

NOTES ON SOME TERTIARY GASTROPODS FROM KWANGSI

By

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With one plate

The Tertiary Gastropods from the lacustrine beds of Yungning formation had been studied by Odhner in 1930, and more recently by S. C. Hsu. The considerable number of new species found by successive investigators show that the Yungning formation is rich in molluscan fauna, which attracts the attention of many enthusiastic field geologists working in that province, and valuable collections were thereby made. Through the courtesy of Mr. L. C. Li of the National Geological Survey of China, the present writer has the privilege to study a small series of lacustrine gastropods found near Yungning, Kwangsi. The main object of Mr. Li's journey was soil survey, molluscs were taken when seen. These few forms brought back by Mr. Li were not comprised in any of the former collections, and hence the records on the subsequent pages are considered to be worth-giving.

The marine appearance of some of these gastropods found from the Yungning formation easily brings us to think of its similar condition of a few living forms occurring in the Lakes Tanganyika and Moero, in the Congo basin of Central Africa. Early authors seemed to have argued considerably for a time about the origin and evolution of the marine-like gastropods found in the freshwater habitat, but we know now almost with certainty that these lacustrine gastropods do not possess any direct phylogenetic relationship with the marine forms, they are of fluviatile origin. The history of the gastropods from Yungning formation needs further study, as we know practically nothing whatsoever of the fluviatile forms that lived in South China during the Mesozoic and early Cenozoic Periods. Nor we can speculate any further on its relationship with the

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living forms that now exist in these southern provinces, since our knowledge concerning the distribution of the living freshwater gastropods in that part of our country is not thorough enough to serve as a reliable basis for reference.

These Tertiary gastropods after a careful study are found to be new to science. They are described as *Sinomelania leei* Yen (gen. et sp. nov.), *Viviparus wongi* Yen (sp. nov.), and *Pila* sp. *Sinomelania leei* is strongly sculptured with varices on the body whorl, tubercles on the internal side of the outer lip, and thick shell substance. The early whorls exhibit its resemblance of some living *Melanoides*, and possibly they are derived from a common stock. *Viviparus wongi* is decidedly close to the African living species, *Viviparus mweruensis* Smith and its variety *pagodiformis* Smith, both being described from Lake Moero. Its generic position however needs further consideration, and if any generic or subgeneric distinction is to be recognized, the name *Rectiviviparus* suggested by Pilsbry and Bequaert in 1927 should be adopted. *Pila* sp. is left as undeterminable form since only part of the body whorl being preserved, and no sufficient specific features having been observed.

Finally I have to acknowledge Mr. L. C. Li, for his courtesy to bring back these specimens for my study. I wish also to express my gratitude to Prof. Grabau and Pere Teilhard de Chardin, for their valuable suggestions given during the progress of my study, and above all, I am very grateful to Dr. W. H. Wong and Dr. J. S. Lee, for their noble advice and encouragement.

DESCRIPTIONS OF SPECIES

Family THIARIDÆ Preston

Genus SINOMELANIA Yen (gen. nov.)

Shell bucciniform, very thick and solid, high-spired, with its body whorl dilated. Whorl-surfaces considerably convex and rapidly increasing in width. Early whorls bearing spiral series of cancellations, while the body whorl sculptured with a number of strong, roundly topped varices. Suture superficial but well impressed by convex surfaces. Aperture ovately oblong in outline, porcellaneous inside, peristome continuous,

bearing a few well developed tubercles on the internal side of the outer lip, and a slight notch produced at the posterior end. Outer lip expanded at anterior half, externally marked with a strong varix, but are rather attenuated on the superior margin. Inner lip callous and well defined, and slightly arched at columella.

Genotype: Sinomelania leei Yen (sp. nov.)

This genus is well characterized by its *Melania*-like appearance of its early whorls, heavy varices on body whorl, expanded outer lip which bearing tubercles internally, and well callous inner lip. It has strong marine appearance but decidedly occurred in a freshwater lake deposit.

I have not yet found any related group comparable to this genus, but a few living species of *Melanoides* commonly found in our southern provinces and elsewhere such as *M. tuberculata* (Muller), *M. aubryana* (Heude), *M. erythrozona* (Heude), and *M. cancellata* (Benson), seemed to possess the cancellated and ribbed sculptures which are observed from the early stages of the typical species of *Sinomelania*. It is probably an extinct branch which was possibly derived from a common stock with these living forms now existing in the South.

Sinomelania leei Yen (sp. nov.)

Pl. I, Figs. 1, a-i.

Shell bucciniform, very thick and solid, with a high spire and suddenly dilated body whorl. Apical part injured, and its following five whorls preserved. The exposed surfaces are rather convex, rapidly increasing in size and embracing further below the ambitus. The first three preserved whorls bear a tuberculated sculptures, and shouldered with a slight concave space; while passing into the fourth volution or penult whorl, the tubercle-appearance gradually become obsolete and being replaced with riblets as here the spirals are less developed. The whorl-shoulder also turns to be much less prominent or even faint. The development of the riblets varies considerably among the individuals as they are very prominent in some cases, but only faintly traced on the type.

The body whorl is suddenly dilated, bearing usually 4 strong and heavy varices, the spaces among these varices being marked with distinct rib-lines, and faint spiral-lines usually being traced toward the umbilical region. The aperture is obliquely ovate-oblong in outline, porcellaneous inside, with its peristome continuous, and bearing a slight posterior notch. The outer lip is externally marked with a strong varix, expanded at the anterior half and bearing two prominent tubercles on its internal side. The inner lip is thickly callous and well defined, bearing a tooth-like thickening in front of the posterior notch, the umbilical region is completely covered by the callous thickening of the inner lip.

