

subspirali, ad marginem posticam inclinato; superficie liris radiantibus, interstitiis anguste clathratis, sculpta; fissura lineari, intus supra concamerata, extus lamellis lateralibus elevatis instructa; apertura angusta, oblongo-ovali, margine crenulato, postice expanso, reflexo.

*Hab.* Straits of Korea; 63 fathoms.

This species is smaller than *C. Pelex*, A. Adams, and is laterally compressed; and the vertex is subspiral, and posteriorly deflexed so as nearly to reach the hinder margin. The interstices of the radiating ribs or liræ are crossed by transverse or concentric bars placed close together, so as to produce a narrowly clathrate style of sculpture. Many specimens were obtained, all of the same size and character, in company with young and old specimens of *Emarginula*. When in the young state, the fissure extends as far as the front edge; and when very young, these shells resemble, in respect of the emarginate aperture, species of *Emarginula*.

Shanghai, Feb. 1, 1860.

XXII.—*A Synoptical List of the British Species of Teredo, with a Notice of the Exotic Species.* By J. GWYN JEFFREYS, Esq., F.R.S.

TEREDO *Auctororum.*

A. *Having simple pallets* (claustra, operculi vice fungentia—"opercula," *Lovén*).

1. *T. Norvagica*, Spengler.

*Bruma delle navi*, Vallisnieri.

*T. navium*, Sellius.

*T. navalis*, Montagu, and all other British conchologists except Forbes and Hanley.

*Fistulana corniformis*, Lamarek.

*T. nigra*, Blainville.

*T. Bruguerii*, Delle Chiaje.

*T. Deshailii*, Quatrefages.

*T. fatalis*, ej.

*T. Senegalensis*, Laurent.

Var. *T. divaricata*, Fischer.

HABITAT: Channel Isles, in submerged wood (Lukis); Budleigh Salterton, Devonshire, in the timbers of a steamer which was wrecked between two and three years ago, and is now partly uncovered at very low tides (Barlee).

2. *T. megotara* †, Hanley.

*Bruma dell' oceano*, Vallisnieri.

*T. oceani*, Sellius.

*T. dilatata*, Stimpson.

HABITAT: in floating wood thrown up on the coast; Swansea

Bay (Jeffreys), Scarborough (Leckenby), Oban (Bedford), Guernsey (Lukis), Sussex (Dennis).

### 3. *T. nana* †, Turton.

*Pholas Teredo*, Müller (Zool. Dan. prodr.) and Fabricius?

*T. navalis*, Möller?

*T. denticulata* (Gray), Fischer.

**HABITAT:** in floating wood thrown up on the coast; Carmarthen Bay (Jeffreys), Larne, County Antrim (Paterson), Guernsey (Lukis). It occurs with the next species, as well as with *T. megotara*, but it is by no means so gregarious or abundant as either of those species.

It differs from *T. megotara* in the valves being more compressed and solid, in the anterior auricle being much smaller and having a more obtuse angle and fewer striæ, in the posterior auricle being larger and higher, and especially in the very strong and prominent tubercle or false tooth. The tube of *T. nana* appears to be destitute of calcareous lining, except towards the entrance, while *T. megotara* forms a solid tunnel; and the lunule of the pallets is more incised in *T. nana*. Adult specimens measure 21 inches in length. The Turtonian types decidedly belong to this species, and not to *megotara*.

### 4. *T. subericola*, n. s. (Macgillivray, MS.)

**Tube** rather thin, and adherent to wood, short, of the form of an elongated cone, curved at the opening, with internal irregular transverse septa, which are close-set at the extremity. **Valves** oval, rather convex, thin; body smooth and somewhat glossy; anterior auricle short, angle obtuse, striæ rather numerous; posterior auricle narrow, falciform, reflected at the outer edge, with its apex raised above the crown; tubercle strong and prominent; fang long, narrow, and incurved; apophysis rather broad. **Pallets** short, pear-shaped, compressed, and expanded towards the anterior margin, with a semilunar depression in the middle and a longitudinal groove in front; stalk short and pointed.

