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THE TYPE OF PLEUROCERA RAFINESQUE.

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The unfortunate legacy that Rafinesque left to American conchology has been, from the beginning, a source of perplexity, to say nothing of contention and bitterness, not only to his contemporaries, but to many of his successors. The recent paper by Dr. H. A. Pilsbry (Naut. XXX, 1917, p. 109), is an admirable attempt to settle the standing of Rafinesque's dubious genera of fresh-water univalve mollusca and, in the main, is a most satisfactory solution of the many questions involved.

It is unfortunate that Dr. Pilsbry did not see his way clear to retain *Campeloma* Raf. and *Anculosa* Say. Both of these names have now had general recognition for many years and should be retained, if it is a possible thing to do so. To replace them by *Ambloxis* Raf. and *Leptoxis* Raf., both at the best very doubtful, must be regarded almost as a miscarriage

of justice. It is possible that future students may find sufficient grounds for the reinstatement of both of these names. The questions involved in both cases are purely zoological. They do not involve any construction of the International Code and are wholly matters of individual opinion as to the proper construction of Rafinesque's *published* writings and the elimination of opinions based on references to his unpublished "Conchologia Ohioensis," which are, of course, absolutely inadmissible. But most writers on the subject have been as unsuccessful in their attempts in the latter particular as Mr. Dick was in keeping King Charles the First out of the Memorial. The futility of discussion on questions of this kind is so obvious that their settlement must, in the end, be left to those who have not participated in the promulgation of the opinions at issue. For this reason, I, personally, bow to the great weight of Dr. Pilsbry's judgment, and leave to others the discussion of the merits of the questions involved and the possible reversal of his decision.

But as to *Pleurocera* the situation is quite different. Not only does the position taken by Dr. Pilsbry involve the standing of two generic names which for over fifty years have had universal recognition, but it is based, as it seems to me, upon a radically incorrect construction of the Code and of several of the decisions of the International Committee, and for that reason should not pass unchallenged.

STATEMENT OF FACTS.

I. *Pleurocera* was first described by Rafinesque in 1818 (Am. Monthly Magazine, etc., III, p. 355) as follows:

G. *Pleurocera*. Univalve. Shell variable oboval or conical, mouth diagonal crooked, rhomboidal, obtuse and nearly reflexed at the base, acute above the connection, lip

and columella flexuose entire. Animal, with an operculum membranaceous, head separated from the mantle inserted above it, elongated, one tentaculum on each side at its base, subulate acute, eyes lateral exterior at the base of the tentacula.

Six species are named but none described.

2. In 1819, in his "Prodome" published in the Journal de Physique, etc., of Brussels, LXXXVII, p. 423, Rafinesque re-defined Pleurocera. Binney's translation (L. & F. W. Sh., Pt. III, p. 62), with one or two exceptions, is excellent and is as follows:

Shell spiral, oval or pyramidal, many whorls "*en aplomb*" (Binney says "rounded," rather flat or straight, literally perpendicular); aperture oblong, oblique, base prolonged, twisted, narrowed above; outer lip thin, interior lip appressed to the columella, which is smooth and twisted, without umbilicus. Animal with a membranaceous operculum, proboscis-like head, inserted in the back; tentacles two, lateral, subulate, sharp, eyes at their exterior base. Family Neritacea (Binney says "Turbinacea"). Species numerous, of which I have already twelve, all fluviatile, from rivers and creeks.

3. In 1820 (Ann. of Nat., p. 11), Rafinesque described his *Pleurocera verrucosa*. This is the first recognizable species described as, or referred to, Pleurocera and is unquestionably the species commonly known as *Angitrema verrucosa*.

4. In his "Enumeration and Account," etc., 1831, p. 2, Rafinesque remarks:

My *G. Pleurocera*, 1819, is, perhaps, a S. G. of *Melania*, but the animal is different, with lateral feelers; the shell is always conical oblong with the opening oblong, oblique, acute at both ends, columella flexuose twisted.

In the same paper (p. 3), he described *Pleurocera acuta* from Lake Erie. This species is undoubtedly the same as Lea's *Melania subularis* from the Niagara River as hereinafter demonstrated.

5. In 1864, (Pr. A. N. S. P., p. 24), Tryon in his "Synopsis of the Strepomatidæ" revived the use of *Pleurocera*. His reasons for so doing were given at length in the Am. Jour. of Con., I, 1865, p. 97 *et seq.* This article was reprinted as the introduction to his "Strepomatidæ," Part IV, L. & F. W. Shells, published by the Smithsonian Institution in 1873.