Measurements:

Cat. No. (G. S. C.)	3142	3143
Altitude of Shell (apical part injured)	34.5	27.2
Width of Shell (including varices)	19.2	16.3
Height of Aperture	16.5	14.0
Width of Aperture	10.0	8.5

Horizon and Locality: Lower Pliocene Lacustrine Bed, Yungning Formation; Yungning, Kwangsi Province. Holotype Cat. No. 3142 (G. S. C.); Paratypes Cat. Nos. 3143-3146, 3149 (G. S. C.).

The apical part of the specimens in the present collection is more or less injured. The sculptures of the early whorls are similar to the *tuberculata* pattern, and that of the penult whorl resembles closely the pattern of *M. erythrozona* (Heude). The heavy varices present on the body whorl seem to be rather distinct for the group, usually 4, and sometimes 3 for the less matured individuals. It is readily differentiated from the other forms of *Melaniinae* by its bucciniform outline, thick shell substance, heavy varices, dilated body whorl, expanded outer lip, and bearing tubercles internally of the outer lip.

I take pleasure to name this species in honour of Prof. J. S. Lee, Director of the National Research Institute of Geology, Academia Sinica, for his valuable contributions to the advancement of geological science in China.

Family VIVIPARIDÆ Adams

Genus VIVIPARUS Montfort

Viviparus wongi Yen (sp. nov.)

Pl. I, Figs. 2 a-d.

Shell trochoid in outline, moderately thick, conically spired, with its body whorl reduced. Whorls about 6 or more, rapidly increasing in width. The apical whorl is roundly convex, somewhat papillary, while its subsequent ones are gently convex, and embracing slightly below the ambitus. The exposed surfaces bear fine growth lines, and very strongly carinated at the ambital region. The space above the carina is more or less excavated, and incised with a series of spiral lines. The prominent carina is clearly traced up as far as to the end of the first or apical whorl, while the spiral lines disappear at the end of third whorl. Suture rather superficial, but well marked by the strong ambital carina. The body whorl is rather obliquely descending, somewhat reduced. The aperture is subquadrate in outline, rather rounded at the basal part, with its peristome injured. The umbilicus is obliterated, appearing to be rather narrow.

Measurement:

Cat. No. (G. S. C.)	3147	3148
Altitude of Shell	29.5 (apex injured)	23.0
Width of Shell	25.0	21.0
Height of Aperture	15.8	—
Width of Aperture	16.0	—

Horizon and Locality: Same as the preceding species, Holotype Cat. No. 3147 (G. S. C.); Paratypes Cat. No. 3148, (G. S. C.).

The specimens are not in good state of preservation, but they are characteristic enough for the specific distinction. The matured one has its umbilical part injured while the other of a younger stage has its apex and spire perfectly well preserved but with its last part of the body whorl and basal region destroyed.

The species is characterised by its conical spire, strong ambital carina, convex whorl-surfaces, and reduced body whorl. It is evidently close to *Viviparus mweruensis* Smith, a living form described from Lake Moero of Central Africa; but easily differentiated from that form by its more acute spire, roundly convex surfaces without angulated condition, and more obscure of decussated sculptures. It is also different from *Viviparus mweruensis* var. *pagodiformis* Smith, another form from Lake Moero, by its less turritid spire and convex whorl-surfaces.

It possesses a Viviparoid apical whorl, but markedly changed from the second whorl by the appearance of the characteristic ambital carina which gradually becomes very conspicuous. The generic position needs further study, although Smith considered that "A subsequent examination of the animal has apparently proved that there is not sufficient reason for separating it" from *Viviparus*. If there is any generic or subgeneric distinction to be differentiated, the name *Rectiviviparus*, as suggested by Pilsbry and Bequaert in 1927 for this group of snails should be adopted.

This species is named in honour of Dr. W. H. Wong, one of the pioneer geologists in our country and Director of the National Geological Survey of China, for his noble effort in developing Chinese geological science.

Family AMPULLARIDÆ Gray

Genus PILA Bolten

Pila sp.

A fragment apparently of the body whorl in the present collection gives no sufficient features for specific identification. The shell appears to be rather large in size and somewhat angulated at the ambital region of the body whorl.

The existence of living forms of this genus in the vicinal regions is hardly questionable. We have *Pila gracilis* (Leao), *P. polita* (Deshayes), *P. sumatrensis* (Philippi), and *P. turbinis* (Lea) recorded from various districts of Indo-China, and it seems therefore possible to find a few allied species in Kwangsi, Kwangtung and Yunnan Provinces.

Horizon and Locality: Same as the preceding species, Cat. No. 3150 (G. S. C.).

Explanation of Plate I

PLATE I

All figures are of natural size

- Figs. 1a-1b. *Sinomelania leei* Yen (gen. et sp. nov.), Holotype Cat. 3142 (G. S. C.).
- Figs. 1c-1g. Ibidem, Cat. Nos. 3143-3146 (G. S. C.). fig. 1d. is another view of Cat. No. 3143 showing the tubercles inside of aperture.
- Figs. 1h-1i. Ibidem, A younger specimen with its early whorls better preserved. Cat. No. 3149 (G. S. C.)
- Figs. 2a-2b. *Viviparus wongi* Yen (sp. nov.), Holotype, Cat. No. 3147 (G. S. C.).
- Figs. 2d-2c. Ibidem, Paratype, Cat. No. 3148 (G. S. C.).
- Fig. 3. *Pila* sp. Cat. No. 3150 (G. S. C.). A fragment of the body whorl.

