

Turtle remains from a late 18th century well at Leadenhall Buildings

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THIS ARTICLE describes a group of turtle bones that were formerly in the collections of the London Museum (Lond.Mus.Acc. No. A26361) and are now held by the Museum of London, where they may be inspected on request. The material (Fig.1, A-G) consists of a skull, three lower jaws, pieces of three costal bones (bony plate of the carapace) and a portion of the hypoplastron (bony plate of the belly shield). All of these skeletal elements are identified as Green turtle *Chelonia mydas* (L), and are believed to come from three separate animals.

An additional note describes the remains of turtle from two other archaeological deposits in London which, together with the bones from Leadenhall Buildings, are relics of the trade in live turtles that took place in London in the late 18th and 19th century. The origins of this trade are examined in the last section of this article.

Remains of Turtle from Leadenhall Buildings

According to the London Museum locality register for 1923-1924, the turtle remains originally came from Leadenhall Buildings and were purchased in November 1923³. Unfortunately, as with much of the material acquired by the museum at that time, there is no information on their history, other than that they were found all together 'in a well in Leadenhall Buildings'⁴ and that whoever made the entry in the register believed them to be of mid 18th century date. Other objects recovered from this same well and sold to the museum include a wooden spigot (vent plug of cask) (Acc.No. A26362) and pieces of six wineglasses (Acc.Nos. A26354-A26359). The wineglasses have been examined by Rosemary Weinstein, Keeper of the Tudor & Stuart Department, Museum of London, who reports that apart from one example of c 1705, all of them are

of late 18th to early 19th century date (certainly not later than c 1815)⁵. On this evidence, a more accurate date for the turtle remains from Leadenhall Buildings would be between c 1750 and c 1815.

We have not been able to ascertain the exact circumstances in which all of this material from the late 18th century well came to be discovered, but it would seem from the London Museum records that there was considerable activity in and around Leadenhall Buildings between October 1923 and November 1924. Many objects from this section of the City were being bought by the museum during this period, including some fine pieces of mid to late 18th century wineglasses, a scent bottle and medicine bottle, both c 1740, and part of a custard glass c 1780 (Lond. Mus. Acc.Nos. A26280-A26293)⁶. All of these came from a 'cess pool in Leadenhall Buildings' and were purchased in October 1923. One further entry in the museum catalogue, for November 1924, is of special interest as the object listed, a rare late 18th century pewter pot used for draining wine bottles (Acc.No. A27239) was recorded as having been 'found in demolishing an old house in Leadenhall Buildings'. This reference to demolition confirms the impression gained from the earlier records that redevelopment of the area was in progress throughout the third decade of the present century, and it was this activity that led to the discovery of the turtle bones.

Inspection of the maps in the Guildhall Library⁷ has revealed that the arrangement of buildings along the eastern side of Gracechurch St. and southern side of Leadenhall St. remained virtually unchanged from 1799 to 1875. Then, sometime between 1875 and 1887, the intersection between Gracechurch St. and Leadenhall St. was much

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3. Jean Macdonald, *pers. comm.*
4. The address for Leadenhall Buildings in the *Post Office Directory for 1923* is given as 'the corner of Gracechurch St. and Leadenhall St.'
5. Rosemary Weinstein, *pers. comm.* See appendix.
6. One of the wine glasses, with a coloured enamel—twist stem and bowl engraved with a rose c 1760 (A26280) was selected for display at the exhibition of London glass held at the London Museum in 1970. See P. J. Glanville & J. Pollard, *Glass in London*, London Museum (1970) 13.
7. In all, nine maps were examined. These were dated: 1799; 1819; 1842; 1875; 1887; 1896; 1916; 1937; 1949.

