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Author(s)	YABU, Hiroshi
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## Chromosome Count in *Chaetomorpha moniligera* KJELLM.

Hiroshi YABU\*

Since the first cytological studies of algae, species belonging to the order Cladophorales have been examined by a number of investigators (cf. GODWARD, 1966, pp. 19-24), but so far as I know, a cytological treatise on *Chaetomorpha moniligera* KJELLM., one of the commonest littoral algae in Japan, has never been published. Here I will report on the results of my study of the alga collected from Oshoro Bay on July 23, 1966. The material was kept alive in the laboratory of the Oshoro Marine Station of Hokkaido University until the middle of the night when it was fixed with alcohol acetic acid (3:1). The material, which had been kept in fixing fluid for 1½ to 4 months, was stained with aceto-iron-haematoxylin-chloral hydrate solution<sup>2)3)</sup>; the chromosomes stained well. Division of the nuclei in a cell was usually to take place simultaneously. Although the nuclei in metaphase were seen in both the somatic and fertile cells, they were larger in size and fewer in number in the somatic cells. The nuclei usually remained somewhat elongated in somatic cells until late prophase or even in metaphase, while those in the fertile cells became quite round in shape as early as the beginning of the prophase stage. The chromosome number counted in the somatic cells was either 24 or 12 and indicates that this species has both diploid and haploid isomorphic phases. During nuclear division leading to the formation of swarmers, the fertile cells in the diploid thalli were usually found to contain nuclei with 12 bi- or univalent chromosomes but sometimes with 24 chromosomes. The nature of the swarmers produced from these cells unfortunately was left undetermined. The swarmers produced from the fertile cells in the haploid thalli were biflagellate.

### References

- 1) GODWARD, M. B. E. (1966). The chromosomes of the Algae. London.
- 2) WITTMANN, W. (1965). Aceto-iron-haematoxylin-chloral hydrate for chromosome staining. *Stain Technol.* **40**, 161-164.
- 3) YABU, H. and TOKIDA, J. (1966). Application of aceto-iron-haematoxylin chloral-hydrate method to chromosome staining in marine algae. *Bot Mat.*, Tokyo, **79**, 381.

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\* Faculty of Fisheries, Hokkaido University

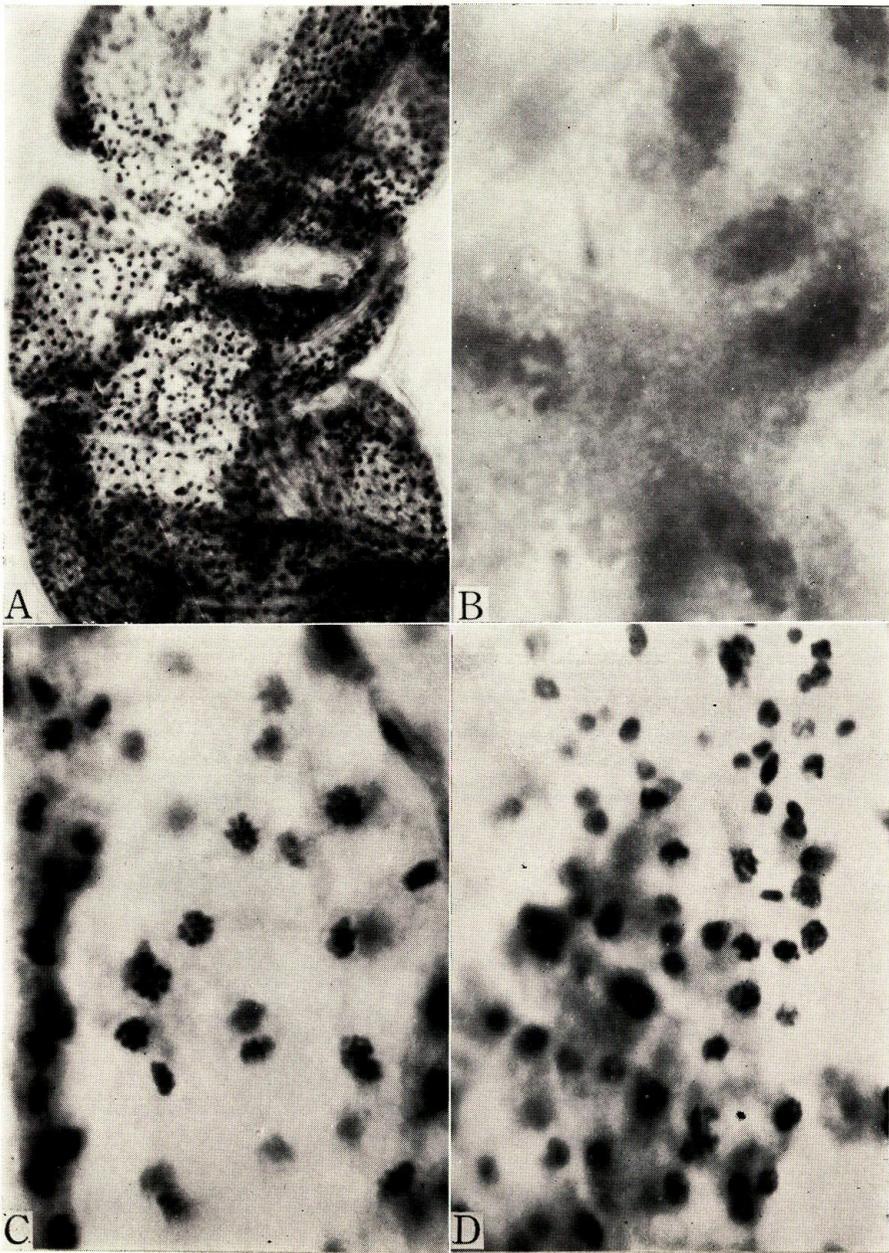
## Explanation of Plates

### PLATE I

*Chaetomorpha moniligera* KJELLM.

