

plentiful. It seems strange that a species once so abundant here should have entirely disappeared.

Following is a list of the species I have taken from the marl beds at New Harmony and Grand Chain :

- Helicina occulta* Say. Abundant.
- Vallonia pulchella* (Müll.).
- Polygyra multilineata* (Say).
- Polygyra hirsuta* (Say). Abundant.
- Polygyra monodon* (Rack.). Abundant.
- Polygyra monodon fraterna* (Say). Abundant.
- Strobilops labyrinthicus* (Say).
- Strobilops affinis* Pils.
- Pupoides marginatus* (Say). Common.
- Bifidaria armifera* Say.
- Bifidaria contracta* Say.
- Circinaria concava* (Say).
- Omphalina inornata* (Say).
- Vitrea hammonis* (Strom.).
- Vitrea wheatleyi* (Bland).
- Euconulus fulvus* (Müll.).
- Zonitoides nitidus* (Müll.).
- Zonitoides arboreus* (Say).
- Gastrodonta ligera* (Say).
- Pyramidula alternata* (Say).
- Pyramidula perspectiva* (Say).
- Pyramidula striatella* (Anth.).
- Helicodiscus lineatus* (Say).
- Succinea retusa* Lea.
- Succinea avara* Say.
- Pomatiopsis lapidaria* Say. Abundant.

NOTES ON MOELLENDORFFIA AND STEGODERA.

BY HENRY A. PILSBRY.

In southeastern China, Tonquin and the neighboring region, there is a group of curious *Helices* with reflexed lip, toothed aperture or plicate throat, and granose, often hairy surface. The systematic re-

lations of these snails are still uncertain. No member of the series has been dissected.

One of the first forms described was *Stegodera angusticollis* Martens (pl. 2, fig. 1, 2, 3), a sinistral snail from the Yangtse valley, with the last whorl distorted, making the throat very narrow. It has not before been noticed that there is a weak and shallow groove on the upper part of the last whorl (indicated in fig. 1), and another one, very weak and shallow, on the base. These vestigial furrows, which would scarcely be noticed, evidently represent structures far better developed in the following species.

Helix triscalpta Martens, type of Ancey's group *Traumatophora*, is shaped like *Stegodera*, but has a regular coil, and is dextral. There are three furrows in the latter part of the last whorl, marked inside by irregular lamellæ. The texture and granose sculpture are like *Stegodera*.

Helix horrida Pfr. and its allies are quite different. The spire is sunken, as in *Chloritis*, the peristome continued in a cord across the parietal wall, and the last whorl has two deep furrows, one basal, the other above the periphery. This and all the preceding have the apical whorl smooth and glossy. (See pl. 2, figs. 4-6.)

Another series has the apical whorl granulated. There are two or three furrows outside, with corresponding prominences within. *Helix trisinuata* type of *Moellendorffia* Ancey, is typical of this group (pl. 2, figs. 7, 8).

The absence of any internal lamellæ or barriers on the parietal wall differentiate all of the above from *Plectopylis* and *Corilla*, while the granose surface, external furrows, etc., indicate that the various members are related to one another. The tendency to have two external pits or furrows in definite positions shows a great likeness to certain forms of *Chloritis*, and the very closely related group *Planispira*, such as *C. bifoveata* Bs., *P. endoptycha* Mts., *porcellana* Grat., *infracta* Marts., etc.¹ The correspondence is so close that I have now little doubt that this Chinese series of Helices is closely related to the genus *Chloritis*, though the full demonstration awaits an examination of the soft anatomy. Pending this, I would suggest the following classification of the species:

¹ Mr. Sykes has proposed a section *Vulnus* for these pitted *Planispiras*.—J. of Malak., 1904, p. 88.

- I. Peristome continuous, free, or continued as a thick cord across the parietal wall; aperture subtriangular, squarish or subcircular, the throat with two or three plicæ.

Genus *MOELLENDORFFIA* Anc.

1. Apical whorl granulated; parietal callus free and erect or shortly adnate.

- a. Spire convex or low-conic; surface coarsely warty; periphery angular or rounded, both sulci below it; peristome continuous, the parietal callus free and erect, bearing a rounded tooth. There is often a small sulcus above the principal outer one.

Subgenus *Moellendorffia* s. str., Anc.

- a¹. Spire flat, the periphery carinate, two sulci, one subperipheral, the other basal below it. Aperture subcircular, the adnate parietal callus very short, not toothed.

Subgenus *Moellendorffiella* Pils.

2. Apical whorl smooth; parietal callus adnate, thickened at the edge; spire more or less concave; aperture heart-shaped, subtriangular or squarish; edge of the parietal callus thickened, cord-like. Surface minutely granose between larger warts which sometimes bear hairs. Typically with a basal and a superperipheral furrow behind the aperture, with corresponding prominences inside, but these may be reduced to indistinct vestiges.

Subgenus *Trihelix* Anc.

- II. Peristome widely interrupted, the parietal callus thin throughout; aperture rounded-lunate; periphery rounded and spire convex in known forms; apical whorl smooth.

- a. Sinistral, last whorl distorted; external sulci vestigial; no internal lamellæ.

Genus *STEGODERA* Martens.

