

## FURTHER NOTES ON COLUS GARDNERI (BERK.) FISCHER.

With Plate V.

By T. Petch, B.A., B.Sc.

*Colus Gardneri* was described by Berkeley under the name of *Lysurus Gardneri* in Hooker's London Journal of Botany, v. p. 535. In "Versuch einer systematischen Uebersicht über die bisher bekannten Phalloideen" (1886), Ed. Fischer transferred it to *Colus*. The description, as given in Saccardo, is: "Receptaculo elongato, stipitiformi 17-18 cm. alto; stipite longo (15 cm. alto) superne dilatato in partem clathratam apicem conicum receptaculi efformantem transeunte; partis clathratæ interstitiis 5, verticalibus, linearibus; ramis superne attenuatis, apice junctis, extus medio structura stipiti æqualibus, latere rugosis."

In Grevillea, xix. p. 94, Masee wrote, "Berkeley, in describing the present species [*Lysurus Gardneri*], says that the vertical lobes bearing the hymenium are united at the tips, and on this account the species has been removed to the genus *Colus* by Fischer; but in reality the segments are not organically united at the tips, but during the young stage are closely pressed together, and having been dried in this condition appear to be united; however, when the mucilage is moistened the tips are found to be quite free, and are normally so in several out of the twenty-three specimens from Gardiner (*sic*) in the Kew Herbarium. The above is an average illustration as to how synonyms originate, i.e., by manipulating descriptions and not specimens, which, however, answers the desired object, that of enabling the manipulator to bracket the founder's name and bring his own to the front."

Whatever may be the condition of the Kew specimens now, there can be no doubt that Masee's statement is incorrect. The fungus is not common at Peradeniya, but I have gathered and examined over thirty specimens and in all of them the arms are "organically united" at the apex. They are not glued together by mucilage, nor united by a membrane, but each arm is continued as a tube up to the apex where it is continuous with the others.

In "Untersuchungen zur vergleichenden Entwicklungsgeschichte und Systematik der Phalloideen" (1890), Fischer retained this species in the genus *Colus*. He had examined a specimen from Berkeley in Herb. Mus. d'Hist. Nat., Paris, but was unable to determine the nature of the dorsal line of the arm and the apex. Fischer stated that *Colus Gardneri* is, as it were, *Colus hirudinosus* in which the stalk has lengthened and the apical meshes disappeared, or an *Anthurus* with its arms united at the tip; it differed from *Lysurus* in that in the latter the stem structure was not continued into the arms; in *C. Gardneri*, as in *Anthurus* and the other species of *Colus*, the stalk expands gradually to the receptaculum, whereas in *Lysurus* it is constricted above as in *Simblum sphaerocephalum*.

In "Neue Untersuchungen" (1893) Fischer wrote "In Berkeley's and the Kew Herbarium there are numerous examples of this fungus, all from Ceylon. I was able to determine with certainty on some of them that the arms are actually united at the apex, though the junction is extraordinarily thin. But the possibility is not excluded that examples may occur in which the arms are free. Further, it is characteristic of this species that the lowest part of the arm is free from spores, and, correspondingly, is not transversely wrinkled."

In "Untersuchungen zur vergleichenden Entwicklungsgeschichte," etc. (1900), Fischer notices Massee's statement in Grevillea and refers his readers to his views expressed in 1893.

In 1907, C. G. Lloyd published "The Phalloids of Australasia," and gave copies of the figures of *Lysurus australiensis* and *Mutinus pentagonus*, which, in general appearance, closely resemble *Colus Gardneri*. Lloyd expressed his opinion of the latter in the following terms. "The early stages of *Lysurus* with the arms connivent have led to some very misleading pictures. Thus, Berkeley's original picture of *Lysurus Gardneri* so misled Professor Fischer that he transferred it to another genus, but after he visited Kew and saw that it misrepresented the plant he should have transferred it back. Our American species *Lysurus borealis* was named *Anthurus borealis*, but in my opinion is a *Lysurus*, and I think the same as the Ceylon species. It was originally illustrated with a drawing subject to the same criticism as the original drawing of *Lysurus Gardneri*" (p. 12). "*Lysurus Gardneri* of Ceylon, which was so named and described by Berkeley, is a true *Lysurus* with spreading arms, and not a *Colus*, as found in Fischer's latest work. Fischer referred it to the genus *Colus* on the strength of Berkeley's figure, and he was justified, if one is ever justified in changing classification on the evidence of a figure. When Professor Fischer came to Kew, however, and saw the specimens,

