

A NEW SQUAMARIACEA

FROM

THE ADRIATIC AND THE MEDITERRANEAN

BY

M. FOSLIE

DET KGL. NORSKE VIDENSKABERS SELSKABS SKRIFTER, 1905. NO 1

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In my paper Lithoth. Adriat. Meer.¹⁾ I mentioned the existence of forms partly of Lithothamnia, partly of Squamariaceae incrustated with carbonate of lime, which in habit greatly recall *Lithothamnion Philippii* Fosl (*Lithothamnion decussatum* Solms, non Ell. et Sol.) and, when sterile, are often hardly distinguishable from the latter species. I have also seen other species, principally tropical ones, of both groups which approached very much to each other. It is, however, a well known fact that the two groups mentioned differ from one another by certain peculiarities also in structure. In most cases — and probably in all — it may, therefore, be settled only from anatomical marks, whether a sterile form in question represents one group or the other.²⁾ On the other hand it is often impossible to ascertain the genus or the species to which the form belongs.

In the collection of Lithothamnia from the Adriatic described l. c., which Dr. Kuckuck kindly sent to me for examination, were found several sterile specimens which in habit more or less recalled or resembled *Lithothamnion Philippii*. They were — partly with some doubt — referred to this species. Some of these sterile specimens were examined also as to structure, others were not examined in that respect. Among the former ones are a couple

1) M. Foslie. Die Lithothamnen des Adriatischen Meeres und Marokkos. — Wissensch. Meeresuntersuchungen. Neue Folge. VII Band. Abt. Helgoland. Oldenburg i. Gr. 1904. Pag. 15.

2) A form hardly ascertainable is mentioned l. c. p. 15 (footnote). Of this form, however, only a small material is in hand. Perhaps these quite small fragments represent forms of both groups growing on the same substratum.

of small specimens which in structure are very like *Peyssonnelia polymorpha*; but they are of much firmer consistency than typical specimens of this species, viz. quite stony and firmly attached to the substratum, a piece of a shell of muscle. On the other hand, I have not seen sure rhizoids, which seem to be few or wanting. — *Peyssonnelia polymorpha* gradually detaches itself from the substratum and seems far from gaining so hard consistency. Besides, it develops numerous and rather long rhizoids.

I have also received specimens of this Squamariacea collected in the Gulf of Naples by the Zoological Station. It is also, — at any rate partly — included in *Sporolithon mediterraneum* Heydr.¹⁾, of which particulars are to be found below. Moreover I have in earlier collections from the Mediterranean seen specimens (without any statement of locality) which probably belong to the same form. Thus it seems to be of no rare occurrence.

I have felt a doubt whether the form in question may be identical with *Polystrata dura* Heydr.²⁾ from the Isle of Tami recently described. At the same time, however, it very nearly approaches *Peyssonnelia polymorpha* (Zan.) Schm. and may perhaps be regarded as a variety of the latter, or rather of an independent species which comes near to it. This of course is not to be ascertained as long as only sterile specimens are known. However, Mr. Heydrich himself seems to feel a doubt whether *Polystrata* is not referable to *Cruoriella* or *Peyssonnelia*. Cp. l. c. pag. 34. I, therefore, think it most reasonable for the present to refer the alga in question to *Peyssonnelia*. As far as the question of species is concerned, it is hardly a wrong assumption that a calcareous alga from the Isle of Tami can appear in an almost identical form in the Mediterranean. The calcareous algae hitherto known from the Tami area are no doubt merely tropical and are wanting out of the Indic and the Pacific oceans; but from neighbouring areas species occur which also seem to appear in the Mediterranean. Be

1) F. Heydrich. Einige neue Melobesien des Mittelmeeres. — Ber. der Deutsch. Bot. Gesellsch. Bd. XVII. Berlin 1899. Pag. 227.

