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Biologiske Meddelelser, bind **18**, nr. 16

Dan. Biol. Medd. **18**, no. 16 (1951)

SOME MARINE ALGAE FROM MAURITIUS

ADDITIONS TO THE PARTS PREVIOUSLY
PUBLISHED, III

BY

F. BØRGESEN



København

i kommission hos Ejnar Munksgaard

1951

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Some collections of algae from Mauritius recently received from Director, Dr. R. E. VAUGHAN not only contain some new species but also several species not yet recorded from the island, or others of which I formerly have had fragmentary specimens only and of which I can add information in various ways. This is done in the part published here.

In all 29 species are mentioned in this part. Of these 3 species are described as new and when dealing with the species of *Trichogloea* from Mauritius, a new species from Java of this genus is described as an addition.

When working with the species of the genus *Trichogloea* it was of a special importance for me to be able to see the original specimens of *Trichogloea Requierii* Montagne kept in the Muséum National d'Histoire Naturelle, Paris. I am very much indebted to the Director, Professor R. LAMI, who upon my application most kindly allowed me to have the loan of these specimens together with some specimens of *Trichogloea* from Mauritius and some other species of *Trichogloea* here in Copenhagen.

As I also wanted very much to see a specimen of a *Trichogloea* collected by Colonel NICHOLAS PIKE in Mauritius and kept in the Kew Herbarium, the Director, Dr. E. J. SALISBURY kindly permitted me to see the specimen here, for which I likewise want to express my sincere thanks.

Since it was also of much interest for me to be able to see the small specimen of *Trichogloea Requierii* of which KÜTZING in *Tabulae Phycologicae*, vol. VII, tab. 92, fig. II has given an illustration I am much indebted to Professor H. G. LAM, Director of the Rijksherbarium, Leiden, and to the Curator, Dr. JOS^e TH. KOSTER for permission to see the specimen.

Further, Professor W. RANDOLPH TAYLOR, Ann Arbor, Michigan, most kindly sent me a type-written duplicate of a not yet

published paper on *Trichogloea Herveyi* Setch, together with some dried specimens of this species endemic in the Bermudas.

Dr. ISABELLA ABBOTT, Hopkins Marine Station, Pacific Grove, California, who has made the study of the genus *Liagora* a speciality, has most kindly given me valuable information about species of this genus.

The lady artist Miss INGEBORG FREDERIKSEN has most kindly drawn most of the figures and for this valuable help I thank her most heartily.

To the Trustees of the Carlsberg Foundation I am much indebted for a continued grant.

CHLOROPHYCEAE

Siphonocladales.

Fam. 1. Siphonocladaceae.

Siphonocladus (Schmitz) Børgs.

1. *Siphonocladus tropicus* (Crouan) C. Ag.

Alg. Mauritius, Addit. List, 1946, p. 14.

Of this species rather common in the West Indies of which I formerly from Mauritius have seen only a single specimen preserved in JADIN's collection, I have in a lately received collection met with some few more.

As the species has not yet been recorded from other localities in the Indian Ocean than Mauritius a new locality there is of course of interest.

About the locality is said only: "Epiphyte, near reef".

Mauritius: Riambel, 8-12-50, G. MORIN, no. 1006.

Valoniopsis Børgs.

1. *Valoniopsis pachynema* (Martens) Børgs.

BØRGESEN, F., Some Marine Algae from the Northern Part of the Arabian Sea, 1934, p. 10, figs. 1—2. — *Bryopsis pachynema* Martens, Die Preussische Expedition nach Ostasien, Bot. Theil, Die Tange von G. v. MARTENS, p. 24, pl. IV, fig. 2, 1866.

In a lately received collection of algae from Mauritius a large specimen of this species is found which has not earlier been recorded from there.

The specimen forms a large tuft more than 20 cm broad consisting of entangled filaments fixed together by means of the numerous rhizoids issuing from the filaments. The latter are about $300\ \mu$ to about 1 mm broad.

About the locality is said: "Forms large cushion-like mats on rocks exposed to surf at low tide".

Mauritius: Riambel, 24-10-50, R. E. V. no. 954.

Geogr. Distr.: Rather widely distributed in the Indian and Pacific Oceans, and the Bermudas in the Atlantic Ocean.

Dasycladales.

Fam. 1. *Dasycladaceae*.

Acetabularia Lamouroux.

1. *Acetabularia Moebii* Solms.

Alg. Mauritius, I, 1940, p. 44.

Of this diminutive *Acetabularia* I have formerly, when visiting the Kew Herbarium, seen there only some few specimens collected by Colonel PIKE. It was therefore interesting to receive, sent by air-mail from Dr. VAUGHAN, a small tube containing 3—4 tiny specimens (Fig. 1).

When compared with the description of SOLMS (1895, p. 30, fig. 1, pl. IV) based upon PIKE'S specimens and a single one collected by MÖEBIUS some differences are present in the specimens I have just received.

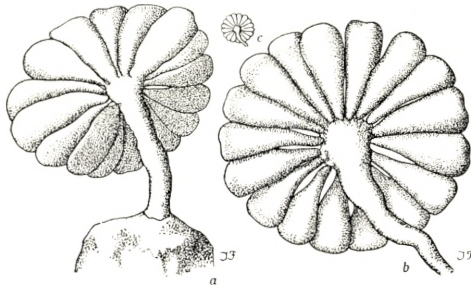


Fig. 1. *Acetabularia Moebii* Solms. *a*, a specimen fixed to a piece of rock; *b*, a disc seen from below; *c*, same specimen in natural size. *a* and *b*, $\times 7$; *c*, $\times 1$.

The discs have in the specimens examined 17 rays, while SOLMS says about 15, and the ends of the rays are in most cases broadly rounded but in a few of the rays they were a little emarginate.

In the coronal knobs mostly six scars, sometimes only 5, were found after the deciduous hairs, while SOLMS says 5 only (Fig. 2).

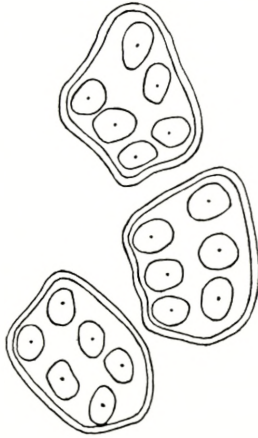


Fig. 2. *Acetabularia Moebii* Solms. Coronal knobs showing hair scars ($\times 300$).

And while SOLMS describes the hair scars as "very delicate", those in the specimens just received are thick-walled.

About the chalk-incrustation SOLMS says that the lateral walls of the rays are united by strong calcification; in the specimens examined by me the rays were also in most cases knitted together with chalk but some rays were free.

The stipe, present in one of the specimens only, was $3\frac{1}{4}$ mm long and rather bent and uneven; above, below the disc, it was thickened which is most probably due to remaining parts of a dropped disc. According to SOLMS two discs were found in the single specimen of MOEBIUS.

The specimens were sterile.

Okamura in "Icones of Japanese Algae", vol. II, p. 184, pl. 100, figs. 7—11 has described a small *Acetabularia*, *A. minutissima* which according to his description and figures seems to be the same as the Mauritian one even if some minor differences are present.

About the locality Dr. VAUGHAN writes in a letter received later:

“We have found it in several localities at Riambel at Mahébourg. It occurs as scattered isolated plants attached to rocks and old pieces of corals on the lagoon side of the reef protected from strong surf, it is usually densely entangled with or covered by other algae”.

Mauritius: Riambel at Mahébourg, R. E. V. no. 1059.

Siphonales.

Fam. 1. *Caulerpaceae*.

Caulerpa Lamouroux.

1. *Caulerpa Webbiana* Mont.

forma *tomentella* (Harv.) Weber.

Alg. Mauritius, Addition. List, I, 1946, p. 36.

In a lately received collection from Mauritius several large, fine specimens of this little *Caulerpa* are found of which I have formerly seen very small fragments only.

Five to six ramuli are found in each whorl in the present form of this variable plant.

About its habitat Dr. VAUGHAN writes: “On rocks or growing in coral sand exposed to strong surf. Very firmly rooted and difficult to separate from other algae.” And on another locality Mr. G. MORIN says: “Growing in sand, in one foot deep water at low tide”.

Mauritius: Riambel, near Souillac, 24-10-50, R. E. VAUGHAN, nos. 948, 949. Ile d’Ambre, 2-7-50, G. MORIN, no. 968.

2. *Caulerpa brachypus* Harv.

var. *mauritiana* Borgs.

f. *exposita* nov. forma.

In a lately received collection of algae from Mauritius a small *Caulerpa* is found which I consider to be a forma *exposita* of the Mauritian variety.