he should have receded from his position, for it is quite evident that the plant is a *Lysurus*, and not a *Colus* in any sense of the word. The arms are entirely separate and spreading when mature. Like all species of *Lysurus*, they are connivent when young, but they are not joined at the apex, however slightly" (p. 14).

In 1908, the present writer redescribed *Colus Gardneri* in "The Phalloideae of Ceylon" (Ann. Perad. iv. pp. 139-184), pointing out that the arms are always united at the apex, and that the structure of the gleba-bearing area of the arms is similar to that of the cap of *Dictyophora irpicina* (*Clautriavia irpicina*). Additional details were published in "Further Notes on the Phalloideae of Ceylon" (Ann. Perad. v. pp. 1-21).

In "Synopsis of the known Phalloids" (1909) Lloyd adopts Berkeley's name *Lysurus Gardneri* for the Ceylon species. Under "The Genus *Lysurus*," he writes: "This genus has been very much misunderstood though of a very simple structure. It consists of free arms borne on a hollow columnar stem. The gleba is borne on the arms. It has been shown that in the original species the gleba is borne on the outer side of the arms, hence species with gleba on the inner surface of the arms have been transferred to *Anthurus*, which genus does not have a columnar stem. I think it is much simpler to define *Lysurus* as originally defined, viz.: a columnar stem bearing free arms at the apex. With respect to the position of the gleba, there are evidently two series, and a new genus will probably be made for those with the gleba on the inner side of the arms. It has recently been shown by Mr. T. Petch, Ceylon, that the arms of *Lysurus Gardneri* (which was the second species known) are not entirely free, but are united by a delicate membrane. We would therefore modify the definition of the genus to include species with arms free or very slightly united."

In the second of the publications referred to above, I have pointed out that the junction of the arms is not a delicate membrane.

Lloyd's final conclusions on the subject are contained in Mycological Notes, No. 43 (Sept. 1916), p. 594. They are quoted here in full.

"We present herewith a sketch of *Lysurus Gardneri*, recently sent us by C. C. Brittlebank, Melbourne. In our Phalloid Synopsis, we presented nine species of *Lysurus*, and the evidence since is that four of them, viz., *Lysurus Gardneri* (Ceylon), *Lysurus australiensis* (Australia), *Lysurus borealis* (United States), and *Lysurus Clarazianus* (Argentina) are all one and the same thing. We have believed it for a long time, and there was no longer any room for doubt on the appearance of 'Notes

on Australian Fungi, No. 2,' August, 1915, by Dr. Cleland and Edwin Cheel. We suspected it from the first, but Professor Petch maintained that *Lysurus Gardneri* had its arms joined by a membrane at the apices, which was not the case as far as known in the other species. Messrs. Cleland and Cheel have satisfactorily explained this. In Australia, while the arms are usually free, they are sometimes 'united at the apex by a thin membrane which gives the specimen a somewhat clathrate appearance.' The figure 836 which we produce from Messrs. Cleland and Cheel presents the top of a young specimen with two of the arms joined. Mr. Brittlebank's sketch (Fig. 835) shows the arms connivent, as they are at first. They afterwards spread out, as shown in the fine photograph by Hollis Webster, published in Mycological Notes, p. 513.