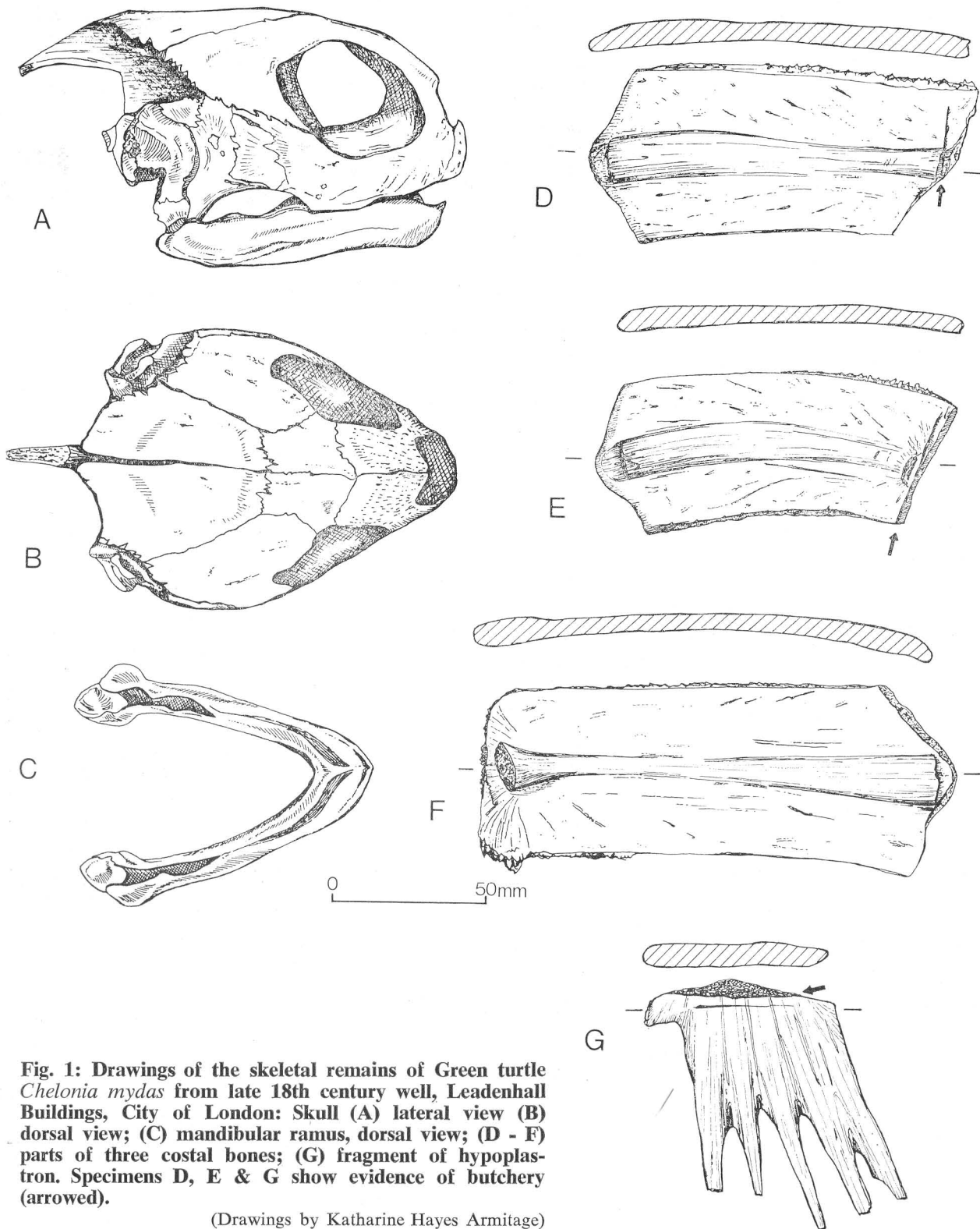


Fig. 1: Drawings of the skeletal remains of Green turtle *Chelonia mydas* from late 18th century well, Leadenhall Buildings, City of London: Skull (A) lateral view (B) dorsal view; (C) mandibular ramus, dorsal view; (D - F) parts of three costal bones; (G) fragment of hypoplas-tron. Specimens D, E & G show evidence of butchery (arrowed).

(Drawings by Katharine Hayes Armitage)

altered through re-alignment and widening of these two roads. On the 1887 map, the north eastern line of Gracechurch St. has been extended round into Leadenhall St. with the addition of two buildings (Nos. 99 & 100 Gracechurch St.). The present locations of Nos. 1-6 Leadenhall St. therefore lie further eastwards than their predecessors of the late 18th century.

By superimposing Horwood's map of 1799 onto Goad's 1949 plan (and after due allowance being made for the displacement eastwards of the numbering of the buildings along Leadenhall St. that took place in the mid 19th century) the position of Leadenhall Buildings is found to lie approximately in the area once occupied by Nos. 2-5 Leadenhall St. The well and cess pool uncovered in 1923 probably were situated in the yard to the rear of these dwellings.

Information obtained from the London Directories show that these buildings in the late 18th century were owned (or ? rented) by the following people⁸:—

No. house	Name of occupier (& date)	Profession
2	John Lambe (1799)	mineral-water warehouseman
3	John Davis (1799) & J. J. Keighly (1799)	citizen merchant
4	John & Samuel Barrows (1783) Samuel Barrow (1799)	mealmen biscuit baker
5	James Woodmason (1783)	stationer

Of these, only J. J. Keighly at No. 3 Leadenhall St. might possibly have any connection with the turtle bones found in the well. The evidence is somewhat circumstantial and depends on the interpretation that J. J. Keighly is the same person listed in *Holden's Triennial Directory for 1799* under Beckford & Keighly, West India merchants of 3 Leaden-

hall leather market. We must leave it to the historian to pursue this line of enquiry further and wish only to say that such a firm, dealing as it did with the West Indies, would have had the opportunity to become involved in the turtle trade.

General osteological description

The turtle bones from Leadenhall Buildings are identified as follows:—

- 1 skull, complete except for the squamosal bones which have become detached and lost in antiquity (Figs. 1A & 1B)
- 3 mandibular rami, one complete, two with their articular bones missing (Fig. 1C)
- 3 costal bones from the carapace, incomplete (Figs. 1D-F)
- 1 hypoplastron from the belly shield, portion only (Fig. 1G)

All of the eight skeletal elements are in a good state of preservation. They are stained light brown and have the appearance of having come from either a damp or, possibly, a waterlogged deposit.

Two of the three costal plates (Figs. 1D & 1E) and the portion of hypoplastron (Fig. 1G) bear on their inner surfaces marks made by a cleaver, showing evidence of butchery.

By comparison with the collection of turtle skulls at the BM (NH), the age of the skull from Leadenhall Buildings is assessed as sub-adult.

