

NOTES.

AOSPORY IN PTERIS AQUILINA.—While at Squam Lake, New Hampshire, in July 1887, I noticed by the side of the road a plant of *Pteris aquilina* that presented a peculiar appearance which I, at first, thought must be due to the excessive heat then prevailing. Some of the pinnae were normal, but others were curled and irregular in shape with the margins somewhat thickened. I had no microscope with me at the time, and it was not until my return to Cambridge that I recognized that the sporangia on the abnormal pinnae had developed in a peculiar manner, and that the present case was one of apospory, although not so well marked as similar cases described by Druery and Bower. As cases of apospory are not very common, an account of the peculiarities of the *Pteris* from Squam Lake may be of interest.

In the first place, an examination of the normal pinnae showed that the formation of sporangia had scarcely begun, and on none of them had the sporangia advanced so far as the formation of the archesporium. The appearance of the abnormal pinnae is shown in Fig. 17. A few of the sporangia on the abnormal pinnae were nearly mature and contained perfectly formed spores; but the greater part of the sporangia had, after the formation of the archesporium, developed abnormally. In some cases the normal development had ceased even before that stage was reached, and what should have been sporangia had developed into sterile growths resembling, in some cases, moss-protonemata, in others, irregularly shaped prothalli. It should be remarked that the abnormal pinnae were most abundant at the tips of the different divisions of the frond, and the sporangia became more and more irregular the nearer they were to the tip.

In the majority of cases, immediately after the formation of the arche-

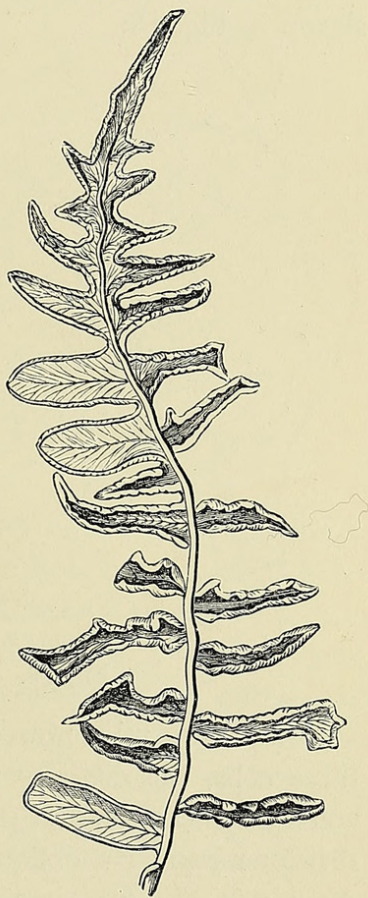


Fig. 17.

sporium, there grew from the apex of the sporangium a short filament; and sometimes two filaments grew out from the upper part of the sporangium diverging so as to form an angle of 45° . The terminal cell of the filaments was usually bluntly conical, the succeeding cells being cut off by walls at right angles to the axis of growth. In the simplest cases the filaments remained unbranched and composed of a single row of cells which usually became curved. In Fig. 18 is shown a case where the filament, whose cells contained abundant chlorophyll, might well be compared with a moss-protonema. In some cases the filaments had grown to double the length of that shown in Fig. 18.

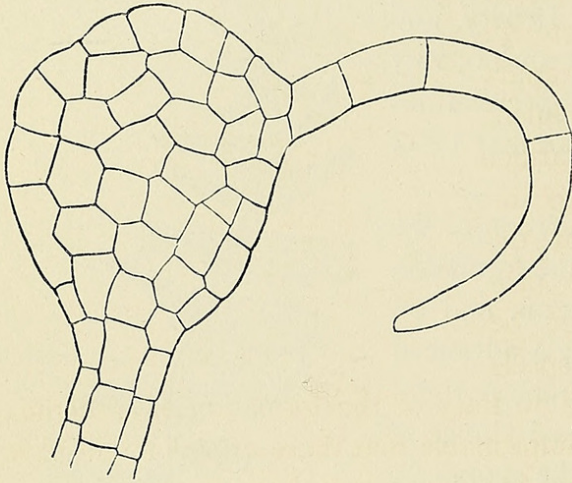


Fig. 18.

