

and differs from that species in the following respects: the angular lamella does not emerge quite to the edge of the peristome, and *it is continuous*, not interrupted, within. The parietal lamella is less remote from the lip-edge, emerging nearly as far as the angular. The lower palatal plica is somewhat stronger.

The only specimen seen was among specimens of *B. plicidens* (*Pupa plicidens*) received from Benson.

Bifidaria plicidens will probably prove to be one of the most widely distributed of Asiatic *Pupillidæ*. Described originally from Landour and Mussoorie, and subsequently reported from Cherra Poonjee, Assam (Godwin-Austen), it has been found by Mr. Y. Hirase at three Japanese localities—Yōrō, Mino ; Riozen, Omi ; and Suimura, Awa (Shikoku). I cannot see that the specimens show any divergence from Indian examples. I do not know that the species has been reported from China, but there cannot be much doubt that it occurs there. Dr. von Moellendorff has shown that another Japanese *Bifidaria*, *B. armigerella*, has a wide range on the Chinese mainland.

UNIO VIRIDIS CONRAD.

BY BRYANT WALKER.

The recent rediscovery by Mr. Frierson of the Appendix to Conrad's New Fresh Water Shells is a very interesting one. And in connection with it, it is also of interest to note that the "hit or miss" method in naming a species adopted by Conrad in reference to his *subviridis* has been explicitly approved by the International Commission on Zoological Nomenclature. (See Opinion 49). It seems clear that, barring the possible reference of Rafinesque's *viridis* to this species, it must be known as *subviridis* Con., with *tappanianus* Lea as a synonym.

But the identification of Rafinesque's *viridis* with the *compressa* of Lea is by no means so sure as Mr. Frierson assumes, and I desire to file an "interference", as the patent lawyers say, for the purpose of suspending the general adoption of the change

proposed until such time as certain important and probably conclusive facts can be obtained.

The recent tendency to revive the long buried names of Rafinesque without argument or explanation seems to me to be a rather regrettable one. I am quite willing to "give the devil his due", when it has been made to conclusively appear that it is his due. But to upset the accepted nomenclature of over half a century, based upon recognizable descriptions and figures, without any attempt to explain why it is done is very unfortunate and almost an abuse of bibliographic research. It is too much, at this late day, to ask the busy modern student to put aside his own work and to wallow in the Rafinesquean "Slough of Despond" in an attempt to work out for himself the reasons, which have influenced the rehabilitation of his species. While it is probably quite likely that there are some of Rafinesque's species that can be recognized, (and if they can, they should be), it is certainly not asking too much that those advocating so radical a change should in every instance give in detail the process of reasoning that has brought them to the conclusions that they have adopted. It is only in this way that those, who are willing to give a careful and candid consideration to the question and who are ready to be convinced, if the facts adduced justify the conclusion, can be expected to give any serious attention to the questions involved. There was altogether too much of the "*ipse dixit*" seventy years ago, when Say and Conrad were disagreeing with themselves and each other in their attempts to secure the recognition of Rafinesque's species, to incline any one at the present time to reopen the old controversy without having a clear, impartial and impersonal statement of facts and arguments bearing upon each species.

So far as the *viridis* of Rafinesque is concerned, I have had occasion to go over the questions involved with some care.

I have had considerable correspondence with Mr. Frierson on the subject. He has favored me with detailed statements of his reasons for identifying that species with Lea's *compressa*. I have imposed on him my reasons for questioning his conclusions. As neither of us has succeeded in convincing the other, it would seem to be a fair inference that the subject is not entirely free from doubt.

My reasons for asking a suspension of judgment in this case are, briefly, these:

1. Rafinesque states explicitly that his *viridis* was "rare in the Ohio, more common in the Kentucky and the small rivers adjacent". So far as I have been able to ascertain, no species approximating in any way to *viridis*, *compressa* or *tappanianus* has been recorded from the Ohio, the Kentucky or the small rivers adjacent. As a matter of fact, we know practically nothing of the Naiad fauna of the Kentucky, where, if anywhere, the genuine *viridis* should be rediscovered. And until the fauna of that river has been carefully investigated and it is definitely determined what species, if any, of this group is found there, it would certainly seem the "better part of wisdom" to suspend hypothetical identifications of the species.

2. The *compressa* of Lea is most emphatically a creek or small river species, ranging from western New York and Pennsylvania west to Iowa and north to the Missinaibe River in the Hudson Bay region. I have not been able to find any definite record of its occurrence in the Ohio. Dr. Ortmann, (Ann. Car. Mus., V, 1909, p. 196), states that in western Pennsylvania, it is "entirely absent in the Ohio", and, (Pr. Am. Phil. Soc., LII, 1913, p. 296), that it is "a peculiar form restricted to the tributaries of the upper Alleghany and also in French Creek and Beaver River drainage". If not found in the upper reaches of the Ohio, it is not likely that it occurs in the deeper waters of the lower portions of the river.