"There is a long story connected with the species. First it was sent Berkeley from Ceylon and named *Lysurus Gardneri*. It is rare in Ceylon, but recently collected by Professor Petch. One collection reached Kew from Australia (Bailey, Brisbane River) which Cooke named *Lysurus australiensis*, and gave in the Handbook a most inaccurate and exaggerated drawing of it. It seems to not be common in Australia, though there are twelve collections in the National Herbarium, Sydney. Fischer gives a very good figure of it from Argentina under the name *Lysurus Clarazianus*. The European and American history is all recent, for it is supposed to be introduced into both these countries. With us it was first collected at East Galway, New York, by Professor Burt in 1893. He published it as *Anthurus borealis* under a misconception of the genus *Anthurus*. A few stations were added from time to time (Cfr. Myc. Notes, pp. 183, 219, and 515), and of late years it is sometimes found in abundance. It seems to grow where sod has been turned and rotted. In Europe it has been collected once in Germany, and twice in England (Cfr. Syn. Phalloids, p. 40), no doubt adventitious. The native home of the species is probably the East (Ceylon and Australia). Cleland and Cheel consider that *Mutinus pentagonus* (Syn. Phalloids, Fig. 28) is the same plant. I examined the specimens at Kew, and I thought the arms were consolidated in one piece. If they separate, then I think it is *Lysurus Mokusin* of China, which differs from *Lysurus Gardneri* in having an angular, fluted stem. Petch in his latest work insisted that the Ceylonese plant and Australian are not the same."

The opinions expressed by the different mycologists who have dealt with *Lysurus Gardneri* from Ceylon and *Lysurus australiensis* from Australia have, of course, been based on drawings and dried specimens, and they are the best possible on that

material. Of recent years, the systematic study of Australian fungi (as distinct from plant pathology) has been vigorously pursued by Dr. J. B. Cleland and Mr. E. Cheel, and thanks to them we are now able to obtain material in a condition more suitable for investigation. In order to decide the identity, or otherwise, of *Lysurus Gardneri* and *Lysurus australiensis*, I sent specimens of the former, in alcohol, to Dr. Cleland, and, in return, Mr. Cheel has very kindly forwarded specimens of the Australian species in formalin. Comparison of the two species shows that they are entirely different. Each has a stalk and five arms, but there the resemblance ends.

Before proceeding to enumerate the differences between the two species named, it may be as well to call attention to a point in the classification of phalloids which has not received the consideration it should. In spite of Fischer's work, there appears to be too great a tendency to base the systematic arrangement of this group on general appearance, and to ignore details which, to some, seem to be more important. We do not group the Dog Rose and the Christmas Rose together, even though to the casual observer their flowers may look very much alike.

In all the phalloids, the gleba is borne on certain definite areas. The main mass of the plant may be regarded as a foundation or scaffolding on which the gleba-bearing regions are situated. The foundation is, in general, composed of chambered tissue, and its surface usually bears close-set convex elevations, which represent the outer walls of the chambers. But the surface underlying the gleba is usually of a different nature, and in many genera it has a characteristic form. This surface may be called the glebiferous layer, from its function, without any necessary implication as to its origin.

It is generally recognised that the shape of the foundation may vary to a considerable extent. A species which usually has five arms may sometimes have four or six. A stalk which generally consists of three layers of chambers might conceivably have only two; Cleland and Cheel suggest such a variation to account for the fact that the wall of the stalk of *Lysurus australiensis* has usually three layers of chambers, while that of the supposed identical *Lysurus Gardneri* has usually only one. In *Aseroë rubra*, the number of arms varies considerably, and while some specimens have narrow simple arms, others may have broader bifid arms owing to the partial fusion of adjacent pairs, and in yet others, all the arms may be fused in pairs to form broad simple arms; stages of this variation may be found on opposite sides of the same specimen. But

what is often not recognised is that the form of the glebiferous layer is practically constant.

In Mutinus, the glebiferous layer consists of a series of close-set slightly-elevated tubercles. *Jansia* is indistinguishable from Mutinus when the head is covered with gleba, but when the gleba is removed, the glebiferous layer (in the type species) is found to bear numerous scattered appendages. Hence *Jansia* is distinguished from Mutinus by the form of the glebiferous layer.

