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Structure of the Outer Secondary Wall on Unbleached Spruce Sulphite Fibres

Numerous investigators, in particular Emerton[1], Wardrop[2] and one of us[3], have reported on the structure of the outer secondary wall, S_1, of coniferous fibres. In all cases, these investigations were carried out on fragments which had been freed from the fibres by some form of mechanical action. Although the evidence that these fragments originated from the S_1 wall is excellent, the S_1 wall has never been seen intact on the surface of a fibre.

We are at present carrying out investigations on some properties of unbleached spruce sulphite fibres. The fibres discussed here were mechanically treated in a 2-litre disintegrator for 80 min. at a consistency of 1 per cent. After the disintegration, the fibres were screened thoroughly twice to remove the fine fragments released by stirring. Samples of the screened fibres were dried on to slides and without further treatment examined in a microscope under reflected light. (Zeiss microscope, model *W*, epi-illumination II*B*.) We found attached to many fibres typical S_1 fragments. In a few cases such as that shown in Fig. 1, the S_1 structure was clearly visible on the surfaces of the fibres. The alternate dark and bright lines between the fibre and the upper fragment are interference fringes (Newton's rings) formed in the wedge-shaped gap between the partially unravelled S_1 fragment and the slide[4] (see cross-sectional view of fibre in Fig. 2). The presence of the interference fringes is strong evidence that the unravelled S_1 fragment is attached to the top surface of the fibre.

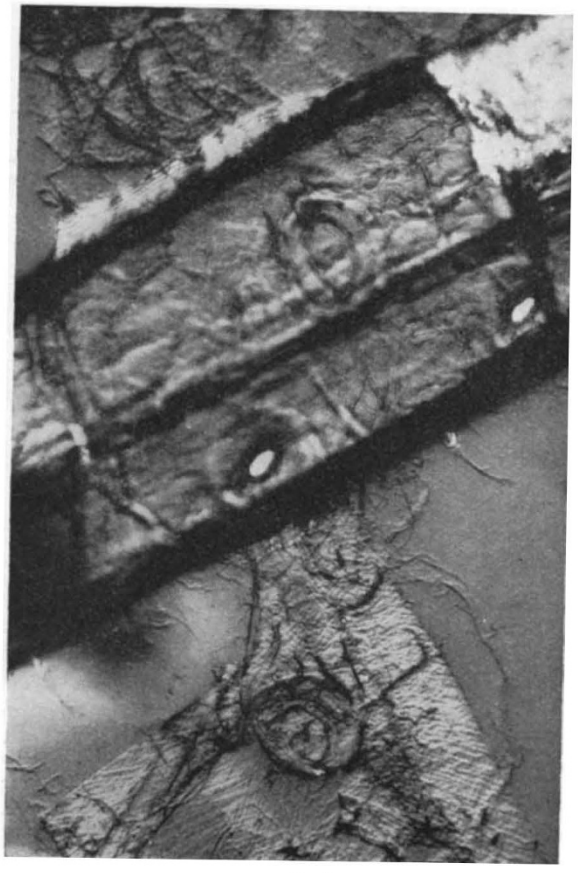

Fig. 1

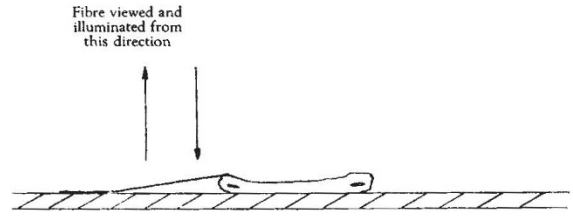

Fig. 2

The angle between each of the two sets of fibrils and the fibre axis (fibrillar angle) is about 50° (five measurements). The same value was obtained for the S_1 fragment in the upper portion of Fig. 1. Assuming that the longitudinal fibre axis of the other fragment is perpendicular to that of the fibre, its fibrillar angle is about 60°. These values agree well with those reported in refs. 1, 2 and 3.

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Occurrence of *Falkenbergia rufolanosa* on the West Coast of Scotland

Periodic reports during the past twenty years[1-4] have noted the appearance of *Asparagopsis armata* and its associated form, *Falkenbergia rufolanosa*, in a number of localities in western Ireland and the south and south-west coasts of England. Although the southern records reported the two forms appearing almost simultaneously, recent evidence suggests that *Falkenbergia* is spreading round the British coasts more widely than *Asparagopsis*[5-7]; and this would seem to confirm the suggestion of Thomas[8] that the two differ in their ecological requirements.

Further evidence of the spread of *Falkenbergia* is seen in its appearance on the coast of Scotland. During