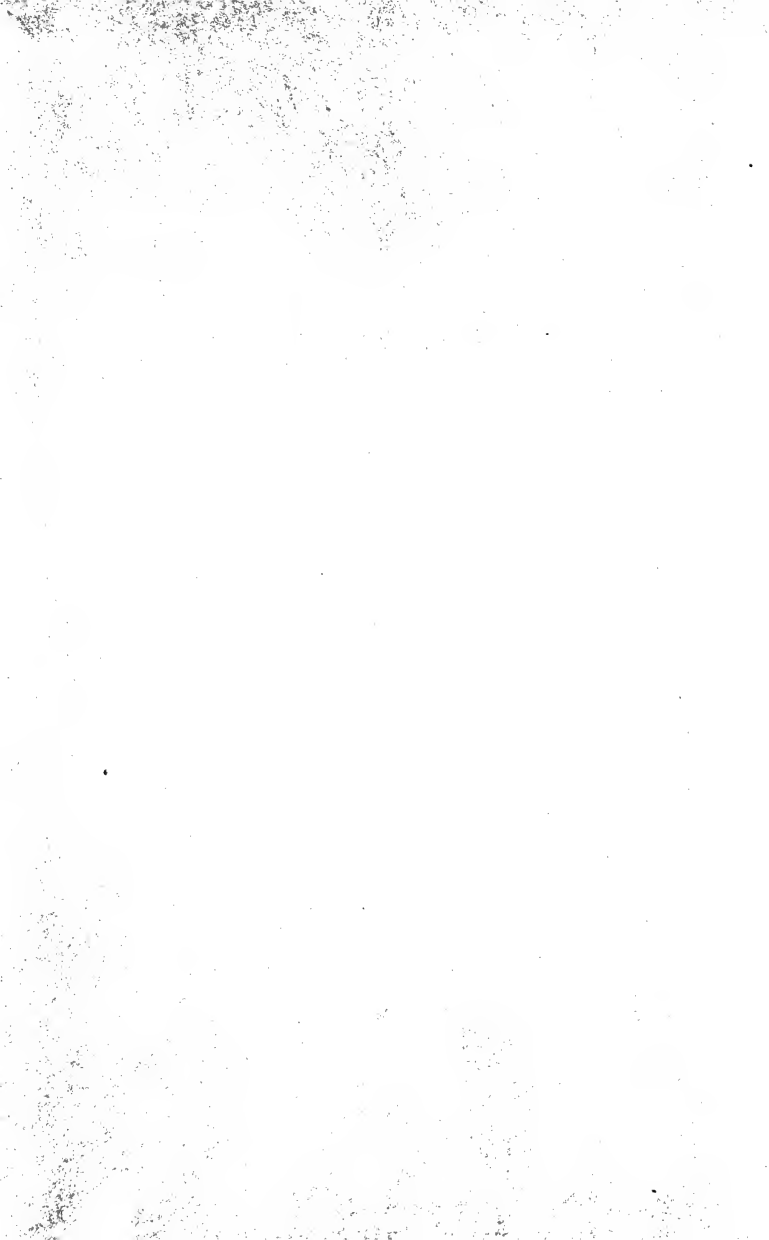


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INDEX

OF THE

Mycological Writings

—OF—

C. G. LLOYD.

VOL. III.

1909-1912.

CINCINNATI, OHIO, U. S. A.

PREFACE.

(Binding is advised in this order.)

Index Vol. III.

Mycological Notes Nos. 32-37.

Mycological Notes, Old Species, Series No. 1.

Mycological Notes, Polyporoid Issue, Nos. 1-3.

Synopsis of the Known Phalloids, 1909.

Synopsis of the Genus Hexagona, 1910.

Synopsis of the Section Microporus, Tabacinus and Funales of the genus Polystictus, 1910.

Synopsis of the Section Ovinus of Polyporus, 1911.

Synopsis of the Stipitate Polyporoids, 1912.

Letters Nos. 25-38.

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ABBREVIATIONS.

The following abbreviations are used in this Index:

M. N.—Mycological Notes.

M. N. Old.—Mycological Notes. Old Species Series.

M. N. Pol.—Mycological Notes. Polyporoid Issue.

Phal.—Synopsis of the Known Phalloids, 1909.

Hex.—Synopsis of the genus Hexagona, 1910.

Mic.—Synopsis of the section Microporus, of the genus Polystictus, 1910.

Tab.—Synopsis of the section Tabacinus, of the genus Polystictus, 1910.

Fun.—Synopsis of the section Funales, of the genus Polystictus, 1910.

Ov.—Synopsis of the section Ovinus, of Polyporus, 1911.

Stip.—Synopsis of the Stipitate Polyporoids, 1912.

Let.—Letters.

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The abbreviations are those used on previous page.

The genera are indexed under the generic name, as published, with the exception of the genera *Polystictus* and *Polyporus*, contained in the Synopsis of the Sections *Microporus*, *Tabacinus*, and *Funales*, Synopsis of *Pelloporus*, and Synopsis of the *Stipitate Polyporoids*. These are indexed under the sectional heads, namely:

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INDEX TO SYNONYMS AND JUGGLED NAMES.

Index of Synonyms, Plants imperfectly described, imperfectly known, or based on imperfect material. Also juggled names.

In our "Synopsis of the Known Phalloids," "Synopsis of the Genus *Hexagona*," and "Synopsis of the Sections of *Polyporus* and *Polystictus*," we have given lists alphabetically of the synonyms in those sections. We have not repeated these synonyms in this index.

It does not follow that all the species included in the following list are invalid species. Some of them are correct in other genera, and are placed here when wrongly classified generically.

Cantharellus Cupressi.....M. N. 497 Corticoides reticulatum.....M. N. Old. 10 Corticium tremellinum var. reticulatum.....M. N. Old. 11 Corynites brevis.....M. N. 424 Cyphella Cupressi.....M. N. 497 Cyathus globosus.....M. N. 455 niveo-tomentosus.....M. N. 455 plicatulus.....M. N. 455 plicatus.....M. N. 441 scutellaris.....M. N. 455 sulcatus.....M. N. 455 Daedalea aulaxina.....Let. 36 flavida.....Let. 36 indica.....Let. 37 Kansensis.....Note, 21, Let. 38 lurida.....Let. 36 splendens.....Let. 36 unicolor var. hydroidea.....M. N. 451 Enslinia Leprieurii.....M. N. Pol. 45 Pocula.....M. N. Pol. 45 Favolus Canadensis.....M. N. Pol. 19 curtipes.....M. N. Pol. 22 Ohiensis.....M. N. Pol. 19 peltatus.....Let. 36 pustulosus.....Let. 37 Rhipidium.....M. N. Pol. 24 striatulus.....M. N. Pol. 20 Taxodii.....M. N. Pol. 22 tener.....Let. 36	Fomes fomentarius var. applanatus. M. N. 469 Palliseri.....Note 8, Let. 32 perpusillus.....Let. 36 ribesius.....M. N. 470 Gloeoporus pusillus.....M. N. Pol. 33 Rhipidium.....M. N. Pol. 24 Hexagona Blumei.....Let. 36 Friesiana.....M. N. Pol. 28 macrotrema.....Let. 37 Molkenboeri.....Let. 36 pulchella.....Let. 36 sericea.....M. N. Pol. 28 vittata.....M. N. Pol. 33 Irpex flavus.....M. N. 450 Laschia crustacea.....Let. 37 spatulatus.....Let. 37 Lentinus Lecomptei.....Note 6, Let. 32 Lenzites Junghuhnii.....Let. 36 vialis.....Note 1, Let. 29 Leotia inflata.....M. N. Old. 4 Merulius affinis.....Let. 37 alveolaris.....M. N. Pol. 19 cucullata.....Let. 37 Cupressi.....M. N. 497 daedaleus.....M. N. Pol. 21 fagineus.....M. N. Old. 2 Mitruľa inflata.....M. N. Old. 4 Panus Hoffmanni.....Note 6, Let. 32 Swainsonii.....Note 6, Let. 32
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Spathularia

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Sphaeria

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 odoratus var. coratophora. M. N. 470
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 vittata Let. 36

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reticulata M. N. Old. 11

Trogia

faginea M. N. Old. 2

ADVERTISEMENTS.

We have not included any advertising in this index, but those interested in the advertising feature will find names of the "authorities" indexed in the separate pamphlets.

MYCOLOGICAL NOTES.

BY C. G. LLOYD.

No. 32.

CINCINNATI, O.

FEBRUARY, 1909.



ELIAS FRIES
(At the age of 80 years)

UNIVERSITY OF CALIFORNIA

JAN 21 1909

ELIAS MAGNUS FRIES

Those who have read after me have perhaps good reason to think that I am not much of a hero-worshiper. But I bow very humbly at the shrine of Elias Fries. We all admire men who accomplish their objects in the world, men who do good and practical work, and Elias Fries, in my opinion, did more effective work in mycology than all others combined, since the days of Persoon. The chief point of excellence in Fries' work was that it was *systematic*. First he learned his subject thoroughly, then he wrote practical books that enabled others to learn it. I am not informed as to other branches of natural history, but I question if any other branch has as complete, as thorough, as accurate a hand-book as the mycologists have in Fries' *Hymenomyces Europaei*.¹

When Fries began his work, Persoon had almost finished his, and the work of Persoon was the foundation on which Fries built. All during his life Fries was the undisputed authority in mycology, and he molded mycological opinion throughout the world. His system of classification, which is a slight modification of Persoon's, has lasted down to our day, and is in general use now. More than one system has been proposed for the purpose of displacing Fries, but with little success, and it is a question if any is, on the whole, superior to that of Fries. I do not claim that Fries' is final, that it is not possible to modify to advantage some of his genera, but I think that Fries' system in the main will not be displaced in our generation. The specific descriptions of Fries are models of accuracy and conciseness, and have been extensively copied and translated. Fries seems to have had the happy faculty of selecting just the right words to characterize his species.

THE LIFE OF FRIES

When I was in Sweden I made inquiries as to the events in the life of Fries, and while I shall not go into minute details, I will summarize some of the leading points.

Fries was born on the 15th day of August, 1794. His father was a dean of the established church of Sweden in a little, remote country district, called Femsjö, and it was there that Elias Fries was born. The elder Fries was a man of liberal education, well fitted to fill a more important post than a remote country parish, but he was assigned there when a young man, there he married and there he passed his life. Elias Fries tells us in one of his books that it was habitual with his father to speak in the Latin language with him, and the thorough familiarity of Elias Fries with Latin was due no doubt to his early training. The elder Fries also instructed his son

¹ When in a recent article I referred to mycological literature as largely composed of errors, inaccuracies and mistakes, I most assuredly did not refer to Fries' *Hymenomyces Europaei*. But the word "accurate," even as referring to Fries' book, is used only relatively as compared to most of the mycological "literature."



ELIAS FRIES
(At the age of 46 years)

(he was an only child) in botany, and it was from finding a specimen of *Hydnum coralloides*, while pursuing natural history studies with his father, that young Fries was first attracted to the study of fungi. As a young man he attended the university at Lund where he took his degree in his twentieth year. Soon after graduation he obtained a minor position with his Alma Mater, that of Docent (1814), then Adjunct, (1819), and in 1828 he was appointed Demonstrator of Botany at the University at Lund. In the meantime he became very much devoted to the study of mycology and a voluminous writer on the subject. When only twenty-seven years of age he began the *Systema Mycologicum*, a work of three volumes, which was finished in 1832, and was a complete account of all the fungi known in those days. Like all young men, Fries was at first ambitious to cover the whole fungus world, but like every one else, as the years rolled by, he contracted his field of study and his next extensive work, *Epicrisis Systematis Mycologici*, 1836-1838, was devoted exclusively to the Hymenomycetes. In 1834 he was appointed Professor of Practical Economics in the University at Upsala, which was then a section of Philosophy. Wahlenberg was at that time the head of the Department of Botany at Upsala.

Owing to the prevalence of cholera in Sweden in 1834, which interrupted means of travel, Fries was unable to reach Upsala until April, 1835. He resided there the remainder of his life, except a temporary residence at Stockholm, during the sessions of the Swedish Parliament ("Riksdag") of which he was for two sessions (1844-5 and 1847-8) a member. Fries succeeded Wahlenberg, and in 1851 was appointed Professor of Botany and Director of the Botanical Museum and of the Botanical Garden, which post he held until his retirement in his sixty-fifth year. During the last thirty years of his life Fries' studies were devoted more exclusively to the Hymenomycetes of Sweden, and principally to the fleshy agarics. He knew the agarics of Sweden as no man ever knew them before, or perhaps will ever learn them again. He was a most persistent and industrious searcher after fleshy fungi. He took long walks and covered much ground, in both the frondose and pine woods, and there is no question but that he met and knew practically all the fleshy agarics that grow in Sweden. But Fries' studies were not only made in the fields but in the literature, and he hunted up all the old illustrations and descriptions in order to get names for his plants. And to crown it all he wrote a complete text-book of the Hymenomycetes of Europe, not only a systematic account of his own observations, but a synopsis of all other literature of the subject. This work he finished on his eightieth birthday, August 15, 1874, the day on which the photograph was taken that we present on the first page of this pamphlet. Fries' Hymenomycetes of Europe remains to this day the only book covering the entire fungus field of Europe.²

² The *Clavis Hymenomycetum*, by Cooke and Quélet, 1878, is a very convenient, condensed synopsis of Fries' book, and *Enchiridion Fungorum*, by Quélet, 1886, was a second edition of it (largely with the names juggled).

FRIES' HERBARIUM

It is an inaccuracy to speak of Fries' herbarium. He made no herbarium. Such plants as are found in his collection appear to me



THE BOTANICAL MUSEUM AT UPSALA.

to be more the result of accident than design. Fries was not a museum-botanist; his studies were made in the fields and woods, and there the plants grew and grow that he described. In the woods of Sweden only are to be found the "types" of Fries. Practically all the plants to be found in Fries' herbarium, of his own collection (and they are very few) were left from his early days at Femsjö. After he went to

Upsala, during the latter forty years of his life, he hardly preserved a single plant. There were quite a number that were collected by his boys at Upsala, chiefly by E. P. Fries, that presumably were passed on by his father, but even as to this we have no certain knowledge. His herbarium is mostly made up of plants that were sent him by his correspondents, by Blytt from Norway, Karsten from Finland, Quélet from France, Kalchbrenner from Hungary, and others. While many of them are Friesian species, there is no evidence that Fries gave them any critical attention, and they have no authentic value excepting in those cases where particular specimens are mentioned in Fries' writings. Like most of the museums of Europe, Fries' herbarium is richer in foreign species than in European. One or two of Berkeley's Ohio plants and some of Schweinitz's species exist *only* in Fries' herbarium, as far as I know.

FRIES' FAMILY

Elias Fries was the father of eight children, four daughters and four sons. The mycological world is only interested in the latter.

Theodore M. Fries, the eldest, is now a hale and hearty elderly man in his seventy-sixth year. He resides at Upsala. Of the four sons of Elias Fries, his eldest is the only one who has devoted his life to botanical studies, and he was a successor of his father in the botanical chair of the university at Upsala. Unfortunately, from a mycological view, he early became interested in lichens, and has chiefly devoted himself to this family. He has written many papers on the subject, and occupies the same exalted position in the lichen world that his father did in the fungus world. In explanation as to why he did not follow in the same field as his father, he tells me that when he began his studies, the microscope was just beginning to be used in the classification of lichens, and he became so interested in the problems that his whole time was taken in the investigation of the questions involved. It is undoubtedly a selfish view to take of it, but as a mycologist I can not but feel sorry that Theodore M. Fries was not early interested in mycology instead of lichenology.

Elias P. Fries, the second son of Elias M. Fries, early gave signs of interest in his father's subject, and there are more specimens to-day in the Friesian herbarium, collected by E. P. Fries at Upsala, than by the remainder of the family. He was evidently an enthusiastic student of the subject, and you will find in Fries' "Monographia" the account of many rare species discovered by his son, E. P. Fries. He died in his twenty-fourth year, and his early death was a severe blow to the hopes of his father. There is every indication that it was the intention of Elias Fries, as his eldest son had taken up the lichens, that his second son should follow in his own chosen field.

J. Otto Fries, the third son, is the only one who did not inherit a taste for natural history study. He is now a citizen of the United States, a civil engineer, residing at Orlando, Florida.

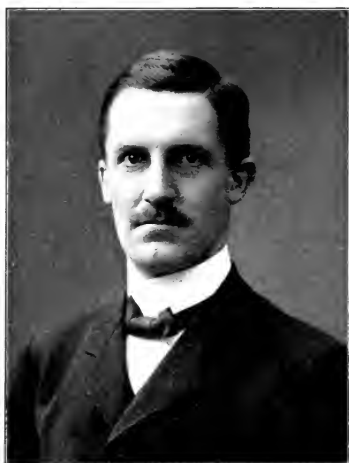
Oscar Robert Fries, the youngest son, was a student of fungi, and as a boy was a frequent companion of his father in his rambles in the



THEODOR MAGNUS FRIES



OSCAR ROBERT FRIES



KLAS ROBERT ELIAS FRIES

woods. The first season I spent in Sweden I learned a number of determinations of agarics that were on the authority of Elias Fries, through his son, Robert. He was always interested in mycology, but was a practicing physician with a large practice, and found little time to devote to the study of science. He was a frequent correspondent of Mr. Romell at Stockholm, to-day the leading mycologist of Sweden. For many years he was located at Göteborg, and published a list of Hymenomycetes of that region. He died very recently (June, 1908).

There are several grandsons of Elias Fries, young men who are interested in botany, and who we hope will finally direct their attention to mycology, and preserve the prestige of the illustrious family name. We are only acquainted with one of them.

Robert E. Fries is a specialist in the phænogamic botany of South America, and has made extensive collections there in the field. At present he is docent of botany and also assistant at the Botanical Garden at Upsala. He has also made an exhaustive study of the Myxomycetes, and has written papers on the Myxomycetes of South America and Sweden. He is the son of Theodor M. Fries. His study of the Myxomycetes began under the late Arthur Lister at London, the acknowledged master of this interesting family. I know very little of this subject myself, but I suspect Robert E. Fries has as good a knowledge of the Myxomycetes as any man in Europe to-day. He is a young man with a promising future before him, and we look for great work from him.

We will close with a *botanical* family tree of Elias Magnus Fries.

ELIAS MAGNUS FRIES (=Fr.)

professor *1794 †1878

THEODOR MAGNUS FRIES (=Th. Fr.)

professor *1832 (lichenology)

ELIAS PETRUS FRIES (=E. Fr. jr.)

doctor philos. *1834 †1858 (mykology)

OSCAR ROBERT FRIES (=R. Fr.)

doctor medic. *1840 †1908 (mykology)

} SONS of ELIAS M. FRIES.

KLAS ROBERT ELIAS FRIES (=R. E. Fr.)

botanices docens *1876 (Flora of South America)

THORE CHRISTIAN ELIAS FRIES (=Th. Fr. jr.)

student *1886 (lichenology)

} SONS of
THEODOR M.
FRIES.

ELIAS ARNE FRIES

student *1887 (mykology)

} SON of OSCAR R. FRIES.

OUR PHOTOGRAPHS

The photograph on our first page is the familiar picture of Elias Fries, taken on his eightieth birthday, the day he finished the *Hymenomyces Europaei*. The second picture is a less familiar one, of Elias Fries at the age of forty-six. It was recently published in *Acta Horti Bergiani*, Bd. III, and is taken from an oil painting.

Our photographs of Theodor M. Fries, Oscar Robert Fries, and Robert E. Fries need no explanation.

The photograph on page 417 is of particular interest to me, as is everything in connection with the life of Elias Fries. The Botanical Museum at Upsala is a large, rectangular building with an inner court. During Fries' life the Director of the Museum lived in the upper story of the building, and the photograph shows the door of the inner court, giving access to his living rooms. Through this door Fries passed daily during his residence there from 1851 to 1862.



Elias Magnus Fries died on the eighth day of February, 1878. He is buried in a cemetery adjoining the University of Upsala, and our photograph is that of the slab of granite marking his final resting place.

THE AMERICAN SPECIMENS IN THE HERBARIUM OF FRIES.

In the herbarium of Elias Fries at Upsala there are a number of historical specimens from America, some of them I believe not to be found elsewhere.

SCHWEINITZ'S SPECIMENS.—It is quite evident from both the writings of Fries and Schweinitz, that the latter sent Fries quite a complete set of his species from America. They are commented upon in Fries' Elenchus, and included in his *Epicrisis*. I hoped to find them at Upsala, but I believe that not one of these original specimens has been preserved. This is unfortunate, for some of them are missing (or very poor) in the Schweinitz herbarium at Philadelphia, and I had hoped to learn more concerning them at Upsala.

There are a few of Schweinitz's species with names pasted on that were evidently cut from a list which I supposed at first were in Schweinitz's writing. They are indorsed, however, in the handwriting of Theodor Fries "Schwaegrichen Misit," which I at first thought was an error. I took the matter up with Professor Fries and he looked up his father's correspondence and convinced me that these specimens did come from Schwaegrichen, who was a German professor at the University of Bonn. The names on the specimens appear to be in the same writing as a letter from Schwaegrichen, who wrote that he sent a package of specimens from America, but does not mention that they are from Schweinitz. They are all Schweinitzian species, however, and are undoubtedly authentic, but I believe are probably a division of specimens sent by Schweinitz to Schwaegrichen. I hope some day to look up the herbarium of Schwaegrichen if it exists, and may learn more from it concerning the species of Schweinitz. The following are all the undoubtedly authentic specimens from Schweinitz to be found at Upsala. The notes concerning them are my own views.

Merulius brassicaefolius, the same I think as *papyraceus* of Europe—*Merulius confluentis*, for me it is *Merulius Corium*—*Merulius incarnatus*, nice specimen of well known plant of America, never collected in Europe. It is the same as Peck discovered was a "new species" and called *Merulius rubellus*.

Polyporus cervinus. This is of much interest, being the only good specimen that exists I think.³ Recently Bresadola has published that *cervinus* is the same as *biformis*, and he takes it as the name for *biformis* notwithstanding that there is no question that *biformis* is the name used for the plant by Fries, Berkeley, and all American authors.⁴ I feel well acquainted with *biformis* as I have collected it many times, have seen specimens in the museums and have received it often from my correspondents, and I should never have referred the Schweinitzian specimen of *cervinus* at Upsala to *biformis*. I do not know it and it is surely a rare plant in the United States. I can not say that it should not be referred as an unusual, abnormal form of *biformis*, but I do not believe even that.

Polyporus scutellatus, from Curtis "ex. herb Schweinitz." It is a well known species—*Polyporus spissus*. The best specimen I have seen of this *Poria*. It is a peculiar American species with a number of aliases, discovered to be a "new species" on various occasions, often described, but never correctly but once and that was by Peck.—*Polyporus superficialis*, surely the same as *Poria viticola* as stated by Fries, if not a species of Europe.—*Polyporus Tulipiferus*, too poor for comments.—*Polyporus viticola*, good specimens.

³As I write this article at Paris from my notes made at Upsala, I do not have with me my notes made in the herbarium of Schweinitz nor of Berkeley, and must trust to my memory, which I think is clear as to these points: that *Polyporus cervinus* is not found at Kew, and only very poor specimens from which nothing can be told at Philadelphia. The specimen at Upsala is in perfect condition.

⁴As a matter of truth the original meanings of *biformis* and *pergamenus* have been transposed since Klotzsch published them. It is a long story and I shall not dwell on it now, for it is of no interest except from an historical standpoint (or perhaps to the name-jugglers). The names *biformis* and *pergamenus* and the plants that bear them are too well established to ever be changed.

Porothelium lacerum, a little fragment labeled originally *Boletus Pezizoides*. As far as I have been able to learn thus far there is but one species of *Porothelium* in Europe or America which I would call *fimbriatum*.

BERKELEY'S SPECIES.—There are a number of American species of Berkeley's naming in the herbarium of Fries, received mostly from Berkeley, Curtis and Lenormand. At first I was very much puzzled to find many American plants with a *French* label, a handwriting unfamiliar to me, mostly specimens from "Caroline-de-Sud" and indorsed in Th. Fries' writing "Lenormand misit." I had never heard of any such American collector as "Lenormand." Th. Fries tells me that Lenormand resided at Vire, in Normandy, France, when he (Th. Fries) on one occasion visited him.⁵ He was not a mycologist but an algologist, and never collected in America. These specimens, though the labels were written by Lenormand, undoubtedly came from Curtis, and I think must have been received by Fries after the publication of *Novae Symbolae*.

Berkeley's own sendings to Fries from America were mostly from Lea, Ohio, and were of special interest to me as the original specimens collected in my own neighborhood. There is a better representation of Lea's Ohio Plants at Upsala than at Kew, and one specimen at least that is not at Kew.

Curtis sent Fries many specimens, mostly though those that have been named by Berkeley. In addition there are a few specimens from Sprague and some from Farlow.

As practically all of Berkeley's American species are known and mostly well represented at Kew and in the Curtis' herbarium at Cambridge, Mass., I will only note here those I found at Upsala that were novelties to me.

Polyporus dryophilus.—I was indeed glad to find a good type specimen at Upsala. There is none at Kew or Paris, and I believe this is the only one in existence. It came originally from Lea. Morgan has attempted to fit plants to Berkeley's determination of Lea's specimens, collected at Cincinnati. Morgan referred a collection to *Polyporus dryophilus* and this collection is the one on which, in America, we have based our opinions of this species. As I recall Morgan's plant, it is not the same as the type at Upsala. It is needless to say that Fries' (*Novae Symbolae*) reference of this plant "Ravenel, Mexico," is an error. It should be "Lea, Ohio."

Polyporus Sartwellii.—I do not remember seeing this before. It appears to me to be close to a *rigid* *Daedalea unicolor* except that the pores are polyporoid.

Daedalea pallido-fulva.—I have seen this plant before at Kew. I can not agree with its reference to synonymy as originally referred by Bresadola (and copied by Murrill). It was correctly interpreted by Morgan, I think. I am acquainted with the plant in its type locality, and it is a good species, though Berkeley has another name for it.

Polyporus galactinus.—There is a better specimen at Upsala than at Kew, but I have often collected the fresh plant at Cincinnati. Dried specimens of the plant are always poor. Its relations are entirely with the *Anodermei Carnosi* of Fries, not with the *Hispidi* as stated by Fries, nor with *Spongiosi*, as placed by Murrill.

AMERICAN SPECIES NAMED BY FRIES.—These are very few indeed. Most of the American plants that reached Fries had been previously named by Berkeley. The following are all that are given in *Novae Symbolae*.

Polyporus spectabilis.—There is a good specimen at Upsala. I agree with Cooke. To me it is a mesopodal *Polyporus Schweinitzii*.

Polyporus poripes.—There is no specimen at Upsala. I had expected to find one, as Mr. Murrill visited Upsala and then came home and announced that *flavovirens* was a synonym for *poripes*. I think he got his idea from Ravenel's *exsiccata*, hardly a just way of arriving at Fries species, particularly as Fries describes *poripes* as having white pores, and every one knows that the pores of *flavovirens* are yellow. If I wished to guess at the identity of *poripes*, as Mr. Murrill evidently has done, I should guess the same plant that Underwood described to be a "new species," (*Polyporus retipes*).

⁵ I am told by Monsieur Hariot that the herbarium of Lenormand is now at the Faculté des Sciences de Caén, France.

Polyporus scruposus.—I did not find the type, but I believe, as generally held, that *scruposus* is a (marked) form of *gilvus*.

Polyporus Berkeleyi.—I found no type, but there is no question as to the species. The co-type (under the name of *Polyporus Anax*) is found in Berkeley's herbarium.

Polyporus Ravenelii.—I found no type.

Polyporus barbatulus.—I find no type, but a specimen from Lenormand labeled "*Polyporus barbatulus* Fr. (non-*Hexagona sericea*) ad Juniper, Carolincede-Sud." It is our well known plant on cedar in the southern states. I think it is "*Hexagona sericea*," and I do not know (except habitat) the difference between it and the common *Polystictus pinsitus* of the tropics.

Trametes lactea.—I did not find the type, but I think it is well known under many forms and many names.

Trametes zebrina.—No type found.

PHALLOIDS IN THE MUSEUM AT UPSALA.

In alcohol.—There is a very abundant collection made by E. Nyman in Java a number of years ago, but mostly unlabeled. The phalloids of Java are well known now, due to the work of Penzig and Dr. Bernard. The following species are at Upsala:

Phallus indusiatus, twelve collections, ten of the usual form with broad pilei and two with slender pilei.

Phallus irpicoides (or *Phallus merulinus*, a better name for it), two collections. This is a frequent species in Java.

Simblum periphragmoides, five collections. I have heretofore held that the species so frequent in the East Indies which was called *Simblum gracile* was distinct in its much more slender form than the original specimen of *Simblum periphragmoides* from Mauritius. These specimens at Upsala, however, are

some of them obese, and so evidently the same as the original specimen at Kew that I will have to recede from my former view, and as Professor Fischer does, consider them one species.

Mutinus bambusinus, one collection.

Clathrus Treubei, three collections, two old, with the arms broken apart, as shown in *Myc. Notes*, p. 382, fig. 212.

Jansia rugosa, one collection.

There is also at Upsala in alcohol, a specimen of *Aseroe rubra* from New Zealand, collected by G. von Scheele; *Clathrus cancellatus* from Montpellier, France, and ten collections of *Phallus impudicus* by various collectors in Sweden.

Dried specimens.—*Aseroe rubra* from New Zealand, Berggren, and a drawing from the fresh specimens; *Clathrus cancellatus*, Tirol, Bresadola; *Clathrus pusillus*, "New Holland, ex. Berk.;" *Mutinus elegans* from Curtis, and labeled "*Corynites brevis*; which was a manuscript name for it; *Clathrus cibarius*, New Zealand, Berggren; *Lysurus Gardneri*, co-types, ex. Berkeley; *Macowanites agaricinus*, co-type from Kalchbrenner. (Not usually classed in the phalloids, but to my mind closely related); *Mutinus caninus*, ex. Quelét, France; *Mutinus* (unnamed) Guadeloupe, L'Herminier. (Something curious but unnamed, and I think this specimen unnamable); *Phallus impudicus* Fautrey, France; *Clathrus guttatus*, no specimen but the type drawing from Örsted on which the species was based.

A DIFFERENCE OF OPINION.—Monsieur Patouillard a publié depuis longtemps et il me l'a d'ailleurs encore confirmé personnellement l'année dernière que le *Polyporus lucidus* a des spores verruqueuses. Atkinson prétend qu'il est victime d'une erreur d'optique et que les spores de ce champignon sont lisses. Je pense que Monsieur Patouillard sera heureux d'apprendre ce qu'Atkinson pense de son opinion sur ce point d'observation microscopique.

MYCOLOGICAL NOTES.

BY C. G. LLOYD.

No. 33.

CINCINNATI, O.

AUGUST, 1909.



PAUL HENNINGS.

UNIVERSITY OF CALIFORNIA

AT LOS ANGELES

JAN 20 1912

NOTES OF TRAVEL. BERLIN.

Since my previous visit to Berlin there has been quite a change in the botanical surroundings. The collection is now installed in the new botanical museum, which is the largest and finest in the world. While I like the plan at Kew better, there is no denying the fact that from an architectural point of view the Germans have a much better and more expensive building. It is divided into a number of separate rooms and each member of the force has his own private room in which to work. I do not know how many rooms there are, but some idea may be obtained from the fact that the room in which I worked was Number 207. While the present working force at Berlin is unquestionably the largest of any institution, they have evidently provided for all possible future growth.

From a mycological point of view the museum at Berlin is not as important as others in Europe, for it is relatively a recent collection, principally the work of the late Dr. Hennings. Of historical collections they have the plants of Klotzsch and Winters¹, and also many of Link's specimens. Also I found there some of the collections of Beyrich from Brazil on which Fries based a number of early species, and the Brazilian phalloids of Alfred Moeller, in alcohol.

At the present writing there has been no successor appointed to the position held by Dr. Hennings, who died last October, nor do I know where they will find in Germany a good man to take his place. While the Germans have forged to the front in Phænogamic botany, and to-day lead the world in this department, systematic mycology in Germany, as it is in the most of Europe, except France, is in a very languishing condition.

PAUL HENNINGS.

The photograph that we present on our first page, of the late Dr. Paul Hennings, was taken during the later years of his life and well presents him as I knew him.

He was born in 1841, and died October 14, 1908. It was only in comparatively recent years that Dr. Hennings became prominent in the mycological world, for he took up the subject late in life (when he was forty-six years old) and published his introductory paper after he was fifty years of age. Previously he had been interested in botany in general, and museum work in particular, and was engaged in arranging the museum at Kiel when he made the acquaintance of Professor Eichler, and this acquaintance led to his studies in mycology. Shortly after Eichler came to Berlin (in 1878) as Director of the Botanical Gardens and Museums, he appointed Dr. Hennings as assistant in the gardens and museum. I judge that Dr. Hennings became a mycologist through force of circumstances. At about that time the Germans were beginning to take the lead in botanical mat-

¹In Winters' herbarium are found many of Kalchbrenner's namings (or mostly misnamings, to be accurate).

ters, and collections of plants began to arrive from all the German colonies of the world. Naturally a great many fungi were sent in and there was no one to work them up. Dr. Hennings, with very little preliminary study in this line, undertook the work. He had no instructor and a very scanty herbarium of named specimens, but with that persistent application that is characteristic of the German student, he devoted himself to the work until he finally got a good grasp of it.

It was a fortunate thing that Dr. Hennings was wise in the earlier days of his fungus work in sending the specimens in the herbarium to Bresadola and having them gone over critically and the names corrected. The original collection was largely that of Winters, and Winters' collection was largely named by Kalchbrenner, and Kalchbrenner's determinations were almost all wrong. Had Dr. Hennings attempted to learn mycology on the basis of Kalchbrenner's determinations he would have made disastrous work of it. I do not believe they appreciate, even at Berlin, how much they are indebted to Bresadola for the correctness of most of Dr. Hennings' determinations.

Dr. Hennings took the collection of fungi at Berlin when it consisted of only a relatively few specimens of Winters, Link and Klotzsch, and he increased it many fold until now I think it is perhaps the third or fourth largest collection in Europe. He arranged and labeled the many specimens that reached Berlin from foreign countries, and in addition he was an industrious collector of the fungi around Berlin. In no other museum of Europe have I found as good and as recent collections of the local fungi as that made by Dr. Hennings. And he deserves great credit for it, for the collection was made under very discouraging circumstances. I should as soon think of hunting for mushrooms on Broadway as fungi in the woods around Berlin. The Germans are much too thrifty a people to suit me as a mycologist. They keep their woods too clean, and the poor fungi have a hard time trying to find a little dead wood lying about on which to grow.

Dr. Hennings' work was largely the publication of "new species," for it is in this manner that museums are built up. A large number of "good things" came into his hands, for they were largely from unexplored regions (Africa, New Guinea, etc.) and the mycology of such portions of the world is as yet practically untouched. In proportion to its size I think the museum at Berlin has as many novelties as any museum in which I have worked.

But it was not in the herbarium proper that Dr. Hennings did his best work. He was by nature and training a *museum man*, and in the "show department" of the botanical museum at Berlin is the largest and finest exhibition of fungi for popular instruction that I have ever seen, and Dr. Hennings made and arranged it.

Personally Dr. Hennings was a most charming man, and students visiting his collection were always welcomed and given every attention and facility for work. He was very kind to me on my first visit to Berlin, and I missed him greatly during my recent stay.

OUR LAW MAKERS.

As long as there are botanical institutions with "axes to grind," and as long as there are men who like to pose as authorities and make "laws" or "rules," as they call them, for others, so long will we have our Botanical "law makers." However, they have about the same power to enforce these laws as have stage policemen, and the whole subject is very much on the order of opera bouffe.

The botanical "law maker" is a very familiar, but at present a somewhat discredited type in America. We have in America (unfortunately) two factions or rival cliques of botanists that love each other as do the French and Germans. One faction has been very busy for the past eight or ten years making their "laws" and scolding everybody who did not approve of them. They have been exceedingly and perniciously active. After they had carried matters with a high hand in America for a number of years, they thought they would work the same plan on a more extended scale. So they went in full force to Vienna. But the Germans had their own "axes to grind," and when they had finished our American law makers were the worst defeated crowd that ever got beaten at their own game. They did have strength enough left to whip up a few stragglers at Philadelphia and "secede," but I think they are heartily sick of the law-making business. It is to be hoped, and to a degree expected, that now American botany will have a little much needed rest on that subject from this quarter.

But the other faction is now trying the same plan and methods and has appointed an agent as their chief steerer and wire puller. He probably is of the opinion that he is directing things, but botanical laws are always cut and dried affairs and the men with axes rarely show their hands. Some one is necessarily singled out to turn the grindstone, but it is to be observed that the other two American members decline to be used for that purpose.

Our trouble in America is purely an American quarrel, and, like the Kilkenny cats, we should be left to fight it out among ourselves, without involving the Europeans.

But that is not the plan. In order to make it appear that there is an international demand for "laws" for nomenclature of cryptograms, a few prominent men in European mycology, such as Bresadola, Patouillard, and Masee, have been appointed as a committee to formulate these "laws." These men are mycologists. They are interested in their own work and are too much engaged to waste their time making "laws" either to regulate nomenclature or to regulate the wind, one of which is just as practicable as the other. The use of their names, in one instance at least, and I suspect in all, was unauthorized, and not one of the three, I am told, will have anything to

do with it. While I am not authoritatively informed as to any of the others, I doubt if there is any mycologist of standing in Europe or America either who really thinks that anything but a row is ever accomplished by "laws" in Botany. The last circular (No. 5) that was issued by the agitation committee whose object is to make "laws," complained of a general apathy on the subject. The entire circular is a pitiful appeal for somebody to take an interest in it. Botanists in general are weary of the never ending and useless "law-making," and at the present writing the prospects are that the next "International Law Congress" will be an international fizzle. As a Frenchman would say, "Tant mieux."

A SUGGESTION.—Why would it not be a good idea to put the "name of the namer" after geographical names as well as botanical names. Some ambiguity might be avoided by it. Thus, Saccardo would not have referred *Fomes superpositus* to "New England, Amer. bor." if there had been added to the Australian New England the name of some pioneer Australian explorer. Nor the South African *Broomeia congregata* to "Albany, Amer. Bor." if the South African Albany had attached to it the name of some celebrated lion hunter.

STEREUM VERSICOLOR.—We all know the plant called, in American mycology, *Stereum versicolor*. It was so called by Berkeley and also by Ellis. Professor Burt told me he had not found the type which was collected by Swartz in Jamaica and published in 1788. He calls the plant *Stereum fasciatum*, Schweinitz. The type of *Stereum versicolor* is at the British Museum, but is not our American plant. It has a smooth, striated pileus, not tomentose as our plant. I think we shall have to call our plant *Stereum fasciatum*. It probably has a European name, however, as it grows in Northern Europe.

PROFESSOR HARD'S BOOK.

I presume the mycologists of the United States are now mostly familiar with Professor M. E. Hard's book, "Mushrooms, edible and otherwise." It was probably issued last year, but as I (in Europe) am not in touch with matters mycological in America, I only learned a few weeks ago that the book was out, and sent for a copy. I can not say that I was surprised when I received it to find that we at last have a good, popular work on common fungi, as I had seen the manuscript and knew it was going to be a good book if the printers did their part. I think they have done very well.

The important feature of Professor Hard's book is that it is practical. The beginner, the student, can take the book and go into the fields and woods and identify a large part of the fungi he finds. It will be a constant source of inspiration to the woods lover to have a book in which he can look up the pictures and get some idea of the curious growths he meets on every hand. Twelve or fifteen years ago when I began work on the subject there was nothing of the kind in America. All that we had were Peck's Reports, of very little serv-

ice as they were largely devoted to "new species," and Morgan's papers, of which the Agaric portion at least was made up by adapting Fries' descriptions to Berkeley's determinations of dried specimens. It was then a matter of the greatest difficulty to get names for our commonest plants. With the help of Hard's book any one ought to work out the usual fungi that he meets. I believe that the book will do more to popularize mycology in America than any work that was ever issued. It would hardly be fair to contrast Hard's book with those that have gone before, as he has had the advantage of the work done by others, and has gotten many things right that he would have gotten wrong a few years ago. Professor Hard was also wise to delay publishing his work until he had met and learned the most of the common plants. Atkinson's book, a few years ago, which was the first step in the right direction, was an immature production. The author had not learned a great deal of his subject when he went into print and the result was a fragmentary account, good as far as it went, but it did not go very far. Hard's book will supply much of this deficiency.

As to the question of the accuracy of the names employed, while there is much yet to be learned of the history of American plants, Hard's book well represents the present knowledge. It will be many years before the ultimate truth as to many American plants is worked out. We are particularly glad to note that Professor Hard has not resorted to any cheap process of name juggling, but has used the names in common use.

This book is a practical demonstration of the value of photography in mycology, a fact, however, that was clearly demonstrated by Atkinson's book. It is an evidence of the practical side of the American character that we have adopted an easy and practical way of illustrating our fungi, while the old world lags behind. There is not in Europe to-day a single, popular book on mycology as well and as clearly illustrated as Hard's book. As our American plants are nearly all the same as those of Europe, to any one in Europe studying fungi this book will be found of more service than any one popular book they now have.

The Gastromycetes of Hard's book are up to date, accurately and correctly named.¹ It is the first connected and well illustrated account that we have of our American puff balls. All the common species are well represented, and in future there will be no reason why any one

¹The few errors that occur are mostly in the advertisements. Thus "Roth" for Rostkovius; *Lycoperdon acuminatum* "Bosc;" *Lycoperdon pusillum* "Fr." As Professor Hard inserts advertisements in accordance with the fetish custom in order to make the book look "scientific," and has copied them from other books without knowing anything about their meaning, he naturally gets more or less of them incorrect. As the custom is both senseless and useless when it is employed in this way (and it is the usual way that it is employed) it does not matter much whether they are right or wrong. As long as he goes through the form of writing some personal name after his plant names to make a show of learning, it is immaterial whether he writes after *Lycoperdon cruciatum* "Roth" or "Ross" or "Rostafinska" or "Roussel" or "Rostkovius." They all have the same meaning for Mr. Hard and the most of his readers. Some of the mistakes he makes in attempting to follow this fetish custom are highly amusing. Thus, "Moy" I presume was some Chinese writer. Montagne who spent his life seeking glory along the usual "new species" route, might be chagrined to find himself referred to as "Mr. Montgomery." Such is fame!

should have any trouble in determining these plants in America. One serious mistake only occurs in this section. The photograph used to illustrate *Nidularia pisiformis* has also (the lower plant) a photograph of *Nidula candida*, which should have been cut off as it has no resemblance to *Nidularia pisiformis*. We might go through the work and pick out other mistakes, but there is so much that is good in the work it would be in poor taste to harp on the little that is bad.

We congratulate professor Hard on his book, and American mycology in having such a work. Every man interested in fungi should have a copy, whether he lives in America or Europe.

HOW SPHAEROBOLUS THROWS ITS PERIDIOLE.

At the time I wrote my account of *Sphaerobolus stellatus* I had never closely observed the fresh plant. There has always been a tradition that the plant ejects its peridiole with force. There is no

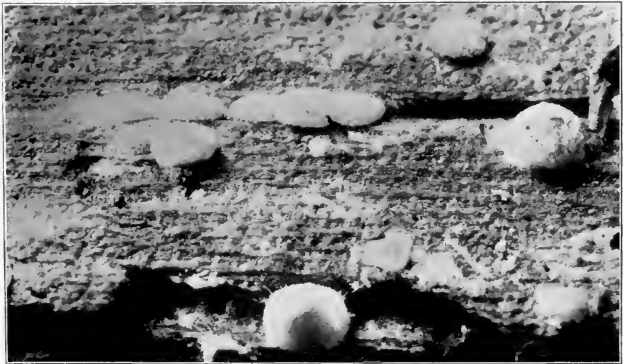


Fig 245 (X 6).

Sphaerobolus stellatus at an early stage.

trouble in tracing this tradition back two hundred years to Micheli, who pictures a plant ejecting its peridiole like a cannon ball from a mortar. As it is evident that some of our modern pictures have been made up from Micheli, I suspected that the idea was derived from this source. I am glad to be able to say, however, that the essentials are true.

Sphaerobolus stellatus (which, in my opinion, is the only species

that exists with us) is not a common plant. I found it rarely the past season in Sweden on pine boards. It grows caespitose, the white mycelium spreading over the rotten wood. The young plant is partly imbedded and is at first white, and covered with this mycelial layer. A section at this stage shows the young peridiole in the center (white, 750 mic.), surrounded by two distinct, yellowish peridia, the inner white (60 mic.), the outer yellow (120 mic.). Both of these peridia are composed of large, globose cells (parenchymatous tissue)² and are imbedded in the white, gelatinous, mycelial layer (composed of filamentous tissue). As the plant develops, it emerges from the mycelial (gelatinous layer), as shown in Fig. 245, where several young plants are shown, the lower one fully emerged. At this stage the outer perid-

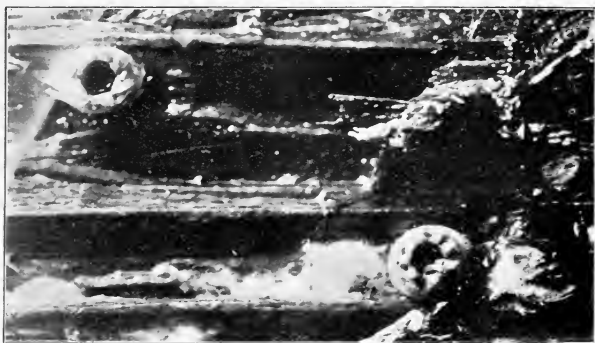


Fig. 246 (X 6).

Sphaerobolus stellatus before the ejection of the peridiole.

ium chiefly shows, and as this peridium is yellow, the plant is usually described as yellow.

The next stage of development (Fig. 246) both peridia open at the top, exposing the reddish brown peridiole. This opening takes place gradually. If a section is now made, the peridia are found to be cup-shaped, the inner white, nesting in the outer yellow. These two peridia are united at the top and break irregularly, as shown in our Fig. 246. There are no regular, stellate lobes, as usually shown in illustrations which are copied from old pictures. At length the inner peridium suddenly turns out and ejects the peridiole with some force. It is said to be accompanied by a slight noise. I can not vouch for that. But the peridiole is thrown from one to five inches, depend-

²I could not note that there was any material difference in the cellular structure of these peridia as shown in the usual illustration.

ing on the vigor of the plant. This sudden inversion of the inner peridium is evidently a mechanical process. I do not exactly understand it, but think it is due to the thinning of the upper walls of the inner peridium and a contraction at the opening. After the ejection of the peridiole the inner peridium, which is thin and white, soon dries up and disappears, hence is not seen on dried specimens.



Fig. 247 (X 6).

Sphaerobolus stellatus showing two plants that have just ejected the peridioles.

We think our photographs of the plant at the various stages will make the subject plain. They are all magnified six diameters, as the plant is not much larger than a mustard seed. In our last figure (247) two plants are shown that have just thrown out the peridioles.

DURAND'S PAPER ON GEOGLOSSACEAE.

