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ADDITIONS TO THE AMERICAN SOUTH ATLANTIC MARINE ALGAE. I.

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This paper gives first notice of the findings of *Liagora mucosa* Howe, *Gracilaria cylindrica* Borgesen, *Agardhiella ramosissima* (Harvey) Kylin var. *dilatata* J. Agardh, and *Hypnea cornuta* (Lamouroux) J. Agardh, along the Brazilian coast. These species were previously known to occur at the Caribbean Islands and nearby regions (Taylor 1960).

INTRODUCTION

This new title will replace the "Additions to the marine flora of Brazil" series, now with 10 numbers published and a total of 71 new reports for the Brazilian shore line. We will follow the same pattern throughout the present series.

The following account deals with four red algae found along the shores of Brazil, that were not previously known to occur south of the American Equator.

DESCRIPTIONS

Liagora mucosa Howe

References: Howe 1920, p. 556; Taylor 1928, p. 136; Taylor 1960, p. 328.

Plate 1, figure 1; Plate 3, figures 1-4.

Plants up to 10 cm high, with a distinctive grayish colour when dried, growing isolated, fixed to the substratum by a small (about 1.5 mm) holdfast, short stipitate (about 0.5 cm), and with few erect main branches. Stipe with a diameter of ca. 3 mm. Main branches up to 2 mm of diameter, dissected by numerous, distichously and alternately placed short laterals, that almost repeat the same pattern. These measure about 2 — 2.5 cm long, being almost of the same size throughout. Last order branchlets having an uniform diameter of about 1 mm. Assimilatory filaments (fascicles) measuring from 150 up to 395 micra long, with end-cells measuring from 11 up to 22 micra long, and a diameter varying from 11 up to 19 micra. Terminal hairs with a diameter from 4 up to 8 micra. Carpogonial branches very distinctively curved, with four cells. Mass of gonimoblast filaments near spherical, measuring up to 215 micra of diameter, with few involucral filaments. Carpospores terminal, with a diameter of about 2 micra.

The above description fits nicely the original description and is also in good accordance with Taylor's descriptions. The plants were secured washed ashore at Praia dos Dois Irmãos, Fernando de Noronha Island, on August 10, 1968 (SPF 2166). Only cystocarpic plants were found.

Gracilaria cylindrica Borgesen

References: Borgesen 1920, p. 375, figs. 364-365; Taylor 1928, p. 153, pl. 33, fig. 9; Taylor 1960, p. 450, pl. 56, fig. 3.

Plate 1, figure 3; Plate 3, figures 5-6.

Plants up to 34 cm high, with a horny texture when dried, growing isolated, fixed by a very small roundish holdfast, shortly stipitated (from 0.5 up to 1.5 cm), cylindrical throughout, but showing constrictions irregularly placed. Erect axis with but a few, exparsely placed, similar branches, abruptly constricted at the base, having a diameter of about 2-3 mm. Medullary cells large, ranging from 111 to about 222 micra of diameter. Cortical cells with a diameter varying from 7 up to 19 micra. Cystocarp nearly spherical, measuring from 1,125 to 1,350 micra. Carpospores ranging from 11 up to 22 micra of diameter. Tetrasporangia scattered having from 35 up to 40 micra.

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This very distinctive plant was secured from material washed ashore at Paracuru (SPF 2237), dredged from 10 m at Aquiraz and dredged from 35 m at Acaraú, all on the shores of Ceará State.

Agardhiella ramosissima (Harvey) Kylin var. *dilatata* J. Agardh

References: Borgesen 1919, p. 365, fig. 358; Kylin 1932, p. 17; Taylor 1960, p. 457, pl. 58, fig. 5; Harvey 1853, p. 199, tab. XXXB, figs. 2-6 (as *Chrysimenia ramosissima*); Taylor 1928, p. 150 (as *Rhabdonia ramosissima* var. *dilatata*).

Plate 1, figure 4; Plate 2, figures 1-3.

