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Reprinted from the *Journal of the Indian Botanical Society*,
Vol. XVII, Nos. 2 & 3, 1938, pp. 191-194.

0829-04

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**ON THE STRUCTURE AND LIFE-HISTORY OF
PSEUDOVALONIA FORBESII (HARV.)
IYENGAR (*VALONIA FORBESII* HARV.)**

(Preliminary note)

BY

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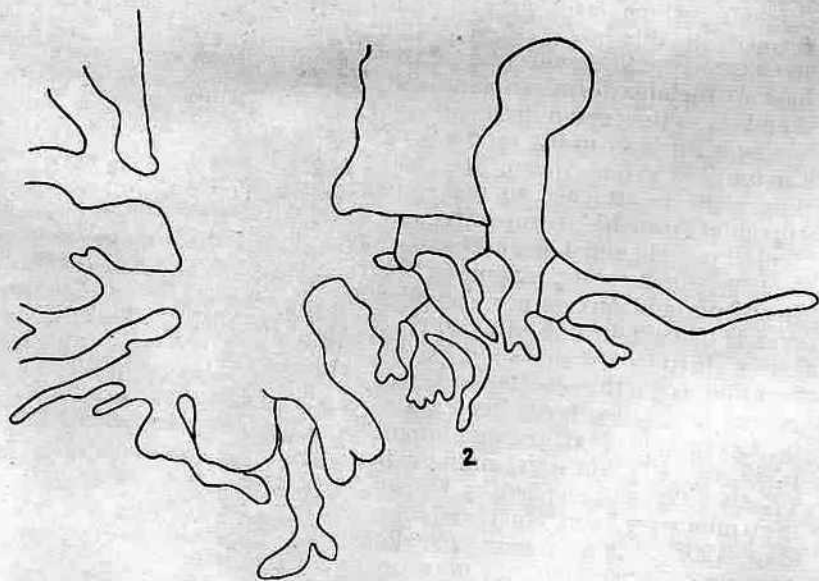
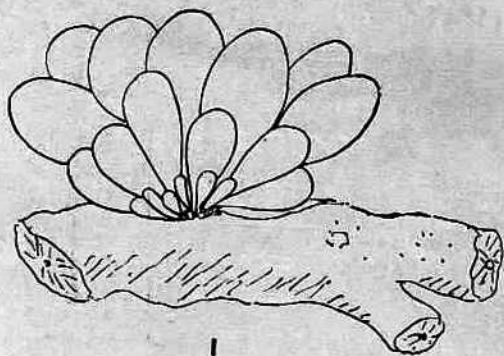
Received for publication on 15th May, 1938

Living material of this alga was brought from Pamban and grown at Madras in the laboratory and the several stages of its life-history were studied in some detail. This alga was until now placed in the genus *Valonia*, but a study of its structure and development shows that it is not a *Valonia*. The peculiar lenticular cells and the tiny marginal cells bearing short rhizoids which are so characteristic of *Valonia* are never formed in this alga. And, unlike *Valonia*, but more like *Ernodesmis*, *Siphonocladus*, *Struvia* and *Chamaedoris*, the base of the alga forms an annularly constricted stipe. (Text-figs. 2 and 4). Boergesen first drew attention to this peculiarity of *Valonia Forbesii* in his recent paper, "Some Marine Algae from Ceylon" (Ceylon Journ. Sc., Vol. XII, pt. 2, 1936, p. 62, fig. 1). The plant is attached to the substratum by horizontal creeping rhizoidal branches formed from the basal portion of the stalk. And these rhizoidal branches, through segregative cell division, soon become septate. Some of the cells of these septate rhizoids swell up and grow into secondary vesicles around the parent vesicle (Text-figs. 2—4), so that the fully grown plant appears like a cluster of vesicles (Text-fig. 1). This method of proliferation from the septate rhizoidal portion is quite similar to what is seen in *Chamaedoris Peniculum* (Sol.) O. Kuntze as recorded by Boergesen (Marine Algæ of the Danish West Indies, Vol. I, p. 57, fig. 40), but quite unlike what is seen in *Valonia utricularis* (Roth) Ag. as recorded by Kuckuck (Ueber den Bau und die Fortpflanzung von *Halycystis* Aresch. und *Valonia* Ginn. Bot. Zeit. 1907). A new genus *Pseudovalonia* is therefore created for this alga. (See also "A note on two interesting South Indian