What impresses me as being a most thorough paper on the Geoglossums and allied plants of North America appeared in a German periodical recently. We have all known that Professor Durand has been at work on the Discomycetes for a number of years, and this is the first important result of the work. We trust he will publish the remainder of the field in the same exhaustive manner. Professor Durand has studied the American specimens of all the principal museums, both American and European, as well as having done much field work. We now have a knowledge of what species occur with us, where they occur, and their relative frequency or rarity, something that we did not have before. We are only sorry that it is not in a more accessible form, for there are many collectors in America

who observe these curious plants and have no way of studying them. Professor Durand finds the following species in the United States: *Mitruia* 6, *Spathularia* 2, *Leotia* 3, *Vibrissea* 2, *Apostemidium* 2, *Cudonia* 3, *Geoglossum* 24. The latter genus he divides into five small genera. The old genera are divided nowadays by a process of division like the multiplication of bacteria. It has the advantage from a "systematic" point of view that there is no limit to it, nor to the new combinations that can be made in this manner. Several have tinkered with the genus *Geoglossum*: Saccardo, Masee, Boudier, Durand, and others. The only thing common to their work is the uniform diversity of the results.

As to specific names, Professor Durand is an earnest follower after "priority." The German edict has gone forth that species have to conform to priority, but genera do not. The result is a reversal of many familiar, specific names, and the installation of others of much less merit. Sometimes this automatic process produces most grotesque results. For instance, we are commanded to call the common *yellow* *Geoglossum*, which is always *yellow*, *Geoglossum rufum*. "Rufum" is a word from one of the dead languages, meaning red. Professor Durand names the *Geoglossum* "rufum," and then tells us "it is easily known by the *yellow* color of every part." He would probably have more regard for the fitness of things if he were naming a yellow dog.¹

There is one feature of Professor Durand's paper that is an eloquent testimony to his thorough, complete knowledge of the subject. After working over hundreds of specimens of *Geoglossums* he finds only *nine* new species. It is usually a safe rule to judge of the knowledge of a man who works in an old field by an inverse proportion to the relative number of "new species" he finds. The fewer old ones he knows, the more new ones he always finds.

Professor Durand's work is a credit to American mycology and will always be the authority on these plants. We wish there were other groups worked up in the same manner. One such paper as Durand issues is worth more than the lifetime work of the average hit-and-miss "new species" exploiter.

FIGURE X 6.

We find that a most convenient way to illustrate small objects or details, such as pores, etc., is to photograph them (enlarged) direct. We have a lens that makes a magnification of about six diameters. We have taken many photographs with this enlargement, and many figures of this nature will appear in future issues. We shall mark these figures X6, and think the matter will be understood without further explanation.

¹In Paris "Black" is a common name for a dog, and it does not make much difference what his color is. I suppose some Frenchman who knew a little English had a black dog some time that he called "Black." It seems to be a good name for a dog, at least it is largely used in Paris. The French may name their dogs in this way if they wish, but I do not believe it is the correct principle to apply to the naming of plants.

REDISCOVERY OF BOVISTELLA PALUDOSA.

Sixty odd years ago L veill  collected in the Sphagnum moss at Malesherbes, France, a puff ball (*Bovistella paludosa*, cfr. Myc. Notes, p. 280). One specimen is in the museum at Paris, and another of this same collection at Kew. These two specimens are all there are in the museums, and it has never reached me from any of my correspondents. It is surely a very rare plant, or at least a rarely collected plant.

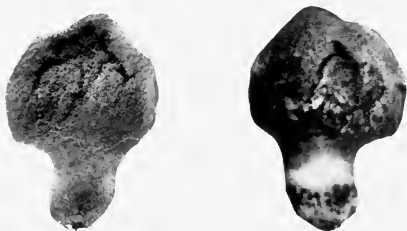


Fig. 248.

Bovistella paludosa.

During the past season Mr. Thomas Gibbs collected this rare species "on the moss on the Cleveland Hills, Yorkshire," England. A specimen was sent in by Carleton Rea. It proved to be the same as L veill 's plant. I was glad to be able to cut it open, for neither of the type specimens is cut, and we did not know the nature of its sterile base. It has a *compact* sterile base of *small* cells, and is the only puff ball in Europe with such a sterile base, excepting *Lycoperdon polymorphum*. Indeed, when I first saw the plant cut open I thought it was *Lycoperdon polymorphum*.

An error has been made in our account of *Bovistella paludosa* as to the capillitium. In the cut specimen we readily see that the capillitia are not all "separate" threads, but many evidently attached. Those in the center of the puff ball appear to be "separate," and I think we have here a plant with a type of capillitium intermediate between that of *Lycoperdon* (typical) and *Bovista* (typical), connecting the two types.

In the *Annales Mycologici* of last year (Feb., 1908), I noticed a "new species," described under the name *Lycoperdon Bub kii*, which from the description seemed to me to be *Bovistella paludosa*. I wrote to Professor Bub k, and he has kindly sent me a specimen, and it is the same species. Professor Bub k collected it in Montenegro, which is the third collection known. *Bovistella paludosa* is so similar to *Lycoperdon polymorphum* that it can only be certainly known by the microscope, and it is possible that other collections have been taken for the latter plant.

A NEW BROOMEIA.

The genus *Broomeia* has heretofore been known from a single species, *Broomeia congregata*, from South Africa. An account was given of it in *Mycological Notes*, page 193 and Plate 21. As the initial work was well done by Berkeley and a good illustration published, the plant is fortunate in escaping all synonyms. Recently another species has been published by Dr. v. Höhnel of Vienna. It came also from South Africa. The external appearance of the two plants is the same, and when Dr. v. Höhnel sent me a photograph of his new species I was disposed to think it would prove to be a slight form. I wrote for some gleba, and find that the spores are *strongly different*, hence

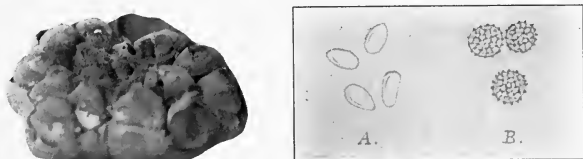


Fig. 249.
Broomeia ellipsospora, natural size. A, spores. B, spores of *B. congregata*.

I consider it a good species. *Broomeia congregata* (Fig. B) has globose, strongly reticulate-echinulate spores. *Broomeia ellipsospora* (Fig. A), as Dr. v. Höhnel calls it, has *smooth*, elliptical spores. The figure herewith (kindly made by A. D. Cotton) shows the spores in contrast. The photograph of the plant was sent by Dr. v. Höhnel.

A NEW GENUS, CYANOSPORUS.

By N. J. MCGINTY.

The common species called *Polyporus caesius* by Fries, was put in the section *Anodermei Carnosi*. This section was discovered to be a new genus by Karsten, and characterized as having white (or whitish-yellow) spores and other characters (copied from Fries). He was followed by our distinguished American specialist, Mr. Murrill. The celebrated French genus-discoverer, Monsieur Quelét, also discovered this same section to be a new genus and named it *Leptoporus*. But *Cyanosporus caesius* does not have "white or whitish-yellow spores." They are *blue in mass*, and hence can not, by any process of reasoning adopted by our modern polyporoid experts, be included in the same genus. In fact, it is the rule now generally adopted by my co-workers to make the color of the spores the primary division of the polyporoids, the same as Fries did for the *Agarics*. I hence have discovered that *Polyporus caesius* (Schraeder) Fries, forms a new genus, *Cyanosporus*, characterized by having bluish spores (and other characters as specified by Fries under *Anodermei Carnosi*), and I have named the plant *Cyanosporus caesius* (Schraeder) McGinty.

FOMES APPLANATUS AND FOMES LEUCOPHAEUS.

It is well known to those who are familiar with the subject that the European species, *Fomes applanatus*, presents characters quite different from those of its American analogue, *Fomes leucophaeus*. The European species has a *dark brown crust*, rather soft; often you can indent it with your thumb nail and easily cut it with a knife. The American species has a *hard, pale, horny* crust, and if you want to cut it you had better take an ax. *Fomes applanatus* is a European plant, not (surely) known in America, though as has been pointed out several times, our American species was for many years passed off as being this plant of Europe.

We have in America a very similar plant, *Fomes reniformis*, a good species, I think, but a bad name. It has the same soft texture and *soft, brown crust* as *Fomes applanatus*, but is an annual plant (hence, not a true *Fomes*) while *Fomes applanatus* is a perennial plant. If *Fomes applanatus* grew in the United States, it would be difficult to distinguish the first year's growth from *Fomes reniformis*, unless by the spores.

Fomes leucophaeus is the most common *Fomes* in the United States. It occurs in Europe rarely, but when it does occur it is easily distinguished from the common European species, and has been so distinguished by all recent writers—Bresadola, Patouillard, Rolland, Boudier, etc. As to spores, Patouillard has published that *leucophaeus* has smooth spores, and *applanatus* rough spores. That has always been my understanding, though I have relied on Patouillard's published statements. Atkinson has recently published that the spores of *Fomes leucophaeus* and *applanatus* are both smooth, and that they are the same species. I have examined a number of specimens since and think he is right as to the spores, but it does not follow that the plants are the same species, nor that the spores of all "*Ganodermas*" are smooth. I have observed our American species, *reniformis*, a number of times, and never questioned but that it has rough spores, and am still of that opinion. Also *lucidus*, I believe, has rough spores. Atkinson tells us that the spores are not rough, that they only look rough under the microscope, and that this is consequently an optical illusion. That may be true, but if it is an "optical illusion" it is much more "illusiv" in some cases than in others.

All three of these species are closely related, and many intermediate, connecting forms occur, and all three can be held to be forms of one species, as Atkinson alone holds, as to two; or, they can be considered as three different species, as everybody else now considers them, including our own Mr. Murrill, at least in the last published work I have seen from his pen.

THE VARIATION OF THE CORTEX AND SPECIES.

There is one factor that is not taken into account by those who see a new species in every slight difference. That is the factor of variation of the same plant. I could well present the above photographs and claim that I have two species very different in their cortex nature. And yet both these specimens grew from the same mycelium. They are about the same age, and are brothers in fact. The species is *Lycoperdon umbrinum* which Persoon well illustrated, showing it with a very minute cortex as our plant on the right. Had some one shown Persoon the plant on the left, it would for him have been another species. But not only does the cortex of *Lycoperdons* vary in different individuals of the same species, but it changes on the same individual with age. For instance, who would regard our enlargements (Fig. 251) as representing the same cortex? And yet they represent the same plant, the same cortex at different ages.



Fig. 250.

Lycoperdon umbrinum, showing variation of cortex.

The study of mycology is not a matter of exact measurement. It is rather a study of variation, a study of change. All things that live change. Nature, instead of casting her species in molds, each specimen like the other, seems to delight in producing an infinite variety. The learned professor gets a specimen with a little different spores, or cortex, or color, or form, and looks wise and says that it is a new species. "I will name and describe it and add my name to it, and be handed down to posterity as a wonderful discoverer." About three times out of four he will be sorry for it if he lives long enough to learn better. Luckily for the learned professor, when it is found out it is printed in small type and put in synonymy, and the matter is smoothed over. But in plain English "synonymy" (in the opinion of the writers) is simply a record of some one's blunders, and there is no subject on earth where there is more synonymy than in mycology.

Nor is there any finality to it. No one knows what a species is, and each man's species are only individual opinions. If he knows but few plants his

species are clear to him and he has no trouble or hesitation in discovering new species. The more specimens he studies, however, the more vague become his species until at last he is apt to reach the conclusion that there is no such thing as species. The whole series becomes one confluent, connected mass. We can illustrate that best by a relief map. We put our finger here and

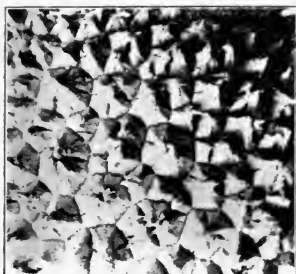


Fig. 251 (X 6).

Cortex of *Iycoperdon pratense* at different ages.

say this is a mountain, and here there are foot-hills and here a plain. But you can not say where the mountain ends and the foot-hills begin. So it is with species. We pick out certain prominent characters and say these are the characters of this species, and other characters of that species, but if they are "related" and we have enough collections and material, we will find that our two species run into each other and we can not draw a line between them. The fewer specimens a man sees the clearer his species are to him.

DUPLICATE NAMES.

The great bugaboo that is always offered as an excuse why authors should write their names after plant names is—"What are you going to do when different authors call different plants the same name unless you designate the author?" These cases are relatively rare.

I have just worked over the names of the phalloids. There are about a hundred phalloids known (or more or less known) and they have about three hundred names. In this lot there are only two instances where the same name is applied to different plants, viz: *Mutinus elegans* of Java, in the sense of Fischer, is not the same as *Mutinus elegans* of the United States. Nor is this instance very serious, for *Mutinus elegans* of Java is much better called *Jansia elegans*. *Phallus roseus* of Egypt is not the same as *Phallus roseus* of Java. Nor is this instance very serious, for neither species has any value. On the other hand, there is one case where twenty-four different names refer to the same plant, each one of the twenty-four bearing the advertisement of the learned author who proposed it. The advertising system of mycology is very much a case of straining at a gnat and swallowing a camel.

WANTED—A GOOD COLOR BOOK.

If there is one thing more than another that is needed in mycology it is a good color book, with good, permanent, ample specimens of colors *named*. When Monsieur Klincksieck told me that he was working on a color book,

I had great hopes, for Klincksieck has a pretty good business head and I thought he would get out something practical.¹⁰ I am very much disappointed with the book as it was issued, being only a series of small sample colors with numbers. Numbers give no idea of colors that can be expressed to another, though perhaps convenient for keeping private memoranda. You can, however, send ten cents to A. E. Wilde Co., 28 E. Seventh St., Cincinnati, Ohio, and get a sample book of kindergarten color papers that will answer the same purpose. What we need in mycology is a good book with *color names*, for colors have names, though I think there is no other subject in general less known or as uncertain, unless it is fungus names. Because we do not know them is no reason why we should not have a book to learn them. The chrysanthemum lovers are more practical than mycologists. They publish a book¹¹ with ample color samples with names of the color in English, French, German, etc. Each color is given a distinctive name, a name taken from use in commerce or the silk industry, or chemicals, or flowers, or the house-painter, or some other recognized *definite* source.

The house-painters have clearer ideas as to colors than mycologists have, for the house-painter can tell his workman to paint a house a dark terra-cotta and the workman will know exactly how to mix the paint. A mycologist can write that his spores are ferruginous, and the reader will not know whether they are a dirty yellow or a chocolate brown. It is unfortunate that this chrysanthemum book is such a cumbersome, inconvenient and expensive affair. Otherwise I think it would have a large sale among the mycologists where there is a genuine need for a good color book. In future when I wish to express myself in definite color terms I shall use this chrysanthemum book. They are at least definite, and carry some idea of their meaning with them. While such names as Mars yellow, Quaker drab and blood brown may not seem very scientific and perhaps can not be translated into pidgin Latin, they have a definite meaning, and convey some idea even to those who do not have the book. I admit I know very little about colors, and in the past have used such terms as "reddish," "yellowish," etc., that have no real meaning. With the aid of this chrysanthemum book I hope to be a little more definite in future.

PLEUROTUS NIDULANS IS FETID.

We recorded several years ago that this plant is fetid, but have seen no other reference to it in any other publication. We found it in Sweden a number of times and, it certainly has a very nauseous odor when fresh. It has various local names. For many years it masqueraded in the United States as *Panus dorsalis*, and even recently Kellerman perpetuated this joke. Then Peck discovered it had pink spores and called it *Claudopus nidulans*. A wonderful discovery was also made by Quélet in France, that it had "citricarnat" spores and was a *Crepidotus*. Furthermore, with a date dictionary and Fries' synonyms he unearthed one of Paulet's old names, *jonquilla*, hence the plant is often called in France, *Crepidotus jonquilla*. Mycology ought to introduce the Bertillon system to identify the various aliases under which fungi pass. In connection with the record that the plant is fetid, it is interesting to know that *Panus foetans* described from Switzerland is also the same thing.

¹⁰ This article was written with the hope of interesting Monsieur Paul Klincksieck in the needs of mycologists for a color book with color names. He was a practical man, and could have given us a practical book. We were very much shocked to learn of Monsieur Klincksieck's death which occurred before the article was printed.

¹¹ *Repertoire de Couleurs, Librairie Agricole, Paris, 1905. Price, about five dollars.*

NEW PUFF BALLS FROM SOUTH AMERICA.

In a recent number of the "Arkiv för Botanik," Robert E. Fries has given an interesting account of the Gastromycetes that he collected in Bolivia and Argentina, including three very distinct and marked new species.²⁴ My readers may be surprised that I should be interested in "new species" but I take the same interest in them that I do in old ones, provided that they are new to others besides the author. All of Mr. Fries' work, both as to new and old species, is correctly done,²⁵ and it is a marked improvement over the careless and inaccurate work that was current fifteen or twenty years ago. Mr. Fries does not agree with me as to names in a number of instances, but that is a matter to which I take no exceptions. As long as he gets the facts correct, the names will take care of themselves in time. The following is a synopsis of the paper:

Phalloids.—*Simblum sphaerocephalum*, which, according to the illustration, takes a rather depauperate form.

Tajahya galericulata, with fine illustrations. Heretofore only known from Brazil, unless the doubtful "*Albofiella argentina*" proves to be the same, as Fries suggests, and which is quite probable.

Lycoperdaceae.—The common puff balls of the world that Fries records are *Lycoperdon pusillum*, *Lycoperdon Wrightii*, *Calvatia lilacina*, *Catastoma subterraneum*, *Lanopila bicolor*, *Mycenastrum Corium*, *Geaster striatulus*, *Geaster asper*, *Geaster saccatus*, *Geaster velutinus*, *Tylostoma albicans*, and *Tylostoma Berteroanum*. *Calvatia rubroflava*, a rather rare species of the United States, is also recorded. It has been found in Brazil and recently in Australia. *Geaster peruvianus* is recorded, which was heretofore only known from the type at Kew.

Phellorina argentinensis is figured and seems from the figure to be distinct from the African species. It has a strongly developed outer veil or volva, on which Spegazzini based the genus *Cypellomyces*. Mr. Fries concluded, doubtless correctly, that it is only a stronger development of what is found in the African species and is not of generic importance.

Battarrea Gaudichaudii is also recorded. I am satisfied this species is the same as *Battarrea Stevenii* of Russia and is, in fact, only a robust form of *Battarrea phalloides*.

Nidulariaceae.—Mr. Fries records three of the common tropical forms, *Cyathus Montagnei*, *Cyathus stercoreus*, and *Cyathus Poeppigii*. The latter he shows, quite conclusively to my mind, to be the same as *Cyathus plicatus*, a prior name. I have always had but little doubt on the subject, although I have never examined the type of *Cyathus plicatus*, but even if true I think

²⁴ They are all new and good unless they have been named by Spegazzini. No one knows anything about Spegazzini's work. Like all hit-and-miss new species exploiters, he undoubtedly gets from time to time more or less that are really good. I do not pretend to be able to tell which they are, for I have no means to even guess intelligently. I should be glad (as would others of whom I know in Europe) to conserve any of Spegazzini's names that have any merit, if we had any way to do it. A few of Spegazzini's puff balls have strayed into Europe in Balansa's *exsiccata*, most of them mis-named. If Spegazzini will send a set of his "new species" to any museum in Europe, I should be glad to study them and adopt and preserve any names that have any merit, and reject such as have none. It is possible, even probable, that some of Mr. Fries' species have been "described" by Spegazzini, but no one has any way of knowing.

²⁵ I note but one error, and that one was evidently taken from my publications, though I have since corrected it. *Geaster Berkeleyi* is not a synonym for *Geaster asper*. It is a quite different plant.

the name should not be dug up to displace better work, and Mr. Fries seems to think the same—at least, he does not do it.

New Species.—Three interesting new species are described and well illustrated:

Lycoperdon abscissum, a most curious plant that might well be made the type of a "new genus." It is almost *all sterile base*. In fact, I thought it was

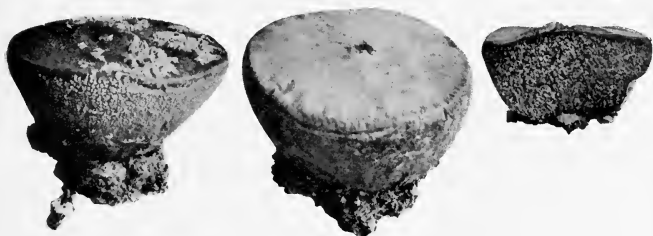


Fig. 252.

Lycoperdon abscissum.

a sterile base when I first saw it, but it has *normally* a very thin, scanty layer of fertile gleba. The spores, capillitium, cortex, shape, in fact everything points to its being a degenerate form of *Lycoperdon pratense*, and if only known from a single specimen I should so consider it. But Mr. Fries has abundant collections from various localities and finds it a constant, normal plant in both Bolivia and Argentina. It is the most curious puff ball that has been brought to light for some time.

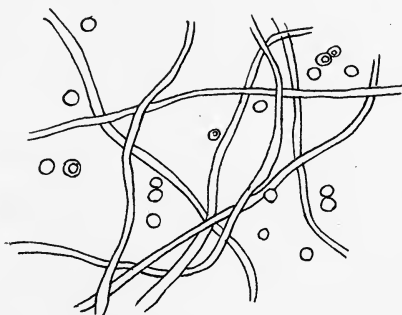


Fig. 253.

Lanopila pygmaea.

Lanopila pygmaea is an interesting addition to a small genus, heretofore only known from a single though widespread species, *Lanopila bicolor*. It has all the generic characters of the genus *Lanopila*, but has no resemblance to *Lanopila bicolor*, having a very small size and *olive, smooth* spores.

Catastoma Pila is a plant that I have known several years. I received it first from W. H. Long, Jr., Texas, and I wrote Mr. Long it was a new species and urged him to name and describe it. Mr. Long has been too long about it. It has since reached me from other correspondents, both North and South America. Its characters are the purplish color of both gleba and



Fig 254

Catastoma Pila.

peridium, and the rough, short, pedicellate spores (the pedicels are not shown in Mr. Fries' figure). In general appearance and even in size it closely resembles our *Bovista Pila* of the United States, so that the plant is well named.

Tylostoma leiospora is also proposed as a new species, but *Tylostoma* is a difficult genus and I would prefer not to pass on a collection without a comparative study.

MILK IN POLYPORUS.

"During August and September I had the opportunity to observe *Polyporus sulphureus* in every stage of growth in great abundance. During the stage while the pores were attaining growth, usually three or four days, the fungus was invariably filled with *yellow milk*. In many cases this was so abundant that it dripped from the fungus when broken. August was a month of abundant rain in New Hampshire. I have not had an opportunity to observe the growth of this plant so carefully in dry weather, so that I can not state whether the plant would always be milky in dry weather. This is the only *Polyporus* that I have observed which is really milky, though I have found a number of species which in wet weather are filled with moisture and under certain atmospheric conditions appear to secrete a drop of clear fluid, as for example in *Polyporus circinatus*. It is always in a young stage of the plant, and is in some cases slightly turbid as it exudes from a broken plant."—Theodate L. Smith.

THE GENUS MATULA.—An investigation at Kew convinces me there is no valid reason for not taking the generic name *Matula*. Berkeley first published it as *Artocreas* but that was only an unintentional transposition for *Michenera*, for he refers the Ceylon species (*Matula poroniaeformis*) to a genus previously published from Cuba (*Micheneri Artocreas*) and transposes it (*Artocreas Micheneri*). An examination of the specimens from Cuba and Pennsylvania shows both to be co-generic (at least to all appearances) and very different from the Ceylonese and Brazilian genus *Matula*.

CORRECTION.—The statement in Letter No. 23 that *Fomes pomaceus* is not *Polyporus fulvus* of Scopoli was due to an error of the type. I do not know *Polyporus fulvus* in the sense of Scopoli, and I question if any one knows much that is definite on that score.

A NEW POLYPOROID GENUS.

By N. J. MCGINTY.

Our literature is enriched by a wonderful boletoid genus discovered by the late Dr. Hennings, which has a volva at the base. He called it *Volvoboletus*, and reconstructed a picture from Persoon's old work to illustrate it. It grew in France, that is, it was said to grow in France about a hundred years ago, but it is remarkable how elusive these things



Fig. 255

Volvopolyporus peronatus.

are, for none of the present generation of French mycologists have ever found it, and some of them are unkind enough to surmise that it exists only in imagination. I trust they will not be so skeptical as to the new genus that I propose herewith, as I present a figure that can not be questioned, the *type illustration*, and also proof that cinches it, a Latin (pidgin) diagnosis in keeping with the "rules."

VOLVOPOLYPORUS, N. G., MCGINTY.—Tubuli in stratum porosum, facile ab hymenophoro separabile. Stipite centrali. Totus fungus primitis quidem in volva inclusus. Volva persistentis, cum basi stipitis connata.

But one species of *Volvopolyporus* is known (viz.: *Volvopolyporus peronatus* (Schulz) McGinty), like the celebrated genus *Dictybole* that is only known from a drawing. It was said to grow in the beech woods in Hungary.

MYCOLOGICAL NOTES.

BY C. G. LLOYD.

CINCINNATI, O.

No. 34.

FEBRUARY, 1910.



PROFESSOR GEORGE MASSEE.

JAN 21 1910

PROFESSOR MASSEE.

Those who have worked at Kew will recognize the portrait on the preceding page, and those who have not will be glad to have a good portrait of Professor George Massee, whose official title at Kew is The Principal Assistant, (Crytogams). I am under many obligations to Professor Massee for courtesies while working at Kew, and take pleasure in presenting a good photograph of him to the readers of Mycological Notes. Particularly am I glad in view of the publication a few years ago of a most miserable likeness in one of our American journals.

The following biography is said to have been written by Professor Massee. Any one who is intimately acquainted with him will not doubt it, but will recognize in it his peculiar style.

My full name is George Edward Massee. I was born in 1850, at Scampston, a hamlet in East Yorkshire. Here they attempted to educate me at a private school, but failed: I had only a liking for drawing and nature. It was intended that I should follow in my father's steps and be a farmer, but I did very little good at farming. I was sent to the York School of Art, where I was fortunate enough to gain the national medal of the year for drawing flowers from nature. At the same time I studied chemistry and physics. Then I was taken in hand by Dr. Spruce, the botanist and traveler, who was a relation of my mother's, and when not ploughing or working in the sheepfold, I worked hard at botany. The illustrations of Dr. Spruce's classical work on Hepaticas were mostly my work. At his suggestion, I went to the West Indies and South America to study plants and collect orchids. I sent home in bulk *Oncidium macranthum* and *Nanodes Medusae*. Among my many exciting experiences during that expedition were earthquakes.

Being an only son, my mother prevailed on me to stop at home, so I again took up the work of farming and botanical study, specializing on fungi and plant diseases. On my father's death I came to Kew, where I worked at the herbarium as a free lance, and in 1893 was appointed Principal Assistant (Crytogams)."

A SLIGHT CORRECTION.—We recently stated, in a footnote, that *Polystictus biformis* and *pergamenus* have been "transposed" since Klotzsch published them. "Confused" would have been a better word, for we find on going into the subject again that there is not the slightest evidence that Klotzsch ever saw the plant that has for more than sixty years been known as "*Polyporus biformis*, Klotzsch," not forgetting to add the "Klotzsch." What he called "biformis," Fries and every one since has called *pergamenus*. I shall continue to call the plant *Polystictus biformis*, that being the well established name for it, but I shall not go through the farce of writing "Klotzsch" after it. If you have to add a name, add "Berkeley," who gave the name its present meaning in mycology.

SPIRIT WORK.—I notice in Saccardo, Vol. 6. p. 709, that Persoon published a new species of *Clavaria* in the Journal of the Linnean Society, volume 18. As this volume was not issued until about fifty years after Persoon died, it was probably through the aid of a medium. It is pretty severe, with all that mycology suffered from the living in the line of "new species" of *Clavaria*, if the dead ones are going to continue in the work.

CLATHRUS CIBARIUS.

Through the kindness of H. W. Laing, Lyttelton, New Zealand, we are able to present a photograph of this phalloid. Though the most common phalloid in New Zealand, this is the first published photograph made to show its size, and it will be noted from the scale that Mr. Laing has thoughtfully photographed on it, our reproduction is reduced one-half the natural size.



Fig. 267.

Clathrus cibarius (reduced one-half).

Photograph from H. W. Laing, New Zealand.

From Mr. Laing's letter we learn the following in regard to the habits and characters of the plant.

Clathrus cibarius is *pure white*, except of course when covered with the foetid, brownish gleba. It grew in clusters in the rank grass in moist situations, and never in the open country where the grass is

cropped short by grazing. The photograph represents specimens (one-half) the usual size, though in some cases they attain double this dimension. That would indicate a diameter of about sixteen inches for the largest specimens. It is the largest *Clathrus* known. The base of the network is always wrinkled and the entire plant is very tender and fragile.

Our best thanks are extended to Mr. Laing for the photograph and information, which give us exactly the points of interest we desired. We hope now some of our Australian friends will furnish a photograph and notes on *Clathrus gracilis*, which is common in Australia but has never been photographed.

A NEW WORK ON FUNGI.

Simple, introductory books on fungi are badly needed in the English language, and I am particularly glad to call the attention of our American mycologists to a book recently issued in England. It is by E. W. Swanton, entitled "Fungi and how to know them." It is written in plain, simple language, and is profusely illustrated, and any American student can take this book and determine not only almost all the genera, but many of the species he will meet in our country. It is a curious fact, but it is true that the species that occur in England are by far the greater part the same as occur in America and the temperate world in general.

The Gastromycetes of Mr. Swanton's book are (with one exception) correctly classified and named.¹ We commend the book not only for what it contains but for what it omits. We note with pleasure the absence of a number of myths that commonly occur in the "puff-ball" literature of England.

There is another feature for which I think the book should be highly praised, the absence of all personal advertisements. Plants have Latin names, and as the usual English reader does not speak Latin very fluently, it is very useful to employ space, as Mr. Swanton does, to explain the meaning of these Latin names. Much more useful, in my opinion, than to occupy the same space with a lot of personal names of no possible interest except to the parties concerned, and most of them are dead.

The American student who has two recently issued books, viz.: Swanton—"Fungi and how to know them" and Hard—"Mushrooms edible and otherwise" is in good position to make rapid advancement in his knowledge of the fungi he finds. Swanton's work is probably not on sale in America, but can be obtained by sending two dollars to G. E. Stechert & Co., No. 129 W. 20th St., New York, who will import the book on request.

¹ There are some cases, such as *Myriostoma coliformis* which appears as *Geaster coliformis*, which are differences of opinion, not errors. But *Bovista pusilla* is an error, for it can not be included in the genus *Bovista* under any logical classification.

THE VEIL OF CLAUTRIAVIA MERULINA.

Professor T. Petch, who has done such good work with the phalloids of Ceylon, sends me an interesting photograph (Fig. 268) showing the attachment of the veil of *Clautriavia merulina*. This, I think, was previously unknown. As will be noted from the photograph, it is *confluent with the upper portion of the stipe* in a manner not found (or, at least, not known) in any species of *Phallus*.

It will perhaps not be out of place here to call attention of observers throughout the tropical world to the aid that can be rendered science by photographing the phalloids they note. Especially if the phalloid seems to present any points of novelty from those shown in our photograph in the recent pamphlet, "Synopsis of the Known Phalloids." A good photograph is the best record one can make of a phalloid, and if accompanied with a *color sketch* is all that is necessary to give a good account of it. A dried specimen of the phalloid, if large, or an alcoholic specimen in a little tube, if small, should also be preserved. But a *good photograph* is the essential. It is not in good taste to complain of the many inaccurate figures and accounts that we have in our phalloid literature, for the collectors in former days probably did the best they could. In these days of universal



Fig. 268

Section of *Clautriavia merulina* (pileus removed) showing attachment of the veil.

photography, I think no phalloid should be published unless accompanied by a good photograph.

As stated in my recent pamphlet, more has been learned of phalloids in the last ten years through the work of Petch, Penzig, Moeller, Long, and Cobb, *with their cameras*, than was known before. And, it is reliable work. If previous observers had employed photography we would not have to admit to-day that of the one hundred and seven supposed species and forms of phalloids, fifty-eight (or 54%) are doubtful. And the story has not by any means been told as yet. There are vast regions of the earth's surface of which nothing is known of the phalloids, and many are yet to be found and named. We feel that our recent "Synopsis of the Known Phalloids" has brought the subject so that any one can study it intelligently, and if those who have received the pamphlet will use their *eyes* and their *cameras*, more will be learned in the next ten years than has been learned up to date. Especially as to the distribution and variation of the "old species," which is of more interest than the publication of the "new species." That which I commend most in the work previously stated of Messrs. Penzig, Moeller, Long and Petch is that they gave full accounts of the "old species" they found as well as the new. Cobb marred his paper with a lot of (fictitious) new species, but there is no criticism to be made of the work of the others.

IRPEX FLAVUS "KLOTZ." AND POLYSTICTUS FLAVUS "JUNGH."

I feel that an error has been made in Saccardo (vol. 6, page 486) and in the determination of many tropical specimens, in referring a very common, tropical *Polystictus* to *Irpex flavus* "Klotz." I am well acquainted with the tropical form in Samoa and in the museums, where it is generally called (at Berlin at least) "*Irpex flavus*, Klotz." Klotzsch's type specimens are at Berlin, and while, by comparison, they seem to be very close to the tropical species, I am satisfied they are not the same plant. The tropical plant, which is widespread in warm countries,² was first illustrated (and beautifully) by Junghuhn, from Java, under the name *Polyporus flavus*. It is one of those intermediate species like "*Poria*" *Tulipifera* that can be put either in the *Polyporoid* series or the *Hydnoid* series. Klotzsch's plant is of arctic origin and came from British America, and I think does not extend even into temperate regions. At least it is unknown from the United States, and if it were the tropical species there surely would not be a gap in distribution between the arctic and tropical regions. By comparison the two plants seem very close, nor could I note any material difference in their "structure" under the microscope. I think, however, they are different in this regard that the arctic species is a true *Poria*, always resupinate with shallow pores that have thin, angular walls prolonged into teeth.³ The teeth are to a degree awl shaped. The tropical species is *normally pileate* and while it is the same old genus (in the sense of Persoon) the teeth are much longer and flatter. The color of the two plants is very similar, but is a brighter yellow in the tropical plant. Still the two plants are very close, and if they occurred over the same regions it would be very difficult to distinguish them.

² At Berlin there are specimens from India, Africa, Australia, Philippines, Samoa and South America.

³ Exactly the idea of the genus *Sistrotrema* in the sense of Persoon but not in the restricted, Friesian sense.

YELLOW SIMBLUMS.

We make our "species" and then we tear them down. The more plants we know the less species we find. A letter and figure of a *Simblum* just received from C. A. O'Connor, Mauritius, raises the question if there is more than one yellow species of *Simblum*. About a year ago we thought and published that there were three distinct yellow species of *Simblum*. Then we saw a series of specimens at Upsala that so intimately connected two of them that we reduced our number of valid (supposed) species to two. Now Mr. O'Connor comes along with his figure and raises the doubt if there is more than one.



Fig 269

Mauritius is the birthplace of the genus *Simblum*. A specimen from Mr. Telfair, now preserved at Kew, was evidently well illustrated by Hooker. It was an obese plant, with a thick stem (about two inches thick), and network merely a continuation (in size) of the stem. The genus is evidently rare in Mauritius, for Mr. O'Connor has only found it recently. He sends a sketch (Fig. 269) of his find,⁴ evidently well made. It is the exact shape and size of the plant recently described as *Simblum Texense* from the United States, and which was supposed to differ from the original Mauritian species (*Simblum periphragmoides*) by its shape and size alone. Of course both "species"

may grow in Mauritius, but I do not place much value on that theory. I maintain sometimes that shape and size do make a good species, as in the case of *Scleroderma tenerum*, but always in connection with a geographical difference. I expect in time we shall have to refer all our yellow *Simblums* to one species.

DAEDALEA UNICOLOR VAR. HYDNOIDEA.

What was surely an irpicoid condition of the common *Daedalea unicolor* has been collected several times around Berlin and was called as above by Dr. Hennings. I think it is hardly worthy of a separate name although a curious condition. Dr. Hennings has given a full account of it from which we cull the following. It was first gathered by Dr. Magnus in 1876 and sent to Elias Fries (at that time a very old man) who thought it was a new species of *Hydnum* related to *Hydnum strigosum*. Dr. Magnus also sent it to Karsten, who discovered at once that it was a new genus and named it "*Phyllodontia Magnusii*." It did not take much provocation for Karsten to discover a new genus. He was almost as adept at it as our own Mr. Murrill. A similar form was also distributed "de Thumen, Exsic. 621 as *Irpex lacteus*, Fr." (sic). I think it was Bresadola who set all this muddle right. At least his correction is found on the specimens both at Berlin and Upsala.

⁴The specimen that Mr. O'Connor sent me in alcohol, fully bears out his figure.

A BOVISTELLA WITH A GEASTER MOUTH.

Robert E. Fries has collected at Torne Träsk, Lapland, the rare little *Bovistella echinella*, which is the sixth collection known of this



Fig. 270.

Bovistella echinella (x6).

rare little species and the second made in Europe. The collection presents all the usual characters of this unique species, and some specimens have protruding mouths, as shown in our photograph (Fig. 270, X6). This is a feature common in Geasters, but which I never before noted on a Lycoperdon or Bovistella. In examining my original photograph of this species I note indications of this pro-

truding mouth (Plate 89), a feature that escaped me at the time.

A full account of this rare, little species was given (Myc. Notes, page 286, Plate 89), with a list of the previously known stations. The photograph herewith is somewhat misleading, as the "cup" at the base is a piece of earth and not a part of the plant, as might appear. It is enlarged (X6), as *Bovistella echinella* is one of the smallest and rarest "puff balls" known.

CUI BONO?

In a separate cover at Berlin are specimens distributed by C. F. Baker, under the name *Cyathus lentiferus*, "Determined by Miss White." As Miss White never recognized the genus *Cyathus* in her publication, she seems to have repudiated her own work, which was a wise thing to do in view of the fact that her genus "*Cyathia*" (sic) was such a silly proposition.

In another cover at Berlin are probably a hundred specimens of exactly the same plant labeled, *Cyathus vernicosus*, as the plant is known to every one except Miss White. The young man who incorporated the Baker specimens did not recognize Miss White's juggling and therefore made a useless new cover for it. But all name-juggling is not done at New York. The Europeans have had several themselves, who with their little date dictionaries look up the dates given in Fries and Persoon and proceed to change names. Three covers, one after the other, at Berlin, *Fomes pinicola*, *Fomes marginatus*, and *Fomes unguulatus*, all exactly the same plant, pose in the collection as different plants, due to such changing. The old botanists, Persoon and Fries, had ideas of distinction between *Fomes pinicola* and *Fomes marginatus*, and even if we can not agree with them we recognize that they had definite ideas on the subject. The present school of jugglers seems devoid of all ideas except that one date is earlier than another date, with the intimation that Persoon and Fries did not know enough to know that.

THE EXOPERIDIUM OF BOVISTA.

I found in the park at Upsala some specimens of a young "puff ball" that at first puzzled me considerably. It had a thick, smooth exoperidium, about 700 mic. thick, and composed of large, globose cells (parenchymatous tissue) 30-35 mic. in diameter. Our figure 271 shows a specimen with the exoperidium partially cut away, exposing the inner peridium.

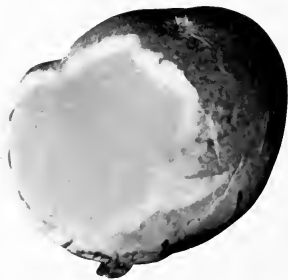


Fig 271.

I knew no "puff ball" with such an exoperidium, but a microscopic examination showed the peculiar capillitium of a *Bovista*, and then I recognized it as young specimens of *Bovista nigrescens*, the only puff ball it could possibly be. I am quite familiar with mature specimens of *Bovista nigrescens* (and also the analogous *Bovista Pila* of America), and no sign of an exoperidium is seen on the mature plant. What becomes of

it? It certainly does not peel away in patches as does the exoperidium of a *Catastoma*, or patches of it would sometimes remain. There can be but one explanation. It disappears in ripening, I think, by a process of deliquescence, the same as many of the cells of the gleba do. Morgan suggested this to me years ago, but I never fully believed it until now. The account of the peridia of the genus *Bovista*, as found in *Myc. Notes*, page 114, is entirely wrong.

This deliquescence of the exoperidium of a *Bovista* explains other things not correctly interpreted before. Thus, the scurfy particles often noted on the common *Bovista plumbea* are due, no doubt, to imperfect deliquescence. The rare and little known *Bovista tomentosa* of Europe and Australia (cfr. *Myc. Notes*, page 392) when young has an exoperidium covered with small spines, and when old is as smooth as a billiard ball. Deliquescence alone, I think, can explain that, for if the spines shriveled up and fell away (as they do in the genus *Lycoperdon*), traces of them would surely remain.

PHALLUS INDUSIATUS.—As is well known, this is the most common phalloid of the tropics and grows in perhaps every warm country of the world. S. Hutchings, of North Bengal, India, writes me it is the only phalloid he notices and that it is plentiful during the rainy season in May and June. I recently met at Kew Mr. C. B. Ussher, who has sent me a number of specimens of this same species from British East Africa. He is a botanist for a rubber company and is located in dense forests where only a few years ago pygmy natives were the only ones to be found. He tells me that this phalloid usually grows in swampy places in the depths of the forest. It is the first time I have known of this species favoring swampy ground.

LES SOUCIS D'UN MYCOLOGUE.

Nous avons en Anglais un dicton : "Ne me confiez pas vos soucis, j'en ai bien assez à moi !" cependant je ne puis m'empêcher de m'ouvrir à mes lecteurs au sujet de quelques unes des difficultés que l'on éprouve lorsqu'on veut arriver à une conclusion tant soit peu satisfaisante à l'égard des sections difficiles telles que les *Porias* d'Europe. Prenez un ouvrage quelconque traitant des champignons d'Europe ; vous me direz que la chose vous paraît fort facile, que la question a été traitée et étudiée à fond et que tout ce qu'on a à faire c'est d'aller dans les bois, de cueillir les spécimens, puis de se servir des ouvrages publiés, pour les déterminer. Cela est vrai, naturellement, pour un grand nombre des plantes ordinaires et bien connues mais pour les sections plus difficiles, telles que la *Poria*, et plus spécialement le *Corticium* (auxquelles je ne prétends rien comprendre du tout) il est dix fois plus difficile de trouver un nom satisfaisant pour vos plantes que d'apprendre les caractéristiques de la plante.

Pendant la première saison que je passai à Upsala je trouvai une *Poria* très étrange. Elle paraissait d'abord comme un tampon mycelial et mou ressemblant à une pelote de coton ; les pores paraissaient d'abord au centre puis s'étendaient sur toute la surface. Depuis longtemps je connaissais *Poria bombycina* par ouï-dire ; Fries disait qu'elle se développait tout justement de cette même manière et c'est pour cela qu'il la nomma ainsi ; mais c'est la seule *Poria* qu'il décrive ainsi. Je n'aimais pas la description de la couleur "jaune sordide" mais je ne doutais pas que ce ne fut la même plante, et pendant toute cette saison je la recueillis en abondance—sans jamais mettre en question son identité ; pour moi c'était la *Poria bombycina*. A la fin de la saison, j'étudiai les plantes dans l'herbier de Fries. Il s'y trouve peu de types authentiques là, mais il y en avait un assurément de la *Poria bombycina* venant de Femsjö (!). Et ce n'était certainement pas ma plante. Alors je fus entièrement déconcerté.

Un jour en examinant les Icones de Fries je remarquai sa planche de *Merulius himantioides*. Elle me paraît bien représenter ma plante mais Fries la décrit comme étant couleur "lilas" et "semblable à *Merulius lacrymans*." Ma plante n'était pas lilas et ne ressemblait pas à *Merulius lacrymans*. Je ne pouvais cependant que croire que ce tableau représentait ma plante et j'en conclus que c'était une *Merulius himantioides*. A mon retour à Paris j'envoyai un specimen à Bresadola. Il la détermina comme "*Merulius himantioides* Fr." Alors je fus satisfait. C'était *Merulius himantioides*!!!!

L'hiver suivant à Kew je trouvai un specimen de *Merulius himantioides* que Fries avait envoyé à Berkeley. *Ce n'était pas ma plante*. Les spores étaient absolument différentes, ressemblant, de fait, à *Merulius lacrymans* à laquelle Fries avait comparé l'*himantioides*. Me voilà de nouveau dérouter. Je racontai mes perplexités à l'abbé Bresadola qui me calma en observant que Fries ne s'était pas servi du microscope et ne regardait pas les spores ; qu'il s'était par con-

séquent trompé dans le spécimen envoyé à Berkeley. Je crus ceci à moitié mais je n'étais pas entièrement rassuré.

Et voici que mon ami Romell vient me troubler de nouveau. Il trouve dans la Suède du Nord une plante qui *correspond absolument à la description de Merulius himantioides de Fries*; couleur lilas, "bombycinus," et qui a les mêmes spores que le spécimen de Kew. Je ne saurais nier pareil témoignage. Romell a trouvé la véritable *Merulius himantioides*. Mais me voici au même point qu'en commençant; je n'ai aucun nom pour mon "bombycina" commun, plante trouvée à Upsala.

L'été dernier à Femsjö j'appris à connaître *Poria bombycina* sans question. Elle correspond absolument à la description de Fries et à son spécimen à Upsala. Dans les trois derniers musées que j'ai visité il y a 14 spécimens étiquetés "*Poria bombycina* Fr." Dans toute la quantité un seul spécimen est correctement déterminé et il venait de Suède, et probablement de Fries. *D'autres ont évidemment eu leurs soucis de même que moi.*

THE NIDULARIACEAE AT BERLIN.

At the date of my previous visit to Berlin I had not studied the Nidulariaceae. There are a few historic specimens there.

Ehrenberg's type of *Cyathus globosus*. It is a *Nidularia*, and in my opinion there is but one (similar) species in Europe, viz: *Nidularia pisiformis*. Also at Berlin are good collections of *Nidularia confluens*, which for me is only a caespitose form of the same thing.

The type of "*Cyathus niveo-tomentosus*" from California, proves to be the rare genus *Nidula*. In fact it is the same as *Nidula microcarpa* and an earlier specific name for it. As Miss White did good generic work in establishing the genus *Nidula*, I accept her work and her names for this genus, and I trust she will appreciate that if I juggled her names as she has juggled others I would call the plant "*Nidula niveo-tomentosa* (Hennings) Lloyd."

In a cover labeled "*Cyathus scutellaris*, Roth." is an old specimen so-labeled in a German handwriting. I do not know that it has any historic value, but if it has, then the species is a synonym for *Crucibulum vulgare*.

Dr. Hennings made three collections of *Cyathus stercoreus* at Berlin. It is a rare plant in Europe, but Dr. Hennings was a good hunter.

Cyathus sulcatus, discovered to be a new species by Kalchbrenner, is *Cyathus Poeppigii*, the most common species of warm countries. These specimens have spores 28 x 40 mic.

The original exsiccatae containing "*Cyathus plicatulus* Mss., Cuba, Poeppig" are also at Berlin. It is on these exsiccatae that Tulasne based his *Cyathus Poeppigii*. A spore measures 32 x 44. As it has proved to be such a common species in all tropical countries, it is doubly unfortunate that Tulasne changed the very suitable name *plicatulus* to the uncouth name "*Poeppigii*."

PSEUDOCOLUS JAVANICUS IN FORMOSA.

I have recently received from Professor S. Kusano, Japan, a drawing (Fig. 272) of *Pseudocolus Javanicus*, which he made in February, 1909, in Central Formosa. The drawing is natural size and the color red. It represents a more globose plant than the original photograph from Java, but I think is evidently the same species.



Fig. 272.

