones Wrist, having several Protruberances, and towards the end some Foot-stalks about Three or Four Inches long, exactly like to Foot-stalks of Ferns, both without and within. Most part of this was cover'd with a Down of a dark yellowish Snuff-Colour, shining like Silk, some of it a quarter of an Inch long. The Down is what is commonly used for spitting Blood, about Six Grains of it being to a Dose, and three Doses pretended

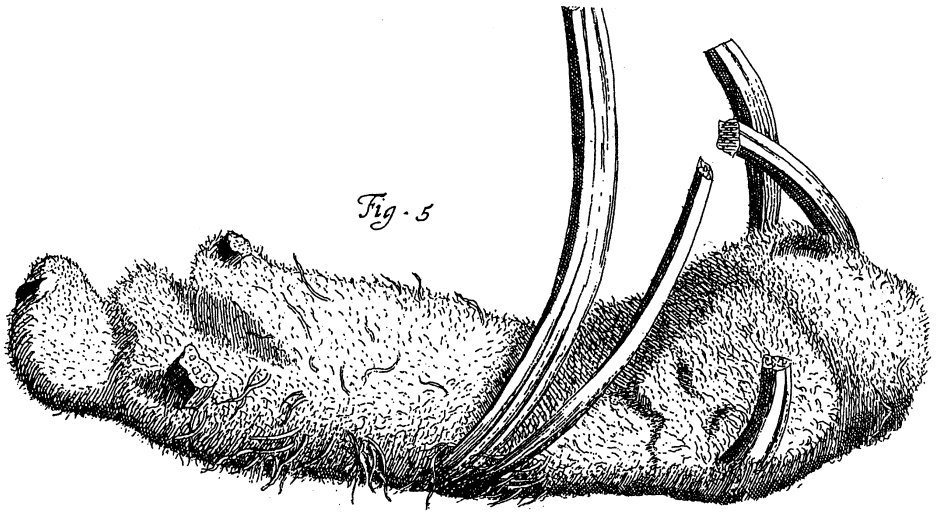

FIGURE 1. Sloane's Tartar Lamb from the 1698 *Phil. Trans.* ('Figure 5').

> to cure such a Haemorrhage. In Jamaica are many scandent and Tree-Ferns, which grow on, or to the bigness of Trees, and have such a kind of *Lanugo* on them, and some of our Capillaries have something like it. It seem'd to be shap'd by Art to imitate a Lamb, the Roots or climbing part is made to resemble the Body, and the extant Foot-stalks the Legs. This Down is taken Notice of by Dr. Merrett at the latter end of Dr. Grew's *Mus. Soc. Reg.* by the Name of *Poco Sempie*, a Golden Moss ...[10]

By coincidence, Sloane received a letter, dated Danzig, 22 December 1725, from Johann Philipp Breyne (1680–1764), M.D., F.R.S. (1703), enclosing a Latin dissertation on the Scythian lamb, which he had read about a year previously at a 'Meeting of some learned and curious Gentlemen' (in all likelihood, the Literary Society for Cultivating Virtue and Science, at Danzig) *before* he had seen Sloane's own account. Breyne, who corresponded extensively with Petiver and Sloane, was a fine botanist like his merchant father Jacob (1637–1697). His 1700 doctoral thesis on ginseng enabled Joseph François Lafitau, the Jesuit missionary, to discover in 1716 a Canadian species similar to, but distinct from, the Tartarian plant described by Pierre Jartoux, also a Jesuit, in the *Philosophical Transactions* for 1713. Breyne introduced the Swiss-born Johann Amman as Sloane's curatorial assistant in 1729, following Johann Gaspar Scheuchzer's early death.[11]

Sloane summarized Breyne's dissertation on the Scythian lamb, or 'borometz', at a meeting of the Royal Society held on 20 January 1726. Breyne first reviewed the main literature on the subject, examining the arguments advanced for and against its being a zoophyte. Then he explained his own findings:

> A certain learned and observant man, passing through our city on his return from a journey through Muscovy, enriched my museum with, amongst other natural curiosities, one of these 'Scythian lambs', which he declared to be the genuine borometz. It was about six inches in length, and had a head, ears, and four legs. Its colour was that of iron-rust, and it was covered all over with a kind of down, like the fibres of silk-plush, except upon the ears and legs, which were bare, and were of a somewhat darker tawny hue. On careful examination of it, I discovered that it was not an animal production, nor yet a fruit, but either the thick creeping-root or the climbing stem, of some plant, which by obstetric art had acquired the form of a quadruped animal. For the four legs, which looked as if the feet had been cut off from them, were so many stalks which had supported leaves, as were also those which formed the ears, and which more nearly resembled horns. The fibres emerging from these, by which, like other plants, this root or stalk had conveyed nutriment, left no doubt upon this point. Close inspection also showed that one of the front legs had been artificially inserted, and that the head and neck were not of one continuous substance with the body, but had been very cleverly and neatly joined on to it. In fact, this root, or stem, had been skilfully manipulated into the form of a lamb in the same artful manner as the little figures of men, who shrieked and dropped human blood when drawn from the ground, were formed from the roots of the mandragore and bryony.

Breyne dismissed the Scythian vegetable lamb as a fable chiefly propagated by the reports of travellers who had never seen it growing. He concluded that Sloane's description of the so-called Tartar lamb in the *Philosophical Transactions* for 1698 coincided with his own independently reached observations, 'excepting that there is not so much resemblance to the figure of a Lamb in that as there is in his own', which

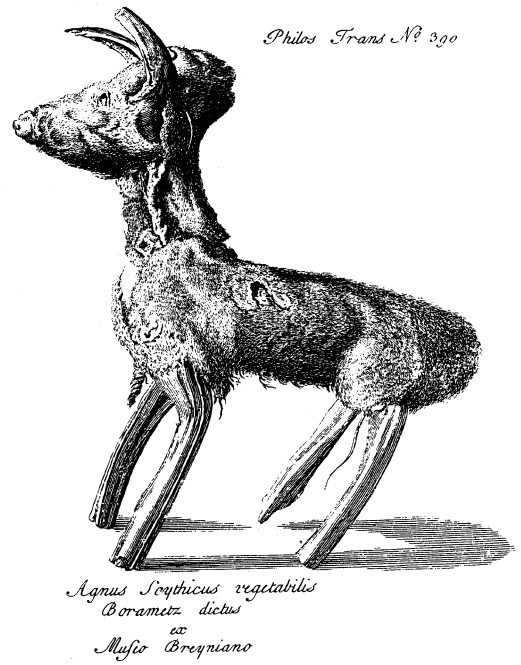

FIGURE 2. J.P. Breyne's Scythian Lamb in the 1725 *Phil. Trans.*

he specifically requests should 'be cutt nicely', as it was 'made with great accuracy'.[12]

After he had reviewed Breyne's dissertation, Sloane showed 'that Agnus Vegetabilis from which he made his Description in the Transactions & the said Account was also read'.[13] The Society's Repository contained, under an inventory heading of 'Fibrous Roots', and an undated entry, a 'root of a sort of Fern, vulgo "Barometz" or "Agnus Scythicus" '. Alternatively, it could have been either or both (if reboxed) of two entries in Sloane's 'Catalogue of Vegetables and Vegetable Substances', numerically arranged by date of acquisition. No. 165 appears among early items from Jamaica and reads: 'The Tartar Lamb Poco sempie'. No. 12114, on the other hand, figures among entries for the East Indies as 'The tartar Lamb. Barometz. [In a different hand] Part of the Root or Stalk of the large scandent fern on wch grows the down call'd Poco Sempie used for stopping Hemorrhages outwardly & inwardly'. The Sloane Collections at the Department of Botany in the Natural History Museum have a Tartar lamb specimen, often exhibited, and identified as the *Cibotium barometz* (MacGregor's edited book on Sir Hans Sloane shows a photograph of it). The accession number is no longer known, though it is generally thought to be the 1698 specimen and to be represented by the plate of it in the Van Rymsdyks's *Musaeum Britannicum* (1778 and, in colour, 1791). However, as it is approximately 6 inches long, from extended fore- to hindlegs, and 5 inches high, it is only about half the size of the 1698 'lamb', and neither it nor the Van Rymsdyks's figure bear any resemblance to the 1698 engraving. One that is similar (except for its more pronounced 'horns')