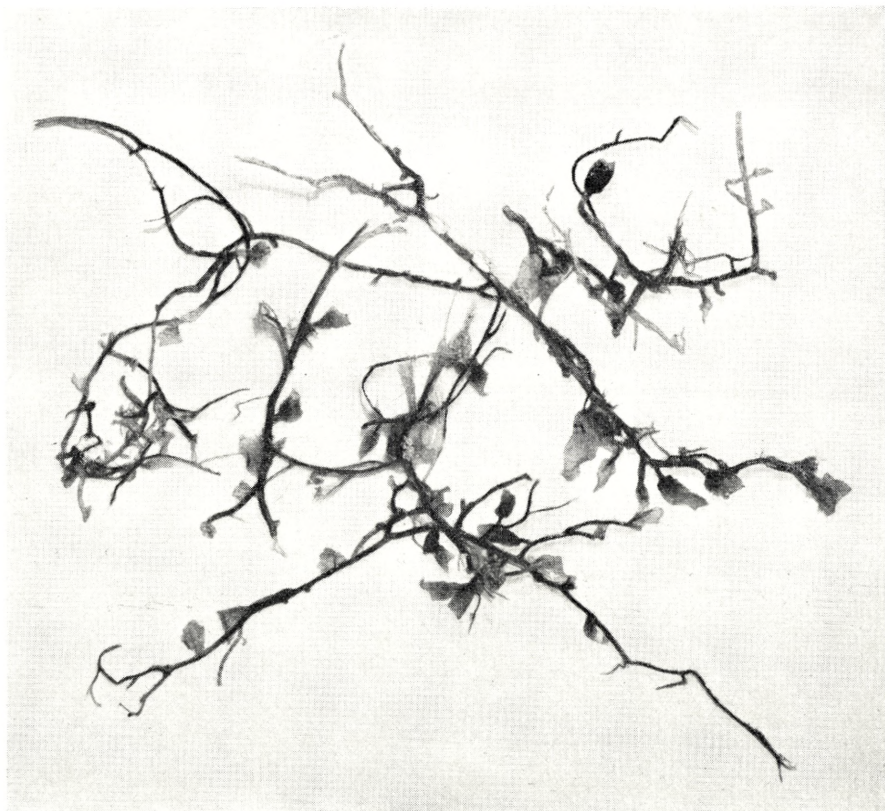


Fig. 3. *Caulerpa brachypus* Harv. var. *mauritiana* Børgs., forma *exposita* ($\times 1$).

As shown in the fig. 3 the erect assimilators are only $\frac{1}{2}$ —1 cm high. The margins of the assimilators are somewhat sinuate, but I have been searching for any dentation of this in vain.

The plant was "growing in small ponds constantly swept by water."

Mauritius: Ile Bernache, 26-2-49, G. MORIN, no. 969.

3. *Caulerpa cupressoides* (Vahl) Ag.

Alg. Mauritius, I, 1940, p. 50. Add. List, 1946, p. 38.

var. *typica* Weber.

Of this species I have formerly seen only very small and poor specimens. It was therefore of interest in a new collection

sent from Mauritius to find several well developed specimens of var. *typica* Weber.

It was "growing on coral and sand in 1—2 feet of water at low tide in calm water".

Mauritius: Ile d'Ambre, 18-6-50, G. MORIN, no. 973.

4. *Caulerpa racemosa* (Forssk.) Weber v. Bosse.

var. *wifera* (Turner) Ag.

WEBER, A., Monogr. d. Caulerpes, 1895, p. 362, pl. 33, fig. 24.

This small form, the assimilators of which have a height of about 1 cm, seems to agree quite well with the figure of Mme WEBER referred to above.

The plant was collected on a reef.

Mauritius: Poudre d'Or, 18-6-50, G. MORIN, no. 975.

5. *Caulerpa peltata* Lamour.

var. *stellata* (J. Ag.) Weber.

Caulerpa stellata (J. Ag.), Till Alg. Syst., 1872, p. 38.

Some specimens of a small form of *C. peltata* Lamour. seem to be referable to this variety.

From the delicate creeping rhizome fastened to the substratum by numerous rhizoids short assimilators up to 1 cm high are given out consisting of 1—3, rarely more, discoid ramuli, the uppermost of them issuing from the margin of a disc below. The discs, about 4 mm broad, have a more or less crenulated margin and are now and then dentate.

The plant was found "creeping on rocks and old corals densely entangled with other algae".

Mauritius: Riambel, 23-11-50, G. MORIN, no. 978.

PHAEOPHYCEAE

Dictyotales.

Fam. 1. *Dictyotaceae*.

Padina Adans.

1. *Padina* spec.

Vaughaniella rupicola Børgs. A new genus of the Dictyotaceae, 1950.

From the very beginning, when examining this little curious plant, I had great troubles about it. Was it in reality an independent form at all, being for instance homologous to the prostrate rhizome of *Padina Pavonia*? But having been unable to find any trace of *Padina* in the material and especially relying upon the fact that the plant was fertile I gave up my doubts. In this connection I also want to point out that I have collected *Padina* in many places in the tropics, but nowhere I have met with such a striking development of the prostrate filaments, as in the Mauritius plant according to the observations of Dr. VAUGHAN.

Shortly after I had sent out my paper I received from several algologists in Australia and New Zealand letters in which I was told that my paper was of great interest to them, that the plant was well known in Australia, and one of them even wrote that "it solves one of my outstanding problems". Nevertheless I still had my doubts and already before I had sent my paper to Dr. VAUGHAN I asked him to look for *Padina* in connection with *Vaughaniella* and to send me some more material in the hope also perhaps to be able to find the sexual organs. According to my wish Dr. VAUGHAN already last summer sent me some large tufts (Fig. 4) of the plant collected May 3, 1950, no. 917, and as to the locality he wrote: "On flat-topped rocks exposed at low-tide, forms flat moss-like cushions." The examination of this



Fig. 4. *Padina* spec. (*Vaughaniella rupicola* Borgs.). Small bits of the thallus ($\times 1$).

material did not show any trace of *Padina*, but neither any sexual or asexual organs.

However, in the beginning of 1951 I received an air-mail letter from Professor ALAN B. CRIBB, Cronulla, N.S.W., dated 13th Jan. 1951, in which he writes: "While I was on holidays in Queensland at Christmas time I was struck by the similarity between *Vaughaniella rupicola* and the basal creeping rhizomatous portion of *Padina Commersonii*. I therefore made careful collections, and after examining the specimens I am of the opinion that *Vaughaniella* is in fact the prostrate juvenile stage of *Padina Commersonii*." And at the same time Prof. CRIBB most kindly sent me some fragments of the rhizome from the

apical tips of which small *Padina*-thalli emerged profusely in various size and development.

An examination of the thallus showed a great likeness to that of *Vaughaniella*, but it was more robust in all respects and not so markedly striated, and the thallus is thicker. Furthermore, a great many apices of the filaments were turned upwards and the tips transformed into smaller or larger juvenile *Padina*-thalli. Professor CRIBB collected the specimen in Weyba Creek, Nossa, Queensland.

Shortly afterwards I received from Mauritius a new larger collection of *Vaughaniella* gathered by Dr. VAUGHAN at Roche Noine, Port Louis, 11-11-50, no. 959. About the locality it is said: "On flat-topped rocks exposed at low tide, calm water." In this collection I have after much search succeeded in finding a quite small *Padina*-thallus emerging from a tip of *Vaughaniella*; besides this some few quite small specimens of *Padina* were found in which I have not been able to observe the connection with the thallus of *Vaughaniella*.

Having thus stated with certainty the connection of *Vaughaniella* with *Padina* I wrote immediately to Dr. VAUGHAN about the fact and in a letter dated Port-Louis 2-3-51 Director VAUGHAN answers: "The information about *Vaughaniella*—*Padina* is very interesting—but I must say that their habitats are quite different; *Vaughaniella* forms large moss-like growths often several feet square, closely adpressed to flat-topped rocks exposed at low-tide. *Padina* on the other hand likes shallow sandy water in sites usually just covered at lowtide and is often attached to old pieces of rocks and coral debris in the lagoon; one of its favourite habitats here is at the foot of the beach where the lagoon begins. In fact I have never seen them growing together—but in view of your remarks I will make careful note of their association."

So far Dr. VAUGHAN about the habitat of this little peculiar plant. Even if, as said above, *Vaughaniella* is the rhizome of a *Padina*, it seems also to be able to live independently, forming extensive carpets on rocks where *Padina* otherwise does not occur. It is not yet evident what species of *Padina* we have to do with, and an attempt to establish this might perhaps be difficult, when the declaration made above by Dr. VAUGHAN about the occurrence of the two forms, is taken into consideration.

Postscript.

Also the question as to what species of *Padina Vaughaniella* belongs to has been solved, as a specimen (no. 1118) sent in a letter dated June 6, 1951 from Dr. VAUGHAN has shown that the plant is *Padina Commersonii* Bory, thus the same species as that Professor CRIBB has found in Queensland.

The locality of no. 1118 was, according to Dr. VAUGHAN: "at the gently sloping edge of the beach where the lagoon begins—here there are a number of flat-topped, sand covered basalt rocks exposed at low tide and seldom subjected to strong surf or currents. The site was more sheltered than where *Vaughaniella* was previously found; there was in addition well developed thalli of *Padina* growing in the same site (vide specimen enclosed)".

RHODOPHYCEAE

FLORIDEAE

Nemalionales.

Fam. 1. Helminthocladiaceae.

Trichogloea Kütz.

During the war I referred a single specimen of *Trichogloea* in JADIN's collection to *Tr. Requierii* (Alg. Mauritius, III, 1, 1942, p. 17), having at that time no possibility to compare the specimen with authentic material. I have now been able to do so and the result is that the Mauritian plant has turned out to be a new species; but before I enter upon a description of it I shall at first briefly describe the Red Sea plant.

Trichogloea Requierii (Mont.) Kütz.

KÜTZING in Bot. Zeit., vol. 5, 1947, p. 54. ZANARDINI, J., Plant. mar. rubr., 1855, p. 67, tab. V, fig. 1. AGARDH, J., Epicrisis, 1876, p. 514. NØN BØRGESEN, Alg. Mauritius, III, 1, 1942, p. 17. — *Batrachospermum Requierii* Mont., Quatrième Centurie Plantes exotiques nouvelles (Ann. sciences nat., II sér., vol. XX, Paris 1843, p. 355).

As it is the first described species of *Trichogloea* it has of course been of a special interest to me to see MONTAGNE's original specimens from the Red Sea, and I am very much obliged to Director, Professor, Dr. R. LAMI, Muséum National d'Hist. Nat., Paris, for permitting me to have them on loan here in Copenhagen.

