

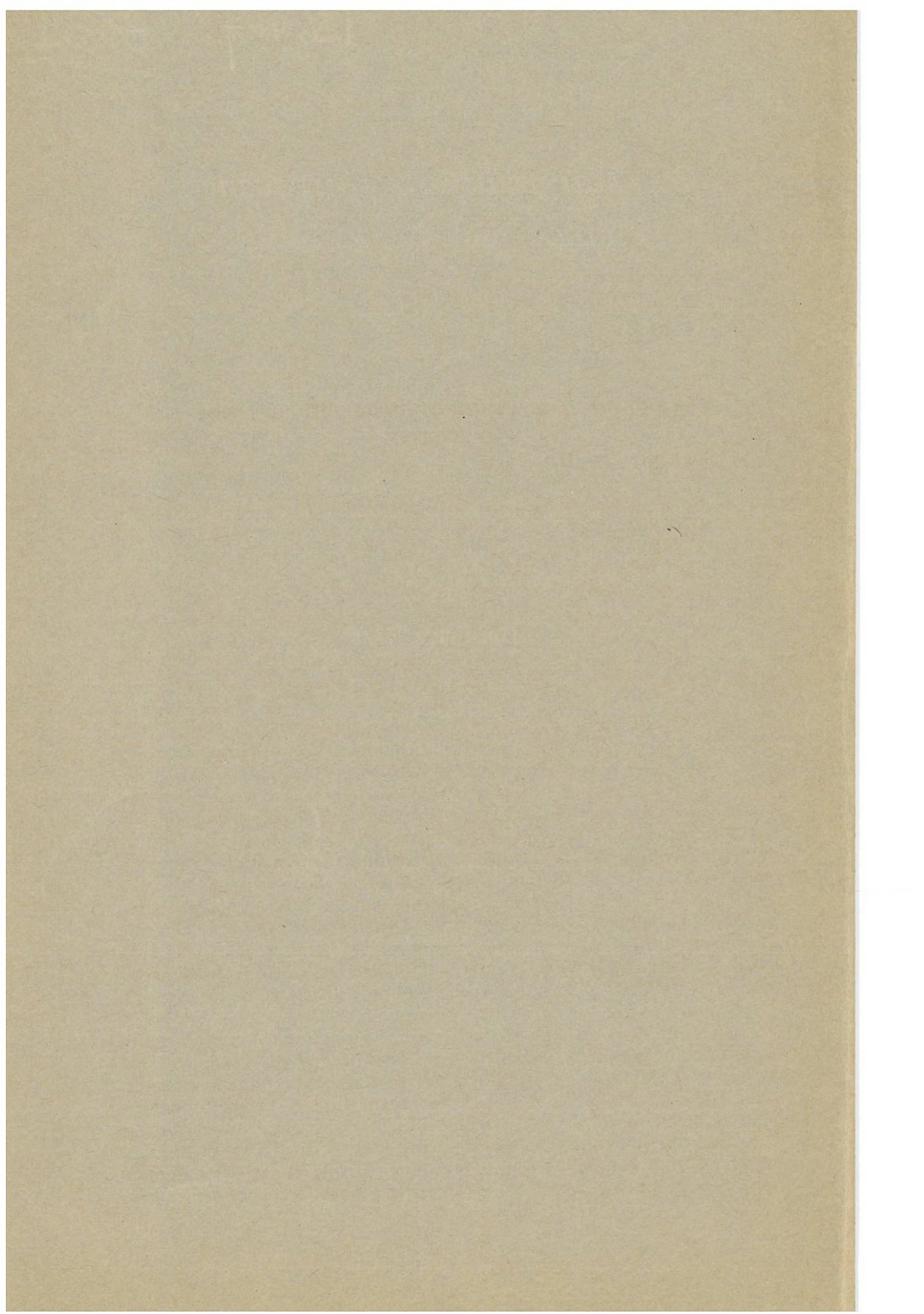
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**On *Margaritifera durrovensis*  
Phillips and its Affinities**

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## ON *MARGARITIFERA DURROVENSIS* PHILLIPS AND ITS AFFINITIES.

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THE Chicago Natural History Museum recently received a valuable addition to its collection of pearly freshwater clams, namely a specimen of *Margaritifera durrovensis* Phillips (No. 29111). For it we are under obligation to Mr. A. E. Ellis and to Mr. A. W. Stelfox. The specimen mentioned was collected by Mr. Stelfox in October 1936 in the River Nore, Queen's County, Ireland, the type locality for the species.

