SHELL·O·GRAM

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The January 22 meeting will be at the Southeast Branch Public Library at 7:00 PM, the customary fourth Thursday of the month. The Shell-of-the-Month will be presented by Harry Lee, who will discuss *Cymatium parthenopeum* (von Salis, 1793), the Neapolitan Triton, an offshore species through much of its circumglobal range. Harry Lee will also give the main program, which will focus on the living tritons (family Ranellidae) of the world.

Because of a scheduling conflict imposed after the room was legitimately secured by us and acknowledged by the library, we have been obliged to meet on the third Thursday in February, the 19th, at the same venue and time as in January (above). Harry Lee will present the Shell-of-the-Month, *Hastula salleana* (Dshayes, 1859), Sallé's Auger, a local species living on high-energy sandy shorelines. Charlotte Thorpe will discuss the long history of the Jacksonville Shell Club collecting expeditions to the area of Cedar Key, on the west-central coast of our state. We have being going there once or more for the past 40 years.

President's Message,

Dear JSC Members,

Another year has quickly passed and I am sure this year will feel as though it is going by quicker than the previous year. I am not sure how or why it works that way? Whether it is a matter of perception or not, it is said that perception is reality! The Jacksonville Shell Club is currently in the process of prospecting a new venue for our 2015 Jacksonville Shell Show. Dr. Harry G. Lee has invested an incredible amount of time working to organize our new venue and keep various attendees and members updated. We hope to solidify arrangements very soon.

With a new venue we will be presented with new challenges as we organize such an event under conditions unfamiliar to us. We should expect the unexpected as we near setup day. However, I have the utmost confidence we will work through the challenges as we always have in the past. The club has discussed this change for a couple of years and we all have agreed this year is the year we must begin seeking such a change. With that said, we will be asking for a call of "all hands on deck" as the show approaches. I am excited to explore new opportunities and I hope everyone else is just as excited as well. After all, we are all shell collectors in some fashion or another and exploring is woven in to each of us at some level.

Happy New Year to everyone, let's make 2015 a great year! Brian

An ersatz *Valvata* from Bernheim Forest, Kentucky

by Harry G. Lee

The intersection of mollusk shells and productions of creatures assigned to other phyla was imprinted in my mind early on. As a college freshman, I found several specimens of an unfamiliar ~ 5 mm. snail living on rocks at the bottom of a brook tributary of the Hoosic River in Williamstown, MA. Only after a few days had passed, when I viewed them under the stereoscope in the biology lab, did I see that these shells were composed of cemented mineral grains and each contained a bristly worm-like critter. The "conchological" resemblance to certain species of the genus *Valvata*, e.g., <http://www.jaxshells.org/p10034.htm>, however, was nonetheless still quite uncanny.

I regret that I promptly lost track of these MA "shells," but in 1976 I placed some similar specimens collected by a botanist friend from a creek near Piha Beach, Watakaries, North Is., New Zealand in my collection.

A third encounter occurred on October 19, 2014 when I found another bunch of these oddities living on small nearshore rocks at the confluence of Wilson and Harrison Creeks in the Bernheim Arboretum and Research Forest Nelson-Bullitt Cos., KY [Fig. 1]. The habitat was eerily reminiscent of my first encounter over a half-century before, and the find launched a "cold case" investigation into this mystery.

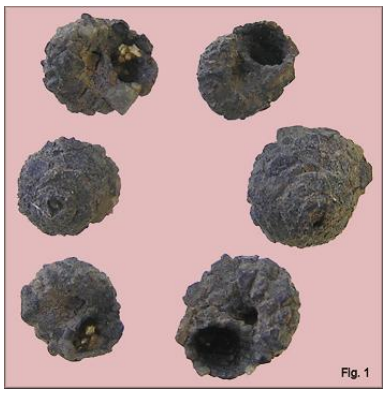


Fig. 1

Over a century before the first of the above events, Philadelphian Isaac Lea, who with some regret I must admit is neither an ancestor or even a close relative of mine, had a similar encounter. Lack of kinship notwithstanding, Dr. Lea shared my initial read on such "shells," and dubbed them *Valvata arenifera* [Latin: sand-bearing] (I. Lea, 1831: 104-105, pl. 15, figs. 36a, b); see Figs. 2 (right of page) and 3 (end of article). Although depicted as opposite (counterclockwise) in direction of growth, these objects are quite reminiscent of my MA material. The Quaker's specimens came from Nashville, TN, where they were taken from the Cumberland River. Lea convinced himself he saw opercula in his specimens, and he believed the agglutinated mineral matter was simply a reinforcement of the snails' shells.

