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Christopher J. Duffin

Earth Science Department, The Natural History Museum

Cromwell Road, London SW7 5BD, UK; and

146, Church Hill Road, Cheam, Sutton, Surrey SM3 8NF, UK

E-mail: cduffin@blueyonder.co.uk

MEDICINAL BOAR'S TEETH

Abstract: The tusks of the Wild Boar (*Sus scrofa*) are Galenical simples of rather minor importance, often forming part of the zoological component of *materiamedica* cabinets and collections from the early eighteenth century. Imported into Britain from Germany, they were rendered into a powder and combined with additional ingredients in relatively uncomplicated polypharmaceutical preparations, usually delivered internally in a liquid medium. Somewhat restricted in their application, powdered tusks were incorporated into prescriptions for diseases of the throat and respiratory system, notably peritonsillar abscesses (quinsy), pleurisy and pneumonia. They may also have been employed as an antispasmodic and antihysterical.

Keywords : boar, tusk, quinsy, pleurisy, pneumonia

Introduction

The survival of ancient cabinets and collections of *materiamedica* is relatively uncommon, and certainly fortuitous. Probably the greatest number of existing cabinets, many retaining their original contents and ranging in date from 1660 onwards, is known from The Netherlands [1,2]. Several late seventeenth and early eighteenth century *materiamedica* collections are also known from the UK, including the Viganian, Heberden and Addenbrooke cabinets, all held by various colleges of the University of Cambridge, the Oglander cabinet (History of Science Museum, Oxford), the Hans Sloane collection (Natural History Museum), and the Burges collection of the Royal Pharmaceutical Society [3,4]. The recent upsurge of interest in the evolution of national pharmacopoeia and the development of the *materiamedica*, together with

the cataloguing of surviving collections has created an opportunity to consider the histories of some of the more unusual, non-herbal materials to which therapeutic properties were once ascribed. The objective of the present paper is to consider the history of use of boar's teeth as medicaments.

The Wild Boar

The Wild Boar (*Sus scrofa*) is wide-ranging both geographically and ecologically. Native to Eurasia and North Africa, it is known on the basis of around sixteen subspecies, is locally common (but became extinct in the UK around the 12th century), and is believed to be the ancestor of domesticated pig breeds. It is a versatile and opportunistic omnivore which gains most of its nutrients from plant material, and generally forages at night. The coat is thick and coarsely bristled with an underlying brown pelage. Well adapted for digging, the boar has a large head with, from 2 years of age, well-developed canine teeth in both the upper and lower jaws. The lower canines are the largest, but like the upper they protrude beyond the lips, meaning they can legitimately be referred to as tusks. The canines are recurved and continuously growing (elodont); the lower canines are sharpened by rubbing against the hollow uppers. The tusks in males are larger, at up to around 65 mm, than is the case in females (average around 30 mm); they are used as weapons in both intraspecific and interspecific combat, for marking trees, and as levers in uncovering items of food [5 pS93]. As with many animals which have been closely associated with human development, they figure in various myths, legends and folklore from a wide range of cultures, and totemic, religious and functional artefacts have been made from their body parts. It is not surprising that therapeutic qualities should have been ascribed to various parts of the boar's anatomy.

Material and Methods

The medicinal tusk in Fig. 1 is part of the Oglander Cabinet of *materiamedica*. The cabinet is named after Dr John Oglander (1737–1794), a cleric, about whom relatively little is known, but who served as Warden of New College, Oxford, from 1768 until his death. Passing to the New College Collections, the cabinet eventually came to the attention of the historian of science, R.T. Gunther (1869–1940), founder of the Museum of the History of Science in Oxford; Gunther arranged for it to be accessioned into the Museum of the History of Science collections as a permanent loan. The cabinet was originally ordered by a Mr Thomas Jobber (dates unknown). The order was filled by the Georgian apothecary, Joseph Clutton (circa 1695–1743), whose business premises were in Holborn, central London. The cabinet (Fig. 2), with its six drawers containing 1032 different medicinal simples and a two volume *Hortus-siccus*, originally cost £21 six shillings and eight pence, was constructed and stocked in 1729/1730. The drawer containing the boar's tusk is illustrated in Figure 3.