2) F. Heydrich. Polystrata, eine Squamariacee aus den Tropen. — Ber. Deutsch. Bot. Gesellsch. Bd. XXIII. Berlin 1905. Pag. 30.

it said that Mr. Heydrich l. c. declares as to the specimens of *Polystrata dura* which he had received, „dass ich sie anfangs für *Sporolithon* hielt“. And further he says: „Ein Dünnschliff eines krustenartigen fossilen *Archaeolithothamnion* nach der Rothpletz-Foslie'schen Auffassung, worauf dies Genus gegründet, ist kaum von den neuen Genus *Polystrata* zu unterscheiden, noch dazu, wenn ältere Krusten Verwendung fanden“. If this is right, the form in question cannot be identical with *Polystrata dura* at all; for it differs much from *Archaeolithothamnion* (*Sporolithon*) even in structure and proves a genuine Squamariacea in this respect. Indeed the remark of Mr. Heydrich quoted does not seem to agree with his description and his figures of *Polystrata dura*. To judge from his own following remarks, it is rather to be looked upon as a peculiar turn of phrase in defence of his view that the recent Corallinaceae ought to be distinguished from the fossil ones, in which view Mr. Heydrich is singular. I have earlier pointed out that the genus *Sporolithon* Heydr. is identical with *Archaeolithothamnion* (Rothpl.) Fosl., and I urge the statement.

On the other hand, it is — as remarked above — hardly out of the question that the alga may represent a form of *Peyssonnelia polymorpha*. I have, however, seen no specimen forming transition between them. Therefore, I think it warranted to regard the alga in question as an independent species:

Peyssonnelia (?) *compacta* Fosl. mscr.

Syn. *Sporolithon mediterraneum* Heydr. saltem pro parte.

Thallus crustlike, up to 5 mm. thick, very closely and firmly adherent to the substratum, incrusting with carbonate of lime and of a very hard or stony consistency.

The plant sticks to pieces of muscles, other calcareous algæ, limestone, or other hard objects, forming crusts which — in the specimens seen — attain a thickness of up to about 5 mm. The shape of the crust depends on that of the substratum, which at length becomes encompassed. The surface is frequently provided with a rather great number of small excrescences, wartlike or more or less irregular, which are — at any rate in most cases —

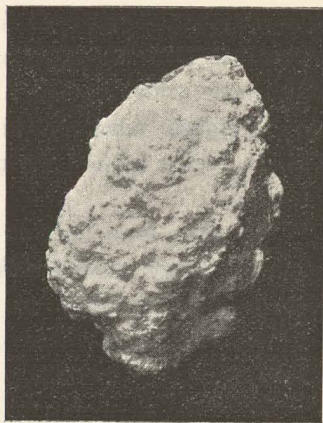
due to the covering up of small extraneous objects. The consistency is very hard, perhaps harder than in the hardest forms of Lithothamnia, or quite stony, and it is very difficult to remove the crust from the substratum. I have not seen rhizoids.

As to structure the species partly approaches that of *Peyssonnelia polymorpha*, partly that of *Polystrata dura*. The cells of the hypothallium are partly elongated, up to 30 or 40 μ long and only 8–12 μ broad, mostly however 20–25 μ long and 12–18 μ broad, partly almost square or roundishly edged, and up to about 30 μ in diameter, though frequently less. The cells of the perithallium are partly oblong or elliptic, seldom rectangular, 15–20 or sometimes 25 μ long and 10–16 μ broad, partly and often roundish or roundishly edged, 7–14 μ in diameter. Thus the cells for the most part seem to be a little smaller than those of *Peyssonnelia polymorpha*. Of the latter, however, I have only examined one species in this respect. On the other hand the cells are a little larger than those of *Polystrata dura*, to judge from the measures of the latter stated l. c. by Mr. Heydrich. But as to stratification there is a considerable likeness between both of these algae. In vertical sections of *Peyssonnelia compacta* are mostly found numerous strata of new hypothallium; but a stratification has also taken place in many of the layers of perithallium proceeding from the layers of hypothallium. This stratification seems to me simply corresponding with the stratification in many crustlike Lithothamnia. As to repeated formation of hypothallium I have earlier pointed out that it is generally formed in the Lithothamnia as soon as the plant is encumbered by certain extraneous bodies, which may gradually occur in one and the same specimen.¹⁾ The same is, at any rate partly, the case with *Peyssonnelia compacta*. New hypothallium is apparently often formed also in this species as in the Lithothamnia, when any part of the crust is hurt from mechanical causes. The new tissue proceeds from the adjacent unhurt parts of the plant. Besides, the presence of new layers

¹⁾ A. Weber and M. Foslie. The Corallinaceae of the Siboga-Expedition. Leyden 1904. Pag. 22, 28, 36, 41.

of hypothallium are, as a matter of course, traceable to the fact that germinating plants attach themselves to and are developed on older specimens of the same species.