is that drawn and coloured by Elizabeth Blackwell for her *Curious Herbal* published in 1737 by the Society for the Encouragement of Learning, with the Duke of Richmond (F.R.S., 1724), as its President, and many Fellows of the Royal Society on its management committee or acting as trustees.[14]

Another candidate for the surviving Tartar lamb, so far overlooked, is item no. 8738 in Sloane's 'Catalogue of Vegetables and Vegetable Substances', which reads: 'The agnus scithicus borametz or Tartar lamb from China. Dr. Woodward [In a different hand] Boramez Worm. p. 189.' In theory, it should be easy to date its acquisition as no. 8735 runs:

> A branch of the cedar of Lebanon wt. 9 cones upon it larger than any I have ever seen in Turky. From the physick garden at Chelsea where it had been planted abt. 50 years by Mr. Watts.

Paul Herman, Professor of Botany at Leiden University, presented the Chelsea Physic Garden with four small cedar of Lebanon trees in 1684, which were planted by John Watts, the Garden's superintendent. Three of them, famous as the 'Chelsea Cedars', were, in 1732, the first to produce cones in England.

Von Uffenbach, the well-known German scientist, sketched in words John Woodward's 'Muscovy vegetable sheep' when he inspected his collection in October 1710. According to him:

> It was not quite a span high [i.e. 8ó–9 inches], light brown, and the wool did not so much resemble ordinary long wool as the fibres that grow in a reed, though they are somewhat more woolly and have longer hair, as you might say; this plant takes nourishment through the feet that it has in place of roots. This was one of the greatest curiosities that we saw here, or indeed, in the whole of our travels.[15]

(Woodward's collections were sold on his death in 1728.)

There is evidence that Peter the Great of Russia (who died in 1725) sent a Tartar lamb plant to his protégé, Augustus II, the 'Strong', at some stage after he had regained the Polish throne (1709–33).[16] Of more relevance to the Royal Society, however, is the following extract from the travels of John Cook of Hamilton, Lanarkshire. He was the principal surgeon of Astrakhan port in the early 1740s, and he sent scientific samples and detailed information about the beluga whale, caviar, Persian borax and white naphtha, which Peter Collinson relayed to the Society. Discussing the 'baronetze', reputed to grow around Astrakhan, he exclaims:

> Who are ignorant that the Armenian or other merchants sold one to the late King of Prussia [Frederick I: 1701–1740], which he as a very great curiosity, made a present of it to the Royal Society, who suspecting a fraud, asked and obtained leave of the King to dissect it: within the skin, they discovered saw-dust or some other materials with which it was stuffed, and the navel pierced with a stick, which was so fixed, as to appearance, looked like a stalk. It was also said that no grass grew within some feet distance of the baronetze, because no doubt, it was supposed that the monster eat it up! for it had a mouth, nor could it miss; because it was only a lambskin stuffed.

Although, as Cook points out, it was well known at the time (*ca.* 1742) that the Royal

Society had made this discovery (of which there is no trace in the Society's records), Johann Bernard von Fischer, M.D. (1685–1772), Archiater of the Russian medical services, both civilian and armed, and physician to Tsarina Anna, ordered Cook and two colleagues to scour the countryside round Astrakhan for this illusive animal-plant, much to Cook's disgust and the derision of the Tartars whom they questioned.[17]

Sea silkworms: *Pinna* byssus

At first glance, the *Pinna* byssus would appear to be totally unconnected with the Tartar lamb fable, but this is far from being the case.