- A. Part of a diploid thallus showing numerous nuclei (as black dots) in the metaphase of somatic division
- B. Nuclei in diploid cell in the metaphase of somatic division
- C. Nuclei in diploid cell in the metaphase of meiosis leading to the formation of swarmers
- D. Nuclei in diploid cell in prophase and metaphase of fertile division leading to the formation of swarmers

(A,  $\times 80$ ; B,  $\times 1600$ ; C & D,  $\times 600$ )

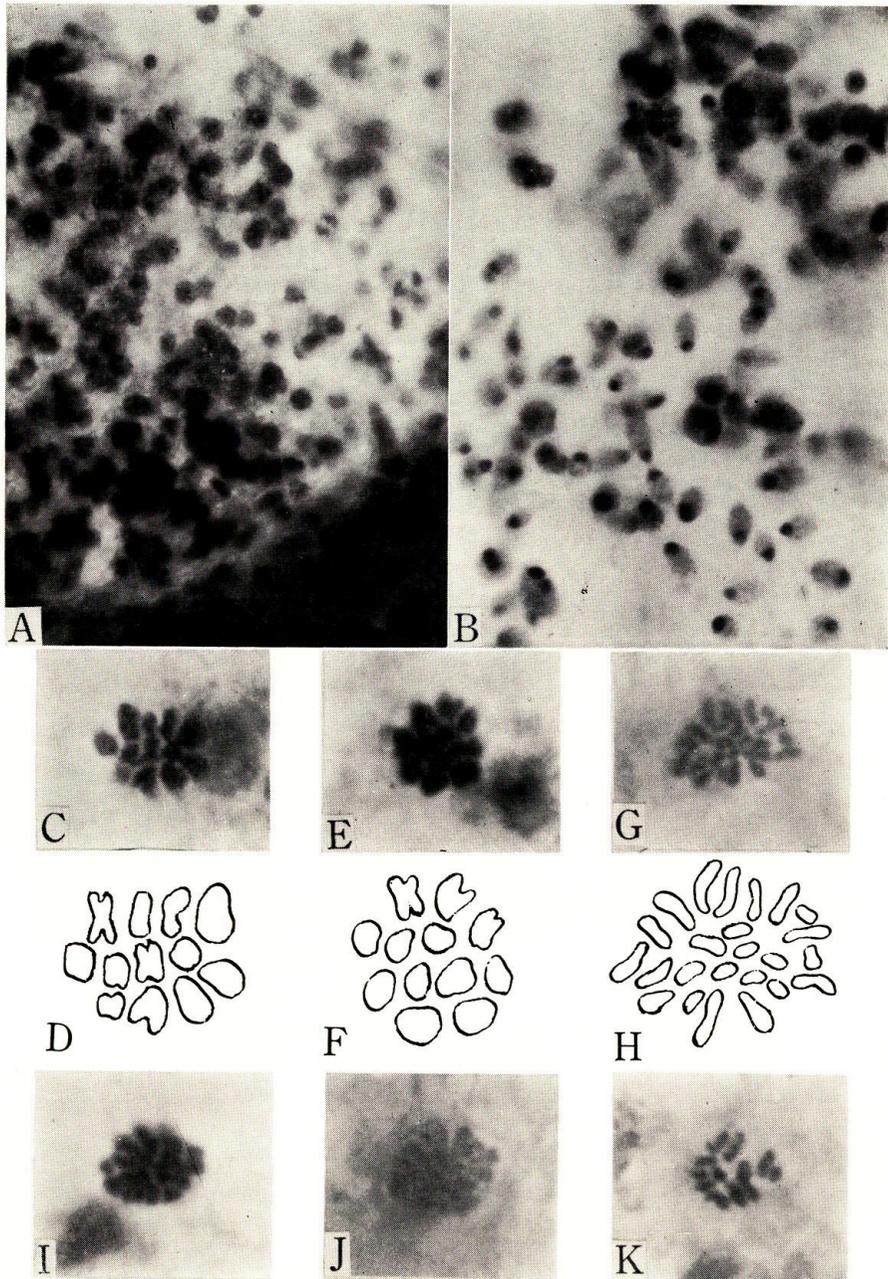


H. YABU: Chromosome count in *Chaetomorpha moniligera* Kjellm.

## PLATE II

*Chaetomorpha moniligera* KJELLM.

- A. Nuclei in various stages of division in a diploid cell leading to the formation of swarmers
- B. Biflagellate swarmers produced in a cell of haploid thallus
- C & E. Nucleus in metaphase of meiosis leading to the formation of swarmers and showing 12 bivalent chromosomes
- D & F. Camera lucida drawing of the nucleus shown in Figs. C & E, respectively
- G, I & J. Nucleus in metaphase in a diploid cell without reproduction leading to the formation of swarmers, and showing 24 univalent chromosomes.
- H. Camera lucida drawing of the nucleus shown in Fig. G
- K. Nucleus in metaphase in a haploid cell leading to the formation of swarmers  
(A,  $\times 320$ ; B,  $\times 480$ ; C, E, G, I, J & K,  $\times 1800$ ; D, F & H,  $\times 2800$ )



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