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part kind of fuel, which in texture reminds one forcibly of lignite, deserve further attention, especially as regards the fossil woods which are contained in them. I consider it not impossible that beds of lignite may be concealed under the form of such peat-beds, which on this supposition might, by proper draining and contrivances, yield a very valuable kind of fuel at an easy price: There has also been some rumour of traces of lignite in the construction of canals and railroads, which are too rare with us. It is to be wished that those persons who can make inquiries, and do not mind the trouble of stating the result of their labours, would choose some better medium of communication than perishable newspapers, where their communications can scarcely be found when wanted. The provincial reports will doubtless gladly promote inquiries of such general provincial interest.

XXXIX.—On three species of Mould detected by Dr. Thomas in the Amber of East Prussia. By the Rev. M. J. BERKELEY, M.A., F.L.S.

[With two Plates.]

IN the spring of the present year I received from Dr. Karl Thomas of Königsberg, who is perhaps better known as a metaphysician than as a naturalist, part of a large collection of sections of amber from East Prussia which consists of several hundred individuals. A large portion of the specimens transmitted contained unequivocal specimens of moulds, in most cases in the condition of mere mycelium, but in one or two instances in beautiful fructification and in a very high state of preservation. Of these he kindly sent some very beautiful and correct sketches, of which I have availed myself in the present communication.

The actual occurrence of fungi in a fossil state has hitherto been very problematical. In the extensive collection of fruits from Sheppey Island which formed the foundation for Mr. Bowerbank's work, I believe no undoubted instance of any parasitic fungus occurred, though *Sphaeria* and other fungi of a hard texture might reasonably have been expected in such a situation, and especially in so recent a formation. Dr. Brown has observed occasionally appearances in the cells of fossil wood which he has been inclined to refer to mycelium, though as I understand with no very decided opinion on the matter.

Dr. Göppert has figured, on a fossil fern belonging to the older coal-measures, what he considers a fungus under the name of *Excipulites Neesii*. I have not seen this figure, but the circumstances under which the vegetable remains which gave origin to the beds of coal must have existed, would not be such as would

be likely to preserve any fungus allied to the genus *Excipula*. I do not find any notice of the occurrence of fungi in any shape in the magnificent work of Dr. Corda on fossil remains of vegetables.

In the work of Dr. Göppert and Dr. Berendt on organic remains in amber, there are figures of one or two supposed fungi, but none of them very satisfactorily made out, and as regards one at least it is quite certain that it has no relation to the genus *Peziza*.

I think then that it cannot be without interest, as well to botanists as geologists, to publish one or two undoubted fungi from amber, the structure of which is as clearly visible as in the specimens of minute algæ so beautifully prepared by Mr. Thwaites. I had the pleasure of comparing them with Dr. Thomas's drawings in company with that gentleman, and also with Mr. Broome and Dr. Carpenter, and all were highly delighted with their accuracy and the admirable state of preservation of the moulds. There were other species in the collection, but in a far less satisfactory state. I have therefore thought it better to omit them. I have however admitted one species which appears very interesting, but of which unfortunately the principal specimen showing the fruit has been lost, so that it was not possible to verify the structure; and certain appearances somewhat analogous in another piece of amber induced some doubt as to the fructification, the spore-like bodies being in that case undoubtedly globules of air.

The occurrence of these fungi was first noticed at the sitting of the Berlin Academy, Nov. 16, 1847, at which time also was announced the occurrence of *Diatomaceæ*, as recorded in this Journal, 2nd series, vol. i. p. 397.

The three species may be characterized as follows.

1. *Penicillium curtipes*, n. s. Candidum; hyphasmate parco; floccis abbreviatis; ramulis fertilibus diffusis demum divisis, sporis ellipticis. Coll. Thom. no. 573.

Hyphasma sparing, loosely branched and mostly at right angles, giving off extremely short flocci, consisting of from three to four articulations which are slightly constricted at the dissepiments, and divided above into two or three threads which are again loosely branched; lower articulations oblong-elliptic, larger, the upper ones gradually smaller, but always elliptic and quite smooth.