**Dimensions:** length (of valves)  $\frac{5}{2}''$ , breadth  $\frac{4}{2}''$ .

**Var. minor.**

**HABITAT:** Guernsey, in drift fir (Lukis); var. *minor*, Aberdeen, in cork (Macgillivray), Swansea and Carmarthen bays, in fishermen's cork net-floats (Jeffreys), Plymouth (Webster), Falmouth (Norman), in similar material. The embryonic state of some of the specimens which occur living in cork, as well as the nature of the material, induce me to consider this species indigenous. The posterior auricle is so small in comparison with that

of *T. megotara*, that Dr. Lukis proposed the name of "microtara" for this species. Specimens in cork are frequently encysted.

5. *T. malleolus* †, Turton.

HABITAT: in floating wood thrown up on the coasts of Carmarthen Bay (Jeffreys), Guernsey (Lukis), Sussex (Dennis).

6. *T. excavata* †, n. s. (Lukis, MS.)

*Tube* short, rather solid, and detached from the wood, slightly curved, jointed at intervals, with a very few internal transverse wrinkles at the opening, and an indistinct siphonal ridge. *Valves* roundish-oval, thin, compressed; body glossy, marked with distant, but regular and fine, striæ or impressed lines; anterior auricle placed nearly at a right angle with the insertion of the fang, striæ rather numerous and waved; posterior auricle dilated and somewhat reflected, apex nearly on a level with the crown or umbo of the valve, inner margin free and well defined; tubercle slight, and not visible when the valve is in a supine position; fang obtuse; apophysis thin and narrow. *Pallets* long and narrow, bifid in front to nearly half their length, with two corresponding tubular cavities which terminate in separate points like the prongs of a steel fork; underneath they are abruptly sloped towards the bifurcate points, and closely striated in a longitudinal direction; stalks nearly as long as pallets, pointed at one end and at the other merging into the pallets.

*Dimensions*: length (of valves)  $\frac{5}{20}$ ''; breadth  $\frac{4}{20}$ ''.

HABITAT: in drift fir, Guernsey (Lukis), Sussex (Dennis); rare. In the shape of the pallets this species is allied to *T. elongata*.

7. *T. bipartita* †, n. s.

*Tube* . . . . .? *Valves* oval, thin, compressed, covered with a brownish epidermis; body smooth and glossy; anterior auricle moderately developed, angle rather obtuse, striæ very numerous and crowded; posterior auricle rounded, small but prominent, appressed to body, apex placed below the crown, internal margin indistinct; fang narrow and pointed; tubercle small; apophysis narrow. *Pallets* resembling those of *T. pedicellata*, but longitudinally divided into two equal parts by a deep furrow; stalk cylindrical, rather longer than pallet.

*Dimensions*: length (of valves)  $\frac{4}{20}$ ''; breadth  $\frac{3}{20}$ ''.

HABITAT: in *Cedrela odorata* (or "West India Cedar"), thrown ashore, perhaps by the gulf stream, at Guernsey, with *T. spatha* (Lukis).

8. *T. pedicellata*, Quatrefages.

HABITAT: Channel Isles, in submerged wood (Lukis); in the

piles of Yarmouth Pier, with the next species (Jeffreys); in fishermen's stakes, Herne Bay (Metcalf).

Although the valves in adult specimens bear a close resemblance to those of the following species, the pallets are unmistakably different; and in the young the striæ on the anterior auricle of the valves are much fewer, and consequently more remote than in that species. Where both species occur together, the present occupies the outer layers of the wood, while the other penetrates into its recesses. Quatrefages discovered this species at Guibuscoa, on the north coast of Spain; and I noticed it in some wood which M. Deshayes had taken on the Algerine coast. The tube is a beautiful object, being jointed in an imbricated manner, like the stalk of an *Equisetum*.

