GRIFFITHSIA WEBER-VAN-BOSSEAE, NOV. SPEC.

by

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In a tube (no 282) containing several specimens of algae collected by Dr R. E. Vaughan, Curepipe, Mauritius, in quiet lagoons at Black River Bay a few specimens of a small delicate *Griffithsia* occurred as an epiphyte upon *Laurencia papillosa* (Forssk.) Grev.

Since this plant has turned out to be a not previously described species it is a great pleasure to me on the occasion of Mme Dr A. Weber—van Bosse's 90th birthday to name it in honour of her in the hope that Mme Weber will take it not only as a proof of my gratitude for a friendship extending over many years, but also as a token of my admiration for the important contribution made by Mme Weber to our knowledge of the tropical marine algal flora, especially by her great classic work "Liste des Algues du Siboga".

Griffithsia Weber-van-Bosseae forms small tufts, about ½—¾ cm high, its base being composed of decumbent filaments from which erect ones arise.

As almost always in *Griffithsia* the cells vary greatly in shape and size in the different parts of the thallus. Thus the lowermost decumbent filaments consist of elongated subcylindrical cells which have thick walls and consequently a narrow lumen (*Fig. 1, a*). These cells are often less than 100 μ broad, reaching a length of 3—4 times their breadth.

From these cells vigorous rhizoids are given out by means of which the plant is anchored to the substratum. The rhizoids are often terminated by more or less broad, irregularly lobed discs (*Fig. 1, a*). Most of the rhizoids are unicellular but the longer rhizoids may be divided into a few cells. The formation and the occurrence of the rhizoids agree well with those of *Gr. globifera* (Harv.) J. Ag. (= *Gr. Bornetiana* Farl.) according to the description of Lewis (1909, p. 653).

Upwards in the filaments the cells become gradually shorter and broader with a larger lumen and thinner walls, forming a gradual transition to the nearly globular cells of which the thallus in its more erect parts is composed (*Figs. 2—3*). The globular cells are nearly isodiametric, having a breadth of about 400 μ and a length of about 420 μ. The uppermost cells in the fertile filaments, especially those in the male plant, are often a little broader than high.

The erect filaments are divided subdichotomously several times like those in *Gr. globifera* and *Gr. corallina.*

The vegetative cell-division, according to the very few young cases found in the material, takes place in exactly the same manner as described by Lewis (l. c. p. 650) for *Gr. globifera* and by Kylin (1916, p. 100) for *Gr. corallina.* An accumulation of protoplasm is gathered at the upper end of the somewhat lengthened apical cell and shortly after

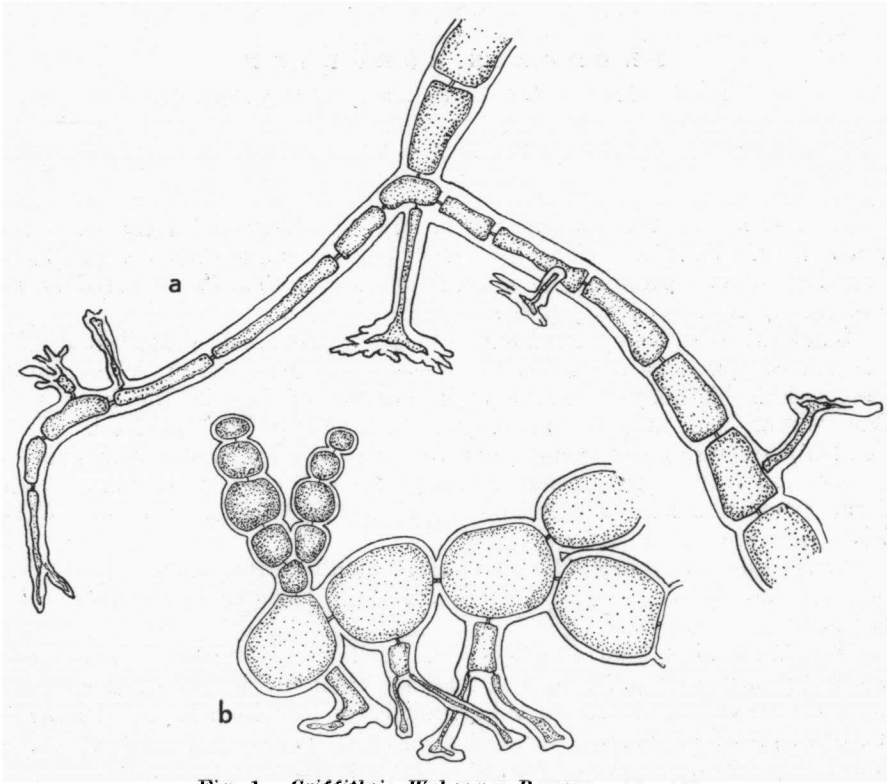

Fig. 1. *Griffithsia Weber-van-Bosseae,* nov. spec.