This species, which is most admirably preserved, is most nearly allied to *Penicillium sparsum*, Lk. (*Aspergillus penicillatus*, Grev., *Monilia penicillata*, Fr.), but differs in its shorter stems and more diffuse tufts of fructifying threads. It is to be observed that Fries's characters of the genus *Penicillium* appear to be taken

either from Nees von Esenbeck's figure or from Dr. Greville's plate of *P. glaucum* and *P. sparsum*, both of which are incorrect, the true structure of the genus being that which has been repeatedly figured by Corda, and which exactly accords with the pretty species before us, as it does with *Aspergillus penicillatus*, Grev.

PLATE XI. fig. 1. *Penicillium curtipes*, magnified 600 diameters.

Brachycladium, n. g.

Receptaculum stipitiforme e fibris intricatis constipatum sursum attenuatum sive laceratum, ramis brevibus fertilibus simplicibus hic illic sparsis, sporis ellipticis sessilibus vel brevissime pedicellatis.

2. *Brachycladium Thomasinum*, n. s. Coll. Thom. no. 535.

Receptacle stem-like, cylindrical, sometimes fasciculate, pointed and attenuated above or irregularly lacerated, consisting of closely packed intricate threads, the apices of some of which become free and project from the stem generally at a more or less acute angle, and almost always simple, inarticulate, bearing from four to five elliptic spores, which are either sessile or furnished with an extremely short peduncle.

This species was, in the original communication to the Berlin Academy, referred to the genus *Botrytis*; but taking that genus in the widest sense, it cannot comprise the present species, distinguished by its compound stem. Its nearest ally perhaps is the genus *Corethropsis*, figured by Corda in the first plate of his 'Prachtflora,' which is to *Penicillium* what the present genus is to *Botrytis*. I have an American mould which bears a similar relation to *Aspergillus*. The fossil flora therefore in this case fills up a type which at present has not been discovered on the globe as now constituted.

PLATE XI. fig. 2. a. Portions of *Brachycladium Thomasinum*, magnified 600 diameters, from a drawing by Dr. Thomas; b. portions more highly magnified, to show the structure of the receptacle and its apex.

3. *Streptothrix spiralis*, n. s. Floccis omnibus spiraliter convolutis ramosis fasciculatis; sporis ellipticis. Coll. Thom. no. 438.

Consisting of long tufted but somewhat diffuse fibres which are branched once or twice, more or less spirally undulated, and bearing elliptic spores either immediately or at the tips of extremely short ramuli.

This curious mould, which, from the loss of the fructifying specimen, I am not enabled to examine more closely, has so much resemblance to *Streptothrix*, that I have little hesitation in placing it provisionally at least in that genus. *Streblocaulium*

atrovirens, Chevallier, is another species of the same genus, and I have either that or a third from South Carolina. All the three, it should be observed, have a more closely tufted habit than the fossil species. Dr. Thomas's plant is possibly figured by Berendt, tab. 6. fig. 73.

PLATE XII. *Streptothrix spiralis*, n. s., magnified 600 diameters: fig. 1. barren; fig. 2. fertile.

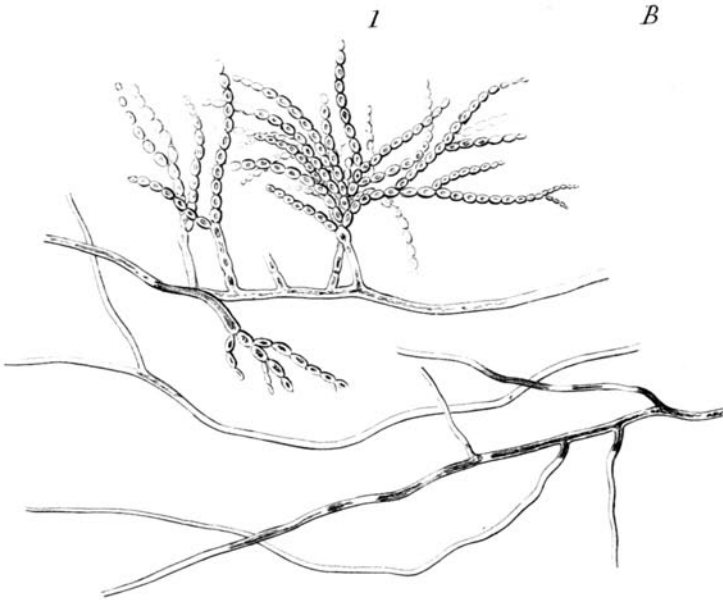
XL.—On the present state of our knowledge of the Ornithology of Madagascar. By Dr. G. HARTLAUB of Bremen*.

