

SHELLS FROM A CAVE AT BUANG BEP, SURAT, PENINSULAR SIAM.

By J. R. LE B. TOMLIN, M. A.

INTRODUCTORY NOTE.

In the Journal of the Siam Society, Vol. XXIV, pp. 207-209, there is a note by Mr. I. H. N. Evans on some cord-marked pottery found in a cave at Buang Bep. The shells listed by Mr. Tomlin in this paper were found on the floor of the same cave, in association with the fragments of pottery. This cave is in a small limestone hill about 45 kilometers from the point where the Bandawn River debouches into Bandawn Bay, and probably about 30 kilometers from the highest point on the river at which tidal influence is felt.

The two species mentioned by Mr. Tomlin as being recent, and both land shells, most probably got into the cavern through some of the large holes in the roof. The other shells in the list consist of both fresh-water and estuarine species. It is improbable that both categories found their way to the cave naturally, i.e., at times when river or sea-levels were relatively higher than now. Human agents, possibly the makers of the cord-marked pottery, were, I have little doubt, responsible for the carriage of these shells into the cave. It is quite likely, however, that when the shells were brought estuarine conditions were much nearer the cave than now. The tops of the *Potamides* were all broken, probably the more easily to get out the contents. Mr. Tomlin writes: "As regards the tops of the *Potamides* being all knocked (?) off, I think the eating idea is very likely but have never seen a mention of this. I think I heard of *Arca granosa* (one valve sent) being eaten in Borneo."¹

It has sometimes been concluded that because marine shells were found in a cave the sea must once have reached its level. The possibility of such shells having been taken to caves by human beings should not, however, be lost sight of.

A. F. G. KERR.

¹ *Arca granosa* is a common Siamese species and one of the eight or ten species of *Arca* regularly eaten in Siam. Among numerous localities represented in local collections are Maprao Island, near Langsuen, and Bandawn Bight.—Editor.

I am indebted to Dr. A. F. G. Kerr for the opportunity of studying a number of shells which he found in a cave at Buang Bep, Surat, Peninsular Siam.

Two of the species received look to me like fairly recent specimens and not coeval with the rest of the material. These two are both land shells, viz :—

ZONITIDAE.

Sarika resplendens (Philippi)?

Unfortunately this example reached me in fragments, and I can only guess at the species.

Cyclophorus expansus Pfeiffer.

Apparently widely distributed in Siam : Dr. Kerr has sent it from Ban Kawp Kep ; Takuapa ; Talang, Puket ; Siepyuan, Chumpawn ; Yan Yao, Surat ; and Kaw Samui.

The rest of the consignment consists entirely of aquatic species, either purely fresh-water forms or, in the case of four species, forms requiring more or less estuarine conditions, i.e., a habitat which affords more or less salinity. The list is as follows :—

ARCIDAE.

Arca granosa Linn.

Most of the species in this family are purely marine, but *A. granosa* is spoken of by von Martens as occurring frequently in brackish water at Singapore, on Borneo, Celebes to Sunda Islands, and elsewhere. M. von Neumayer states that a very small form was found in the deposits of the Yang-tse-kiang delta, mixed with such fresh-water genera as *Viviparus*, *Bythinia*, *Thiara*, and *Corbicula*. A record of its occurrence in the Bassein River will be found in Journal of Asiatic Society of Bengal, Vol. XXXVI, p. 70 (1867). It is evidently a very adaptable species, and the analogy to the Chinese association mentioned above is strong, especially when one remembers that *Cyrena* is closely akin to *Corbicula*. I find *A. granosa* in a recent state also recorded from Malacca, Mergui, Burma, both sides of India, Cochin China, Tonkin, Lem Ngawp and Kaw Chang in the Gulf of Siam, China, Japan, Philippines, Sumatra, Java, Moluccas, Timor, Macassar, Aru Isles, and Sorong.

CYRENIDAE.

Cyrena decipiens Deshayes.

The members of this genus are generally found under brackish conditions. *C. decipiens* is known chiefly from Singapore.

UNIONIDAE.

There are fragments of one or possibly two species in the collection, but they are too worn, decorticated, and broken to admit even of generic identification. The Unionidae consist entirely of fresh-water forms.

ELLOBIIDAE.

Ellobium auris-midae (Linn.)

There is one unmistakable fragment of this common estuarine oriental species, which is recorded as far east as the Moluccas and New Guinea (Lesson).

VIVIPARIDAE.

Viviparus martensi (Frauenfeld).

Viviparus is almost a world-wide genus of fresh-water snails. *V. martensi* seems peculiar to Siam. Dr. Kerr has collected it in a flooded rice-field at Kaw Yao Yai, Pang-nga; in a rocky pool on a limestone hill at Sam Roi Yawt; at Angtawng; at Kao Tok, Kanburi; and Professor Cockerell sent it to me from Chiangmai.

CERTHIIDAE.

Potamides palustris (Linn.)

A brackish-water shell of almost universal occurrence in the Indian Ocean, among the islands of the far East, and reaching as far as tropical Australia.

THIARIDAE.

Thiara hamonvillei Brot.

One imperfect but easily recognisable specimen. This species was described from Tonkin and is very well figured in *Journal de Conchylogie*, vol. xli, pl. vi, figs. 2, 2a. It has been recorded from numerous localities in Tonkin, and M. Blaise mentions that it is found sometimes on stones or tree-trunks below the surface of rivers, sometimes on muddy bottoms, and it is known to occur in fresh water which is slightly ferruginous. Entirely a fresh-water species and not hitherto reported from Siam.