Pseudocolus Javanicus was originally from Java (as its name implies), but is quite a rare plant there. Dr. Penzig found but a single specimen, and Dr. Bernard has not found it at all. It occurs, however, also in China, at least I believe a specimen from China in alcohol at Paris is this species. It is much broken and was described as a new species of *Anthurus*. Professor Kusano found only three specimens "on the rotten stems of grass" in the mountainous region of the Central Formosa." It is an important addition to our knowledge of the distribution of the phalloids.

Of course, from a sketch only I can not be positive that this is the same as the Penzig species of Java. I think it is, although a new, globose form. The arms have the same general arrangement. What I presume was an excellent figure of *Pseudocolus Javanicus* was given by Penzig and was reproduced in our recent "Synopsis of the Phalloids," page 52. I suspect in time it will be found to be the same as Professor Kusano found in Formosa. Nor should I be surprised if it developed in time that *Pseudocolus rugulosus* is an inaccurate figure of the same species.

THE TYPE SPECIES.

I believe it was Mr. Ricker who asked me one day if I believed in the principle of a "type species" for each genus. Yes, I believe in it. I believe it is the greatest scheme for name juggling that was ever invented since the late and lamented Otto Kuntze promulgated his plan.

It works most admirably. First, you take a large genus like the *Desmodium*, for instance, and you look up the synonyms in Index Kewensis and find the first generic name that was applied to each species. When you have your dates all hunted up, "restore" the name that bears the earliest date and call that your "type species." Then you *change* all the others (for the purpose of uniformity, of course), and the more there are the better, for you always add your own name to each, it being incidental, the main object being to produce uniformity of result and permanency in nomenclature.

I do not know who invented the "type species" scheme, but who ever he was, he was a genius, and his talents ought to have public recognition. The next Congress of International Name-Jugglers should raise a fund for two pedestals. On one they should put a bust of Otto Kuntze, and on the other of this unknown genius who invented the "type species" idea.

A NEW TYPE IN THE GENUS BOVISTELLA.

When we wrote our account of the genus *Bovistella* I knew no species with *typical, separate* capillitium threads and *non* pedicellate spores (cfr. last note, page 278). Such a plant has just come to hand from E. Jarvis, Brisbane, Australia, and is an interesting addition to the genus *Bovistella*. It belongs to Section 4 of the genus and differs from all other known species of this section in not having pedicellate spores.

BOVISTELLA PUSILLA (Fig. 273).—Plant globose, 1 to 1½ cm. in diameter. Cortex smooth. Peridium thin, flaccid. Sterile base, none. Gleba dark brown. Capillitium of separate, deeply colored threads, the main stem of the thread 16 mic. thick, with numerous sharp, tapering branches. Spores compressed globose or slightly ovoid, 4 x 4½ mic., deep colored, smooth, with a short but distinct apiculus.

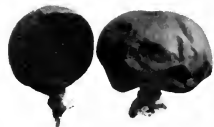


Fig 273.

This little species in size, color and general appearance resembles closely *Lycoperdon pusillum*, but is entirely different in its capillitium characters. The separate threads with their thick, main stems and numerous, tapering branches are similar to those of *Boviste nigrescens*. It is the first plant known with such threads and *non* pedicellate spores.

THE NEW GENUS MARTELLA.

BY N. J. MCGINTY.

In looking through the rare genus which for a hundred years has been incorrectly called *Hericium*, I note by the synonyms given in Saccardo that Scopoli called a species *Martella Echinus*. The generic name, *Hericium*, was proposed by Persoon, but every one knows that Scopoli wrote before Persoon did. Hence, by the sacred principles of priority set forth by our illustrious master, Otto Kuntze, I have made a wonderful discovery, and I propose to take advantage of it for my own advertisement in keeping with the custom of my illustrious co-workers, such as Hollós, Murrill, Earle, and other date-dictionary experts. I therefore claim the following new combinations:

Martella Notarisii (Inz.) McGinty, syn. *Hydnum Notarisii* Inzenga, Sic. t. 1, f. 1.

Martella Hystrix (Pers.) McGinty, syn. *Hericium Hystrix*, Pers. Comm. Clav. p. 27.

Martella alpestre (Pers.) McGinty, syn. *Hericium alpestre*, Pers. Myc. Eur. vol. 2, p. 151.

As I have copied my references and synonyms from Saccardo, also in keeping with the customs of my illustrious co-workers, I disclaim any responsibility for errors.

SCHIZOPHYLLUM COMMUNE IN EUROPE.—In our article on this species we commented on the fact that the plant is strangely rare over the greater portion of Europe. I have never collected it, nor has Mr. Romell in Sweden, nor Professor Lange in Denmark. Professor Magnus, who has collected much in the Tirol, tells me that it is a *very abundant plant* in the higher altitudes of the Tyrolean Alps.

THE IDENTITY OF PHALLUS RUGULOSUS.

When I wrote the recent "Synopsis of the Known Phalloids," I was much puzzled to decide what difference existed between *Phallus rugulosus* of Japan and *Phallus gracilis*, which proves to be common in other warm countries. I finally decided that if there was any difference it was that *Phallus rugulosus* did not have the substance of the pileus colored red. It was described from alcoholic material and I suspected that the color had been extracted by the alcohol.

I took the matter up by correspondence with Professor S. Kusano, Tokyo, Japan, who had previously advised me that he found *Phallus rugulosus* common in Japan. He has sent me a colored sketch, and he has found the *substance of the pileus red*, as well as the stem. There is no question now in my mind that *Phallus rugulosus* is a synonym for *Phallus gracilis*, which is at best a slender form of *Phallus rubicundus*, a common plant in many warm countries.

Like all widely distributed plants it has been discovered to be a "new species" on numerous occasions, and gives promise to rival the celebrated *Phallus indusiatus* in the number of its aliases. The following are all that have come to my notice thus far, with the names of the country whence exploited. In my opinion all are better referred to *Phallus rubicundus*, originally from Southern United States, or to *Phallus gracilis*, at best a slender form of it. *Phallus rugulosus* of Japan; *Phallus sanguineus* of Africa; *Phallus celebicus* of the Celebes; *Phallus aurantiacus* of India; *Phallus Novae-Hollandiae* of Australia; *Phallus coralloides* of Hawaii; *Phallus Balansae* of South America; *Phallus vitellinus* of Australia.

POLYPORUS BRAUNII.

I was very much pleased to receive from Monsieur Hariot a fine, fresh specimen of this plant, collected in a hothouse at Cherbourg. I had only known the plant from dried specimens, which are common in the museums of Europe, as the plant has been collected a number of times in the hothouses. While not a native of Europe, it might almost be so considered now, as it is not rare in *hothouses* all over Europe, and I am told has been found in abandoned mines. When fresh it is a beautifully marked plant, with pore surface of a *bright, clear yellow*. It is the only truly yellow *Polyporus* I have seen except *Polyporus croceus*, and some *Porias*. The pores are very small, the mouths bright yellow. As the pores get old, however, in the interior they lose the yellow color and the context is better called pale. The prominent microscopic features are numerous, large, rough, hyaline, cylindrical cystidia, about 8×40 mic. I found abundant spores, very small, $1\frac{1}{2} \times 2\frac{1}{2}$ mic., hyaline, smooth, but I suspect they are conidial spores. The fresh plant threw down no spores, and Bresadola only records his specimens as sterile.

Classification.—The species is found in Saccardo as *Polystictus*, where it appears to me to have no relation. Strictly speaking, it is a *Fomes*, for the pores in this specimen are in distinct strata, but many tropical species are perennial, and I think the only practical way is to restrict the *Fomes* of the tropics to specimens with hard, woody context. *Polyporus Engelii* (teste Bresadola) and *Polyporus rufoflavus* (teste Patouillard) are other names for it.

A EUROPEAN MARE'S NEST.

The literature of Europe has been enriched by a wonderful "new species" of *Poria*, which departed from all known species in its habitat, *growing on the pileus of an Agaric*. It was discovered by Dr. F. Ludwig, who gave an account of it in *Hedwigia* in 1882.

There is a specimen in the herbarium of Winter at Berlin. Bresadola, who has seen it, endorses on the label that it is not a *Poria* at all but an anomaly of the *Agaric* which produces imperfect gills on top of the pileus. I have seen just such abnormal agarics myself, and on closely examining the specimens there is no doubt in my mind that Bresadola's statement is the correct explanation. Thus the wonderful "new species" of Dr. Ludwig fades



Fig. 274.

away into the same class with the wonderful "new genus" *Dictybole* of Professor Atkinson's exploitation. All flesh is mortal. I have recently heard rumors of a "*Poria*" that grows on *Phalloid* eggs in Java. I hope it will materialize into something definite and not join the *Dictybole* class.

THE NATURALIST A SANE MAN.

Cartoonists, humorists, and jokesmiths generally have immemorially taken delight in the kindly people who wander over the green hillsides of spring and the golden meadows of summer chasing bugs, and eke the butterfly. It is the custom to point out these gentle folk as a species of harmless creatures, pleasantly irresponsible in their actions, a little loose in their upper stories and entitled to the guardianship of all the rest of us.

But we are wrong in our diagnosis of the case. The naturalist is the sanest man in the world. He is the one man among us who gets the best out of life. He finds himself in a wonderful world and with only one small lifetime in which to explore that world. He has discovered that there is vastly more for his consideration than men and women. In fact, he is apt to find that it is only men and women who are dull and uninteresting. Wherefore the wise man sallies out to the wide spaces, to the great hills and the deep-hushed valleys; he wanders by the mountain streams and is brother to the sun, moon, and stars. He visits the things of the wild in their wonderful cities and towns, talks with the builder ant, the busy, marvelous bee, the birds as they rear their young, and the squirrel as he gathers his winter store.

And what does this man learn? More than we learn, brethren, in our stuffy towns, bartering and trading in our sordid marts, missing the beauty, the miracle, and the wonder of things. Here is California, glowing in the glory of God's smile. What do we know of it? We know so little, indeed, that when we shall look back upon it from the streets of the New Jerusalem we shall regret, even there, that we once had it, like a lute, in our hands and never learned to play on it.—*Los Angeles Times*.

AMATEUR WORK.—We note from a recent review of Arthur's work in North American Flora that he has only succeeded in adding his name to about half of the plants named. A sincere follower of the Kuntze system of juggling names usually succeeds in from eighty to ninety per cent. What a contempt a genuine Kuntzeite must have for such amateur work as Arthur seems to be doing in this line!

A NEW GENUS ÆTNEENSIS.

By N. J. MCGINTY.

In one of the old museums of Europe there recently came to light a very curious drawing of what is unquestionably a new genus of puff ball with an emphasis on the "puff." It was labeled *Lycoperdon clavariaeformis*, but as it is certainly a new genus on the order of *Dictybole*, it will now become *Ætnensis clavariaeformis*, McGinty. Nothing is known as to the native country or origin of this curious product, and no specimen is known, hence I am unable to give (in pidgin Latin) a diagnosis of this curious genus, as required by the

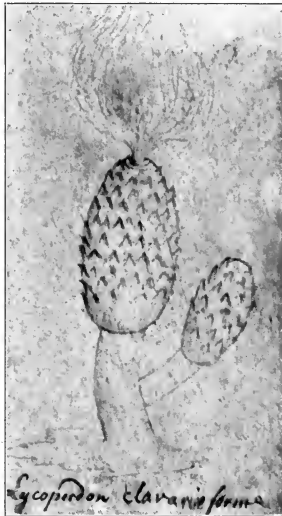


Fig. 275.

latest "laws." It is not necessary, however, to give any description of the genus, as the illustration tells its own story. Certainly no other similar genus exists (or ever did). As the author of this remarkable species had enough consideration not to impose his wonderful discovery on the credulity of the mycological world, it would not be fair to give his name, and I trust no one will recognize his writing. I have named this curious illustration *Ætnensis*, from its evident resemblance to the mountain of the same name.

As I read over this pamphlet before it goes to press I think perhaps I have made too much fun of those who may take themselves seriously. However, I hope it may enable them to see themselves as others see them.

MYCOLOGICAL NOTES.

BY C. G. LLOYD.

No. 35.

CINCINNATI, O.

MARCH, 1910.



L' ABBÉ G. BRESADOLA.
UNIVERSITY OF CALIFORNIA

JAN 21 1911

L'ABBÉ G. BRESADOLA.

Il est à mon avis, peu d'hommes en Europe qui puissent être comparés à l'abbé Bresadola pour sa connaissance profonde des champignons européens. Lors de ma première visite à Paris il y a plusieurs années, je demandai à Monsieur Patouillard: "Quels sont les premiers mycologues d'Europe?" Cette question était posée au présent, mais il lui plut de l'interpréter comme pour le temps passé, car—haussant les épaules, ce qui chez un Français est plus expressif que la parole, il répondit: "Il y en avait deux, Persoon et Fries." Si quelqu'un me posait aujourd'hui cette même question, je serai disposé à en ajouter un troisième: Bresadola.

Je ne crois pas que l'oeuvre de Bresadola vienne jamais à égaler en importance celle de Persoon ou de Fries car ces deux étaient les pionniers, et se consacrèrent à l'étude et à la publication systématiques. Mais Bresadola a appris à connaître les champignons d'Europe je crois, peut-être même mieux que Persoon ou Fries, surtout les sections difficiles telles que les Polyporoides resupinés et les Théléphorées résupinés. Il est regrettable, à mon avis, qu'après avoir dépensé tant d'énergie à l'étude de ces sujets, il n'ait rien publié qui nous donne, de façon systématique, le résultat de ses travaux. Ses ouvrages ont, pour la plupart, traité de "nouvelles espèces" et, comme mes lecteurs anglais le savent bien, je considère que les nouvelles espèces n'ont pas à moitié autant d'importance (sauf toutefois pour l'auteur) que les "vieilles espèces," ni d'intérêt non plus.

Je crois que le monde mycologique en général n'apprécie pas l'étendue du travail accompli par Bresadola concernant les champignons européens. Si vous visitez les collections de Leyde, de Berlin, d'Upsala vous trouverez que Bresadola a étudié et rédigé des notes critiquant toutes ces collections et il est le seul qui ait fait pareille chose. De plus, Bresadola a exercé une grande influence en déterminant les spécimens d'un nombre considérable de correspondants. Je lui ai envoyé des centaines de spécimens et ma première idée nette de beaucoup d'espèces a été tirée de ses déterminations. C'est un homme d'esprit large en ce qui concerne la démarcation des espèces et il fut parmi les premiers à démontrer la distribution étendue d'une même espèce. Il a signalé un grand nombre d'espèces existant en Europe qui étaient jadis considérées comme ne se trouvant qu'en Amérique.¹

Je ne suis pas d'ailleurs, seul à avoir soumis mes spécimens à Bresadola pour leur détermination. Il a une nomenclature spéciale et je la connais si bien que je reconnais de suite une nomination faite par Bresadola lorsque je reçois de correspondants des spécimens qu'il a déterminés. Je pourrais citer une demi-douzaine de correspondants qui, à mon su, ont fait ainsi nommer leurs échantillons. A vrai dire, on a vu se développer en Europe une sorte d'école

¹ Polystictus biformis, Polystictus pergamenus, Trametes sepium, Hydnum Himantia, etc.

Bresadola de mycologues, qui comptent parmi leur nombre, les travailleurs les plus actifs en Europe actuellement. Je pourrai citer : von Höhnel en Autriche, Bubàk en Bohême, Torrend au Portugal, Jaap en Allemagne, Rick au Brésil, Bourdot en France, Breitung en Danemark (et moi-même), dont tous les ouvrages et les espèces portent l'empreinte de l'influence de Bresadola.

Son influence a été encore plus importante en Amérique. Je me pique d'avoir été le premier à découvrir Bresadola en Amérique (cf. Myc. Notes, 1899), la connaissance m'en vint par une remarque faite 'en passant' par le Professeur Ellis dans une lettre. Je crois qu'Ellis ne lui envoya jamais beaucoup de spécimens, mais je voulus essayer la chose, et je lui en envoyai quelques uns comme tentative. Je fus si frappé de ses réponses que je lui envoyai presque toutes les espèces que je trouvai à Cincinnati. Ce qui me fit le plus d'effet dans ma correspondance passée avec Bresadola, c'est qu'il fut le premier à me dire que je lui avais envoyé des espèces "qui me sont inconnues." Tous les autres auxquels j'avais envoyé des spécimens me faisaient connaître leur détermination, ou me disaient que c'était "une nouvelle espèce." Je commençai à me méfier des "nouvelles espèces" de bonne heure, d'autant plus que j'en trouvais (ou me le dit) beaucoup à Cincinnati. Heureusement je ne les publiai jamais, mais je crois que je pourrais nommer un Américain qui a envoyé à Bresadola de nombreux spécimens et qui a publié comme "espèces nouvelles" ceux dont Bresadola lui disait "inconnues pour moi,"—et cela sans un mot de reconnaissance.

M. Murrill, notre archéologue Américain commença un peu tard à apprendre l'existence de Bresadola. Dans ses premières communications il n'était pas d'accord avec Bresadola pour un grand nombre de cas. Dans le cours de son deuxième voyage en Europe il visita Bresadola et dans ses communications finales il a copié presque tous les synonymes de Bresadola (aussi sans le reconnaître). Je ne crois pas qu'il eut pu imiter une meilleure autorité,—mais je suis disposé à être sceptique en ce qui concerne quelques unes des conclusions de Bresadola, surtout lorsqu'il puise dans les vagues écrits du passé. Cependant je suis par nature incrédule comme Saint Thomas.

Je suis heureux de pouvoir présenter à mes lecteurs une photographie de Bresadola tel qu'il est aujourd'hui. Le portrait que j'ai publié il y a quelques années fut pris, évidemment, lors qu'il était jeune. Nous ne sommes pas aussi intéressés à connaître sa physionomie dans ces jours d'antan, quand il était associé avec Quelét et Schulzer. Nous l'aimons bien mieux dans ces années actuelles. Bresadola court maintenant dans sa soixante-deuxième année. Pendant cette dernière saison, il était en fort mauvais état de santé mais on m'assure qu'il est maintenant entièrement remis.

Nous doutons qu'il y ait un autre mycologue aussi universellement et aussi favorablement connu, et mes lecteurs seront heureux, je suis sûr (comme moi), d'avoir un portrait récent de lui.

THE POLYPORES OF PERSOON'S HERBARIUM.

Having on two occasions recently visited Leiden for the purpose of studying Persoon's herbarium, I deem it of interest to give a short account of the historic specimens preserved there. I think it is probable at the coming² Congress at Brussels, Persoon may be taken as the "starting point" for the nomenclature of fungi. While I, personally, attach no importance whatever to the findings of this Congress, and think it is absolutely impracticable to make "rules" for nomenclature and a pure waste of energy, others may not think as I do.³ In the event that Persoon is made the "legal" starting point, then his herbarium will become the Mecca for all priority hunters. A short account therefore will not be amiss.

In the first place I wish to acknowledge my obligations to Dr. Goethart for every kindness and facility in working in the herbarium, and to Dr. Jongmans for valuable aid.

Considering the difficulties that surrounded Persoon in his work, he made a wonderful collection, but like the herbarium of Fries it is largely made up of specimens that were sent to him by his correspondents. Persoon's herbarium is chiefly deficient in the plants he knew best, the plants of his own collection, but the specimens he received and cited in his works are mostly preserved. The greater part of the collection—that is, the smaller specimens which were mounted on sheets—are practically complete and intact to-day, just as when Persoon left them. The larger specimens were kept for many years loosely in drawers, and some of them have disappeared or have been eaten by insects, and from others the labels have been shifted or lost. While they may have lost some of their historic value from this cause, it is not serious and I think very little confusion has occurred that can not be corrected. In recent years Dr. Jongmans has poisoned all of these specimens and placed each in a glass covered box with the label found with it so that no future deterioration or confusion can take place. Quite a number of Persoon's specimens are absolutely authentic, and are types in the strictest meaning of the word. Persoon has endorsed them with the name and added "Synop. fung." or "Mycol. Europ.", showing they were the identical specimens on which he based his descriptions. Figure 331 is a reproduction of such labels. Others (and there are a great many such) are determined with a ? mark, especially those he received from his correspondents. Some species are only represented by specimens marked ? by Persoon. Hence for these there are really no historic specimens in the collection. I rather admire the candor that Persoon must have manifested with his correspondents to so mark and probably so report their specimens sent for determination. It takes a great deal of moral courage for a man looked upon as the highest authority, as

² "Coming" at the time this is written. It will probably be past before this is printed.

³ I am firmly convinced that in the immediate past "rules" in botany have been principally bluffs for the name jugglers, and I anticipate that in however good faith the Brussels' rules may be formulated, that will be the principal use to which they will be put.

Persoon was in his day, to express any doubt as to his knowledge of his subject.

I think there have been three men in Europe who have made a serious study of the European Polyporoids in general, viz: Persoon, Fries and Bresadola. I do not mean to say there have been only these, for there have been others, but these are the three who have published most on the subject in general. In my account of the specimens in Persoon's herbarium, I have in many cases added notes made in Fries' herbarium, or learned from my correspondence with Bresadola.

Thelephora mucida.
Mycel. curv.

Ph. mollispora Lyn Grog
Junior Thel. argophillea?
aut Perisporia foetida?

Fig. 331.

Labels from Persoon's herbarium.

The following species, most of which are well known to-day and well known to Persoon, are not represented by specimens in his herbarium. I include here the species with which, from his writings, he was familiar in the woods but of which he did not preserve specimens. If our lawmakers decree that species are not valid unless preserved by Persoon (as Professor Durand argues in the case of *Geoglossum viscosum*), then if we obey the laws we must give up some very familiar species. The following is the list:

Leptocephalus, *nummularius*, *umbellatus*, *giganteus*, *imbricatus*, *cristatus*, *spumeus*, *candidus*, *triqueter*, *croceus*, *destructor*, *mollis*, *caesius*, *stypticus*, *crispus*, *officinalis*, *levis*, *fraxineus*, *dryadeus*, *marginatus*, *pinicola*, *tristis*, *vitreus*, *holoporus*, *xylostromeus*, *brumalis*, *fuligineus*, *melanopus*.

The following species are represented by specimens in good condition, and I presume, therefore, there will be no "law" made to prevent our using the names. I have arranged them alphabetically under the generic names usually employed in modern books, viz: Polyporus, Polystictus, Fomes, Trametes and Poria. Persoon, as is well known, did not use these names (except Poria and Polyporus) but he anticipated them all except Trametes, and Fries, who brought them into use, merely followed the lines laid down by Persoon.



Fig. 332.
Polyporus Pes Caprae. (From Persoon's herbarium.)

POLYPORUS.

adustus—Specimen poor but evident.

aureolus—This is amorphus as now known. Amorphus was a Friesian species, but Persoon proposed to change it to aureolus, as he stated (truly) it is no more amorphous than any other Polyporus. Fries would not accept the change. While he had no hesitation in changing Persoon's names if they did not suit him (example, Radulum molare), the rule did not work both ways. "Rules" rarely do. As Fries commanded the situation, the plant has become known as "Polyporus amorphus".

betulinus—(Box 58) as well-known.

citrinus—as Persoon called the well-known sulphureus. Box No. 379, labeled "cristatus? giganteus?" by L'éveillé, is this plant.

confluens—Not the usual form but a specimen from Chaillet, which he calls "var. pachypus". I believe it to be a form of confluens, though I have seen only this specimen. It is surely not a synonym for politus, as stated by Fries.

cuticularis—It appears to me that what Persoon called "triqueter" is now known as *cuticularis*. It is a common plant in France and must have been known to Persoon, who described it, I think, as triqueter. There is no specimen in his herbarium. Persoon included cuticularis in his work solely on Bulliard's

figure (t. 462) which is such a poor figure that Persoon never recognized it. However, there is a specimen in his herbarium which I would refer to *cuticularis*, labeled by Persoon "Boletus cuticularis, Bull.?"

frondosus—as well known.

fumosus—(Box 65) which has dark pores and would generally be referred to *adustus*. Persoon records "Odor gratus".

hispidus—(Box 40) as well known.

Juglandis—well known now as *squamosus*.

laccatus—(Box 350) as Persoon called the well-known *lucidus*.

leucomelas—a small specimen as now known, I think.

levis—There is no specimen of *levis* now although there evidently was at one time, for the label is attached to a ferruginous *Poria* with a second label, "medulla panis affinis", the latter evidently the correct one. *Levis* was a pileate species, "passim ad Salices", and its identity, even as a tradition, has been lost entirely.

Pes Caprae—a nice specimen (Fig. 332) from Mougeot. Persoon described it as "vert-jaunâtre".

radiatus—Persoon evidently took *radiatus* from Fries' work. What is known as *radiatus* to-day, Persoon called "triqueter var. *alveus*". There are, however, two very poor specimens in the herbarium labeled "radiatus." Both are very poor and doubtful, and I think neither is *radiatus*.



Fig. 333.

Polyporus Rheades. (From Persoon's herbarium.)

RHEADES. (Fig. XXX.)—Ce sont des spécimens excessivement intéressants car l'espèce de Persoon fut entièrement mal interprétée par Fries. *Rheades* est la plante identique qui fut appelée *vulpinus* par Fries; c'est une espèce rare mais fortement marquée poussant sur le peuplier. Persoon ne rencontra jamais la plante lui-même, mais il en recut deux bons spécimens de Tussac. Ils sont en bon état (dans la boîte 4) sauf que les soies recouvrant le pileus sont usées. Fries a classé le *Rheades* parmi les *Spongiosi*, section à laquelle il n'appartient

pas. Cette idée lui fut suggérée par un dessin que lui envoya Quélet, sous le nom de fulvus; Fries biffa ce nom et écrivit à la place celui de Rheades. Telle peut avoir été la source des idées qu'avait autrefois Bresadola lorsqu'il présenta (Fungi Tridentini T. 136) sous le nom de Rheades une plante qui a depuis été appelée Tamaricis. Bresadola a corrigé cette opinion depuis lors.

rutilans—as well known, and as well illustrated by Persoon. It is the same as Fries called nidulans.

tuberaster—I doubt very much if the specimen in Persoon's herbarium which he cites, Thomas, Calabria, is the same as Jacquin's illustration on which Persoon based the name. In such cases I hope our lawmakers will not fail to legislate as to which we will have to accept.

varius—(Box 394) as well known.

viscosus—The type "Pontivy, France, Cauvin" is in good condition. It is a Boletus (mitis, teste Bresadola) not a Polyporus.

POLYSTICTUS.

abietinus—as well known.

argyraceus—The specimen from Chaillet on which Persoon based this species is glued top down and I could not get much idea from the pore surface. It may be an "exolete versicolor" as Fries refers it.

cinnabarinus—Three specimens as now well known. It is rather rare in Europe.

dolosus—surely the same as abietinus and from Persoon's remarks and labels it is evident he was somewhat of that opinion himself.



Fig. 334.

Polystictus lutescens. (From Persoon's herbarium.)

LUTESCENS. (Fig. 334)—Il y a un bon spécimen dans l'herbier de Persoon et c'est une forme "fauve" de *Polystictus hirsutus*. Il y a un grand nombre de Polypores qui prennent des formes colorées, généralement fauve et brun, et on a basé un grand nombre "d'espèces" sur ces formes fauves. Ces formes de couleurs correspondent pour les Polypores aux blonds et bruns de la race humaine, et les "fauves" sont d'un type plus méridional. Je crois que le *Polystictus lutescens* est plus commun dans le sud de l'Europe et il est parfois déterminé comme *Polystictus velutinus*. Bresadola a déclaré dans ses écrits que le *lutescens* de Persoon est le même que le *Trametes hispida*. Nul ne connaît

mieux que Bresadola la différence entre ces deux espèces et il admettra certainement l'erreur en voyant notre photographie (Fig. 334) du type Persoon.

Lorsque Bresadola s'adressa à la direction du musée de Leiden pour obtenir des spécimens, le directeur, dont j'ignore le nom, était d'esprit fort circonspect. Il préleva de petits fragments qu'il envoya à Bresadola; on voit nettement sur notre photographie du *Polystictus lutescens* l'endroit où on coupa ce fragment. Comment il fut possible pour Bresadola, avec un spécimen si minuscule, de définir quoique ce soit, me surpasse, mais je crois que cela explique son erreur au sujet de la plante en question. Le *Polystictus lutescens* n'est pas un synonyme de *Trametes hispida*, ainsi qu'on l'a dit, mais plutôt une forme colorée de *Polystictus hirsutus*.

perennis—(Boxes 195 and 199.) as well known.

versicolor—(Boxes 138, 348 and others.) Persoon knew *versicolor* as it is known to-day, excepting that he included *zonatus* in it.

FOMES.

conchatus—as known to-day.

Euonymi—(Box 354.) There is a good collection under the name "*Polyporus scoriatum*," which is an unpublished name of Persoon. It is practically the same thing as *Fomes ribis*, as pointed out by Bresadola, and excepting the host, they are very close. I think there is a little difference, however.

fomentarius—(Boxes 415 and 417.) There are two large specimens, both attributed to Persoon, though neither labeled by him. They are both correct, however, and the common form on beech in France.

fomentarius var. *applanatus*—(Box 393.) There is a good specimen labeled by Persoon as above. It is a very common species now known as *Fomes applanatus*, for it is no variety of *fomentarius*, as Persoon thought.

IGNIARIUS.—(Boite 387.) Voilà un bon spécimen, et c'est bien la même plante que celle qui fut connue de Fries comme *igniarius*. Je crois que la plupart des mycologues français sont dans l'erreur en ce qui concerne la plante qu'ils appellent *igniarius*. L'*igniarius* fut un nom proposé par Linnée et on écrit souvent son nom à la suite d'*igniarius*. Si sa signification doit être interprétée dans le sens de Linnée, je n'ai rien à dire, car je ne crois pas que personne ait jamais su ni ne sache jamais, ce que Linnée appelait *igniarius*; je doute même que Linnée l'ait su lui-même. Persoon et Fries donnèrent à l'*igniarius* sa signification et il n'y a pas de difficulté à découvrir ce qu'ils entendaient par ce mot. Ainsi que le déclare Fries, c'est une plante très commune sur les saules en Suède et même en France. La couleur du contexte est d'un brun ombré et la plupart des mycologues français appellent cette plante *Fomes nigricans*.

Ce que les mycologues français appellent *igniarius* est une toute autre plante qui pousse sur le *Quercus*. Son contexte est d'une couleur beaucoup plus claire, se rapprochant de la couleur rhubarbe. Quoique cette plante pousse en Suède et en France, ni Fries ni Persoon ne l'ont jamais distinguée. Ce fut Karsten (à ce que me dit Mr. Romell) qui en nota les différences d'avec l'*igniarius* et l'appela *Fomes robustus*. Je crois qu'il n'y a pas de *Fomes nigricans* dans le sens de l'Hym. Europe de Fries car il confond deux choses. Le spécimen qu'il cite "*Scotia Klotzsch*" se trouve dans le musée de Berlin (section d'exposition). C'est une forme noire de *fomentarius* et ce fut l'idée primitive sans doute de *Fomes nigricans* "ad truncos *Betulae*, nec alibi." "Bull. A 401 hunc satis refert." Je crois que Bresadola possède bien le *Fomes nigricans* dans sa signification primitive, et que les mycologues français se trompent à ce sujet.

loricatus var. *glaucoptus*—(Box 179.) A specimen from Chaillet which was all known to Persoon. The same collection is found in Fries' herbarium. It was referred by Fries to *igniarius*. In my opinion it is *salicinus*.

POMACEUS—(Boites 105 et 170). Persoon avait des idées bien arrêtées au sujet des *pomaceus* et il en fit un rapport bien déterminé dans ses écrits et ses spécimens. Je crois que son nom devrait être employé. Fries considère le *pomaceus* comme une variété d'*igniarius*; cela s'en rapproche certainement, la couleur du contexte est la même, les spores sont pareils, mais il y a sur l'hymé-

nium du pomaceus un grand nombre de setæ colorés qui ne paraissent pas—ou du moins je ne les ai jamais constatés—sur l'igniarius. Récemment Bresadola fut le premier à indiquer les points de divergence entre cette plante et l'igniarius, mais il l'appela fulvus de Scopoli.

Je crois que le rapport de Scopoli est trop vague et le fait que Quélet, Marcucci, Bresadola, Fries et Hartig ont chacun pu croire qu'il reconnaissait le fulvus de Scopoli dans une plante tout à fait différente, doit venir à l'appui de mon opinion.

ribesius. (Box 288 and 286.)—as well known now as Fomes ribis.

TORULOSUS. (Boites 62, 183, 207, 409.)—Ce sont les plantes les plus intéressantes de la collection Persoon, car toute trace des recherches faites par lui à leur sujet a disparu des traditions mêmes de la mycologie européenne. On rencontre fréquemment ce Fomes sur le chêne aux alentours de Paris et il était bien connu de Persoon ainsi que des mycologistes actuels en France. Persoon l'appela torulosus à cause du bord obtus et enflé qui en est souvent un caractère saillant. Il parle de la figure "A 454 var. c" de Bulliard qui est bien dessinée mais mal coloriée; il parle aussi de la fig. A 80 de Bolton qui n'a que peu de ressemblance avec cette plante.⁴ Il en parle familièrement dans ses "Champignons comestibles" de la façon suivante: "un champignon qui croît au pied des chênes, large, aplati, et brunâtre, ayant sur la superficie des protubérances souvent difformes, mais point de cercles." Il a conservé dans son herbier quatre beaux spécimens de grande taille et très caractéristiques (boîtes 62, 183, 207 et 409.) Malgré tout cela, Quélet découvrit que c'était une "espèce nouvelle" et l'appela Fomes rubriporus. Le mot "nouvelle" paraît n'avoir été employé par Quélet que dans le sens mycologique. Cela voulait dire "espèce nouvelle pour Quélet." L'année qui suivit sa publication par Quélet, Boudier le publia aussi comme Fomes fusco-purpureus et quoique la publication de Quélet ait été antérieure à la sienne, Boudier a toujours employé sa propre dénomination et tout récemment il a présenté une de ses belles illustrations sous ce nom. Ceci peut paraître étrange à première idée, mais je crois qu'il avait de bonnes raisons pour agir ainsi. Boudier fut le premier à trouver la plante et il l'envoya à Quélet en la dénommant fusco-purpureus, mais avant qu'il ait pu la présenter publiquement, Quélet l'émit sous son propre nom. Le procédé était peu délicat pour ne pas dire un mot plus sévère. Je pense qu'en cas pareil Boudier sent, comme moi, que tout en respectant dûment "l'antériorité" nous préférons que cette loi soit observée avec plus de bonne foi. Cooke qui n'eut jamais grande sympathie pour Quélet (et je crois que le sentiment était réciproque) employa la dénomination de Boudier, ajoutant simplement celle de Quélet comme synonyme. Saccardo qui suivit la méthode d'arrangement (ou de dérangement) de Cooke pour les Polypores, fit de même.

TRAMETES.

cervinus.—There is a good specimen in Persoon's herbarium and it is the same plant now known as Trametes mollis and was so referred by Fries. Persoon's plant has a distinct, reflexed border, as it has in southern and central Europe, but in Sweden I have never found this border well developed. It will be noted that Fries puts it in the resupinate section. I shall use Persoon's specific name as it well designates the color, and the plant is never "mollis" in any sense of the word. Besides as Fries changed many of Persoon's names on the grounds of "priority" I think he should have adopted some of them on the same grounds.

odoratus.—(Box 14) as now well known.

odoratus var. ceratophora.—(Boxes 389 and 401) an abnormal subterranean form.

pini.—(Boxes 39 and 234) as now well known.

suaveolens.—(Box 66) as now well known.

⁴ Quoique le Fomes torulosus soit fréquent autour de Paris et très répandu sur le continent, on n'en a jamais fait mention en Angleterre, où il se rencontre sans doute aussi.

PORIA.

Comme tous les champignons à résupin le genre *Poria* n'a été que peu étudié en Europe et je crois que la plus grande proportion des anciens spécimens que l'on voit dans les musées sont maldéterminés; il est certain qu'on ne peut en dire grand'chose. Bresadola fut le premier à étudier sérieusement ces plantes, si l'on excepte les premiers temps de Fries à Femsjö. Fries contribua beaucoup à leur confusion; et on constate dans ses collections et Icones des contradictions directes en ce qui concerne ces spécimens; ceci a été prouvé par Bresadola. Tandis que Fries observait et étudiait soigneusement ces spécimens durant sa jeunesse à Femsjö, toute son attention et tous ses efforts furent consacrés pendant ses quarante dernières années à l'étude des agaries, si bien que les détails concernant les *Porias* et autres champignons à résupin sont assez confus dans ses derniers écrits. Je crois que ses dispositions des espèces de Persoon furent presque toutes erronées; il n'avait d'ailleurs aucun moyen de connaître les échantillons de Persoon.

Quant à Persoon, ses idées n'étaient claires en ce qui concerne les *Porias* que pour un bien petit nombre d'espèces. Ceci ressort de son herbier où on voit des noms manuscrits sous un grand nombre de *Porias*, sans compter beaucoup de spécimens qu'il a marqués d'un point d'interrogation. De plus, une quantité des noms de sa *Mycologia Europaea* sont tirés de Hoffmann et étaient primitivement basés sur des croissances anormales trouvées dans less mines et les caves. Sur les dix-sept spécimens incontestablement authentiques qui figurent dans son herbier, six seulement furent recueillis par lui personnellement. Les autres sont des noms donnés par lui à des échantillons qui lui furent envoyées et qu'il ne connaissait pas. Je ne sais si Persoon fut le premier à se tirer d'embarras en baptisant du nom d' "espèces nouvelles" tous les échantillons qui lui étaient inconnus; je suis bien persuadé qu'il ne fut pas le dernier à employer cette méthode!

bibula.—Persoon made but one collection. It is white and has large, angular pores and may prove to be the same as *ambigua*. I found no cystidia on it however that occur on *ambigua*.

brunnea.—Only one little fragment from Chaillet on which the species was based. It is too scanty to tell much. The color was probably reddish as Persoon first referred it to "*rufus*."

byssina.—It is evident that Persoon referred several things to *byssina*, among others a specimen from Chaillet which Persoon also called "*molluscus*," showing that he had no very definite idea as to the latter species.

colliculosa.—There is a good specimen in Persoon's herbarium. It was on oak, is white and has *large, rigid* pores, about what Fries called *Trametes serpens*, I think.

contigua.—It will be noted that Persoon (*Myc. Europ.*, p. 74) placed *contigua* in the pileate section, but it is usually held to be a *Poria* nowadays, and Persoon's type is resupinate. It is in good condition and is very close to the common plant in Sweden that Fries called *Poria ferruginosa*. Both have ferruginous context and abundant colored setae on the hymenium. I found no spores in Persoon's specimen. I think that *ferruginosa* and *contigua* are not exactly the same plant, but I have no clear idea as to the difference between them.

cribosa.—This was based on one specimen from Helvetia still in Persoon's herbarium. It belongs to the ferruginous section with abundant colored setae and small superficial pores. I doubt if it is well developed.

cruenta.—Only one collection which is same general color, only much darker as shown on Persoon's plate (t. 16 fig. 4). Strange as it may seem, I believe it is the same plant as shown Rostk. t. 58 which is *orange when fresh* and changes to the color as shown by Persoon in drying. This plant is now called by Rev. Bresadola (I am sure in error) *Poria nitida*, Pers.

dentipora.—Only the type, all that was known to Persoon. It has a thick subiculum and superficial, lacerate pores. Persoon described it as "*subnitidus*."

ferrea.—I think *ferrea* and *Racodioides* are the same thing. Color pale ferruginous with a spongy, sterile margin. Pores rather large (not minute, as Persoon says for *ferrea*). Colored setae abundant. Spores I did not find. Though I do not know the species, I think it can be identified from Persoon's specimens.

fimbriata.—This is *Porothelium fimbriatum* as now well known.

frutulata—A very poor specimen from Chaillat. I do not know it, but it surely has no relation to *salicinus* as Persoon suggests.

fugax—The type is there, a piece of wood, and under a lens I think I can see a faint indication of a fungus on it. If the species can not be recognized from Persoon's *Icones Pictae* T. 16, f. 2, it will never be known in the sense of Persoon.

fusco-carnea—Persoon only found this once, near Paris, on dead branches. It is unknown to me, but the specimens are very poor.

incarnata—The type is in good condition. It is a thick slab about 6 mm. thick, with long pores and thin subiculum. Persoon says white within and Fries suggests it was a "lusus". It has no resemblance to Fries' *Icones* of *incarnata*, but it may be his *Poria placenta*.

incrustans—This was Persoon's change of *obliqua* of Fries. It is needless to say that Fries never accepted it. There is only a small fragment from Sweden.

laurens—The type from Chaillat is in the collection as figured (poorly) *Myc. Europ.* T. XVII, fig. 2, not fig. 3, as cited by error. It is resupinate, *Polyporus amorphus*.

Medulla panis—In the Persoonian sense this is quite evidently a frequent species "assez vulgaire", "sur des bois travaillés". There are seven collections in his herbarium. It is a thick, white, firm species on the *Trametes* order, with small, round, firm pores. *Medulla panis* was based on an old Jacquin picture which each person interprets differently, and it is said that Persoon, Fries and the Danish botanists each take a different plant under this name.

megalopora—Persoon named two collections, one from Mougeot, the other from Desmazières, not the same I think and neither normal.

mollusca—The type is in good condition and seems to me the same as *mucida*. The type was not sent to Bresadola, but a specimen that Persoon had marked "*Poria spongiosa*, *Poria mollusca*?" I think, notwithstanding, that *Poria mollusca* will have to be taken in the sense of Bresadola, who gave the first account of it that can be recognized. In the woods of Sweden I was never able to tell *mollusca* from *vulgaris* without the microscope, for excepting the spore characters they are much alike. I doubt if either Persoon or Fries, neither of whom used the microscope on *Poria* spores, could tell the two apart.

mucida—This is a white species with large pores and a soft white border. I do not know it with certainty, but I doubt if it is the plant now so called.

NITIDA.—Ce fut, je crois, le Rev. Bresadola qui observa tout d'abord les caractères microscopiques de cette espèce, sous le nom d'eupora de Karsten. (Karsten était si occupé à chercher de nouvelles espèces qu'il n'avait pas toujours le temps d'en étudier les caractères au microscope.) Cette espèce présente une très curieuse cystidia, de grande taille, sur l'hyménium. Ce fut Bresadola qui me fit connaître cette plante et je reconnus l'espèce de Persoon dès que je la vis. La grande cystidia si abondante sur l'hyménium, facilement distinguée sous le microscope confirma entièrement cette opinion dès le début. Ce type de nitida ne fut pas envoyé à Bresadola et sa conclusion, tirée sans doute de l'illustration de Persoon, est erronée. J'indiquerai la généalogie de *Poria nitida* par le langage symbolique habituellement employé, ainsi qu'il suit: *Poria nitida* Pers. Obs. *Myc.* 2 p. 15 (non Fries, non Bresadola): *Poria Blyttii* Fries, *Hym. Europe* p. 571 p. p. (non Bresadola)⁵: *Poria eupora* Karst. *Not. Soc. Fenn* IX p. 360.

Racodioides—see *ferrea*.

radula—I believe this to be the same as *versipora*.

salicina—as, now well known.

scalaris—There is only one collection (ex Gay). I think it is the resupinate form of *Trametes serialis*, the same as Fries called *Poria callosa*.

⁵ On trouve dans l'herbier de Fries deux plantes différentes remises par Blytt et dénommées: *Poria Blyttii*. Les deux présentent ces cystidia particulières, mais cela n'est à mon avis qu'une coïncidence. Bresadola les considère comme des variétés d'une même espèce. Celle qui pousse sur bois acérin est rare, je ne l'ai jamais rencontrée et Mr. Romell ne l'a trouvée qu'une seule fois; celle qui pousse sur les bois feuillus est beaucoup plus commune. C'est manifestement cette dernière "avec bord pâle" que Fries décrit sous le nom de *Poria Blyttii*, et c'est celle-là aussi que Persoon appelle *Poria nitida*, tandis que Karsten la denomme: *Poria eupora*.

TAXICOLA.—Persoon ne connaissait qu'un petit spécimen venant de Chaillet. Ce spécimen est noir comme du charbon maintenant et dans la figure de Persoon il est noir aussi, mais le subiculum reste blanc. Chaillet l'appelle sur l'étiquette "Sistotrema Taxi" et dit "la couleur n'a pas changé". La couleur avait changé, mais ni Persoon ni Chaillet ne le savaient, car lorsque la plante est fraîche elle est rouge. On pourrait écrire un long chapitre au sujet des erreurs dans les déterminations de cette plante. Elle existe en abondance dans les musées et sous toute espèce de noms. Je l'ai vue étiquetée: *Merulius petropolitanus*, *Merulius molluscus*, *Merulius rufus*, *Merulius serpens*, *Merulius Ravenelii*, *Poria violacea*, *Poria purpurea*, *Poria incarnata*, *Poria rufa* et *Poria sorbicola*, et avec une seule exception, tous se référaient à Fries. Je crois que ni Persoon ni Fries ne connurent réellement cette plante. Persoon ne vit jamais que ce petit fragment décoloré que lui remit Chaillet, et il ne l'aurait jamais reconnu s'il l'avait vu en vie. Fries lui donna deux ou trois noms différents, mais certes il ne lui donna pas autant de noms qu'on a bien voulu le dire. Je crois que Bresadola fut le premier à avoir une connaissance distincte de cette plante et malheureusement il basa ce nom sur le spécimen qui paraît dans l'herbier de Persoon. Il serait difficile de trouver un plus mauvais nom, surtout si on écrit "Persoon" à sa suite. Persoon ne connut jamais la plante et nul ne peut jamais avoir eu le moindre soupçon sur son identité d'après les écrits ou les figures de Persoon. Elle pousse sur le *Pinus sylvestris* (*toujours*, as ce que nous savons) et non seulement elle n'est pas "taxicola" mais on n'a pas de preuve qu'elle ait jamais poussé sur le *Taxus*. Je ne connais pas d'autre nom certain qui puisse lui être appliqué (sauf *sorbicola* qui est aussi mauvais que *taxicola*). Je crois que c'est la violacea des derniers écrits de Fries et l'*incarnata* de ses premiers écrits ce n'est pas certain et tous deux sont des noms insuffisants. Je voudrais bien que nos législateurs donne l'autorité à quelqu'un de découvrir que c'est une "espèce nouvelle" et de lui trouver un nom approprié.

versipora—Many specimens of many "forms". There is no doubt that it is that common species around Paris with sinuate Pores inclined to become irpicoid if growing in an upright position. Persoon gave a different varietal name to almost every collection. It is *Poria radula* in the sense of Bresadola, and probably also of Fries. It is the common plant in England, known to Berkeley as *vaporaria*. Berkeley passed this over to us in America, and Ellis always called all large, white-pored *Porias* "*vaporaria*." It is not *vaporaria* in the sense of Fries.

umbrina—There are two collections, one from D. Graves, the other from Chaubert. Both surely the same and on elm, and I think a distinct species not otherwise known to me. It belongs to the ferruginous section and has abundant colored setae. The specimen from Desmazières in Fries' herbarium is his own *laevigata*, as pointed out by Bresadola, quite a different species I think.

undata—Only one specimen from Chaillet. It is the resupinate form of what was distributed by Rabenhorst as *Polyporus Broomei*. It was found abundantly, and fine pileate forms were found in the botanical garden at Berlin by Dr. Hennings. It is supposed to be an exotic species.

unita—Persoon evidently based this on a single collection from Mougéot. It may be resupinate *igniarius*. I am quite sure it was never white, and could not be *medulla panis* as stated. Nor is it the same as the specimen in Fries' herbarium.