*Fig. 1. Two views of a Boar's tooth (lower canine of *Sus scrofa*) from the Oglander Cabinet, Museum of the History Of Science, Oxford. Inv. 25401. Photograph by the author, reproduced courtesy of the Museum of the History of Science, University of Oxford.*

Fig. 2. *The Oglander Cabinet. Inv. 25401. © Museum of the History of Science, University of Oxford.*

The late 17th century London drug and spice merchant, John Jacob Berlu (dates unknown) indicates that stocks of medicinal boar's tusk, or *Dens Apri*, were imported at that time from Germany [6 p39]. Furthermore, it was one of the components which the Royal College of Physicians included in their 'Catalogue of what Parts of Living Creatures and Excrements' which apothecaries should keep as part of the stock in their Shops [7 p53]. A literature survey was undertaken in order to elucidate the history of the medicinal use of Boar's tusks, and as a means of informing the presence of such items in surviving *materiamedica* cabinets.

Fig. 3. *Drawer containing the Boar's tooth, The Oglander Cabinet. Inv. 25401. © Museum of the History of Science, University of Oxford.*

The Boar's tusk in medicine

Quinsy

The Middle English Quinsy, also known by the obsolete English archaism 'Squinancy', refers to a peritonsillar abscess. The name derives from the Middle and Old French *esquinancie*. The herbal simple of choice in the treatment of this disease was often *Asperulacynanchica*, now known in English as Squinancywort, a member of the Bedstraw Family (Rubiaceae). In Quinsy, the abscess usually forms as a complication of acute tonsillitis with aerobic or anaerobic bacterial pathogens spreading to the loose connective tissue of the peritonsillar area. Symptoms include an asym-

metrical sore throat, pain during swallowing (odynophagia), redness and swelling, inflammation of the lymph nodes, neck pain and swelling, displacement of the uvula, referred ear pain, changes to the voice, fever, headache and a general sense of being unwell. The breath often smells foul (halitosis), considerable amounts of pus may be produced, and there may be problems with breathing. The Italian physician, surgeon and alchemist, Leonardo Fioravanti (1517–1588) described the condition as follows:

The Squinancie is a certain alteration in the throat, which is caused of a flatulous or windiehumor, and this cometh with such a vehemencie, that if it be not holpen quickly, it will choak him, for it stoppeth the conduites where the breath cometh through, and letteth a man to swallow his meat [8 p15].

His recommended treatment was ‘the tooth of a Bore made in powder, and drunk the quantitie of dram. ii. in Linseed oil [...] These I have proved divers times’ [8 p15]. Nicholas Culpeper (1616–1654) noted that this preparation was so effective that ‘if the grieved place be but touched with it with a feather’, the squinancy might be cured [9 p90]. Felix Platter (1536–1614) indicates that Linseed Oil could be replaced with ‘Oyl of sweet Almonds’ [10 p274].

Pleurisy

Pleurisy is the condition in which the pleural membranes, which surround the lungs and line the thoracic cavity, become inflamed, commonly as a result of viral infection. One contemporary seventeenth century description states that the condition is due to:

boiling Blood flowing into it [the Pleura] through the Vertebral Arteries, and there growing clammy, with a continual and acute Fever, a pricking pain of the side. A Cough, and a difficulty of breathing [11 p113].

Several authors cite Boar’s tusks as a useful simple in the treatment of pleurisy, but without further comment [12 p16, 13 p24]. Felix Platter, however, provides a more detailed medical receipt:

Take Bores tusk or jaw of a Pike, Crabs Eyes, Bulspizle, in powder, a dram or a dram and an half, with Broath or Wine, or Carduus water, or Violet or Barley water, these are better known by good experience than by reason [10 p274].

The “Crab’s eyes” cited in the mixture were also known as *oculi cancrorum*, and are calcareous, pre-moult, gastric growths formed in freshwater crayfish (*Astacus fluviatilis*). Their appearance was said to resemble the shape of an eye, and they were common medicinal ingredients, being credited with alkaline, absorbent and diuretic properties. “Bulspizle” is an archaism for Bull’s penis, an ingredient with limited contemporary application, being mostly reserved for use as an aphrodisiac and to increase fecundity in various ways.

Another receipt is given by Thomas Willis (1621–1675; Fig. 4), an influential English physician and a founding member of the Royal Society:

Take Powder of Crabs-eyes two drams, Sal Prunella one dram and half, of the flowers of red Poppies half a dram, mix them and make a Powder, the dose half a dram, three or four times aday, in a convenient Vehicle. Instead of Crabs-eyes, the powder of the Jaw of a Pike, or the Tusk of a Boar, or the Pizzle of a Stag, or Bull, are used. [14 p67]

Fig. 4. Portrait of Thomas Willis (1621–1675). Published by W. Crook, 1691. Wellcome Library, London.