Although the squamosal bones are missing, the remaining portion of the skull is sufficiently intact to allow measurement. These measurements (Fig. 4, appendix) which were devised by the authors, are given in Table 1.

8. The list was compiled from *Kent's Directory for the year 1783* and *Holden's Triennial Directory for 1799*.

Point of measurement	Designation as in Fig. 4	Value
Total length: Median point on premaxillae — extremity of supra-occipital crest	1	145.4
Condylobasal length: Median point on premaxillae — aboral border of occipital condyle	2	115.0
Cranial length: Median point on premaxillae — posterior edge of parietal bone	3	128.5
Greatest diameter of orbit	4	48.7
Width of skull at junction of squamosal, postorbital & quadratojugal bones	5	85.8
Squamosal width	6	—
Basal width across mandibular condyles	7	81.6
Least width between the orbits: Measured in region of prefrontal—frontal suture	8	41.4
Height of skull: Articular surface of condylus mandibularis—highest elevation of parietal bone	9	73.7

Table 1: Measurements of the skull of *Chelonia mydas* from late 18th century well, Leadenhall Buildings, City of London (London Museum Acc. No. A26361). All measurements are in mm.

Estimation of carapace length

Figure 2 shows the relationship between length of skull and straight length of the carapace in Green turtle. These data are based on measurements taken by the authors on the series of 13 complete Green turtles from the Philippines in the collections of the BM(NH)⁹. Although the heads of these turtles retain their covering of skin, it proved possible to locate the posterior edge of the parietal bones on each of the dried specimens and so measure their cranial lengths directly.

From the diagram, it can be seen that there is a strong positive correlation between the two variates, with the observations distributed closely along a straight line. The regression line shown in Fig. 2 was derived from the formula:—

$$Y = a + bX$$

Where: Y is the length of carapace in mm; X is the length of skull in mm; a (intercept) is -186; b (slope) is + 6.19.

The correlation coefficient has been calculated at + 0.97, and this high value confirms the very close relationship that exists between the two chosen variates.

Using as a model the regression equation $Y = -186 + 6.19(X)$ derived from the data on the series of Philippine turtles, an estimate of the carapace length of the Leadenhall Buildings turtle may be obtained from its cranial length.

Assigning the cranial length of the London specimen (128.5mm, 5.1in) to X, the length of the carapace is estimated at 609mm (24in). The 95% confidence limits for this estimated value are calculated to lie at 609mm plus and minus 48mm¹⁰.

Liveweight of the London turtle

In addition to the close relationship between length of skull and length of carapace, there is also known to be a direct functional relationship between carapace length and body weight in Green turtle, based on the formula $W = AL^3$. Where: W is the weight in pounds; A is 0.0045; L is the carapace length in inches¹¹. On the basis of the data relating to Green turtles from South Yemen published by Hirth & Carr (1970)¹², the liveweight of the Leaden-

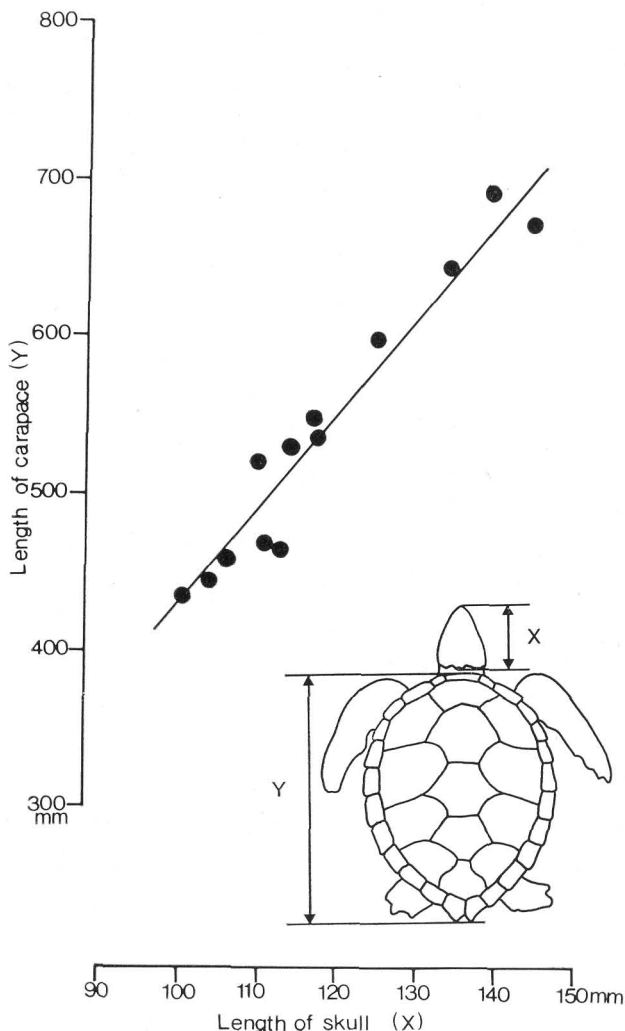


Fig. 2: Relationship between length of skull and straight length of carapace in Green turtle.

hall turtle is estimated to have been just over 60lb (27kg).