- a¹. Dextral, regular; three external sulci and internal plicæ.

Subgenus *Traumatophora* Anc.

The species now known are as follows:

Moellendorffia eastlakeana (Mlldff.), China.

Moellendorffia hensaniensis (Gredl.), China.

Moellendorffia trisinuata (Marts.), China.

Moellendorffia trisinuata sculptilis (Mlldff.), China. (Pl. 2, figs. 7, 8.)

Moellendorffia loxotata (Mab.). Tonquin.

Moellendorffia spurca (Bav. & Dautz.). Indo-China.

Moellendorffia spurca deflexa (Mlldff.). Indo-China.

Moellendorffia messengeri (Bav. & Dautz.). “

Moellendorffia callitricha (Bav. & Dautz.). “

Moellendorffia (*Moellendorffiella*) *erdmanni* (S. & B.), China. (Pl. 2, figs. 9, 10.)

Moellendorffia (*Trihelix*) *horrida* (Pfr.). Cambodia.

Moellendorffia (*Trihelix*) *biscalpta* (Hde.), China.

Moellendorffia (*Trihelix*) *faberiana* (Mlldff.), China.

Moellendorffia (*Trihelix*) *hiraseana* Pils., Formosa. (Pl. 2, figs. 4, 5, 6.)

Moellendorffia (*Trihelix*) *eucharistus* (Pils.), Ryukyu Is.

Moellendorffia (*Trihelix*) *eucharistus tokunoensis* Pils. & Hir.

Moellendorffia (*Trihelix*) *eucharistus diminuta* Pils. & Hir.

Stegodera angusticollis (Marts.), China. (Pl. 2, figs. 1, 2, 3.)

Stegodera (*Traumatophora*) *triscalpta* (Marts.), China.

***Moellendorffia* (*Trihelix*) *hiraseana* n. sp.** Plate 2, figs. 4, 5, 6.

Shell planorboid, umbilicate, the umbilicus about one-fifth the diameter of the shell, thin but moderately strong, brown (the exact color not known, as the specimens found are dead). Sculpture of very distinct minute granules, close but not regularly arranged, and on the last whorl and a half, comparatively large oblong low tubercles, rather widely spaced, and standing in somewhat irregular oblique rows. Spire slightly sunken in the middle. Whorls $4\frac{1}{2}$, convex, the last more than twice the width of the preceding, convex above and below, rounded peripherally, having a deep obliquely ascending sulcus above the periphery on its last fourth, shallower as it approaches the lip, and another on the base, tangentially passing out from the umbilicus. Aperture very oblique, heart-shaped, obstructed within by two strong plicæ representing the external furrows, the basal plica standing transversely, the peripheral one entering. Peristome well reflexed, whitish, the margins connected by a raised callous parietal cord; upper lip arcuate and tapering near the upper insertion, then straightened and sloping, with a very slight prominence within where the sulcus terminates; basal lip but slightly arcuate.

Alt. 7.7, diam. 18 mm.; length from lip-edge to rear end of upper sulcus 9 mm.

Hotawa, Taiwan [Formosa]. Type no. 89999, A. N. S. P., from no. 1406 of Mr. Hirase's collection.

Two specimens of this fine species were obtained. It is closely related to *biscalpta* (Heude) and *faberiana* (Mlldff.) of China. The former is a somewhat larger shell, in which the supraparipheral sulcus terminates at the lip in a downward projecting prominence, causing the upper margin of the lip to appear composed of two small arches, a structure not seen in *M. hirasei*. The spire in *M. biscalpta* is decidedly wider than in the Formosan shell. *M. faberiana* (Mlldff.) has not been figured. It is the size of *M. hirasei*, but differs by the shape of the last whorl, which is flat, obtusely angulated above, and obtusely angular around the umbilicus, by the absence of a parietal callus, sinuous outer lip, etc. It also seems to differ in sculpture and various other features. *M. hiraseana* probably will be found to bear hairs on the larger warts when in fresh condition.

A NEW SUBSPECIES OF POLYGYRA FERRISSI.

BY JAMES H. FERRISS.

Happening to look over my cabinet series of *P. ferrissi* by daylight, I noticed that some shells from Balsam Mountain, Swain Co., N. C., differed from *ferrissi* in several points, especially the minute sculpture, and I believe them to be a new subspecies.

Polygyra ferrissi sericea n. subsp.

The shell has $5\frac{1}{3}$ to $5\frac{1}{2}$ whorls, the inner ones but slightly paler than the outer, with but the slightest trace of punctation. The last whorl has perceptibly closer striation than *P. ferrissi*, is less glossy, and is covered with a weak, very minute granulation in the interstices between striæ; there is also a slight, fine malleation or indentation; the general effect being that of a dull silk. The color is rich reddish brown, with a slight olive tint. The lip is broad and flat, a little turned back. The outer edge is dark, the inner rim white. There is a very small parietal denticle, smaller than in *P. ferrissi*. Alt. 12.7 to 13, diam. 23 mm.

Balsam Mountain, Swain County, N. C.



Pilsbry, Henry Augustus. 1905. "Notes on Moellendorffia and Stegodera." *The Nautilus* 19, 63–67.

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