The self-styled ‘Professor of Physick’, William Salmon (1644–1713; Fig. 5) provides four receipts for pleurisy and associated pains in the side. The first is an opiate:

Rx *Laudanum* q. s. Jaw-bone of a Pike, Tooth of a Bore prepared, A. gr. iv. mix, and with Oyl of Benjamin, make little Pills to be gilded for one dose [15 p182].

This recipe has echoes of Salmon’s ambition to treat the rich, containing Ambergis (A. gr), and being gilded both for overall effect and possibly to reduce the smell of the concoction. The Oil of Benjamin refers to a preparation made from aromatic Benzoin resin, commonly referred to as Benjamin. Benzoin was obtained from the trees of various species of the genus *Styrax*, and has been used since Antiquity as a perfume, incense and medicine. Sir John Hill (1714–1775) hailed it as “a great

and powerful Expectorant” and recorded its contemporary use as a tincture in the treatment of asthma, “Infarctions of the Lungs and inveterate coughs” [16 p717]. Oil of Benjamin seems generally to have been little used; the means of preparation involved placing the resin in a closed glass phial and then burying it in a dung heap for fifteen to twenty days, before straining it into another phial ready for use [17 p405].

The second recipe involved mixing an ounce of Flowers of Sulphur (effectively, pure sulphur sublimate) with a dram each of ‘raspings of a gelt Boar’s Tooth’, Pike jaw and Corn Poppy Flowers. The whole was then rendered into a powder [15 p182]. “Gelt” is an archaism found only in this work and may refer to a gelded (castrated) animal. In addition to curing pleurisy, it was also effective against ‘all Putrefaction and Apostems of those parts’, according to Salmon, and ‘not without the *Stupor* or Amazement (saith the Author) of the By-standers.’ This typically empiric prose was embellished still further, with the recipe being proclaimed as the most efficacious treatment available; ‘This poudre alone cures to admiration, being some few times exhibited, and restores the sick by the Providence of God to perfect health’ [15 p182]. The powder was added to ‘waters of flowers of Camomil and Corn poppies’ and sweetened to taste.

Fig. 5. Portrait of William Salmon (1644–1713). Line engraving by W. Sherwin, 1671.
Wellcome Library, London.

Salmon's third recipe involved mixing two drams of flowers of Sulphur with seeds of Ladies thistle (*Silybummarianum*), 'bayberries hull'd, Mistleto of the Oak, Zedoary, Olibanum, raspings of a gelt bores tooth, Teeth of a Pike, and Corn Poppy flowers'; the ingredients were then reduced to a powder and could be administered to the patient in 'Waters of Hyssop, Fennel or Corn Poppy flowers, morning, noon and night'. Salmon ascribes the recipe to Adrian von Mynsicht (1603–1638), although I have not been able to trace the original, whom he claims wrote that it was 'a great Secret against Pleuritick pains, or stitches of the sides, tho so extream, as that the sick seems to be giving up the Ghost' [15 p602].

The final receipt given by Salmon is identical to his second recorded, minus the flowers of sulphur [15 p 602].

A further medical receipt for the treatment of pleurisy is given by Nicholas Lémery (1645–1715), the French chemist:

Rx. Prepar'd Goats Blood one ounce, powder of Vipers, Antimoniumdiaphoreticum, flowers of Corn Poppies, prepar'd Crab's-eyes, Boar's-tooth, seeds of Carduus Benedictus, Olibanum, of each one drachm; reduce them into powder [18 p64].

Lémery believed that pleurisy was the result of Acids causing the blood to stagnate in the chest, leading to the various symptoms of the disease (see also below for pneumonia). Being alkali, he reasoned that the powder whose recipe he provided was able to 'absorb the Acids that fix and stagnate the Blood', restoring full circulation and throwing off 'by transpiration the hostile matter' which stultified it [18 p64].

Pneumonia

During the 17th century, this condition was also known as Peripneumonia, a term seemingly first used by the English physician and author William Bullein (circa 1515–1576). A contemporary description by John Pechey (1655–1716) notes:

'Tis an Inflammation of the Lungs, with an acute Fever, a Cough, and a difficulty of Breathing. They that have this Disease perceive a great Inflammation in the Breast, with a Swelling of the Lungs, and sometimes a pricking Pain; they labour for breath, and Breath short [19 p61].

