

Phuokan 1. 2. 4. 5

ANNALS OF BOTANY



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A NEW CORDYCEPS.—In the examination of the large collection of Ferns recently made for the West India Fauna and Flora Committee of the British Association by Mr. R. V. Sherring in the island of Grenada, the dried remains of a species of ant were observed to be attached to a fern-frond. On these remains there was growing what proved to be a new species of *Cordyceps*.

Cordyceps Sherringii, Mass., sp. nov. Stipite flexuoso, pallide ochraceo, 1 cm. alt. 1 mm. cr., capitulo globoso, ochraceo, 2 mm. diam., peritheciis prominulis granuloso; ascis cylindraceis, 80 X 7.5; sporae filiformes 60 X 1.5 μ , utrinque acutiusculae, hyalinae, quinque-septatae. (See Woodcut 4, Figs. 2-6.)

Gregarious on an ant, springing from various parts of the body, most firmly attached to the frond of a fern by a dense mass of pale ochraceous mycelium. Allied to *Cordyceps myrmecophila*, Cesati, but quite distinct in the globose head and the constantly 5-septate spores.

Grenada. Coll. R. V. Sherring, F.L.S.

The present species belongs to one of a small group of genera characterised by having exceedingly minute, needle-shaped spores, and more especially by being true parasites on living plants or animals. The members of the above-mentioned generic group of fungi are morphologically closely allied; in fact so close is the agreement that the perithecia, asci, and spores are almost indistinguishable in the species belonging to the various genera, and the modifications met with appear, so far as can be ascertained, to be solely in connection with spore-diffusion. The species of all the genera have the perithecia or spore-producing structures immersed in a portion of the fungus called the stroma. The spores when mature escape from the perithecia into the air.

In the genera *Omyces* and *Lepichies* the stroma is thin and crust-like on the leaves and stems of living grasses; no conidial form of reproduction is known. In *Claviceps*—which leads up to the fully-evolved structure for securing spore-diffusion met with in *Cordyceps*—the species are parasitic on the fruit of various grasses; the stroma, known as 'ergot' in one species, first produces a conidial form of reproduction, and afterwards bears the perfect ascigerous form, the head bearing the perithecia being supported on a more or less elongated stalk. Finally, in *Cordyceps* the species, with two exceptions that are parasitic on fungi, are parasitic on living

insects. In many species a conidial form of reproduction, not produced on the surface of the compact stroma as in *Claviceps*, but borne on an erect, branched structure, appears first, being followed by the higher form of reproduction, the globose or club-shaped head bearing the perithecia being supported on a stem varying in length in the different species from one-sixth of an inch to six inches in length, the entire fungus being often eight inches high, as in *Cordyceps Robertii*, Hook., parasitic on a large caterpillar in New Zealand. As a rule the larva is attacked by the fungus, the conidial fructification being produced on the active pupa, which often succumbs to the parasite, the higher fructification appearing after death. In other cases both forms of fruit mature on the still living caterpillar, or in other species one or both forms of fruit appear on the living imago state, as in some species of Lepidoptera. The great advantage to the fungus, from the point of view of spore-diffusion, of having the mature fruit raised on a long stalk and carried about, especially by a winged insect, is obvious.

The number of species included in the above-named genera are as follows: *Omyces*, 1; *Lepichies*, 3; *Claviceps*, 5; *Cordyceps*, 47; and the genus is cosmopolitan.

G. MASSEE, Kew.

ON THE OCCURENCE OF DIASTASE IN POLLEN¹.

The germination of the pollen-grain and the formation of the pollen-tube involve questions similar to those which arise in connection with the germination of the seed. In both cases we have to deal with the utilisation of certain reserve materials which in the case of the pollen-grain are stored within it. As the pollen-tube has to attain a certain length before it can avail itself of any external nutriment which it may find in the tissue of the style, it is evident that the material which it uses in the early period of its growth must be the result of the transformation of the starch, sugar, &c., which are part of the contents of the grain.

In these processes ferment-action plays a definite part. Some years ago, Van Tieghem found that he could demonstrate in the pollen-grain the presence of invertase which converts cane-sugar into glucose. In the present paper an account is given of certain experi-

¹ Abstract of paper read at the meeting of the British Association, August, 1891.