Mon français—Mes articles français paraissent en français dans mes brochures mais je ne voudrais pas que mes lecteurs croient que je les écris en cette langue. Ils sont traduits de l'anglais par une personne qui connaît parfaitement le français et l'anglais mais qui n'est pas mycologue, et par conséquent elle pourra se tromper pour les termes techniques.

Quant à mon français, je le lis aussi facilement que l'anglais; je le parle imparfaitement et je ne l'écris pas du tout.

Geaster Dybowski.

Monsieur Patouillard a aimablement attiré mon attention sur cette plante; il dit que j'ai fait erreur de référence en ce qui la concerne, dans mon Synopsis des Geaster (Myc. Notes p. 316). En examinant de nouveau la plante j'admets volontiers qu'elle diffère de



Fig. 335.

Geaster Dybowski, natural size; also mouth enlarged (X 6.)

tous les autres Geaster epigés en ce qu'elle a une bouche striée, fait que je n'avais pas observé dans mon examen précédent. Je dois encore la considérer comme étant très proche du Geaster velutinus dans lequel je l'avais placée.

Les Geaster, à bouche striée ou non-striée, sont en général des plantes fort différentes, et dans mon premier travail sur les Geasters, je basai sur ce fait la division primaire du genre. Nous ne pouvons

grouper des plantes d'après un seul caractère car il y a toujours des exceptions où une plante présentera un des caractères qui sont le trait principal de certains groupes, tandis que dans ses autres caractéristiques elle se rapprochera davantage d'autres groupes. C'est l'ensemble des caractères qui fait nos espèces aussi bien que nos groupes.

Le Geaster Dybowski correspond en tous points au Geaster velutinus dans ses traits essentiels, c'est à dire sa nature épigée, la surface de son péridium, sa forte columelle.

Je ne puis croire qu'un des specimens d'une même récolte à bouche striée suffisant pour faire une espèce distincte, car j'ai vu des bouches striées et non-striées dans la même récolte d'une seule espèce. Que ce soit là cependant une différence qui mérite un nom spécial, je l'admets volontiers et je considère le Geaster Dybowski comme une forme à bouche striée du Geaster velutinus. Nous avons un autre cas, exactement semblable dans les Geaster: le Geaster MacOwani (Myc. Notes p. 311, t. 97) que je considère comme étant une forme à bouche striée du Geaster fornicatus, espèce qui, dans toutes les parties du monde a une bouche régulière sauf dans cette forme sud-africaine.

A REEXAMINATION NEEDED.

"It now seems doubtful if the Schweinitz specimen is the true *Hydnum strigosum*, Sw. but a reexamination of the plant would be necessary to settle the question."—Banker, in "*Mycologia*," January, 1910.

It seems to me important that Mr. Banker should reexamine it at an early date, as on his first examination he included it in a "new genus" of *Hydnaceae*, and the plant in Schweinitz's herbarium is a *Polyporus* with but little resemblance to a *Hydnum*, and no more resemblance to *Hydnum strigosum* than it has to a porcupine. Mr. Banker has probably noticed the passing note in my letter No. 24, on this subject, and has elaborated at great length with another new juggle.

I hope when Mr. Banker reexamines Schweinitz's specimen he will be impressed, as I was when I examined it, with the folly of any one presuming to change Fries' names of *Hydnium*s and at the same time not distinguishing a *Hydnum* from a *Polyporus* when he sees it.

Now that Mr. Banker has made his little "correction" we await with interest another little "correction" from the editor of the N. A. F. The plant is a *Polyporus*, very closely related to *Polyporus hispidus*, but as far as I know a remarkably distinct "new species." The editor of the N. A. F., who has examined Schweinitz's herbarium several times, never recognized it as a *Polyporus*, possibly because it was labeled "*Hydnum*." Professor McGinty calls it *Inonotus Bankeri*, in recognition of the valuable work done by Mr. Banker on the subject, and furnishes the following pedigree and description:

Inonotus Bankeri, McGinty, sp. nov.

Hydnum strigosum, Schweinitz (not Swartz.)

Steccherinum strigosum (Swartz.) Banker, Mem. Torrey Club, 1906: 128.

Pileus thick, sessile, compact, dimidiate. Surface densely covered with coarse, strigose hairs. Context bright, ferruginous, soft, spongy. Pores concolorous, large, sinuate, irregular, becoming lacerate when old. Spores abundant, elliptical, smooth, 9×11 mic., deep ferruginous color.

I trust when the little "correction" is made in the North American Flora, due notice will be taken of the priority of Professor McGinty's name.

RESUMÉ OF PHALLOIDS RECENTLY RECEIVED FROM CORRESPONDENTS.

USSHER, C. B., Straits Settlements:

Phallus multicolor, photograph, color sketch and specimen.

LAING, H. W., New Zealand:

Clathrus cibarius, fine photograph recently published in *Mycological Notes*. It is the first we have received of this species.

KUSANO, S., Japan:

Color sketch of *Phallus rugulosus*, demonstrating its identity with *Phallus gracilis*.

Pseudocolus Javanicus, color sketch and notes on its occurrence in Formosa.

O'CONNOR, CHAS., Mauritius:

Simblum periphragmoides. Alcoholic specimen and sketch, showing that shape has little value in deciding species in the "yellow" *Simblums*, and that *Simblum Texense* probably can not be maintained as distinct from *Simblum periphragmoides*.

Clathrus Fischeri, alcoholic specimens and color notes, placing this species for a time at least as distinct in its color (yellow) from *Clathrus gracilis* of Australia.

PETCH, PROFESSOR T., Ceylon:

Phallus indusiatus, five fine photographs of various forms.

Lysurus Gardneri, photograph same as found on page 37 of "Synopsis of the Known Phalloids".

Clautriavia merulina, three photographs; one with pileus removed, another a section, showing the attachment of the veil which is confluent with the top of the stipe in a manner entirely distinct from any species of *Phallus* known to me.

NEW SPECIES.—Most of the proposers of "new species" are content to write "new species" after their names, and let some one else find out if the species are new or not. A recent writer on the Philippine plants has quite an improvement. He calls them "Brand New Species." I suspect, however, when they are traced down they will be found to be of the same old, familiar H. & M. variety.

MYCOLOGICAL NOTES.

BY C. G. LLOYD.

No. 36.

CINCINNATI, O.

AUGUST, 1910.



PROFESSOR W. A. KELLERMAN.

477

UNIVERSITY OF CALIFORNIA
AT LOS ANGELES

JAN 20 1942

PROFESSOR W. A. KELLERMAN.

It was a heavy blow that fell on American mycologists at the death of Professor Kellerman. I am afraid there is no one to take up and continue his work.

His earlier years were devoted largely to the microscopic species, and when his career was suddenly cut short he had just begun to get a good start with our larger fungi. Professor Kellerman was perhaps the most energetic and enthusiastic mycologist we had. In fact, he paid the penalty with his life in venturing into a tropical climate in search of material for his favorite study. His death was a severe shock to all of us, for only a few months previous he had left us in the best of health, with hopes of rich additions to his collections.

When Professor Kellerman began the publication, or rather revived the publication of the *Journal of Mycology*, he succeeded in instilling new life into American mycology. It was largely a labor of love, for I think the publication was never a success from a financial point of view and always drew on his private resources. There are few men so enthusiastic in their work that they are willing to make personal sacrifices in order to carry it on.

OUR LATEST LAWS "BY AUTHORITY."

I was glad to be advised by a special correspondent at Brussels that the recent botanical congress had adopted Fries, with a few exceptions, as a starting point for mycological nomenclature. While I do not believe that nomenclature can be regulated by artificial law, I am personally much gratified that the congress was wise enough to set their disapproval on the flood of cheap date-dictionary juggling so prevalent of late. While it will probably have little effect with this work, as those who have indulged in it are so deep in the mire that they can not extricate themselves, yet if they persist in this course it puts them in the position of being open outlaws and removes the last vestige of the excuse that the work is done under the guise of law.

I have not seen the full text of the Brussels "Laws," and do not know if they contain any "sleepers." I am thoroughly convinced, from what I learned in conversation with mycologists in Europe, that those with whom I talked were earnest in their desire that something be done at Brussels to prevent name juggling, but whether or not they have succeeded is another thing. The name juggler is a natural product of the personal advertisement system in connection with plant names. Probably as long as one exists, so will the other, for they go hand in hand.

Botanical congresses, like political conventions in the United States, are governed by a system of trading, wherein a few wire-pullers in each section direct the matter. Fortunately, from a fungus point of view, the chief pullers in this department (Farlow and Atkinson) had rather sane ideas and made a late date (Fries) their starting point. However, the "starting point" in nomenclature of fungi is of about as

much practical importance to the student of fungi as is the exact location of the north pole to the average tourist. Still, the later the "legal" starting point the less possibility of "legal" juggling. Therefore mycologists in general have reason to be thankful that Farlow and Atkinson, as well as the others who voted in approval, made their date no earlier. But it scarcely seems fair to our Kuntzeite friends or to those who worship the sacred principles of priority to give them such a hard jolt in the direction of fungi in general, and at the same time except special departments, such as Uredinaceae and Myxomycetes, where the door for name juggling is open back to Adam.

Taking everything together, our "law-makers" did very well, and personally we are grateful that it was no worse.

Our botanical law-makers may be likened to a party of children at play. It amuses them and does no permanent harm (nor good, either, for that matter), as botanical nomenclature is subject to the same laws that govern any language, viz: the rules of use based on fact and evidence. It is useless to try to make artificial rules to regulate the course of natural laws.

THE GENUS THELEPORUS.

This is an unfortunate genus in more than one respect. First, the name is too close to the well-known genus *Thelephora*, and second, the genus is not of much importance, though it is carried in



Fig. 374

Theleporus cretaceus (x6).

all of our systematic works. The word "thele" means a papilla, and the character of the genus is a papilla in each pore, otherwise the genus is the usual genus *Poria*. The papillae are very small and can scarcely be seen except when enlarged. We think, however, they can be found in our enlarged photograph if viewed with a magnifying glass. But one species of *Theleporus* is known, and but one collection, as far as I am aware. This was from South Africa, by Wahlberg, and was named by Fries (*Theleporus cretaceus*) about sixty years ago. In a few words, it is a *Poria* with a papilla in each pore. The color is white; otherwise, our figure tells the whole story.

FEMSJÖ IN FRIES' DAY.

The illustration on the opposite page represents Femsjö in the early days of Elias Fries. It has never been published, and was made from an oil painting in the possession of Theodore Fries at Upsala. The house on the left is the house in which Elias Fries was born, and where he lived when he did his early work with fungi. His father was pastor of the church on the right.

Femsjö is located in southern Sweden, and seems to me to be about on the dividing line between the southern and northern regions, so that it embraces the flora of both. Southern Sweden is a rich, rolling, agricultural country. The prevailing wood is beech. Northern Sweden is for the most part a rocky, hilly, sterile region, with a few fertile spots in the valleys, but principally rocks and woods. The prevailing forest trees are pine and spruce, with occasionally a few sections of frondose woods along the lakes. The region at Femsjö is a combination of both these types. The greater part of the forests is of acerous wood, but sandwiched in between are a few large tracts of beech woods. Fries was therefore most fortunately situated at Femsjö to find the fungi that occur in both woods.

From an agricultural point of view, Femsjö is a most barren region, for while the soil is very fertile (that is, what soil there is), the rocks are far more abundant than the soil. Before a field can be prepared for cultivation the rocks have to be removed, or perhaps "quarried" would be a better word. The greater part of the country around Femsjö is in a wild state even to this day, doubtless due to the labor involved in preparing the soil for cultivation. Under these adverse conditions of agriculture, farming means a constant struggle, and such a life develops characters of thrift and economy instead of waste, as in more favored regions. The average American farmer would starve to death on a farm at Femsjö, but the Swedes make good crops—of hay, for example—on a rocky field that would not be considered worth the labor of harvesting in our country.

Fries' father, who was a highly educated man, spent his life as pastor of the little church that you see in our illustration. Excepting the time he spent in college, Elias Fries lived here during the early years of his life, until the age of forty years, when he was offered a professorship in the University of Upsala and removed with his family to this city. The old church at Femsjö remains practically the same as it was in Fries' time, with the exception of a few minor changes. The old home has been torn down and a new pastor's residence built, somewhat farther to the left than the building in the picture. In fact, with the exception of the church, the entire surroundings have been so changed as to be scarcely recognizable. I am told by Theodore Fries that this oil painting is a very accurate representation of the surroundings at that time, as he well remembers it when a boy.

As Elias Fries has had more influence on the development of the mycology of Europe than all others combined, with the exception of



Persoon, I think it is quite interesting to put on record a picture of his early environment. My best thanks are due to Professor Theodore Fries, of Upsala, for furnishing the copy from which this illustration is made.

THE GENUS LYCOGALOPSIS.

In my work with the puff balls I have never felt sure of the genus *Lycogalopsis*. Specimens I have seen so referred I have always thought were immature *Lycoperdons*. I was therefore greatly pleased to receive from Dr. Chas. Bernard, Java, what I noted at once to be a genus new to me, but which on investigation I find to be the genus *Lycogalopsis*, as published by Professor Fischer. The value of this genus rests for me on its peridium character. The plant grows on rotting wood and develops on the surface of the wood a thick, white subiculum. The little peridia are produced on this subiculum, or rather, to speak more correctly, from this subiculum as the peridia are simply continuations of the tissue of the subiculum. The peridia are quite thin, and rupture irregularly, and fall away in dehiscence, leaving cup-shaped remains in the subiculum, as shown in Fig. 376. It is this peculiar, peridial structure that gives the genus its value to me, as I know no other that is similar. The interior of the puff ball shows nothing very marked. There is no sterile base, and the pale olive gleba, which consists mostly of a mass of spores, fills the interior. The capillitium is very scanty and rudimentary. The spores are globose, pale, smooth, and 4-5 mic. in diameter. The surface of the peridia is smooth and white. This little species came originally from Java and was called *Lycogalopsis Solmsii*, the generic name, referring to the resemblance of the peridia to those of the common *Lycogala*.

SOUTH AFRICAN PHALLOIDS.

J. Medley Wood, who has observed the plants of South Africa for many years, favors me with an interesting note on the phalloids. He has noted but three species.

Kalchbrennera corallocephala is the most frequent species.

Phallus indusiatus is not rare, yet is not as frequent as the preceding.

Lysurus Woodii is extremely rare and in more than fifty years' observation Mr. Wood has met it but once. The only collection was made in one place not more than three or four yards in extent. Mr. Wood has searched for it in the same locality since, but never found it again. I do not believe the whole story of South African phalloids has yet been told. Not long ago I saw in one of the museums a dried specimen, recently collected by S. T. Saxton, Cape Town, and while I can not tell much from such a specimen, it is surely some species both unique and unnamed.

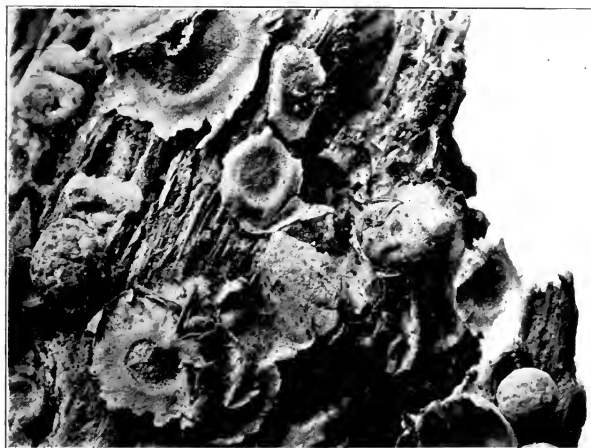


Fig. 376
Lycogalopsis Solmsii x6.

JANSIA TRUNCATA.

By D. McAlpine.

Volva creamy white, somewhat cup-shaped, slightly longer than broad, averaging three-fourths inch in length, irregularly split at margin, narrowing towards base, and provided generally with one or two slender, thread-like roots, which branch considerably in the humus.

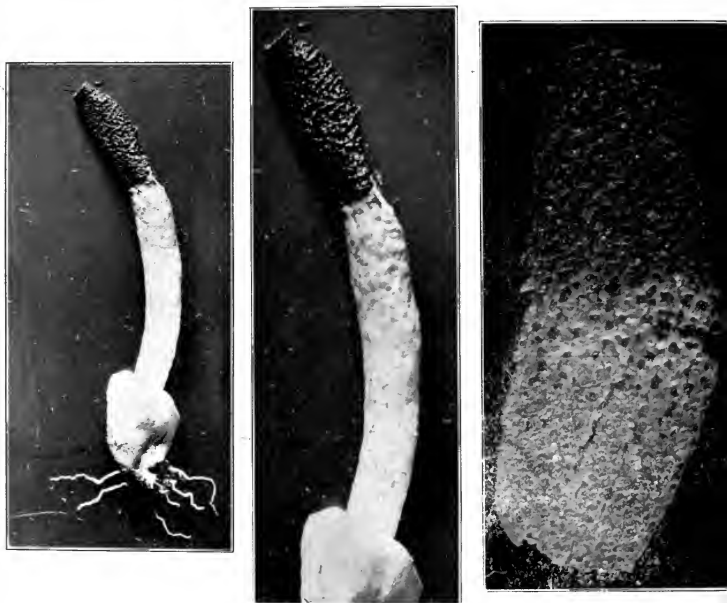


Fig. 377.

Jansia truncata. Showing: 1st, natural size; 2d, enlarged; 3d, the cellular structure of the inner face enlarged. Photographs all from Professor D. McAlpine.

Stem arising in the gelatinous matter contained in the volva, and easily detached, cylindrical, hollow, whitish at base, but gradually passing into a salmon-pink, the surface marked out into small polygonal areas by shallow depressions.

Receptacle a direct continuation of the stem, but sharply distinguished by its deep, dark crimson color and surface, roughened by a raised, irregular network, with meshes variable. The convolutions are shown clearly in the photograph. It tapers slightly towards apex, where it terminates in a distinct circular opening.

Gleba olivaceous, in slimy masses, scattered over the entire receptacle.

Spores very minute, hyaline, ellipsoid, with distinct contents, 3 to $3\frac{1}{2}$ mic. long.

Over thirty specimens were found on a buffalo grass lawn in front of my house near Melbourne. They first appeared on the 27th of March, 1910, and an occasional one afterwards up to the 31st of March. They are very fragile and soon collapse. When fresh, the smell could hardly be described as disagreeable, since it reminds one strongly of scorched linen, the burnt smell caused by a hot iron. The height was commonly $2\frac{3}{4}$ to 3 inches, and in the latter case the relative lengths of the different parts were: volva, $\frac{3}{4}$ inch; stem, $1\frac{1}{4}$ inch; receptacle, 1 inch. Occasionally one or two "eggs" at different stages of development were found attached to the mycelium of the volva.

We are pleased to publish the above description and photograph of a species of *Jansia*, received from Professor McAlpine. Our first impression was that it was absolutely distinct from anything known, in having a truncate, perforate apex. Since this article has been in type we have received specimens in alcohol of *Jansia rugosa*, through the kindness of Dr. Ch. Bernard, Java, and on comparing them with the alcoholic specimen received from Professor McAlpine, we find that *Jansia rugosa* does have a perforate apex though it is contracted and has not been noted by me in my previous accounts of this species. There is, therefore, no real difference between *Jansia truncata* and *Jansia rugosa* on which a species may be based, but the Australian plant is so much larger and more robust and its truncate apex is so much more prominent that it is well entitled to a name as a form.

Since like many phalloids it proves of wide distribution, it is probable that many of the vague references of early phalloid literature should belong here; as for instance, *Mutinus proximus* of Ceylon; perhaps *Mutinus boninensis* of Japan, *Mutinus borneensis* of Borneo, and probably *Mutinus minimus* of China. The past work with the phalloids has been so vaguely and inaccurately done that the identity of many of them is at best little more than a guess.—C. G. L.



Fig. 378.

Kodak snapshot. Three French "mycologues" at Upsala.

DIRECTIONS FOR MAKING A MUSEUM OF FUNGI.

The method of preserving the larger fungi, such as the Polyporei, has changed somewhat in recent years from that formerly employed. In the museums of Europe for the most part, as at Kew, Paris, and Upsala, the specimens are glued down to sheets, somewhat after the same plan used in making a herbarium of dried, flowering plants. While this method has advantages, such as compactness, it has disadvantages that more than offset the advantages. It is evident that all that can be preserved of a large specimen in this manner is a thin slice which often gives a very inadequate idea of the species. In the modern museums, such as the Lloyd Museum at Cincinnati and the New York Botanical Gardens, these specimens are preserved in boxes in their natural condition, each specimen in a separate box. The boxes are made in different sizes in order to accommodate the various specimens, but the sizes run in sets so they can be piled together in compact piles without regard to the different sizes of the boxes. In the Lloyd Museum the original sizes of the boxes were based on the shelving. The following are the standard sizes we use in our museum. The measurements are in millimeters, and the last represents the height of the box with the cover on.

- No. $\frac{1}{2}$. 70 x 64 x 22 mm.
- No. 1. 70 x 64 x 44 mm.
- No. 2. 70 x 64 x 88 mm.
- No. 3. 70 x 128 x 88 mm.
- No. 4. 140 x 128 x 88 mm.
- No. 5. 140 x 128 x 176 mm.
- No. 6. 140 x 256 x 176 mm.

We strongly advise those who wish to make a collection of fungi to adopt a series of boxes, the sizes running by units as the above, as then all the various sizes can be piled compactly. The sizes that we have adopted take care of almost any size or shape of fungus that we receive, and in practical use we find that the greater part of them are put in boxes No. $\frac{1}{2}$ or No. 1.

Preservation of Specimens.

Poisoning specimens.—The principal trouble that many have in making collections of fungi is that specimens are apt to be eaten by insects. This is very discouraging, but we have learned now how to avoid it in a very simple manner. In the old collections where specimens are pasted on sheets they have to be poisoned with a solution of corrosive sublimate and alcohol, but this is very objectionable from the fact that it changes materially the condition of the specimens and they are not in their natural condition after going through the poisoning process. It was formerly my custom when I received specimens to submit them to the fumes of carbon bisulphide, which is fatal to insect life, but I have found that while it may kill the insects in the specimens it does not kill the chrysalis, and specimens submitted to the fumes may have chrysalides which will hatch out and eventually destroy the specimen. I learned from Mr. Romell of Stockholm a very simple process which is as inexpensive as it is effectual for specimens that are preserved in boxes, but of course does not apply to specimens pasted on sheets. Simply put in each box a liberal quantity of flake naphthalene. For boxes the size of No. $\frac{1}{2}$ and No. 1 a teaspoonful, and for larger boxes a larger quantity in proportion. Flake naphthalene does not affect the specimens at all, but it kills the insects, not only those that may be in the plant, but those that develop afterwards. I have recently gone through our private collection of some ten thousand specimens or more and dumped into each box a sufficient quantity of this flake naphthalene. I do not anticipate there will ever be any trouble in future with insects in my collection. Flake naphthalene is comparatively inexpensive, and two or three pounds will take care of two or three hundred specimens. It costs about fifteen cents per pound.

THE GENUS CYCLOMYCES.

This genus is based on the concentric disposition of the pores. With the exception of a few on the outer circles, they take a lamellate form and then the genus can be briefly characterized as being *Lenzites* with the lamellae concentric instead of radiate. It is a rare genus, occurring only as far as known in the United States, the East Indies, and African Islands. The genus was first described by Fries¹³ in 1830, and a fairly good cut given of it.¹⁴ It consists (as I believe) of only two species, *Cyclomyces fuscus* and *Cyclomyces Greenii*. These two species have different context and are put in different genera by those who give preference to other than hymenial characters.¹⁵ The curious, concentric disposition of the pores (and lamellae) is a very prominent and seems to me to be a good character on which to base a genus.



Fig 379

Cyclomyces fuscus (Natural Size).

CYCLOMYCES FUSCUS (Fig. 379).—Pileus dimidiate (or sometimes scutellate), thin, coriaceous. Surface dark brown, velutinate

¹³ The name usually attached to it is *Kunze*, Fries having taken the name from a manuscript label from Kunze, Berlin. The specimen came, I think, from Telfaire, Mauritius, at least abundant material is at Kew from this source, and also on the same sheet a co-type "*Cyclomyces fusea*, of G. Kunze. Mauritius, Sieber (Exs.)." Telfaire specimen is labeled "*Laxophyllum velutinum*, Klotzsch."

¹⁴ It can hardly be said to be correctly described, however, as he states "Asci immersed, not free, as in *Polyporus*."

¹⁵ In brief, *Cyclomyces fuscus* has abundant, colored setae and hyaline spores, and is epixyloous. *Cyclomyces Greenii* has no setae and colored spores, and grows in the ground. This was first pointed out by Patouillard, but was appropriated and juggled by Murrill.

with fine hairs, sulcate zonate. Gills narrow, close, concolorous, *concentric*, usually with cross partitions forming pores near the margin, furnished with abundant colored setae (of the *Hymenochaete* type). Spores (said to be) colorless, globose.

This plant was originally from Mauritius, but has since been found abundantly in the East. There are specimens at Kew from Mauritius (abundant) India (Perak), Malay, and Sarawak. It is also recorded from Java, and is evidently a frequent plant through the East. It occurs also in Madagascar,¹⁶ and the Philippines. The two following, I think, are synonyms: *Cyclomyces Beccarianus*, from Sarawak, of which I have seen a co-type, identically the same; *Cyclomyces stereoides*, of which I know only the description, but do not question it was based on a scutellate specimen. It came from the same region and the "description" was practically the same.

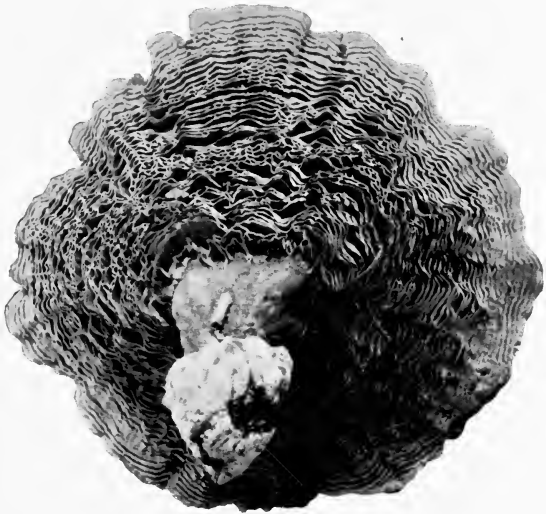


Fig. 380

Cyclomyces Greenii Specimen from E. B. Sterling.

CYCLOMYCES GREENII (Fig. 380).—This characteristic plant hardly needs any description other than our figure. As there is no other plant in the United States with such a disposition of the gills, it can not possibly be mistaken. The color is ferruginous, the

¹⁶I have recently seen at the British Museum a specimen in a German exsiccatae from Madagascar. It is absolutely the same as the Mauritian and Indian plant. However, every time a plant is found in a new locality it has to have a new name of some kind, so the author calls it "var. Madagascariensis."

texture soft, spongy, the surface velvety. In its color and contexture it is very much the same as *Polystictus tomentosus*. There are no setae on the gills, however. The spores are smooth, colored, elliptical, 6×12 mic. It has a short, velvety stem, usually central, though I have rarely seen excentric specimens.



Fig. 381

omyces turbinatus (Drawing by Patouillard).



Fig. 382

Cyclomyces Greenii (Photograph by Prof. Beardslee).

HISTORY.—This plant was found by Berkeley in Hooker's herbarium. The specimen came from B. D. Greene, Tewkesbury, Massachusetts.¹⁷ It was of much interest to Berkeley as the second known species of the genus. He gave a good figure of it (by Fitch), and the plant has never had a synonym,

¹⁷ Who B. D. Greene was I do not know, excepting that this species was named for him. Neither do I know who named it, though Berkeley published it. The original label in Hooker's herbarium is in a writing I do not recognize. "*Cyclomyces Greenii*, Boston, U. S., B. D. Greene." It was published from Tewkesbury, Mass. As far as I have noted, this is the only plant sent to Kew from "B. D. Greene."

unless the Indian species is a synonym. There is also a specimen at Kew from Sprague, Mass. Professor Peck found the plant on two occasions and spoke of it as being rare, so that it has that reputation in the United States. Most of the specimens come from the Eastern States. I have the following: from Massachusetts, Simon Davis, Mrs. E. B. Blackford, and Hollis Webster; New Jersey, E. B. Sterling; Maryland, W. T. Lakin; Pennsylvania, Mrs. Geo. M. Dallas, Charles McIlvaine, and Dr. Herbst. I have never found it in Ohio, although reported by Hard and Beardslee. I have a photograph from Iowa, Macbride. Our illustration is made from a photograph by Professor Beardslee, and from a specimen from E. B. Sterling.

RELATED SPECIES.

CYCLOMYCES TURBINATUS (Fig. 381).—This species is based on two little, undeveloped specimens in Hooker's herbarium, from India, many years ago. They seem to have the same color, context, spores, and other characters as *Cyclomyces Greenii*, but differ slightly in shape, being as the name indicates more conical or turbinate. I think it will prove to be practically the same species as our American plant. Additional specimens reached Paris from Java and were called *Cyclomyces Javanicus*. A good account and illustration of it was given. I feel so convinced that it is the same as the Indian species (only better developed specimens) that I use the illustration.

A POLYPORUS THAT WEEPS.

The splendid photograph that we present on the opposite page was taken by Professor G. D. Smith. I know no other who makes as good fungus photographs as Professor Smith.

The subject is *Polyporus dryadeus*, and it is a very rare plant in the United States. When I received the photograph I referred it to *Polyporus resinus*,¹⁹ as this was the only species I had observed in the United States that weeps so abundantly. When later Professor Smith sent me the specimen I found, on comparison, it was *Polyporus dryadeus* of Europe. I had not previously known this species to occur in the United States.²⁰ I had never before seen an American specimen, but I had observed the fresh plant in France and found, on comparison, that Professor Smith's specimen was the same as my European specimens.

Polyporus dryadeus is not a common plant in Europe,²¹ and grows

¹⁹ I use this name in the sense in which it has always been used in America by Berkeley, Ellis, Morgan, and others, and it appears to be in the sense of Fries' description. But I am not satisfied with it. I do not know the plant in Europe, and besides it was most assuredly not *resinusus*, of Schrader, where Fries got the name. *Fuliginosus* is the latest allegation (copied from Bresadola), and while it is a very early date, the plant to which it was applied in Europe is quite different from our American plant in several respects. Our plant is surely a different variety, if not a different species.

²⁰ I am aware that it is included in North American Flora, but as the author did not mention it when he wrote his account of the "genus," four years previously, I thought perhaps it had been introduced since. Or possibly he had in the meantime seen Schweinitz's record, not knowing that this was based on *Polyporus gilvus*. He also seems to have been very careless in his compilations. He copies Fries' citation, Hussey, plate 26, which was an error for plate 21. He ascribes the pedigree to "*Polyporus dryadeus*, Fries, Syst. 1821," and there Fries states that he took the name from Persoon Obs. (1799). Had he looked up Persoon he would have found that Persoon changed Bulliard's name *pseudo-igniarius* (1784), which is contrary to the dictum of Mr. Kuntze and the sacred precepts of priority. As I can not believe that the author would intentionally disregard these sacred principles, I must therefore ascribe it to very careless compilation. If he had looked up Schroeter's work he would have found that Schroeter had already juggled it to Bulliard's name.

²¹ It is more common in England, France, and Central Europe, but very rare in Sweden. Fries records it in an early work, but in his latest states he has only seen dried specimens. Mr. Romell has recently collected it near Stockholm.

FIG. 383



only on oak. It is noted for its rapid growth and the drops of water that exude so abundantly from it in a growing state. Bulliard gave a good illustration of it, showing these water drops, and commented on them. Mrs. Hussey has also illustrated it, but her figure is not as good as Bulliard's.

The plant that Professor Smith found grew on elm, and that was one reason that led me at first to question my determination. In Europe it is only known on oak.

We have a *Polyporus* in the United States, a common one, *Polyporus resinus* (in the usual sense), that has the habit of exuding drops of water from the growing plant. I have often noticed it, but never saw so many tears as shown on Professor Smith's photograph.

WHAT A LONG TAIL OUR CAT DOES HAVE!

We present a photograph of the type material, all that exists, of "*Polyporus phaeoxanthus*," and a copy of the wonderful story that appeared about it in *North American Flora*. The modern mycologist is something of a paleontologist. He can take a little frustule and build upon it an elaborate account that will rival the most extravagant romance of Baron Munchausen, and which is just about as true.



Fig. 384.

"Pileus convex, subhemispherical, 2.5 x 0.5 cm.; surface smooth, glabrous, bay-brown, margin acute, straight, slightly undulate; context fleshy, luteous, rigid, friable, and much shrunken when dry, 1 to 2 mm. thick; tubes remote, minute, very short, 0.5 mm. or less in length, mouths irregular, 6 to 8 to a mm., edges thick (specimen young), obtuse, luteous; spores not examined; stipe central, cylindrical, solid, fleshy, concolorous, floccose at the base, 4 cm. long, 3 mm. thick. Type locality: Columbus, Ohio. Habitat: Fallen oak wood. Distribution: Known only from the type locality."

Some one has kindly sent us the following clipping taken from a newspaper: "Wilm Knox, of the firm of Knox and Elliott, architects of the Rockefeller and other noble buildings, is one of the best known micrologists in the world. It is said, indeed, that with the exception of Ashley Lloyd, of Cincinnati, Mr. Knox is the best authority on mushrooms in this or any other country. He is constantly experimenting with these delicacies, and has produced hitherto unknown varieties that are almost intoxicating in the richness of their flavor. He can, just by glancing at a mushroom of any shape, color, or size, give its complete history and its 'ranking' among the almost countless varieties of this favorite of the epicures."

We judge the above must have been written by the sporting editor. The statement that Mr. Knox is a "micrologist" and "has produced hitherto unknown varieties that are almost intoxicating in the richness of their flavor" is characteristic of the usual reporter's account. Also the reference to Ashley Lloyd in connection with "mushrooms" is amusing. He takes a great deal more interest in "three-base hits" than he does in mushrooms.

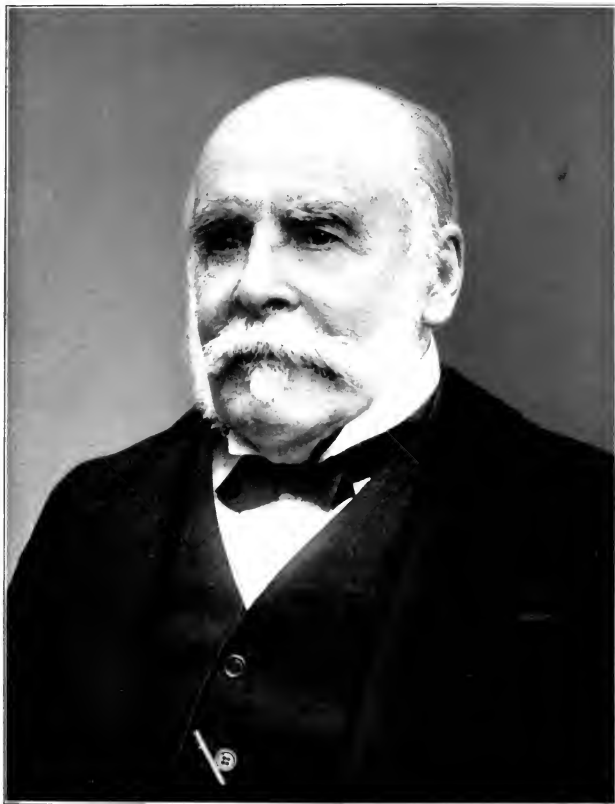
MYCOLOGICAL NOTES.

BY G. G. LLOYD.

No. 37.

CINCINNATI, O.

APRIL, 1911.



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MONSIEUR ÉMILE BOUDIER.



MONSIEUR ÉMILE BOUDIER.

It seems to me that the successful completion of the magnificent plates "*Icones Mycologicae*," by E. Boudier, is a propitious time for the publication of a photograph of the author.

Monsieur Boudier needs no introduction to European readers. For many years he has stood at the head, the acknowledged master of French mycology. He was born on the 6th of January, 1828, and is therefore now in his eighty-fourth year. His early life was devoted to trade as a pharmacist, but he wisely retired about twenty-five years ago, with a modest competency, devoting the remaining years of his life to his favorite studies. He has acquired a most thorough knowledge of the fungi that grow in France, and in addition is an artist of unusual talent.

There have been a number of good artists who were not good mycologists, who have issued plates of fungi, and several good mycologists who were poor artists. Monsieur Boudier is, in my opinion, the first man to combine both talents. His plates are the acme of excellence, both as to general appearance of the plants and the microscopic structure. Every little detail is brought out with absolute accuracy, and this has been at an expenditure of a world of patience and labor. I am told that Monsieur Boudier will often spend two or three days in making a single drawing. The "*Icones Mycologicae*," which has just been brought to a successful finish, comprises six hundred plates of French fungi, every one of them perfection. It is largely devoted to the *Discomycetes*, which were always favorites of Monsieur Boudier.

The study and work in mycology to which Monsieur Boudier devotes himself is purely as a recreation. He receives specimens from a large circle of correspondents in France, and is as actively engaged in the work to-day as he ever was. The various scientific societies of France have honored him with the highest honors at their command. The one that I think he cherishes the most was recently bestowed on him by the French Academy of Sciences. It was only last year, November, 1910, that he was elected a member of this institution in the grade "Chevalier de la Legion d'honneur." In America we do not realize what that means to a Frenchman. It is the crowning ambition of every man of letters or science of France to be accorded this rank, and it is one that relatively few ever attain.

We present on our first page the photograph of Monsieur Boudier, that was issued as a frontispiece on the completion of his *Icones*. It is an excellent photograph of him as he appears to-day. We present also at the head of this article a photograph that was made about forty years ago, when he began the study of mycology. Monsieur Boudier does not recall his exact age when this photograph was made, but he thinks he was between forty and forty-five years of age.

We congratulate Monsieur Boudier on the successful completion of his magnificent "*Icones Mycologicae*," and also on the honors that have resulted.

FUNGUS IN COMMERCE.

It is a true saying that one-half the world does not know how the other half lives. Mr. W. E. Barker, of New Zealand, enclosed in a recent letter to me a newspaper clipping which is reproduced below. I presume there is nothing strange about such a newspaper item in the section where the fungus is an article of commerce, but it is certainly worthy of remark that a fungus should be collected to the value of over a million and a half dollars, and its very name and use be unknown to the fungus students. I have written to Mr. Barker, asking that he send me a specimen of the fungus so that I may identify it. While I do not know, I rather suspect that what they are collecting so largely in New Zealand and shipping to China is the common Jew's ear, *Hirneola auricula-Judae*.

This fungus is common both in Europe and in America. It is not used to any extent as food in our country, but I was shown this same fungus in one of the Pacific islands, and told it was largely collected and shipped to China. It is probable that it is a staple food among the Chinese. The article is as follows, and is taken from the *Taranaki Herald*, Taranaki being a province of western New Zealand.

"FUNGUS.—No one has yet fathomed the mystery of fungus. We know what it is and where it comes from, but that is all. We know it is shipped away, but are ignorant of where it goes and what becomes of it. It may truly be said that this fungus industry was the first salvation of Taranaki, and very few people are aware of its magnitude or of the amount of money it puts into circulation. From 1870 to 1903 the Customs returns of New Plymouth show that £305,995 was used in the actual purchase of the stuff from settlers. In addition to this sum an equal amount was spent in labor in packing and in freight. In 1903 Mr. Chong (a Chinese merchant who specialized in the product) went to China, and the fungus business lapsed for a time; but from 1904 to 1909 £58,793 was paid. This, with labor and freight, has caused a total circulation of £700,000 in forty years—surely a very considerable work for one man."

PAUL KLINCKSIECK.



PAUL, KLINCKSIECK.

It is only just, I think, to accord to Monsieur Paul Klincksieck due credit for the part he played in the production of Boudier's plates. Monsieur Boudier told me before the plates were issued that he had little hope of seeing them published, for to issue them in the manner they merited would involve an expense that he feared would be prohibitive. Monsieur Klincksieck was a man of intense nervous energy, and he had the courage to undertake the production of this, a work that would have appalled most publishers. When the publication of these plates was announced, I doubted if they would be published in the manner that such work deserved, but happily my misgivings were not fulfilled. Monsieur Klincksieck spared neither expense, labor, nor care in producing these plates, exhausting the possibilities of the highest lithographic art. As with Monsieur Boudier the creation of these plates has been a labor of love, so with Monsieur Klincksieck their issue was a matter of pride as a publisher. It is indeed unfortunate that he could not have lived to see the completion of the work.

From a monetary point of view, and Monsieur Klincksieck's chief interest lay naturally in this direction, Boudier's plates were not a

success. I think they barely paid the cost of production. But it is gratifying to know that they involved no loss, for when Paul Klincksieck had the courage to undertake their production in this expensive manner, he assumed the risk of a heavy loss.

I feel that Paul Klincksieck should be accorded all due honor for producing in such a superb manner the "Icones Mycologicae" of Boudier.

ANOTHER "FUNGUS," GONE WRONG.

Our figure 385 represents a growth that occurs on the living branches of the Southern cypress (*Taxodium distichum*). I was glad to get specimens from S. C. Edwards collected in North Carolina, for I wanted to investigate

its nature. I have seen it in the herbarium of Schweinitz, at Philadelphia. Schweinitz first called it *Merulius Cupressi*. In his next work he called it *Cantharellus Cupressi*, and he sent it to Fries, and Fries called it *Cyphella Cupressi*, and it so appears in Saccardo, vol. 6, page 674. Berkeley stated many years ago that it was an insect gall, but Saccardo did not seem to believe him, for he compiled it among the fungi.

From a cursory examination of Schweinitz's specimens I could not decide what it was, though I felt quite sure it was neither a *Merulius*, *Cantharellus*, nor *Cyphella*, as it figures in our fungal "literature." Upon receipt of these specimens from my correspondent, I was glad to be able to cut them open, and it did not take me long to decide that Berkeley was right, and that it is an insect gall, for the cellular structure is quite different from that we find in fungi, and in addition I found on the inside of each specimen a little orange grub. I sent specimens to Mr. Mel T. Cooke, who makes a special study of the galls, and he advises me as follows:

"There is but one species of gall reported on *Taxodium distichum*, and I

have specimens of that species. It is entirely different from the one you send me. The gall which you send is of insect origin without doubt, and apparently belongs to the genus *Cecidomyia*."

It therefore appears to be a "new species" of gall. As it is an "old species" of fungus, does the name hold good? I think our learned law-makers are silent on this point, though they give their "authority" to maintain just as bad blunders of the old mycologists, as, for instance, *Calvatia "cyathiformis"* and *Geoglossum "rufum."* Professor McGinty proposes to name it *Cecidomyia Cupressi* (Schw.) McGinty, according to celebrated "legal" principles.

Unnecessary Information.—Dr. Bruce Fink recently published a list of Boletaceae, which he informs us were largely determined by Murrill. As twenty-two out of the twenty-seven names have Murrill's name written after them, it was scarcely necessary to go to the trouble of stating who determined them.



Fig. 385

B. D. GREENE.

When we wrote our article on *Cyclomyces Greenii*, we admitted that we did not know the identity of the "Mr. Greene" for whom it was named. Our ignorance in this respect has shocked the editor of the *Torrey Bulletin*, and he has kindly enlightened us. Our best thanks are tendered to Mr. John Hendley Barnhart for the information, as follows:

"Benjamin Daniel Greene was the son of a man who, in his day, was known as the wealthiest citizen of Boston, Massachusetts. He was born at Demerara, British Guiana, during a visit of his parents to that place, 29th December, 1793, and died at Boston 14th October, 1862. He was a graduate of Harvard; completed his education in Europe, and qualified himself for both law and medicine, but never engaged actively in the practice of either profession. He was a personal friend of Sir William J. Hooker, and many of his specimens are at Kew, as well as in nearly every other important herbarium of his day. He was one of the founders of the Boston Society of Natural History, and its first president; his herbarium formed the nucleus of the great botanical collections of that society. For seventy-five years and more an oriental genus of Rubiaceae, *Greenea*, has borne his name; it was named in his honor by Wight and Arnott, at a time when it meant something for two English botanists to name a genus for an American. I am sure you would be interested in the opinion of Asa Gray concerning the nature and extent of his botanical attainments, which you can find in the *American Journal of Science* (Series II, vol. 35, pages 449 and 450. 1863), or in Gray's *Scientific Papers*, edited by Sargent (vol. 2, pages 310 and 311.)"

THE REV. C. TORREND, S. J.



REV. C. TORREND, S. J.

The sympathies of the mycological world should be extended to

the Rev. C. Torrend for the deplorable persecution of which he has recently been the unfortunate victim. During the recent revolution in



Fig 386

Portugal, his monastery was ransacked, the greater part of his books, his microscope and photographic apparatus, and many of his specimens were destroyed by a fanatical mob. He was thrown in prison, and his life was even in danger for some weeks. At last he escaped through the intervention of the French Consul, the Rev. Torrend being a French subject. He is now in Holland, safe in a Jesuit institution. While his future

plans are not settled, he wrote to me that he would probably go to Brazil. Such of his books and specimens as were saved are in charge of the French Consul, and will be sent, for a time at least, to the Museum at Paris.

I reproduce above a photograph of the Rev. C. Torrend, and Fig. 386, a kodak view, showing him with a party of his students on their return from a mycological expedition.

Whatever may be the religious opinions of my readers, I am sure they will, with me, extend to Rev. Torrend our deepest sympathy in this trouble. In this age of so-called civilization, it is a shame that the inoffensive order of Jesuits should be singled out for persecution at the hands of an irresponsible mob, and the fact that it is done under the guise of "freedom" does not mitigate the crime. There are no more self-sacrificing or devoted scientists than are to be found in this same Order of Jesuits, and there are none that have added more to the general fund of scientific knowledge. Whenever you meet a Jesuit Father, you will find a man of the highest education, and I have always found them liberal and tolerant in all their views.

While Rev. Torrend is naturally much discouraged at present, having the results of his years of scientific work in Portugal so largely destroyed, when he gets to Brazil in a new field, we have no doubt he will return to his old love—mycology, with renewed ardor. Our best wishes go with him.

HEXAGONAS.

Having studied and photographed every type specimen of *Hexagona* in the museums of Europe, and having written a synopsis of the genus, I feel in position now to pass on the specimens of this family that I receive from my correspondents.

Mr. Edouard Luja, Congo Belge, has sent me a fine lot of Polypores, including three species of *Hexagona*. One species, *Hexagona Henschalli*, (cfr. Synopsis, page 11) had reached Europe, there being only a single specimen at Kew. Mr. Luja sends it abundantly. The pores are large and flaccid, with a pale pore surface. A section through the pore walls shows a thick, white, exterior layer (hymenial probably) quite distinct from the colored hyphae of the trama.

HEXAGONA POBEGUINI (Fig. 387, cfr. also Synopsis, page 18, fig. 295).—I thought I knew this species, having seen and photographed it in three different museums under three different names.



Fig 387

Hexagona Pobeguini.

but when I first saw Mr. Luja's specimens I did not recognize them. The truth is, I think, that the species was named and described from *old* specimens that have changed very much. Mr. Luja's are the first good, typical specimens that have reached Europe. When the plant is in good condition it is densely covered, both pileus and pores, by a brown, velutinous coat that disappears largely from old specimens.

Old specimens also become thicker and more indurated. The pores also vary much as to size, as shown in our fig. 387. Comparing this figure with the one previously published (Synopsis, Fig. 295) one would scarcely believe them to be the same plant. I feel assured now they are different ages of the same species, though my first impression was that Mr. Luja's plants were unnamed.

