

agar medium. Chromosomes of root tip squashes of sixteen seedlings in Feulgen reagent revealed fourteen bivalents (Fig. 1g).

Of the forty-two cross-pollinated cultures, nine succumbed, fifteen were used for embryological studies and the rest were grown to seed maturity. Their embryology was similar to that of self-pollinated cultures. The total number of seeds was 991 and the average was 55.05, which is only a little more than 52, the number obtained for selfed cultures.

Gamete compatibility was effectively induced and formation of diploid seedlings accomplished in aseptic cultures of bare masses of ovules of the self-incompatible species, *Petunia axillaris*. This is an improvement on the work of Stout and Chandler, who could not obtain a diploid progeny of a selfed diploid parent³. Our work, now in progress, has also revealed that the technique can be successfully applied to bring about self-fertilization in part of an ovule mass, while the remainder of the ovule mass is left intact. The intact part is then available for other experiments of genetical, physiological and embryological interest.

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¹ Rangaswamy, N. S., in *Recent Advances in the Embryology of Angiosperms* (edit. by Maheshwari, P.), 327 (Intern. Soc. Plant Morphologists, Delhi, 1963).

² Maheshwari, P., and Rangaswamy, N. S., in *Advances in Botanical Research* (edit. by Preston, R. D.), 2, 219 (Academic Press, London and New York, 1965).

³ Stout, A. B., and Chandler, C., *Science*, **94**, 118 (1941).

⁴ Shivanna, K. R., *Phytomorphology*, **15**, 183 (1965).

⁵ Kanta, Kusum, Rangaswamy, N. S., and Maheshwari, P., *Nature*, **194**, 1214 (1962).

Cytokinesis in the Green Alga *Fritschiella*

CYTOKINESIS in the algae, including the green algae, is generally believed to be characterized by centripetal development of the new cell wall. In the green land plants, on the other hand, a cell plate forms in the phragmoplast between two telophase nuclei and expands centrifugally until it separates the daughter cells. It is generally accepted that the land plants evolved from specialized green algae which invaded the land, and it is reasonable to assume that various cellular processes, including cytokinesis, were modified early in the evolution of the terrestrial plant cell from its ancestral green algal cell, and that these modifications were passed onto the land plants as well as to some modern green algae.

This hypothesis led to an investigation of cytokinesis in several ulotrichalean algae, including the subaerial parenchymatous *Fritschiella tuberosa* Lyengar. Soil containing *Fritschiella* was sent by Dr A. K. Mitra from Allahabad, India. The alga was isolated and grown on a mineral agar supplied with micronutrients and material was prepared for study under the electron microscope using glutaraldehyde-osmium fixation and 'Epon' embedding. Fig. 1 is a section of a cell in which two telophase nuclei can be seen separated by a cell plate quite characteristic of higher land plants. Dictyosome activity can be seen in the region, and vesicles apparently similar to those of dictyosome origin seem to be fusing with the cell plate.

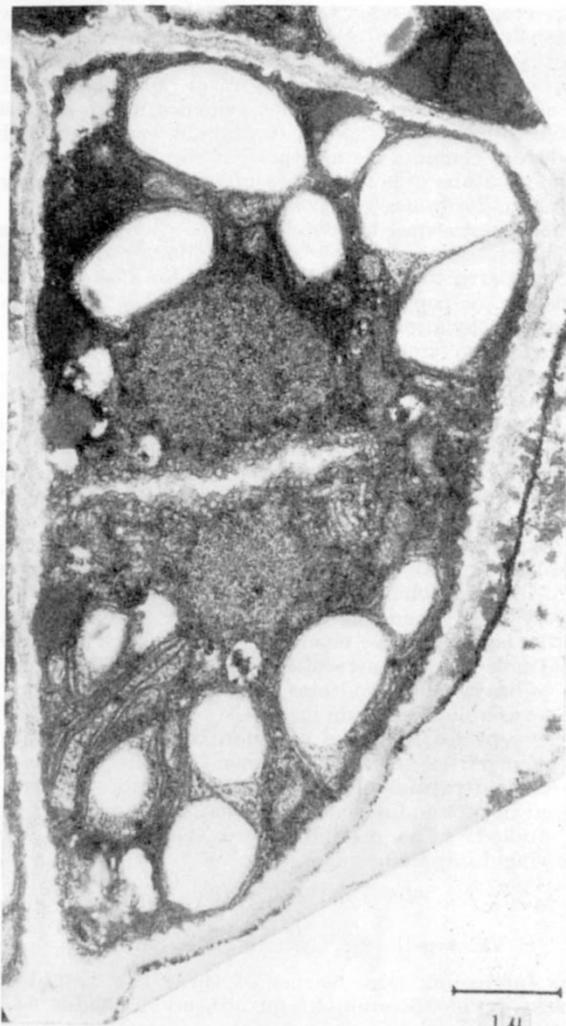


Fig. 1. *Fritschiella tuberosa*. Electron micrograph of dividing cell in late telophase showing developing cell plate separating two daughter nuclei. Glutaraldehyde-osmium fixation, 'Epon' embedding.

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IMMUNOLOGY

Disulphide Bridges of Immunoglobulin G1 Heavy Chains

THE immunoglobulins G1 represent the major component of human immunoglobulins, with a basic four chain structure consisting of two heavy and two light chains joined by disulphide bridges¹. (The nomenclature used is based on that recommended by the World Health Organization (1966).) The light chains are made up of two sections—an invariable C-terminal section characteristic of each type, and a variable N-terminal section specific to each clone²⁻⁴. Peptide maps of Fd fragments^{5,6} suggest that a similar situation holds in heavy chains. In light chains the two sections are folded, each by a single disulphide bridge, to give two loops of almost equal size—the invariable C-terminal loop and the variable N-terminal loop⁷.