Plants up to 70 cm long, attached by a very small, roundish holdfast, short stipitate (0.5 — 2 cm), with one or sometimes two main axis, flattened throughout, repeatedly distichous and alternately branched. Primary branches long, repeating the branching pattern of the main axis. All order lateral branches tapering at the base. Main axis up to 1.5 cm wide. All order axis with a conspicuous central cavity transversed by numerous filaments. Internal cells with a diameter ranging from 56 up to 148 micra; cortical cells varying from 7 up to 15 micra of diameter. Cystocarps completely immersed, filling the central cavity, with a diameter varying from 900 up to 1,575 micra. Carpospores up to 18 micra of diameter.

This very beautiful plants was found at various places, washed ashore and also obtained by dredgings at 10 and 40 m off the coast of the State of Ceará (SPF 2165). Both tetrasporic and cystocarpic plants were secured. Our material fits very well the descriptions and figures of the Caribbean plants quoted above.

Hypnea cornuta (Lamouroux) J. Agardh

References: Borgesen 1920, p. 382, figs. 367-368; Taylor 1960, p. 467.

Plate 1, figure 2; Plate 2, figures 4-5.

Plants up to 7.5 cm high, with a fleshy texture and a colour or a pallid yellowish red. Branching irregular but with distincts main axis. These are dissected by numerous short branchlets or few long branches similar to the main ones.

Main axis having a diameter of about 525 micra. Besides, the regular, all order branches, there are numerous short stellate projections scattered along all order branches but primarily on lesser branchlets, giving a peculiar appearance to the plant, even to the maked eye. These are distinctly peltately fixed to the branchlet forming an irregular star, whose arms can reach up to 975 micra long and a diameter at its base of about 225 micra.

A transverse section shows an unusually thick transparent cuticle (about 17 micra) covering small chromatophores bearing cells (cortical region) and internally large colourless cells, more or less regularly disposed around a clear central cell.

Tetrasporangia zonatelly divided, measuring about 52 micra long and with a diameter of 17 micra, immersed in the cortical region of specialised short fusiform branchlets. Only tetrasporic plants were found during the month of September at the Island of Jurubaíba, Bay of Guanabara (SPF 2204), and one sterile plant at Cabo Frio, Rio de Janeiro State (SPF 2239). This is the first report of the present species outside the Caribbean region.

RESUMO

O presente trabalho refere, pela primeira vez, a ocorrência de *Liagora mucosa* Howe, *Gracilaria cylindrica* Borgesen, *Agardhiella ramosissima* (Harvey) Kylin var. *dilatata* J Agardh e *Hypnea cornuta* (Lamouroux) J. Agardh, no litoral brasileiro. Estas espécies eram anteriormente conhecidas apenas da região Caraíbica e áreas adjacentes. Além de fotografias de espécimens típicos, é apresentada uma detalhada descrição de cada uma das plantas.