The only record of its occurrence in any of the southern tributaries of the Ohio is that of Dr. Ortmann, (Pr. Am. Phil. Soc., LII, 1913, p. 372), from the little Kanawha River, which empties into the Ohio at Parkersburg.

So far as I have been able to ascertain, it has never been listed from any of the tributaries of the Ohio in Kentucky or Tennessee. Apparently, with the exception above noted, so far as our present knowledge goes, the Ohio has been a barrier to any extension of this species into its southern tributaries.

If Rafinesque's statement as to the locality of his species is to be relied upon, in view of these facts it does not seem too much to ask that the actual occurrence of *compressa* in the Ken-

tucky and small adjacent rivers be proved before any approximation of the two species be accepted.

3. The *tappanianus* of Lea, until recently, has always been considered to be restricted to the Atlantic drainage. But Dr. Ortmann, (Pr. Am. Phil. Soc., LII, 1913, p. 371), has very lately discovered it in abundance in the Greenbrier and New rivers in the upper Kanawha system. Its occurrence in the Ohio drainage system is, therefore, established.

As the habits of *compressa* and *tappanianus* are alike, both being creek species, in view of what we now know, it would seem quite as probable that *tappanianus* might be found in the Kentucky as *compressa*. At any rate, it would suggest the desirability of getting the facts as to what the fauna of the Kentucky is, before jumping at conclusions.

4. So far as I know the single valve in the Poulson collection, said to be from the Kentucky and identified by Rafinesque as his *viridis*, is not now in existence. If it is, the question as to which of the later described species it belongs, can be easily settled by an inspection of the shell. Conrad, who saw the specimen, said that it was identical with the Juniata shell described by himself as *subviridis* and by Lea as *tappanianus*. Say, who also saw the shell, said that it was an entirely different species. In the light of the then existing knowledge of the distribution of *tappanianus*, and, indeed, of our own until 1913, Dr. Lea was quite justified in his remark "that there is an error in the habitat or the name". Mr. Frierson, who has not seen the specimen, assumes that the habitat was right, but that Conrad was wrong in identifying it with the Juniata species. It would be quite as reasonable either to assume that Conrad was right and the locality wrong or that both Conrad and the locality were right. At any rate, in the absence of the specimen itself, great caution should be exercised in making any assumptions about it.

5. If Rafinesque had stated that his *viridis* came from the Atlantic drainage, there is scarcely any one, who would attempt to make any identification based on his description alone, who would not say that it was quite surely the *tappanianus* of Lea.

If the question of locality could be eliminated, I feel assured,

from a very careful study of the original description in comparison with quite a large series of both *compressa* and *tappanianus*, that a strong argument could be made tending to show that, on the whole, as between these two forms, *viridis* should be approximated to *tappanianus* rather than to *compressa*. But the burden of proof is upon those, who advocate the change and until a *prima facie* case has been presented in favor of the change, there is no occasion to go into that question.

6. In view of the fact that nothing is known of the fauna of the Kentucky so far as this group is concerned, it would seem quite within the bounds of possibility that there may be a form of this group in the Kentucky, which is neither *compressa* nor *tappanianus*, but allied to the *quadrata* Lea or *diversus* Con., and which may be the real type of *viridis*. This may be a mere possibility, but even so, it emphasizes the importance of ascertaining what the fauna of that river really is.

Taking all these elements of doubt into consideration, it would seem to me that so far as the *compressa* of Lea is concerned, no change in the accepted nomenclature should be made until it can be based upon facts so conclusive as to put an end to discussion.

For the benefit of the "weak-kneed", who, like myself, hesitate to accept Mr. Frierson's conclusions, it may be well to call attention to the fact that Mr. Frierson is in error in his statement that if Rafinesque's name be not accepted, Lea's name of *compressa* must give way to the *alasmodontina* of Stimpson. Lea originally described his species as *Symphynota compressa*. The fact that an author errs in the generic reference of a new species does not prevent the use of his specific name in the genus to which the species properly belongs, provided, of course, that his name has not already been used for an earlier described species in that genus. Mr. Frierson assigns the species to *Lasnigona*, in which there is no other species described as *compressa*. It follows, therefore that the "weak-kneed" will still continue to use Lea's name for this species until it is *proved* to be a synonym of some earlier name.



Walker, Bryant. 1915. "Unio viridis Conrad." *The Nautilus* 29, 74–78.

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