6. In 1865, Binney (L. & F. W. Sh., Pt. III, p. 62, fig. 126) published a fac-simile of a figure of *Pleurocera* taken from Rafinesque's unpublished "Conchologia Ohioensis," which is consequently available for nomenclatorial purposes from that time.

7. In 1912, Hannibal (Proc. Mal. Soc. Lond., X, p. 169) designated *Pleurocera verrucosa* Raf. as the generic type.

8. In 1917, Pilsbry (l. c., p. 110) accepted and adopted Hannibal's designation.

ARGUMENT.

I.

It is to be noted that Rafinesque's original description of *Pleurocera* in 1818, with six named, but undescribed, species, and his revised diagnosis in 1819, with no species mentioned, were both published before he described his *Pleurocera verrucosa* in 1820. *Pleurocera* was, therefore, a genus without a type and the question at issue is:—what species under the facts and a proper construction of the Code must be held to be the genotype.

Both of Rafinesque's generic descriptions taken by themselves, are adequate, "clearly giving generic characters," and there can be no doubt but that *Pleurocera* was intended to include the group of species, which for over fifty years has been universally designated by that name. This is confirmed by his figure, published by Binney in 1865 and since that time

admissible evidence. It may, therefore, be considered as settled beyond dispute that *Pleurocera* since 1819 has been an adequately described genus, representing a common and well known group of species and as such it has been universally recognized for more than fifty years.

It is equally clear that *Pleurocera verrucosa* Raf. does not fall within the original generic diagnosis nor agree with Rafinesque's figure, but, on the contrary, by the unanimous consensus of opinion of all conchologists for over half a century, belongs to an entirely different genus.

Pleurocera belongs to category 5 of Opinion 46 of the International Commission.

Three rules are laid down in that opinion :

1st. "In genera published without mention, by name, of any species, no species is available as a genotype unless it can be recognized from the original generic publication."

That is, no species that does not comply in its characters with the original generic diagnosis, is available as the genotype.

2nd. "If it is not evident from the original publication of the genus how many or what species are involved, the genus contains all the species in the world, which would come under the generic description as originally published."

3rd. "The first species published in connection with the genus becomes *ipso facto* the type."

My contention is, that these rules of procedure must be construed together and harmoniously. Any construction that would so interpret any one of these rules as to negative either of the others must necessarily be erroneous. In short, if the "first species published in connection with the genus" does not comply with the generic diagnosis and therefore cannot "be recognized from the original generic publication," it is not available as a genotype.

It also seems to me that the argument advanced by the Commission in Opinion 19 is applicable to this case.

If, for any reason, it should be contended that the first rule laid down in Opinion 46 as above quoted was not intended to apply to a case like this, then I would further urge that it is a cardinal principle in the legal construction of precedents that the determination of a court of final resort is a precedent only for subsequent cases involving the same essential facts.

If any of the essential facts in a subsequent case is different, the prior case is not a precedent that is binding on the court, but may be construed or modified as the court may deem necessary in dealing with the facts of the subsequent case.

While the language on page 107, Op. 46, "that the first species published as a member or members of the genus are the only species available as the type" would, if taken by itself and construed literally, seem to cover the case of *verrucosa*, the language used must necessarily be construed to mean that such subsequently described species agrees with the original generic diagnosis.

The fact that such subsequent species might not fall within the generic specification was, evidently, not called to the attention of the International Commission. Such a possibility is not mentioned in their opinion and was not passed upon by them. This being so, the essential differential fact in this case that the subsequent species does not fall within the generic diagnosis raises an entirely new and different question for which the decision given is not necessarily a precedent and which is still open for discussion and decision upon its merits.

But it seems to me that the question is really covered by the statement in the opinion that "each new genus, therefore, contains all the species of the world, which come in that cate-

gory in the tables." And it necessarily follows that it does not include any species that does not "come within that category in the tables." And consequently, the erroneous reference of a subsequently described species, either by the original author or a subsequent writer, cannot make that species the type of a genus to which, zoologically considered, it does not belong.

In other words, the opinion, taken as a whole, should be construed as though it read,—Each new genus contains all the species in the world, which come within that category in the tables (i. e., the original generic diagnosis) and the first species published as a member of the genus that falls within the original generic diagnosis is the only species available as the type.

This, it seems to me, is not only common sense, but is the proper legal construction of the language of the opinion and it is exactly what I claim.