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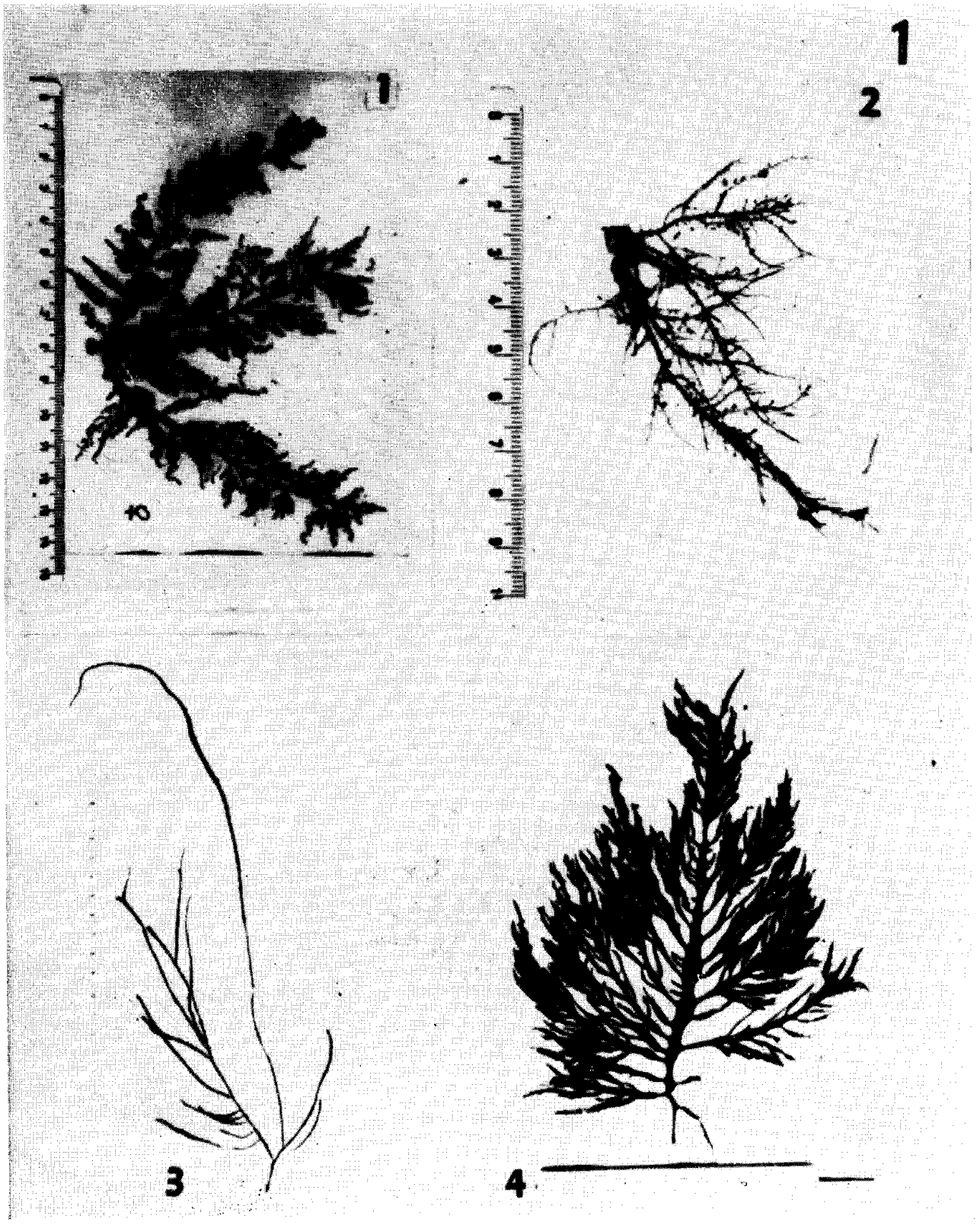

Plate I

Figure 1. *Liagora mucosa* Howe. Photography of a female cystocarpic plant.
Figure 2. *Hypnea cornuta* (Lamouroux) J. Agardh. Photography of an sterile plant. Note the typical spiny, stellate branchelets appearing as minute dark pointed projections.
Figure 3. *Gracilaria cylindrica* Borgesen. Photography of an entire plant. Note the characteristic few--spaced branch pattern.
Figure 4. *Agardhiella ramosissima* (Harvey) Kylin. Photography of an entire plant. Note the typical flattened thallus and the branching pattern.

