

loured bands as in the preceding varieties, though, from imperfect indications of them in one or two instances, it is not improbable that this variety may occasionally assume the markings of the deep-water shells*; the mouth is rarely white, most frequently of a deep rich purple-brown, occasionally tawny or of a fine bright yellow, particularly when the shell is white or pale.

A very interesting modification of this variety occurs on the Lancaster Sands, where it was procured in abundance by Mr. Charles M. Adamson. The undulations of this form are scarcely to be distinguished, and in many individuals are completely obliterated; the striæ are generally very strong and regular, with finer striæ between them, giving the surface precisely the appearance of *B. striatum* of Pennant; the surface is however occasionally devoid of the more elevated striæ, and is closely covered with fine but somewhat irregular striæ. Another striking modification of this variety was taken by the Rev. J. Law on rocks near Sunderland: it is white with a bright yellow mouth, having the surface well undulated and the striæ strong and much elevated.

Dr. Johnston mentions in the 'Proceedings of the Berwickshire Naturalists' Club,' a shell with a purple mouth that occurs in Berwick Bay, which probably belongs to this variety; and the *B. undatum* of Gould's 'Invertebrata of Massachusetts' appears also to resemble it. The golden-coloured mouth of the American shell, and its locality, which is stated to be "on the rocky bars in Boston harbour," go far to prove that it belongs to this form. Professor Edw. Forbes also mentions in his 'Malacologia Monensis' a dwarf form of this variety as occurring near Bergen in Norway, and in the Firth of Forth. With these three exceptions, this strongly-marked variety appears to have escaped the notice of writers on the subject.

Newcastle-on-Tyne, January 26, 1847.

XVIII.—*On a second form of Fructification in Peyssonnelia Squamaria.* By C. MONTAGNE, D.M., in a Letter to the Rev. M. J. BERKELEY, M.A., F.L.S.

I TOLD you in my last letter of a new form of fructification which I had just discovered in a specimen of *Peyssonnelia Squamaria* from Algiers. I propose at present to trace the history of this discovery, to describe these new organs, and to subjoin some brief notes on Nemathecia.

In studying the Fungi collected by Drège at the Cape which had been placed in my hands by Professor Miquel of Amsterdam, I found under the number 4108 (44) a specimen of *Peyssonnelia*

* Since writing the above, Mr. Richard Howse has informed me that he has recently taken this variety with coloured bands.

which presented some peculiarities of structure. The frond, in other respects resembling that of young individuals from the Mediterranean, presented on its upper surface a multitude of granules of a paler tint, which gave to it the appearance of a man's skin affected with a miliary eruption. A thin vertical slice of the frond placed under the microscope showed the central and horizontal layer of quadrilateral cells from whence were given off on one side the root-like threads which form a sort of nap on the lower surface, and on the other the filaments, which at first ascending and oblique, become vertical and terminate on the outer surface which is formed by the intimate adherence of the ultimate articulations. In the Cape plant the four or five articulations nearest to the surface turn up and form with the others an angle of about 130° , which circumstance presents a certain analogy with what takes place in the cylindric fronds of certain *Florideæ* of the tribe *Cryptonemeæ*; analogy, I say, for there is no real resemblance.

It is amongst the ascending filaments, and not those which have resumed their original vertical direction, that I have observed the agglomerations of granules which may be considered as spores. It is these little elevations which give to the frond the appearance of which I have spoken above. They are about the tenth of a millimetre in diameter, and are composed of free oblong granules $\frac{3}{100}$ ths of a millimetre long, and rather thicker than $\frac{1}{100}$ th of a millimetre, entire, or divided into two transversely; some appeared to be divided crosswise into four, like true tetraspores, but I cannot affirm this positively. Their more intense colour and greater opakeness prevent their being confounded with the endochromes from which they probably derive their origin, though it is difficult to say how. Supposing then that they are organs destined to multiply the species, it is impossible not to see that they differ from the normal tetraspores of the *Peyssonnelia* of our coasts, by their aggregation, their form, their proportionally smaller size, and above all by their position.

Desiring to re-examine the already well-known fructification, and of which Decaisne, Kützing and Zanardini have given good figures, not to mention the more recent analysis of *P. Dubyi* by Mr. Harvey, I placed under the microscope a very thin vertical slice taken from the centre of a nemathecium of a specimen sent from Algiers by Dr. Guyon. What was my astonishment, when instead of seeing what I had so often observed, and indeed had just described for the 'Flora of Algiers,' I perceived an entirely different form of fructification!