In the Sloane Collections there is a glove, once one of a pair, made from the byssus of a *Pinna* shell. It, and the original pair illustrated by the Van Rymsdyks, are reproduced together as a colour plate by MacGregor.[1] The relevant entry in the shells section of Sloane's 'Catalogue of Fossils' is: 'A pair of men's gloves made of the beard of the *pinna marina* in Andalousia in Spaine sent me by His Grace the Duke of Richmond'. The Duke gave Sloane another byssus glove in the collection, from Minorca (formerly Port Mahon, captured in 1708 by General James Stanhope); the two previous entries – pearls from the *Pinna*, and 'The Byssus from that pinna' – indicate that all three items originally belonged to Martin Lister. Sloane and the Duke of Richmond, Charles II's grandson, were linked by family ties and common interests; among the numerous objects Sloane received from him were 'Trufles found at Goodwood [the ducal home] by the help of a dog'.[18]

Sloane would have been familiar with the report by Claude Joseph Geoffroy the Younger (1685–1752), F.R.S. (1715) and Academician (1707), on his chemical tests and microscopic studies of the *Pinna marina*'s byssus, or 'beard'—silk-like anchoring threads—in the French Academy's *Memoirs* for 1712. Known since 1758 as *Pinna nobilis* L., the Noble pen shell (60 cm) belongs to the *Pinnidae* family of large fan-shaped shells attached by thick, silky byssi to submerged rocks in littoral sand and gravel, and is common to 20 m in the offshore Mediterranean waters. The Romans called these threads, secreted by a special gland in the animal's foot, or byssus, 'silkworms of the sea'. For many centuries they were woven into very fine, undyed textile fibres and fabrics, characterized by their golden bronze colour and highly prized by royalty. However, the Arabic form of the word 'byssus', signifying special whiteness, was translated in the 1611 English Bible as 'fine linen' in the parable of the 'certain rich man, which was clothed in purple and fine linen' (St Luke, 17:19); hence, as Geoffroy suggests, *Pinna* byssus has often been confused with cotton, flax and silk.[19]

The Royal Society's recurring interest in the *Pinna* byssus is reflected by entries in the inventories of its Museum collections. These comprise, in chronological order:

1. A sort of Silklike Substance (Byssus) taken out of the pinna marina [Given by Francis Willughby, in March 1666].

2. The sea Wing. Pinna Marina [Grew's Catalogue, 1681].

3. Byssus of the Pinna marina [From Dr Henry Newton, 18 October 1711].
4. Some Byssus [Given by Peter Le Neve, 22 May 1714].
5. A Stoking made of the beard of the Pinna Marina [From John Busby, 14 May 1719]. [And] Some Peices of shells.
6. Two Shells of a Pinna Marina [On 3 May 1722, from William Jones, F.R.S., 1711].

The *Journal Book* indicates that Hans Sloane presented six select items to the Society on 18 October 1711 from Henry Newton, who had been elected a Fellow in 1709 while he was British envoy to Florence; because the time for his admission had elapsed, he was re-elected for admission on this occasion. His fifth object was 'The Byssus or Beard of the Pinna Marina mentioned by Rondeletius of which the Vestes Byssine and silk of the Antients was made'. However, the most informative report was that made by John Busby (F.R.S., 1719) in connection with his gift. Busby, who came from Marsh Gibbon in Buckinghamshire, patented a kiln for drying malt with hot air on 10 May 1720, and an engine in 1722 for 'Curing the Damp in Mines, Pitts or Wells' based on Boyle's air-pressure experiments. The *Journal Book* records that on 14 May 1719 he presented the Society with:

> a Stocking resembling Soft Silk made of the beard of the Shell fish Pinna together with some fragments of the Shell and an Account of it was read. In which by his Own Order at Tarentum in the Kingdom of Naples from the Beards which he Saw taken from Several Shells of a Ffish which much frequents that Branch of the Sea leading to the Bay of Tarentum called Mare De Pesco. The Ffish is Called by Some of the Inhabitants the Scooda and by others the Parachella.

