This rapid and direct technique requires neither expensive apparatus nor lengthy culture methods. It counts all soil algæ without selection.

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Formation of New Cell Walls in Cell Division

In a recent communication in *Nature*, further evidence was presented by Dr. E. Elliot[1] relating to the concept of Giltay[2], and supported afterwards by Priestley and Scott[3], that at cell division each daughter protoplast secretes a continuous wall around itself. The suggestion was also made that this method of cell-wall formation may prove to be general in the higher plants. Recent work in this laboratory on cell division in the cambium of angiosperms and gymnosperms further supports this suggestion.

Parts of an enveloping parent wall, apparently persisting after division in the ray initials, were observed connecting adjacent cells of a radial file of ray parenchyma cells isolated by simple maceration (Fig. 1). An example, which may perhaps be more important, was observed in the course of a study of the sequence of cell division of the cambium during the development of compression wood in conifer stems. Thin, feebly birefringent membranes, considered to be the remains of the parent cambial cell wall, were detected traversing the well-developed intercellular spaces characteristic of this tissue (Figs. 2 and 3). In normal wood the presence of similar membranes was demonstrated by careful delignification of thin cross-sections by alternate treatments with chlorine water and alcoholic monoethanolamine, with dilute alcoholic acetic acid washes (Fig. 4). Using techniques of simple maceration, demonstration of the parent wall was extremely difficult, as in the mature tissue this wall is not continuous around a radial file of cells and any slight agitation was sufficient to cause the cells to separate. That only fragments of the parent wall can be demonstrated is consistent with the great radial expansion of the cambium daughter cells which occurs during differentiation, following periclinal divisions.

A further point of interest is that the parent wall could not be demonstrated at the tips of cells by either of the techniques referred to above. This may be an indication of tip growth rather than of symplastic readjustment of the cells following cell division in the cambium.

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[1] Elliot, E., *Nature*, **168**, 1089 (1951).
[2] Giltay, E., *Arch. Néerlandaises*, 432 (1882).
[3] Priestley, J. H., and Scott, L. I., *Proc. Leeds Lit. Phil. Soc.*, **3**, 532 (1938).

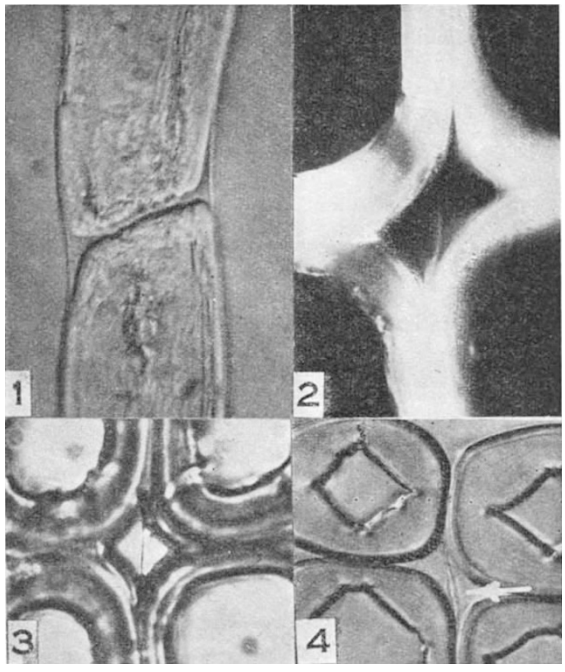

Fig. 1. *Grevillea robusta*. Part of two ray parenchyma cells, isolated by maceration with hydrogen peroxide and acetic acid, showing part of parent wall of the ray initial. Unstained. × 980

Fig. 2. *Pinus pinaster*. Transverse section of compression wood between crossed nicols. Only part of the parent wall traversing the intercellular space is in a position of brightness. × 2,000

Fig. 3. *Pinus pinaster*. An example similar to Fig. 2, photographed with ordinary illumination after staining with safranin. × 980

Fig. 4. *Pinus pinaster*. Transverse section of normal wood after delignification showing parts of the parent wall (marked by arrow). Unstained. × 430

Sugarcane × Bamboo Hybrids

Sugarcane × bamboo hybrids were first reported from this Institute by Venkatraman in 1937[1]. In spite of the absence of easily recognizable bamboo characters in the seedlings, Kutty Amma and Ekambaram[2] proved by a critical study of the anatomy and morphology of the seedlings that they were genuine hybrids. This corroborated Janaki Ammal's[3] conclusion arrived at earlier, on the basis of somatic chromosome counts. In these bamboo crosses the pistillate parents employed were the two male sterile Java canes, *POJ*.213 and *POJ*.2725. These were themselves complicated bispecies hybrids —*POJ*.213, involving *S. officinarum* and *S. barberi*; *POJ*.2725, a much more complicated hybrid between a number of *officinarum* and Java *spontaneum* (Glagah). It was felt desirable to repeat the cross, using a simple *officinarum* as the female parent. All the varieties of *officinarum* so far examined show $2n = 80$. For this purpose, *S. officinarum* var. *Vellai* (a local form) was employed and two seedlings were obtained. Examining the mother and the two seedlings derived therefrom through pollination with bamboo, one of the seedlings is very thick, much thicker than the mother, more vigorous and taller. The other is much thinner. Examination of the root-tips revealed a somatic chromosome number of 116 in the thick seedling and 86 in the thin. It is believed that the thick seedling has come into being through the fusion of an unreduced egg of *S. officinarum* (that is, $2n = 80$) with a normal sperm of *Bambusa arundanacea* ($n = 36$). The thin seedling

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