The point I would wish to emphasise is that, in classification, the shape of the glebiferous layer, as well as the general shape of the foundation, should be taken into account. Otherwise, the classification would appear to be in the same category as a classification of flowering plants based on general form and habit.

*Dictyophora* offers a standard example. *Dictyophora irpicina* is of the same general form as *D. phalloidea*. When the cap is covered with gleba, there is nothing evident to indicate that the two are not structurally alike. But when the gleba is removed, the latter is found to have its cap widely reticulated with high, narrow ridges, while the cap of the former has an irregular granular appearance, due to the fact that its glebiferous layer consists of innumerable thin processes and contorted plates, perpendicular to the basal layer and closely packed together. Recognising this difference, Fischer divided *Dictyophora* into two sections, *Reticulati* and *Rugulosi*. Recent writers have gone further and have raised Patouillard's section *Clautriavia*, which is Fischer's *Rugulosi*, to the rank of a genus.

According to the idea outlined above, it is not possible to classify an unknown phalloid accurately, unless the gleba is washed off and the glebiferous layer examined. If this test is applied to *Lysurus australiensis* and *Lysurus Gardneri*, it is immediately clear that the two species are not the same and do not even belong to the same genus. The glebiferous layer of *Lysurus australiensis* consists of smooth broad folds or wrinkles; that of *Lysurus Gardneri* is rough and granular, of the same nature as that of *Clautriavia irpicina*. If *Dictyophora irpicina* is admitted to be generically distinct from *D. phalloidea*, there can be no escape from the conclusion that *Lysurus Gardneri* is generically distinct from *L. australiensis*.

The arm of *Lysurus australiensis* bears a glebiferous layer along the whole of its length. Laterally, this layer extends nearly round the arm, leaving, however, a shallow longitudinal furrow on the outer side free from gleba. It is composed of a series of close-set horizontal wrinkles, each 0.4-0.5 mm.

broad. These wrinkles seldom extend right across the arm, but those which begin at the sides thin out and are finally wedged between others which arise on the inner face. The separate wrinkles have a smooth white rounded outer edge. In longitudinal section, it is seen that these wrinkles are merely folds in the wall of the arm.

The arm of *Lysurus Gardneri* bears its glebiferous layer along the middle two-thirds or three-quarters of its length, the base and apex being free. The layer extends laterally almost completely round the arm, being interrupted by a deep narrow furrow on the outer side. This furrow is usually so narrow that it is hidden by the projection of the gleba over either edge. The glebiferous layer is slightly furrowed transversely, but the whole surface is minutely granular, the granules being the ends of thin processes, or the irregular edges of contorted plates, so closely packed together that their outer ends form a continuous surface. These processes arise from the wall of the tube which forms the arm, and as they are 1.5-2 mm. long, they constitute the greater part of the thickness of the arm. As in *Clautriavia (Dictyophora) irpicina*, the glebiferous layer, after the removal of the gleba, is dark olivaceous, not white.

The above is the fundamental distinction between the two species. *Lysurus australiensis* has a glebiferous layer, similar to the commoner type in phalloids; *Lysurus Gardneri* has a "rugulose" glebiferous layer, practically identical with that of *Clautriavia irpicina*.

The less important points of difference are numerous, and would be sufficient to maintain the two species distinct, if they belonged to the same genus.

The arm of *Lysurus australiensis* is irregularly chambered below, and becomes a simple tube, with a wrinkled wall, above. The wrinkled glebiferous layer is continued from arm to arm round the sinus between the arms. (It may be noted that a continuation of the gleba may mean nothing, because the soft gleba mass may be washed down into an abnormal position, but, on the other hand, the continuation of the glebiferous layer postulates a definite type of structure.) The head of *L. australiensis* may be roughly compared to a star-shaped disc, perforated in the centre, glebiferous along the whole outer edge, the points of which have been turned up. The comparison is not a very accurate one, as it ignores the continuation of the glebiferous tissue across the inner surface of the arms. But it may serve, as it illustrates also the fact that the "head" consists not only of the arms, but also includes the upper edge, or rim, of the tube which constitutes the stalk. This "head"

is separated from the stalk by a distinct constriction, in most cases. This distinction between stalk and head, and the continuation of the glebiferous layer from arm to arm at its base were noted by Fischer: the points are clearly shown in Brittlebank's figure.