9. *T. marina*, Sellius.

*Serpula Teredo*, Da Costa.

*T. navis* (*Dentalium*), Linn. in Fn. Suec.

*T. navalis*, ej. Syst. Nat.

*T. Batava*, Spengler.

HABITAT: in the piles of Yarmouth Pier, and too frequently in the Medway and lower part of the Thames (Jeffreys). Ramsgate Pier (Rev. Sir Charles Macgregor, Bart.). It is the Dutchmen's pest; and they do not appear to be favoured with any other kind.

Sellius used the binomial appellation throughout, although the date of his valuable and interesting monograph is long anterior to the time of Linnæus. It was Sellius, and not Adanson, who first indicated the affinity of *Teredo* to *Pholas*.

10. *T. spatha* †, n. s.

*Tube* rather long and flexuous, detachable, regularly jointed, increasing rapidly from the extremity, inside which there are a few transverse wrinkles and a sharp, but short, siphonal ridge. *Valves* triangular, compressed, rather solid; body smooth; anterior auricle large, angle about 50°, striæ exceedingly numerous and fine; middle area unusually large and broad, beading very minute; posterior auricle obtuse, small, rounded and appressed, internal margin indistinct; fang narrow and pointed; tubercle small and sunk; apophysis narrow. *Pallets* spade-shaped, in the young state calyciform; stalk of the same length as pallet.

*Dimensions*: length (of valves)  $\frac{6}{20}$ " ; breadth nearly as much.

HABITAT: with *T. bipartita*, in *Cedrela odorata*, at Guernsey (Lukis).

A pair of pallets is in the British Museum, from Miss Saull; and another pair is in the Collections of Natural History at the

Jardin des Plantes. The localities of both the last-mentioned specimens are unknown.

11. *T. fusticulus* †, n. s.

*Tube* short and straight, with a slight calcareous lining, which is not easily separated from the wood. It is thickened internally at the opening, and has a few transverse wrinkles in that part. *Valves* round, thin, compressed; body smooth, glossy, white under a brown epidermis; anterior auricle of moderate size, angle about  $50^{\circ}$ , striæ numerous; posterior auricle round, expanded, and appressed to body, internal edge well defined; fang broad, obtuse; tubercle small and sunk; apophysis thin and narrow. *Pallets* club-shaped, formed of several transverse layers, and externally tuberculate; stalk twice the length of pallet.

*Dimensions*: length (of valves)  $\frac{4}{20}$ " ; breadth nearly as much.

*HABITAT*: in *Cedrela odorata* from Leith (Jeffreys).

B. *Having compound pallets* (Xylotrya, Leach).

12. *T. cucullata* †, n. s. (Norman, MS.)

*Tube* long, thick, not easily detached from the wood, internally wrinkled near the opening. *Valves* roundish-oval, rather convex; body marked transversely, but regularly, with a few striæ or impressed lines; anterior auricle small, angle obtuse, striæ numerous; posterior auricle dilated and appressed, having its apex nearly on a level with the crown or umbo of the valve, inner edge free and overlapping the body; fang broad; tubercle small; apophysis sickle-shaped. *Pallets* composed of 20–30 calyciform joints or *cuculli*, which are broad on the outer surface, and slightly overlap one another in succession, lateral edges setaceous, with short filaments; stalk cylindrical, of same length as pallet.

*Dimensions*: length (of valves)  $\frac{8}{20}$ " ; breadth  $\frac{6}{20}$ " .

*HABITAT*: in drift fir-wood, Guernsey (Lukis); Sussex coast (Dennis); in teak, with the next species, at Belfast (Thompson).

The pallets resemble those of *T. minima*, Blainville (*T. pal-mulata*, Philippi), in having the front margin quite plain; but they differ in the joints being of nearly equal breadth throughout, and (especially in the earlier stage of growth) being much more numerous and compact. The pallets of *T. cucullata* are also three or four times as long as those of *T. minima*. The tube and valves of each species are easily distinguishable.