Two specimens of *Batrachospermum Requierii* Mont. are found in the herbarium; one of them female, the other male. The specimens are fragments only; the ramification is very

irregular, branches issuing without any order with shorter or longer interstices between them and are again provided with branchlets. The thallus is in the thicker parts about 2 mm thick, tapering slowly upwards, the tips of the branches being subacute. The colour of the filaments is whitish-yellowish-olivegreen.

HOWE in his paper "Hawaiian Algae", 1934, p. 36, fig. 3,

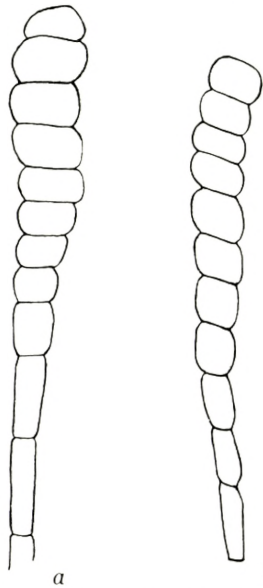


Fig. 5. *Trichogloea Requierii* (Mont.) Kütz. Apical ends of assimilating filaments. (ca. $\times 350$.)

gives a photographic illustration of the female specimen of MONTAGNE. And ZANARDINI's fig. of a specimen in "Pl. mar. rubr.", p. 67, tab. V, fig. 1, presents quite a good illustration of the plant, only its colour is too green.

The peripheral cells in the assimilating filaments of the thallus are short, especially in the female plant, in which the uppermost ca. 10 cells in the filaments are much broader than the height, about 20μ broad and 15μ high (Fig. 5). Another characteristic feature is that in many of the assimilating filaments the transverse walls are oblique (Fig. 5b). In the male plant the sterile assimilating filaments are of about the same shape; but in the fertile filaments the cells become longer, about $10-15 \mu$ or more. ZANARDINI's figure (pl. V, figs. 3-4) gives quite a good picture of their shape. A. H. NASR (Synopsis, 1947, p. 95) in his

figure 17 of a gonimoblast of *Tr. Requierii* has drawn the uppermost cells in the assimilating filaments for the most part oblong. No exact information is given as to the question if the plant is dioecious or not.

The occurrence of the antheridial bodies in the assimilating filaments is rather variable, in some cases a single or a few sterile apical cells are found. In others up to 5—6 of the distal cells are fertile and it may happen that the apical cell is fertile, then 1—3 cells are sterile and followed by a row of fertile ones.

In the female plant the gonimoblasts in most cases are dome-like, about 150 μ broad and 125 μ high, but when older often somewhat more irregularly shaped and up to 200 μ broad. The stalk is about 20—30 μ thick; from the uppermost 3 cells in this the nutritive filaments¹ are given out. The uppermost are as a rule the most developed; in rare cases I have seen the uppermost whorl being somewhat upward curved and in that case encircling the base of the gonimoblasts, but most often they are straight outwardly directed like the two smaller ones below, the lowermost ones often consisting only of the basal cells; these are large, nearly ball-shaped, about ca. 20 μ broad. I have not seen any fusion of the cells in the stalk below the gonimoblasts; but this is often difficult to observe because the nutritive filaments cover them.

In the above description I have taken the plant to be dioecious, but this being based upon the two specimens of MONTAGNE only, an examination of more Red Sea material is necessary for confirmation. To be sure, PAPENFUSS (1946, p. 419) found the plant from Hawaii he referred to *Trichogloea Requierii*, in most cases to be dioecious (l. c. p. 425), but I do not feel quite sure about the referring of the Hawaiian plant to the species of the Red Sea, as some differences seem to be present; for instance the shape of the assimilating cells and the fusion of the cells in the stipe of the gonimoblasts which take place in the Hawaiian plant, I have not been able to observe in the Red Sea plant.

The plant PILGER in his papers: "Ueber *Trichogloea* Kütz.", 1908 refers to *Trichogloea Requierii* is scarcely rightly referred

¹ These filaments are often called sterile filaments, but in my opinion and in conformity with that of PAPENFUSS (1946, p. 431) the purpose of these filaments is that of nursing the gonimoblasts.

to this species to judge from his description and figures of the single specimen he had for examination. Most probably it is referable to one of the species found in Mauritius, but an examination of the specimen is necessary to make this out.

1. *Trichogloea Jadinii* nov. spec.

Trichogloea lubrica Jadin, Algues des Iles de la Réunion et de Maurice, 1934, p. 162. *Trichogloea Requierii* Børgs., Alg. Mauritius, III, 1, 1942, p. 117, fig. 7.

Planta caespitosa, ca. 17 mm alta, in sicco pallide olivacea, calcificatione minore, irregulariter ramosa, ramis majoribus identidem ramulos gerentibus, majoribus in sicco ad 4 mm latis, minoribus tenuioribus, ramis et ramulis ad apicem versus tenuioribus, superne subacutis.

Filamenta assimilationis ca. 600—700 μ longa, in partibus basalibus tenuiora, superne crassiora ex cellulis elongatis oblongisque, ca. 8—12 μ latis composita.

Planta monoica.

Antheridia in filamentis corticalibus, cellulis apicalibus 1—3 sterilibus evoluta. Gonimoblasti subglobosi ca. 150 μ lati et 125 longi, in stipitibus terminales orti. Stipes ca. 20—25 μ latus, cellulis 3 superioribus stipitis filamenta nutritiva in verticillis orta gerentibus.

Mauritius: Flacq, September 1890, JADIN, no. 458. As to the locality JADIN writes: "Sur les récifs, balayés par le courant violent des lames, mais du côté intérieur regardant la lagune."

Of this species (Pl. I) I have had for examination two specimens most probably originating from the same plant, one of these being found in the Muséum National in Paris, the other in my herbarium; and furthermore a large, more ramified specimen and 3 small fragments, all in the collection of the Paris Muséum and collected by JADIN.

From the most probably discoid base a number of erect shoots arise, having a length of up to 20 cm and forming a dense bushy tuft. In the large, by far mostly ramified specimen a great number of side branches issue from the main branches on all sides, bearing again numerous shorter branchlets, often provided

with smaller ones again. Both branches and branchlets are given out in the most irregular way with longer or shorter interstices between them on all sides, but sometimes also unilaterally in shorter or longer rows. The main branches are in a dried condition up to about 4 mm thick. Upwards the branches and branchlets taper to a subacute apex. In a dried condition the colour of the large specimen is olive-yellowish-greyish; and rather much calcified, while the two smaller specimens have a yellowish-brown colour and less calcification.

The plant is monoecious, but the male and female organs are not always found together, very often the female ones are found in one part of the thallus, the male in another.

The assimilating filaments are up to about 700 μ long; when issuing from the medulla they are thin, 3–4 μ thick, becoming slowly thicker and more ramified upwards until near the periphery, where the assimilating parts begin, here being about 8–12 μ thick, and the cells of which they are composed are about double this length.

The antheridial bodies (Fig. 6), being very like those found in other species of *Trichogloea*, are developed near the distal end of the assimilating filaments, leaving in most cases a single or 2–3 apical cells sterile; but it may happen that the apical cell is fertile; 2–4 up to 10 cells in a row may be fertile.

The young gonimoblasts are about globose, the older ones dome-like, about 150 μ broad and 125 μ high, often also more irregularly shaped and more loosely built, showing also in later stages the branched filaments of the gonimoblasts.

From the vigorous, rather long and thick stipe, in older gonimoblasts up to 40 μ thick, 3–4 but not rarely up to 5 and even 6 whorls of nutritive filaments are given out, the uppermost or sometimes also the second being the largest (Fig. 7). The

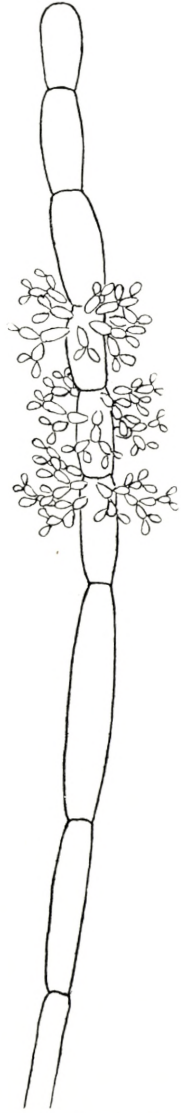


Fig. 6. *Trichogloea Jadinii* n. spec. Assimilating filaments with antheridia. (\times ca. 400.)

filaments are mostly straight outwardly directed, bristly, downwards with increasing distances between the whorls. The basal cells in the nutritive filaments are often large and ball-shaped,

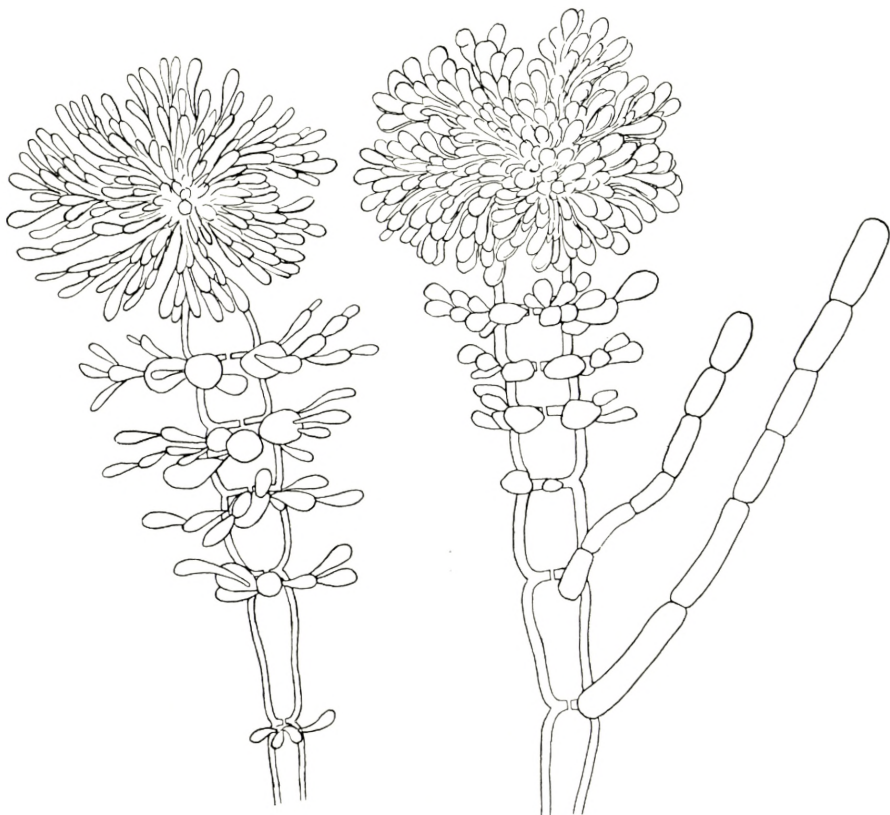


Fig. 7. *Trichogloea Jadinii* n. spec. Two gonimoblasts. (\times ca. 400.)

up to about 30μ broad; then the cells in the filaments decrease in size to the distal ones; downwards the filaments become shorter, the lowermost one consisting of the basal cell only.