HEXAGONA DERMATIPHORA (Fig. 388).—Another species sent by Edouard Luja, Congo Belge, has the surface covered with a thin, compact, isabelline, velutinate film, such as is found in no other species. It might also be sought in the section Velutinus, but its other characters are so close to *Hexagona tenuis* that it is usually better



Fig. 388

Hexagona dermatiphora.

placed there. This covering disappears, or more properly is not developed, near the margin. The thickness, color, context, and pores are the same as those of *Hexagona tenuis*; in fact it might be classed as a form of this species. The pores are small, regular, with thin walls, and are dark colored, with a faint purplish cast. I would place it next

to *Hexagona tenuis*, differing from it and from all others in this section in the thin, velutinate pellicle that covers the pileus.

HEXAGONA SUBTENUIS.—In a personal letter received from the Rev. Bresadola, he claims that in my Synopsis of the genus *Hexagona*, I have taken too broad a view of the species *Hexagona tenuis*, that this species is confined to American territory, and that all the forms from India and the East should be referred to other species. I readily admit that *Hexagona tenuis*, in the sense in which I have taken it, is a

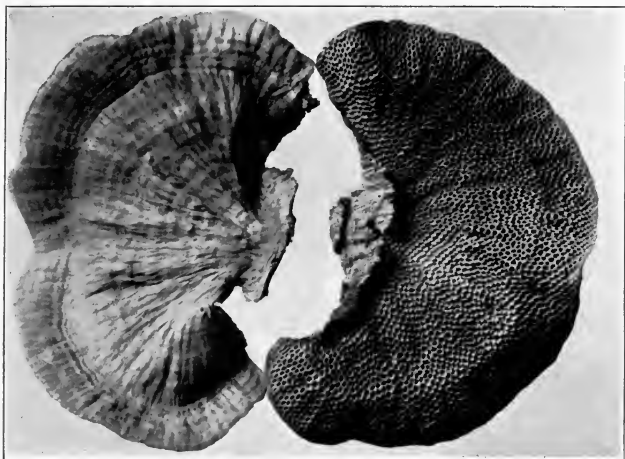


Fig 389

Hexagona subtenuis.

heterogeneous assembly of plants, and I suspect that with abundant material other species may be differentiated. I have just received from Col. K. R. Kirtikar, Bombay, nice specimens (Fig. 389) of what I have published as *Hexagona subtenuis*, basing the name on a specimen in Berkeley's herbarium. It differs from the type form of *Hexagona tenuis* not only in the more rugulose upper surface, but in the color of the pores which are distinctly *yellowish*. I think this is a good species, quite distinct from *tenuis*. We hope in time to get a clear idea of the distribution and forms, but we can not without abundant material.

Correction.—The last paragraph on page 460 was written by myself and does not belong to Professor McGinty's article, as the printer has made it appear. I assume no responsibility for Professor McGinty's opinions; in fact, do not always endorse them, and I certainly would not wish to place upon him any responsibility for my opinions.

LENZITES OCHROLEUCA.

Among a fine collection of specimens received from Col. K. R. Kirtikar, Bombay, India, was a curious ear-shaped, irpicoid form of *Lenzites ochroleuca* (Fig. 390). This species seems to be very common in the East and it takes many hymenial forms. Col. Kirtikar sends me three distinct types. We have considered the plant at length in our Synopsis of the genus *Hexagona*, but will have to refer to it in every "genus" we consider, for it is an *Irpex*, a *Hexagona*, a *Trametes*,



Fig. 390

Lenzites ochroleuca, Irpicoid form.

a *Daedalea*, and a *Lenzites* at one and the same time. Rarely do we find two collections the same as to the hymenium, and sometimes the *same specimen* presents three different types. The only constant thing about it is the color of surface, context and hymenium, the texture, and its distant plates or gills. Bresadola writes to me that I have included three species in the synonyms I gave. That may be true, but I see no means of distinguishing them except the hymenial configuration, and in this "species" hymenial configuration counts for nothing at all. The old mycologists who made a "new species" of every specimen they received, made of this about twenty species. Bresadola makes three species, but at present I make but one.

Apology.—My apologies are due and extended to Miss White for the printing of the specific name of *Phallogaster Whitei* in lower case type in my recent phalloid synopsis. We do not believe in printing personal specific names in lower case, notwithstanding that it was sanctioned by some mighty "law-makers" (cfr. *Myc. Notes*, p. 347). This list was made up while in Europe, and I had forgotten the specific name for this alleged species and directed it to be supplied at my home office. Unfortunately it was supplied in lower case.

NEWS FROM OUR LAWMAKERS.

Less than a year ago a galaxy of bright, legal stars were solemnly assembled at Brussels to make laws for the mycological world. The constellation was not as brilliant as had been planned. Of the fourteen men that had been appointed as a committee to make our laws for fungi, eight of them, viz: Boudier, Bresadola, Earle, Fischer, Masee, Patouillard, Saccardo, and Ward, were conspicuous by their absence. Ward died before the meeting. What reasons the others may have had for not appearing I do not know, excepting the two that I have since seen. I gathered from my conversation with them that they were not strongly enamored with the task of making laws for other people.

Professor Arthur was there, representing New York, but he had little to say. It is generally understood that the New York lawmakers received enough law at Vienna to last them the remainder of their lives. Those of the New York contingency at Vienna who had been appointed to the Brussels Congress, viz: Earle, Evans, and Mrs. Britton, were likewise absent. Professor Magnus was there, but after the first round of lawmaking his interest waned, and he was not much concerned as to the subsequent proceedings. Perhaps there were one or two others of the original mycological committee there, but my informant was not very clear on that point, excepting as to two, Atkinson and Maire. They were both there and were very much in evidence. What they lacked in numbers they made up in votes. I was told that Maire voted eleven times and Atkinson five or six on each proposition. At any rate they made a law that all fungi should have as a starting point Fries' Systema, except the Uredinales, Ustilaginales, and Gasteromycetes which begin with Persoon's Synopsis (1801). They must have made this law for other people, for neither of them observe it.

Atkinson has since published a Gasteromyces, "*Ithyphallus impudicus*" which Persoon called *Phallus impudicus*. This is not in accordance with their law, as the genus *Ithyphallus* was made by dividing the old Persoonian genus *Phallus* into two genera and by abandoning the original genus. Such work was always irregular, and since the Vienna Congress has been directly contrary to Art. 45 of the law which prescribes what shall be done in such a case and leaves no discretion whatever in the matter. Atkinson's use of the genus *Ithyphallus* is in direct violation of his law. It is possible that he was not altogether unconscious of this fact at the time.

Maire has since published *Lycoperdon fragilis* which is also contrary to law, for the plant had a specific name prior to *fragilis* and subsequent to Persoon, and *Lycoperdon fragilis* is not "starting with Persoon." Perhaps Maire did not know this.

One characteristic of lawmakers is that they are very willing to make for others laws which they can not apply themselves. I wonder if there was a man at Brussels (or if there is one elsewhere) who knows enough of the history of the Gasteromycetes to carry their nomen-

clature correctly back to the days of Persoon. It seems to me very illogical to make a law requiring others to do what the makers themselves can not or will not do.

MUTINUS BAMBUSINUS.

We present herewith an excellent photograph (Fig. 391) of *Mutinus bambusinus*, which we have received from Mr. C. B. Ussher, Straits Settlements. We published in our Synopsis of the Phalloids a figure (Fig. 26) of this species, but it is not as clear nor does it show the cellular structure of the stem as well as the photograph that Mr. Ussher sent. *Mutinus bambusinus* is widely spread in the tropics and appears to be the most common species of *Mutinus* in warm countries. It replaces there *Mutinus caninus* of Europe, and *Mutinus elegans* of the United States. It was originally named from Java, but is found in the Celebes, Brazil, and doubtless in many warm countries. It has appeared adventitiously a few times in the hot-houses at Kew. This tropical species is quite similar to *Mutinus caninus* of Europe, but has a larger, more pointed, more rugulose, fertile portion. The cells of the fertile portion are small, in strong contrast to those of the stem. The entire plant is red.



Fig. 391

In publishing Mr. Ussher's fine photograph, we would again call the attention of those residing in warm countries to the importance of *photographing their phalloids*. Only by means of photography will a correct knowledge of tropical phalloids ever be obtained. We trust that Mr. Ussher will not fail to photograph all he finds for the phalloids of his section have never been worked, and he will doubtless find some novelties as well as add to our knowledge of the distribution of the "old species."

Since this was written we learn that Mr. Ussher has accepted a position in Java. We are rather sorry, for Java phalloids are well known while those of Straits Settlements are hardly known at all.

The Type Locality.

The compilers of the present day are much concerned about the exact "type locality" of each plant. It is an easy matter of course (clerical work only) to look up the publication and record—"Type locality, Cuba," and it looks well, particularly when accompanied by the elaboration—"Distribution: known only from the type locality." Sometimes, however, in their compilation act they jump at conclusions and make some funny mistakes. Thus in North American Flora we are informed that *Polyporus Columbiensis* came from the "type locality, Columbia river, South Carolina" and that its "Distribution is South Carolina." The type specimen did not grow within twelve hundred miles of South Carolina, and I doubt if the author ever saw a specimen from South Carolina or from anywhere else, or would know it if he did, or for that matter if any one else would know it either. The "type" is a little, discolored remnant that should never have been named. It has never been recognized since it was "described" seventy years ago and never will be, and was never within a thousand miles of South Carolina. What rubbish they do scrape up and pass off for science nowadays!

A CURIOUS HOME FOR INSECTS.

While collecting at Albany I noted a *Myxomyces* (Figs. 392 and 393 x6) with curious chimney-like tubes, that on examination proved to be the home of some insect, some sort of a "fly," I judge. The *Myxomyces* is *Enteridium Rozeanum* (of Lister) or *Enteridium splendens* (of Macbride)¹ but what the "fly" is I do not know. The ways of nature are most curious. Here we have a fly that probably lays its eggs only in this particular species of *Myxomyces*, and it is a plant that I have noted very rarely in the woods. The common



Fig. 392



Fig. 393.

Lycogala Epidendrum, which is a very similar plant, was developed in abundance by the side of this *Enteridium*, and not a specimen was affected. A mycologist might confuse these two plants, but the fly knew them apart. While it may be a well known phenomenon to the entomologists who study such things, these "fly" cases in *Myxomyces* seemed very strange to me.

MYXOMYCETES OF SAMOA.

On my trip to Samoa I have collected such *Myxomyces* as came to my notice. As I have never worked with this family I have given them to Professor Macbride, who determines them as listed below. It is a pleasure to note, and a further evidence of the wide distribution of the species of fungi, that among those that grew in that distant island there is not a single "new species." The nomenclature is in accordance with Professor Macbride's book.

Arcyria punicea
Physarum sinuosum
Ceratiomyxa fruticulosa
Tilmadoche alba
Badhamia capsulifera
Hemitrichia Wigandii
Leocarpus fragilis
Stemonitis axifera
Stemonitis Smithii
Fuligo ovata
Trichia scabra

¹ It seems to me that our nomenclatural dreamers who try to make "rules" to bring about "uniformity" in nomenclature could get a lesson from Lister's and McBride's works. There is no question as to the plant or its history, but each uses a different name, in this and many other cases, because each thinks it should have a different name on its merits. After all nomenclature is at best only personal opinions, and you can not govern personal opinions by any laws.

A DECEPTIVE "FUNGUS."

Miss Mary Fitzgerald has been one of my most valued correspondents from the South, as she has the faculty of picking up odd things such as rarely reach me from other correspondents.

Recently she sent me some butterflies with yellow, club-shaped bodies growing from their eyes. Photograph increased six diameters shows these little bodies. Miss Fitzgerald took them for parasitic fungi, and so did I, particularly as I examined them through a microscope and found them composed of cells filled with granular matter that I mistook for spores.

As I know nothing whatever about parasitic fungi on insects, I sent them to Prof. Roland Thaxter, who is the world's authority on this class of fungi, and he advises me that the bodies are not fungi at all, but the pollinia of *Asclepias* which the insect attaches to his head when hunting the nectar of the flower.

These bodies are all attached by a slender base with the thickened, club-shaped apex extending in front. They look just like a little clavate fungus, and would be apt to deceive almost any one.



Fig. 394 (X6)

PHALLUS INDUSIATUS AS FOOD.

We reproduce an interesting letter received from Professor S. Kawamura, of the Botanical Institute of Tokyo, with reference to the use of *Phallus indusiatus* as food among the Chinese.

"Many times I have been asked about the scientific name of a fungus called "Chikuson" in Chinese, which is used for cooking in China. But I had not had occasion to see the plant and had not heard enough about it to know what kind of a plant it is. I have now had opportunity to examine the dry specimens of this plant, given to the Botanical Institute by Dr. Yabe, who had been in Peking for five years. From those specimens I have found they are the stems, veils, and cups of a fungus named *Dictyophora phalloidea*, Desv.

"At the same time I was surprised to know that this plant is really eaten by mankind, because this is a fungus considered as poisonous by many authors, and there is no mycologist to this day who tells of the use of this fungus. The smell of its mucous gleba is very detestable, and so distinctive that a specimen may be detected many feet away. Whenever I examined with a microscope the fresh specimens of this fungus I found in the spores many bacteria in motion. Because of this aspect I approve of the poisonousness of this fungus, though any poisonous ingredient was not yet isolated from fungus. And if these bacteria themselves would not be injurious to the human body, they would produce some poison by their powerful, decaying effect. Now I have learned that the very fungus considered as poisonous is used for food in China. It is said that the caps and stems, with the reticulate veils of the plant, are collected, leaving the volvas in the ground, and are carefully washed with water to free from the detestable mucous, and are then dried by exposure to the sun, and sent to the market."

I suppose no one need be surprised at what a Chinaman may eat, yet to an ordinary mortal a phalloid would be the last thing he would ask for as food. It is possible, however, that putting aside sentiment, phalloids may be as good food as rats, puppies, or bird's nests, which are all highly esteemed in China. It all seems to be a question of taste and education, and when you

come to think about it there is no more reason why a phalloid should not be eaten than why one should not eat Limburger cheese. The odors are very similar, and the writer has to acknowledge a weakness for the product of our German friends. I think, however, there is no possibility of his acquiring a taste for phalloids.

PHALLUS IMPERIALIS AND PHALLUS IMPUDICUS.

We extract the following from an interesting letter from Professor A. Jaczewski, St. Petersburg, Russia.

"I can not quite agree with your writings about *Phallus imperialis* and *Phallus impudicus* being the same species, for I find, at least in Russian specimens, a great and marked difference, not only in the color of the volva that has naturally no great importance, but in the shape of the egg and in the markings of the pileus. The egg of *Phallus imperialis*, instead of being globose as is that of *impudicus*, is elongated in shape and the reticulations of the pilei are much larger."

Our best thanks are returned to Professor Jaczewski for advising us as to these points. He also calls to our attention that the volva of *impudicus* habitually breaks and remains as a sort of cap or pileus. That is a usual character also in this country as I have frequently noted from specimens, and as Professor Peck noted when he discovered it was a "new genus."

Professor A. Jaczewski reports concerning specimens that I sent him from America that our American plant appears quite different to him from the European in the *reticulations of the pileus*. It is a question whether our American plant should be referred to *Phallus imperialis* or as a pink variety of *Phallus impudicus*.

THE PHALLOIDS OF MAURITIUS.

We extract the following from a letter from C. A. O'Connor, of Mauritius, and publish it, as it is such information regarding the distribution of phalloids that leads to a better knowledge of them.

"I have found hundreds of *Phallus indusiatus* growing in sugar cane fields during the rainy season. They were of different shape, size, and color. Some were as large as the form you named *P. mauritianus*; others only one-fourth and even less than this size. Several had their veil of orange color, others light pink, and many pure white. Plants were also observed with rudimentary veils; a few had their veils attached to the pileus instead of the stem as is usually the case. An appreciable difference was also noticed in the size of the meshes of the different forms. A name juggler would have had a fine opportunity of creating at least a half dozen new species. In the most common form the veil is rigid when the plants are collected a few hours after sunrise; as soon as the heat of the sun reaches them the veil hangs loosely down and has not the same appearance as that of a plant which has just ruptured its volva.

"I have not yet found any *Simblum periphragmoides* resembling Fig. 83, page 64 of the Synopsis of the Known Phalloids. Probably it is an abnormal form. Mr. Telfair, who sent the specimen to Hooker at Kew, was the proprietor of a sugar estate in the vicinity where I reside, and I would surely have come across this Phalloid if it grew commonly here."

It will be noted that Mr. O'Connor's observations confirm the opinion of Professor Petch that species based on the coloration, such as *Phallus multicolor* and *Phallus callichrous*, can not be maintained as distinct forms of the type, white form, *Phallus indusiatus*. He also confirms Professor Petch's observation that *Phallus Moelleri*, cfr. Synopsis, page 19, fig. 13, is only an early condition of the same plant.

Further Appreciation of Prof. McGinty.—"I greatly enjoy your breezy, independent way of writing, and pray convey to the redoubtable Professor McGinty my appreciation of his researches. I wish he might turn his mind to the Spermatophytes, for a great field is open to a man of his talents."—Extract from a letter from P.—Cal.

MYCOLOGICAL NOTES.

BY C. G. LLOYD.

Old Species Series, No. 1.

CINCINNATI, O.

JUNE, 1908.

SOME OLD SPECIES.

Nine tenths of the current mycological literature is devoted to the exploitation of new species. However important this may be to the authors, the general readers are more anxious to learn about the old ones. We expect from time to time to devote a pamphlet to the "old species." We shall select those that are most noteworthy and which lend themselves best to photography. In fact we shall expect our photographs to tell more of the story than our words. We shall not attempt any dry, technical descriptions of the plants, for the trouble with a great deal of the current literature is that so much is written and so little told. In fact, a great deal that is printed is put in to fill out and the leading truths about a plant are often hid in a mass of verbosity about unimportant details.

Nor do we claim any critical knowledge of a great many plants that will be included in this series. We firmly believe, from the developments in our study of the Gastromycetes, that the fungous flora of the world is practically the same, and that one can not have a critical knowledge of the forms of any one country without a critical knowledge of the whole. Of course this is impossible in a great many groups of fungi that we shall have to consider. The best we can do is to give the history of the plants as they are known in American mycology, and if it develops that in other countries they have other histories and other names, that will be a matter for the future, or for some one else. There are some sections of American fungi, such as the resupinate Thelephoraceæ, of which I at present know very little: in fact, we think there is but one man in America who does know them—Professor E. A. Burt, Middlebury, Vermont. We hope to learn them some day and have been patiently waiting for Professor Burt's long promised and long delayed paper.

While these papers will be devoted to "old species," it is possible that in considering special groups we may have plants we are unable to determine. We shall not claim that they are new species, however, because we recognize the fact that we know but a small fraction of the old species in these same groups, and without that knowledge we feel it would be an assumption to pose as the author of new species. We trust and believe that these plants will be very few in number, for of the many specimens from the United States that reach us there are few that we can not refer to some old species that we know. That is, in those families in which we have worked with the old species. There are of course a few endemic species in the United States, but they are relatively rare and the greater part of them have now several names.

TROGIA CRISPA (Figs. 211 and 212).—If you live in localities where the alder grows you will be very apt to find *Trogia crispa* for it is particularly partial to the alder. However, it grows on beach and other frondose wood and I have collected it on oak. It can be known at once by the *crisped, swollen* gills for we have no other fungus

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in the temperate regions with this character. It is one of those agarics of a *fleshy-coriaceous*, tough nature, which dries up and persists through the dry weather, and revives and opens out when wet. Our figures were made from specimens that had been expanded by moisture. As there is no other fungus in America or Europe that can be compared with it (unless possibly the next) we feel our photographs are all the description necessary.



Fig. 211.



Fig. 212.

Trogia crispa.—Fig. 211, natural size. Fig. 212, enlarged x 4).

HISTORY.—It is a frequent plant, particularly in sections where the alder grows. It has not a clear title to the generic name *Trogia*, for it was originally applied to tropical species now held by some to not be co-generic. But the plant has so long monopolized the name in works on European and American mycology that I think it can never be dislodged.¹ Likewise the specific name has been questioned, particularly among our German friends who have been doing a little date dictionary investigating as to Persoon's and Fries' synonyms.²

¹ It has been classed also as *Merulius* and *Cantharellus*, and the latter is where I think it ought to have been left.

² When Persoon named it he gave as a synonym, "*Merulius fagineus* of Schrader," and it has been copied in every list of synonyms since. I do not think that Persoon or any one else knew that it was the plant so designated in Schrader's vague work, but it was alleged to be a synonym and the date dictionary shows it to be an earlier date. So it was changed notwithstanding the fact that its usual name *crispus* is by far the better name for it, and the only specific name that can not be questioned.

SCHIZOPHYLLUM COMMUNE (Figs. 213, 214 and 215).— This is one of the most common plants that occur in this country, and the collector is sure to note it almost every time he goes to the woods. From our illustrations it can not be mistaken. The plant is tough, and revives under the influence of moisture. The gills are



Fig. 213



Fig. 214

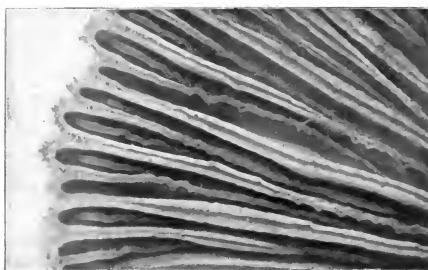


Fig. 215.

Schizophyllum commune.—Fig. 213, upper surface. Fig. 214, lower surface (both natural size). Fig. 215, gills enlarged (x 6).

peculiar. There is no other fungus like it in the temperate world. The gills are split along the edge so that they appear deeply channeled or double.³ (See Fig. 215, enlarged six times). We feel that a description of the plant is unnecessary.

³De Bary says "they split from the edge to the middle, parallel to the surface into two plates which curve away from one another as they continue to grow. The dorsal surfaces are sterile and hairy with spreading hyphæ branches."

HISTORY.—This is a most abundant plant in this country and is widely distributed in the world. We have specimens in our collection from Hawaii, Samoa, Barbados, Bahamas, Mexico, Guatemala, Nicaragua, Brazil, Ecuador, New Caledonia, Tasmania, Australia, India, two from Europe and many from the United States. The tropical forms are usually more lobed, but we think really the same species. It grows in Europe but, strange to say, there it is relatively an infrequent plant. From the books I judge it is most common in the "Midi" of France. In Stevenson there is a discussion as to whether it is really a native of England or introduced. I never found it in the three seasons that I collected in Europe and I have it from only two of my European correspondents, viz: Rev. L. Badet, Italy and E. Wulff, Crimea. It was very happily named by Fries, the generic name referring to the split gills and the specific name to its common occurrence in many countries. There was a legend that it was *Agaricus alneus* of Linnaeus and some priorists call it *Schizophyllum alneum*. It is a foolish change to make if it were true⁴ because it is the most common species we have, and does not grow on alder once out of a dozen times, and occurs in thousands of locations and many countries where alder does not grow.

PHYSALACRIA INFLATA (Figs. 216, 217, and 218).—This little fungus grows in tufts, on logs and sticks, but is not common, and I think is of northern distribution only. I have collected it in Michigan and Vermont, but I never found it around Cincinnati. I have specimens also from Professor Burt. It consists of little, uneven, globose, hollow, fleshy heads, about 3 to 4 mm. in diameter, supported on slender pedicels from 6 to 10 mm. long. The pedicels appear pruinose under a hand glass, caused by a number of microscopic, glandular hairs. The hymenium surrounds the globose head, and consists of fusoid, crested cystidia and numerous clavate basidia.⁵ The spores are hyaline, elliptical, smooth, 3 x 5 mic. The color is white, discoloring somewhat when old. Sometimes the heads are closely crowded together and somewhat confluent, the pedicels shortened, and in this condition it has the general appearance of a white *Tremella*.

HISTORY.—Schweinitz sent the plant to Fries under the manuscript name *Leotia inflata*, but Fries placed it in the genus *Mitruia*. The genus *Mitruia* as now understood has spores in asci, but in those days was based on the shape of the fungus. Schweinitz listed it (N. A. Fungi No. 1068) as *Mitruia inflata*, but there is no specimen in his herbarium. Cooke (*Mycographia* T. 344) puts it in the genus *Spathularia*, and gives a very inaccurately drawn and colored figure that might represent an imaginary *Spathularia*, but does not at all represent the fungus. He was unable to find "fruit" and considered that his specimens were

⁴ This is so obviously only a date dictionary juggle that I do not feel it is worth the trouble to look it up or disprove it. I suspect if the matter could be sifted it would probably be found what Linnaeus called *Agaricus alneus*, was *Trogia crispa*. He claims to have found it in Sweden, but he was far more likely to have found *Trogia crispa* than *Schizophyllum commune* in Sweden. To be sure he says the gills were "bifid" which is the only clue to the identity of his plant, but he was just as apt to have meant that they were dichotomous as that the edges were split. There is no question as to *Agaricus alneus* of Bulliard, but it is farcical to write "Linnaeus" after the specific name on any printed evidence that exists.

⁵ We are not expert enough with the microscope to assure ourselves of the nature of the numerous clavate bodies we found to compose the hymenium. We could readily make out numerous large, crested, fusoid cystidia similar to those of an *Inocybe*. We sent specimens to Rev. Bresadola and he writes us: "The spores are 2-2½ x 4-5, basidia with 4 sterigmata, 4-6 x 18-25, cystidia fusoid or clavate, 8-10 x 40-50."

sterile. Peck announced (Bull. Torr. Club, 1882, p. 1) that the spores are borne on basidia (not in asci as previously supposed) and he established for it a new genus *Physalacria*, now generally classed with the *Clavariaceae*. There has been but this one species found in northern United States and it is rare. Ellis claimed to have found a new species from Louisiana, which is unknown to me.



Fig. 216

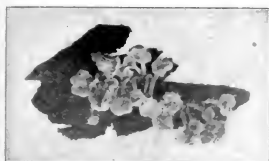


Fig. 217



Fig. 218

Physalacria inflata.—Figs. 216 and 217 natural size. Fig. 218 enlarged x6.

THE GENUS FISTULINA.—The genus *Fistulina* is based on the character of *separate* tubes. In general appearance the tubes resemble the pores of a *Polyporus*, but in the latter the walls of the pores are not separated from each other, and in *Fistulina* each tube is separate and distinct. Our enlarged photograph (Fig. 220) will show this tube structure as we think never before illustrated.⁶ We have two species of *Fistulina* in the United States, both of them rather rare.

⁶Excepting by De Seynes. The best work ever done with this genus was by De Seynes, and of the many illustrations published in Europe I think his truest to nature.

FISTULINA HEPATICA (Figs. 219, 220, and 221.)—This is the original and only species of Europe, and is more frequent in Europe than with us. It grows on the oak (*Quercus*) in Europe, but



Fig 219.

Fistulina hepatica, natural size.

with us I think is usually found on the chestnut (*Castanea*).⁷ It is a rather tough, juicy, fleshy plant, *red* and a section of the plant shows a variegated color, streaked with darker red lines.⁸ It is a striking

⁷ It is apparently absent around Cincinnati where we have oaks but not chestnuts, but I have collected it in Pennsylvania where Dr. Herbst told me it was found only on chestnut.

⁸ I am satisfied that the red color is due to the action of the air on some chemical principle in the plant. The flesh of the very young plant is white but quickly turns red on exposure to the air.

plant to one who collects it for the first time. Being frequent in Europe it figures in almost every popular work on fungi and has been illustrated many times. They call it the "beefsteak" fungus, and write a lot of stuff comparing it to "juicy beef-steaks" and finding large specimens that would furnish "four or five men a good dinner." A section of it does look something like a piece of meat, but the resemblance stops there, and it can be no more compared to a beef-steak, either for flavor or quality, than can a piece of sole-leather. The young plant is covered on the upper surface with papillæ, somewhat like those on the tongue, and the French call the plant "langue-de-boeuf" or tongue of a beef. The under surface has small, whitish



Fig. 220

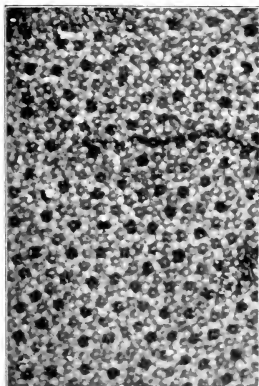


Fig 221

Fig. 220. The tubes of *Fistulina hepatica* (enlarged $\times 6$.)
Fig. 221. The mouths of pores (enlarged $\times 6$.)

granules arrayed around the mouths of the pores as shown in Fig. 221, which is an enlargement six diameters of the pore surface. Our figure (219) will give a good idea of the fresh plant if you will bear in mind that the plant is red. Also the section was made from a young specimen, for the pores are 6 to 8 mm. long when grown. It seems to me from my dried specimens that the flesh of the American plant is thinner than in the usual European form which we figure. The plant has been known as *Fistulina hepatica* for a hundred years, but having had other names in pre-historic times, it will no doubt acquire new ones when the name changers get to work on it.

OTHER SPECIES OF FISTULINA.—There have been four other "new species" discovered in the United States. There is evidence of but one, which is about the usual proportion of these finds. This one is scantily known to me, and is called *Fistulina pallida*, and I think well illustrated by Atkinson.

SPECIMENS IN OUR COLLECTION.

Europe, France: N. Patouillard, Victor Dupain, C. G. Lloyd; *Sweden*: C. G. Lloyd; *Italy*: Rev. L. Badet.

America, New Jersey: E. B. Sterling; *Pennsylvania*: C. G. Lloyd.

LENTODIUM SQUAMULOSUM (Figs. 222 and 223).—The genus *Lentodium* is held by every mycologist, except its author, to be something abnormal. Professor Morgan, however, always

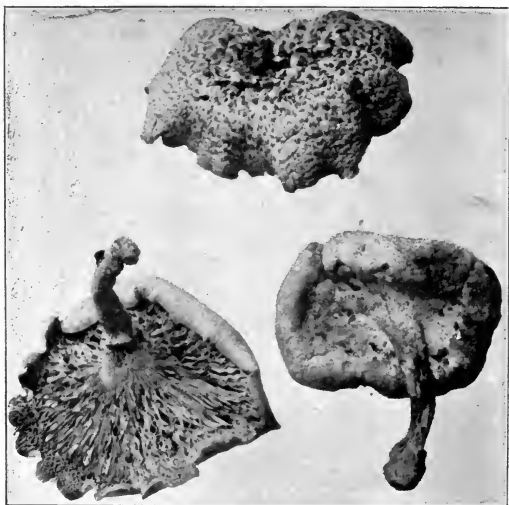


Fig. 222.

Lentodium squamulosum (natural size).

maintained to the last conversation I had with him that it was a distinct and good genus. It is the general impression that *Lentodium squamulosum* is a metamorphosed form of *Lentinus tigrinus*. It was so referred by Berkeley sixty years ago, and it will so impress most any one who will study the question.⁹

⁹Since this article has been written we have received a pamphlet from G. R. Lyman which takes the grounds that *Lentodium squamulosum* is autonomous. It is the first published endorsement of Morgan's views that we have noticed.

First, It has the same color, shape, size, scales, texture and spores as *Lentinus tigrinus*.

Second, Plants imperfectly metamorphosed as shown in our figure are not rare.

Third, A number of plants are known to assume abnormal forms thus. *Myriadoporus* is acknowledged to be a form of various polyporoids, *Ptychogaster* a conidial form of others, and in the *Gastromycetes* I claim that *Catastoma juglandæforme* is probably only a curious anomaly of *Catastoma castanea*.

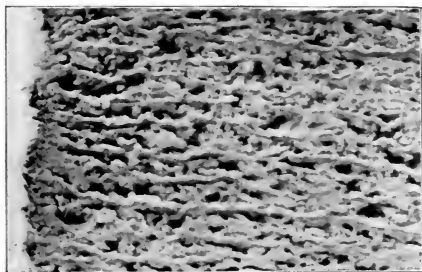


Fig. 223

A section of *Lentodium squamulosum* (enlarged x6).

Professor Morgan always maintained that no known abnormality has normal spores, that *Myriadoporus* is sterile, *Ptychogaster* is conidial, while *Lentodium* has normal basidial spores. It is also a curious fact that in Europe where *Lentinus tigrinus* is common in certain localities, *Lentodium squamulosum* is unknown and in our country *Lentodium* is not infrequent and *Lentinus tigrinus* is rare. Similar abnormalities of agarics are frequently caused by parasitic fungi as the common *Hypomyces Lactiflorum* but there is no evidence of any parasitic species in connection with *Lentodium*. Patouillard has suggested "des parasites animaux" but that also is only a supposition without any proof. We present (fig. 223) an enlargement of a section of the interior of *Lentodium squamulosum*. It will be seen that the gills anastomose and form an irregular, porous mass. The spores are in the greatest abundance and are elliptical, 3×5 mic. hyaline, smooth. Whether *Lentodium squamulosum* is autonomous or not, the name is very convenient to designate this form.

SPECIMENS IN OUR COLLECTION.

Ohio, Professor A. P. Morgan (type): *Illinois*, J. Schneck: *Mississippi*, Dr. N. S. Davis: *Dist. Columbia*, H. E. Warner: *Kentucky*, C. G. Lloyd: *Iowa*, James F. Clarke: *New Jersey*, E. B. Sterling (3 collections): *Pennsylvania*, Mrs. Hannah Streeter: *Michigan*, O. E. Fischer: *Minnesota*, Mrs. E. F. Elliott, Dr. M. S. Whetstone: *Vermont*, C. G. Lloyd.

TREMELLA CLAVARIOIDES (Fig. 224.)—A rare plant, I judge, has been received from Professor G. D. Smith of Akron, Ohio, and Dr. Mary S. Whetstone of Minneapolis, Minn. I have never seen it growing nor did I find it in Professor Peck's museum. It is a pure white Tremella that has the general appearance of being a Clavaria. The substance is gelatinous, though it is firmer than most Tremellas and retains its form even when very moist. It has the typical basidia and spores of a Tremella and the gelatinous nature,



Fig 224

Tremella clavarioides.

and therefore will have to be classed as the genus *Tremella* though it can not be entered in any of the present sections of the genus, and a new section, *Clavariiformis*, must be made to include it.¹⁰ In drying the plant shrivels but retains its form, and on moistening it soon assumes its growing shape and size. Our photograph (Fig. 224) was made from a dried specimen that had been moistened.

¹⁰ My friend, Professor McGinty, suggests that it would be simpler to make a "new genus," as that will surely be done as soon as the facts are published. He proposes the name "*Corticoides reticulatum*, new genus, McGinty," on the same principle apparently (it being neither a *Corticium* nor *reticulata*) that the name *Tremellodendron* was proposed for plants that are neither "*Tremellas*" nor "trees."

HISTORY.—When I received this plant I was unable to find any description that seemed to me to at all apply to it. The nearest was *Tremella fusiformis*, with which I was not familiar. I sent it to Dr. Farlow, and he kindly advises me it is the same plant that was called by Berkeley¹¹ "*Corticium tremellinum* var. *reticulatum*" (sic.) The plant would therefore, according to the celebrated principle—"I saw it first"—be named *Tremella reticulata*.¹² It appears to me to be absurd, and unjust to the plant, to call it *Tremella reticulata*, when it was not reticulate, because it had been named *Corticium*, var. *reticulatum*, when it never had the most remote resemblance to a *Corticium*. I took up the matter with Professor McGinty and he wrote me he would call it *Tremella clavarioides*, and I have adopted his name.¹³

TREMELLA AURANTIA (Fig. 225).—Plant two to three inches



Fig. 225
Tremella aurantia.

¹¹The plant in Saccardo bears the advertisement "Berkeley and Ravenel" but if it is true that it was so named, the naming was done by Berkeley. Some day we expect to devote some remarks to the system of advertising in double platoons, nine-tenths of which is a double fraud. In this case Ravenel had nothing to do with it, not even to pick it up. The plant is attributed to Michener of Penn. and was sent to Berkeley by Curtis.

¹²Since this article was written we note that Professor Farlow has taken this view of it. (Cfr. *Rhodora*, January, 1908.)

¹³Professor McGinty informs me this was done in accordance with Article 5 of the Rules of the Poseyville Fungus Forage Club.

"When a new-species-hunter is so careless in his work that he puts a plant in a genus where it has no possible relationships and gives it a specific name with no application to the plant, owing to the poor quality of his work it becomes null and void and the plant shall be placed in the genus where it belongs and a suitable name given to it."

in diameter with thin foliaceous lobes. Color yellow, whitish below. Spores subglobose, apiculate, 8-10 mic. in diameter, hyaline, smooth.

HISTORY.—It is a rare plant and I have seen it but once. It grew erumpent from the limb of an oak tree and was collected the latter part of November. It is much thinner, firmer and more foliaceous than the common species *Tremella mesenterica*. I refer it to Schweinitz's name, as it seems to fit exactly his short description and habits.¹⁴ I am not certain, however, that it is not *Tremella frondosa* of Europe,¹⁵ but Fries (and other European mycologists to whom I have sent it) saw the American species and considered it distinct. Besides it does not appear to me to be Bulliard's figure. I have seen in the museum at Paris quite a different American plant (a species of *Dacryomyces*) determined as "*Tremella aurantia*, Schw." but I think it is an error.

POLYPORUS VIRGINII-CUBONI, N. C.

By N. J. MCGINTY.

It is held by our leading authorities that whenever one discovers a duplication of an old name, it is his first duty (to himself) to immediately propose a new name for one of the plants, notwithstanding he may not know anything about either of them. In 1836, Berkeley in Vol. 5 of Hooker's English Flora described a resupinate *Polyporus* on the bark of fir trees which he named *Polyporus armeniacus*. This species was compiled in Saccardo (Vol. 6, p. 127) as *Polyporus armeniacus*, Berk. It belongs to the genus *Poria*, and certainly not to the genus *Polyporus*, and I therefore name it *Poria armeniaca* (Berkeley) McGinty. In 1856 Berkeley described in Hooker's Journal, vol. 8, page 197, a new species collected by Spruce in Brazil under the name *Polyporus armeniacus*, n. s., identically the same name he has applied to a British species. Saccardo has compiled it without change in vol. 6, p. 109, although any date dictionary would have demonstrated that 1856 is twenty years later than 1836. I have carefully studied the works of the learned nomenclatorial authority, Otto Kuntze, and also read the Rochester code (which seems to have been taken from them), and I can find in neither any rule justifying an author to call two entirely different "new species" by identically the same name. I therefore change the name of the second *Polyporus armeniacus* to *Polyporus Virginii-Cuboni*, McGinty, in honor of Madame Cuboni, who has rendered mycology such marked service in translating some English diagnoses into Latin (cfr. Saccardo Sylloge, vol. 6, p. 199). I regret that I must still include it in the old genus *Polyporus*, as my distinguished co-workers have not yet indicated what new genus is comprised in the section *Anodermei Carnosi* of Fries' classification. The synonymy may be indicated as follows:

Poria Armeniaca (Berkeley) McGinty: synonym,—*Polyporus armeniacus*, Berkeley, Hooker's English Flora, vol. 5, part 2, 1836, p. 147.

Polyporus Virginii-Cuboni, McGinty: synonym,—*Polyporus armeniacus*, Berkeley, Hooker's Journal, vol. 8, 1856, p. 197.

(NOTE.—Our apologies are due to Professor McGinty for delay in printing the above communication, the copy having been in our hands nearly two years. In the meantime his "co-workers" have indicated that Fries' section forms the "new genus" *Tyromyces*.—C. G. L.)

¹⁴ The specimen in Schweinitz's herbarium has mostly disappeared, only some very small fragments left. There still remains the *Stereum* with which it grew.

¹⁵ I do not know *Tremella frondosa* of Europe, though I know well a plant in this country that passes for it. Our plant, however, can not be called "pale yellow," and I have always doubted the reference.

MYCOLOGICAL NOTES.

BY C. G. LLOYD.

Polyporoid Issue, No. 1.

CINCINNATI, O.

FEBRUARY, 1908.

We begin with this issue a series devoted to the polyporoids of Europe and America. As yet we have only devoted about a year to their special study, and of course there are many questions in connection with the subject that have not yet been solved. It is needless to say that we shall be conservative and follow the established usage in our names and classification. We take no stock whatever in the exuberance of new names that have been proposed in the last few years and shall not bother our readers with them.

POLYSTICTUS (SECTION PELLOPORUS).

The genus *Polystictus*, as proposed by Fries and adopted generally by mycologists, is defined by one word—coriaceous. It differs from the larger section now known as the true *Polyporus* in its texture, being usually thin, flexible, coriaceous or membranaceous. When fresh it is never soft, fleshy, watery, and when dry it is generally more flexible than brittle. Like all characters on which genera are based, intermediate species occur that are difficult to place, especially from the dried specimens, and the best that can be done in such cases is to judge from related plants. There are no hard and sharp lines in Nature.

Fries divided the genus *Polystictus* into a number of sections, but unfortunately he did not give the different sections distinctive names. Had he done so, the expenditure of much gray matter would have been saved to the modern name changers, who busy themselves discovering that the sections of Fries form "new genera" and then setting up various pretexts to juggle around the names.

The section under consideration was called by Fries in the main "Perennes" and embraces the *Polystictus* that have stems either mesopodal or pleuropodal and colored context. It can be divided "generally" of course if one wishes) into "genera" with hyaline and "genera" with colored spores, or into "genera" with colored setae and "genera" without colored setae, or into "genera" with uniform context or "genera" with the dual context.

Karsten, who was the first to engage in discovering "new genera" in Fries' sections, called this "genus" *Polystictus*, but the name was applied to so many plants that it seems to me if advisable to specially distinguish these sections by separate names the name *Polystictus* should be used for the main section and these smaller ones given other names. The next name-juggler to engage in the work was Guélet who called Fries' section, *Perennes*, *Pelloporus*. Since it has

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been called (in part at least) Xanthochrous, Coltriciella and Coltricia. In fact if you examine the work of any of the modern name changers you will find them a great deal more prolific in *new names* than in *new ideas*.

SETAE PRESENT.

Colored setae (Fig. 196) are characters found in many polyporoids and other plants, and generally such plants have ferruginous context. The presence or absence of colored setae on the hymenium is readily seen with a low power microscope. They appear like sharp spines, usually of a deeper color than the hyphae of the context. They are often called cystidia, but appear to me to be more on the surface than true cystidia. They have been proposed as a generic character by Ellis but the idea did not meet with much favor.¹

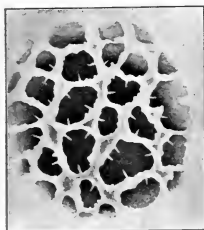


Fig. 196.

POLYSTICTUS TOMENTOSUS (Fig. 197).—Pileus thin, plane or depressed, dark brown, ferruginous color, *soft, tomentose*, usually without zones.² Context thin, *hard, uniform*. Stipe usually mesopodal, soft, tomentose. Pores small, 3 to mm. short (1 mm.)³ covered when young with a white film. Colored setae abundant.

This species I found abundantly in Sweden. Usually the stipe is mesopodal, rarely pleuropodal. Many of the specimens are double, one pileus superimposed above the other as in Fries' illustration of *Schweinitzii*. (Icon. T. 179.) My description is drawn from plants I collected in Sweden, but am not sure but that it is applicable to young plants only. (See note 5, page 4).

SPECIMENS IN OUR COLLECTION.

Sweden, C. G. Lloyd (abundant.)

Tirol, Rev. Bresadola, Rev. Jaime Pujula.

POLYSTICTUS CIRCINATUS (Fig 198).—Pileus, thick, plane or depressed, of a pale, fulvous color, without zones, and with a soft, velutinate surface. Context *double*, the lower sub-ligneous, the upper layer of equal or greater thickness, soft spongy. Stipe often short, thick, soft spongy, mesopodal, or in northern localities more slender and usually pleuropodal. Pores at first small, round, becoming large and more irregular when old, from 2 to 5 mm. long. At first covered

¹ I know from my conversations with Professor Ellis that he took it very much to heart because the mycological world did not take kindly to his idea of a genus *Mucronoporus* based on colored setae in the polyporoids. He said, and said truly, that if colored setae in the Thelephoraceae make the genus *Hymenochaete*, why should they not make a genus in the Polyporaceae? The reason was that *Corticium* was a large genus and the presence or absence of colored (and uncolored) setae are the most convenient methods to break it up, while the polyporoids have been broken up by Fries on much better and plainer characters.

² Fries emphasizes the character "azonate" but I found rarely specimens in Sweden that were distinctly zoned.

³ All my specimens have a *thin* layer of pores but as I find no spores I suspect all to be immature. It seems to be a character of all these related plants that the pores when young are more regular and shallow and increase in length as the plants get older. Hence in young and old plants the pores appear different.

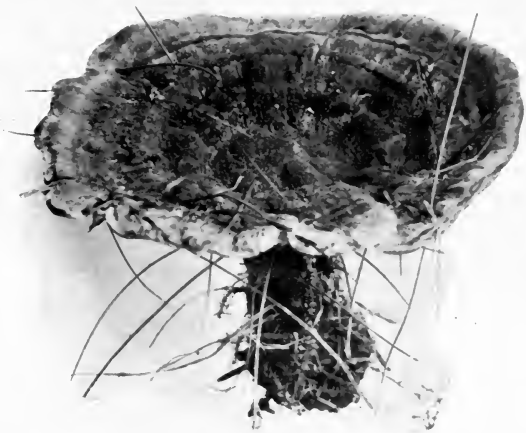


Fig. 197.
Polystictus tomentosus, and section.

with a white film. Colored setae abundant. Spores pale colored, 3×5 mic.⁴

HISTORY AND DISTRIBUTION.—A frequent plant in acerous woods in northern localities. Specimens from Massachusetts are mostly mesopodal with a short, thick stem. I found it frequent in northern Canada and there it was more slender and usually pleuropodal. Similar specimens from Colorado are thinner. It is known as *Polystictus circinatus* in Peck's work and in Miss Marshall's book, and probably correctly, though there are a number of discrepancies between it and European literature. It has smaller spores than the European plant as I have collected it in Sweden.⁵ It agrees exactly with Fries' description (save that his pore description applies only to young plants). It differs from *Polystictus tomentosus* exactly as Fries says it does. It does not agree with his figure (Icon. T. 180) particularly as to color for it is more yellow than red, nor does his figure show the dual character of the flesh which he emphasizes so strongly in his description.⁶ The spores are smaller than as stated by Bresadola (and found by myself) for the European plant. So taking it all together there is considerable doubt about it.

SPECIMENS IN OUR COLLECTION.

Sweden, C. G. Lloyd (See Note 5 below.)
Massachusetts, R. B. Mackintosh, Theodate L. Smith, J. W. Huntington, Geo. E. Morris, Miss Cora Clarke, Lincoln W. Riddle: *Maryland*, W. T. Lakin: *Colorado*, Ernest Knaebel: *Canada*, Thomas Langton, C. G. Lloyd. (One collection from Mr. Langton, Canada, is young and decidedly more *yellow* than usual.)

Forms.

As previously stated the plant varies very much from thick obese, short, central stemmed forms to thinner, more slender pleuropodal stemmed forms, but I do not believe they can be separated even under distinct, varietal names. They usually grow in pine woods over pine needles. I have a single collection from J. W. Huntington, Amesbury, Mass. which seems to be the same species in everything excepting that the pores are decurrent to the base of the short stem. I think it is a form, but it grew on "an oak stump" and *Polystictus circinatus* has no business to be found in such a situation.