According to Wilson (1976)¹³ a turtle weighing 60lb (27kg) 'was large enough to provide a first course in itself', the baked belly and carapace

9. BM(NH) Reg. Nos. 1978. 2116-2130. Series includes both male and female, and is mostly sub-adults with a few younger turtles.
10. P. L. Armitage wishes to thank Kathleen M. Shaw, Biometrics Section, BM(NH), for advice and help with the statistical analysis. Calculations followed those described by G. W. Snedecor & W. G. Cochran, *Statistical Methods*, Iowa (1969) 155.
11. H. Hirth & A. Carr, 'The Green turtle in the Gulf of Aden and the Seychelles Islands', *Verhandelingen der*

Koninklijke Nederlandse Akademie van Wetenschappen, AFD. Natuurkunde 58 (No. 5) (1970) 1-44; H. F. Hirth, 'Synopsis of biological data on the Green turtle *Chelonia mydas* (Linnaeus) 1758', *FAO Fisheries Synopsis No. 85*, Rome (1971) 3 : 3.

12. H. Hirth & A. Carr, *op cit* (1970) 14 & 15.
13. C. A. Wilson, *Food and Drink in Britain from the Stone Age to Recent Times*, Harmondsworth (1976) 203.

formed one dish, a stew prepared from the fins and guts another, while the head and lights made an excellent soup.

More direct information on the weights of late 18th century turtles may be obtained from contemporary documentary sources, for example the *Account Book of Samuel Birch, Lucas Birch & Company*¹⁴ in the collections of the Museum of London¹⁵. The surviving cash book of this company spans the period between 1st January 1782 and 16th May 1785, and in its pages four individual weights of turtles are mentioned (Table 2).

archaeological deposits in London, these are described as follows:—

(1) Dump of post-medieval refuse, Thames foreshore (Museum of London area 18). Chance find 1980.

The specimen, a piece of costal bone from the carapace of a turtle (probably Green turtle) was recovered by E. A. Jarzembowski, Department of Entomology, BM(NH) from the Thames foreshore, next to Southwark Bridge on the downstream side (Mus. Lond. area 18) and was found in the spoil excavated from a 3 foot (0.91m) deep pit²⁰. The

Weight of turtle		Price	Date purchased	Supplier
lb	(kg)			
130	(59)	£13 - 6s - 0d	August 15th, 1783	not recorded
20	(9)**	£2 - 0s - 0d	September 16th, 1783	not recorded
28	(13)**	£2 - 16s - 0d	July 13th, 1784	not recorded
110	(50)	£7 - 0s - 0d	July 30th, 1784	not recorded

** These were probably immature turtles whose flesh would have been considered too 'watery' for soup and therefore eaten as steaks.

Table 2: Weight and price of turtles sold in London in the late 18th century. Data are taken from the Account Book of Birch, Birch & Co., 15 Cornhill.

Heavier turtles are recorded elsewhere in the contemporary literature. An article that appeared in the 1753 issue of the *Gentleman's Magazine*¹⁶, for example, mentions turtles introduced to London from Ascension Island in the south Atlantic Ocean, whose weights were 300lb (136kg) or more. While in a later issue (1754)¹⁷ there is a description of a gravid female weighing 3cwt (152.4kg)¹⁸ whose carapace measured 4 foot 3 inches (1.27m) long by about 3 foot (0.91m) wide. This animal was presented by Lord Anson¹⁹ to the gentlemen of White's Coffee House, and was said to have laid five eggs shortly after.

Remains of Turtle from Other Archaeological Deposits in London.

Besides the group of eight bones of *Chelonia mydas* from Leadenhall Buildings, the authors have recently examined two other examples of turtle from

treasure hunter responsible for digging the pit, presented the clay pipes found in association with the turtle bone to Jarzembowski, who reports that according to the system of classification proposed by Atkinson & Oswald (1969)²¹ two types are represented, L22 (c 1680 - 1710) and L25 (c 1730 - 1760).

The piece of costal bone measures 92.0 mm by 238.5 mm (3.67 in by 9.39 in) and is 13.7 mm (0.54 in) thick. As is usual for animal bones recovered from waterlogged levels on or near the foreshore, the surface of the specimen is stained dark brown.

(2) 18th/19th century well. Butcher Row, Ratcliff, London E14. Excavated by the Inner London Unit 1975.

Two articulated costal bones from the carapace of a turtle (probably Green turtle) were found amongst a deposit of general domestic refuse forming part of the infill to an 18th/19th century well, Ratcliff, E14

- Birch, Birch & Co. were confectioners and pastry cooks who operated from their shop at 15, Cornhill. They were responsible for much of the catering at events such as the Lord Mayor's banquet and other similar ceremonial occasions between c 1760 and c 1836. A short history of this company may be found in the unpublished Museum of London MS entitled 'A Brief History of Ring & Brymer'. Ring & Brymer was the company that took over Birch & Birch in c 1836.
- P. L. Armitage wishes to thank Christopher Ellmers, Modern Dept., Museum of London, for drawing his attention to this account book.
- Anon, *The Gentleman's Magazine* 23 (1753) 489.
- Anon, *The Gentleman's Magazine* 24 (1754) 337.
- We have presumed that as the weight of this animal

is written as '300 weight' the author meant 3 cwt and not 300 pounds weight.