The 3 small specimens or fragments only are whitish-rosy of colour, but as far as I have seen sterile.

No fusion of the cells in the stipe has been observed.

At a first glance the large and the two small specimens must be said to be rather distinct, but on closer examination also of the structure I have arrived at the conclusion that they are the same species. It is of course always a drawback to have so little

material to work with and still more when it surely has been more or less decayed, which in the tropics rapidly takes place with algae, especially in the case of such soft, fleshy forms as *Trichogloea*.

Still I want to remark that the gonimoblast figured by OKAMURA in "Icones", vol. IV, p. 188, tab. 197, fig. 6, of an alga he refers to *Trichogloea lubrica* shows much likeness to the Mauritian species, but the habit figure of the Japanese plant seems rather deviating.

2. *Trichogloea* spec.

Myriocladia capensis Dickie, Algae of Mauritius, 1873, p. 191.

Professor W. RANDOLPH TAYLOR in a letter dated 5 Oct. 50 most kindly called my attention to a plant which NICHOLAS PIKE in 1869 had collected in Mauritius and of which 4 specimens are found in the herbarium of the New York Botanical Garden, being named *Myriocladia capensis* by DICKIE (Algae of Mauritius, 1873, p. 191). And Professor TAYLOR wrote about them: "The specimens seem to me to be *Trichogloea*."

Occasioned by this I wrote to Miss DICKINSON, Keeper of the Algal Herbarium at Kew, asking her if a specimen collected by PIKE and determined as said by DICKIE was found in the herbarium. In a letter of Dec. 12 Miss DICKINSON most kindly informed me that such a specimen was found there and that it was laid in the *Trichogloea lubrica* cover. By permission of Director, Sir EDWARD SALISBURY, Kew, I have had the privilege of having it on loan here.

I had of course expected that the plant collected by PIKE should be the same as that of JADIN mentioned above, but a glance at it was enough to show that in reality it is, indeed, a *Trichogloea*, though not JADIN's species but rather a new species of this genus. In the following I shall give a short description of it.

The specimen, or more correctly only a fragment of a specimen, is about 20 cm high. From the main axis the side-branches are given out more or less verticillately with a distance of about 1 cm or more irregularly. The side-branches are again branched and ramuli are given out from the latter. In the middle of the

thallus several small branchlets issue from the main axis between the larger ones. The main stem is about 4 mm thick and all branches and branchlets taper towards the rather blunt apices. The colour of the dried plant is a dirty olive-green.

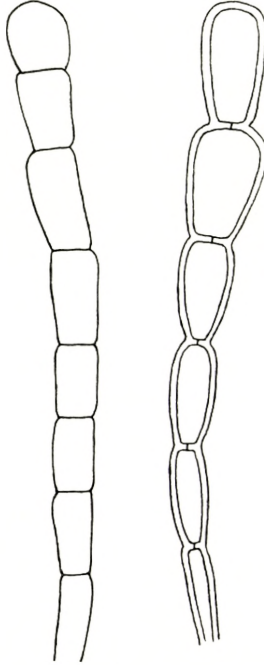


Fig. 8. *Trichogloea* spec. Apical ends of assimilating filaments. (\times ca. 350.)

An examination of a small fragment of the specimen has shown that it is most probably sterile.

Regarding the structure of the plant I shall therefore restrict myself to mention that the distal part of the assimilating filaments is composed of cells often nearly cylindrical or also somewhat broader above, having a breadth of about 10—12 μ and 2 to 3 times this length (Fig. 8).

Besides, the specimen seems to be in rather a bad condition, having surely been much decayed before preparation.

Mauritius: Near Barkly Island, July 1870, Colonel PIKE, no. 194.

When treating the species of *Trichogloea* from Mauritius I shall in this connection also mention a characteristic species of this genus

I have several years ago received from Mme WEBER VAN BOSSE and which Mme WEBER had determined as *Tr. Requienii* (Mont.) Kütz.; the specimen was collected in Java by the Swedish botanist HJALMAR MÖLLER in the year 1897.

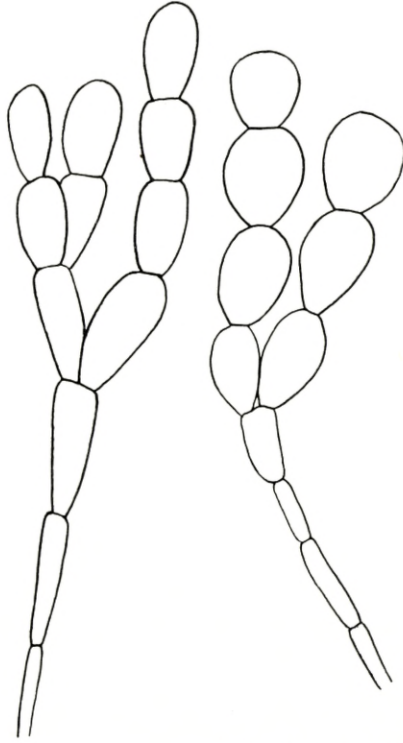


Fig. 9. *Trichogloea javensis* nov. spec. Apical ends of assimilating filaments.
(\times ca. 350.)

The shape and appearance of this species is very deviating from that of the present known species of *Trichogloea*, reminding, when superficially observed, very much of a brown alga for instance an *Eudesme* or *Chordaria*.

Pl. II shows the habit of the plant. The specimen consists of several fragments mounted together. From the main branches short branchlets, 3—10 mm long, issue in all directions with a distance between them of a few mm. The main branches are 1—1½ mm thick, while the branchlets are only half this breadth. The consistency of the plant is firm and the calcification moderate; the colour of the thallus is dark-brownish.

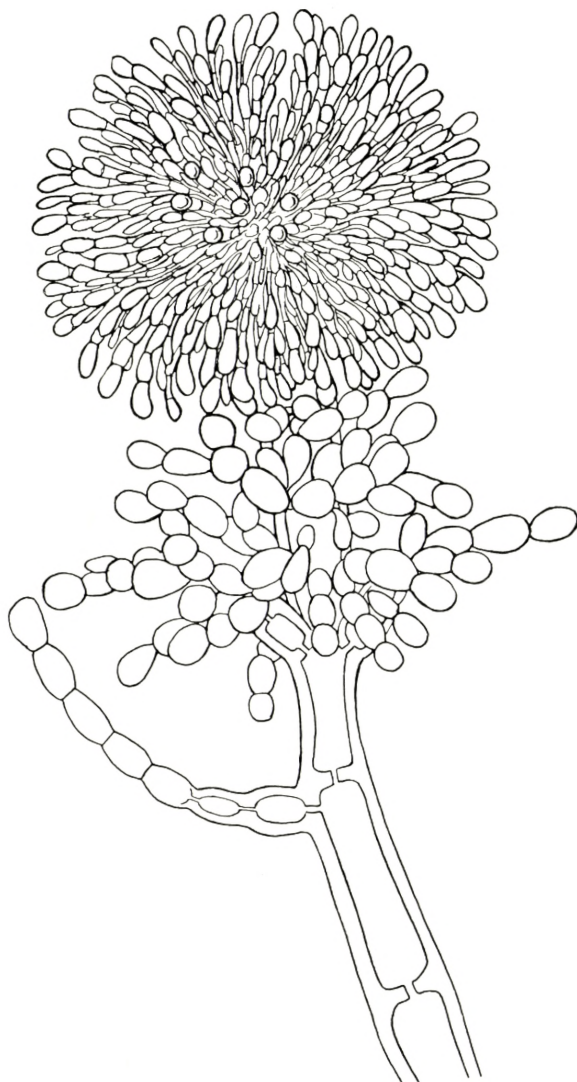


Fig. 10. *Trichogloea javensis* nov. spec. A gonimoblast. (\times ca. 400.)

An examination of the structure of the plant has shown this to be in good accordance with that of other species of *Trichogloea*, but in detail characteristic differences are present.

The assimilating filaments are about 600μ long and repeatedly forked, thin at the base and there composed of long cells; upwards the filaments become gradually thicker and the

cells shorter, in the assimilating part they are moniliform with oblong cells about $15\text{--}25\ \mu$ thick and $20\text{--}30\ \mu$ long; (Fig. 9) the uppermost, often nearly ball-shaped, cells are mutually more or less coherent, even after decalcification.

The plant is most probably dioecious, in any case the specimen I have seen is female. No trace of antheridia has been observed.