POLYSTICTUS DUALIS (Fig. 199).—Pileus dimidiate, with a short, rudimentary stem, fulvous, ferruginous. Surface, soft, velutinate. Context dual, the lower subligneous, the upper about equal in thickness and soft, spongy. Pores small, subregular, about 2 mm. long, at first whitish, but soon dark.⁷ Colored setae abundant, *curved*. Spores unknown.⁸

⁴In the American plant so referred. In the plants so referred from Europe I find them 7×12 mic.

⁵The first season I was in Sweden I got a few specimens which I thought were *Polystictus tomentosus*. The second season I found abundantly what I supposed was the same plant. As I compare the specimens now I find my first season's collection has the dual context characters as attributed to *P. circinatus* by Fries, and my second season's collection a single context as he defines *P. tomentosus*. The specimens of first collection are old and those of the second are all young. I can not decide whether I got different plants or the same plant at different ages. If I did get the same plant then the dual context is developed as the plant ages and *P. circinatus* is an old condition of *P. tomentosus*.

⁶It was described Fr. Monog. p. 268 not page 268 as erroneously stated in Hym. Europe, and copied by Saccardo.

⁷As I remember them the fresh specimens had darker pores, than they are now when dry. When I collected the plant my first impression was that it was related to *adustus*.

⁸I find none in my specimens nor are they noted by Professor Peck.



Fig. 198.
Polystictus circinatus, showing mesopodal and pleuropodal forms.

HISTORY.—A rather rare plant I judge, which I know only from the type at Albany and a single collection that I made in northern Canada. It grows

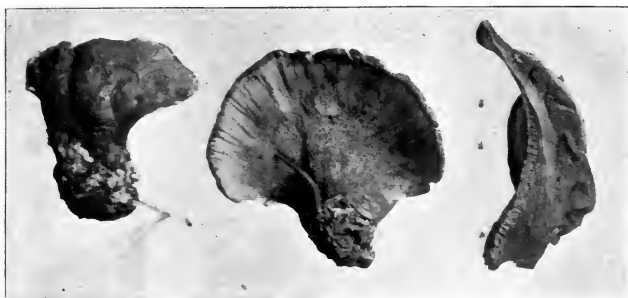


Fig. 199.
Polystictus dualis.

only on pine wood and those I found were on the base of a living pine tree. Its evident relationship to *Polystictus circinatus* has been acknowledged by Professor Peck but it is quite distinct and I do not question its claim to specific rank. It was given as a synonym for *Polystictus circinatus* by Cooke (who was only guessing) and so compiled by Mr. Merrill. It does not in reality belong in this section for Professor Peck finds it usually sessile, belonging to the *Apus* section. Although it has little resemblance to Fries' figure and does not agree with his description, I suspect it will prove to be *Polystictus triqueter* of Europe. Bresadola gives *Polystictus triqueter* and *circinatus* as varieties of the same species, though Fries does not indicate any relationship and puts them in widely distinct sections of *Polyporus*.

PLANTS WITH NO COLORED SETAE. SPORES PALE COLORED.

There are three frequent, small species belonging to the section *Perennes* and they have been very badly confused. They are widely different and there is no occasion for this confusion excepting lack of care on the part of the writers. All are much smaller, more slender plants than the preceding and have pale colored spores, appearing almost subhyaline under a high power. They are readily distinguished by the following key:

- Color bright cinnamon, *Polystictus cinnamomeus*.
- Color dull. Pores large, *Polystictus fomicola*.
- Color dull. Pores small, *Polystictus perennis*.

POLYSTICTUS CINNAMOMEUS (Fig. 200).—Pileus thin, coriaceous, depressed or umbilicate, *bright*, ferruginous-cinnamon color, subzonate, the surface silky and shiny with appressed radiating fibrils. Context thin, concolorous, $\frac{3}{4}$ mm. thick. Stem central, slender, equal, concolorous. Pores small, concolorous, at first shallow but when mature 2 to $2\frac{1}{2}$ mm. long. Spores elliptical, smooth, varying from 5×6 to 6×10 mic., pale straw color, pale under the microscope.

HISTORY.—This is not a rare plant in the United States, and is usually found in rich humus in the woods. In Europe it is very rare. It is small and slender, the pileus from $1\frac{1}{2}$ to 4 cm. in diameter. Many of the collections are

very small. In this country the plant was first collected by Richardson in British America and named by Klotzsch *Polyporus parvulus*.⁹ Then Peck discovered

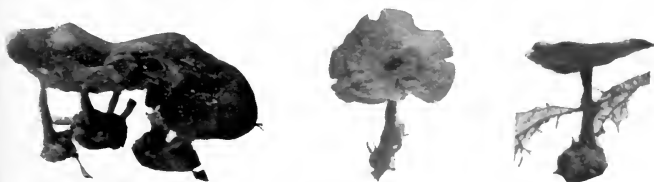


Fig 200.
Polystictus cinnamomeus.

it was a new species and named it *Polyporus splendens*, afterwards changed it to *Polyporus subsericeus*. Cooke referred it to a very similar plant of Australia, *Polystictus oblectans*.¹⁰ The reference of the American plant to the European was due I think to Rev. Bresadola. At any rate it was a matter of common knowledge years ago to all of Bresadola's correspondents. *Cinnamomeus* is a specific name given by Jacquin, more than a hundred years ago. As a general rule I do not favor digging up the old names based on old pictures for most of them are more dubious than true. Jacquin however gave such a correctly drawn colored picture that I do not see how his work can be ignored, and this is the only plant known in Europe that agrees with it in any respect. Fries never referred any plant to Jacquin's picture, and carried it as a doubtful species through all his works. He balked at the one word "fragilis" in Jacquin's description, as Persoon had done before, and he called the plant when he received it from France *Polyporus Montagnei*. The co-types in Montagne's herbarium are the same as our American plant. Bresadola has given a very good figure of it in *Fung. Trident.* not as bright colored however as our American plant. The coloring of Quélet's figure (T. 17) is too yellow and the plant too obese. I think it must be some other species but know no plant that agrees with it in any degree.

SPECIMENS IN OUR COLLECTION.

Europe, Tirol, Rev. G. Bresadola; *France*, L. Ludwig; *Italy*, Rev. L. Badet. *America, Canada*, J. Dearness; *Minnesota*, Dr. M. S. Whetstone; *Michigan*, O. E. Fischer; *Massachusetts*, Simon Davis, Lincoln W. Riddle, Geo. F. Morris, R. B. Mackintosh; *Maryland*, W. T. Lakin; *Washington, D. C.*, Dr. A. Hrdlička; *New Jersey*, E. B. Sterling; *Ohio*, M. Bubna, C. G. Lloyd; *Florida*, Mrs. M. A. Noble, C. G. Lloyd.

POLYSTICTUS PERENNIS (Figs. 201).—Pileus plane or infundibuliform, minutely velvety, becoming smooth, *zonate dull* cinnamon color, often bleaching whitish. Context thin, particularly toward the margin, concolorous. Stipe central, concolorous, varying from

⁹ It is *not* the plant, however, usually called *Polystictus parvulus* in American mycology. The name was switched, first due to an error of Fries who referred to it *P. connatus* of Schweinitz and then to a second error of Berkeley who misinterpreted *P. connatus*. The plant usually called *Polystictus parvulus* in American mycology is *Polystictus fociicola*. I think there was some reason for Berkeley's conclusions for Schweinitz's description of *connatus* answers *Polystictus fociicola* better than the plant from which it was drawn. But I see no good excuse for any one who has seen both Schweinitz's and Klotzsch's types perpetuating this old error.

¹⁰ *Polystictus oblectans* is a similarly colored plant of Australia, very common there I judge from the number of specimens at Kew. I have it from several collectors. It is a shorter, thicker plant, but in the American plant the fibrils of the pileus are appressed and the pileus smooth. In the Australian plant the fibrils in the center of the pileus are *erect* and the pileus subscamoseous. In addition the spores of the Australian plant are more round being about 6×7 mic.

3 to 7 mm. thick and from 2 to 7 cm. long. Pores cinnamon, small, slightly decurrent,—when young small (4 to mm.) shallow, subregular,—when old larger, more irregular, somewhat torn. Spores elliptical, 4-5 x 8-10, smooth, pale colored, (subhyaline under the microscope).

HISTORY.—A frequent plant both in America and Europe. It is the most common *Polystictus* of this section that we have. It is somewhat similar to the preceding species but usually larger, more zonate and can always be recognized by its *dull* color.¹¹ It grows in more sandy open places and is not so characteristically a "woods" species as the preceding. The specific name, *perennis*, is attributed to Linnaeus and is really a misnomer, for the plant is not perennial in the sense that it revives the second season. It often persists over the winter and the weathered specimens bleach almost white on top. Such specimens frequently reach me. In common with other related species, *Polystictus perennis* has the curious habit of growing around and enclosing sticks and blades of grass etc. when they are in the way of the growing plant. Two or more plants coalesce if they grow where they touch each other. Such a specimen consisting of perhaps a dozen united individuals was named *Polyporus connatus* by Schweinitz.¹²

SPECIMENS IN OUR COLLECTION.

Europe, France, F. Fautrey, L. Rolland, Professor J. Lagarde, C. G. Lloyd; *Germany*, Dr. O. Pazschke, Otto Jaap, Professor Krüger, E. Engelke; *England*: E. W. Swanton*; *Austria*, Ant. Weidmann, E. Wulff, *Tirol*, Rev. G. Bresadola; *Belgium*, Prof. Ch. Van Bambeke; *Italy*, M. Bezzi*; *Denmark*, Rev. A. Breitung; *Sweden*, C. G. Lloyd.

America, Canada, James Fletcher, P. L. Ricker, Miss Isabel M. Walker; *Minnesota*, Miss Daisy Hone, Dr. M. S. Whetstone; *Wisconsin*, Chas. E. Brown; *Michigan*, H. C. Beardslee, C. G. Lloyd; *Vermont*, E. A. Burt; *New Hampshire*, Miss Kate A. Jones*, Margaret L. Sewall, H. E. Warner, F. L. Sargent; *Massachusetts*, L. W. Riddle, Geo. E. Morris, Simon Davis*, *Missouri*, Dr. N. M. Glatfelter, N. L. T. Nelson*, *Pennsylvania*, Caroline A. Burgin*; *Illinois*, H. C. Beardslee; *Washington, D. C.*, F. J. Braendle. One of Mr. Braendle's collections is surely *perennis* but *too* bright color. The other tends towards *focicola*.

Forms.

POLYSTICTUS SIMILLIMUS.—This is in my opinion a small, more slender form with pores not so decurrent. I get it from both Europe and America and such forms are starred in above list.

POLYSTICTUS PROLIFERUS (Fig. 202).—A curious form (?) or sport, has been received from M. Bubna, Cleveland, Ohio. It is not perfect, but the margin of the pileus develops a number of proliferous pilei. The spores, 6 x 9, and the texture is more flexible, also color brighter than *Polystictus perennis*, but on the scanty material we have we would prefer to consider it as a possible sport rather than a wonderful "new species."

POLYSTICTUS FOCICOLA (Fig. 203).—Pileus same as *Polystictus perennis* but usually smaller. Stipe similar. Pores *large* (1 mm or more) rather shallow. Spores elliptical, 5 x 10, pale colored, smooth.

¹¹ One collection I have from F. J. Braendle, Washington, D. C., is bright color but so evidently *P. perennis* in size and habits and general appearance that notwithstanding its color I should without hesitation refer it to *perennis*. It shows that even the "key" characters sometimes fail.

¹² The specimen is still in good condition at Philadelphia. Fries erroneously referred Schweinitz's species and the error has been copied by every writer on the subject since.

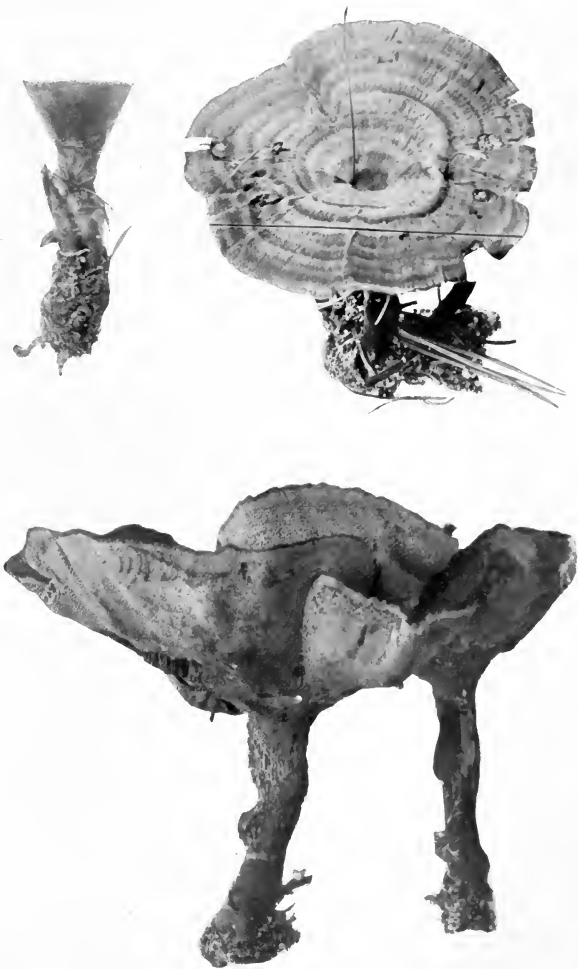


Fig. 201.
Polystictus perennis.

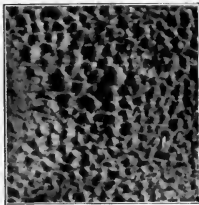
HISTORY.—This is practically the same plant as the preceding, having the same *dull* color, and appearance and differs only in having *larger* pores. The



Fig. 202.
Polystictus proliferus.

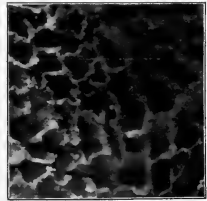


Fig. 203.
Polystictus focicola.



Perennis.

Fig. 204.



Focicola.

Contrast of pores (enlarged x6.) of Polystictus perennis and Polystictus focicola.

extreme forms are marked in the difference in the size of the pores but intermediate forms occur that are hard to refer. It is a *southern* plant and the most common form in the South and is not known from Europe. The most northern station known to me is Brewerton, N. Y.¹³ It usually grows on burnt ground. The plant has generally and erroneously been known in American mycology as Polystictus parvulus (See note 9 p. 7.) based on Berkeley's work. Polystictus connatus of Schweinitz, also usually referred to it as a synonym is an error (See page 8.) Berkeley named the plant Polystictus¹⁴ focicola, but withdrew it in favor of Polystictus parvulus, being misled by Schweinitz's description and Fries' synonymy. As neither Polystictus parvulus nor Polystictus connatus is this plant, I think Berkeley's name will have to stand.

¹³ Mr. Murrill correctly gives its distribution as "confined to states south of Massachusetts" and then copied the usual error and referred it to Polystictus parvulus which Dr. Richardson collected in Arctic America.

There is no exact locality on the label, but Richardson was the botanist of the Franklin expedition to the north pole and collected his plants "from Hudson Bay to the Polar Sea." Polystictus parvulus was collected without question much nearer the Arctic circle than any "state south of Massachusetts."

¹⁴ Or Polyporus to be accurate, but Polystictus having come into general use for a section of Polyporus since that date I use the two names in the present sense. The same remark will always apply to my use or rather non-use of all the recently juggled names. (See Note 2, page 342).

SPECIMENS IN OUR COLLECTION.

Florida, C. E. Pleas, G. C. Fisher, (4 collections,) Mrs. M. A. Noble (?); Tennessee, Mrs. M. S. Percival: Kentucky, C. G. Lloyd: New Jersey, T. J. Collins.

Rare and Doubtful Species.

POLYSTICTUS OBESUS.—A thick, obese species with general color and characters of *Polystictus perennis*. It is not zonate, however, and the surface is uneven, with *erect, squamose*, scales. It is a rare form and I think the type is the only one surely known. I have a specimen from John Dearness, Canada, that I think belongs here though Ellis referred it to *P. cinnamomeus* which it surely is not. Morgan referred it to *P. Montagnei* (likewise surely not) and it is the basis of the record of this species in Morgan's work. I have also two collections, one from Theodate L. Smith, New Hampshire and the other from Dr. Mary S. Whetstone, Minneapolis, which I doubtfully refer here. If so, they are young, thinner, and with larger pores.

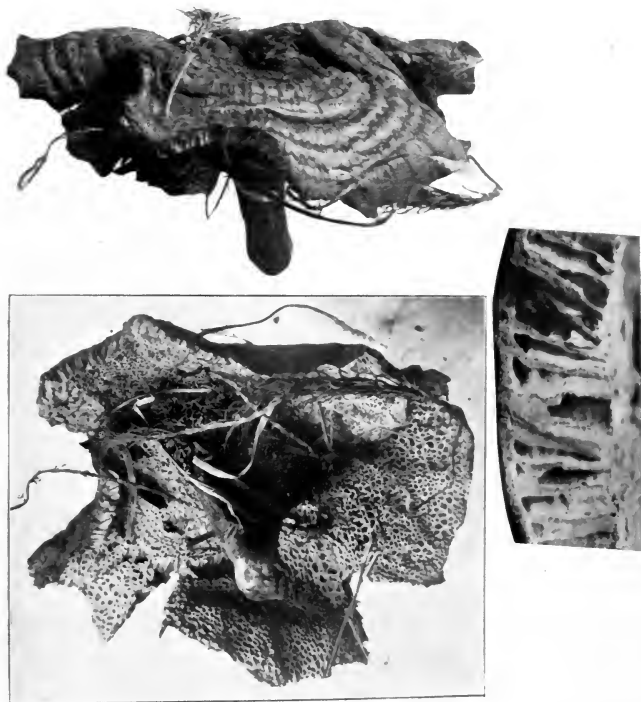


Fig. 205.

Polystictus cuticularis, with an enlargement $\times 6$ showing the relative thinness of the flesh.

POLYSTICTUS MEMMINGERI.—I have not seen and do not know this. It seems from the description to be a very obese oboesus.

POLYSTICTUS CUTICULARIS (Fig. 205).—Pileus plane, smooth, bright cinnamon color, strongly zonate. Context thin, less than $\frac{1}{2}$ mm.,¹⁵ concolorous. Pores large, 1-2 mm. wide, 3 mm. long. Paler than the pileus. Stipe rather obese, concolorous, minutely velutinate (2 cm. long, 1 cm. thick in this specimen.) Spores 6 x 12-14 mic., pale colored, smooth, lateral apiculate with a large gutta.

Based on a single specimen collected at Wayland, Mass. by Geo. E. Morris. It is quite different from related plants in this country in its *very thin* context, in proportion to the pores, and the spores (lateral apiculate) are different in shape from all others. Not knowing what it is, I give it a new name in keeping with custom in such cases. It may be a new species and it may not. I hope some day to be in a position to say.

POLYSTICTUS DECURRENS (Fig. 206).—Pileus depressed, *zonate*, *smooth*, pale cinnamon color, thin. Stipe slender. Pores *long*, *decurrent*, small regular. Spores elliptical, 4 x 8 mic., hyaline, smooth, guttate.

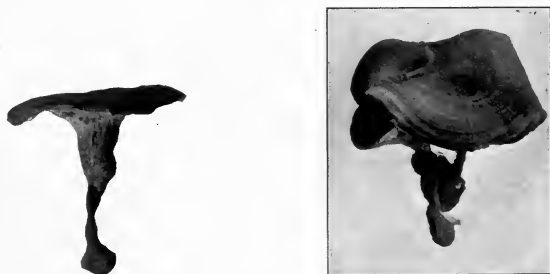


Fig. 206.
Polystictus decurrens.

This species is only "known from the type locality." It was collected by Geo. E. Morris, at Ellis, Mass. It differs from all others in its *long* decurrent pores. It is closest to *cinnamomeus*, but pileus is smoother, not bright color, more rigid. As to the naming of the preceding plant, the same remarks apply to this.¹⁶

POLYSTICTUS DEPENDENS.—If this is not an anomaly of some kind it is a very curious thing. It grows pendant, hanging on the under side of pine branches and logs and the pores (of course) on the under side of it. It might well be compared to a wasp's nest. In its surface, context, color, pores and general appearance it is almost the same as *Polystictus cinnamomeus* excepting in its manner of growth. It is a small plant about one half inch in diameter and very rare, being found originally by Curtis in South Carolina and later by Ellis in New Jersey, who sent his plants to Cooke to be named. At Kew there is also in the same cover what appears to be the same plant from Africa.

¹⁵ Hence the name, for the thin flesh is little more than a cuticle.

¹⁶ As a matter of truth, Jacquin's figure of *Polystictus cinnamomeus* agrees with Mr. Morris' plant both in color and shape better than it does with the plant to which the name is now applied. At the same time no such plant as Mr. Morris sends is known now in Europe.



Fig. 207.

Polystictus dependsens and the pore surface. Both enlarged 6 diameters.

Since the pamphlet has been in type we were very much pleased to receive a specimen of *Polystictus dependsens* from G. C. Fisher, Florida. The spores of the plant are of a much deeper color than those of *Polystictus cinnamomeus* and smaller, 5×7 mic. They are elliptical, guttate, smooth. Mr. Fisher's plants reached me at an opportune time to present a figure (207) which is an enlargement six diameters of the specimen.

SETAE NONE. SPORES PURE WHITE.

POLYPORUS SCHWEINITZII (Fig 208).—Pileus dark brown, varying much in size and shape, covered with a strigose, matted brown tomentum. The perfect form is mesopodal. Usually it is pleuropodal and sometimes apodal. Context brown, soft, spongy when fresh. Soft, brittle when dry. Stipe usually short and thick, rarely central, usually excentric, sometimes wanting. Pores decurrent, at first large, meruloid, shallow, when fresh yellowish, spotting brown when bruised or in drying, becoming longer (5 mm.) and when old irregular and lacerate.¹⁷ Spores pure white in mass,¹⁸ elliptical, 4×6 , hyaline, smooth.

This is a celebrated plant and has been known (except by a few changers¹⁹) as *Polyporus Schweinitzii* ever since Fries nearly ninety years ago so named it, in honor of Schweinitz.²⁰ It is one of those intermediate plants between *Polystictus* and *Polyporus* and has been referred to both. Fries at one time put it in *Polystictus* but Cooke and Saccardo in *Polyporus*. It varies in size from two inches to a foot in diameter (or even two feet as Mr. Murrill has collected it). It

¹⁷ I have received the plant from correspondents sent as a *Hydium*.

¹⁸ The English author who states "pale yellow" certainly never collected them.

¹⁹ If you examine their work you will be impressed with the wonderful unanimity with which each one of them gets up a *different* name for it. During the last twenty five years it has had a *new juggled name* on an average once every five years.

²⁰ I had the pleasure of telling Mr. Romell that it had recently been named in honor of him. It was news to him, and very amusing, and we had a good laugh over it.

grows usually at the base of a pine tree and generally takes a pleuropodal form. Rarely forms with central stems are found. Sometimes it grows *on* the trunks of pine trees and then the stem is lateral or wanting. The forms on trunks have received several names—*Polyporus tabulaeformis*²¹ by Berkeley and *Polyporus hispidioides* by Peck, and both of these authors afterwards corrected their work. Fries named this plant *Polyporus spectabilis*, according to Cooke's synonym.



Fig. 208.

Polyporus Schweinitzii. A small specimen. Usually it is 8 to 12 inches in diameter.

Fries gives, I think, a very good picture of it (*Icones T. 179*) made from a fresh plant, but it bothered me for years because I never saw specimens with the contrast of colors of the pores and context such as he shows. One must observe the fresh plant to find that, for in drying the pores become very much the same color as the context. The marked manner in which the fresh, yellowish pores turn quickly brown on bruising is a notable character of the fresh plant not mentioned I think in books.

SPECIMENS IN OUR COLLECTION.

Europe, Denmark, Dr. C. Mundt: *Germany*, Fritz Noack.

America, Canada, C. G. Lloyd: *Massachusetts*, J. W. Huntington (who states "very common"): *Minnesota*, E. P. Ely: *Ohio*, Captain Wm. Holden:²² *Michigan*, S. G. Milner: *Florida*, C. G. Lloyd: *Alabama*, A. S. Bertolet.

NOMENCLATURE.—"The nomenclature is in accordance with the best judgment of the author." The above quotation from a recent catalogue by Edith M. Farr impresses me as being good common sense. If authors would rely on their own judgment in selecting names instead of being dictated to by some "rules" it would be much better. The man who has to conform to "rules," formulated by those who knew nothing of his subject, is to be pitied.

²¹ Incorrectly compiled *tubulaeformis* in Saccardo, Vol. 6, p. 76.

²² Pine is not indigenous around Cincinnati and the discovery of this species near Cincinnati by Captain Holden is of interest, as it is certainly adventitious in this locality.

WHICH IS FOMES NIGRICANS, "FRIES"?

FOMES NIGRICANS.—The fact that there are two very different plants referred to *Fomes nigricans*, "Fries," by different botanists is not generally appreciated.

First, there is a *Fomes* (Fig. 209) growing very common on



Fig. 209.

birch, which is in reality a form of *Fomes igniarius*, with a *smooth, black, shining* crust.²³ It is called *Fomes nigricans*, "Fries," by Quèlet and Patouillard, and is the plant beautifully shown in the recent plate by Boudier. I have only collected it on birch, but have specimens from France, on willow, which are so referred. It has the same colored context, the same spores (subhyaline, compressed globose, 5-6 mic.), and has a peculiarity I have often noted in *Fomes igniarius*, which was not overlooked in Boudier's plate, though never mentioned, to my knowledge, in books. The old tubes have a white deposit (lime, I presume), which shows plainly in a section of the pileus of *Fomes igniarius*, but not any other species, to my knowledge. If this is the true *Fomes nigricans* of Fries, and I presume it is, then I should consider it a form of *Fomes igniarius*, but well worthy of a name.

Second, there is a *Fomes*, in reality I think a form of *Fomes fomentarius*, which was called *Fomes nigricans*, "Fries," by Bresadola

²³ The type form of *Fomes igniarius*, as it grows in great abundance on all kinds of frondose trees in Sweden, has a rough, rimose, black crust, very much resembling, in general appearance, *Fomes rimosus*. Last summer I found both forms in northern Canada, the rough form on poplar, the smooth form in great abundance on birch.

(Hym. Hung. Kmet, p. 10), and is so known to some mycologists in France to-day. I received a beautiful specimen, so named by Monsieur L. Ludwig, Paris (see Fig. 210, made from the specimen). I also have a specimen from C. Engelke, Hanover, Germany, and one from Rev. Bresadola. It is not "Fomes fomentarius, of advanced age and indurated," as stated by Mr. Murrill, being more distinct, in fact,



Fig. 210

from the usual form of *Fomes fomentarius* than the previous plant is from *Fomes igniarius*. It has the same context, long stratified pores and peculiar pore mouths as *Fomes fomentarius*, but has a black crust, *strongly concentrically sulcate*. I do not question but that it is a form of *Fomes fomentarius*, but it is well worthy of a distinct name.

MYCOLOGICAL NOTES.

BY C. G. LLOYD.

Polyporoid Issue, No. 2.

CINCINNATI, O.

AUGUST, 1909.

THE GENUS FAVOLUS.

Hymenium of large, elongated pores, radiating from the stem. Spores white. Context fleshy, tough.

The genus *Favolus*, quite frequent in the tropics, is represented by but one species in temperate Europe or America. As originally proposed, it included all the large-pored polyporoids, but is now usually restricted to species with elongated pores. The large-pored polyporoids with round or hexagonal pores form the genus *Hexagona*, a tropical genus.

THE DISTINCTION BETWEEN FAVOLUS AND HEXAGONA.—The author who proposed *Favolus* made no distinction, but Fries separated the original genus *Favolus* into two genera, one with elongated pores which he called *Favolus*, the other with hexagonal pores which he called *Hexagona*, and this has been used for eighty years, and accepted by every mycologist as far as I know (excepting it was juggled as part of the 83%).¹

The genus *Favolus* runs into the agaric series, and the tropical species sometimes take a lamellate form. The genus *Hexagona*, on the other hand is more closely related to *Polyporus*. Generally speaking *Hexagona* comprises "corky-woody" species and *Favolus* "fleshy-tough" species. A few species with hexagonal pores but with the usual *Favolus* context have been placed with the latter. We should include them in *Hexagona*, and one species of our Southern States is affected thereby, viz: *Hexagona cucullata*.

DISTINCTION BETWEEN FAVOLUS AND POLYPORUS.—Theoretically the distinction is large, elongated pores, as previously stated, though of course it is difficult to exactly specify where the line falls between large and small pores. In practice, however, dimidiate species or with lateral stems are called *Favolus*, while species with equally large, elongated pores with a central stem are called *Polyporus* (example, *Polyporus arcularius*). It would probably be better to include both in *Favolus*, though that is not the custom.

FAVOLUS EUROPAEUS (Fig. 256).—Pileus dimidiate, with a short, lateral stipe. At first covered with reddish, tawny, fibrillose cuticle, which, as the plant ages, peels away or fades out so that old specimens are pale or even white. Pores white, large, elongate, radiate.

¹ The excuse upon which this contortion act of changing all species of *Favolus* to *Hexagona* and all species of *Hexagona* to *Favolus*, was based, was that Palisot-de-Beauvois, who proposed *Favolus* and included both genera, happened to print a picture of a *Hexagona* before he printed a picture of a *Favolus*. As the present genera *Favolus* and *Hexagona* are not taken in the sense of Palisot-de-Beauvois, I can not see why it should make any difference which he printed first. Certainly it is not of enough importance to change 218 names.

Favolus europaeus is a frequent plant in the United States, usually on hickory branches. It is a spring plant and found in its best development in June, when one often finds very bright specimens. As the season advances the plants lose their bright cuticle, become pale, and

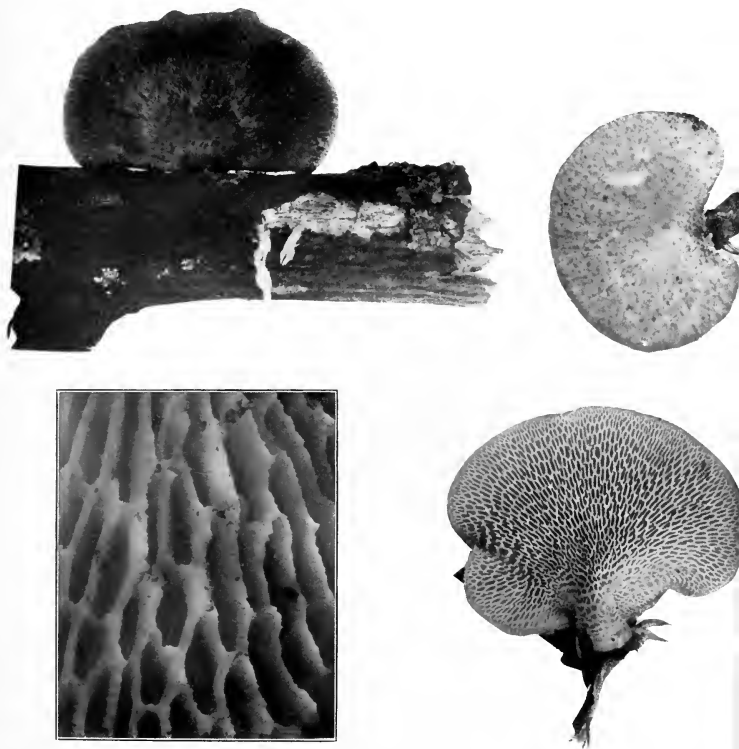


Fig. 256.

Favolus europaeus. One with the fibrils partially separated. Also pores (x 6).

are usually eaten by beetles, so that by midsummer the plant generally disappears from our woods. As we have no other species of *Favolus* in our Northern States, it is easily known by the pores. These are constant, as far as I have observed in the United States, but I have seen specimens from Italy tending toward *Lenzites*.

In Europe *Favolus europaeus* is quite rare. It does not occur in England nor further west than the Alps. In France it is found, rarely, in the Jura, extending east and south into Italy. It usually grows on *Juglans* or *Morus*.

History.—In Europe it was first noticed by De Candolle and called *Merulius alveolaris*.² Fries called it *Favolus europaeus*. Two collections reached Europe from America, both of which were discovered to be new species. Klotzsch found it in Hooker's herbarium³ and named it *Favolus Canadensis*. This name has been largely used in the United States, in fact it is only in recent years that its identity with the European plant has been unquestioned. Montagne called it *Favolus Ohiensis*. Berkeley usually referred our American plant to *Favolus Boucheanus*,⁴ and he also named a "var. *peponinus*" which is exactly the type form as far as I can see. American collections referred to *Favolus alutaceus*⁵ are also this plant.

FORMS.

As previously stated, *Favolus europaeus* which is at first covered with a bright, reddish cuticle, gradually loses this cuticle and becomes in the end smooth and white. These are not forms, though likely to be so taken, but are conditions. One of our figures is an intermediate condition. The following is, however, a good form.

FAVOLUS MICROSPORUS (Fig. 257).—This is only a small-pored form



Fig. 257

Favolus microsporus and the pores (x 6).

of *Favolus europaeus*, having all the other characters of the type form except smaller pores. Sometimes I have noticed both forms in the same collection. The small pored form is much rarer, however.

History.—This small-pored form has long been known in American mycology, and usually considered as a form of *europaeus* hardly worthy of a separate name. Professor Peck sent it to Fries thirty years ago, and our photograph is from his specimen in the museum at Upsala. It was the basis of *Polyporus Boucheanus* in Morgan's work. Recently Mr. Murrill discovered

² I think no one has seen De Candolle's specimens, but his remarks seem to apply to it, and besides Fries cites it, and it is this plant in the usual date-dictionary sense. I think it was Quélet that first produced the dates.

³ The specimen is still in good condition, and there are poor specimens at Berlin.

⁴ He evidently never knew the European species, which does not grow in England. It has been known for some time that *Favolus Boucheanus* in the sense of Berkeley was *Favolus europaeus*, hence in compilations *Favolus Boucheanus*, "Klotzsch" is often given as a synonym. Klotzsch's plant has no resemblance whatever to *Favolus europaeus*, and in the usual classification is not even a *Favolus*. It is a *Polyporus* closely related to *Polyporus squamosus*.

⁵ Whether the original *Favolus alutaceus* from Brazil is the same as *europaeus* or not, I would not say, but to me the types look to be very close. Those so named from the United States are surely the same as *europaeus*. I should add that on one occasion I made a collection near Cincinnati, which was young and in good condition, and which was yellowish, without any reddish color, which we always associate with *europaeus* in its prime. It grew on oak, I think; at any rate, I took it for *Favolus europaeus*, modified probably by a different host.

it was a "new species" and named it *Favolus microsporus*. Then he discovered it was not, as Ellis had named it *Favolus striatulus*.⁶ As the name micro-



Fig. 258

Favolus brasiliensis.

sporus is so much better name for the plant we adopt it. Plants suffer so much from the names of the "new-species" discoverers that it is only fair that their work should occasionally lead to a better name for a plant.

⁶ Mr. Murrill's second discovery was probably only that Ellis had published it.

FAVOLUS BRASILIENSIS (Fig. 258).—Pileus white, smooth, but marked with striate lines on the upper surface. Stipe eccentric, usually well developed, and marked with the decurrent pores. Pores elongated, alveolate, white.

This species is quite common in Brazil, judging from the number of collections in the museums. In the United States it occurs only in the South and is unusual there. It is best known from the collections of Rev. Langlois in Louisiana. At Kew there are specimens from Texas collected by Wright.

History.—Fries named the plant from Brazil, and gave a fairly good picture of it. He also referred here an old name, *Merulius daedaleus* of Link, which comes in handy for juggling purposes.

Particularly as the evidence points to the conclusion that Link's plant had not the slightest relationship to *Favolus brasiliensis* and does not even belong to the genus *Favolus*. The plant is abundant in the museums of Europe, always under Fries' name.

THE GENUS HEXAGONA.

The genus *Hexagona* is a very common tropical genus, unknown

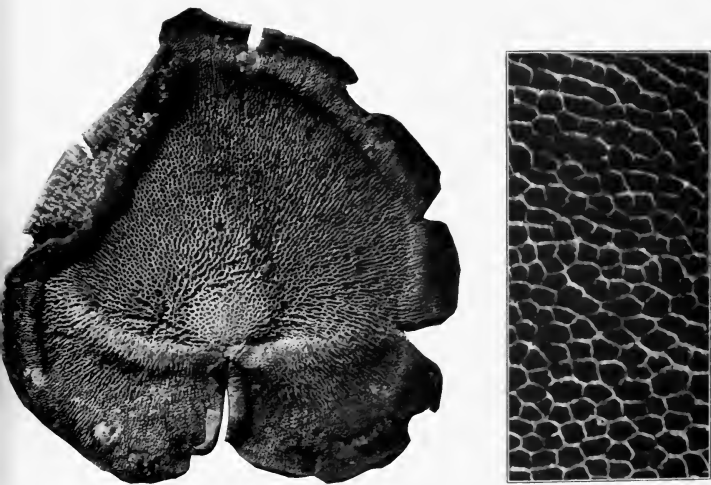


Fig. 259.

Hexagona cucullata (natural size and pores x 6).

from temperate regions. It has large, round or hexagonal pores, hence the name. They may well be compared to a honey-comb. The texture

of the tropical species is usually "corky-woody," persistent, and in the original diagnosis this was part of the generic character. Under this definition we have no true *Hexagona* in the United States, our Southern species with hexagonal pores being of a tough, fleshy nature. For that reason perhaps it has always been classed as a *Favolus*, though it seems to me its logical place is in the genus *Hexagona*.⁷

HEXAGONA CUCULLATA (Fig. 259).—Pileus orbicular reniform, attached by a very short disk-like stem. Surface smooth, even; when fresh, Mars yellow; when old, deeper reddish brown. Pores *concolorous*, orbicular, a scant mm. wide, shallow.

History.—A rare plant in the southern states. I have only received a single specimen from G. C. Fisher, Florida. At Kew there are three specimens, though I think but one collection, from Ravenel, South Carolina. The fresh plant is of a much lighter color than these old specimens. Montagne named it *Favolus cucullatus* from Cuba, and gave a good illustration of it. It was referred to *Favolus* from its context nature, not its pore shape, which does not agree with *Favolus*. Berkeley also discovered it was a new species, *Favolus curtipes*—and then he discovered that it was not. Then Mr. Murrill discovered it was a new species, *Favolus Taxodii*—and then he discovered it was not. I received it from Mr. Fisher and while I thought it was a new species I thought it would be better to learn a few of the old ones before announcing it.

SOME NOTEWORTHY POLYPOROIDS.

We shall present some of our most remarkable polyporoids that deviate from the usual run of these plants. Most of them form "new genera" for those who see a genus in every species out of the ordinary.

POLYPORUS RHIPIDIUM (Fig. 260).—Pileus dimidiate, scattered or imbricate, with a short, usually dilated stipe, smooth, white, becoming reddish with age. Pores round or somewhat irregular, rather large, with thin dissepiments.

This species was originally described from Ohio (Lea),⁸ but it is a rare plant; at least I have never found it in its "type locality." I think, however, that Professor Morgan did find it at Cincinnati. Generally it is 1 to 1½ cm. in diameter, with a short, broad, dilated stem that gives it a general resemblance to *Panus stipticus*.⁹ Our photograph (Fig. 260B) represents an unusually large specimen. The type collection, as well as others we have seen, are not larger than we have noted.

⁷ This section of *Hexagona* with tough flesh context will some day be discovered to be a "new genus." I know four species now that belong to it: *Hexagona cucullata*, *Hexagona indurata*, known from a single specimen from San Domingo; *Hexagona bipindensis*, of Africa, and a species, pure white, that I collected in Samoa, for which I have not yet been able to find a specific name, and think it has none.

⁸ Though a well-known American plant, *Polyporus Rhipidium* is not included in the recently published N. A. F., which states that it will include all American plants excepting those cultivated only. The author probably thought it was cultivated. Either that or it was lost in the juggle.

⁹ The name *Rhipidium* means fan-shaped.

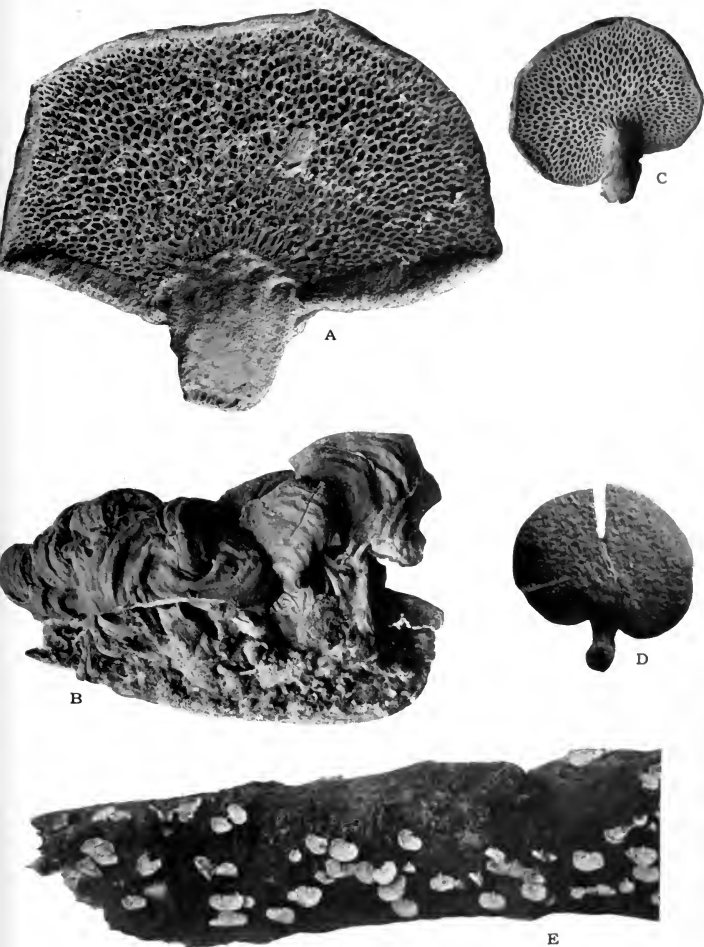


Fig. 260

Polyporus rhipidium.

Fig. A, type form x 6. B, same, a cluster. C and D, form *subpulverulentus* x 6.
E, the small tropical form photographed in Samoa.

The curious feature about *Polyporus rhipidium* is its change of color *with age*. This has never been published, I believe. When fresh it is white,¹⁰ but first turns yellowish and then with age it turns reddish. This seems to be due to some chemical principle, and I know but one other *Polyporus* with such a character, viz. *Polyporus confluens*. A very similar change takes place in *Hydnum septentrionale* and related species.

Berkeley always called the plant *Polyporus Rhipidium*, though it is found in Saccardo (vol. 6, p. 397) as *Favolus Rhipidium*, attributed to Berkeley.¹¹ Also in Vol. 9 as *Gloeoporus Rhipidium* on Spegazzini's authority. It does have some resemblance to a *Favolus* but none whatever to the character of a "Gloeoporus." In my opinion, it is best classed as a *Polyporus* for it does not have the pores of a *Favolus*.

FORMS.—This species departs from the usual order in taking its most luxuriant forms in temperate regions. In the tropics it takes usually a very minute little form rarely over $\frac{1}{2}$ a cm. in diameter. The stipe of this tropical form is not dilated as it usually is in the temperate region form. In addition, the little tropical form grows scattered. In the temperate regions it is imbricate. At first view it would seem to not be the same species, but with the same context, pores, and peculiar color changes and many connecting sizes, I do not question it is the same species. No name has been published for this little tropical form, though it might well have one. It is widespread and at Kew specimens are found from Ohio, North Carolina, Paraguay, Australia, Bonin Island, Ceylon, Brazil, Cuba, Venezuela, Mexico, and New Zealand, and all, I think, correctly named, though all except those from the United States are the small form. In addition, I have collected it in Samoa. The first specimen to reach Europe is found in Persoon's herbarium at Leiden. It was from the West Indies. Persoon labeled it *Polyporus pusillus*, but never published it.

POLYPORUS SUBPULVERULENTUS.—A rare form in warm regions is pulverulent or rather slightly tomentose. Our figure 260, C and D, is this form (enlarged X6). I have collected it in Florida.

POLYPORUS VOLVATUS (Fig. 261).—A *Polyporus* that conceals its pores by a thick membrane is a distinct departure from the usual order and well merits being called a "new genus."¹² Since the day that Professor Peck published and illustrated this curious growth it has been a celebrated plant. It grows in our Eastern States "plentifully" in the spruce forests, and Professor Peck states that it usually proceeds from a perforation of the bark caused by a beetle.

¹⁰ Or perhaps yellowish, I do not know. I have only collected the small tropical form, and that, when fresh, is white. *Polyporus Rhipidium* was first described as "yellowish," and all the freshly dried specimens I have seen of the large form are yellowish.

¹¹ This change should have been attributed to Cooke, for Berkeley always called it *Polyporus*, and every specimen in his herbarium is so named.

¹² It was so suggested by Professor Peck shortly after he published it, but Professor Peck has always been conservative in making new genera. Instead of calling it a new genus he called it a "section *Cryptoporus*." It remained for Shear, of Washington, to discover that it was not a section, but a genus, and thus add his name to it.

It also seems to be frequent in our Western forests (California), there growing on *Pinus contorta*, and Professor Peck has found it at Albany on *Pinus rigida*. It is probably restricted to coniferous wood.

Polyporus volvatus is an annual plant and short lived, for it is usually destroyed by beetles early in the season.¹³ The form is globose, or compressed, as shown in our illustration. At first it is a



Fig. 261.

Polyporus volvatus.

The larger are the Western form, the smaller the "type" form.

hollow ball with a posterior opening below.¹⁴ Then the pores are developed in the interior on the upper side. The context is white and homogeneous. I think it is misleading to describe the "volva" as a prolongation of the margin of the pileus. The "pileus" is rather a hollow globe with the context slightly thicker above than below. The surface of the pileus is smooth, the upper portion colored with a reddish brown resinous stain.¹⁵ The pores are small, slightly darker

¹³ Notwithstanding that it was arranged by Cooke in "Fomes" and is found in Saccardo as "Fomes volvatus," Mr. Murrill puts it in "Fomiteae." Its nature is the antithesis of Fomes and Fomiteae, and, as pointed out by both Peck and Patouillard, its relations are close to *Polyporus betulinus*.

¹⁴ We read that the "volva at length ruptures at one to three points," etc. I think there is no rupture. The hole is formed when the "volva" is. It is a definite, well formed aperture, and exists, I believe, from an early stage. I have one collection so young that no pores are yet formed, but the aperture is perfect. And I think it is a definite, *single* aperture. I have never seen a species with more than one opening. Specimens are recorded, as for instance Ellis' "new species" *Polyporus inflatus*, without an opening, but that is evidently due to growing on top of a log, an abnormal position. When the plant grows normally on the side of a trunk, as it generally does, the hole is developed as the plant develops.

¹⁵ In a young collection I have, this stain is uniform over the entire surface, but in old collections it seems to disappear from the under surface.

than the context and have darker mouths.¹⁶ Spores are oblong, 4 x 12 mic., hyaline, smooth.

FORMS.—I think there are no forms worthy of separate names. The usual Eastern form is almost globose and about a cm. in diameter, but the same form occurs also in the West, and the type of *Polyporus obvolutus* from California was of this nature. In the West there is also a larger, more robust form which we also illustrate.¹⁷ It is generally compressed, globose. This larger form is called in Saccardo (incorrectly) "var. *obvolutus*," and by Hennings "var. *Helix*," and by Patouillard, from China, "var. *pleurostoma*." All are exactly the same as our Western form. (It grows also in China and Japan, and I have a collection from A. Yasuda from the latter country.) The first collection that was found in the Torrey herbarium, from "Sandy Desert, California," had a short stipe and was called "var. *Torreyi*." I think the plant normally is always sessile, and this stipitate "form," I think, was due to growing in some abnormal position.