Fig. 2

The following year Constantine Rafinesque (1832: 122; fig. on p. 121 <http://tinyurl.com/qzqayzn>) named a "new tubular fresh water shell of the Alleghany *[sic]* Mts." *Psephides paradoxa* n. gen., n. sp. Not certain it was the production of a mollusk, he did write: "This strange shell has something mysterious in it. It appears a mass of gravel; strongly cemented ..." The figure depicts a tubular structure of the same fabric seen in my and Lea's shells. Although "conchologically" quite distinct, I think neither Lea nor Rafinesque, would find the eventual taxonomic proximity, not to mention placement, of their respective species anything short of incredible. Nearly as incredible is the fact that no further mention of the Rafinesque genus (or species) except Neave <http://tinyurl.com/n6hs493> could be found in the literature.

Not much later Thomas Swainson (1840) treated a shell looking even more like my MA specimens, his *Thelidomus braziliensis*, as a gastropod mollusk. The nomenclatorial context of this action was almost as bizarre as the animal involved and would benefit from a short explanation. The author actually proposed the genus-group *Thelidomus* twice - and in the same work (1840: 191-192, 330; and 228, 353)! The first usage appears without mention of any constituent species on p. 191-192. That taxon was made available on p. 330, where its monotype is given as *Helix striolata* Guilding [now known to be a synonym of the camaenid *H. incerta* Férussac, 1821]. The second usage of this generic epithet initially pops up on p. 228 next to text figure 41, which depicts a "shell" very much like mine but with no associated species group name. On p. 353 the name *Thelidomus* reappears again with the same text figure (now no. 113). However, this time "*Braziliensis* Sw[ainson]," the monotype, appears in the text block [Figure 4].* Years later, the First Reviser, Henry Pilsbry (1894: 96) remedied this shocking example of Swainsonian homonymy. He gave the land snail seniority based on "position priority" (page number 330 vs. 353), an attribute which no longer mandates such preference, and indicated *Thelidomus* (Swainson, 1840: 353) made *Thelidomus* Swainson, 1840: 353 *non* Swainson 1840: 330 permanently invalid.

Sensing that nobody had put a generic name on such shells, but possibly quite ignorant of the *Thelidomus* fiasco, Carl Theodor Ernst von Siebold named the group *Helicopsyche.* The German zoologist, well-grounded in entomology, was a bit more savvy and thorough than his predecessors cited above. Not only did he realize these shells were the product of caddisfly larvae rather than gastropods, he mentioned the likelihood that Lea's *Valvata arenifera* was a congener. He even lifted and republished its type figure in support his assertion!

Here's a taxonomic recap of these snail impersonators provided by the Entomology Dept., Swedish Museum of Natural History <http://www2.nrm.se/en/helicolist.html.en>:

Phylum Arthropoda
Class Insecta
Order Trichoptera (caddisflies)
Family Helicopsychidae Ulmer, 1906 [four genera]
Genus *Helicopsyche* von Siebold, 1856 [~ 230 named species in five subgenera]

Type species *Helicopsyche shuttleworthi* von Siebold, 1856 [subsequent designation Flint, 1964]. Helicopsychidae is worldwide in distribution. Interestingly, in the above system *Valvata arenifera* Lea, 1834 [*sic; error pro* 1831] is treated as an invalid synonym of the later name, *Helicopsyche (Feropsyche) borealis* (Hagen, 1861). Perhaps a worker somewhere along the way overturned thepriority of the Lea name by invoking the *nomen oblitum* option (translation: “forgotten name” ICZN 1999, Article 23.9).