The gonimoblasts are subglobose-domelike, about $150\ \mu$ broad and a little less high; but larger ones, especially broader ones, are found, for instance one was $200\ \mu$ broad and $110\ \mu$ high and their shape may be rather irregular (Fig. 10).

The stalk is up to about $30\text{--}35\ \mu$ thick; from the upper cells in this the nutritive filaments are given out, forming a dense more or less compact and broadly expanded collar below the gonimoblasts; but in rare cases the uppermost whorl may be somewhat upward bent towards the base of the gonimoblasts.

The nutritive filaments are often longer than the breadth of the gonimoblasts, those in the figure reaching a length of about $175\ \mu$, and the cells of which they are composed are oval, to pyriform, large, up to about $20\ \mu$ broad; the apical cells in the filaments are more or less mutually coherent.

Besides the very characteristic appearance of the thallus of this species, it is characterized by the broadly oval cells in the distal parts of the assimilating filaments, which give them a moniliform appearance, the domelike robust gonimoblasts and the vigorously developed nutritive filaments being densely gathered just below the gonimoblasts.

At last a description in Latin of the species.

Trichogloea javensis nov. spec.

Specimen unicum observatum ex fragmentis majoribus compositum. Rami majores plus minus ramosi et ramulosi, ramulis brevibus numerosis ca. $\frac{1}{2}\text{--}1$ mm longis sparse ortis.

Thallus teres, rami majores ca. $1\frac{1}{2}\text{--}2$ mm, ramuli ca. $\frac{1}{2}$ mm in sicco lati, superne subacuti. Consistentia thalli firmior, calcificatione moderata.

Filamenta assimilationis ex medulla orta, ca. $600\ \mu$ longa ad

apicem moniliformia, ex cellulis oblongis-subovatis composita, ca. 12—17 μ crassis et 20—22 μ longis, cellulis apicalibus inter se plus minus cohaerentibus.

Planta ut videtur dioica, antheridia in fragmentis thalli praesentibus non observata.

Gonimoblasti subglobosi, ca. 150—200 μ lati et ca. 100—130 μ longi, stipites firmi ca. 30—35 μ lati; filamenta nutritiva praesentia ex cellulis superioribus stipitis orta, verticellata, expansa, robusta ca. 175 μ longa, ex cellulis oblongis 5—7 μ latis composita.

JAVA, Zandbaai, Tjisolak, 29-7-1897, legit HJ. MÖLLER.

Liagora Lamouroux.

1. Liagora decussata Mont.

MONTAGNE, C., in Ann. Sciences Nat. Bot., 1849, p. 64. KÜTZING, Spec. alg., 1849, p. 538. AGARDH, J., Spec. alg. vol. II, 1852, p. 429. YAMADA, Y., The Species of Liagora from Japan, 1938, p. 22, pl. VII and figs. 13—14.

I have lately received some beautiful specimens of this species from Dr. VAUGHAN. The specimens form large dense tufts up to 17 cm high composed of the much ramified filaments.

The plant is strongly calcified becoming rather much longi-

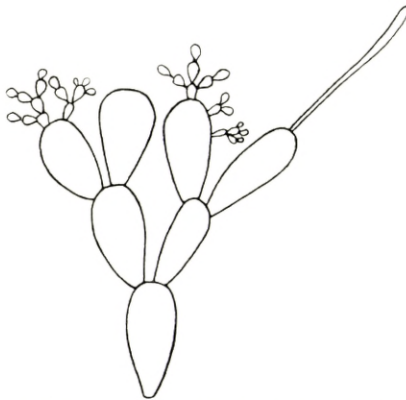


Fig. 11. *Liagora decussata* Mont. Apical ends of assimilating filaments with antheridia and a hair. (\times ca. 350.)

tudinally shrivelled in a dried condition. The colour of the dried specimens is rosy-whitish.

When decalcified the thallus is rather tough and the assimilating filaments, being much entangled in their distal ends, are rather difficult to separate from each other.

From the apical cells in the assimilating filaments numerous hairs are given out. The apical cells are oblong-pyriform, above 7—10 μ thick.

Only male specimens are found. Fig. 11 shows the antheridial bodies together with a hair emerging from the assimilating filaments.

As to the locality it is said: "In deep pools behind reef often epiphytic."

Mauritius: Riambel, 23-11-50, R. E. V. no. 991.

Geogr. Distr.: West Indies, Formosa.

2. *Liagora ceranoides* Lamx.

Alg. Mauritius, III, 1, 1942, p. 28. Additions, I, 1949, p. 32.

A fine specimen of the var. *pulverulenta* (Ag.) Yamada, Spec. of *Liagora* from Japan, 1938, p. 21, pl. VI, is found in a newly received collection of algae from Mauritius.

Mauritius: Pointe aux Roches: "In shallow water near shore", 10-9-50, R. E. VAUGHAN, no. 939.

3. *Liagora mauritiana* Børgs.

Alg. Mauritius, III, 1, 1942, p. 32, figs. 15-10, pl. II, fig. 3.

This species was described upon a single, rather badly preserved specimen found in JADIN'S Herbarium in Paris. In a collection of algae recently received from Mauritius several fine specimens of a *Liagora* are found which seems to me referable to the species in question.

The specimens were found as epiphytes on *Cymodocea* and formed roundish dense tufts with a diameter up to about 10 mm (Plate III).

Their colour is dark-reddish, which is due to the fact that the tips of the assimilating filaments protrude above the surface

of the chalk incrustation forming a rather dense cover above it, as was also found in the original specimen.

And furthermore, to judge from the outside of the thallus, the recently received specimens in a dried condition show the same characteristic parallel arrangement of the branches and

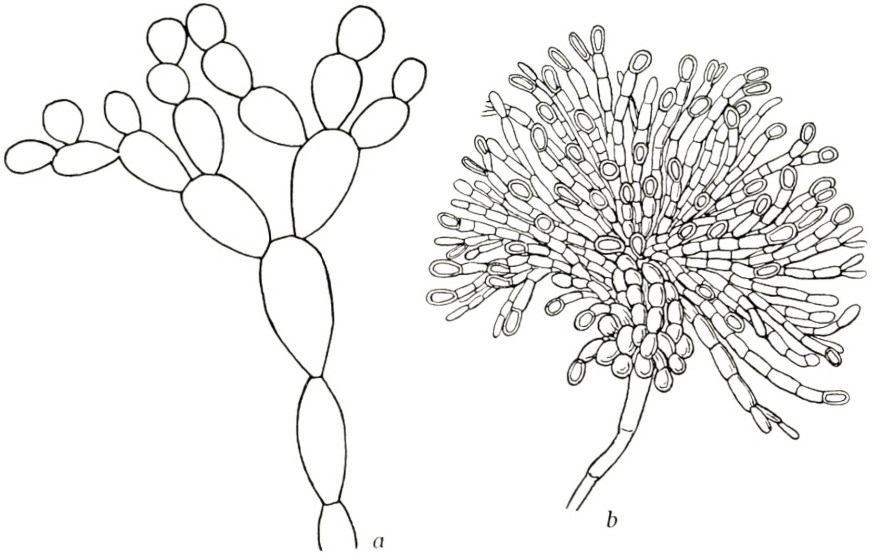


Fig. 12. *Liagora mauritiana* Borgs. *a*, upper parts of assimilating filaments; *b*, a gonimoblast. (\times *a*, about 400; *b*, about 250 μ .)

branchlets as is clearly seen in the right part of JADIN'S specimen reproduced in pl. II, fig. 3 *b*, *c*.

The structure of the thallus likewise seems to be in good accordance with what is said in the description of the species.

The assimilating filaments (Fig. 12) are very alike, composed in their basal part of rather thick cylindrical cells, in their upper part of pyriform, at the top nearly globular cells (Fig. 12 *a*).

In the semiglobular gonimoblasts the involucreal filaments are not much developed and a cell-complex of longer or shorter filaments is found at the base of the gonimoblasts (Fig. 12 *b*).

In the Latin diagnosis of the species it is said that it is monoecious; but in the specimens I have now examined I have not been able to find any antheridia.

I want to point out that I have sent a fragment of one of the specimens together with a small bit of the type-specimen to

Dr. J. ABBOTT, Hopkins Marine Station, California, asking Mrs. ABBOTT whether in her opinion they are the same species or not. She has most kindly answered me as follows: "No. 992 from Mauritius I believe, as you do, is similar to *L. mauritiana*, and any differences I have observed I feel are minor ones."

About the locality Dr. VAUGHAN writes: "Grows on stems of *Cymodocea* on the lagoon side of reef."

Mauritius: Riambel near Souillac, 28-11-50, R. E. V. no. 992.

4. *Liagora Vaughani* nov. spec.¹

Frons caespitosa, teres, valde calce incrustata, subfragilis, ca. 10—11 cm alta, alba rosea, superficie thalli in sicco farinaceo-scabrida, ramosa.

Rami et ramuli repetite furcati, majores ca. 1½ mm, minores ca. ¾ mm crassi.

Axis centralis frondis ca. 300 μ latus ex filamentis ca. 20 μ latis compositus.

Stratum periphericum ex filamentis assimilationis subdichotomis ca. 300 μ longis, cellulas in parte basali subcylindricas ca. 8—10 μ latas, ad apicem filamentorum versus oblonge ovaes, superne subpyriformes continentibus, formatum.

Rami carpogonici robusti, ca. 15—20 μ lati, recti aut fere recti, ex 5 in casu 4 cellulis brevibus compositi; cellula carpogonica conica in trichogynum longum productum.

Gonimoblasti subglobosi aut magis irregulariter formati ex filamentis sterilibus circumcincti.

Mauritius: Riambel, near Souillac. "In deep pools near reef or on the stems of *Cymodocea* and *Sargassum*", 23-11-50, R. E. V. no. 990.

