The leafy appendages raise very interesting points. They may represent fully developed adult structure or they may be young stages of an arborescent type, or they may be organs of vegetative propagation.

In some respects the specimen is reminiscent of *Stigmaria bacupensis* Scott et Lang[1]; for example, in size. The diameter of the main axis, of the stele and of the appendages are all of the same order as in *S. bacupensis*; but this new specimen differs from *S. bacupensis* in the following features: (1) the protostele has no recognizable protoxylem; (2) the cortex of the main axis has quite a different structure; (3) the outer cortex of the appendages differs from the outer cortex structure of the rootlets of *S. bacupensis*; (4) the appendages bear leaves.

The structural features of this new specimen suggest a Stigmarian axis bearing appendages rather similar to Stigmarian rootlets; but the appendages of this new plant bear leaves and the leaves bear ligules. It may be that this new specimen indicates that the so-called rootlets of *Stigmaria* are really of stem nature. In this connexion it is interesting to note that in the same coal-ball and in close proximity to the specimen just described are remains of outer cortical tissues which are identical in structure with those of the new specimen, but this cortex bears ordinary Stigmarian rootlets and not leafy appendages.

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[1] Leclercq, S., *Ann. Bot.*, **44**, 31 (1930).

Supra-vital Staining of Striated Muscle with Tetrazolium Compounds

The fact that a nearly colourless solution of 2 : 3 : 5 triphenyl tetrazolium chloride (tetrazolium salt) is reduced to a red formazan in contact with living tissue has been recognized for some time. This has been used in testing for viability and also for staining tissues; but detailed descriptions of the colour distribution within tissues are lacking. Since the red colour is due to reduction of the agent, the colour distribution should offer some evidence as to the intracellular distribution of reducing groups.

In the present work, small strips of striated muscle from freshly killed mice have been teased out in a 0·1 per cent solution of tetrazolium in normal saline or Ringer–Locke solution. The preparations were mounted under cover slips, ringed with a 'Vaseline'-wax mixture and examined immediately. The red colour appears within 3½ min. and continues to intensify until all the muscle fibres are deeply stained. Under the high-power microscope, the colour is seen to be concentrated in transverse bands in the muscle, while the intervening bands are but faintly stained; a narrow band of intermediate staining intensity traverses the centre of the faint band. This is illustrated in Fig. 1. Apart from the coloration, the appearance is very similar to that seen in a phase-contrast picture (cf. Fig. 2).

Experiments with the related compounds 2,2′-(*p*-diphenylene)-*bis*(3,5 diphenyl tetrazolium chloride) (neotetrazolium) and 2-(*p*-iodophenyl)-3-(*p*-nitrophenyl)-5-phenyl tetrazolium chloride (iodotetrazolium) have given similar results. In the case of neotetrazolium, the reduction colour is a deep purple-black, and in some preparations the longitudinal striæ of the muscle fibres have also appeared. The distinctive distribution of the colour is strongly suggestive of a similar distribution of reducing groups within the muscle fibre. Since the overall picture remains the same despite intensification of the colour, it appears unlikely that the result achieved is dependent upon differential rates of infiltration of the agent into the various portions of the muscle fibre.

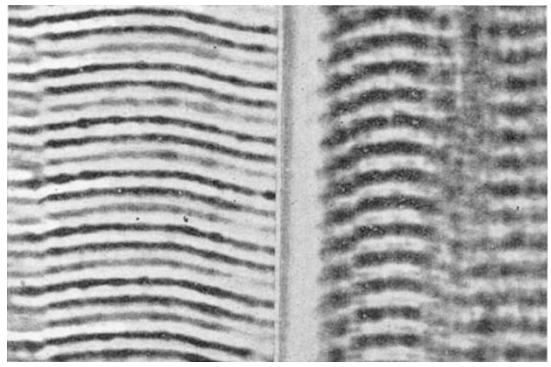

Fig. 1. Striated muscle stained with tetrazolium. (× 1,500)

Fig. 2. Striated muscle, unstained (phase contrast. ×1,500)

It appears, then, that these salts not only provide a useful tool for histological demonstration, but may also offer evidence as to the distribution of cellular components.

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Noradrenaline and Accessory Chromaffin Tissue

Fulk and Macleod[1] showed that the retro-peritoneal tissue of many mammals contains a material which, like extracts of the suprarenal glands, produces inhibition of the isolated rabbit intestine and excitation of the isolated rabbit uterus. Using histological methods, Wislocki[2] confirmed that there is abdominal chromaffin tissue in these animals. Whereas Mulon[3] showed that the chromaffin tissue in the carotid bodies of horses contains a pressor substance, Fulk and Macleod[1] failed to obtain any sympathomimetic substance in extracts of the thoracic aorta (containing the chromaffin tissue of the cardioaortic bodies). Recently, West, Shepherd and Hunter[4] reported that the collection of chromaffin tissue known in babies as the organs of Zuckerkandl contains large amounts of noradrenaline. The paraganglia are situated along the aorta near the origin of the inferior mesenteric artery. We have therefore attempted (*a*) to confirm that a sympathomimetic substance is present in accessory chromaffin tissue of animals, and (*b*) to identify such a substance by biological and chromatographic methods[4].

The results shown in the accompanying table indicate that large amounts of noradrenaline may be found in the retro-peritoneal tissue of young dogs, rabbits, guinea pigs and cats, and in certain cases