



NEW SPECIES OF SHIPWORMS FROM SIAM.

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With Plate 6.

INTRODUCTORY NOTE.

Shipworms are abundant and widely distributed in Siam. Here as elsewhere they are very destructive to timbers, piling, boats, stakes used in fishing appliances, and submerged wood generally. While most numerous in salt and brackish waters, they sometimes occur far inland where the water is always fresh or is faintly brackish for only a short period each year. It is reported that shipworms have attacked the timbers of the Chulalongkorn Lock in the Rangsit Canal, where the water is always fresh. On the east coast of the Gulf of Siam, where for many years shipworms (called prieng) have been the object of a special fishery and are extensively consumed as human food, an interesting form of cultivation is carried on, section of trunks and limbs of trees being driven into the bottom in shallow water and large quantities of the shipworms harvested therefrom after a few months. On this part of the coast shipworms are reported to attack living mangrove trees.

Specimens of shipworms collected by the writer in various parts of Siam and submitted for identification to Dr. Paul Bartsch, the leading authority on this group, have been found to include at least two hitherto unknown forms which are here described and figured.

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Teredo (Teredo) siamensis, new species. Siam Shipworm.

Plate 6, figs. 2, 3, 4, 5, 9, 11.

Shell small, flesh-colored, with a rosy flush which is particularly apparent on the anterior and median portion. The extreme anterior edge of the anterior part is marked by a strong, smooth, reflected callus from which radiate in a fan-shaped manner the denticulated ridges of the anterior portion. These are very closely approximated anteriorly, and are separated by spaces a little wider

than the ridges at the ventral margin, and by spaces about three times as wide on the umbonal region. These ridges are finely denticulated at their free margin, the denticulations extending down on the dorsal edge to the base of the ridges, but not so on the ventral. The junction of the anterior and median portions forms almost a straight line. The anterior median part is moderately broad and marked by stout denticulated ridges which are separated by narrow impressed lines. Of these ridges, 20 occur in a straight line across the anterior median portion, parallel with the ventral margin of the anterior part. The next to the last one has 120 denticles. These denticles are each doubly cusped, the posterior cusp being a little smaller than the anterior which is elongated. The middle portion of the median part forms a depressed area which is crossed by the rough continuation of the dental ridges which here take a decided bend, but are free of denticles; between these ridges are smaller ridges which increase the roughness. The posterior portion of the median part is a little wider than the anterior and middle portion of the median part combined, and is marked by up-curved lines of growth which are parallel with the ventral margin of this portion in position. The posterior part forms a conspicuous auricle which produces a decided knob at its junction with the posterior portion of the median part. The area where these two meet also is somewhat constricted. The auricle is marked by concentric lines which give to it a somewhat fluted aspect. These raised lines are parallel with the ventral margin of this part. Interior of the shell with a very strong umbone from the basal margin of which a strong, flattened, twisted blade extends ventrally. The junction between the anterior and median portion is a thickened straight line. The middle area of the median part is rough. The anterior part of the posterior auricle projects over the posterior median portion as a thin shelf which extends from the ventral knob at the junction of the median and posterior part into the umbone. The cavity behind this shelf is shallow. The posterior portion of the auricle is strongly fluted within. A strong basal knob is present at the ventral margin of the median portion and extends for some little distance dorsally as a ridge. The pallets have a rather twisted stalk, a strong basal cal-

careous portion which terminates in a somewhat blunt apex which is surmounted by the cupped bi-pronged typical teredine tip.

The type (Cat. No. 363159 U. S. National Museum) was collected by Dr. Hugh M. Smith at Singora, Siam. The shell measures—height, 3.8 mm.; length, 3.8 mm.; diameter, 3.5 mm. The pallet measures—length, 3.6 mm., of which 1.5 mm. go to the stalk; diameter, 1.1 mm.

Bankia (Nausitora) smithi, new species. Smith Nausitora.