I submit, therefore, that under a proper construction of Opinion 46, the *verrucosa* Raf., although it was described as a *Pleurocera*, is not available as a genotype on the ground that it does not comply with and cannot "be recognized from the original generic publication."

II.

Hannibal's designation of *verrucosa* as the type of *Pleurocera*, in 1912, is entirely immaterial, as it was either invalid or unnecessary.

If I am right in the foregoing contention, his attempted designation was absolutely void. The International Commission has held (Op. 15) that the author of a published name has no greater rights over it than any other writer. The same rule is applicable to the description of a new genus. The original publication must govern and a subsequently designated genotype must accord with the generic specification. Rafinesque

himself did not attempt to designate *verrucosa* as the type of *Pleurocera*. If he had, the designation would have been invalid. Hannibal had no more right to designate as the type a species that does not agree with the original generic specifications than Rafinesque had by erroneously including it in his genus. In other words, he cannot, by such designation, validate the erroneous action of Rafinesque in describing *verrucosa* as a *Pleurocera*.

If, on the other hand, my contention is erroneous, and the third rule laid down in Opinion 46 is to be construed literally, without reference to the remainder of the opinion and without any qualification, then *verrucosa* became automatically the type of *Pleurocera* and Hannibal's designation was only the statement of a fact already determined.

III.

If the preceding argument is correct, and *verrucosa* Raf. is not available as the type of *Pleurocera*, its genotype still remains to be determined. No other designation of a type for the genus has ever been made, and, unless the question has already been determined under the rules laid down in Opinion 46, the designation of a proper type is still open.

But it seems to me that the question is already settled.

In 1831, Rafinesque described three additional species of *Pleurocera*. Two of them from Kentucky are unidentifiable. But the third, *P. acuta*, from Lake Erie, is undoubtedly, as it appears to me, the species from the Niagara River described by Lea as *Melania subularis*.

Rafinesque's species has been referred to *Goniobasis virginica* Gmel. by Hannibal, but, as *virginica* is not known from the Lake Erie Basin and does not agree with the description of *acuta*, the approximation is evidently erroneous.

The description of *P. acuta*, though short, does not apply to any other Pleurocerid belonging to the Lake Erie fauna, but does, as it seems to me, unmistakably cover the species so well known as *subularis* Lea.

That *acuta* Raf. and *subularis* Lea are the same species is shown conclusively by the following comparison of the original descriptions, in which every word of both, and nothing else, is included.

Pleurocera acuta Raf.

Elongate, very acute.

Flat, nine spires, the first angular in front.

Lake Erie.

Melania subularis Lea.

Elevated and acutely turreted, apex acute, horn color.

Whorls about twelve, flat, carinate on the middle of the body-whorl, base angulated.

Aperture white and one-fourth the length of the shell.

Length 1.3; diam. .4 in.

Niagara River.

Dr. Lea could almost be convicted of plagiarism on this showing. If this identification is correct, then under the ruling of Opinion No. 46, *Pleurocera acuta* Raf., being the first identifiable species described as *Pleurocera* and complying with the original generic diagnosis, automatically becomes the genotype as being the "only species available as a type."

IV.

While I think that under the showing made, it is unnecessary, nevertheless, to put the question beyond any peradventure of a doubt, I hereby identify *Pleurocera acuta* Raf. as the species subsequently described by Lea as *Melania subularis* and do further designate it as the type of the genus *Pleurocera* Raf.

V.

In conclusion, I desire to insist most strenuously:

1. That the original diagnosis of *Pleurocera* is an adequate and unmistakable description of a group that has had universal generic recognition for over fifty years.

2. That the figure copied by Binney from the "Conchologia Ohioensis," and now admissible in evidence, confirms very exactly the present existing conception of the genus.

3. That *verrucosa* Raf. does not fall within the original generic diagnosis nor agree with Rafinesque's figure, but, on the contrary, by the unanimous consensus of opinion of all conchologists for over half a century, belongs to an entirely different genus.

4. That the establishment of *verrucosa* as the genotype of *Pleurocera* would result in transferring the generic name to a group that does not comply with the original generic specifications.

5. That such a result, in plain violation of the clear intent of the original author, would be most unfortunate and should not be done, if in any way it can be avoided.

6. That *Pleurocera acuta* Raf. is clearly identifiable.

7. That under a proper construction of the Code as interpreted by Opinion No. 46, it becomes necessarily the genotype.

8. If not, that it has now become the type by designation, as being the first species complying with the original generic diagnosis that has been so designated.