As mentioned above, this species includes at any rate partly *Sporolithon mediterraneum* Heydr.¹⁾ It is a misstatement that the latter was gathered in the Gulf of Naples by Francotte. The fact is that Mr. Heydrich received from Dr. Chalon the specimens which were made the basis of the description of the said species. This is not mentioned by Mr. Heydrich l. c. — On application Dr. Chalon most kindly sent to me three specimens determined by Mr. Heydrich as *Sporolithon mediterraneum*. One of these — see the figure — represents a typical *Peyssonnelia compacta*. The second specimen comprehends partly small crusts of the same species, partly and essentially *Lithothamnion Philippii* Fosl. furnished with conceptacles of sporangia. The third specimen represents partly and essentially young *Gonolithon Brassica-florida* (*mamillosum* Hauck). On new application to Dr. Chalon, asking whether the three specimens mentioned had really been determined by Mr. Heydrich, I received the following answer: „C'est



M. Heydrich lui-même qui a déterminé le *Sporolithon mediterraneum*“.

Sporolithon mediterraneum Heydr.;
nat. size.

At the same time he sent me 17 specimens from the same place which were also determined as *Sp. mediterraneum*. But not one of these either proved to represent any *Archaeolithothamnion* (*Sporolithon*). Each of them includes small, quite young specimens, coalesced and partly stunted, mostly of two, partly of three species growing on hard substratum

1) = *Archaeolithothamnion mediterraneum* (Heydr.) Fosl. Rev. Syst. Surv. Melob. p. 8.

of different kind, viz. *Peyssonnelia compacta* Fosl., *Lithothamnion Philippii* Fosl., *Lithothamnion fruticosum* (Kütz.) Fosl., *Goniolithon Notarisii* (Duf.) Fosl., *Goniolithon Brassica-florida* (Harv.) Fosl.¹⁾ and *Lithophyllum racemus* (Lam.) Fosl.

If this fact is compared with the statement of Mr. Heydrich above quoted that he earlier considered a Squamariacea (*Polystrata dura*) as representing *Archaeolithothamnion (Sporolithon)*, it is an obvious conclusion that *Sporolithon mediterraneum* Heydr. not only partly, but probably entirely comprehends a similar Squamariacea, *Peyssonnelia compacta*. In this case the name of *compacta* must probably be dropped, and the species will have to be named *Peyssonnelia mediterranea* (Heydr.) Fosl. At present, however, I do not want to do so, as I am not sure whether any of the specimens received from Dr. Chalon may have to be considered as being the type of *Sporolithon mediterraneum* or to be co-ordinate with the latter. The specimen representing the very type perhaps remained in the possession of Mr. Heydrich himself, when he had the collection from Dr. Chalon for determination.

The form from the Gulf of Naples mentioned by Mr. Mazza²⁾ under the name of *Sporolithon mediterraneum* Heydr. is probably also unsure. It seems to have been determined from specimens received from Dr. Chalon and from the same collection as those which were sent to me.

As to the misstatement of the place of growth I beg to quote what Dr. Chalon kindly communicated to me: „Pour le *Sporolithon mediterraneum* je vous envoie tout ce qui me reste“ (viz. the 17 specimens mentioned above). „C'est par erreur que je vous ai dit cette Algue recoltée a Naples par Francotte. Cette erreur a été répétée par Heydrich et par De Toni (p. 1723), c'est ma faute. Francotte me l'avait envoyée de Naples, avec d'autres Algues de Naples, et sans etiquette. J'ai appris récemment que cette espèce avait été pêchée dans le golf de Villefranche par le

1) = *Goniolithon mamillosum* (Hauck) Fosl., which perhaps ought to be kept distinct. Cp. Lithoth. Adriat. Meer. p. 20.

2) Angelo Mazza. Noticine algologica. La Nuova Notarisia. 1905. Pag. 18.

Dr. Schleicher. Il vaut mieux reconnaître 3 erreurs que de vouloir en soutenir une seule."

Peyssonnelia compacta is at present known from the following places: The Adriatic: Off Del Dente between Rovigno and Quieto in a depth of 15—23 meter (Dr. Kuckuck); the Mediterranean: The Gulf of Naples (Zool. Station) and the Gulf of Villefranche (Dr. Schleicher).

Dr. Schlichter, in your study, I think you will find that the following is a list of the names of the authors of the various papers in the series of 1-11, from the first to the last. The names of the authors are given in the order in which they appear in the series, and the full of the names of the authors are given in the order in which they appear in the series.

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