The arms of *L. australiensis* are apparently glebiferous to the apex: in section they are obtusely triangular, the rounded apex of the triangle being on the inner side. The stalk in cross section is composed of several layers (usually three) of small chambers.

In *Lysurus Gardneri*, the glebiferous layer is not continued below from arm to arm. The stalk divides at the apex into five small stalks, and these do not bear any glebiferous layer for a length of two to four millimetres. Their structure in this basal region is the usual chambered stalk structure, and in cross section they show two large chambers. Above that region, each arm becomes a simple tube, bearing on its outer wall the closely-packed processes which constitute the glebiferous layer. The diameter of the arm, which is about 3 mm. in the stalk region, is increased to 6 mm. in the glebiferous zone, the increase being due to the length of the processes. Towards the apex, the glebiferous layer ceases, and the arm is continued as a narrow simple tube. In this species, consequently, there is no "head" sharply defined from the stalk: each arm is borne on its own stalk.

In section the arms of *Lysurus Gardneri* are oval, with a narrow groove along the outer face. The groove results from the absence of the glebiferous layer, with its long processes, from a narrow longitudinal band. The stalk is composed, as a rule, of a single layer of chambers, greatly extended longitudinally, but it may have two layers.

The discussion as to the identity of *Lysurus Gardneri* and *Lysurus australiensis* has usually centred on the minor point whether the arms are united or not at the apex. In *Lysurus Gardneri*, each arm is continued as a narrow tube to the apex, where it is united with the other arms, the tube structure being continuous over the apex. This feature is constant in all the fresh specimens examined, and it is clear from the structure that any separation of the arms could only be the result of an accidental fracture. In *Lysurus australiensis*, the arms are said to be usually free at the apex, but specimens are found in which the arms are united. In one of the specimens sent me by Mr. Cheel, one of the arms is subacute and closed at the apex; the remaining four are perforate and truncate at the apex, and one of them bears at the top a short length which, from its expansion upwards, evidently belongs to one of the



other arms. In another specimen, two arms are clearly united, the wrinkled structure being continuous from one to the other. But it is surely misleading to call such a junction a "Membrane"; this one is a tube 1.75 mm. in diameter.

From the specimens submitted to me, I should deduce that in the young state, in the egg, and probably immediately after expansion, *Lysurus australiensis* has one or more arms free and others united in pairs, and that some time after the plant has expanded the junctions break. If the egg were obtained and the plant allowed to expand under a bell glass, this could easily be determined.

Fortunately, the distinction between *Lysurus Gardneri* and *Lysurus australiensis* does not depend on the question whether the arms are united or free, and we are consequently spared the trouble of discussing which characteristic should be attributed to *Lysurus* as a genus. But the case illustrates a point which will always bother the classifiers of phalloids, as long as they have to depend on chance collections of expanded specimens. For a phalloid is one of the most ephemeral of tropical fungi, and the collector who does not gather his specimens in the early morning cannot gain a correct knowledge of their original form.

The question which perennially arises in the study of phalloids is this: Are we to describe a phalloid from specimens which have just expanded and are therefore in the most perfect condition, or from specimens which have been expanded for some hours and have begun to collapse? It is surely incorrect to base classification and discuss affinities on details which only exist in old, broken specimens.