HISTORY.—Professor Peck named the plant, but he did not collect it first. There was a collection in the Torrey herbarium, part of which was sent to Upsala (probably during the latter part of Fries' life) but it was not named. It was sent by Gerard and endorsed "in sandy deserts, California,"¹⁸ The history of the plant in Europe was so carelessly made that it probably should not be told in plain English. The usual way of arranging a lot of Latin names in a row, which is the plan adopted to hide the truth, would perhaps be better. Berkeley never saw the plant while he was engaged in the work, but the species first reached Cooke from Harkness. Cooke did not know it, but sent it to Berkeley, who named it "*Polyporus evolvens*, B. & Cooke." Cooke probably noted that the name was preoccupied¹⁹ and published it under the name *Polyporus obvolutus* (Grev. 7, p. 1) and gave a "description."²⁰ Fortunately it happened that Professor Peck, who gave a full account and illustration "saw it first", about a year before this "work" was done in Europe. Otherwise I suppose we would have had learned date dictionary arguments advanced as to why we should not use *volvatus* as a name on account of a "prior description."

POLYSTICTUS PINSITUS (Fig. 262).—Pileus thin, flexible, tough. Context white. Surface densely velutinate with appressed, fine hairs. Color varying from light cervine to dark seal brown. Pores pale or sometimes dark, large, shallow, with thin, angular, denticulate edges.

Polystictus pinsitus is a frequent plant in tropical America and the West Indies. There are specimens at Kew from New Orleans (type of *Polyporus sericeo-hirsutus*), North Carolina, Brazil (several), Cuba (many), Mexico, Guadeloupe (a very brown specimen). It seems, however, to be confined to

¹⁶ Professor Peck described the mouths as cinnamon brown, but in the Western form they are dark brown, or rather fuliginous.

¹⁷ In our illustration the larger specimens are the Western form, from A. J. Hill, British Columbia, and the smaller specimens are the Eastern form.

¹⁸ Further account of this collection is given by Professor Peck, *Bull. Torr. Club*, vol. vii, p. 104.

¹⁹ Berkeley had applied the same name to a Brazilian plant.

²⁰ The following is the full description as published: "Scarcely exceeding an inch in diameter and two-thirds as thick." It was brief, but strongly "descriptive."

America.²¹ The only other specimen I have seen that approaches it is a collection from Madagascar which I would refer here as a form, although it is pale and different from all American specimens. It varies in color from pale brown to dark brown, but no more than any other similar species, such



Fig. 262.

Polystictus pinsitus.

as *Polystictus hirsutus*. Its peculiar character is the pores. I know no other species with such pores. They are broad in proportion to the depth, and for this reason have been classed as *Hexagona*. Indeed, in Saccardo it is found both in *Hexagona* and *Polystictus*.²² The pores vary in size even in

²¹ The following other records are printed: India and New Zealand, both based on species abundantly different. Mauritius, based on an error of labeling. Taken from Hooker's herbarium, where it is found only from Cuba. Manila, Sarawak, Borneo, and Algeria. I do not know as to the last-named, but the three preceding are errors due to referring here *Polystictus dermatodeus*, as a synonym.

²² If I were engaged in hunting for "new genera" in the polyporoids, I should surely find one here, for few other *Hexagona* or *Polystictus* have such pores. They are as large as the pores of other "Hexagonas," such as *tenuis*, but are irregularly angular, thin, while the character of the "small"-pored *Hexagonas* is the regularity of the pores.

the same collection²³ (cfr. our figures 263 the large and small pores made from the same collection). They are always more or less irregular.²⁴

HISTORY.—The plant first reached Fries from Brazil and was called *Polyporus pinsitus*. Then he put it in the genus *Polystictus*, where it is usually found in recent works. Then it was described by Klotszsch, from New Orleans, as *Polyporus sericeo-hirsutus*, which Fries changed to *Hexagona sericea*.²⁵ Later Fries described a pale form from Southern United States as

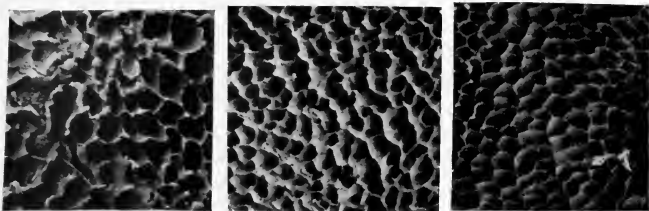


Fig. 263.

Polystictus pinsitus pores, x 6.

Polystictus barbatulus. Specimens of *Hexagona Friesiana*, as named by Spegazzini, are identically the same. (He has since acknowledged it.) The plant is said to have other synonyms, and it undoubtedly has, but I have not looked them up. Such a frequent plant in the tropics must have been discovered to be a "new species" on many occasions.²⁶

POLYPORUS ELLISII (Fig. 264).—Pileus when fresh sulphur-yellow, with large, dense, fasciculate warts.²⁷ Flesh when fresh white, about half an inch thick. In the dried specimen it is compact, firm, and slightly discolored. Pores when young white, angular, decurrent. When old about a third of an inch long, angular, sinuate, or somewhat irpicoid. Color of fresh pores said to be white, changing to greenish when wounded. In the dried plant they are much darker than the pileus. Spores (teste Underwood) oval, 6 x 9, smooth.

²³ The distinction between "barbatulus" and "sericeo-hirsutus," as pointed out, that the former has larger pores than the latter, has no foundation.

²⁴ There is no basis for the statement that "pinsitus" of the tropics has more irregular pores than "sericeo-hirsutus" of Southern United States.

²⁵ As found in Saccardo, vol. 7, p. 363.

²⁶ I do not know who started the story, but it is stated in Saccardo that *Polyporus dermatodes*, as named and illustrated by Lévillé in "Gaudichaud's Voyage," is the same. It is an error, for it has little resemblance to it, and belongs to a different section with colored context.

The first specimen of *Polystictus pinsitus* that reached Europe was called by Swartz, *Boletus villosus*, and is found in Saccardo as *Polystictus villosus*. Years ago Berkeley published that it was the same, and Swartz's specimen in the British Museum fully confirms it. The date dictionary experts seem to have missed it.

²⁷ These curious plate-like warts remind me in a general way of an armadillo.

This is one of our rare species of a Southern type. I have never received it from a correspondent. There are two collections in Cooke's collection. The first came from Ellis, a young specimen, with notes sent to Cooke. It was described under the firm name of "Cooke & Ellis,"²⁸ but as it was named for one of the firm, they wrote "Berkeley" after it.²⁹ It seems that afterwards a specimen reached Cooke from Ravenel.³⁰ This was much better developed, with long pores (5 mm. long)³¹ that reach to the *very base* of the stipe.³² Some

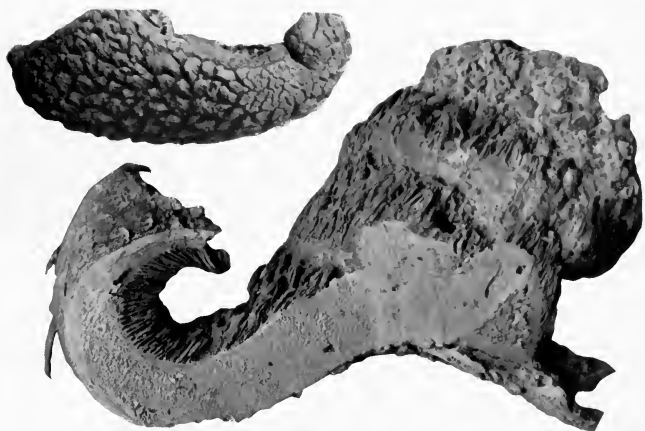


Fig 264.

Polyporus Ellisii.

years later the plant was collected in Alabama and discovered by Underwood to be a "new species" and called *Polyporus flavo-squamosus*, which would have been a much better name for it. Underwood gave the best description that was given of it. We think these three collections are the only ones known. It is one of the most strongly marked species that I have seen.

Our illustration is made from a section of a plant in Cooke's herbarium, which he received from Ravenel, and shows the pores extending to the very base of the plant. I have never received the plant from any collector, and I hope my southern correspondents will watch for it.

²⁸ It is needless to say this was before they had their quarrel.

²⁹ There is no evidence that Berkeley had anything to do with it. It was published several years after he had quit publishing, and is not found in his herbarium.

³⁰ At least it is indorsed by Cooke, "Rav'l No. 877," but there is no specimen in Ravenel's herbarium.

³¹ In the original description they were from a young plant and were described as a line deep.

³² Said to be *subdecurrent* in N. A. F.

THE GENUS PTYCHOGASTER.

This is not a genus, or rather it is a spurious genus. It is well known now to be the conidial condition of various polyporoids. The genus was first set forth by Corda in his *Icones*, 1838, but as a species supposed to belong to the same genus was named *Ceratomyces Fischeri*, also by Corda in the previous year, the latter name has been taken up in Saccardo.³³ In mycology generally, however, the name for the genus is *Ptychogaster*.

Corda thought that the genus was allied to the *Myxomycetes*, and I think Fries was the first to publish that it was a monstrosity of a *Polyporus*.³⁴ Tulasne gave a good account and figure of its struc-

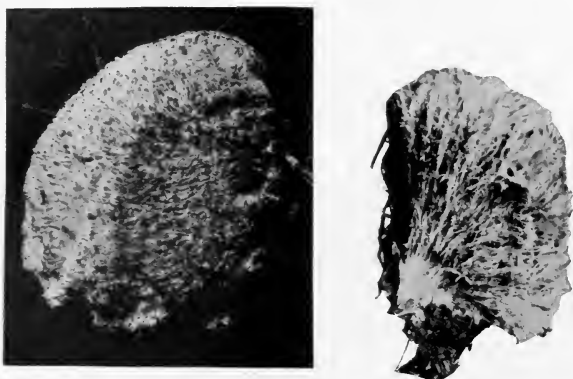


Fig. 266.

Ptychogaster albus and section of same.

ture and considered it not a fungus "perfect and complete," but did not account for its origin. Since Tulasne's day a number of species have been found and the direct connection with species of *Polyporus* has in several instances been established.³⁵ The genus *Ptychogaster* usually does not have a porous structure. It consists simply of filaments bearing in abundance conidial spores. While it sometimes

³³ By this method he added his name to all but one of the European species in his work. It is very much the same cheap method of changing that Saccardo (wisely) ignores when indulged in by American mycologists. The name *Ceratomyces*, drawn from a honey-comb, has little application to the usual species.

³⁴ In 1846 he announced that *Ptychogaster* was "monstrous progenies" of *Polyporus borealis*.

³⁵ There exists in Fries's herbarium a specimen which is part *Polyporus borealis* and part *Ptychogaster*. It was sent by Rev. Stevenson, of Scotland.

presents the form of the normal species, it is often so modified that it is difficult to trace the connection. It is generally recognized that *Ptychogaster* is a modification or a conidial form of a *Polyporus*, but I have seen no explanation or theory to account for it.

PTYCHOGASTER ALBUS (Fig. 265).—All species of *Ptychogaster* are rare, but this is the most frequent and best known. I have collected it several times in Sweden, but it is reported rare in England and France. I do not know it from the United States, where it has been recorded by Peck.

When young it is white and soft and has somewhat the appearance of a *Spumaria*. Its form is usually nearly globose, and the surface is pubescent with the projecting fibrils. When broken open it is found to consist of soft fibrils, powdery with abundant, conidial spores. These spores are globose, hyaline, smooth, very small, about $\frac{1}{2}$ mic. in diameter, I judge. When old the plant becomes brownish.



Fig. 266.

Ptychogaster hepaticus x 6.

I found the plant several times in Sweden, but never saw any connection between it and *Polyporus borealis*, and had I not known it to be a conidial form I should never have suspected any connection. Why Fries first reached this conclusion I do not know.³⁰ I have never seen them growing together;

³⁰ One author, Ludwig, claims that *Ptychogaster albus* is a form of "its own proper species," which he calls *Polyporus Ptychogaster*, as found in Saccardo. I think no one else believes it. The statement by Berkeley that Fries considered it a monstrosity of *Polyporus destructor* is an error, for Fries referred it to *Polyporus borealis*.

in fact, it seems to me they occur on different conditions of the host. *Polyporus borealis* is a most abundant species in Sweden, covering the logs and stumps of *Abies*. *Ptychogaster* grows on the same host, but only on very rotten wood when it is in the last stage of decay. This may be the explanation of it, that when there is abundant food material for the plant it produces the normal form, but after it has exhausted the food material then it turns into the conidial form. This is contrary, however, to the general rule, by which conidial forms come first.

PTYCHOGASTER HEPATICUS (Fig. 266).—We gave an account of *Fistulina hepatica* on page 6 of Old Species Series, but at that time we were not acquainted with the conidial form. It is said to be quite common in connection with the normal form, but we have seen it but once (sent by E. B. Sterling, New Jersey). It has little resemblance to *Fistulina hepatica*.³⁷ It forms a solid, compact ball. A section shows a mottled appearance (Fig. 266) due to the changed condition of the tubes. The spores are very abundant, hyaline, smooth, and very irregular as to size. They vary from almost globose 4×5 to elliptical 5×10 .

NOTELETS.

A LARGE POLYPORUS GIGANTEUS.—Monsieur Maurice Barbier informs me of the collection at Dijon, France, of a specimen of *Polyporus giganteus* weighing nine kilogrammes (about 18 pounds).

THE SCLEROTIUM OF POLYPORUS UMBELLATUS.—It has been published by Bommer, and it is known in France, that the rare *Polyporus umbellatus* is developed from an underground sclerotium. I was first so informed by Professor Patouillard, and have before me a letter from Monsieur Maurice Barbier which mentions it. I hope the next one of my correspondents who finds this rare plant will dig it up and dry it *with the sclerotium attached*. I have only collected the plant once, and was not then aware that it had a sclerotium.

IS IT PERENNIAL?—Among the many errors that pass current in European mycology is the statement that *Polyporus lucidus* is a "Fomes". It is so found in Saccardo and was so placed in Cooke's synopsis. That it is not a "Fomes", however, I think every one who has observed this plant will testify, at least all I have asked. Persoon wrote very clearly on the subject, a hundred years ago, stating that while sometimes found semi-persistent in the spring months, it *does not revive*. That it is not a perennial and not a Fomes, I think there is no question.

It has been well known for years that our American plant is an annual. More than ten years ago I heard rumors that it must be a different species from the European "because it is annual and not a Fomes". It is only very recently that it blossomed out as a "new species". That, however, is another story.

³⁷ We were unable to name the specimen until Patouillard recognized it.

MYCOLOGICAL NOTES.

BY C. G. LLOYD.

Polyporoid Issue, No. 3.

CINCINNATI, O.

AUGUST, 1910.

ADDITIONAL NOTES ON POLYPOROID ISSUE No. 2.

It seems that we were a little late in prophesying that the fleshy section of *Hexagona* would some day be discovered to be a "new genus." It develops that this has already been done.

Also we learn that *Polyporus Rhipidium* (Fig. 357) is a genus of Agaricés. That may explain why it was not included in North American Flora.

The author may have taken it for an agaric. It looks to me about as much like an agaric as does *Daedalea quercina*, which we were at one time informed was the "nomenclatural type of the genus *Agaricus*" (sic).

We have learned a little additional history of *Polyporus Rhipidium* at Paris. It develops that Lévillé's type of "*Gloeoporus pusillus*" is the same plant. It is a miserable little remnant that has never been recognized since Lévillé "described" it sixty years ago. I have seen it often, and while well acquainted with *Polyporus Rhipidium* I have never recognized it, and probably never would if I had not traced its connection to Persoon's specimens at Leiden (cfr. p. 24). I have not looked up the

"dates," but it may prove of interest to the date experts. Nothing seems to give them so much pleasure as to change a name such as *Polyporus Rhipidium* that has been universally used for many years, and I hope this discovery may prove of service to them.

I present here a figure (358) of the stalked form of *Polyporus volvatus*, called "var. *Torreyi*." It was the first collection known and the figure is made

from a specimen in Fries' herbarium. As I have previously stated I consider it probably an abnormal development of a "stipe." As will be noted the "volva" has been broken away from this specimen.

Additional synonyms have developed for *Polystictus pinsitus*. *Polyporus tener* and *Polyporus gibberulosus*, as named by Lévillé, are both in my opinion this plant. I have seen in the collection of Professor

Patouillard a specimen which Ellis sent him as *Hexagona vittata*. It is *Polystictus pinsitus*. We use the name *Polystictus pinsitus* in its usual sense. It is a very common species in the tropics, with dark pores. It was originally named, by Swartz from Jamaica, *Polystictus villosus*, but the Friesian name is generally applied to it. Still Fries states that *Polystictus pinsitus* has white pores, and it develops that there is a form in Brazil (whence the plant was named) with white pores. It may be better to restrict the name *Polystictus pinsitus* to this white pored form.



Fig. 357.
(Enlarged 6 x.)



Fig. 358.

TWO MAMMOTH POLYPOROIDS.

When I was at Leiden recently, I saw in the Rijks Herbarium two of the largest polyporoids I have ever seen. It may be that larger ones grow in the tropics somewhere, but I am sure that none larger have ever been sent to Europe. I was not familiar with either of them, but when I went to Kew I found that one of them had been named *Polyporus talpae* by Cooke, from Brazil, and Bresadola informed me that the other has been called *Fomes pachyphloeus* at Paris.³²

I am under special obligations to Dr. J. W. C. Goethart for the photographs (Figs. 360 and 361) that we present. They are, of course, much reduced, and alone would give an inadequate idea of the mammoth size of these plants.

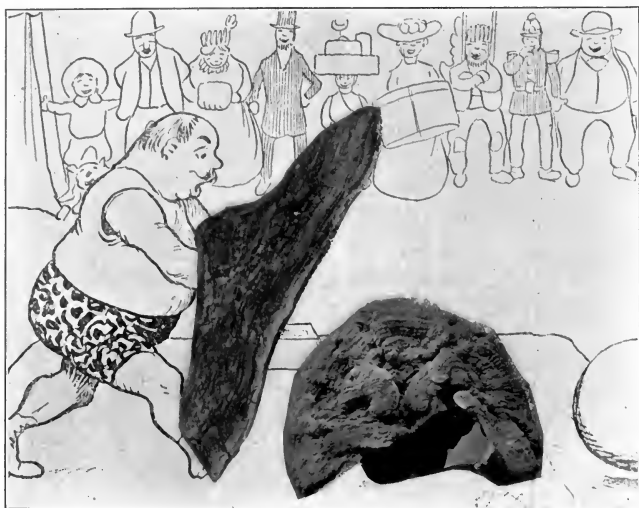


Fig. 359.

Cut arranged to show relative size of *Fomes pachyphloeus* and *Polyporus talpae*.

It is not easy to appreciate the large size of these two specimens from a description, and the photographs of the bare specimens tell nothing as to size. We have therefore introduced them (photographed to relative size) into a comic street scene in Paris, which by contrast will give a better relative idea.

³² It was described by Bresadola from Africa, Bull. Soc. Myc., vol. 6, p. XLI, from a specimen "15 to 17 cm." broad, which was evidently a pigmy compared to the specimen at Leiden, which is 250 cm. broad, or a hundred times as large in cubical contents.

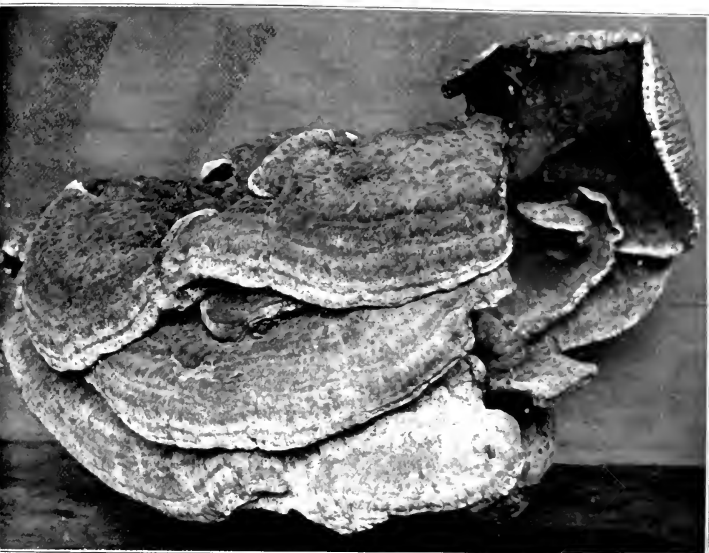


Fig. 360.

Polyporus talpae Much reduced. Photograph by Dr. Goethart

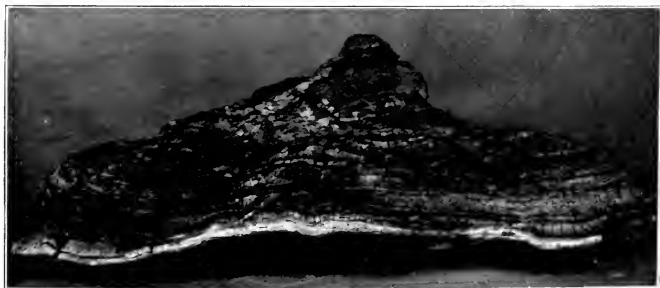


Fig. 361

Fomes pachyphloeus much reduced. Photograph by Dr. Goethart.

POLYPORUS TALPAE (Fig. 360).—Dimensions: Circumference, 230 centimeters (7 2-3 feet); greatest breadth, 70 centimeters ($2\frac{1}{2}$ feet); weight, dry, 9 1-3 kilograms (20 lbs. 6 oz.). It must have weighed more than fifty pounds when it was fresh. The specimen came from Paramaribo, Dutch Guiana. *Polyporus talpae* was originally sent to Europe by Glaziou, from Brazil. It belongs in the section *Merisma* with *Polyporus giganteus* of Europe, which is a pigmy compared to this plant. The surface is dull, minutely velutinate, and is soft to the touch, and the name, referring to a mole skin, is not bad. The context is pale, and the pores small and cinereous in the dried specimen. The spores are hyaline,⁸³ globose, 8 mic., and minutely rough. In its habits of growth and general appearance the plant is close to *Polyporus Berkeleyi*, of the United States, and the spores also indicate a relationship.

FOMES PACHYPHLOEUS (Fig. 361).—Dimensions: Greatest breadth, 150 centimeters (5 feet); thickness, 20 centimeters (8 inches); weight, $20\frac{1}{4}$ kilograms ($44\frac{1}{2}$ lbs.). The specimen reached the Rijks Herbarium from Java.

Fomes pachyphloeus was described by Bresadola from Africa, and this Javanese specimen has been determined by him. It has ferruginous context and abundant, colored setae on the hymenium. The spores (teste Bresadola) are globose, 3-5 mic., pale yellow. The plant would therefore come in the same section as *Fomes Everhartii*, which grows on the oak in the United States.

OTHER LARGE POLYPOROIDS.

POLYPORUS BERKELEYI (Figs. 362 and 363).—This is the largest *Polyporus* that we have in the United States, and I have seen specimens two and a half feet across the pileus. We have a specimen in our museum from E. B. Sterling, Trenton, New Jersey, of the following dimensions when fresh:

Circumference, 8 feet 9 inches.

Length, 3 feet.

Width, 2 feet $2\frac{1}{2}$ inches.

Height, 1 foot 1 inch.

Weight, 43 lbs.

It usually grows at the base of a stump or tree, and our figure (362) will give a good idea of its habits as well as size on comparison with the tree behind it. The pileus consists of a number of imbricate pileoli arising from a short, thick stem or root stock. The surface is pale, dull, slightly tomentose, and obscurely zoned. The flesh, from one-half an inch to an inch thick, is white, becoming wood color in old specimens. When dry it is brittle. The pores are large, unequal, white.

⁸³ They were described as "fulvis" by Hennings, but I am sure they are hyaline in his specimen. Glaziou also sent this same plant to Berlin, which Hennings discovered was a "new species" and sent a description to Saccardo. He called it "*Polyporus Glaziovii*," but Cooke "saw it first."



with angular mouths. The spores are globose, hyaline, about 8 mic. in diameter, and *distinctly echinulate*. It is the only *Polyporus* we have, I think, in the United States with *echinulate* spores. Our photograph presents figure 362, a plant in situ much reduced, and figure 363 a small pileolus almost natural size.

History.—The plant first reached Berkeley from Lea, Ohio, and was named on the label *Polyporus Anax*, but not published. Then Curtis sent it to Berkeley and also to Fries³⁵ and Fries named it *Polyporus Berkeleyi*. Berkeley did not seem to have been overwhelmed with the honor for he did not change the name on the label and the next time he received it he discovered it was a "new species" and called it *Polyporus subgiganteus*. Berkeley knew that the plant he had labeled *Polyporus Anax* was the same Fries had named *Polyporus Berkeleyi*, for he endorsed both names on the Curtis Mss. notes, but years later when he summarized the North American fungi in Grevillea he had forgotten it as he included the plant in Grevillea under his own Mss. name, *Polyporus Anax*. Years later Cooke discovered that "*Polyporus Anax*" had not been "described" and supplied the oversight.

Our American mycologists had almost as much trouble with it. Professor Peck solved it in the usual way by discovering that it was a "new species" on two occasions (*Polyporus Beatii* and *Polyporus lactifluus*). Ellis probably got the name from Cooke as he distributed it as *Polyporus Anax* (2d series, No. 1595). Morgan³⁶ got it right, and I judge it was from Fries' publication that he reached this conclusion. This was all done before I began the study. There has been no confusion concerning *Polyporus Berkeleyi* since I can remember. Even Ellis had it right during the latter part of his life.

EUROPEAN ANALOGUE.

POLYPORUS MONTANUS (Fig. 364).—The question now to be solved is whether or not *Polyporus montanus*, as named by Quélet, from the Jura regions of France, is the same as our American species. It is very close and has about the same context and color *and the same peculiar spores*. It is a smaller plant, and the only specimen I ever received (from E. Woulff, Austria) was more regular and mesopedal, if I remember correctly.³⁷ Quélet figured it as fan-shaped, with a lateral, short stipe. It is a rare plant in Europe and very rare in the museums. All that I know are two collections at Berlin.³⁸ Quélet first referred the plant to *Polyporus acanthoides*,³⁹ and both the specimens in the museum at Berlin were so referred originally. I would not say that *Polyporus montanus* is exactly the same plant as *Berkeleyi*,

³⁵ I do not know whether this specimen came to Fries direct from Curtis or through Berkeley. I judge, from the name Fries gave it, it was through Berkeley.

³⁶ Morgan's error in determination of "*Polyporus Anax*" has already been explained, and I will not repeat it here. (Cfr. Myc. Notes, p. 341.)

³⁷ At this writing I can not find the specimen.

³⁸ These two collections at Berlin are, one from "Neuchatel, by Morthier," the other "Saxony, Krieger." Both were originally labeled "*Polyporus acanthoides*, Bull."

³⁹ *Polyporus acanthoides* is based on an old figure of Bulliard (T. 486), which appears to be a very poorly colored picture of *Polyporus giganteus*, and was used as a juggle for *giganteus* in Quélet's later works. The picture is so poor that Fries mistook it, and *Polyporus acanthoides* in the sense of Fries is *Polyporus rufescens* (or *biennis*, if you wish). This is proven from a specimen labeled "*Hydnum crispum*" by Inzenga and cited by Fries, and still preserved in his herbarium.



Fig. 363

Polyporus Berkeleyi. A small pileolus. natural size.

but it is close and unquestionably the European analogue of it. It seems to be a smaller, more regular plant than its American cousin.

Foreign Related Species.

Notwithstanding the vast amount of name juggling that is going on in this subject, very little is really known of the foreign polyporoids. As the cuttle fish employs his ink to cloud the water and disguise his whereabouts, so does the name juggler use his art to conceal how little he really knows.



Fig. 364

Polyporus montanus.

Polyporus Berkeleyi is supposed to only occur in the United States. When the truth is learned it will be found in many other countries, or forms that are very close to it. At Kew there are three foreign collections, all having the same general characters and the *same peculiar spores* as *Polyporus Berkeleyi*. These are *Polyporus Dickinsii* from Japan, *Polyporus eurocephalus* from Ceylon, and *Polyporus Zelandicus* from Australia. The latter is thinner, tougher, and has the general appearance of *Polyporus giganteus*, but how the two former differ from *Berkeleyi* I would not like to state on the evidence of the small fragmentary pileoli by which they are represented.

SOME NOTEWORTHY POLYPOROIDS.

We continue from page 29 our account of the most remarkable polyporoids that form "new genera" for those who are hunting that kind of game.

POLYSTICTUS CONCHIFER (Fig. 366).—A curious Polystictus grows commonly on fallen elm branches in the United States. It produces at the base little sterile disk-like pilei, and their development is somewhat of a mystery. The fertile pileus is flabelliform, tapering to a short stem with a disk-like base. It is pure white, glabrous, and not zoned. The pores are white, rather large, and often sinuate. The sterile portions are the most interesting part, for as far as known no other species produces similar. They are to me somewhat of a puzzle, for I do not know exactly how or why they are produced. It



Fig. 365

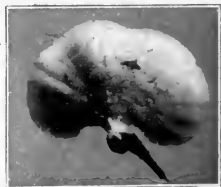
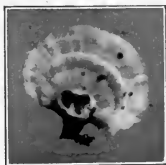
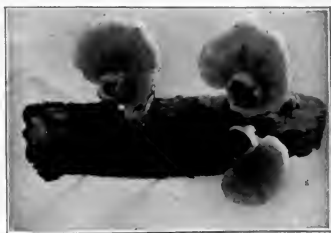


Fig. 366.

Polystictus conchifer. Fig. 365 shows old sterile cups.

is the general impression that the fertile pilei grow from these sterile cups. I think this was Morgan's view. I am not so sure that this is true. The fertile portion falls away each year, but the cups are persistent and are found in the spring as shown in figure 365. I think, however, they do not produce new pilei the second year. I have never seen any so produced. On the other hand, I often find fertile pilei without any sign of a cup. One large collection I made of two or three hundred pilei has very few "cups," and those that occur have evidently been developed *on the new pilei*. My present belief is that

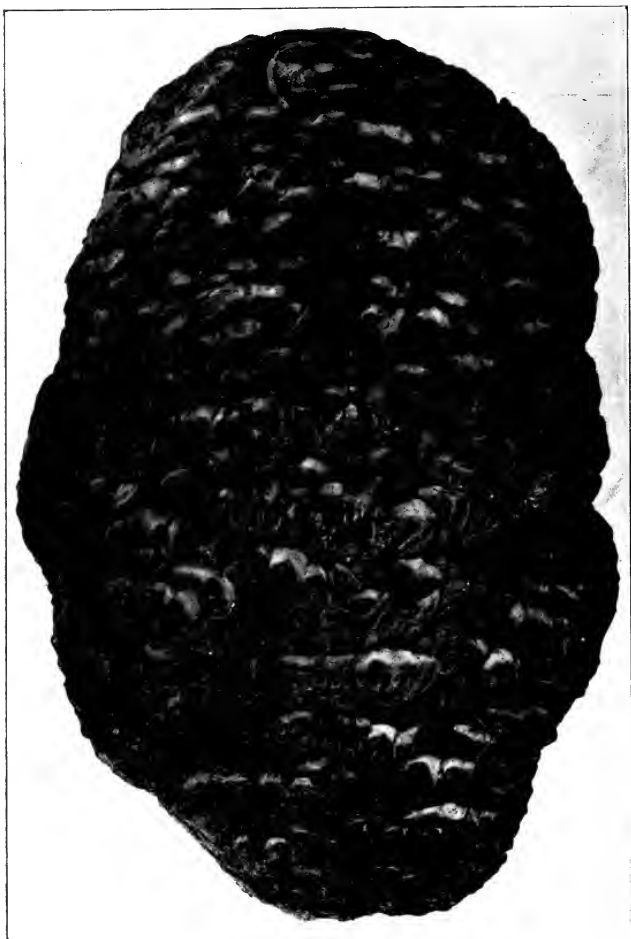


Fig. 367

Fomes graveolens.

the plant produces a secondary abortive pileus, and that the fertile portion falls away, while the cup persists through the winter, but does not produce a fertile portion the following season.

Polystictus conchifer grows only on the elm and only in the United States and Canada, as far as I know. It was named by Schweinitz the "shell-bearing," and he likened the sterile cup to a shell. He also called a species *Polystictus virgineus*, which, according to specimens in his herbarium, is the same as *conchifer*. Cooke used the name *virgineus* and tried to sink the name *conchifer*, but it was not a success, as *conchifer* is too good a name to be put aside. Besides there is some doubt as to *virgineus*, for, while there is no doubt the plant in Schweinitz's herbarium as *virgineus* is *conchifer*, it never takes either the shape or color as shown in a figure that Schweinitz gave of it. Either the figure is very poor of the plant, or represents something else.

FOMES GRAVEOLENS (Fig. 367).—This is another curious plant that was named by Schweinitz, and it is unique in the fact that there is no other similar plant known in any portion of the world.²²

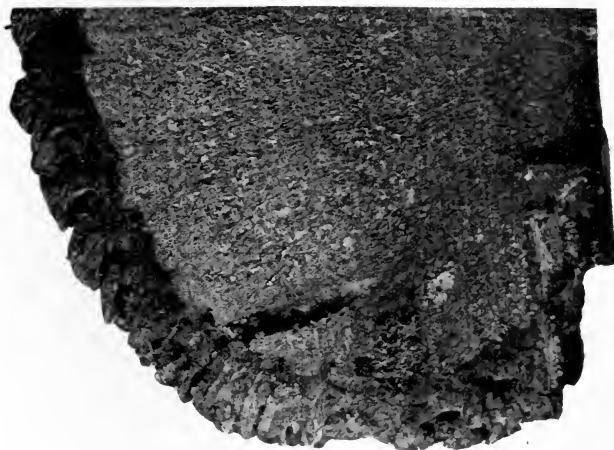


Fig. 368.

Section of *Fomes graveolens*.

It is a true *Fomes*, evidently of slow growth, and the densely imbricate pilei grow from a globose, woody core. Its manner of growth is plainly shown in our section (Fig. 368). The context of the pilei

²² In our text-books it is placed in a section *Merisma*, with a half dozen others, none of which have the slightest resemblance to it in their manner of growth.

and core and the pores are of a uniform color (snuff brown, [303]) and of a hard, sub-woody texture. The pores are minute, with darker mouths. This curious growth is rather rare in the central, western, and southern United States. It seems to be absent from the Eastern States, and I believe that Professor Peck has never recorded it from New York. I have never seen it growing fresh, though I have specimens from a half dozen correspondents. When fresh it is said to exhale a strong odor, and is known to the natives as "sweet-knot." I have been told that they can detect it at a distance by its odor. Schweinitz named it *graveolens*, and stated it has a strong sub-nauseous odor. That hardly carries out the native name. At any rate the odor disappears from dried specimens, and is contrary to the usual nature of fragrant fungi, for the odoriferous principle as a rule gets stronger with age. Around Cincinnati *Fomes graveolens* grows usually on beech.²³ Schweinitz's original reference was on oak, and Ravenel distributed it from the oak. The plant, though rare, is well known to most American mycologists, and was recently illustrated by Kellerman, and also by Hard.²⁴ A little bit of unwritten history came to light on my last visit to Paris. Stuck away in a closet I found one day the type of *Polyporus botryoides*, as named by L veill , from this specimen that he found in the Museum "Patria incog." It is typically *Fomes graveolens*, and I knew it as soon as I saw it. For sixty years it has been kept in the museum, and no one had ever recognized it.²⁵

POLYPORUS POCULA (Figs. 369, 370, and 371).—This is the smallest *Polyporus* known, and it was many years before it was known to be a *Polyporus* at all. It grows erumpent from the bark of various trees, and is particularly partial to the chestnut oak, though it has been found on hickory, sunac, ash, cherry, etc. It has a short, curving stem, which is black at the base. Surface smooth, brown, powdery. The pore surface is a disk, always turned toward the ground, and about 3 mm. in diameter when expanded. In drying it shrinks and becomes somewhat cup-shaped. The context is white, tough, but soft when moist, brittle and harder when dry. The pores are very small (about 120 mic.) and from 400 to 520 mic. ($\frac{1}{2}$ mm.) deep. The mouths are almost hidden by a layer of minute, encrusted, hyaline hairs, usually described as pruinose.²⁶ Spores (teste Cooke) globose, hyaline, smooth, 4 mic.

²³ This plant, which Berkeley received from Lea, Ohio, he called *Polyporus conglobatus*, but he afterward corrected it, at least Ravenel did, probably at Berkeley's direction.

²⁴ Hard, or probably the printer, got his figure upside down.

²⁵ *Polyporus botryoides* passes in our literature as a "Polyporus," not even in the same genus as *Fomes graveolens*. No one has ever suspected from our literature that it had the most remote relation to *Fomes graveolens*, and yet it is this same *very peculiar* species. It is an illustration of the value of the usual fungus "literature" and "description."

²⁶ "Peziza.—The disk is covered with a brown powder and appears minutely punctate. After soaking in water the mouths of open tubes are very perceptible. They lie compactly together, are very long (or deep), and quite tough. They may be asci. If this is not a *Peziza*, I do not know where to place it. It is not *Polyporus* or *Ascobolus*."—Lea's original note to Berkeley.

Which shows Lea to have been a very observing man. Had it not been that the mouths of the tubes are masked by a "brown powder," I do not question but that Lea would have recognized it as a *Polyporus*.

This curious little *Polyporus* is quite frequent in the United States, usually erumpent from the bark of the smaller branches. It will hardly be found excepting by those who hunt for the small fungi. It is widespread, particularly common in the South and extends to French Guiana and probably other portions of South America. Several collections are known from Central America and a long stalked form from Brazil. At Kew there is a single collection from Australia²⁷ and at Berlin a typical collection from Japan (Fig. 370).



Fig. 369.

Polyporus Pocula, showing natural size, also two specimens x6, and face of pores x6.

History.—This unique little *Polyporus* has had a curious history. It was first called *Sphaeria pocula* by Schweinitz and he gave in the Proc., Phila. Acad. Sci. a very fair illustration of it. The genus *Sphaeria* has the spores in asci, and at that time embraced almost all the Pyrenomycetes. He sent it to Fries and for forty years it was thought to be an Ascomycete as the pores were taken to be the mouths of the asci. When Berkeley received it first from America (Lea) he referred it to *Sphaeria Pocula*. When Fries divided the Pyrenomycetes he made a genus *Enslinia* to include this species, not questioning that it was a Pyrenomycete and called it *Enslinia Pocula*. This genus stood for a number of years and Montagne referred to it a "new species" "*Enslinia Lepicurii*" from French Guiana, which is exactly the same plant as *Polyporus Pocula*.²⁸ In 1849 Berkeley received it from Curtis, growing on *Rhus* and published it as *Polyporus cupulaeformis*, noting that it had the habits of "*Sphaeria cupulaeformis*, Schweinitz." Berkeley was afterward aware that it was the same as *Polyporus Pocula* as he at first labeled a Nicaraguan collection *Polyporus cupulaeformis*,²⁹ but published it as *Polyporus Pocula*.

To Cooke should be given the credit of making known that the little plant which passed for so many years as a "*Sphaeria*" was a *Polyporus*. He

²⁷ This was received and determined by Cooke and included in the Handbook as *Polyporus cupulaeformis* (a synonym for *Polyporus Pocula*). I think it is correct. A section shows the same "structure," though the surface is more rugulose than the American plant.

²⁸ As this had not been published it was not raked up in the recent compilation (N. A. F.).

²⁹ I think this label is in Berkeley's writing, but can not be sure, as it is written in printed characters, as are many of the "U. S. Exp. Exped." labels. It was surely on Berkeley's authority.

made the discovery independent of Berkeley's previous but obscure publication, and he gave an excellent account and figure of it, showing its polyporoid nature. This was about twenty-five years ago, and since that date the plant has been generally and correctly known to all mycologists.³⁰



Fig. 370.

Polyporus Pocula. From Japan.



Fig. 371. (x 6)

Polyporus Pocula, var. *longipes*, from Brazil.

Forms.

This little plant seems very constant in America and the Japanese collection is exactly the same. The Australian form (only one collection known) has a more rugulose surface, but is essentially the same.

Var. *longipes*. At Berlin there is a collection from Brazil (Fig. 371 x6) with a long stipe. It is only known from this collection.

Distribution.—The distribution of *Polyporus Pocula* as far as known is as follows:

Frequent in the United States, having a preference for chestnut oak and sumac; extending south and apparently frequent through Central America and northern South America.

Brazil, a single collection (at Berlin) of a long-stemmed form (var. *longipes*).

Japan, a fine collection (at Berlin).

Australia, a single collection (at Kew).³¹

³⁰ The history of its juggling is almost as long as its "new species" history. Any plant that departs as much as this from the usual habits of a *Polyporus* forms a "new genus," of course, but they have had much trouble to get a name for it. Fries, as previously stated, made a new genus for it, *Enslinia* in the *Pyrenomycetes*. Then a "Kew Index investigation" showed that *Enslinia* was a name for a phaenogamic genus, and it was changed to *Porodiscus*. Then they discovered that was something else, and they changed to *Porodisculus*. I have not heard of any juggle since.

The specific name *pendula* rests only upon two vague suggestions of Schweinitz and a date dictionary shuffle of some alleged synonyms given by Fries. Although the name *pendula* is attributed to Schweinitz, he always called the plant "pocula" and maintained to the last that *pendula* was not only a different plant but a different genus. He preserved in his herbarium unquestioned specimens of *Polyporus pocula*, but none of "pendula." The latter name is only a date dictionary juggle of some alleged synonyms by Fries and originally had no historic value. It is not only contrary to the usage of a half century, but contrary to all published opinions of its author, Schweinitz.

³¹ The distribution is given in *North American Flora* as "from Connecticut to Nicaragua." A little more thorough work in the museums of Europe would have extended the "distribution" to Brazil, Australia, and Japan.

POLYSTICTUS VILLOSUS AND POLYSTICTUS PINSITUS.

When a name becomes well established in mycology, it is almost futile to try to change it. *Polystictus pinsitus* was named by Fries, from Brazil, and while the type does not exist, there is a very common species in the tropics, usually named *Polystictus pinsitus* in the museums, and a plant so named by Fries is in his collection. This plant has

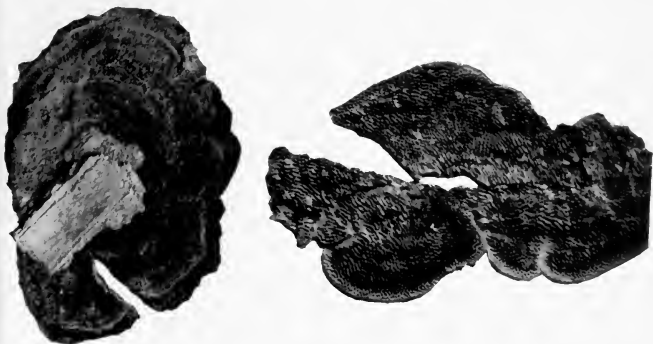


Fig. 372

Polystictus villosus.

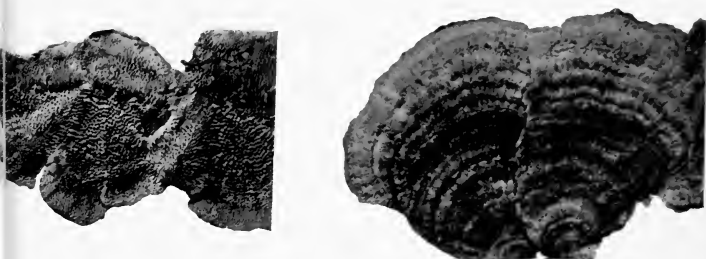


Fig. 373.

Polystictus pinsitus.

smoky or dark pores. Fries described the pores as white, but as I have never seen any but dark-pored specimens until recently, I supposed this to be a discrepancy in the description. Recently I have gone over a large collection made by Father Rick in Brazil. I find three collections of a similar plant with *white* pores, and none with dark pores.

As *Polystictus pinsitus* was originally from Brazil, I think we are justified in concluding that this was the original of *Polystictus pinsitus*.

As to the dark-pored plant, usually called *Polystictus pinsitus*, we have another name for that, and it is ancient enough to suit the most rabid priorist. Swartz named a collection from Jamaica *Boletus villosus*, and it was among the first foreign polyporoids to be named. His type is at the British Museum and was stated to be the same as *Polystictus pinsitus* by Berkeley years ago, and it surely is very close, except that it has dark pores.⁵⁴ The close resemblance of these two plants will be noted from our photographs, and one could still call both *Polystictus pinsitus* and not be far wrong. However, there is a difference between them, and *Polystictus pinsitus* not only differs in having white pores, but is more strongly zoned. If we distinguish them by different names, then *Polystictus pinsitus* should be restricted to the plant with white pores.

FOMES TORULOSUS IN AMERICA.

A most interesting addition to our knowledge of our American *Fomes* is the finding of *Fomes torulosus* by Mr. C. W. Edgerton on the trunk of a live oak in Audubon Park, New Orleans.

Fomes torulosus is a species of Europe, quite frequent in the neighborhood of Paris. It was named by Persoon and included in his published account in his "Traite les Champignons Comestibles." It was not included by Fries in any of his works, and of course was not compiled in Saccardo's *Sylloge*, as Saccardo began his compilation of the *Polyporei* with Fries' *Epicrasis*. Recently the plant was discovered to be a new species by both Quélet and Boudier, the former calling it *Fomes rubriporus* and the latter *Fomes fusco-purpureus*. A full account of these "discoveries" has been given in French on page 470 of *Mycological Notes*. It is a marked species with abundant, large, colored setae and hyaline, globose spores about 4 mic. in diameter. The pores of the fresh plant are of a decidedly purplish color, well named by Boudier, but in old specimens they are disposed to lose their purplish tinge and become dark. The spores of *Fomes fusco-purpureus* are described as fulvous in Saccardo, but that is an error, as the plant has hyaline spores, and was so originally stated by Boudier and shown in his plate. We call attention particularly to this, for the spore colors are the best means of distinguishing this class of plants. The plant not having been recorded in America, it was of course not compiled in the North American Flora, nor does it appear, I think, in any of the numerous "new species" that have been discovered in this section.

I was very much pleased to receive this plant from Mr. Edgerton, and it is a most interesting addition to our flora.

⁵⁴ Mr. Murrill, who never saw Swartz's specimen, guessed it to be a plant that he should have called *Polystictus versatilis*, a very common plant in the tropics, with no real resemblance to Swartz's specimen. I see no advantage in crossing the Atlantic if one does not take the trouble to look up the historic specimens in the museums, for just as good guesses could have been made in New York, certainly none worse.