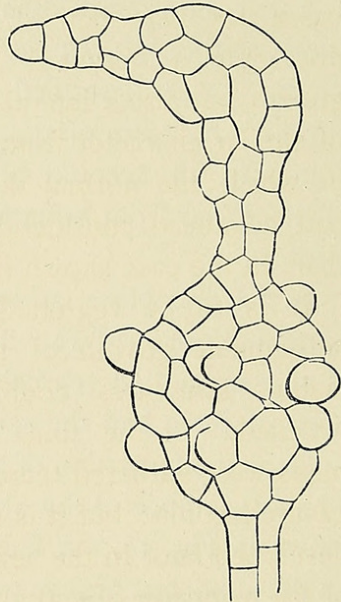


Fig. 19.

More frequently, however, after the formation of the first two or three cells, the divisions were oblique and regularly placed, and, in some instances, the first partition itself was oblique and the subsequent divisions regularly oblique as in the tips of the narrow *Delesseriae*. As a rule, the filaments, even where oblique partitions were formed, remained nearly linear or cylindrical; but there were numerous cases where, by irregular division, a small prothalline body of a single layer of cells was formed. Such a growth is shown in Fig. 19, where it will be observed that a considerable number of the superficial cells of the aborted sporangium have grown outwards as if to produce other filaments or prothalli.

In a few cases, the initial sporangium had, at a very early stage, lost

all resemblance to true sporangia and, without reaching the stage at which the archesporium generally appears, had grown into a sort of irregular prothallus. Fig. 20 represents one of these prothalli, not at all to be confounded with the scales or paraphyses found in the sori of *Pteris*. In the particular case figured, a trace of what might possibly have been a small aborted archesporium could be seen a short distance below the terminal cell *a*. A secondary apical cell had formed at *b*, but it is impossible to surmise what its further growth would have been; it should, however, be remarked that, in some cases not here figured, there was not only a terminal prothalline growth, but also a lateral outgrowth of similar character from sporangia in which the normal development had advanced considerably farther than in the case shown in Fig. 20.

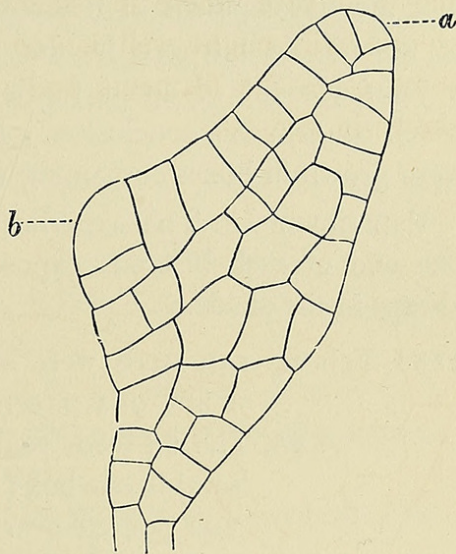


Fig. 20.

It is to be regretted that the subsequent growth of these prothalline structures could not be watched. At the time my specimens were gathered there was no trace of the formation of antheridia or archegonia; but it is not improbable that those organs might have developed later in the season. As it is, we have here another instance of the reversion of sporangia to structures which are, to say the least, prothalline in appearance. I have been informed by a person to whom my specimens were shown, that in a certain field in Pennsylvania the plants of *Pteris* frequently have an abnormal appearance like that shown in Fig. 17. It is to be hoped that hereafter some botanist, recognizing the peculiar deformity of *Pteris* here described, will be able to watch the development of the abnormal sporangial growths late in the season. It is certainly worthy of note that the abnormal pinnae bore some nearly mature sporangia at a season of the year when the normal pinnae showed only very young sporangia. One would ask whether the premature development and the accompanying abnormal growths were, in any way, the result of the extraordinary heat of the summer of 1887.

W. G. FARLOW, Cambridge, Mass.



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