- In his book *The World of the Sea* published in 1869, the Rev. H. M. Hart says, page 364, that it was Admiral Anson who, in 1752, brought the first turtle to England.
- E. A. Jarzembowski, *pers. comm.*
- D. Atkinson & A. Oswald, 'London clay tobacco pipes', *J Brit Archaeol Ass* 32 (1969) 171-227; see also, A. Oswald, *Clay Pipes for the Archaeologist*, BAR 14 (1975) 37 & 38.
- Alison Locker, *pers. comm.*; The animal bones from the 16th and 17th century levels have been reported on by A. Locker in I. Schwab & B. Nurse, 'Butcher Row, Ratcliff, E. 14', *Trans London and Middlesex Archaeol Soc* 28 (1977) 215-251.

(BTR 75. F.87)²².

The bones, which are incomplete (broken in antiquity), are both 9.3 mm (0.37 in) thick and measure 303 mm by 47.5 mm (11.9 in by 1.87 in) and 175.9 mm by 110.7 mm (6.93 in by 4.36 in) respectively.

Both are stained yellow, and the longest piece has on its outer surface, a straight line scored by a knife, possibly made during removal of the outer plate²³.

History of the Turtle Trade in Late 18th and 19th Century London

The purpose of this last section is to briefly explore the historical background to the turtle trade in London, and to suggest that further remains of Green turtle await discovery on archaeological sites in the City of London.

Although it is well known that the Green turtle was frequently exploited throughout the late 16th and 17th centuries as a source of food by seafarers and West India plantation owners,²⁴ no where can we find evidence for its introduction to Britain before the mid 18th century²⁵. The earliest reference to turtle in London, known to us, is to be found in the 1753 issue of the *Gentleman's Magazine*²⁶, where there is an account of how a turtle weighing 350 lb (159 kg) was baked and eaten at the Kings Arms tavern in Pall-Mall. Evidently this was a unique event at the tavern as there was some difficulty experienced in cooking the animal; the door of the oven had to be dismantled in order that the turtle might be inserted.

By the second half of the 18th century, there had developed a thriving trade in imported live Green turtles between the West Indies and London. Additional supplies to the London market came from Ascension Island in the south Atlantic Ocean²⁷, a much favoured provisioning station for English ships returning home from the East Indies²⁸.

23. The plates of Green turtle are thin and lack the strong colours found in tortoiseshell derived from the Hawksbill turtle and generally have little commercial value. They are, however, occasionally used as inlay for furniture. See R. Webster, *Gems: Their Sources, Descriptions and Identification*, London (1970) 488-491.
24. J. J. Parsons, *The Green Turtle and Man*, Gainesville, Florida (1962) 11-14.
25. Its delay in reaching these shores is extremely puzzling when it is considered that this species was being eaten by English sailors visiting the West Indies fully two centuries before its recorded introduction to Britain, and that its virtues as a food particularly suitable for convalescents and those of delicate constitution (especially when served in the form of soup) were being extolled as early as the mid 17th century by English writers on cookery. See, for example, Muffet, *Healths Improvement* (1646) 190, referred to

On reaching London, the turtles (most of whom were in poor condition after the long sea voyage) were placed in heated iron tanks and fattened to the required weight. Although their meat was occasionally eaten, either boiled or baked, the majority of the imported turtles were destined to be made into soup. Green turtle soup rapidly became a prestige food much relished by gourmets. The following declaration published in 1863²⁹ epitomises the praise often bestowed on this dish: 'Every good citizen should delight in turtle soup. Smooth, appetising, without any over-predominance of flavour, far more nutritive and tasty than any classical dish in Homer.'

In spite of the exhortation to 'every . . . citizen' to partake of this dish, the reality was that because of the high cost, only the wealthier classes of late 18th and early 19th century London were in a position to enjoy its delights. For those less fortunate, there was always 'mock turtle soup' made from a calf's head, well seasoned, and served with veal gravy and Madeira, which, according to Wilson (1976)³⁰ made its appearance in English cookery books almost as soon as the genuine article.

The association between turtle soup and the Lord Mayor's banquets is widely known. The origins of this tradition may be traced back to 1761 and the Lord Mayor's banquet attended by King George III. The menu for this banquet survives in the collections of the Guildhall Record Office (Guildhall misc. MS 70.2) and it shows that only the more important guests, seated at the King's, Foreign Minister's and the Lord Mayor & Aldermen's tables, were served with turtle, while the Lady Mayoress, together with lesser personages, seated elsewhere, were apparently only provided with dishes of 'olios and pottages' as a first course. Their lower social rank obviously did not entitle them to sample such delights as turtle.