A comparison of the shell with a *Pinna* shell fetched from the Repository proved them to be identical.[20]

Although it has not been verified, several writers claim that Pope Benedict XV was presented with *Pinna* byssus stockings in a silver snuffbox during 1754. On 18 March 1804, Nelson, on board the *Victory*, while blockading the French off Toulon, sent Emma Hamilton:

> a comb, which looks handsome, and a pair of curious gloves; they are made only in Sardinia of the beards of mussels. I have ordered a muff: they tell me they are very scarce, and for that reason I wish you to have them.[21]

History of a legend

Berthold Laufer's 'Story of the Pinna and the Syrian Lamb', in the *Journal of American Folk-lore* (1915), finally resolved the mystery of the Tartar lamb fable. *Pinna* byssus textiles, derived from the mollusc species formerly known as *P. nobilis* or *squamosa*, date from Hellenistic times. Later, a whole corpus of legends sprang up from this industry and from Aristotle's scientific discussion of the pinna as a zoophyte. The *Chinese Annals* (A.D. 25–220), with reference to Roman Syria, mention a fine cloth said to originate from the fleece of a 'water-sheep' (long called 'pinna wool').

The earliest known Arabic version of the legend, in the geographical works of Abū Ishāq al-Istakhirī (fl. *ca*. 950), provides a transitional form in which the byssus, emerging from the sea, rubs its wool off on shore rocks before being chased and eaten by crabs. *The Annals of the T'ang Dynasty* (618–966) relate further developments of the earth-born lamb, modified by Christian allegory and transmitted from Syria. Later elaborations and the European transmissions of fourteenth-century travellers such as Odoric of Pordenone and John Mandeville, and Von Herberstein's report of 1549—the counterparts of prosaic and grossly materialized versions of the Chinese in the Mongol period—engendered the fully fledged tale of the Scythian, or Tartar lamb which acquired, as Needham remarks, 'the dignity of a Latin zoological name, *Agnus scythicus*, all ready for Linnean systematists.'[22]

Summing up, there is no evidence that the Royal Society or Sir Hans Sloane knew about the origins of the Tartar lamb fable, but they clearly realized that it had nothing to do either with lambskins or with fern rhizomes. For the best part of a century, the Society, through its discussions, publications and cabinets of curiosities, acted as a central focus for channelling valuable critical data on a subject of considerable interest even today.

Notes

1 *Journal Book of the Royal Society* (*J.B.R.S.*) **2**, 232–233, 22 August 1666. Sir Theodore de Vaux was physician to Charles II and the Dowager Queen Catherine. 'Boramez', 'barometz' or 'baranets' is the diminutive Russian form of 'baran', signifying a sheep; 'baranets' is the Russian botanical term for an earth or fir club moss.

2 W.D. Macray, *Annals of the Bodleian Library*, pp. 51 and 431–433 (Oxford, 1890), called a zoophyte cloak in the earliest 'Annals'. For Reitiner, see the author's 'Doctor Christopher Reitinger and a seal of Boris Godunov', *Oxford Slavonic Papers*, New Series, **12**, 32–39 (1979). Public Record Office, P.C.C. 11/113/8/61, Sir Richard Lee's will, October–November 1608; he donated three rare Russian books and five Persian ones to the Bodleian in 1602.

3 *Op. cit.* (2), Macray, p. 74; Copenhagen, Royal Library, New Royal MS. 40, f. 369. The title pages of John Parkinson's *Paradisi in Sole Paradisus Terrestris* (1629) and his famous herbal, *Theatrum Botanicum* (1640), incorporate figures of the vegetable lamb similar to that described by Sir Richard Lee.

4 *The Diary of John Evelyn*, vol. 2, ed. by E.S. De Beer, pp. 106–107 (1955).