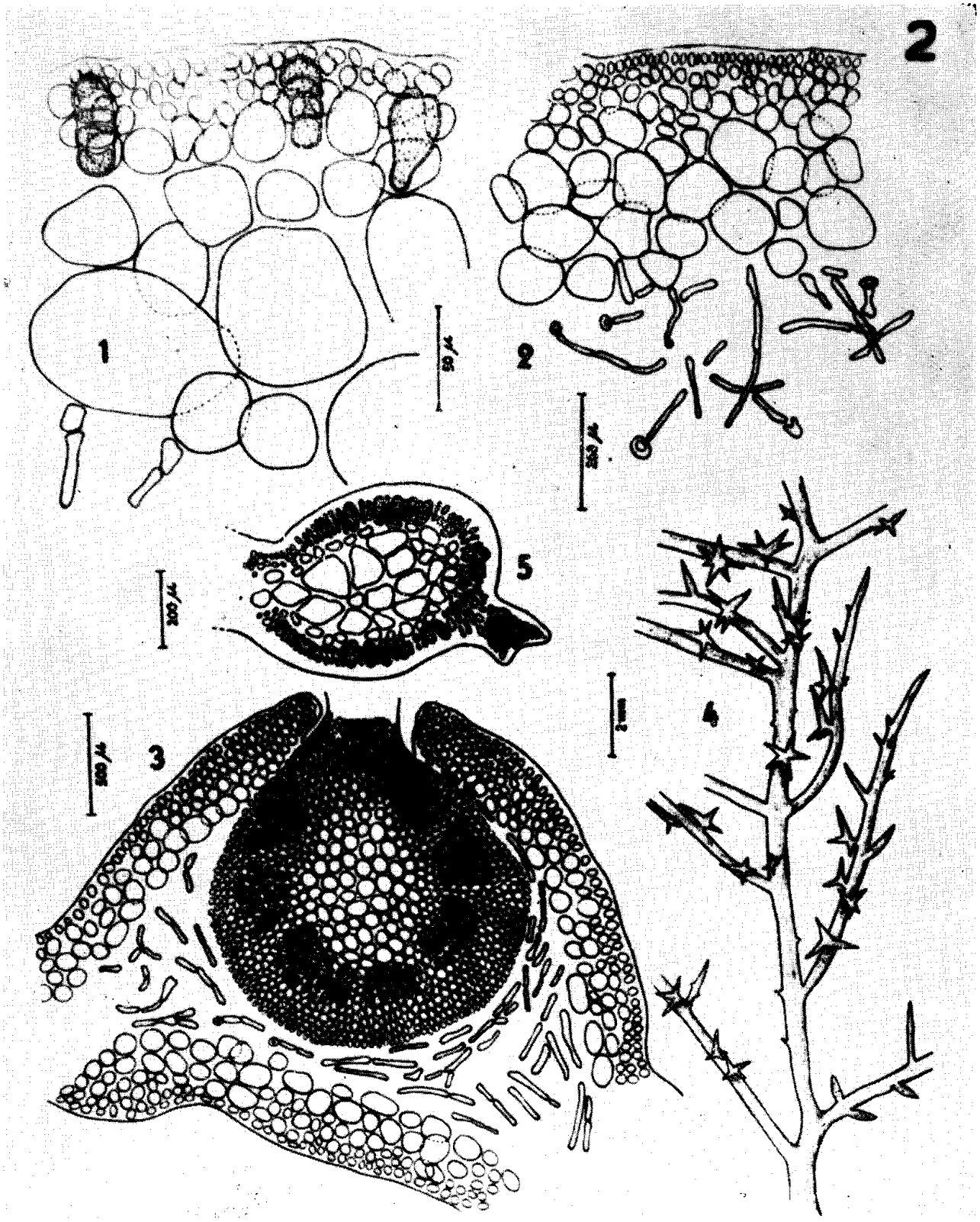

Plate II

Figures 1-3. *Agardhiella ramosissima* (Harvey) Kylin. 1 — Part of a cross section of a tetrasporic plant. 2 — Part of a cross section of a sterile plant. 3 — Longitudinal section of a mature cystocarp (somewhat schematic).

Figures 4-5. *Hypnea cornuta* (Lamouroux) J. Agardh. 4 — Part of a plant showing the characteristic stellate branchlets, and some fusiform tetrasporic branchlets (lower and middle right). 5 — Cross section of a tetrasporic branchlet.

All figures are camera lucida drawings of formalin preserved material.