Plate 6, figs. 1, 6, 7, 8, 10, 12,

Shell very large, subglobular, pale straw-colored. The extreme anterior margin with the usual sinus which is covered by a moderately reflected thick, smooth callus, the main portion bearing the dental ridges which radiate slightly fan-shaped from the anterior margin, where they are rather closely approximated, to the junction at their posterior extremity, with the anterior edge of the median portion, where they are separated by spaces about one and a half times as wide as the ridges. These ridges are almost triangular in cross-section and very finely denticulated on the free border, the grooves separating the denticles extending down on the anterior and posterior margin of the ridge bearing them. 50 of these ridges are present on the type, but probably more than that number have been lost by the erosion at the umbone. The anterior median area is very broad and bears the closely crowded strongly denticulated ridges which are separated by spaces a little more than half as wide as the ridges. These ridges terminate abruptly posteriorly. The teeth borne on these ridges are about twice as high as they are wide, and bear a hook-like denticle at their dorsal termination. There are 64 of these rows across the anterior median portion in a straight line from the ventral margin of the anterior portion, and there are 194 denticles on the next to last ridge. The middle portion of the median part is marked by the usual groove that extends from the umbone to the basal margin. This is in reality divided into two parts which are of equal width, the anterior of which is concave and the posterior slightly convex. The anterior is marked by the feeble continuations of the denticulated ridges which here are smooth and free of denticles, while the posterior portion is rendered rough by transverse dermal rugae. The posterior median portion is narrow, a little more

than twice as wide as the median portion, and is marked by upcurved incremental lines; the posterior part is almost absent in the adult shell where only a narrow inbent strip remains, the posterior auricle being completely eroded in the adult shell. In young shells this is narrow, thin, and marked by concentric lines that parallel its basal edge. Interior bluish-white with a rather strong umbonal knob and a rather strong flattened blade descending from the inner margin of the umbonal knob. There is also a strong basal knob at the ventral extremity of the median middle portion, which is free for some little distance from the shell itself and extends dorsally as an attenuated ridge. The junction of the anterior and middle part forms a somewhat thickened ridge. The posterior part projects over the middle part as a thin shelf which is free for some little distance. The anterior border of this almost coincides with the anterior edge of the anterior median part. Pallets typical for the subgenus, that is, they consist of a solid basal stalk which extends throughout the structure. Upon this stalk is placed a series of closely spaced cone-in-cone-shaped elements which are over-grown with a solid calcareous covering that unites them, leaving only ridges shining through this to denote the individual elements composing them.

The type (Cat. No. 363158 U. S. National Museum) was collected by Dr. Hugh M. Smith in the Chao Phya River at Bang Sorn, July 19, 1925. The shell measures—altitude, 13 mm.; length, 11 mm.; diameter, 13 mm. The pallet measures—length, 14.5 mm., of which 6 mm. go to the stalk; diameter, 3 mm. Cat. No. 361383 U. S. National Museum contains two additional specimens also collected by Dr. Smith at Singora, Siam.

EXPLANATION OF PLATE 6.

- Fig. 1. *Bankia* (*Nausitora*) *smithi*: outside of shell.
2. *Teredo* (*Teredo*) *siamensis*: outside of pallet.
3. *Teredo* (*Teredo*) *siamensis*: inside of pallet.
4. *Teredo* (*Teredo*) *siamensis*: a cross section of the anterior portion of the median area parallel with the ventral margin of the anterior area, showing the number of dental ridges and the character of the denticles.
5. *Teredo* (*Teredo*) *siamensis*: lateral view of pallet.
6. *Bankia* (*Nausitora*) *smithi*: inside of pallet.
7. *Bankia* (*Nausitora*) *smithi*: lateral view of pallet.
8. *Bankia* (*Nausitora*) *smithi*: outside of pallet.
9. *Teredo* (*Teredo*) *siamensis*: outside of shell.
10. *Bankia* (*Nausitora*) *smithi*: inside of shell.
11. *Teredo* (*Teredo*) *siamensis*: inside of shell.
12. *Bankia* (*Nausitora*) *smithi*: a cross section of the anterior portion of the median area parallel with the ventral margin of the anterior area, showing the number of dental ridges and the character of the denticles.