a, Base of the thallus with rhizoids. *b,* Fragment of the thallus with new shoots and rhizoids. (× 36).

an annular thickening somewhat below the apex of the cell is formed by the cell wall, and this thickening gradually increases inwardly dividing the lumen of the cells into two parts.

Dwarf shoots (*Fig. 2, c*) occurred rather abundantly near the upper ends of the cells; in shape they are very like those found in *Gr. globifera*; compare Lewis' figures 42, 43 (Lewis, 1909, pl. I) and my figure 192, b (Børgesen, 1915—1920, p. 205). The dwarf-shoots occurred in the male as well as in the tetrasporic specimens, whereas hairs, like those found for instance in *Gr. globifera* and *Gr. corallina,* were not present in the specimens examined by me.

Vegetative reproduction seems to be a rather common feature in this species; pieces of the thallus, when torn loose, being able to produce rhizoids everywhere from the cell-walls turned towards the substratum and new erect shoots from the upward-turned sides of these (*Fig. 1, b*). The reproductory corpuscula found by me consisted of several cells, whereas Lewis (l. c., p. 673) mentions that he sometimes found that a single cell was able to give rise to a new plant.

Only tetrasporic and male plants occurred in the material and, as is the rule in *Griffithsia*, the sexual and asexual organs were found on separate individuals. To be sure, Lewis (1909, p. 640 and 671) mentions that he once found a few antheridial filaments upon an otherwise normally developed female plant of *Gr. globifera*; and in another case an otherwise normally developed antheridial plant bore a considerable number of branches upon which rings of cells resembling tetrasporangia occurred, but the further development showed that these cells became degeneratively developed only. And I myself (1910, p. 207) once found, in West Indian material of *Gr. globifera* preserved in alcohol, a female plant bearing tetraspore-like bodies.

The tetrasporangia (*Fig. 2, a, b*) form a dense ring at the upper end of the cells encircling the large porus between the cells and quite filling the narrow interstice between the base and summit of the nearly globular cells in the main filaments. In the scanty material I have had for examination the tetrasporangia were nearly always present only in the interstice between the apical cell and the following one (*Fig. 2, a*); in one case only have I found them also below the second cell from the top (*Fig. 2, b*).

In agreement with the development of the tetrasporangia of *Gr. globifera* and *G. corallina* these organs take their origin from a pedicell from which 3—4 cells gradually are developed which are the mothercells of the tetrasporangia. The ripe tetrasporangia have a diameter of about 42 μ.

The male specimens (*Fig. 3, a*) are built up vegetatively in entire agreement with the tetrasporic plant. In these only the apical cells of the filaments become fertile, the formation of the antheridial bodies stopping the further growth of the filaments; at any rate I have found this to be the case in the few specimens I have been able to examine; but in *Gr. globifera* Lewis mentions (l. c. p. 656) that the fructiferus apical cells, having produced a crop of spermatia often develop one or more new branches from their summits and thus again become functional apical cells. The fertile cells are the larger ones in the filaments of the plant from Mauritius and carry upon their upper half part the densely crowded spermatangial bodies forming a well defined hat-like disc (*Fig. 3*). The spermatangial bodies consist of numerous densely placed dwarfish systems of branchlets, each of these issuing from a longer basal cell given off from the apex of the apical cell. From this basal cell issue several repeatedly branched filaments composed of elongated subcylindrical cells. The uppermost cells in these filaments are the mothercells of the spermatangia developing gradually 2—3 spermatia. The development of the antheridial bodies agrees well with that of *Gr. globifera* and *Gr. corallina* according to Lewis's (l. c. p. 654) and Kylin's (l. c. p. 113) descriptions respectively.