After 1761, turtle soup became a regular feature of many banquets and ceremonial dinners organised

- by E. Phipson, *The Animal-Lore of Shakespeare's Time*, London (1883) 302.
26. Anon, *The Gentleman's Magazine* 23 (1753) 441.
27. O. Goldsmith, *A History of the Earth and Animated Nature*, London (1774 reprinted 1805) Vol. 5, 194 & 195. Ascension Island is a desolate volcanic island that has no resident population of Green turtles. During Dec.-June, the island is used as a breeding centre by migrating Brazilian turtles — A. Carr & H. Hirth, 'The ecology and migrations of sea turtles, 5 Comparative features of isolated Green turtle colonies', *American Museum Novitates* No. 2091 (1962) 1-42.
28. J. J. Parson, *op cit* (1962) 40.
29. 'Aleph' (City Press) *London Scenes and London People*, London (1863) 336.
30. Wilson cites the 6th edition of Hannah Glasse's *The Art of Cookery* published in 1758 as evidence of this — C. A. Wilson, *op cit* (1976) 204.

by the Lord Mayor and Livery Companies of the City of London. The association between City aldermen and turtle soup, in particular, was to become fixed in people's minds. So much so, that when in the late 19th century, stocks of turtle in the West Indies and Ascension Island were in danger of becoming seriously depleted by over exploitation, the Reverend Hart³¹ was moved to comment that 'Turtle fishing . . . is carried on regardless of the future . . . the consequence is that the turtle is becoming scarce . . . unless something is done, there will be great difficulty in supplying the alderman of London with that celebrated soup, upon which, according to popular belief, the aldermanic existence depends.' He goes on to report that the establishment in 'recent times' of turtle parks have in some measure obviated 'such a terrible disaster as the extinction of turtles and aldermen.'

Very little is known concerning the early organisation of the turtle trade. Certainly turtles were sold directly to various establishments in London by ship's captains, some of whom apparently specialised in this trade³². The bulk of the trade, however, was probably controlled by middlemen whose identity and exact role remains unknown, but may have included West India merchants.

Although the *Account Book of Birch, Birch & Company* provides the names of eleven people who sold turtles to the firm, we have unfortunately not been able to establish any link between them and the turtle trade. The London Directories were unable to throw any light on this matter. For example, the records of Birch, Birch & Co. show that on July 28th 1784, the sum of £56 - 3s - 0d was paid to a Mr Neunberg for an unspecified number of turtles. A search through *Bailey's British Directory Vol. I London* for the year 1784 revealed one entry only under this surname. This was G. V. Neunberg of No. 75 Cornhill, whose profession was listed as 'potter and glass seller'; a somewhat unlikely candidate for a dealer in live turtles. A firmer, but as yet unsubstantiated lead was provided by the reference in the Birch & Birch account book to the purchase of a turtle from the Jamaica Coffee House. The Jamaica Coffee House was situated in Cornhill and according to *Kent's Directory* for the year 1783, this was also the address of John Hill a West India merchant.

The later history of the turtle trade is better documented. The advent of the steam ship greatly facilitated the movement of live turtles across the Atlantic, and by 1878 the total number of turtles imported annually to Britain was said to have reached 15,000.³³ According to Simmonds (1885)³⁴ about 3,000 turtles were supplied each year by the nesting beaches on Ascension Island.

Throughout the late 19th century, Jamaica served as the principal centre for the turtle trade in the Caribbean. Shipments of turtles caught on the nesting beaches on the Cayman Islands and Tortuguero Beach were sent via Jamaica to England and the United States. In addition to live turtles, Jamaica supplied the London markets with sundried turtle meat.³⁵ Tinned turtle products also started to arrive in London from the Caribbean by the mid 19th century as the following extract from *Punch* published in 1844, illustrates³⁶:

Turtles for the Million

'Last summer the metropolis was inundated with fourpenny pine-apples, and though ship-load after ship-load arrived in the Docks, "the cry was still, they come". This cheap luxury having retired for the season, we are promised real turtle for sixteen people out of a 2lb tin, being, by-the-by, about a gravy-spoon per head, or rather per mouth, of this most salacious relish . . . The cheap turtle is made from fish seized while sporting in their native waters . . . and "preserved under patent at Honduras", before they have time to feel the terrors of the situation, and lose any of their liveliness'.

By the late 19th century, other canneries had been built to supply the demand for tinned turtle meat and soup. One of the largest factories, at Key West in Florida, was said to pack each year, 200,000 pounds (90,000kg) of dried turtle meat for export to England and Cuba.³⁷ The increased traffic in live turtles, together with importation of dried and tinned turtle products, meant that by the end of the 19th century turtle soup was no longer the prerogative of the rich but could be enjoyed even by the lower middle classes. Today, the production by John Lusty Ltd³⁸ of relatively inexpensive cans of turtle soup means that many more people are now able to try this exotic food.

Acknowledgements

Dr P. L. Armitage wishes to thank the following

31. H. M. Hart, *The World of the Sea*, London (1869) 364.
32. See, for example, the reference to Capt. Crayton 'The turtle' in Anon, *The Gentleman's Magazine* 23 (1753) 489.
33. P. L. Simmonds, *The Commercial Products of the Sea*, London (1878) 365.
34. P. L. Simmonds, *The Animal Food Resources of Different Nations*, London (1885) 227.
35. P. L. Simmonds, *op cit* (1885) 227; J. J. Parsons, *op cit* (1962) 16, 27-35.
36. Anon, 'Turtles for the million', *Punch* 7 (1844) 260.
37. P. L. Simmonds, *op cit* (1885) 226.

colleagues at the Museum of London for their help: Jean Macdonald, C. Ellmers, Rosemary Weinstein, Katharine Hayes Armitage, Barbara West and Tony Dyson. My gratitude also goes

38. This firm originated in 1852 with John Lusty selling turtles from his Marine Stores in Parnham St., Limehouse. Shortly after this date, John Lusty began preparing turtle soup in large batches. This soup was at first sold in glass jars and then, just before the founder's death in 1887, supplied in cans. Information from *John Lusty & The Turtle*, pamphlet privately printed by John Lusty Ltd. 57, Standard Road, Park Royal, London NW10.

to Kathleen M. Shaw and E. A. Jarzembowski, both of the British Museum (Natural History). Lastly, I wish to thank Alison Locker, D.O.E. Ancient Monuments Laboratory, London and Mr D. Staples of John Lusty Ltd for information provided.

