

The general region in which Columbia is situated remains to be explored; it has been barely glanced at. Though the occurrence of *circumcarinata* thereabouts has not been verified by subsequent collectors, its non-occurrence there cannot safely be assumed upon the ground of extreme remoteness from the Montana region explored by Professor Elrod, when we have the more extraordinary fact in the matter of distribution, exhibited by the occurrence of *Pyramidula hemphilli* Newc. (heretofore credited to Arizona, Nevada, Idaho, Utah and Colorado), on Catalina Island, twenty-five miles distant from the mainland of southern California, where Mr. Hemphill, some months ago, collected numerous living examples, fifty or more, which he kindly showed me.

Here is a conundrum in geographical distribution, of great interest and certainly "a hard nut to crack."

Hemphill's original find of this peculiar form was in the White Pine mining district, extreme eastern Nevada.

A few years ago the distribution of *Vallonia pulchella*¹ was given as "Montana eastward, from Canada to, or nearly to the Gulf of Mexico. Europe." In September, 1900, it appeared suddenly upon my grounds in Los Angeles and continued to be abundant for some months; it is now scarce. Whence it came and whither it is going, who can tell?

Los Angeles, Cal., August 26, 1902.

**"PYRAMIDULA" ELRODI AND EPIPHRAGMOPHORA
CIRCUMCARINATA.**

BY H. A. PILSBRY.

Dr. Stearns, having expressed the opinion that the two *Helices* named above are specifically identical, I have again compared them, and find my previous idea of their distinctness confirmed. My material consists of the types and numerous other specimens of *P. elrodi* and two specimens of *E. circumcarinata*, an adult and a young one, received from Dr. Stearns years ago, about the time the species was described. The difference between Dr. Stearns' views and my own, of the affinities of the two *Helices*, may be due to his

¹ See THE NAUTILUS for October, 1900.

having, perhaps, no examples of *circumcarinata* at hand for direct comparison with *elrodi*.

The following differences appear on comparing the shells: With the same general figure and size, *P. elrodi* has a wider umbilicus, and viewed from above, the last whorl is wider; the base is more convex, being swollen and almost subangular around the umbilicus; the rib sculpture is coarser; the finer spiral sculpture is much developed in *P. elrodi*, especially beneath, while *E. circumcarinata* shows no spirals there, but only minute papillæ scattered between the ribs. The shape of the apertures differs: In *P. elrodi* the transverse axis does not much exceed the longitudinal, while in *circumcarinata* it is conspicuously greater. In Dr. Stearns' species, the basal lip is narrowly reflexed, while in *P. elrodi* it is at most merely expanded a little. Finally, the apices show important differences.

In *E. circumcarinata* the first $1\frac{1}{2}$ whorls appear smooth, a high power showing a minute, even, criss-cross pebbly sculpture, like that of *E. mormonum*, and the next whorl shows only very weak riblets, with papillæ between them; while in *P. elrodi* the strong riblets begin earlier, and there is no trace of the *mormonum* type of sculpture, even in young removed from the uterus of the mother.

These facts indicate, in my opinion, that the great general similarity between the two species in question is merely superficial, and probably the result of similar conditions acting upon organisms originally diverse, and indeed not closely related. *P. elrodi* belongs undoubtedly to the *P. strigosa* group; while, although its soft anatomy is unknown, *circumcarinata* will probably prove to belong where Dr. Stearns placed it, near *mormonum*, although with present knowledge it is in all probability distinct from that specifically. In other words, I think the two species belong to different genera.

It might be as well to say here that the *strigosa* group of snails is not correctly placed in *Pyramidula*. They do not belong in the *Endodontidæ* at all, but are *Helicidæ*, nearer *Sonorella* than any other group, but constituting a new genus which will be suitably defined in the near future.

In South Australia there is a group of snails called *Glyptorhagada*, some species of which resemble *P. elrodi* remarkably in form, sculpture and color. They belong, however, to a different sub-family of *Helicidæ*, and the resemblance, as in the case of *E. circumcarinata*, is a case of convergent evolution.



Pilsbry, Henry Augustus. 1902. "Pyramidula elrodi and Epiphragmophora circumcarinata." *The Nautilus* 16, 62–63.

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