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XLIX.—Note on Lichens

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Polyachus bicolor.

P. oblongo-ovatus, convexus, niger, nitidus, capite, thorace pedibusque rufo-testaceis, antennis fulvis, extrorsum nigris; thorace remote punctato; elytris sat fortiter punctato-striatis, interspatiis planis, duobus externis convexiusculis.

Long. $\frac{3}{4}$ lin.

Hab. Gawler Town, South Australia.

Vertex smooth, impunctate; clypeus semiovate, impressed with a few remote punctures; eyes large, subangulate-emarginate, moderately distant, black; antennæ with the six upper joints slightly thickened, the four outer ones black. Thorax about twice as broad as long; sides rounded and converging from base to apex; basal margin slightly bisinuate on either side; median lobe produced, angulate, its apex rounded, entire; upper surface transversely convex; subcylindrical at the apex; apical and basal margins each bordered with a single row of punctures, disk remotely punctured; extreme basal margin narrowly edged with piceous. Scutellum narrowly oblong, its apex obtuse. Elytra strongly punctate-striate; interspaces smooth, impunctate, two outer ones slightly convex.

Very similar in form and coloration to *Bucharis martius*; in addition, however, to the structural difference in the antennæ, it may be at once known by the different form of the basal lobe of the thorax: in *B. martius* it is thickened, its apex being acuminate; in the present insect the lobe is flattened, forming a thin plate, and its apex is rounded.

[To be continued.]

XLIX.—*Note on Lichens.*

By G. H. K. THWAITES, F.R.S.

MY thoughts have been much occupied of late upon the subject of lichens and their development, and especially with reference to the views of Schwendener and Bornet, and of some other botanists who coincide with them in advocating the theory of *parasitism* as explanatory of the structural composition of lichens.

I have not the least desire, nor have I any intention to impugn the correctness of the descriptions and of the beautiful delineations of Mons. Bornet ('*Annales des Sciences Naturelles*,' 4^e série, tome xvii.); but I must candidly confess that, after prolonged consideration, I cannot bring myself to yield

assent to the *interpretation* of the phenomena which he and some other distinguished lichenologists give to them.

It is well known that the ordinary lichen, as generally recognized, discharges, when mature, its fruit (sporidia) from portions of its upper surface, and that at the same time gonidial gemmæ escape spontaneously from other parts of its structure. These two productions (sporidia and gonidia) naturally become scattered about in abundance and in close proximity with one another; thence it follows that they must come into mutual contact not unfrequently, and more certainly so when each of the kinds begins to extend itself by growth. Both sporidia and gonidia are capable of developing for a certain time, each independently and unconnected with the other; and as they retain each its own character of tissue, so different in appearance from that of the other, a casual observer, seeing them not in connexion, may easily arrive at the belief that they are essentially distinct and by no means specifically identical. To him there is therefore a *primâ facie* appearance of parasitic action when he sees the somewhat fungus-like little detached germinating sporidia, when coming into contact with portions of the alga-like gonidia, adhering organically to them, continuing to grow in such connexion, and for a certain time in a seemingly irregular manner. It will be noticed, however, by the candid investigator, that the subsequent more mature development of the combined structures exhibits a very different character. It will be seen, too, that it is essentially different from what is observed in instances of real parasitism, as generally understood; for in these latter the parasite is observed to be nourished at the expense of the organism upon which it is growing, to be injurious to its health, and to impair its beauty and symmetry. But how different, in contradistinction to this, is the result brought about by the so-called *lichen-parasitism*! In this latter we observe that the intimate coalescence of the two above-described organically adhering kinds of tissue (sporidial and gonidial) eventuates in a most beautiful symmetrical structure—the perfect lichen, with its every part manifesting the possession of full health and vigour.

In the presence of these last-mentioned circumstances it really seems to me that those who believe that the two kinds of tissue above referred to belong respectively to two totally distinct species of plants should, consistently with such belief, acknowledge that the phenomenon ought to be looked upon as an example of *commensalism* rather than one of parasitism. And, granting for a moment this to be the correct view, it might surely be reasonably expected that, instead of finding,

as we do, *one* perfect symmetrical combined growth, we ought to have exhibited to us *two* independent symmetries, as occurs in true cases of commensalism.

But I will suppose, as I believe to be the case, and as was believed unreservedly in early times by botanists generally, that the lichen is a single autonomous organism, and not a compound of two distinct species of plants. I would look upon the more or less developed sporidial tissue as the reproductive portion, and the gonidia as the vegetative portion of this lichen-structure; and I feel scarcely a difficulty in believing that the mutual organic union of the two is necessary to constitute the complete autonomous lichen capable of producing sporidia. It is true that this procedure of development of a simple species of plant is apparently exceptional and somewhat anomalous; but the acceptance of this view gets rid of the paradoxes necessarily attaching, in the case in question, to that theory of parasitism which has been strongly contended for by some celebrated botanists.

We must not fail to bear in mind that in other families of the lower plants there have been encountered unexpected phenomena connected with their reproduction; and it is only necessary to mention the *Filices* as furnishing a notable instance of such an unlooked-for and startling discovery.

The fact that there are some lichens parasitic upon other lichens is only analogous to what occurs amongst many other families of plants.

Ceylon, Sept. 10, 1877.

L.—*Contributions to Micro-Palæontology*.—II. On *Prasopora* Grayæ, a new Genus and Species of Silurian Corals. By H. ALLEYNE NICHOLSON, M.D., D.Sc., F.R.S.E., and ROBERT ETHERIDGE, Jun., F.G.S.

Genus PRASOPORA, Nich. & Eth., jun.

Gen. char. Corallum compound, forming small hemispheric or concavo-convex masses, composed of numerous prismatic corallites radiating from a wrinkled basal epitheca, and connected by smaller cœnenchymal tubules. Corallites with imperforate walls, destitute of septa, furnished with an exterior zone of vesicular tabulæ surrounding a vacant central tube, which may be crossed here and there by an occasional tabula. Calices showing a central aperture surrounded by a ring-like tabula. Cœnenchymal tubes much smaller than the