Whether von Siebold was the first to recognize the caddisfly as the perpetrator of this inter-phylum imposture is not clear, but his taxonomic initiative struck the path for proper understanding of the players involved. This geographically far-flung conchological masquerade is a stunning instance of evolutionary convergence in the geometry of an animal production - approached, but not exceeded only by certain tubicolous polychaete annelids and symbiotic arthropod-anthozoan (final plate of Abbott and Dance, 1982), and arthropod-bryozoan <http://www.jaxshells.org/jdawley.htm> species.

* Note the entry that follows in Swainson’s work states that pleurotomarians are known only as fossils. The first living species, dubbed *Pleurotomaria quoyana* by Paul Fischer and A.C. Bernardi the same year as von Siebold named *Helicopsyche* <http://www.jaxshells.org/quoyana.htm>, was discovered in 1855, 15 years later (Dance, 1969: 47).

Abbott, R.T. and S.P. Dance, 1982. *Compendium of seashells.* E.P. Dutton, New York, x + 1-411 + [1], incl. numerous text figs.

Dance, S.P., 1969. *Rare Shells*. University of California Press, Berkeley. (1)-128 + 24 plates.

ICZN (International Commission for Zoological Nomenclature), 1999. *International Code for Zoological Nomenclature Fourth Edition.* International Trust for Zoological Nomenclature, London. pp. 1-306 + i-xxix. <http://www.nhm.ac.uk/hosted-sites/iczn/code/>

Lea, I., 1831. Observations on the naiades and descriptions of new species of that and other families. *Transactions of the American Philosophical Society 4*: 63-121 + pls. 3-18. <http://www.biodiversitylibrary.org/item/79816#page/85/mode/1up>

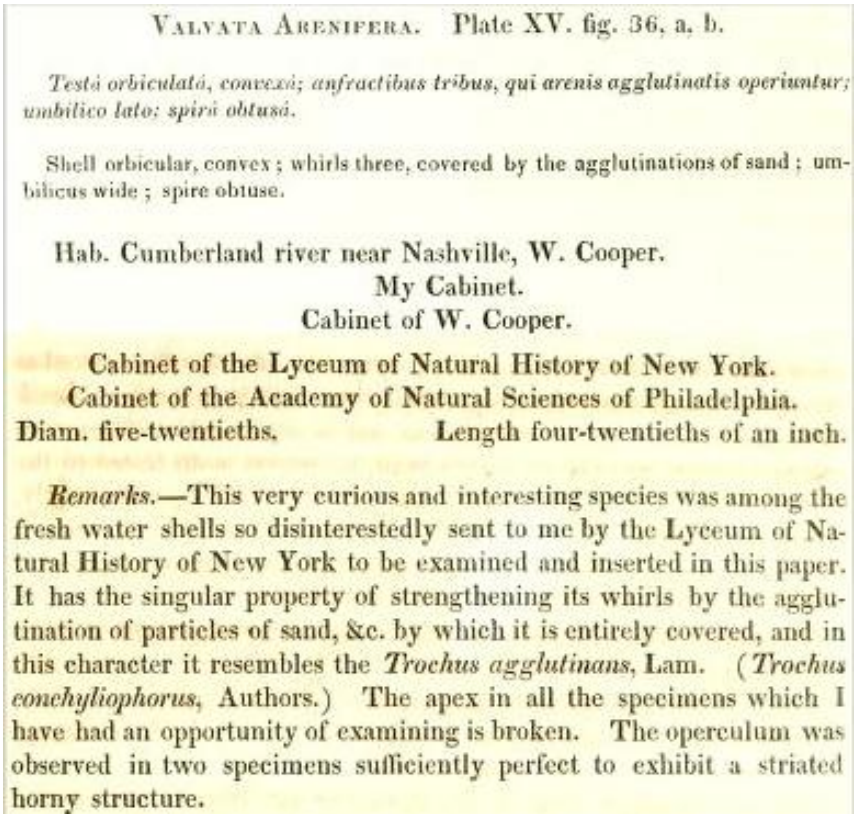
Pilsbry, H. A., 1893-1895. *Manual of Conchology (second series) 9. Helicidae, vol. 7; index to the helices.* Academy of Natural Sciences, Philadelphia. frontispiece + xlviii + 1-366 + 71 pls. Nov. 16 to April. <http://www.biodiversitylibrary.org/item/16303#page/9/mode/1up>

