from below at the orifice of a capillary the end of which is unwettable. The possibility of a mechanism embodying this principle is suggested by Lewis's observation[4] that the surface of mesophyll cells abutting on air spaces is unwettable. If the unwettable surface were finely porous, water exuding through the cell wall under an internal pressure would form convex menisci at the pores in the unwettable film and the air spaces would be kept supersaturated.

A further consequence of this condition would follow, namely, that an excess pressure, varying inversely with the size of the pores, would be required to flood the air-spaces with water—an obvious advantage to plants with no provision for guttation.

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Production of Spring Wood with β-Indole Acetic Acid (Heteroauxin)

DURING an investigation of the development of annual rings in trees, a few crystals of heteroauxin were placed in a 3/16-in. hole bored in a white pine (*Pinus strobus* L.) branch on June 30. The hole was sealed with a beeswax–'Vaseline' mixture. A comparable check branch on the same tree was bored and sealed, but with no heteroauxin inserted. These branches were cut on September 11.

Four pieces about ½ in. long were cut from the treated and untreated stems, just above the bored hole. These segments were treated with hydrofluoric acid for nine days, dehydrated with ethyl alcohol and embedded in celloidin according to Wetmore's method[1]. Transverse sections were cut with a sliding microtome and stained with iron hæmatoxylin and safranin[2].

The technique did not show the details of the cambium to advantage, because shrinkage had caused partial collapse of these thin-walled cells. However, the last two rows of tracheids in the treated material showed a marked difference as compared with the untreated material. They were much larger, thinner-walled, and resembled typical spring-wood tracheids which are normally formed earlier in the growing season. It was noted in the untreated control branch that the last tracheids to differentiate were summer-wood tracheids having a relatively narrow radial measurement, a thickened secondary wall and tangential pitting. However, a more complete investigation of the treated branch showed that the production of wide-lumened spring-wood tracheids did not extend all the way around the circumference of the annual ring. Rather, they were formed on each side of the wound with heteroauxin crystals, but had not formed in the quadrant directly opposite the wound. Additional experiments using a paste of lanolin and heteroauxin crystals showed that with concentrations higher than 20 mgm. heteroauxin per gm. of lanolin, transitional types of tracheids ranging from typical spring wood to typical redwood could be discerned. Wershing and Bailey[3] have already noted that redwood is formed with higher concentrations of heteroauxin in lanolin applied to the hypocotyls of pine seedlings.

Microchemical tests, using Ruthenium Red as an indicator, showed that while the cells are enlarging under the influence of heteroauxin, the middle lamella and primary wall remain in the form of 'plastic' pectic acid. However, untreated controls indicate that formation of 'non-plastic' calcium pectate from 'plastic' pectic acid takes place in the middle lamella and primary wall at a much earlier date than in the branches treated with heteroauxin. Further investigations, which may lead to a more complete understanding of annual ring development, are still in progress.

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Occurrence of *Falkenbergia* on the English Coast

ON April 17, 1949, during the course of a survey of the shore known as the Gates at the southern tip of Lundy, a piece of a Floridean alga, too small to identify with certainty, was collected in order that its population of epiphytic red algæ might be examined. It occurred in a pool very near extreme low water springs, the spring tides at this period being some of the biggest of the year.

On examination of the sample in the field laboratory it proved to include plants of *Antithamnionella sarniensis* Lyle, *Ceramium* sp. and a filamentous alga having something of the appearance of a *Polysiphonia*, but not according with any species known to the collector (C. C. H.). It was therefore preserved and submitted, through the kindly agency of Mr. Owen Gilbert, to Dr. K. M. Drew.

This *Polysiphonia*-like alga (Fig. 1) is undoubtedly a species of *Falkenbergia*, and, so far as we know, this is the first record of its occurrence along the coasts of the British Isles apart from the Channel Islands. *Falkenbergia* is readily distinguishable from *Polysiphonia* by the presence of three pericentral cells only around each cell of the central filaments as well as by the formation of lateral branches direct from the pericentral cells, trichoblasts being absent (Fig. 2). Each pericentral cell may cut off a gland cell from its internal face; but these are not so easily seen in preserved material. The macroscopic appearance of the Lundy specimen suggests a young growth of *Trailliella intricata* or *Spermothamnion Turneri*, from both of which, however, it is readily distinguishable by means of a hand lens.

Falkenbergia is a genus claiming particular interest for two reasons: first, one or more species appear to be enlarging their area of distribution fairly rapidly, and secondly, J. Feldmann and G. Feldmann[1] consider that *Falkenbergia rufolanosa* develops from the carpospores of *Asparagopsis armata* and is the tetrasporophyte of that alga.

Five species of *Falkenbergia* have been described; but the Feldmanns consider that no satisfactory criteria exist for distinguishing four of these species from each other. The fifth species, *F. vagabunda* (Harv.) Falk., described from Australia, is still im-