At the time, it was believed that the cause of the condition was slow passage of the blood through the lungs as a consequence of its 'boiling Feavourishly' [19 p61]. What was needed in order to ameliorate the condition was something that would work by 'the taking off of the clamminess or obstructing viscosity of the Blood' [19 p72]. 'Testaceous powders' – those derived from hard, shell-like materials – were deemed to be appropriate, since they contained 'Alkali salts' (usually calcium salts); Boar's teeth and Pike Jaws were strong candidates, 'now receiv'd into use by long experience' [19 p72, 17 p61]. Indeed, the English physician and champion of pulse-taking, Sir John Floyer (1649–1734) included *Dens apri* (Boar's teeth) in his list of

simples which, having a diagnostic ‘Terrene or Gritty Taste’ are able to absorb the off-putting acids, an action which ‘depend on the *Earthy* Part’ of the item [20 pp94,141].

Thomas Willis provides the following medical receipt, virtually identical to the confection which he recommended for pleurisy:

Take of the Tusk of a Boar, (or the Jaw of a Pike) of Crabs–eyes, of each one dram and half, flowers of Salt Armoniack, Powder of red Poppy Flowers, of each half a dram, mix them for 4 doses [21 p61].

Discussion

Early 18th century *materiamedica* cabinets and collections preserve an interesting record of contemporary medical ingredients stocked by apothecaries, used as teaching aids, and forming the basis of polypharmaceuticals prescribed by physicians. The medicines utilised by the medical profession have been the subject of changing fashions in prescribing practice, largely reflecting shifts in background philosophy. The contents of such cabinets have been noted as representing of two main schools of thought – Galenism and Iatrochemistry [3]. The work of Claudius Galenus (129–200/216), Greek philosopher, surgeon and physician to the Roman Empire, propounded an expanded version of Hippocratic medicine founded on the principles of Aristotelianism. According to the humoral theory, health and disease were the consequence of the state of balance or imbalance of the four humours – yellow bile, black bile, phlegm and blood. In instances where an imbalance existed, the physician was called upon to restore health by administering animal, herbal or mineral simples (galenicals), either individually or in combination, according to a system of opposites. Utilising the four–element theory (earth, water, air and fire), usually credited to Empedocles (490–435 BC) and championed by Aristotle (384–322 BC), together with the idea of contrary qualities (cold, hot, wet and dry) that was embedded in Hellenistic philosophy, Galen produced an integrated approach to prescription, proposing mixtures of therapeutic materials within a quasi–quantitative framework of quotients (degrees) to counteract the ailing disposition of the body [22 p132]. The individual medicinal ingredients, also known as “simples” or “Galenicals” required little processing other than being rendered into a powder and administered in a suitable medium. The authority of Galen was followed uncritically for hundreds of years; indeed, some elements of Galenism persisted well into the 19th century.

A revolution took place during the early 16th century as Neo–platonism began to erode Aristotelianism as the defining scientific philosophy, ushering in a more empirical approach to medicine and its practice. Embracing this change, Paracelsus (1493–1541) proposed a hermetical understanding of man and disease, seeing sickness and health as relying on the balance between Man and Nature (or between microcosm and macrocosm). In 1549, Paracelsus promoted the notion that, rather than trying to readjust the balance of the humours by Galenic treatments such as blood–letting and the use of Galenical simples, the ‘natural virtues’ present in plants,

animals and minerals should be used to target specific diseases. Identification of the appropriate material often depended on the Doctrine of Signatures, which saw God as leaving a “signatum” or signature of his handiwork upon a particular material indicative of the therapeutic use to which it could be put. Having identified a suitable material for use in the treatment of disease, Paracelsus then advocated that it’s “quintessence” should be released from the enclosing dross by alchemical means – distillation, solution, rectification and the like [22 pp16–139]. This led to the production of purified ingredients, often in crystalline and powdered form, which could then be readily administered, either individually or as components of polypharmaceutical preparations, dissolved in ethanol as tinctures, or as other suitable preparations.

Early 18th century pharmaceutical cabinets usually contain a combination of Galenical simples, and processed iatrochemical materials. The question to be asked is where Boar’s teeth fit into this dichotomy. Clearly, they are primarily Galenicals since, according to the medical receipts detailed above, the tusks generally show minimal processing, merely being reduced to a powder before being combined with other animal and herbal ingredients. Most Galenical simples have a long history of use extending back to Antiquity, often first being introduced by such authors as the Greek physician Pedanius Dioscorides (circa 40–90) or his close contemporary, Pliny the Elder (23–79). While both of these authors mention the Wild Boar, neither has anything to say about the medicinal use of its teeth. Indeed, a search of appropriate classical and medieval medical literature from both the Western and Arabic traditions has yielded no reference to the medicinal use of Boar’s tusks. It is as if the item appears with a fully formed medical folklore some time during the 16th century, and then becomes incorporated into the *materia medica* as a rather minor ingredient with limited application. The remainder of the boar was also credited with therapeutic properties in the Galenic tradition, as summarised in Table 1, included here for the sake of completeness.