Setting aside *Lysurus* as an unsettled case, we may take *Dictyophora* as an example. When *Dictyophora phalloidea* first expands, its net is rigid and stands out like an old-time crinoline, but in the course of an hour or two, the net collapses into folds, after the manner of a modern (?) petticoat. But there appears to be a general agreement that the net of *Dictyophora* hangs in folds, and it has been suggested that a new species should be founded on Möller's figure, which shows a rigid net. Again, *Simblum periphragmoides* has a subglobose, netted head at the apex of a stout stalk. When first expanded, the head rests on the top of the stalk like a ball on a stick, but, after a few hours, the basal bars of the net weaken and collapse, and the head sits down on the stalk and sags over the edge. The collapsed form has been made a new species. As an extreme example, *Clathrus crispatus* may be cited. This is a large *Clathrus*, 20 cm. diameter, with massive arms and small meshes. Half an hour after expansion, it breaks up spon-

taneously into fragments. Is *Clathrus crispatus* to be described as a heap of fragments? It would appear self-evident that if classification is to be based on the general shape of phalloids, it must be on the perfect shape, immediately after expansion, before they have collapsed or broken.

The type species of the genus *Lysurus*, *L. Mokusin*, appears from the available figures and descriptions to be so different from the other species assigned to *Lysurus*, that it would seem preferable to confine the genus to it alone. From the photograph of *Lysurus borealis* in Lloyd, Myco. Notes, p. 513, it appears clear that that species has wrinkled arms similar to those of *Lysurus australiensis*. From Fischer's description, and Möller's figure as reproduced by Lloyd, *Lysurus Clarazianus* has the same wrinkled arms. Of the remaining species enumerated by Lloyd, *Lysurus Woodii* (MacOwan), *L. Sanctae-catharinae* (Ed. Fischer), and *Lysurus cruciatus*, there does not appear to be any definite information regarding the structure of the arms.

The type species of the genus *Colus* is *Colus hirudinosus* Cav. & Sech. Its short stalk divides above into several stalk-like arms, which support a netted head. Hence Fischer was justified in comparing *Lysurus Gardneri* to a *Colus* in which the apical meshes had disappeared. Its arms appear to be transversely wrinkled.

The genus *Pseudocolus* is attributed, in Saccardo, xxi., to Fischer, but it was apparently established by Lloyd, Phalloids of Australia (1907), p. 18, for the reception of *Colus Rothae* Fischer, *Colus javanicus* Penz., *Colus Garciae* Möll., *Colus fusiformis* Fischer, and *Pseudocolus rugulosus*. These species have a short stalk which bears three arms, united at the apex. It may be noted that unless the genus *Pseudocolus* is confined to species which have only three arms, *Lysurus Gardneri* should, if the general shape of the plant alone is considered, have been included in it; Fischer, indeed, grouped *Colus* (*Lysurus*) *Gardneri* with *Colus javanicus* and *Colus Garciae*. Length of stalk can scarcely be regarded as a generic difference.

*Pseudocolus Rothae* is insufficiently known; its arms are described by Fischer as wrinkled, but Cleland and Cheel state that the species they attribute to this has arms which are alveolar on their inner surface. *Pseudocolus Garciae*, from Möller's figure and description, has coarsely wrinkled arms. *Pseudocolus javanicus* is described and figured by Penzig as having lamellae in groups on the arms. *Pseudocolus fusiformis* and *Pseudocolus rugulosus* have not been adequately described or figured.

On the available evidence, none of the species of the genera

*Lysurus*, *Colus*, and *Pseudocolus*, except *Lysurus Gardneri*, has a glebiferous layer composed of closely-packed processes and plates, such as occurs in *Clautriavia irpicina*. I therefore propose to establish a new genus *Pharus* for *Lysurus Gardneri*, its distinguishing characters being the division of the stalk into arms, and the structure of the glebiferous layer.

*Pharus*, gen. nov. Receptaculum stalked: stalk dividing above into arms which normally unite at the apex: glebiferous layer borne solely on the arms, and consisting of numerous plicate processes and plates, perpendicular to the arm, closely packed together, and presenting a granular outer surface, similar to that of *Clautriavia*.