Colin McCarthy would like to thank Dr E. N. Arnold and Miss A. G. C. Grandison, both of the Reptile Section, Dept Zoology, British Museum (Natural History), and Professor L. D. Brongersma, for reading and discussing the manuscript.

Appendix

The Glass

1. Wine glass (fragment) lead glass; solid inverted baluster separated from a large, annulated ~~knop~~ by a collar. ht. 80mm; 1705-15; MOL A26359.
2. Wine glass, lead glass; ?ovoid bowl (fragment); short drawn stem; solid conical foot. ht. 108mm; late 18th century; MOL A26354.
3. Wine glass, lead glass; trumpet bowl (fragment); short drawn stem; plain conical foot. ht. 90mm; late 18th century; MOL A26355.

4. Wine glass, lead glass; trumpet bowl (fragment); short drawn stem with flattened knop in mid section; collar at base; plain conical foot. ht. 90mm; late 18th century; MOL A26356.
5. Wine glass, lead glass; short drawn stem with bladed knop and stepped junction below bowl (fragment); collar at base, plain conical foot. ht. 77mm; c. 1815; MOL A26357.
6. Wine glass, lead glass; conical bowl (fragment); bladed knop and triple collar below bowl. ht. 90mm; c. 1815; MOL A26358.

ROSEMARY WEINSTEIN

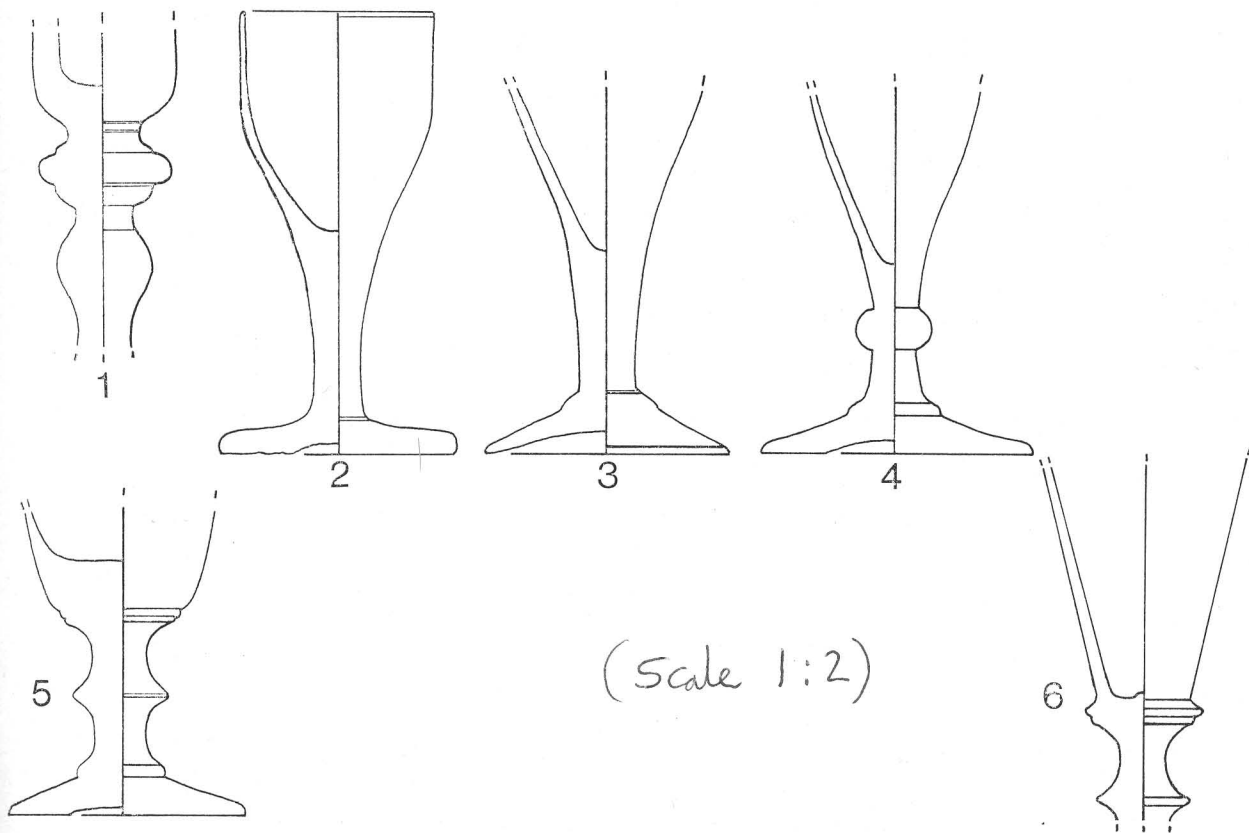
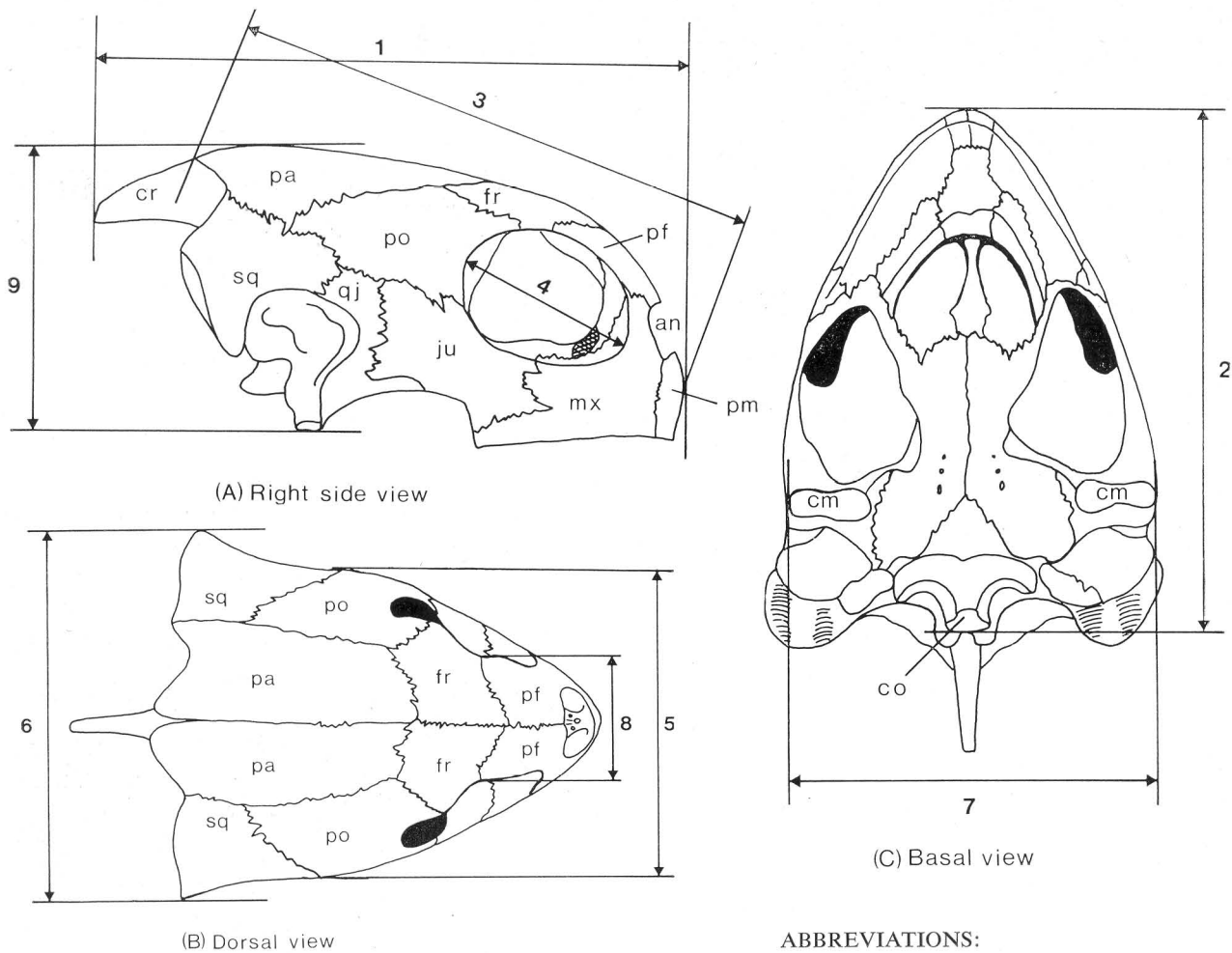