Table 1. Table to show the therapeutic uses reported in the literature for the body parts and products of Wild Boar (Sus scrofa) [9,10,24,25]

Body part/Product	Application	Authority
Urine	Bladder stones	Culpeper 1659
	Good to anoint the Pulses and Temples	Platter 1664
	Epilepsy	Topsell 1607
	Deafness and ear pain	Topsell 1607
	Strangury	Topsell 1607
	Dropsy	Topsell 1607
Testes	To increase Lust and aid conception	Pechey 1698
	Scrofula	Platter 1664
	Epilepsy	Topsell 1607

Body part/Product	Application	Authority
Dung	Imposthumes and scrofula	Platter 1664
	Nosebleeds	Topsell 1607
	Pains in the joints	Topsell 1607
	Pains in the sides	Topsell 1607
	Ulcers	Topsell 1607
	Sciatica	Topsell 1607
	Bloody flux	Topsell 1607
Liver	Barrenness	Rivière 1655
	Bites from serpents and dogs	Topsell 1607
	Sores and apostumes in the ear	Topsell 1607
	Revives those whose spirits are drowsy	Topsell 1607
	Looseness of the belly	Topsell 1607
Gall	Epilepsy	Willis 1684
	Serpent bites	Topsell 1607
	Wens and swellings in the neck	Topsell 1607
	Ulcers	Topsell 1607
	Gout	Topsell 1607
Gall stones	Bladder stones	Topsell 1607
Brains	Serpent bites	Topsell 1607
	Carbuncles	Topsell 1607
	Easing all pains and greifs	Topsell 1607
	Pain in the penis	Topsell 1607
Fat	Serpent bites	Topsell 1607
	Broken or bruised feet	Topsell 1607
	Blisters	Topsell 1607
Lungs	Broken or bruised feet	Topsell 1607
Cheek bone	Ulcers	Topsell 1607
Hoof	Strangury	Topsell 1607
	Bed wetting	Topsell 1607
Bladder	Strangury	Topsell 1607
	Incontinence	Topsell 1607
	paines in the bladder and wringings of the guts'	Topsell 1607

Interestingly, in a few of the receipts cited above, Boar's teeth are combined with alchemical ingredients such as purified sulphur, diaphoretic antimony (probably a combination of antimony oxides and sulphides) and sal ammoniac (NH_4Cl). There is also the use of alchemical language when speaking of the mode of action of Boar's teeth – possessing alkaline salts which were believed to remove the acid causes of sluggish blood flow. Furthermore, Sir John Floyer cites the fact that they yield 'a *Volatile Salt* and *Oyl* in distillation' [20 p94].

Conclusions

Boar's teeth or tusks are a minor component of *materiamedica* collections dating from the early 18th century. They may have been included in teaching collections somewhat as a curiosity. Rather limited in their application, the teeth were powdered and added as Galenical simples to relatively few additional ingredients for use in the treatment of diseases of the throat and respiratory system – quinsy, pleurisy and pneumonia. In one instance they are commended as antihysterics [20 p94], and in another as an antispasmodic and therefore of use in treating convulsions [23 p574]. Temporally somewhat restricted in their application, most records date from the 17th through to the late 18th century. In a few receipts they were combined with alchemically produced derivatives of various minerals.

Acknowledgements

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List of Illustrations

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2. The Oglander Cabinet. Inv. 25401. © Museum of the History of Science, University of Oxford.
3. Drawer containing the Boar's tooth, The Oglander Cabinet. Inv. 25401. © Museum of the History of Science, University of Oxford.
4. Portrait of Thomas Willis (1621–1675). Published by W. Crook, 1691. Wellcome Library, London.
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1. Table to show the therapeutic uses reported in the literature for the body parts and products of Wild Boar (*Sus scrofa*) [9; 10; 24; 25]

Rezime

Kljove divlje svinje (*Sus scrofa*) su galenički simboli manjeg značaja, često čineći deo zoološke komponente *materiamedica* ordinacija i kolekcija od ranog osamnaestog veka. Uvezene u Britaniju iz Nemačke, pretvarane su u prah i kombinovane sa drugim sastojcima u relativno jednostavnim polifarmaceutskim pripremama, da bi se potom oslobodile u tečnom medijumu. Njihova primena je donekle ograničena. Samlevene kljove su bile uvrštene u recepte za lečenje bolesti grla i respiratornog sistema, naročito angine, zapaljenja plućne maramice (pleurisije) i zapaljenja pluća. Takođe su mogle biti korišćene kao antispazmodici i antihisterici.

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