*Pharus Gardneri* (Berk.). *Lysurus Gardneri* Berk., in Hooker's Lond. Jour. Bot. v. (1846) p. 535 and vi. (1847) p. 512. *Lysurus* (*Desmaturus*) *Gardneri* Schlecht., in Linnaea, 31 (1861-62), p. 180. *Colus Gardneri* (Berk.) Ed. Fischer, Vers. e. Syst. Uebers. p. 77 (1886), and Sacc., Sylloge, vii. p. 21. *Lysurus Gardneri* Berk., of Lloyd, Synopsis of the known Phalloids. Not *Lysurus Gardneri* Berk., of Cleland and Cheel, Notes on Australian Fungi, No. 2, Jour. Proc. Roy. Soc. N.S.W.. xlix. p. 204; li. p. 364.

*Hab.* Ceylon only.

## EXPLANATION OF PLATE V.

Fig.

1. *Pharus Gardneri*, natural size. Specimen with five arms, united at the apex. The gleba has been removed as far as possible, but traces remain between the ends of the processes and give the glebiferous layer a dark appearance.
2. *Pharus Gardneri*, upper part, natural size. Specimen with six arms, the junction of the arms produced into an apical appendage. This abnormality has been met with only once.
3. *Pharus Gardneri*. An arm viewed from the inner side, after removal of the gleba.  $\times 4$ .
4. *Pharus Gardneri*. Cross section of an arm through the glebiferous region.  $\times 4$ . The furrow is on the outer side of the arm.
5. *Pharus Gardneri*. Cross section of the egg, through the region of the arms, slightly enlarged. The separate gleba masses surround the arms almost completely, being interrupted only by the umbilical plates which are united to the arms along the dorsal furrow.

Fig.

6. *Lysurus australiensis*. Copy of Brittlebank's figure in Lloyd (loc. cit.). Note the continuation of the glebi-ferous layer from arm to arm, and the constriction of the stalk (represented by the double line) below the head.
7. *Lysurus australiensis*. The lateral surface of an arm.  $\times 4$ .
8. *Lysurus australiensis*. Cross section of an arm.  $\times 4$ .

## NEW BRITISH FUNGI.

By E. M. Wakefield, F.L.S.

*Hypochnus umbrinus* (Fr.) Quél., Flore Myc. 1888, p. 2.

*Thelephora umbrina* Fr., Elench. Fung. i, 1823, p. 199; non *T. umbrina* A. & S., Consp. Fung. 1805, p. 281; *Corticium umbrinum* Fr., Hym. Eur. 1874, p. 658; *Thelephora biennis* Fr., Hym. Eur. p. 636, non Syst. Myc. i, p. 449; *Hypochnus tristis* Karst. in Soc. pro Faun. et Flor. Fenn. Med. ix, 1883, p. 71; *Hypochnopsis fuscata* Karst., Finl. Basidsv. 1889, p. 443; *Hypochnus fuscatus* Karst. in Sacc. Syll. ix, p. 244; *Tomentella tristis* von Hoehn. & Litsch. in K. Akad. Wiss. Wien, Sitzungsber. cxv, 1906, p. 1572; *Hypochnus sitnensis* Bres. in I. R. Accad. Agiati Atti, iii, 3, 1897, p. 115.

Effused, thick, soft, separable. Hymenium compact, membranaceous, brown with more or less of a vinaceous tint (varying from drab or deep brownish drab to dusky drab or Chaetura drab of Ridgway). Subiculum villose, warm sepia in colour. Hyphae brown, thick-walled, frequently septate, without clamp-connections,  $4-5\mu$  in diameter. Basidia clavate, brownish, with four sterigmata. Spores dark brown, globose or subglobose, coarsely warted,  $7-8\mu$  in diameter or  $6-8\mu \times 6-7\mu$ .

*Hab.* On rotten wood, Escrick, Yorks. Coll. Miss A. Lorrain Smith, Sept. 1918; on fallen twigs, leaves, etc., Weybridge, E.M.W. and A.A.P., Nov. 1918.

Readily distinguished by the dark, compact hymenium, the rather rigid hyphae without clamp-connections, and the