This species (Plate IV) forms a large, dense, paniculate tuft about 10—12 cm high, and is composed of repeatedly furcated, more or less curved branches and branchlets giving the thallus on umbellate appearance. The thicker branches are about 1½ mm thick, tapering very slowly upwards to about ¾ mm near the tips.

The calcification is strong, the uppermost tips of the assi-

¹ Named in honour of Director, Dr. R. E. VAUGHAN.

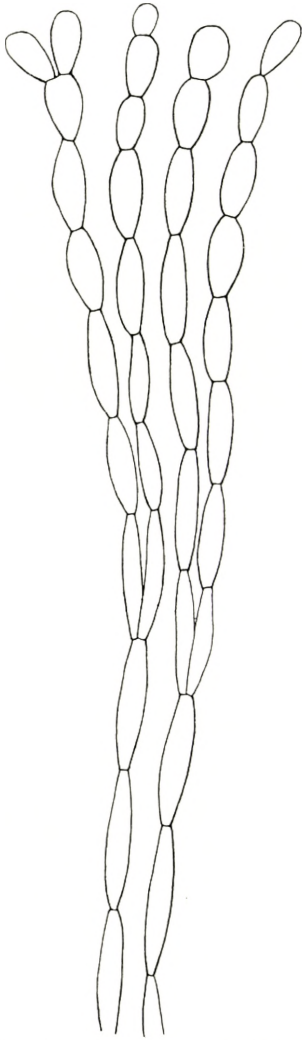


Fig. 13. *Liagora Vaughani* nov. spec. Assimilating filaments. (\times ca. 250.)

milating filaments protruding very little or not at all above the chalk incrustation.

The colour of the thallus in a dried condition is whitish-rosy. The surface of the thallus is uneven with numerous small pits given it a mealy appearance, and especially in the younger parts of the thallus is rather much shrivelled.

The central axis of the thallus is composed of nearly cylindrical filaments about 20μ thick. The assimilating filaments are about 300μ long; in the younger parts of the thallus the filaments are straight upward directed, closely placed, and nearly parallel (Fig. 13); in their proximal ends they are composed of nearly cylindrical cells upwards becoming gradually ellipsoidal, the apical ones more shortly oval or pyriform, $7-10 \mu$ thick; when older the distal parts of the filaments become more irregularly corymbose and mutually entangled, and after decalcification are pasted together with a tough slime, and rather a strong pressure is necessary to separate them.

The apical cells of the assimilating filaments are provided with numerous hairs in the young parts of the thallus.

The species is most probably dioecious, in any case no antheridial bodies have been observed in the single specimen found.

The carpogonial branches are laterally placed upon a cell above the dichotomy in the assimilating filament; they are nearly straight or very little curved, robust, about $15-20 \mu$ thick and provided with a long trichogyne. It is usually composed of 5 cells, more rarely of 4 only (Fig. 14a).

In the younger gonimoblasts (Fig. 14b) the involucrel filaments are obliquely upward directed, encircling the rather densely

placed gonimoblast-filaments; when older the involucreal filaments become more outwardly spread.

In the course of time a good many species related to *L. valida* have been described and the species described here seems also

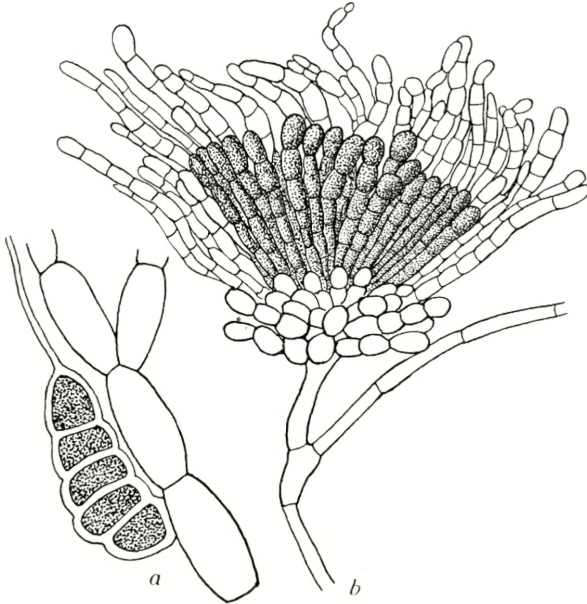


Fig. 14. *Liagora Vaughani* nov. spec. *a*, carpogonial branch; *b*, a gonimoblast. (*a*, \times about 400; *b*, \times about 200.)

referable to this group, but in one respect in any case it seems to be distinct from the many species referred to this group, namely by the shape of the carpogonial branch which otherwise in this group is curved. But having only one specimen to rely on I wanted to hear Dr. ABBOT'S opinion about its specific value, and she has most kindly informed me that it ought to be described as a new species.

5. *Liagora farinosa* Lamx.

Alg. Mauritius, III, 1, 1942, p. 36 and Additions, 1949, p. 33.

Some very fine material of this species has lately been received from Mauritius. A female plant (no. 950) forms a large tuft about 15 cm high. Two other specimens (no. 952) are smaller and seem to be sterile, but material preserved in formol and

seawater, also numbered 952, is loaded with the characteristic antheridial bodies.

The specimens were gathered "in deep pools" and about no. 952 it was added: "often attached to other algae".

Mauritius: Riambel, near Souillac, 24-10-50, R. E. V. nos. 950, 952.

6. *Liagora Pikeana* nov. Spec.

Frons caespitosa, teres, verisimiliter mollissima, incrustatione calcarea nulla aut minima, ramosa, ramificatione irregulariter subfurcata aut alternata.

Rami majores in parte basali frondis nudi, ca. 1 mm lati, apicem versus filamentis assimilationis dense instructi ca. $\frac{1}{2}$ mm latis apicibus ramulorum obtusis.

Color thalli in sicco sordide roseus. Axis centralis thalli ca. 150 μ latus ex filamentis subcylindricis, ramosis, inter se contactis compositus.

Filamenta assimilationis ca. 150—200 μ longa, repetitive furcata, in parte basali ex cellulis subcylindricis, sursum pyriformibus, ca. 7—10 μ latis in apice subglobosis formata.

Species verisimiliter dioica, antheridiis non observatis.

Rami carpogonici non visi.

Gonimoblasti subsphaerici, ca. 135—170 μ alti et 170—200 μ lati, ex filis carposporiferis compositi, filamentis involueralibus, ex cellulis infra ramos carpogonici ortis, plus minus circumcincti.

Mauritius: No locality is recorded. Colonel NICHOLAS PIKE legit.

In part III, 1, 1942, p. 40, pl. I, fig. 1 I erroneously referred a single specimen of *Liagora* collected by NICHOLAS PIKE to *Liagora lurida* Dickie, but in Additions I, 1949, p. 34 I corrected this mistake, pointing out that DICKIE's *L. lurida* in reality was a variety of *L. farinosa*.

In a later collection of algae received from Dr. VAUGHAN and collected by PIKE a specimen of the *Liagora* in question is also included, as far as I am aware being not yet described, beyond the quite short description given by myself, I shall in what follows redress this want.

As has already been stated the plant has in a living condition

had a soft, mucous thallus very little incrustated by chalk. Both specimens are fragments only, so it is not possible to say anything about the size of the plant. The specimens are much ramified; compare the habit-figure in part III, pl. I, fig. 1; from the thin, scarcely 1 mm broad, main stem numerous branches and

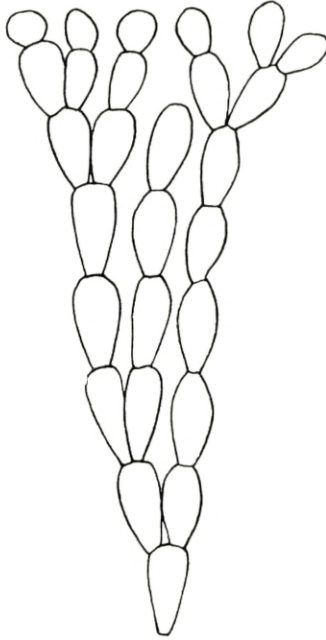


Fig. 15. *Liagora Pikeana* Borgs. Assimilating filaments. (\times about 300.)

branchlets are given out, alternating irregularly or secund.

Below the main branches are naked without assimilating filaments, higher up the branches and branchlets are densely covered with these, getting a breadth of about $\frac{1}{2}$ — $\frac{3}{4}$ mm and keeping this breadth upwards to the roundish apex.

As to the structure of the thallus the central strand, composed of densely packed filaments, is about 150μ thick. The assimilating filaments are about 150 — 200μ long, often furcated and composed upwards of elongated pyriform cells about 7 — 10μ thick, the uppermost one being shorter, subglobose to pyriform (Fig. 15).

No carpogonial branches have been found. The gonimoblasts (Fig. 16) are domelike or subglobose, about 170 — 200μ broad

and 135—170 μ high, forming rather a dense mass. The involu-
 cral filaments are well developed, reaching a length of up to 200 μ .
 The uppermost of these are bending upwards round the base
 of the gonimoblasts, those in the middle are more or less straightly
 outward directed and the lowermost are bending downwards.