Griffithsia Weber-van-Bosseae forms, together with the American *Griffithsia globifera* (Harv.) J. Ag. and the Canarian *Griffithsia capitata* Boergs. (1930, p. 34, figs. 12—13) in which species similar antheridial

Fig. 2. *Griffithsia Weber-van-Bosseae*, nov. spec.
a, *b*, Parts of a tetrasporic plant (× 30).
c, A dwarfshoot (× 250).

bodies are found, a well defined group among the species of *Griffithsia* for which I propose the name *Capitatae*, alluding to the very characteristic occurrence of the antheridial bodies as cap-like formations upon the apical cells of the filaments in the male plants.

Griffithsia Weber-van-Bosseae is easily separable from the other two species by its smaller thallus.

In *Griffithsia capitata* as well as in the plant from Mauritius the tetrasporangia form annular rings round the upper ends of the fertile cells and have no involucral rays; but *Gr. capitata* it easily discernible from the plant from Mauritius by its longer subcylindrical cells and by the absence of dwarfish shoots. In both plants the female plant is unknown.

In *Griffithsia globifera* the cells are broadly pyriform or nearly globose and much longer than those in *Gr. Weber-van-Bosseae*; while dwarfish

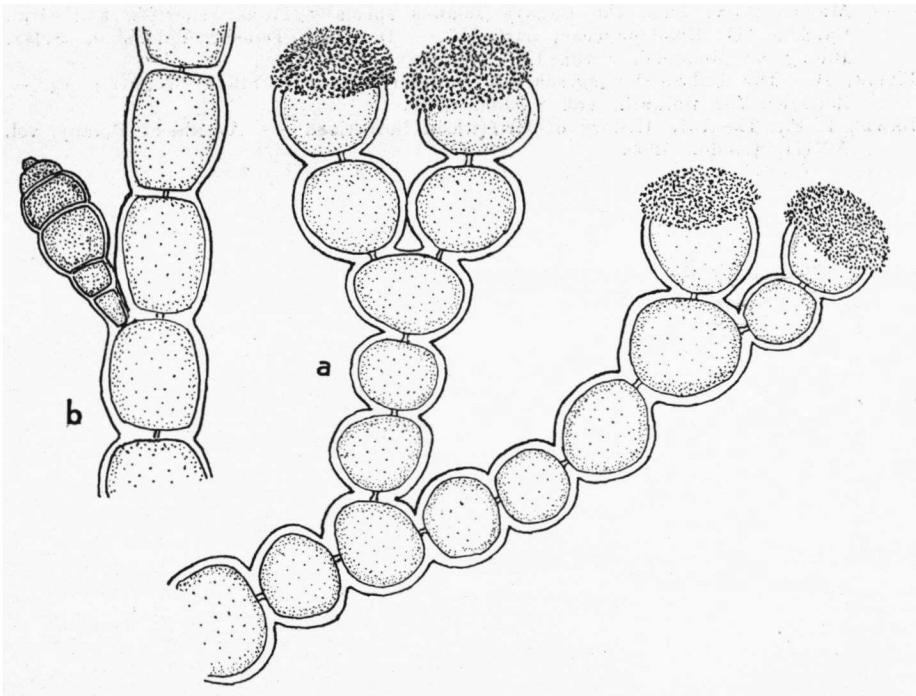

Fig. 3. *Griffithsia Weber-van-Bosseae*, nov. spec.

a, A piece of a male plant. *b*, A Fragment of the thallus with a young shoot. (× 34).

shoots occur in both species, hairs are only present in *Gr. globifera*, and the tetrasporic rings in the species are surrounded by an involucrum.

At last a short description in latin of the new species:

Griffithsia Weber-van-Bosseae Boergs. nov. spec.

Frons caespitosa, erectiuscula, ca ½—¾ cm alta et ultra, subdichotoma; cellulae in parte frondis inferiore decumbente subcylindricae, rhizoideis irregularibus substrato affixis, in parte frondis superiore fere globosae, ca 400 μ latae et 420 μ longae.

Tetrasporangia circa apices cellularum paenultimarum verticillata, nuda, haud involucrata.

Antheridia sessilia in partibus superioribus cellularum ultimarum discam semiglobosam formantia.

Cystocarpia ignota.

Mauritius: Black River Bay, July 9, 1939: *R. E. Vaughan no. 282.*

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