Fig 3: Wineglasses from late 18th century well, Leadenhall Buildings.
(Drawing by Katharine Hayes Armitage)

(Appendix continued on page 16)



POINTS OF MEASUREMENT:

- 1 Total length
- 2 Condylobasal length
- 3 Cranial length
- 4 Greatest diameter of orbit
- 5 Width of skull
- 6 Squamosal width
- 7 Basal width across mandibular condyles
- 8 Least width between orbits
- 9 Height of skull

ABBREVIATIONS:

- | | |
|----|-------------------------|
| an | apertura narium externa |
| cm | condylus mandibularis |
| co | condylus occipitalis |
| cr | crista supraoccipitalis |
| fr | frontal |
| ju | jugal |
| mx | maxilla |
| pa | parietal |
| pf | prefrontal |
| pm | premaxilla |
| po | postorbital |
| qj | quadratojugal |
| sq | squamosal |

Fig. 4: Points of measurement on the skull of Green turtle *Chelonia mydas*. Nomenclature follows that of E. S. Gaffney, 'An illustrated glossary of turtle skull nomenclature', *American Museum Novitates* No. 2486 (1972) 1 - 33. For an earlier description of the skull of Green turtle, reference may be made to H. L. Kesteven, 'The anatomy of the head of the Green turtle *Chelone midas*, Latr. Part I. The skull', *Journal and Proceedings of the Royal Society of New South Wales for 1910* 44 (Part 3) (1911) 368 - 400.

(Diagrams by Katharine & Philip Armitage)