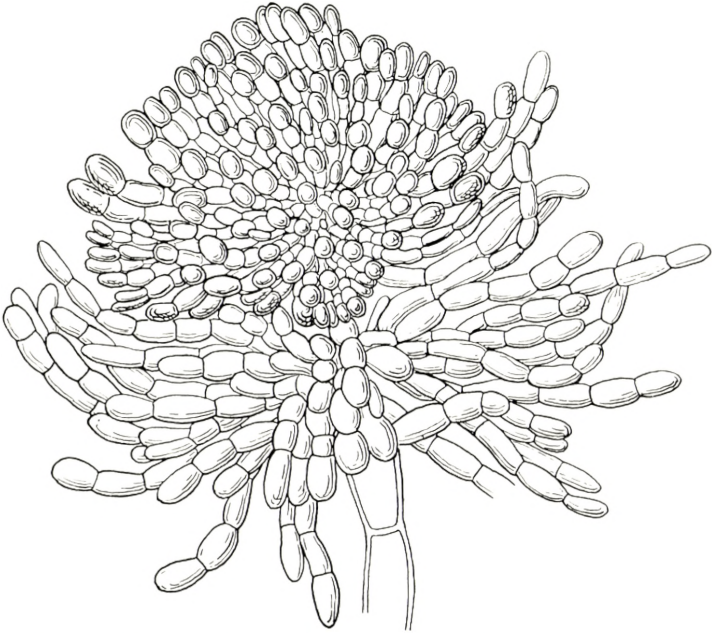


Fig. 16. *Liagora Pikeana* Borgs. A gonimoblast. (\times ca. 1100.)

The plant is most probably dioecious, in any case I have
 not met with any antheridial bodies in the specimens.

I want to add that the specimens are densely filled with
 hyphae of fungi and surely must have been much decayed when
 they were prepared, why they are not very suitable for examination.

Compared with other not or very little calcified *Liagora* species,
Liagora pectinata Collins and Herv. from Bermuda differs
 essentially by its in all respects larger thallus, the ramuli for
 instance being more than 1 mm thick and tapering to the subacute
 apices, while in *Liagora Pikeana* these are only about half this
 breadth and keeping this size upwards to their rounded apices.

Likewise the two Japanese species: *Liagora mucosissima* Yam.
 and *Liag. formosana* Yamada. The species of *Liagora* from Japan,

1938, p. 30 and p. 32, are easily discernible from the Mauritian plant, the first named by the absence of any involucreal filaments, while in the latter species the involucreal filaments are short and more or less pendent.

Fam. Chaetangiaceae.

Actinotrichia Decsne.

1. *Actinotrichia fragilis* (Forssk.) Børgs.

Alg. Mauritius, III, 1, 1942, p. 44; Additions, II, 1950, p. 5.

Some very fine, large, roundish tufts of this species are found in collections received lately, but to my great disappointment they are all sterile.

Fertile specimens are rarely met with. They were first discovered by Mme WEBER (Alg. Siboga, p. 207); C. K. TSENG in his paper: Studies on the *Chaetangiaceae* of China, p. 96, mentions that he has found antheridial bodies; compare his figure 8c.

The specimens have a very fine rosy-red colour. The tufts reach a diameter of up to about 12 cm.

As to the locality it is said: "Forms large roundish cushions in shallow water near shore", and upon another label: "Near shore in shallow water: Fish-landing station."

Champia parvula was found intermingled among the thallus of *Actinotrichia*.

Flic-en-Flacq, 3-5-50, R. E. V. no. 916.

Galaxaura Lamouroux.

1. *Galaxaura mauritiana* Børgs.

Alg. Mauritius, Additions, I, 1949, p. 35.

Not without doubt I refer some lately received specimens of *Galaxaura* (no. 920) to this species, because short assimilating filaments containing 4 cells are rarely found and in the few cases in which I have met with them the supporting cell was not de-

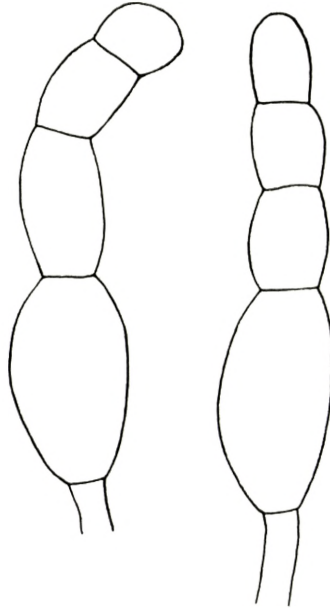


Fig. 17. *Galaxaura mauritiana* Borgs. Two short assimilating filaments. (\times about 300.)

veloped (Fig. 17). But apart from this defect the specimens in question were in good conformity with those which I formerly have seen.

Mauritius: Flic-en-Flacq, 3-5-50, R. E. V. no. 920.

2. *Galaxaura oblongata* (Ellis et Sol.) Lamx.

Alg. Mauritius, III, 1, 1942, p. 49; Additions I, 1949, p. 41.

In a collection of algae received from Dr. VAUGHAN in the autumn of 1950 several well developed specimens of a *Galaxaura* are found which in conformity with my former conception of the species I refer to *Galaxaura oblongata*.

The specimens when living must have formed semiglobular balls, the larger ones about 12 cm broad. The specimens are sexual, some female and some male.

As to the locality in which the specimens were found Dr. VAUGHAN remarks: "in channels between rocks in swiftly flowing

water''; during ebb-tide upon a sloping exposed coast such small streams are often found, being outflow from higher lying rock-pools.

Mauritius: Flic-en-Flacq, 3-5-50, R. E. V. no. 921.

3. *Galaxaura umbellata* (Esper) Lamx.

LAMOUREUX, J. V. F., *Extrait etc.* 1812, p. 185; *Histoire des poly-piers coralligènes flexibles*, Paris 1816, p. 262. CHOU, RUTH CHEN YING, *Pacific Species of Galaxaura, II. Sexual Types*, 1945 (published 1947), p. 14, pl. V, figs. 1—6, pl. XI, fig. 1. — *Galaxaura obtusata* (Sol.) Lamx., HOWE, M. A., *A Note on the structural Dimorphism, etc.* 1917, p. 621. SVEDELIUS, N., *Critical Notes, etc.*, 1945, p. 52.

For more literature see the papers quoted above.

In Alg. Mauritius, III, 1, 1942, p. 54 I referred a sterile specimen of *Galaxaura*, having the structure of that found in the group *Cameratae* of KJELLMAN, containing only tetrasporic individuals, to *G. breviarticulata* Kjellm.

It is therefore of interest that in a recently received collection of *Galaxaura* I have found the sexual form of the species, namely *G. umbellata* (Esper) Lamour. syn. *G. obtusata* (Sol.) Lamour., belonging to the group *Spissae* Kjellm. containing sexual forms only.

When, as done above, I have named the species *G. umbellata* (Esper) Lamour. it is according to the observation of RUTH CHOU (*Pacific Species of Galaxaura, II*, 1945, p. 14), that the name of ESPER has the priority.

SVEDELIUS in his elaborate paper: *Critical Notes on some Species of Galaxaura from Ceylon*, 1945, p. 52, has given a very detailed description of this species to which I refer here, pointing out only that SVEDELIUS has been able to examine several type-specimens of KJELLMAN's new species of the Sectio *Dichotomaria* comprising the groups *Cameratae* and *Spissae* and has found that they are to be referred to the present species.

The very fine specimens were gathered by Dr. VAUGHAN in "calm water near shore".

Mauritius: Les Salines, Roche Noire, Port Louis, 11-11-1950, R. E. V. no. 965.

Geogr. Distr.: Found in most tropical seas.

Fam. Bonnemaisoniaceae.

Asparagopsis Mont.

1. *Asparagopsis taxiformis* (Delile) Collins et Herv.

COLLINS, F. S. and A. B. HERVEY, The Algae of Bermuda, 1917, p. 117. BØRGESSEN, F., Mar. Alg. D. W. I., 1919, p. 352, figs. 347—351. FELDMANN, P. J., et GENEVIÈVE FELDMANN, Recherches sur les Bonnemaisoniacées et leur Alternance de Générations, 1942, p. 75. — *Fucus taxiformis* Delile, Flore d'Égypte, 1813, p. 151.

For more synonyms and literature see the above mentioned papers.

In the paper quoted above JEAN FELDMANN et Mme FELDMANN have published their highly interesting observations on the genera *Asparagopsis* and *Falkenbergia*, making it clear that the genus *Falkenbergia* formerly considered as autonomic in reality comprises the tetrasporophytes of the genus *Asparagopsis*. And furthermore they have demonstrated that the number of species known of *Asparagopsis* are to be reduced to two: the above mentioned *Asp. taxiformis* and *Asp. armata* Harv. and in conformity with this that the species of *Falkenbergia* likewise are to be reduced to two: *Falk. Hillebrandii* (Barnet) Falkeb. and *Falk. rufolanosa* (Harv.) Schmith, the former being the tetrasporophyte of the species of *Asparagopsis* mentioned here.

Asparagopsis taxiformis has not previously been found in Mauritius. About the locality where it was found Dr. VAUGHAN writes: "In shallow water near shore attached to old coral."

Mauritius: Pointe aux Roches, 10-9-50, R. E. V. no. 938.

Geogr. Distr.: Widely distributed in warm seas.

Gelidiales.

Fam. 1. Gelidiaceae.

Gelidiella Feldm. et Hamel.

1. *Gelidiella acerosa* (Forssk.) Feldm. et Hamel.

Alg. Mauritius, III, 2, 1943, p. 5. Additions, II, 1950, p. 5.

Of this species I have formerly seen only rather poorly developed specimens; but in a recently received collection of algae several well developed specimens are included.

As to the locality it is said: "In crevices of large rocks near reef."

Mauritius: Flic-en-Flacq, 10-9-50, R. E. V. no. 945.

Cryptomeniales.

Fam. 1. *Callymeniaceae*.

Callymenia J. Ag.

1. *Callymenia Morelii* (Mont. et Millardet) Børgs.

Pachycarpus Morelii Mont. et. Mill.

MONTAGNE, C. et M. MILLARDET, Algues, in MAILLARD, Notes sur L'île de la Réunion, Paris 1862, p. 6, pl. XXVI, fig. 2.

