THE TRANSPIRATION OF THE SPOROPHORE OF THE MUSCI.—In the account of the anatomy of the sporophore of Mosses which I have given elsewhere¹, a thin-walled strand of tissue (which I have named *leptoxylem*) in the centre of the 'central strand' is assumed, on anatomical grounds, to be that which conducts the transpiration-current up the seta to the apophysis, the organ of absorption and assimilation of gases and of *transpiration*.

Recently I obtained material very suitable for testing by direct experiment whether indeed this *leptoxylem* does, or does not, conduct the transpiration-current.

To do this I found that the best method was to make experiments with two different species of Moss; in one of them the tissues were well differentiated, and in consequence rather large and opaque; the other I chose on account of the transparency of its tissues, so that the transpiration-current could be observed without mutilating the tissues. The Mosses used were *Polytrichum formosum*, Hedw., and *Splachnum sphaericum*, Linn. The method adopted was that of placing the cut ends of the sporogonium in a drop of eosin.

In the case of *P. formosum*, after a short time, about 30 minutes, on splitting up the seta and extracting the central strand and examining it, it was found that the eosin had penetrated up the central part of the central strand only. But this did not show exactly into what tissues the eosin went; therefore, a transverse section of another seta was made which had been treated similarly to the first, and this showed clearly that the eosin passed up the seta by means of the *leptoxylem*, although, as was only to be expected, the eosin, after some considerable time, penetrated into other tissues. The rate of transpiration could not be observed with any accuracy in *P. formosum* on account of the opaqueness of its tissues.

In *Splachnum sphaericum* the rate of transpiration could, on account of the transparency of the seta, be observed with the greatest ease, the current going up the centre of the seta only; but on account of the extreme delicacy of the tissues the exact limits of the tissue which conducted the transpiration-current could not be determined.

Watching measured distances of 2 mm. along a part of a seta, the eosin could be seen to move over the measured space in 2 minutes.

¹ Vaizey, On the Anatomy and Development of the Sporophore of the Musci (Part 1, Polytrichaceae). Journ. Linn. Soc.

This was observed again and again on different setae. On a long seta a distance of 30 mm. was measured, the ends of the course being marked; the eosin passed the first mark at 10.47 a.m., and the second at 11.31 a.m., thus taking 44 minutes to do the whole distance, which is a slower rate than that recorded over the short distances. This is, I think, accounted for by the facts, that in the long distance there were one or two twists in the seta, and the measurement was taken in a straight line, so that my account should rather under than overstate the case, that in watching the short distances there must be some unavoidable errors of observation, and also that there must be a good deal of variation between individual setae. I frequently observed the eosin pass up the whole of the seta and enter the apophysis, which was found by means of transverse sections to have a quantity of eosin in its centre. These experiments sufficiently confirm, I think, my original view, based on anatomical grounds, as to the function of leptoxylem.

I have, in conclusion, to thank Mr. P. Ewing, of Glasgow, for sending very fine living specimens of *Splachnum sphaericum*, and thus enabling me to carry out these experiments.

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THE PRICKLE-PORES OF VICTORIA REGIA.—On page 54 of De Bary's Comparative Anatomy of the Phanerogams and Ferns (English Edition) the following passage occurs:—

'The openings which Trécul describes on the large prickles on the leaf-nerves and petioles of *Victoria regia* may be here supplementarily mentioned, being doubtful as regards their structure, and requiring further investigation. These prickles enclose a thin vascular bundle, which ends under their apex, and at the apex is to be found a depression with one circular opening (ostiole).'

The results of further investigations are as follows:—

(1) Fibrovascular bundles only occur invariably in the largest spines, rarely in those less than one inch in length, and then the elements are fewer and but slightly lignified.

(2) The spines themselves either taper to a finer point than in Trécul's figure, being composed of two or three cells only at the extreme end, or they are variously truncated. The ostioles and depressions could not be seen either in surface-views of the ends or in longitudinal sections through the apex.

(3) The apices of the spines are lignified, and the lignification