13. *T. fimbriata* †, n. s.

*T. palmulata*, Forbes and Hanley, but not of Lamarck or Philippi.

HABITAT: in teak-wood, Leith (Jeffreys).

The minute description of this species which is given in the 'History of the British Mollusca' makes it unnecessary to add anything to it; but I may remark that the front margin of the pallet is fringed, as in *T. pennatifera* and *bipennata*, and that the valves are more nearly allied to *T. fusticulus* than to the *T. palmulata* of Philippi.

14. *T. pennatifera* †, Blainville.

HABITAT: in floating wood thrown up on the coast of Guernsey (Lukis); Beachy Head (Dennis). In France it has occurred under similar circumstances at Cherbourg.

15. *T. bipennata* †, Turton.

*T. carinata* (partim), Gray.

HABITAT: with the last.

This species requires further investigation, because of the similarity of its valves to those of *T. malleolus*, and of its pallets to those of *T. pennatifera*. The former appear, however, to present a difference in being more arched and solid than in *T. malleolus*, with the anterior auricle larger and having more striæ, as well as in the posterior auricle being usually smaller; and the latter in having a much shorter and thicker stalk than in *T. pennatifera*, which is not annular or tracheiform as in that species, as well as in the lateral filaments being shorter and less slender.

*Observation.*—The species distinguished by a † may not be strictly indigenous, but occasionally or accidentally visiting these coasts. I have given only the localities which occurred to myself or were communicated to me by scientific friends, having in every instance examined and verified the species.

*Exotic Species.*

## A.

16. *T. truncata*, Quatrefages.

17. *T. Senegalensis*, Blainville.

*Taret du Sénégal*, Adanson.

18. *T. elongata*, Quatrefages.

*T. Petitii*, Recluz.

*T. Senegalensis*, Fischer.

## B.

19. *T. Stutchburyi*, Blainville.*T. campanulata*, Deshayes in Brit. Mus.20. *T. minima*, Blainville.*T. bipalmata* and *bipalmulata*, Delle Chiaje.*T. palmulata*, Philippi.*T. Philippii*, Fischer.*T. serratus*, Deshayes, MS.

This species is common in the Mediterranean; but it has not yet been noticed in this country.

21. *T. palmulata*, Lamarck.*T. bipalmulata*, ej.*Tarct. de Pondichéri*, Adanson.

Nothing is known of the valves or tube. The pallets, from which Lamarck described the species, are still preserved in the Collections of Natural History at the Jardin des Plantes; and I observed another pair in the cabinet of M. Petit de la Saussaye at Paris. They bear no resemblance to the pallets of *T. palmulata* of Philippi, except in being compound or jointed; but they are more nearly allied to the pallets of *T. bipennata*, although evidently distinct.

## PROCEEDINGS OF LEARNED SOCIETIES.

## ZOOLOGICAL SOCIETY.

February 14, 1860.—John Gould, Esq., F.R.S., V.P., in the Chair.

## ON THE OCCURRENCE OF AMERICAN BIRDS IN EUROPE.

BY HERR H. GÄTKE OF HELIGOLAND.

The route by which American birds proceed to Europe is, as Yarrell justly terms it, “an interesting problem, of difficult solution.” For years this solution has occupied my attention; and although I have myself always been convinced that such of these entirely American birds as occasionally visit Europe *do* reach us by a passage across the Atlantic, this remains a mere opinion, carrying no weight if unsupported by facts, or by at least sufficient argument to make good the question at issue.

The mere comparative review of the occasional visitors among the birds of Great Britain and of Germany will lead to the conclusion that the route of American birds to Europe must needs be a voyage across the Atlantic; for almost all the additions to the birds of Europe, of species *purely American*, have been obtained in Great Britain—which could not have been the case if they had proceeded in any other than an eastern direction—whilst the additions by Germany, furnished to the European Ornis, consist almost entirely of birds belonging to Asia.