Rafinesque, C.S., 1832. (Article) 22. Conchology. - A new tubular fresh water shell of the Alleghany *[sic]* Mts. *The Atlantic Journal and Friend of Knowledge 3*: 121-122. <http://tinyurl.com/k2qpc4y>

Swainson, W., 1840. *A treatise on malacology; or the natural classification of shells and shellfish.* London. vii + 419, figs. <https://archive.org/details/treatiseonmalaco00swai>

von Siebold, C.T.E., 1856. *Wahre Parthenogenesis bei Schmetterlingen und Bienen*. Wilhelm Engelmann; Leipzig. 144 pp. <http://www.biodiversitylibrary.org/item/41785#page/7/mode/1up>

Figure 3



VALVATA ARENIFERA. Plate XV. fig. 36. a. b.

Testâ orbiculatâ, convexâ; anfractibus tribus, qui arenis agglutinatis operiuntur; umbilico lato: spirâ obtusâ.

Shell orbicular, convex; whirls three, covered by the agglutinations of sand; umbilicus wide; spire obtuse.

Hab. Cumberland river near Nashville, W. Cooper.
My Cabinet.
Cabinet of W. Cooper.

Cabinet of the Lyceum of Natural History of New York.
Cabinet of the Academy of Natural Sciences of Philadelphia.

Diam. five-twentieths. Length four-twentieths of an inch.

Remarks.—This very curious and interesting species was among the fresh water shells so disinterestedly sent to me by the Lyceum of Natural History of New York to be examined and inserted in this paper. It has the singular property of strengthening its whirls by the agglutination of particles of sand, &c. by which it is entirely covered, and in this character it resembles the *Trochus agglutinans*, Lam. (*Trochus conchyliophorus*, Authors.) The apex in all the specimens which I have had an opportunity of examining is broken. The operculum was observed in two specimens sufficiently perfect to exhibit a striated horny structure.

Symbiotic survival in marine bivalve mollusks

One of the most diverse families in the ocean today -- marine bivalve mollusks known as Lucinidae (or lucinids) -- originated more than 400 million years ago in the Silurian period, with adaptations and life habits like those of its modern members. This *Geology* study by Steven Stanley of the University of Hawaii, published online on 25 July 2014, tracks the remarkable evolutionary expansion of the lucinids through significant symbiotic relationships.

At is origin, the Lucinidae family remained at very low diversity until the rise of mangroves and sea grasses near the end of the Cretaceous. According to Stanley, the mangroves and sea grasses created protective habitats in which the bivalve mollusks could thrive, in turn providing benefit through a sort of tri-level symbiosis. Stanley writes that what was especially important was the lucinids' development of a symbiotic relationship with sea grasses. The lucinids flourished as they took advantage of the oxygen-poor, sulfide-rich sediments below roots and rhizomes. These habitats provided a rich supply of sulfur-oxidizing bacteria (or endosymbionts), which the bivalves "farmed" on their gills and then consumed. At the same time, the sea grasses benefited from the uptake of (to them) toxic sulfide by the bivalves.

The Cretaceous mass extinction, which killed off not only the dinosaurs but also many forms of marine life, had little impact on the lucinids. Stanley writes that this can be attributed to the fact that the bivalves relied heavily on the endosymbiont bacteria for nutrition at a time when productivity of marine algae collapsed and many suspension-feeding groups of animals died out. About 500 lucinid species exist today, with by far the highest diversity in shallow-sea sea grass meadows.

Lucina pectinata (Gmelin, 1791)
From 1foot of water, Largo, FL,
Gulf of Mexico, July,1979,
Collected by Charlotte Thorpe

Fimbria fimbriata (Linnaeus, 1758)
In shallow water/grasses, Philippines.