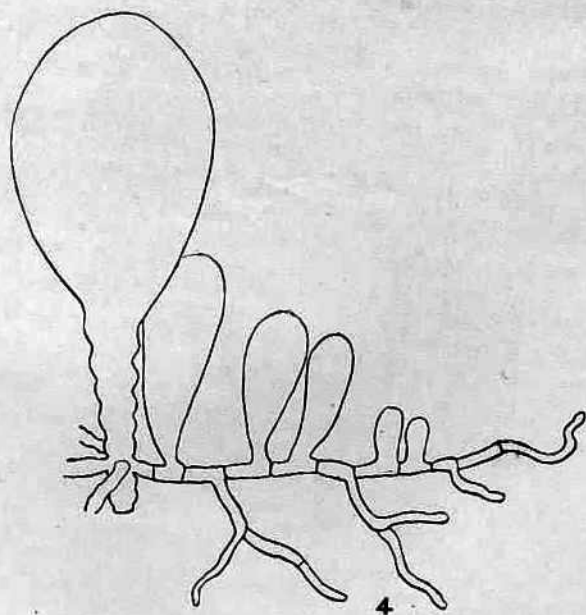
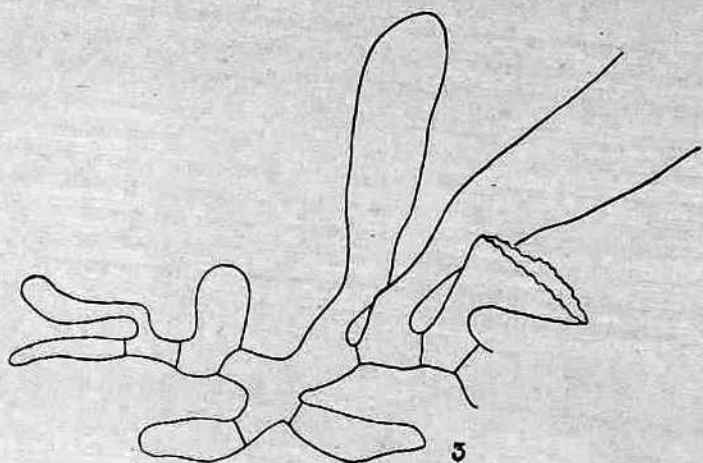
* Alg. Ceylon, No. 75 (Nomen nudum). (Quoted from Boergesen below). J. G. Agardh: Till Algernes Systematik VIII, p. 96 F. Boergesen, Some Marine Algæ from Ceylon, Ceylon Journ. Sci. (A) Vol. XII, Pt. 2, 1936, p. 62, fig. 1.

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Marine Algæ, *Pseudovalonia Forbesii* (Harv.) Iyengar comb. nov. and *Pseudobryopsis pambanensis* sp. nov.: Proceedings of the Twenty-fifth Indian Science Congress, Calcutta, 1938, pp. 132 and 133, Pt. III, Abstracts.)”



Text-figs. 1-2.—*Pseudovalonia Forbesii*. Fig. 1. General clustered habit of the plant. About natural size. Fig. 2. Base of the plant showing rhizoids formed from the stalk; some of the rhizoids have become septate and young vesicles are already formed from some of the cells. \times about 40,



Text-figs. 3-4.—Fig. 3. A proliferating rhizoidal portion with the vesicles grown larger. \times about 40. Fig. 4. A diagrammatic representation of the structure of the alga, showing the annular stalk and the proliferation of secondary vesicles from a septate rhizoid.

Under unfavourable conditions, plenty of cysts are formed inside the vesicle. These cysts grow into new plants when conditions become more favourable again.

Numerous four-ciliated motile spores are formed in each vesicle. These escape outside through a large number of round apertures formed in the wall of the vesicle and, after swarming for some time, finally settle down and grow into young plants. No case of sexual fusion was observed. The occurrence of four-ciliated swimmers in this alga is interesting, since usually only biciliated swimmers are formed in the *Valoniaceae*. The only previous record of four-ciliated swimmers is by Kuckuck (*loc. cit.*) in *Valonia macrophysa* Kutz.

Description

-Pseudovalonia gen. nov.

Thallus vesicular and narrowed downwards into an annularly constricted stalk ; thallus attached to the substratum by rhizoids formed from the base of the stalk ; rhizoids soon becoming septate through segregative cell-division ; plenty of new vesicles proliferating all round the base of the parent vesicle through the enlargement and growth upwards of the cells of the rhizoidal portion, giving the alga a clustered appearance ; lenticular cells never formed in the thallus.

Asexual reproduction through the formation of numerous four-ciliated swarm spores formed inside the vesicle.

Sexual reproduction not known.