It has long been known to zoologists that the island of Madagascar is the site and centre of a very peculiar animal population. Isidore Geoffroy St. Hilaire was inclined to regard it, in respect of its fauna, as a "fourth continent"; and Hombron, in the first volume of the zoological portion of Dumont d'Urville's Expedition to the South Pole, indicates it as one of the creational centres of the African plateau. The distinctness of the Madagascar fauna from that of the African continent is so remarkably great, that of the forty-seven or forty-eight mammalian species which are known to live in a wild state in Madagascar, only one or perhaps two (*Sus larvatus* and *Pteropus rubricollis*?) occur also in Africa. Indeed by far the greater number of them belong to genera which are met with in no other region of the earth's surface. According to Schlegel's researches, the Ophidians of this great island appear to be equally peculiar, inasmuch as it is only the forms of the west coast which exhibit some affinity to those of the opposite shores of Africa. Lastly, the insect-fauna of Madagascar seems, according to Klug and Boisduval, to be rich in original and remarkable forms, although in this department the cases of identity with African species are more frequent, as appears, for instance, from the list of insects of the neighbourhood of Port Natal, &c., appended to Delegorgue's 'Voyage dans l'Afrique Australe.' It is indeed not improbable that a more complete knowledge of the zoology of the East-African regions of Mozambique and Sofalá will establish still further relations of affinity between the continental fauna of Africa and the insular one of Madagascar; especially if ever the west coast of this island (which is 350 miles long and is still in great measure a *terra incognita*) shall become more accessible. Our knowledge of the Madagascar fauna, slight and fragmentary as it is, is almost exclusively due to the undaunted and unwearied zeal of the French naturalists, whose field of

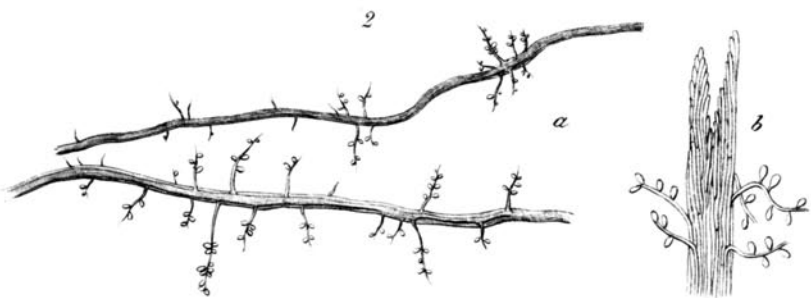
* Translated by H. E. Strickland from D'Alton and Burmeister's 'Zeitung für Zoologie, Zootomie und Palæozoologie,' No. 19, May 6, 1848.



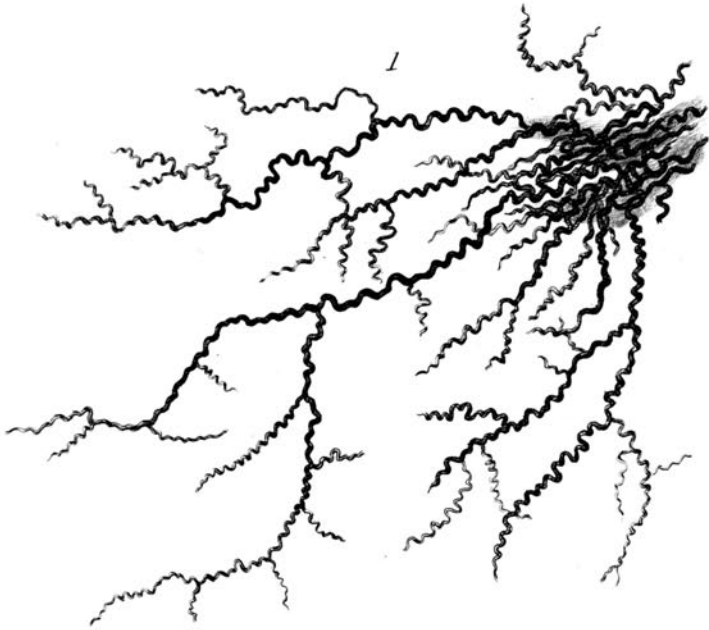
Limnaea Burnetti.



Penicillium curtipes.



Brachycladium Thomasinum.



Streptothrix spiralis