In a collection of algae lately received from Mauritius several specimens of a small species were included of which some of the more poorly developed specimens in a striking way reminded of the picture of an alga which MONTAGNE et MILLARDET in their above quoted paper have called *Pachycarpus Morelii*. About this plant DE-TONI in Sylloge Alg., vol. IV, 1897, p. 254 writes: "est forsā *Callymeniae* sp." An examination of the structure of the plant has shown that it is that of *Callymenia*. Therefore even if I have not been able to compare the specimens from Mauritius with authentic material I do not hesitate to refer the plant from Mauritius to that from Réunion.

In the specimens (Pl. V), the largest ones about 7—8 cm high, the bases are missing, but according to the description the plant is fixed to the substratum by a plexus of decumbent stipes from which the wedge-shaped upwards more or less broadened thallus arise.

Upwards and along the upper margin the thallus becomes divided in the most irregular way in a greater or smaller number of lobes just as likewise often numerous proliferations of various size are given out from the edge, the thallus in this way getting a lacerate and flabby appearance.

The thallus is flexible and tough, slippery when wet, thus splendidly fitted to live in strong surf.

As to the structure of the thallus a transverse section shows that this agrees completely with that which KYLIN (1928, p. 59, fig. 1) has given of *Callymenia reniformis*; below the small cortical cells 3—4 layers of larger cells follow, from the lowermost of which ramified filaments are given out, forming the medullary layer.

In the material at hand I have found only female specimens; the large cupola-like cystocarps are scattered over the surface of the thallus.

A transverse section of a cystocarp demonstrates that they are built quite in conformity with those of *Call. reniformis* according to KYLIN's fig. 37 c (l. c.), viz. several large groups of carpospores separated from each other by a tissue of rhizoid-like filaments.

Unfortunately no tetrasporic specimens are included in the collection; according to the description of MONTAGNE and MILLARDET the sporangia are scattered over the surface of the thallus; they are said to be triangularly divided, but this is surely wrong, as the sporangia in the *Callymeniaceae* are cruciately divided.

As to the localities it is said about no. 943: "Exposed places, washed by strong surf", and about no. 957: "firmly attached to rocks in exposed localities washed by strong surf."

Mauritius: Savinia, 17-9-50, R. E. V. no. 943. Riambel, 24-10-50, R. E. V. no. 957.

Geogr. Distr.: Réunion.

Gigartinales.

Fam. 1. Soliceriaceae.

Eucheuma J. Ag.

Sectio I. *Axifera*.

1. *Eucheuma horridum* (Harv.) J. Ag.

Alg. Mauritius, III, 2, 1943, p. 44, figs. 17, 18.

Of this species endemic in Mauritius some fine specimens are found in a recently received collection; Pl. VI shows one of these. As appears from this, the specimens are in good conformity with the type-specimen of Harvey in Herb. Kew. This species

comes near to some forms of *Eucheuma muricatum*, but its thallus is slender and the spines smaller, slender, and undivided.

About its occurrence Dr. VAUGHAN says that it grows in rock crevices on reefs.

Mauritius: Flic-en-Flacq, 3-4-50, R. E. V. no. 902 and the same locality, 3-5-50, R. E. V. no. 924.

Fam. 2. Gracilariaceae.

Corallopsis Grev.

1. **Corallopsis Opuntia** J. Ag.

Alg. Mauritius, III, 2, 1943, p. 47; Additions II, 1950, p. 24, figs. 9—10.

Some fine specimens are found in a collection of algae lately received from Dr. VAUGHAN.

The specimens were collected in shallow water, just behind reef.

Mauritius: Flic-en-Flacq, 3-5-50, R. E. V. no. 923.

Gracilaria Grev.

1. **Gracilaria dura** (Ag.) J. Ag.

AGARDH, J., Alg. Mediterranea, 1842, p. 151; Spec. Alg., II, 2, 1852, p. 589; Epicrisis, 1876, p. 419. — *Sphaerococcus durus* Ag., Spec. Alg., 1821, p. 310.

Some specimens quite recently received from Mauritius seem to agree quite well with the description of this species, but I have not been able to compare the specimens with authentic material. It is characteristic of this species that unilateral branchlets placed in short rows are given out here and there from the main filaments; compare Pl. VII.

KÜTZING's figures in Tab. Phycol., vol. 18, tab. 78 and tab. 76 (as *Sphaerococcus Sonderi*) are not very characteristic.

A transverse section of the thallus shows that the cells near

the periphery are quite small, increasing in size towards the middle of the thallus, where they have a diameter of about 500μ .

In the tetrasporic specimens the sporangia are scattered in the cortical layer. While the thallus in the tetrasporic specimens reaches a breadth of about 2 mm, that in the female plant is somewhat thicker, about $2\frac{1}{2}$ mm; the cystocarps are scattered over the thallus.

The plant was collected in "calm waters near the shore attached to corals".

Mauritius: Flic-en-Flacq. "Near shore in shallow water at low tide", 3-5-50, R. E. V. nos. 907, 918, and 919.

Rhodymeniales.

Fam. 1. Rhodymeniaceae.

Coelothrix Børgs.

1. *Coelothrix indica* Børgs.

Alg. Mauritius, III, 3, 1944, p. 14, figs. 9—11. Additions, II, 1950, p. 40, figs. 20, 21.

Some fine, but most regrettably sterile specimens of *Coelothrix* have been sent lately from Mauritius. The specimens form rather large, dense tufts of a dark red-brown colour.

About the locality it is said: "Upon rocks on reef exposed to surf. Often epiphytic upon *Digenea*, etc."

Mauritius: Flic-en-Flacq, 3-4-50, G. MORIN, no. 908.

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Trichogloea Jadinii nov. spec. ($\times 1$).

PLATE II.

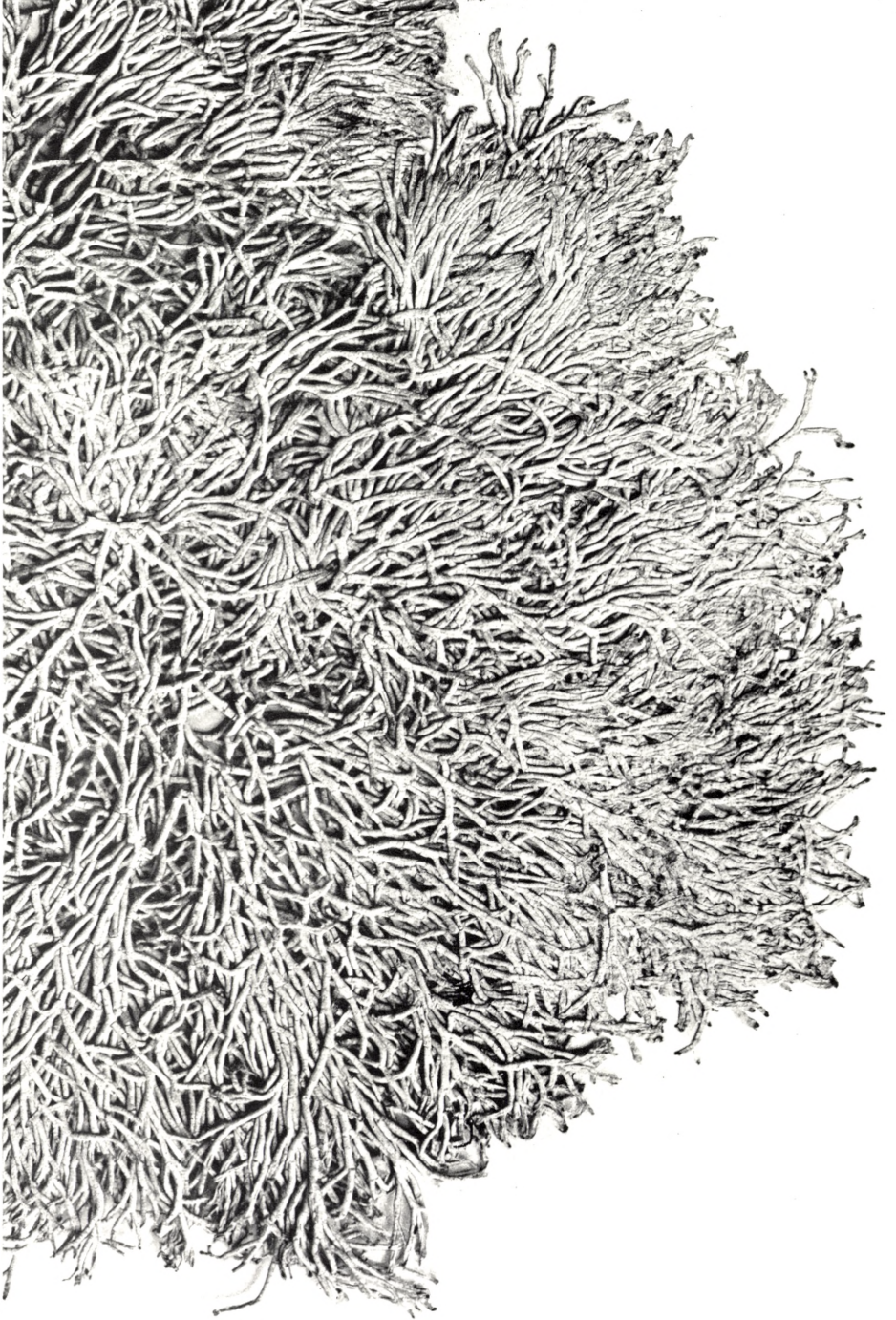


Trichogloea javensis nov. spec. ($\times 1$).



Liagora mauritiana Borgs. ($\times 1$).

PLATE IV.



Liagora Vaughani nov. spec. ($\times 1$).



Callymenia Morelii (Mont. et Millard.) Borgs. ($\times 1$).

PLATE VI.



Eucheuma horridum (Harv.) J. Ag. ($\times 1$).



Gracilaria dura (Ag.) J. Ag. ($\times 1$).

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