The pustules formed by the nemathecia have just the same dimensions as those of individuals bearing tetraspores. They are composed of two sets of filaments, the one extremely delicate,

apparently dichotomous, but in reality simple, with long endochromes, performing probably the office of paraphyses; the others of the same length, but far larger; and it is remarkable that it is the endochromes of these which become spores absolutely in the same way as in a great number of conceptacula of *Florideæ*, as for instance in *Nothogenia variolosa*, *Melanthalia Jaubertiana*, *Plocaria confervoides*, *Sphærococcus coronopifolius*, *Delesseria hypoglosson*, &c. (see the analyses given by myself and Kützing). Thus we find rows of two, four, six or even eight spores, according to the degree of evolution at which the nemathecium have arrived. It appears that their development proceeds from the upper part of the thread, taking a downward course, because those which are nearest the upper surface of the nemathecium are the largest and most spherical, the lower ones being still elongated and claviform, and much more slender. This however may depend on the form of the nemathecium whose convexity allows a greater extension than the base. The number of the spore-producing threads is large enough to make one imagine that the nemathecium are entirely composed of them, but in compressing them under Shiek's compressorium, threads are distinctly observed remaining still in the form of paraphyses. When the row consists of four spores only, it might be taken for a linear tetraspore. Nevertheless there is even then this difference, that in this case the extreme spores are neither similar nor equal to one another. The upper one is $\frac{5}{100}$ ths of a millimetre in length, and rather more than $\frac{2}{100}$ ths in breadth, rounded above and truncate below; the second and third are truncate at either end. The form of the lower was described before; its length is $\frac{4}{100}$ ths of a millimetre, and its greatest thickness $\frac{2}{100}$ ths. Observe, I am describing here only a single series of spores, for they are very variable according to the number of the spores of which they consist. I should add, that when they are once free they are soon clothed with a distinct perisporium and acquire larger dimensions. Hence I have measured some, which, together with their perispore, had a diameter of $\frac{1}{20}$ th of a millimetre.

On the whole then, this form of fructification appears to me to correspond with that which one meets with in the conceptacula of *Sphærococcoideæ* and *Delesseriæ*. It differs simply in the absence of a conceptaculum properly so called, which is here replaced by filaments radiating from the surface which give rise to the nemathecium.

Nemathecium then may inclose three forms of fructification: 1. masses of spores inclosed in a pericarp (*Favellidia*, J. Ag.) as in *Polyides*, and perhaps in *Rhizophyllis* (see Fl. Alg. t. 16. fig. c and d); 2. tetraspores which may, as we see in the genus *Fauchea* (l. c. t. 16. fig. 1 h), and in *Peyssonnelia*, grow between the radia-

ting filaments, or, as in *Chondrus*, *Gymnogongrus* and *Phyllophora Stiridia* (*l. c.* t. 16. fig. 5 *d* and 5 *e*), derive their origin from the metamorphosis of the endochromes of these filaments; 3. a form of fructification which may possibly be merely a modification of the former, in which the endochrome, suffering a normal hypertrophy, is not divided as a tetraspore, and presents an analogy to what one meets with in certain conceptacula. However this may be, one must allow that the organs in question are true spores, since they are exactly like those of the species with which I have compared them as regards their mode of reproduction. I ought to add, that Mr. Harvey has seen something like this in the nemathecium of *Phyllophora Brodiaei*, but he does not say whether it is in the same nemathecium which incloses the tetraspores, which would make a great difference.

XIX.—*Note on the genus Atya of Leach, with descriptions of four apparently new Species, in the Cabinets of the British Museum.* By G. NEWPORT, F.R.S. &c.

[With a Plate.]

see appendix 6 95

Fam. MACROURA, Latr., Leach.

Gen. *Atya*, Leach.

WHEN Dr. Leach described this genus of Macrourous Crustaceans, he was acquainted with only one species. There are four specimens of this in the cabinets of the British Museum, but nothing whatever is known of their habits, or from whence they were obtained. M. Milne Edwards, in his work on Crustacea, states that *Atya scabra* is from the coasts of Mexico. A species described in Wiegmann's 'Archives' for 1836, *Atya mexicana*, is from the same country. Whether this is identical with Dr. Leach's species is not ascertained. Two new species have since been added to the collection in the British Museum, one from Jamaica and the other from the Philippine Islands. I have myself received two others, presented to me by my friend Dr. M'William, R.N., the indefatigable officer of the Niger Expedition, to whose kindness I am also indebted for other valuable specimens of natural history. These *Atyas* are now in our national collection. One of them, a small species, is from New Zealand. This is a female with an abundance of ova attached, and near the period of hatching: it was found in brackish water at Apia, Upolu, nine miles inland. The other species is of the size of Dr. Leach's *A. scabra* and very closely resembles it, so that it may prove to be only a variety of it; but it seems to differ from Dr. Leach's species in having the legs slightly sulcated, and the middle plate



Montagne, Jean
Franc

ois Camille. 1847. "XVIII.—On a second form of fructification in *Peyssonnelia Squamaria*. in a Letter to the Rev. M. J. Berkeley, M.A., F.L.S." *The Annals and magazine of natural history; zoology, botany, and geology* 19, 155–158.

<https://doi.org/10.1080/037454809494501>.

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