limit of the cap. According to Hirn's theory we should expect the substance of the cap to consist of alternating layers of mucilage and cellulose, which is quite evidently not the case. The opinion of this latter observer that the central mucilaginous portion of the ring 'beim Zerreißen der Zellwand von Bedeutung sein dürfte,' seems very plausible; and possibly the somewhat aerial conditions under which the described *Oedogonium* was growing did not give the necessary factors (water?) for the swelling of this portion, and consequently for the rupture of the ring. When stained with chlor.-zinc-iodine the whole of the cap takes on a blue colour, but I could make out no difference in the intensity of colouration of the different parts of the cap. Vesuvium stains it dark brown, and in this case it is the main mass of the cap which mainly takes on the colour, whilst the cell-membranes are less obviously coloured.

Before concluding, I wish still to say a few words on the cell-contents of these abnormal young plants. It has already been mentioned above that the cells presented quite a healthy green appearance, but the fact that they are crowded with starch grains (Fig. 61 *a, b, g*) indicates a somewhat abnormal state of affairs. In addition to these starch grains, however, many of the cells often contain very large globules of a colourless highly refractive substance (Fig. 61 *b, g*), which is quite unaffected by iodine; usually there are several (as many as four or five) such globules in a cell, but at times one may attain such a size that it occupies a large portion of the cell-cavity. These globules take on a black colour with osmic acid and undoubtedly consist of some kind of fat. I have observed such fat-globules before in other species of *Oedogonium*, but omitted to make a note of it at the time, so that I am unable to say in which species. Undoubtedly, however, starch is the normal product of assimilation in *Oedogonium*, and the occasional occurrence of fat side by side with it is not without parallel in other Algae.

F. E. FRITSCH.

UNIVERSITY COLLEGE, LONDON.

June 8, 1904.

ON THE DISTRIBUTION OF STATOLITHS IN CUCURBITACEAE.—

In discussing the function of the endodermis Tondera¹ states that in the stems of a number of Cucurbitaceous plants he finds scattered starch in the younger internodes which are geotropic, and falling starch only in the older internodes which no longer respond to gravity. At the suggestion of Mr. Darwin I examined most of the species mentioned by Tondera. My results, owing possibly to difference in method, do not agree with his.

Cyclanthera pedata, *Momordica Charantia*, *Sicyos angulata*, *Thladiantha dubia*, and *Cucurbita Pepo* contain, according to Tondera, only scattered starch in their younger internodes. In all these plants I find falling starch in both older and younger parts, extending quite to the apex, or within 1 cm. of it. Again, Tondera finds no falling starch in the apical internodes of *Cucumis sativa* and *Lagenaria vulgaris*. I was

¹ Tondera. Beitrag zur Kenntniss des functionellen Werthes d. Stärkescheide. Bull. Int. de l'Acad. d. Sciences de Cracow, 1903.

unable to examine these species, but in *Cucumis perenne* and *Lagenaria clavata* I find falling starch in younger as well as older internodes quite to the apex, and in *Bryonia dioica*, which according to Tondera possesses no endodermis, I find the same distribution of statoliths.

My observations were made during the early summer (May to July) 1904, with rather thick sections of fresh material mounted in a solution of iodine in potassium iodide.

D. F. M. PERTZ.

CAMBRIDGE.

ON THE PRESENCE OF A PARICHNOS IN RECENT PLANTS¹.—If a mature sporophyll of *Isoetes Hystrix* be examined, there will be seen in the lateral expansions of its base two longitudinal cavities containing a certain amount of mucilage, and situated one on each side of the vascular bundle, in close proximity to the sporogenous mass. By the examination of sporophylls in different stages of development, it may be ascertained that the above-mentioned canals arise by the mucilaginous degeneration of two strands of parenchyma. The structure in question does not extend into the cortex of the stem, but is confined entirely to the base of the sporophyll, its limits seemingly depending upon the extent of the sporangium. Whether the same features obtain in sterile leaves has not been determined, owing to the lack of material. Indications of a similar structure were observed in other species of *Isoetes*.

It is suggested that these strands of degenerating tissue, and the resulting mucilage-containing canals of the mature leaf, represent the parichnos occurring in *Lepidodendron*, *Sigillaria*, *Lepidocarpon*, &c.

T. G. HILL.

KEW.

¹ Abstract of paper read before Section K at the Cambridge Meeting of the British Association, August, 1904.

Pertz, Dorothea F. M. 1904. "On the distribution of statoliths in Cucurbitaceae." *Annals of botany* 18, 653–654.

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