*Margaritifera durrovensis* puzzled me for a long time and I had tried in vain to procure a specimen of it. From the original description of its shell (Phillips, 1928) and its anatomy (Bloomer, 1928) it seemed very unlikely that *durrovensis* was really a distinct species. I had collected so many hundreds of *Margaritifera margaritifera* (Linnaeus) in many parts of Europe and had studied shells of this species in such vast quantities, both in the collection of Senckenberg Museum, to which I was attached until 1936, and in many other private collections and museums, that I was aware of the wide range of individual and local variation of the common European freshwater pearl mussel. All the distinctive features of the shell of *durrovensis* seemed to fall within this range of variation of *margaritifera*. Nor do the anatomical features of *durrovensis*, pointed out by Bloomer, show any qualitative differences from those of *margaritifera*, the quantitative ones being negligible. I therefore resolved to consider *M. durrovensis* a synonym of *M. margaritifera*, and treated it as such in my tentative list of the palearctic Unionidæ (Haas, 1940). I feel happy now to know that, as early as 1929, Stelfox had come to the identical conclusion.

There is no denying that *M. durrovensis* exhibits some strange features uncommon in typical *M. margaritifera*. This became even more evident to me when the first specimen of *durrovensis* came into my hands. I remembered immediately that I had seen similar specimens before. In fact, the form of *M. margaritifera* which was originally described as *Unio brunnescens* Bonhomme, 1840, from the River Viazur, Aveyron, France (of which I had seen an authentic specimen in the Roßmaessler collection now in Senckenberg Museum), shares the general features with *durro-*



*vensis*, especially the brown colour of the conchine layer. Thus, the *durrovensis*-phase may appear in various widely separated localities, and this fact strengthens my belief that this phase is an environmental one, a phase caused by the special life conditions of its habitat, namely water rich in calcium carbonate.

It is well known that *M. margaritifera* appears in two environmental phases, according to the nature of the respective localities. Associated with and almost restricted to water destitute of lime, the freshwater pearl mussel occurs only in waters originating in granitic or gneissic rocks, or in the Triassic Bunter Sandstone; all other waters contain at least a certain amount of lime. Now individuals of *M. margaritifera* living in waters from archaic mountains are generally larger, longer, wider and somewhat thicker and more kidney-shaped than those from Triassic waters, which are mostly shorter, narrower and thinner. Under these circumstances individual names were certain to be given to these two phases of *M. margaritifera*. The name just mentioned and given by Linnaeus must be applied to the phase of archaic water, while Lamarck bestowed the name *elongata* on the phase living in the Triassic waters of the Western Vosges Mountains. Subsequent authors have added new names to this same phase, which can be found listed in Haas, 1940. In recent years, however, everyone seems to agree that the two phases of *M. margaritifera* cannot be separated as species.

To the best of my knowledge, almost nowhere has *M. margaritifera* ever been found in company with other unionids, and I think that only Clessin once mentioned having collected freshwater pearl mussels in a locality where they were associated with *Anodonta anatina*. I myself, in my many collecting trips, have met with only two cases in which *M. margaritifera* was not the only representative of the unionids. In both cases, specimens of the *Unio crassus*-group were the associates, namely members of a genus that never occurs in water destitute of lime. The two localities, the first of which is not yet mentioned in the literature, are the mountain creek Altfell, a tributary of the Weser, near Ilbeshausen, in the Vogelsberg Mountains, central Germany, and the little River Mudau, an affluent of the Main, near Miltenberg-on-Main, central Germany (Haas and Schwarz, 1913, 7). These few findings are important inasmuch as they prove that *M. margaritifera*, under conditions not yet known, is able to live in water in which lime is present. This fact once established, it becomes rather probable that the *Margaritifera* of the River Nore, in Ireland, also belongs to the species *margaritifera*, but has become established in water rich in lime and changed by this environmental factor into a distinguishable phase, to which the specific name *durrovensis* has been given. On the other hand, the distinctive characters of this *durrovensis*-phase seem insufficient to justify a specific or even a subspecific separation from *margaritifera*. I thus come to the conclusion that *durrovensis* is to be considered as representing the lime-phase of *margaritifera*, exactly as *elongata* represents the Bunter Sandstone phase and typical *margaritifera* the Archaic Rock phase. The name *durrovensis* Phillips thus becomes a synonym of *Margaritifera margaritifera* (Linnaeus).

The disappearance of the name *durrovensis* into the synonymy of *M. margaritifera* does not diminish the theoretical interest in this lime phase of a species that generally avoids calcium. The physiological problems involved in this passage into a bivalve dependent upon calcium are worthy of closer study, as I have pointed out in the section on lime-metabolism in my monograph of the bivalves (Haas, 1941, 568) in which I used *M. durrovensis* as an example.

So far as I am able to find, the name *durrovensis* has appeared in scientific literature only in the following cases :—

*Margaritifera durrovensis* Phillips, 1928, 69-74, pl. 3-5 ; Bloomer, 1928, 74-76, 1 fig. ; Haas, 1941, 568 ; Ellis, 1947, 10, figs. 3-5, pl. 4, fig. 22, pl. 5, fig. 25.

*Margaritana durrovensis* Stelfox, 1929, 7.

*Unio durrovensis* Kennard, 1941, 273.

*Margaritifera margaritifera margaritifera* Haas, 1940, 120 (*durrovensis* cited in synonymy).

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