5 John Evelyn, *Terra*, in *Silva, or a Discourse of Forest-Trees*, ed. by A. Hunter, M.D., F.R.S., vol. 2, p. 48 (1786), with Joseph Halfpenny's plate of 'The Tartar Lamb. Barometz'. Robert Boyle, *The Experimental History of Cold*, in *The Works of the Hon. Robert Boyle*, vol. 2, ed. by Rev. Thomas Birch, p. 715 (1772). Samuel Collins, *The Present State of Russia*, p. 85 (1671).

6 Natural History Museum (N.H.M.), Palaeontology Library, Sloane MS. Catalogue, vol. 5, 'Fishes, Birds, Quadrupeds', f. 250. The accession number and context indicate an early acquisition from the East India Company (at 'Bombaie').

7 John Z. Bowers and Robert W. Carrubba, 'The doctoral thesis of Engelbert Kaempfer on diseases, oriental medicine and exotic natural phenomena', *J. Hist. Med. and Allied Scs.* **25**, 270–310 (1970), including translated thesis text, excellently annotated.

8 John Bell, *Travels from St Petersburg in Russia to Ispahan in Persia*, vol. 1, pp. 43–44 (1763).

9 *An English Lady at the Court of Catherine the Great*, ed. by A.G. Cross, p. 82 (Crest, Cambridge, 1989). Yu. P. Altukhov, *Population Genetics. Diversity and Stability*, pp. 261–272 (Harwood Academic Publications, London, 1990), translated copy in R.S. Library.

10 Hans Sloane, 'A further account of the Contents of the China Cabinet mentioned last Transactions', *Phil. Trans. R. Soc. Lond.* **10**, 461-462 (1698). Sloane also mentions that Dr Samuel Brown, 'who has made very good Observations in the East-Indies, about the Chinese using the down for Stopping of the Blood in fresh Wounds, as Cobwebs are with us'. Brown assisted Buckley in supplying Petiver with oriental plants in 1698, in exchange for items such as 'Lambskins very thin Soft & white'; 6 volumes of his 'Plants from Fort St. George' are listed as being in the Society's Repository: B.L., Dept. of MSS., Sloane MS.4062, ff. 288 and 294–296v.; and R.S. MS.414 (Catalogue B), Section (folder) 7, p. 3. See also, under 'Agnus Scythicus', in Griffith Hughes (F.R.S., 1750; Rector of St Lucy's, Barbados), *Natural History of Barbados*, pp. 235–236 (1750).

11 B.L., Dept. of MSS., J.P. Breyne to Sir Hans Sloane, Sloane MSS. 4048, ff. 110–111, 22 December 1725, and 4050, f. 234, 29 November 1729. R.S., Register Book 12.871–881 (original 'Dissertatiuncula'). J.P. Breynius, *Dissertatio Botanica-Medica de Radice Gin-sem, seu Nisi ...*, Leyden (1700). J.F. Lafitau, Mémoire ... concernant la précieuse plante de gin-seng de Tartare, découverte en Canade ..., pp. 35, 40, 55, 58, etc. (Paris, 1718). See the author's 'Ginseng and the Royal Society', *Notes Rec. R. Soc. Lond.* **37**, 127–128 (1983).

12 Ibid., MS. Sloane 4048, f. 111. J.P. Breyne, 'Dissertatiuncula de Agne Vegetabile Scythico, Borametz vulgo dicto', *Phil. Trans. R. Soc. Lond.* **33**, 353–360 (September–October 1725; but, chronologically, should be in *34*). Henry Lee, *The Vegetable Lamb of Tartary: Ta Curious Fable of the Cotton Plant*, quoted from his translation of Breyne's account, pp. 27–28 (1887); *J.B.R.S.* **12**, 611–613, 20 January 1726.