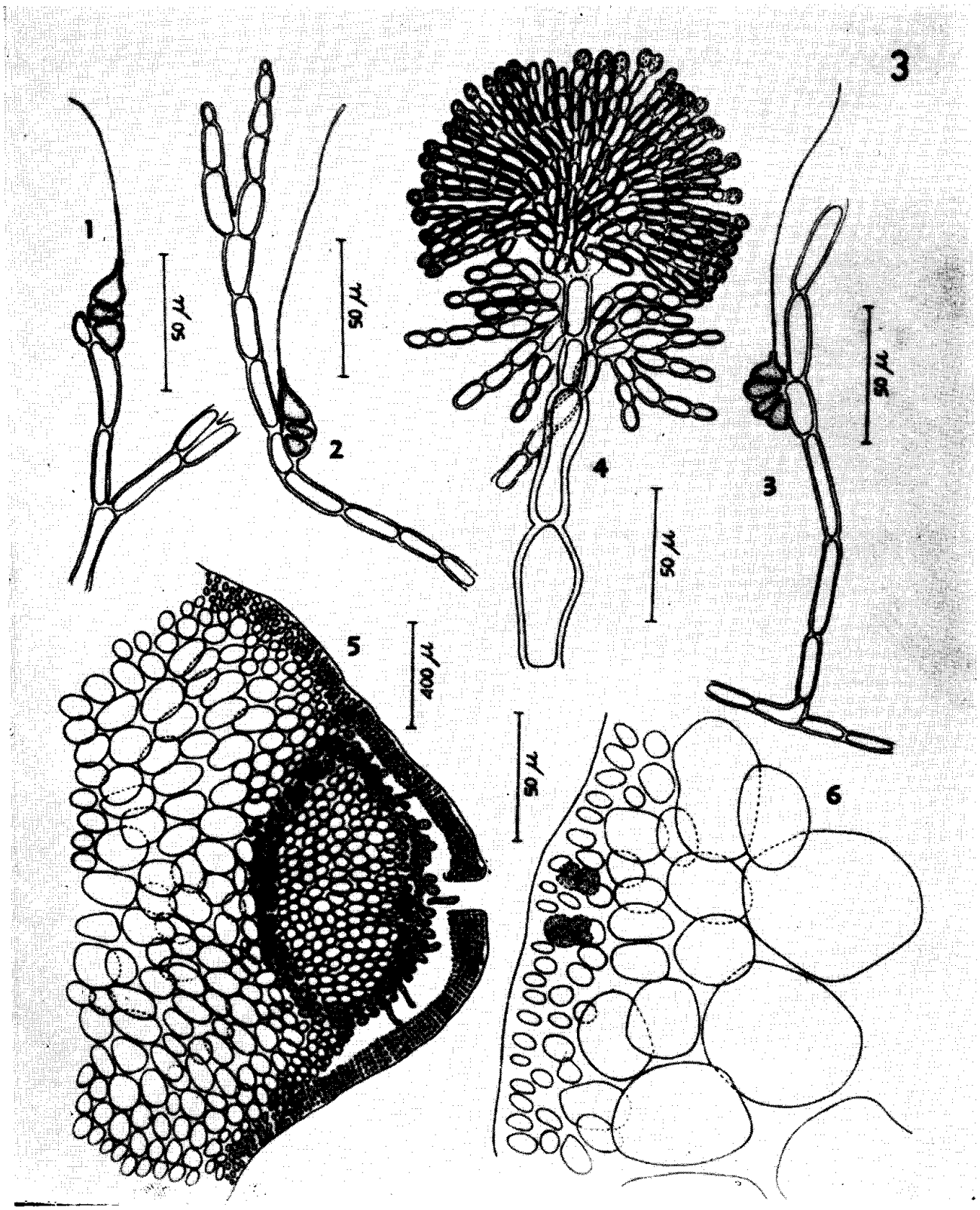

Plate III

Figures 1-4. *Liagora mucosa* Howe. 1-3 — Three carpogenic branches. 4 — Gonimoblast filaments isolated from the thallus.

Figures 5-6. *Gracilaria cylindrica* Borgesen. 5 — A longitudinal section of a cystocarp (somewhat schematic). 6 — Part of a cross section of a tetrasporic plant.

All figures are camera lucida drawings of formalin preserved material.