13 *Op. cit.*, note 12, *J.B.R.S.*

14 R.S. MS.414 (Catalogue B) Section (folder) 7, 'Of Vegetables', p12. Natural History Museum (N.H.M.), Botany Library, Sloane MS. 'Catalogue of Vegetables and Vegetable Substances'; N.B. numerous labels from the Sloane Cabinet of Vegetables at the N.H.M. Herbarium, found attached to one sheet and placed in the top of Tray 5 by E. Groves in 1947, include '*Cibotium barometz*' and 'Tartarian Lamb'. Letter of 23 April 1996 from Roy Vickery, Curator of Flowering Plants, N.H.M. Dept. of Botany. *Sir Hans Sloane*, ed. by Arthur MacGregor, fig. 47, p. 146 (1994). Elizabeth Blackwell, *A Curious Herbal ... of the most useful Plants ... in the Practice of Physick*, 2 vols., vol. 2, plate 360 (1737).

15 *London in 1710 From the Travels of Zacharias Conrad von Uffenbach*, transl. and ed. by W.H. Quarrel and M. Mare, pp. 177–178 (1934).

16 A. de la Motraye, *Voyages in Diverses Provinces et Places ... de la Russie, de la Pologne &c*. French-English text, p. 251 (1732).

17 John Cook, M.D., *Voyages and Travels through the Russian Empire, Tartary, and Part of the Kingdom of Persia*, 3rd edn, by A.L. Fullerton, vol. 1, pp. 260–261 (Oriental Research Partners, Newtonville, Mass., 1997). Fischer corresponded with Sloane and Petiver; his son, Johann Benjamin (1720–1759/60), M.D., was elected F.R.S. on 15 November 1744.

18 *Op. cit.*, note 14, *Sir Hans Sloane*, p. 110 and plate 11 (1994). N.H.M., Palaeontology Library, Sloane MS. 'Catalogue of Fossils', 'Testac', vol. 3, f. 49, nos. 5708-5711. *Op. cit.*, note 14, 'Catalogue of Vegetables', etc., no. 11114.

19 M. Geoffrai [sic], Jun., 'Pinna Marina ...', in *The Philosophical History and Memoirs of the Royal Academy of Sciences at Paris*, transl. and abridged by John Martyn, F.R.S., and Ephraim Chambers, F.R.S., **4**, 235–236 (1792). Sloane read Geoffroy's letter about Canadian ginseng to the Society in June 1718: *op. cit.* (11), 'Ginseng and the Royal Society'.

20 R.S. MSS. 413 (Catalogue A), p. 53; 414 (Catalogue B), Section 5, p.21v, '18. Of Sea Muscles'; and 416 (Catalogue D), pp. 131 and 135. J.B.R.S., vol. 10, 18 October 1711; and vol. 11, 9 April, 14 May and 11 June 1719; on the latter occasion Busby donated a hawk's-bill turtle, also from the Gulf of Taranto. B.L., Egerton Charter 7947 and *Proposals for Drying of Malt with Hot Air* (B.L.: 816.m.13 (68)—'Tracts on Trade'). Busby showed the Society a model of his kiln on 26 January 1720/1, when members found the malt was 'very Sweet and seemed without fault': *J.B.R.S.* **12**. Nehemiah Grew, *Musaeum Regalis Societatis* p. 141 (1681). Guilaume Rondeletius, *Libri de piscibus marinis* (Leiden, 1554–55), transl. into French as Guilaume Rondelet, *L'Histoire Entière des Poissons*, part 2, pp. 35–37 (Lyons, 1558).

21 Letter of 29 May 1996 from Fr Josef Metzler, O.M.I., Prefect of the Vatican Secret Archives, disclaiming any personal knowledge of the gift to Pope Benedict XV. *Nelson and Emma*, ed. by Roger Hudson, p. 203 (The Folio Society, 1994).

22 Berthold Laufer, 'The Story of the Pinna and the Syrian Lamb', *J. of American Folk-Lore* **38**, 103–128 (1915). Joseph Needham, *Science and Civilization in China*, vol. 1, pp. 200–201 (1954).