SYNOPSIS
OF THE
KNOWN PHALLOIDS

By
C. G. LLOYD

WITH AN
ILLUSTRATION OF EACH SPECIES

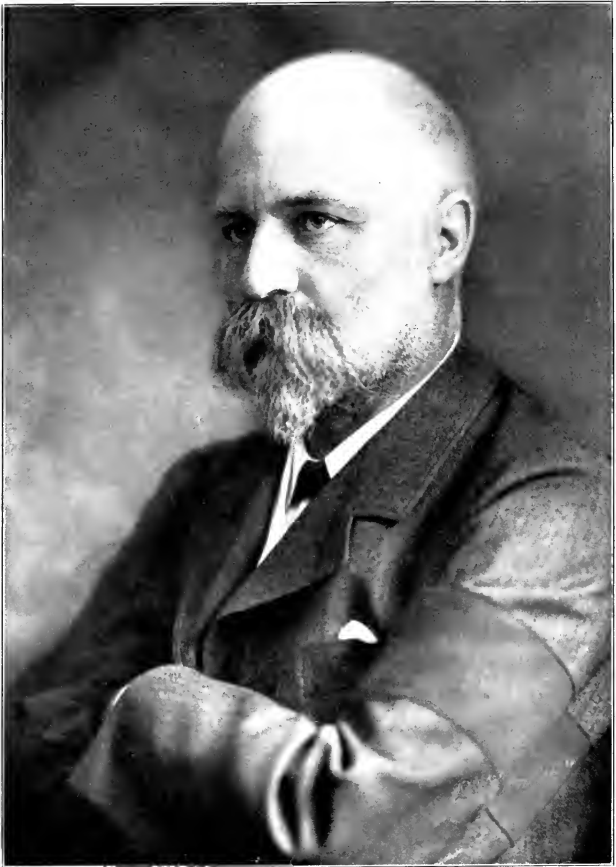
CINCINNATI, O. - SEPTEMBER, 1909

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AT LOS ANGELES

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Ed. Fischer.

In this pamphlet devoted to phalloids I am pleased to present a photograph of Professor Ed. Fischer, Bern, Switzerland, who is the best authority in the world on the phalloid subject.—C. G. L.

INTRODUCTION.

Phalloids are in many respects the most remarkable fungi that grow. Usually they are excessively fetid, and persons who would pass by an ordinary fungus without noticing it have their attention strongly fixed when they chance upon one of these "ill-smelling things." In addition they assume most bizarre shapes and often bright colors. I hope these features, probably intended by nature to attract flies, will attract the attention of those to whom this pamphlet is sent.

From the very nature of phalloids, they should be studied in the countries where they grow. Accurate work can not be done in Europe with such fugitive plants, and a large part of what has been written on the subject is not reliable. More has been added to our knowledge by the observations of Penzig, Moeller, Petch, Long, and Cobb, in very recent years, than from all other sources, and these men observed and studied the phalloids in the countries where they grow.

It was with the view of summarizing what is known of the phalloid subject and making it available to students in all parts of the world that this pamphlet has been written. We hope to interest observers in such unworked fields as India, Japan, Australia, West Indies, and South America (except portions of Brazil). We should be glad if any observer in any country where the phalloids are not well known (cfr. page 6) would publish with good photographs an account of such species as he observes. We believe that all the well-known species can be readily determined from this pamphlet.

We trust, however, that this will not lead to a flood of "new species" by inexperienced observers. The species of phalloids, like all fungi, are widely distributed, and wherever you may be located most of the phalloids you will find are recorded in this work. They may differ in unimportant details and seem new to you, but we strongly advise you before publishing to first submit a good photograph, color notes, and a dried specimen to Professor Ed. Fischer or to myself for an opinion.

C. G. LLOYD,
63 rue Buffon, Paris, France.

WHAT IS A PHALLOID?

It would be out of place in a work of this kind, intended for general distribution, to enter upon any technical, botanical discussion of what constitutes a phalloid. Most persons know them by reputation, and with certainty if they have met them. If not, they will know them as soon as they look through our pictures.

Phalloids are always fleshy fungi, always fetid, and appear as if by magic in our woods and fields. When young, they are enclosed in a gelatinous membrane called a volva, which breaks, and the plant develops so rapidly that I will not go into details for fear that some of my readers will think I am not telling the truth. I have often carried home the eggs, but have never seen them develop, as my specimens have always developed during the night. In a single night the species observed have reached a height of eight inches. One author has a picture showing a plant to have grown 4 cm., or an inch

and a half, in one minute of time. Of course this is not true growth by the accretion of cells, but rather a mechanical process by the expansion of cells.

The "roots," or mycelium, as it is correctly called, of phalloids grow in the earth, or rotten wood, and take the form of long, white cords. The illustration on the opposite page is a cluster of this mycelium, which has developed several "eggs," or young phalloids. If we cut open one of these eggs we will find it to contain an undeveloped plant, as shown in the figures herewith. But it is best not to cut



them open, but to take them home and place them on a dish, and in a few days you will have some perfect plants.

THE COLOR OF PHALLOIDS.

There are only three colors known in the phalloids: red, yellow, and white. Most species are red, or some shade of red, pink, flesh, or orange. A few are yellow, and many are white. The yellow and red phalloids seem quite distinct, and do not run into each other, but the red species are apt to have white forms.



DEFINITION OF TERMS.

In the description of phalloids it is necessary to use a few botanical terms, but they are simple and will be readily understood from the following explanation.

VOLVA.—All phalloids (excepting one genus, *Phallogaster*) when young are enclosed in a subglobose membrane called the volva. In this state a phalloid can well be compared to an egg; in fact, it is customary to speak of young phalloids as "eggs." The volva or shell, however, is a soft, thick, gelatinous membrane. When the plant develops the volva bursts at the top and remains as a cup at the base of the mature phalloid. All our pictures of phalloids show the volva at the base of the plant, at least all pictures that were made from perfect plants. If there is no volva at the base it is because the illustration was drawn from an imperfect specimen.

RECEPTACLE.—This is a term that is applied to the portion of the plant that bears the greenish, mucilaginous mass (called the gleba). In some phalloids (such as *Clathrus*) the entire plant, exclusive of the volva, forms the receptacle. In others, such as *Simblum*, the receptacle is borne on a stem. Some phalloids are a simple, stem-like structure and bear the gleba directly on the upper portion, then of course the upper portion of the stem is the receptacle.

GLEBA.—This is a greenish, viscid, fetid substance with which all phalloids are supplied. It is in fact the fruiting portion of a phalloid, for it contains innumerable, microscopic spores which are analogous to the seed of flowering plants. It is the gleba of a phalloid that is usually so excessively fetid. This bad odor, as offensive as it may be to us, serves a useful purpose to the plants, as it attracts flies and other insects that are the means of the dispersion of the spores.

STEM.—The stem (or stipe) of a phalloid needs no special explanation. It is used in the ordinary sense of the word. Some phalloids have no stems.

PILEUS.—There are some phalloids (the genus *Phallus*) that have the gleba borne on a special membrane on the top of the stem. This is usually conical or hat-shaped and is called the pileus.

VEIL.—A most striking feature in a few species that have pilei is a thin, net-like membrane that hangs from under the pileus and spreads out as a net around the stem. It is called the veil (or more correctly the indusium) but we prefer to call it the veil.

HISTORY OF PHALLOIDS.

We can not write the history of the phalloids because it is not known. There are only five countries in the world where the phalloids are well known, viz: Europe, the United States, Brazil, Java, and Ceylon. Most of the mycological writers have lived in Europe and the United States, and the easy, conspicuous fungi such as the phalloids are well known. In Java most excellent accounts of the phalloids have been written by Penzig, and in Brazil by Moeller. In the United States a good account of the phalloids of Texas was published by Long, and in Hawaii by Cobb.¹ Very recently—in fact, since this pamphlet was in the printer's hands—we have had an excellent account of the phalloids of Ceylon, by T. Petch. Aside from these five papers, however, most of the work on the subject has been in the line of new species exploitation.

¹ Mr. Cobb marred his paper by discovering some "new species" that were only new to him; otherwise, his paper was most excellent.

If a census were taken of the individual specimens that have reached Europe from foreign countries, probably more than one-half have been discovered to be "new species." Most of these new species finally gravitate where they belong, into the trash pile known as synonyms. Professor Fischer, of Berne, Switzerland, has done good work in disposing of a great many of them. We shall help the subject along to the best of our ability in one of our appendices.

NAMES OF PHALLOIDS.

Like all objects of natural history, phalloids have Latin names, and in addition to each is usually appended a personal name, primarily designed to tickle the vanity of some individual. Under this system they have never acquired any stable names, for each person who writes about them is chiefly interested in getting up new names to which to append his own. By this means the names of phalloids (like all fungi) have been shuffled about like a shuttlecock. There are only forty-nine phalloids that are at all well known, and fifty-eight more or less vague and often inaccurate accounts and forms. These one hundred and seven species have two hundred and ninety-nine different names. One of them alone, *Phallus indusiatus*, has twenty-four different names. It is customary in "scientific" monographs to rake up all these various combinations, tabulate them, usually in chronological order, append with great minutiae the various promoters of these names, and when finished the result is so largely personal it resembles the society notes in a daily newspaper. We present in an appendix (page 77) an alphabetical list of the names which in our opinion have no value, to the number of 192, and in our Index (page 96) the names we have adopted, to the number of 107. Every writer should, of course, use a nomenclature that expresses his views of how the various species are most naturally grouped into genera. And, where changes are advisable in an author's arrangement, it is at best unfortunate, if he is using a system of writing his own name after such changes, as it may give the impression that this is perhaps the strongest reason for the change. We have made but very few changes and have found it necessary to discover but one new genus.

THE STATE OF PHALLOID KNOWLEDGE.

The phalloids of Europe (and there are but six species in Europe) are, with perhaps one exception, well known. The same can be said to-day of those of the United States, though, owing to the vague manner in which several of them were exploited, it is only in recent years that any clear, definite idea has been obtained of them. Taking into account those that occur in both countries, this includes fourteen species and forms. The first foreign paper in which the phalloids were well presented was only ten years ago, an account of the species of Java, by Penzig. In this paper sixteen species and forms were considered, and at least fourteen were well illustrated. Then there appeared a paper on the phalloids of Brazil, by Moeller, in which nine species were well illustrated. Recent writers, and this includes both Penzig and Moeller, have had the benefit of photography, the best method of illustrating a phalloid. Previously the illustrations were mostly made up from dried specimens or copied from sketches, which gives results, sometimes very good, but often more or less doubtful, sometimes very vague and amusing, and in a few instances they seem to be pure fakes.²

There have been a number of compilations similar to this pamphlet, in which the literature has been raked over, and the supposed species arranged with their names more or less shuffled around. This, however, is the first in which all the pictures have been brought together. The first crude attempt was by Ventenat, in presenting one of the first foreign species. Then Fries'

² We know two or three in Europe that in our belief come under this head, and one in America.

Systema (1823) at which time nine foreign species had been figured, and four in Europe, or thirteen in all, and one of the European was a freak. Excluding the freak, all twelve of these species are recognized in this pamphlet, nine of them under the same names as used by Fries. The next general compilation was by Schlechtendal, about fifty years ago. In the meantime, the new species hunters had been quite busy, and Schlechtendal succeeded in finding forty-five species, and he seems to have taken practically all of them at their face value, nor did he indulge in inventing new genera in order to change the names. It is an evidence of the "progress" that since that time, nearly fifty years ago, not an iota of information has been added nor another specimen recorded as to twenty-seven of his forty-five species. Some of them have been discarded as being worthless on their face, but those of the twenty-seven that are retained and known to-day are included in this pamphlet on exactly the same knowledge (?) that Schlechtendal had when he wrote fifty years ago. The next work was by Professor Fischer, in 1886, a compilation of the species described and numbering seventy-six, including the doubtful ones. Practically the same species were included in Saccardo (vol. 7) two years later. After making these compilations, Professor Fischer began his real study of the subject. First, he visited Paris and wrote his first *Untersuchungen* in 1890, then he visited London and Berlin and wrote his second *Untersuchungen* in 1893. A third *Untersuchungen*, principally to include the work of Penzig and Moeller, was issued in 1900. Professor Fischer has studied practically all the specimens in the museums of Europe and the result of his studies has been the rejection of many of the species included in his earliest work, and the reduction of others to forms or varieties. Of the seventy-six species included in his first work, only twenty-three stand as original and good species, and twenty-eight are doubtful. In addition, twenty-eight new species have been added, mostly the work of himself, Hennings, Penzig, and Moeller. This makes a total of fifty-one species, recognized as "good" by Professor Fischer, and twenty-eight doubtful, or a total of seventy-nine.

I have worked over practically the same ground as Professor Fischer, the same museums, and I am in very close accord with him as to the species. As are all who have had the opportunity to see specimens from many localities, Professor Fischer is very liberal in the treatment of species; more so than I, for I maintain a number in this pamphlet that Professor Fischer refers to synonymy. I have not refused to recognize any "new species" that has been exploited in an intelligent manner and that was accompanied by a drawing or photograph showing any material difference. The twenty odd phalloids in this pamphlet, in addition to those recognized in Professor Fischer's latest work, are mostly those that he has referred as forms.

I decline to recognize the alleged "new species" that have been proposed with so much verbosity and so little illustration. No man can give any idea of a phalloid by a mere word description, whether he writes in English, French, German, Chinese, or Pidgin Latin, and it is time this fiction was wiped out of our "literature." In these days of "law-makers" there ought to be a law with a heavy prison penalty for any one who engages in such work. I refer to them in the synonyms as "nomina nuda," although it is a paradox to so call things exploited with so much verbosity.

THE WORK IN THIS PAMPHLET.

We have included in this pamphlet the best illustration known of each phalloid that we recognize. We consider the study of phalloids largely a picture study, and our readers can take these illustrations and form an opinion as to the identity of any phalloid they find with almost as much advantage as if they had access to the types.

In our text we have not entered into minute descriptions, believing that in most cases it is superfluous. We have given the leading facts as to the occurrence of the various species as far as known, the color, and have pointed out the manner in which they differ from each other. We have presented

the best picture possible of each species, and in many cases the copies of the original illustration from which the description was drawn. With these facts before him, the reader can learn just as much about the phalloid as the author who named it and wrote the "description."

CLASSIFICATION.

There are relatively few genera of phalloids, and they are classed by their general form, so that the classification is a very simple matter and will be readily understood by the following table and the illustrations. As a matter of convenience we divide them into five groups:

1st, The simple stem section. Gleba borne directly on the upper portion of a simple stem, or on a pileus borne on top of a simple stem.

Gleba borne on the outer surface of a special pileus.

Pileus even, rugose, or reticulate.....**Phallus**

Pileus surface strongly convolute.....**Clautriavia**

Pileus of a lamellate structure, the gleba covering the plates....**Itajahya**

Gleba borne directly on the upper portion of the stem. No special pileus.

Smooth, even.....**Mutinus**

Rugose, papillate or uneven.....**Jansia**

Gleba covering a rudimentary network.....**Floccomutinus**

2d, The lobed section. Gleba spread over or on the inner surface of free arms or lobes at the apex of the stem.

Arms free at the apex of a columnar stem.....**Lysurus**

Stipe, a flaring tube, the limb lobed.....**Anthurus**

Stipe bearing a disk-like expansion, the limb divided into lobes or

segments.....**Aseroc**

3d, The columnar section. Receptacle consisting of simple, vertical columns, united at the top and bearing the gleba on the inner sides.

Sessile.....**Laternea**

Stalked.....**Pseudocolus**

4th, The clathrate section. Receptacle in the form of a clathrate or latticed structure.

Sessile, simple.....**Clathrus**

Stalked, receptacle a simple net.

Borne on a simple stem.....**Simblum**

Borne on columns that are united into a hollow tube at the base....**Colus**

Stalked, the net-work having knob-like projections.....**Kalchbrennera**

5th, Anomalous genus, without volva.....**Phallogaster**

THE GENUS PHALLUS.

This is the original genus of Europe and from whence the name of the order is derived. The genus is very simply characterized by having a pileus, borne on the top of a simple stem. All species of the genus are very much alike as to shape, but differ in color, in size, in smoothness or roughness of the pileus, and in various developments of a veil. This veil, which is only known as rudimentary in the related genus *Mutinus*, varies much in different species of *Phallus*, and even in the same species in degrees of development. Some species have only a rudimentary veil, others a distinct but very

short veil hidden under the pileus, or slightly protruding, others a very conspicuous, long veil. The gleba covers the outer surface of the pileus. In a few species this pileus is even, or relatively smooth; others reticulate, or ridged. Usually the pileus has an apical collar that is entire or perforate, sometimes in the same species. Some species are devoid of this apical collar, and one, *Phallus subtilis*, has been erected into a genus principally on this account. We would divide the species into two sections, as Professor Fischer does, though we would not designate these sections by distinct generic names. We think the old name *Phallus* should cover them both.

Section 1, Veil short or merely rudimentary. Section 2, With distinct veils. Each section is also subdivided on the character, whether the pileus is relatively smooth and even, or is reticulate with ridges.

SECTION I. VEIL SHORT OR MERELY RUDIMENTARY.

PILEUS STRONGLY RETICULATE.

PHALLUS IMPUDICUS (Fig. 1).—It seems to me to be useless to use any space in describing *Phallus impudicus*. It is such a well-known plant, even to every peasant in Europe, and, besides, our photograph is the best description. The stem is white and the pileus has strong reticulations, not shown in our photograph where they are covered with the gleba. *Phallus impudicus* is the original phalloid, and the most common one of Europe. It extends throughout Europe. In the United States we do not have the type form of Europe, but a pinkish variety known as *Phallus imperialis*. In Japan, *Phallus impudicus* (the type form I judge from the drawings I have seen) is common. In Australia it is rare, if it occurs at all. Only one collection is known, now at Kew, which does not accord exactly with the European plant, but is close to it. *Phallus impudicus* probably occurs in other countries, but the above are all that are surely known.

Forms.

PHALLUS IMPERIALIS.—This form differs from the type form only in having a pink volva and in its distribution. I am told that in France it has a different habitat, and a different odor. I can not vouch for that. At any rate it is a rare plant in Europe, widely distributed but infrequent. In the United States it is the only form of *Phallus impudicus* we have. It is common in the West—Colorado, Southern California, and Texas. East of the Mississippi, I know of but one station, Washington, D. C. From its distribution it is evidently a plant that favors a warm climate and a sandy soil.

PHALLUS COSTATUS (Fig. 2).—This species, which was described from Java, is evidently similar to *Phallus impudicus*, and seems to me is better considered as a form. It differs chiefly in having more pronounced, almost winged reticulations to the pileus, and the substance of the pileus is described as yellowish-white.

PHALLUS TENUIS (Fig. 3).—A small yellow-species, native of the Orient. It can easily be known from all others of the section by its yellow color, both of stipe and pileus, and in addition by its

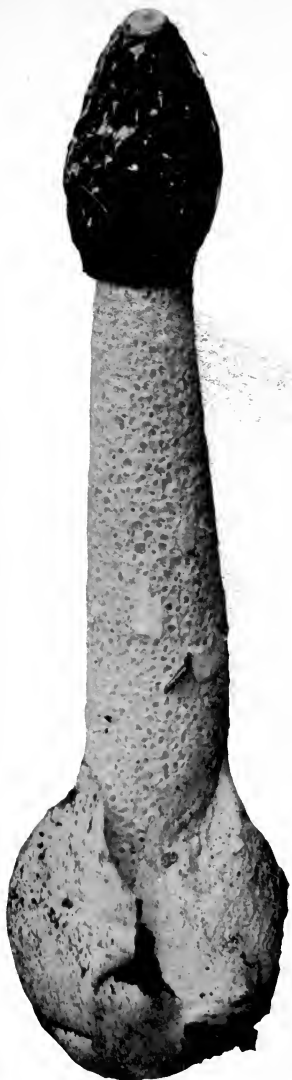


Fig. 1.

PHALLUS IMPUDICUS.

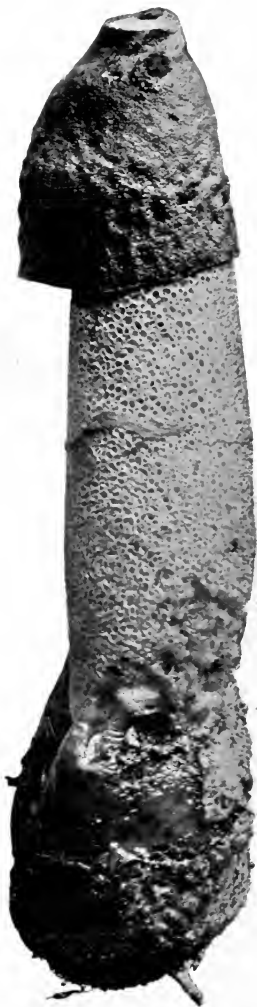


Fig. 7.

PHALLUS RAVENELII.



Fig. 3.
PHALLUS
TENUIS.



Fig. 5.
PHALLUS RUBICUNDUS.



Fig. 9.
PHALLUS RUGULOSUS.

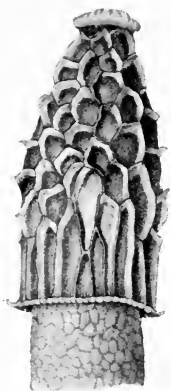


Fig. 2.

PHALLUS COSTATUS.

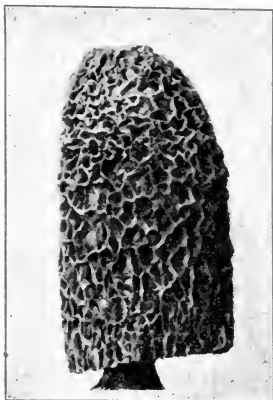


Fig. 4.

PHALLUS FAVOSUS.



Fig. 8.

PHALLUS RAVENELII.
(reduced)
(With protruding veil.)



Fig. 10.

PHALLUS GLUTINOLENS.

small size and thin substance. The dried specimens appear like a thin skin. *Phallus tenuis* was originally from Java, but must be a rare species there, as Dr. Bernard does not record it. It occurs also in Ceylon (specimens at Kew), and Professor Kusano has found it (very rarely) in Japan. In the latter country it grew on rotten wood. The stipe of the Javanese form is yellow, but in Japan it was represented as white. The original description makes no mention of the plant having a veil, but one of Penzig's figures shows a rudimentary veil hidden under the pileus.

PHALLUS FAVOSUS (Fig. 4).—This species, also known from Java, and rare there, is intermediate between *Phallus impudicus* and *Phallus tenuis*. With the large size of the former, it has a relatively thin pileus and a pale, yellowish stem. The substance of the pileus is also pale, but not so clear yellow as that of *tenuis*. It is only known from the original record.

PILEUS RELATIVELY SMOOTH OR MERELY RUGULOSE.

PHALLUS RUBICUNDUS (Fig. 5).—Stem, red. Pileus, red, smooth, or slightly rugose, covered with the greenish gleba. Apex, perforate, or sometimes imperforate. This is the only red species of the genus *Phallus* that we have, and it is widely distributed. It occurs in abundance in certain localities in our Southern States and many other warm countries. It has been named from India (*Phallus aurantiacus*), Africa (*Phallus sanguineus*), Australia, Hawaii. I have seen a drawing from China, and it is reported from Japan. In Hawaii it has been shown to be the cause of a destructive root disease of the sugar cane. When we get a better knowledge of the distribution of our phalloids, I think that *Phallus rubicundus* will be found in almost all sugar countries. I believe there is only one red *Phallus*. Forms from various countries seem to differ in being slender or obese; the pilei, in being truncate or acute, perforate or imperforate, with an apical collar or without, but the material is not at hand from which to form any opinion as to the systematic value (if any) of these differences.

Forms.

PHALLUS GRACILIS (Fig. 6).—*Phallus rubicundus* varies chiefly in stature. Slender forms have been called *Phallus gracilis*. For a long time the characters of *Phallus rubicundus* were not known other than the fact that we had a red *Phallus* in our Southern States. A recent article of Professor Long has given us a clear idea of its characters and convinced us there is no distinction between it and *Phallus aurantiacus* as it has generally been known in foreign countries.

PHALLUS RAVENELII (Fig. 7).—This is the most common phalloid of the United States, there replacing *Phallus impudicus* of Europe. In general appearance it resembles *Phallus impudicus*, but has a smoother pileus and a veil, usually short and hidden under the pileus. Rarely, however, it occurs with a protruding veil (Fig. 8). Usually *Phallus Ravenelii* grows on logs in the woods, sometimes on



Fig. 6

PHALLUS GRACILIS.



Fig. 12.

PHALLUS INDUSIATUS.



Fig. 15.

PHALLUS DAEMONUM.



Fig. 16.

PHALLUS DUPLICATUS.

the ground, and sometimes it develops in the greatest abundance on old piles of sawdust. The species is only known from the United States and Canada.

PHALLUS RUGULOSUS (Fig. 9).—Pileus, thimble-shaped, almost even or slightly rugulose, with a small, globose, apiculate collar. Color, dark. Veil, none. Stem, pale reddish. This species was described from alcoholic material, and is known only from Japan, where it is reported to be common. I have seen a drawing from Professor Kusano. As I understand it, the substance of the pileus is not red, otherwise the plant seems close to *Phallus rubicundus*. I should not be at all surprised if it develops that it is a slender form (*gracilis*) when the color of the pileus substance is known.

PHALLUS GLUTINOLENS (Fig. 10).—This is a unique species of *Phallus*, known only from Brazil. It has white stipe and no evident veil. The pileus is smooth and differs from all other species in the *globose* shape. It has only been observed by its original author, who gives us a good photograph of it.

PHALLUS SUBTILIS (Fig. 11).—This Brazilian species has only been illustrated by a sectional drawing. A photograph would not show any marked difference from any other small *Phallus*. It was erected into a separate genus because the pileus has no apical collar, and a section shows it to be formed of radiate plates. It is also somewhat gelatinous in its nature. It is only known from Brazil and from the work of the original author.

SECTION 2. VEIL EVIDENT, USUALLY STRONGLY DEVELOPED.

PILEUS STRONGLY RETICULATE.

PHALLUS INDUSIATUS (Fig. 12).—Pileus broadly campanulate, strongly reticulate. Veil strongly developed, of small, slender threads and large meshes. Color of stipe and veil white. This is the most common phalloid of all tropical countries and is found in quantities in all of the museums. We have noted specimens from Australia, India, Andaman Island, Java, Ceylon, East Africa, Mauritius, Mexico, Brazil, British Guiana, French Guiana, South Africa, Surinam, New Caledonia, Cuba, Tonkin, Philippines, Borneo, Jamaica. We have received it from a number of correspondents and have collected it (common) in Samoa.

Forms.

Phallus indusiatus varies in the tropics, chiefly in the shape of the pileus and the veils. Also in color, I think, and I suspect that in time it will not be found practicable to keep distinct *Phallus callichrous* and *Phallus multicolor* as other than color forms. Usually the veil is flaccid, but at other times more rigid. Sometimes it is united above into a distinct membrane. These forms seem to have a geographical significance, but so little is known that at present it is not possible to designate the distribution of the various forms. In Samoa, where I have observed it common, it never takes anything but the type form.



Fig. 13.

PHALLUS MOELLERI.

PHALLUS ROSEUS.—A form with a pink veil, which is at Paris, from French Guiana. It is also reported from Java.

PHALLUS MOELLERI (Fig. 13).—A form with a narrow pileus and rigid, spreading veil, as illustrated by Alfred Moeller, from Brazil. Professor Moeller states that in Brazil it runs into the type form so intimately that it is not practicable to keep it distinct.

In the recent article by T. Petch, it is stated that this rigid veil is not a form even, but the *normal* condition of the veil of *Phallus indusiatus* when first expanded and before the sun strikes it. That which I have taken for the type form is a condition after the veil has been wilted by the sun. I have never observed this (in Samoa) nor should I have suspected it, as they seem so different, but Professor Petch undoubtedly knows. In the interest of truth then "*Phallus Moelleri*" must be deleted, even as a form.

PHALLUS ROCHESTERENSIS (Fig. 18).—A form with an elongated thimble-shaped pileus and narrow, cylindrical veil is found at Kew, from Australia. It has been illustrated under the erroneous name, *Phallus merulinus*.

Color Forms.

There are two very showy tropical phalloids that in shape and other characters appear to be the same as *Phallus indusiatus*, but have bright colors. At the present time we can characterize them by their colors, but when the phalloids come to be well known, I think so many intermediate colors will be found that color characters alone will not be held to constitute species. T. Petch finds these color forms abundant in Ceylon, and states that they grade into the white form so intimately that it is not possible to keep them distinct even as forms. I am satisfied, however, that they have a geographical significance. They do not occur in Samoa, and Mr. C. B. Ussher, who has observed the species in tropical Africa, informs me that they are absent there.

PHALLUS MULTICOLOR (Fig. 14).—This was originally from Australia, but has been recently found and photographed from Java. Pileus orange red, veil bright lemon yellow, stipe lemon yellow, volva pink, mycelium purple. The characters, if they are real characters, of the species are the colors as stated above.

PHALLUS CALLICHOUS.—This appears to be different from multicolor only in the coloration. The pileus is orange, the veil and stipe white. It has never been illustrated, but probably could not be distinguished by a photograph alone from either multicolor or *indusiatus*. It was originally named from Brazil, but similarly colored plants have been observed in Java, Africa, and Australia.

PHALLUS DAEMONUM (Fig. 15).—This, which was the original foreign phalloid, illustrated from the island of Amboyna, was published one hundred and sixty years ago.³ All that is known of it to this day is the original, crude figure that we present. It seems quite distinct from the usual form in its punctate rather than reticulate pileus, if that proves to be a character of the plant and not of the figure only.

PHALLUS DUPLICATUS (Fig. 16).—Pileus with a strongly developed apical collar and strong reticulations. Veil long, white, of

³ It has therefore strong claims to be taken as the specific name for the species as proposed by Professor McGinty. There are two objections to it, however. First, it may be the "type" in the perverted sense that the word "type" is usually used, but it does not seem to be the typical form as the plant usually occurs. Second, it is not advisable to use so familiarly the name of His Satanic Majesty.



Fig. 14.

PHALLUS MULTICOLOR.

thick threads, which in alcoholic specimens contract and form almost a membrane. This is a common plant in the United States and is so close to the tropical species it may well be considered a temperate region form of it. However, it differs in the nature of the veil and the usual shape of the pileus, and I am convinced that it is as distinct as species generally are. The veil (which is torn in our figure) is a conspicuous feature of the plant.

Forms.

We would be disposed to consider related plants with a similar veil as forms of this species.

PHALLUS SUBUCULATUS, of Algeria, which was inaccurately figured, is, we think, a form of it.

PHALLUS MAURITIANUS (Fig. 17).—This form, which we have received in alcohol from Chas. O'Connor, of Mauritius, we feel is worthy of a separate designation as a form. It differs from the typical plant in the nature of the reticulations of the pileus, and is better shown in our photograph than we can tell it.

Note.—We formerly included in this section, under the name *Phallus irpicinus*, the only known phalloid with a well developed veil and rugulose pileus. It was proposed as a new genus (or a new section) *Clautriavia*, on account of having the pileus minutely convolute. We were not disposed to consider that of generic value, until recently when we saw at Berlin a New Guinea species with such a *strongly convolute* pileus, and such a marked character that we now feel that the genus *Clautriavia* should be maintained. Compare *Clautriavia merulina* on the next page.

IMPERFECTLY KNOWN SPECIES OF THE GENUS PHALLUS.

Many phalloids are known (?) only from old cuts based mostly on dried specimens and, in some instances, fertile imaginations. Naturally they are of not much importance for no one ever finds them again, but there is no way of getting rid of them. The genus *Phallus* has been especially favored (?) in this regard. We give a short synopsis of them here and have relegated the (alleged) pictures to an appendix.

PHALLUS DISCOLOR (Fig. 95).—From Australia, if correctly illustrated (with an emphasis on the "if"), is an intermediate plant connecting the genera *Phallus* and *Mutinus*. It was alleged to have the pileus adnate at the base to *the top* of the stem.

PHALLUS CALYPTRATUS (Fig. 96).—From Australia. Appears to be based chiefly on an accidental mass of gleba dried on top of the pileus.

PHALLUS RETUSUS.—Originally exploited as a new genus, it is reported by Professor Fischer (who has seen the "type") as an obese form of *aurantiacus*. The figure has no resemblance to *aurantiacus*, but it does not follow that the plant has none. It was from Australia.

PHALLUS CAMPANULATUS (Fig. 98).—Known only from the figure (Uruguay). The little cup at the base is not the volva, but the "inner" volva. It seems to have an even pileus and be close to *Ravenelii*, though nothing is known as to its veil. No specimen exists.

PHALLUS CELEBICUS (Fig. 99).—Said to grow in the Celebes and to have a whitish pileus and a yellow stem. It appears from the published account to be very close to *Phallus rubicundus*.

PHALLUS CANARIENSIS (Fig. 100).—If the figure is correct it is a peculiar little species with a slender stipe and large, rugulose pileus. Both



Fig. 18.

PHALLUS ROCHESTERENSIS.



Fig. 17.

PHALLUS MAURITIANUS.



Fig. 11.

PHALLUS SUBTILIS.
(Section.)

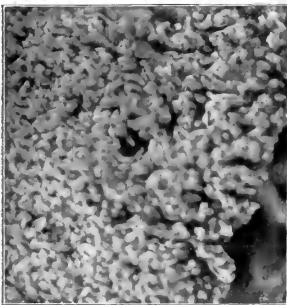
pileus and stipe are rose colored. It was from the Canary Islands. I have found no type.

PHALLUS FARLOWII.—This from alcoholic (or dried?) material from Brazil has never been illustrated. It is said to have a membranous veil, otherwise it is very close to *Phallus indusiatus*.

PHALLUS QUADRICOLOR (Fig. 102).—I think is probably based on a specimen of *Phallus multicolor* which has lost its veil. From Australia.

THE GENUS CLAUTRIAVIA.

This genus is characterized by having the surface of the pileus convoluted in folds, the gleba covering the folds and permeating the interspaces between them. Our figure (which is an enlargement six diameters) will give a clear idea of this structure. The original species, *Clautriavia merulina*, which is a frequent plant in Java, Ceylon, and the East Indies, in general (probably) has very minute folds, so that the surface to the eye appears even, but a recently discovered species of New Guinea, *Clautriavia Lauterbachii*, has the folds so strongly convoluted that in the egg the pileus appears to be a crumpled veil covered with gleba.



CLAUTRIAVIA MERULINA (Fig. 19).—This species has the general appearance of being a *Phallus*. The pileus, however, instead of being

a plain or reticulate membrane with the gleba on the outer surface, consists of minutely convoluted folds, the gleba permeating the depressions between the folds. It has long been known as a common species in Java.⁴ Recently T. Petch has published that it is abundant in the grounds of the Botanical Garden at Peradeniya, Ceylon. When the truth of the subject is known it will probably be found to be generally distributed in the East Indies and neighboring countries.

CLAUTRIAVIA LAUTERBACHII (Fig. 20).—This species, which has a most remarkable structure, is unfortunately known only from some undeveloped plants from New Guinea. The pileus in the

⁴ Berkeley named the plant *Phallus merulinus*, many years ago, and while he gave no formal description of it (in pidgin Latin) he characterized it in an unmistakable manner, it appears to me now. Fischer incorrectly referred the name as a synonym for *Phallus indusiatus*, and Cooke illustrated a form of *Phallus indusiatus* of Australia under Berkeley's name. Patouillard discovered it to be a "new species" from Java, and named it *irpicinus*, which name we have previously used, and would continue to use if it had any application to the plant. We adopt Berkeley's name, not on the grounds of "priority," but suitability, believing that when a plant has two names, one very good and one very bad, the better should be chosen.



Fig. 19.

CLAUTRIAVIA MERULINA.

egg is a strongly folded and convolute membrane resembling at first view a crumpled veil. What form it takes in the developed plant is not known, but it is probable that it does not change much, as the form of a pileus is in all known instances well defined in the egg. In addition the volva is covered with wart-like processes, which, while unknown as to any other phalloid, is in my opinion a minor character. The plant is only known from New Guinea, and a photograph of a developed plant is much desired.⁵

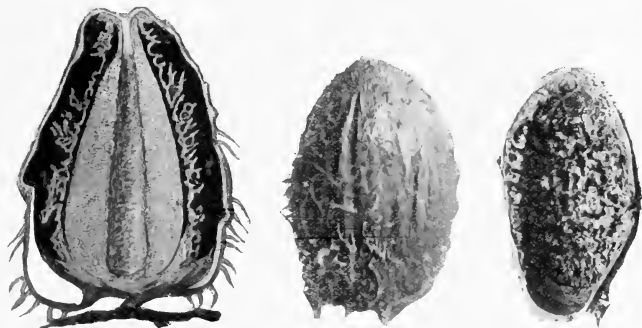


Fig. 20.

CLAUTRIAVIA LAUTERBACHII.

Section by Fischer. Photograph of the volva, also of the folds of the inner face of the pileus.

THE GENUS ITAJAHYA.

This genus in general appearance resembles the genus *Phallus*, but is quite different in the structure of the pileus. This consists of lamellate plates, the gleba covering these plates, permeating the inner structure of the pileus.

⁵ Until I saw the specimens I had a very erroneous idea of the characters of the plant, and I think they have been inaccurately presented in the published accounts. When Dr. Hennings received these phalloid eggs he sent them to Professor Fischer, who made what impresses me as a very accurate drawing of a section that he returned to Dr. Hennings with the suggestion that it be called *Ithyphallus lauterbachii*. We reproduce Professor Fischer's section in our figure (20). Dr. Hennings did not publish Fischer's figure as received, but modified it, showing a "hut" and an "indusium." The plant has but one membrane, which should be called the "hut," as it bears the gleba and is analogous to a pileus. There is no indusium. One of the egg sections at Berlin would at first view seem to have a rudimentary indusium, but on closely examining it I find it is a division of the stem, which in this instance seems to divide above and support the pileus in the manner of a *Helvella*. The pileus in the egg is so convoluted that my first impression (until I noticed that it bore the gleba) was that it was an indusium, and that here we had a type of a new genus of phalloid which had a veil but no pileus. Dr. Hennings first published it under Fischer's name, *Ithyphallus lauterbachii*. Afterwards he republished it as a new genus *Echinophallus*, basing it principally on the protuberances of the volva, a minor character, in my opinion. The main character of the plant, the strongly folded and convoluted pileus, is unique in this species and establishes, for me at least, the validity of Patouillard's genus *Clautriavia*, based on the same character, though in a much less developed form.

ITAJAHYA GALERICULATA (Figs. 21 and 22).—But one species of the genus is known, which is a native of Brazil, from whence it was well described and illustrated by Moeller. It has since been found there by Father Schupp. Robert E. Fries recently records the plant as common in Argentina, and it is probably frequent and widely distributed in South America.⁶ Our photographs and the sectional figure of the pileus are all that are necessary to enable one to recognize the plant.



Fig. 21.

ITAJAHYA GALERICU-
LATA.



Fig. 22.

ITAJAHYA GALERICU-
LATA. (Section.)

THE GENUS MUTINUS.

This genus is distinguished from Phallus, to which it was formerly united by having no distinct pileus, the gleba being borne on the upper portion of a simple stem. Sometimes the gleba-bearing por-

⁶ Mr. Fries suggests, not without reason, that it may be the original of Spegazzini's "new genus" *Albofiella*, which if true is a prior name. In that case I submit, would it not be a rank injustice and a travesty on science to replace the excellent work done by Moeller, or his name, by the inaccurate work of Spegazzini?

tion is distinct from the stem, taking somewhat the nature of a distinct pileus, but in other species it is not clearly marked from the stem. The species of *Mutinus* are all very similar and are distinguished by their general form. All are red, or sometimes have white forms.

MUTINUS CANINUS (Fig. 23).—This, which is the only species of *Mutinus* that grows in Europe, has a short, distinct, spore-bearing portion, which is sharply distinct from the stem. I do not know whether it is a constant character, but I have seen alcoholic specimens where the receptacle was abruptly contracted and of a smaller diameter than the stem. The structure of the receptacle is always different, being of small, thick-walled cells, while those of the stem are large and thin-walled.⁷ *Mutinus caninus* is not rare and is widely spread in Europe. In the United States it is much rarer, and while I think it is well authenticated, it occurs principally in the Eastern States. The stem of *Mutinus caninus* is usually red, though white-stemmed forms have been figured on several occasions.

MUTINUS ELEGANS (Fig. 24).—In this species there is no distinction between the stem and the spore-bearing portion. It is all one uniform, cellular structure, with no sharp line of demarcation. The form is generally tapering from a thickened base to an acute apex. *Mutinus elegans* is the most common *Mutinus* that we have in the United States. It grows in the woods around old logs or soil rich in humus. It is not rare. The color is red or orange.

MUTINUS RAVENELII (Fig. 25).—This species has the same cellular structure as the preceding and has been held to be the same plant. I am satisfied it is distinct in form (usual) and habitat. The shape is club-form, thickened above, and tapering below. The habitat is old fields devoid of woods humus. It is a rare plant in the United States. The color is red.

MUTINUS BAMBUSINUS (Fig. 26).—Receptacle distinct from the stipe, formed of small cells. Color of both stipe and receptacle is red. This, which seems to be the common species of the tropics, is very similar to *Mutinus caninus* of Europe. However, it has a much longer spore-bearing portion and the color is brighter red. It was originally from Java, but occurs in the Celebes, Brazil, and no doubt in many tropical countries. It has been noted, adventitious, in the hot-houses at Kew.

MUTINUS FLEISCHERI (Fig. 27).—The most obese species of *Mutinus* known. It has a thick stem and a very short, contracted spore-bearing portion. Its structure is that of *Mutinus caninus*, of Europe, but it is a much more obese plant. It is known only from Java and is a rare plant there. The color is red.

⁷ This has always been my observation, and my understanding of the essential character of *Mutinus caninus*. I have recently seen at Berlin alcoholic specimens of eggs and sections of eggs of *Mutinus caninus* from Europe, where I can not note any difference in the cells of the stem and gleba-bearing portion.



Fig. 23.

MUTINUS CANINUS.



Fig. 24.

MUTINUS ELEGANS.



Fig. 26.

MUTINUS BAMBUSINUS.

MUTINUS PENTAGONUS (Fig. 28).—All the previous species of Mutinus have cylindrical stems, but in this species the stem is pentagonal (or sometimes six-angled). The gleba-bearing portion is also strongly fluted, and the gleba is borne on the channels with free edges. In the genus *Lysurus* the lobes, when young, are connivent, and the young plants of *Lysurus Mokusin* evidently closely resemble this species. In *Mutinus pentagonus* I am convinced from an examination of dried specimens that there are no arms, but that the receptacle consists of a single piece. *Mutinus pentagonus* is known only from Australia, and but scantily there.

MUTINUS XYLOGENUS (Fig. 29).—This is the smallest phalloid known and an idea of its size can be obtained from our photograph, which is an enlargement six diameters. It is only known from a collection made in French Guiana many years ago, and preserved at Paris. It is a question whether it is a *Phallus* or a *Mutinus* (cfr. *Myc. Notes*, p. 336). If a *Mutinus*, it is not only the smallest species known, but differs from all other species in having a globose mass of gleba.



Fig. 25.

MUTINUS RAVENELII.

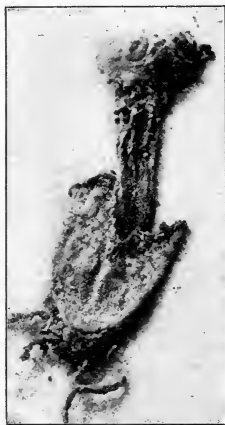


Fig. 29.

MUTINUS XYLOGENUS.
(Enlarged x6.)

DOUBTFUL AND LITTLE KNOWN SPECIES.

The same remarks apply here as under the same head concerning the genus *Phallus*. *Mutinus minimus*, *Mutinus borneensis*, *Mutinus proximus*, and *Jansia boninensis* may all prove to be the same plant.



Fig. 27.

MUTINUS FLEISCHERI.

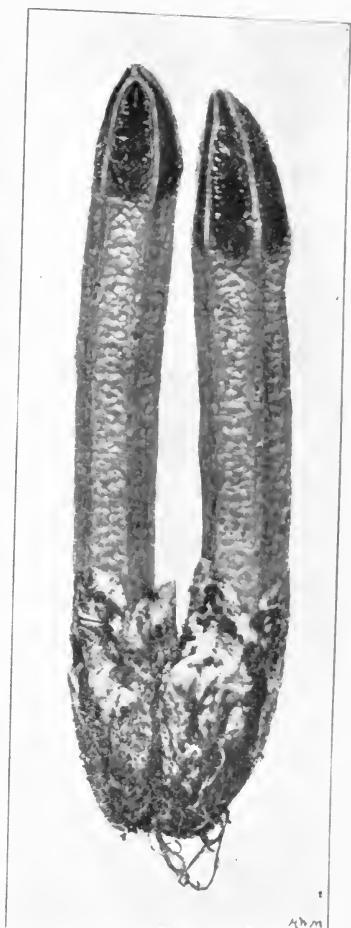


Fig. 28.

MUTINUS PENTAGONUS.

MUTINUS MINIMUS (Fig. 103).—Known from a figure reconstructed from a dried or alcoholic specimen. Color, red. Seems to differ from others in its rugulose receptacle. Described from Tonkin.

MUTINUS BORNEENSIS (Fig. 104).—Figured from Borneo, in an Italian journal. Was said to have a white stipe and short red spore-bearing portion. We reproduce a figure from Tonkin.⁸

MUTINUS PROXIMUS.—Based on a dried specimen in the British Museum, from Ceylon. It is a small species, described as having a white stipe, but the plant is accompanied by a sketch showing an orange stipe. It seems to be close to *caninus*. It has not been figured.

MUTINUS CURTUS (Fig. 105).—Only known from one collection made in Australia sixty years ago, which seems to be immature. The figure reconstructed by Corda is no doubt inaccurate, especially as to the lobed volva.

MUTINUS PAPUASIUS (Fig. 106).—Known only from a figure from a dried specimen, from Australia. It is not known whether it is a *Mutinus* or a *Phallus*.

MUTINUS ARGENTINUS (Fig. 107).—This was originally published without illustration and was referred by Professor Fischer, doubtfully, to *Mutinus Muelleri*. The latter seems from Fischer's illustration to be *Mutinus bambusinus*, and is so referred by Moeller. Spegazzini has recently published a figure of *Mutinus argentinus* which seems to me quite different from *bambusinus*. It has a short, thick spore-bearing portion. From the figure one could not say it was not *Mutinus caninus* of Europe, though it is rather stocky for that.



Fig. 30.

JANSIA RUGOSA.
(Natural size.)



Fig. 32.

JANSIA ELEGANS.
(Natural size.)



Fig. 35.

JANSIA BONINENSIS.

⁸ In our account, *Myc. Notes*, p. 388, we confused *Mutinus borneensis* of Borneo with *Mutinus boninensis* of Bonin Island. Both are imperfectly known, but the latter seems to be a *Jansia*, and both may in time prove to be the same plant. Since we have seen the types of *Jansia boninensis* we think we have inaccurately referred here (page 402) a species of *Mutinus* from Japan.

THE GENUS JANSIA.

This is a genus of very small phalloids, common in Java and well illustrated by Penzig. The general form is that of a little *Mutinus*, but the spore-bearing portion is strongly differentiated from the stipe, and it is strongly rugulose or papillate. Two species occur in Java and have been well illustrated. They grew on rotten wood. There are two imperfectly known species, one from Bonin Island and one from Australia.

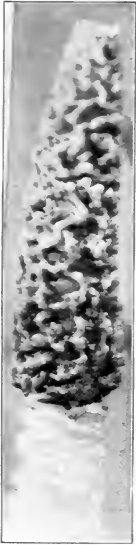


Fig. 31.



Fig. 33.



Fig. 34.

JANSIA RUGOSA.
(Enlarged.)

JANSIA ELEGANS.
(Enlarged.)

JANSIA ANNULATA.

JANSIA RUGOSA (Figs. 30 and 31).—This is a very small phalloid, which is common in Java. The short gleba-bearing portion is strongly distinct from the stipe and is strongly rugulose, as shown in our enlargement (Fig. 31). It is the only species of *Jansia* that is common and well known. This little plant is white and grows on rotten wood.

JANSIA ELEGANS (Figs. 32 and 33).—This species is also known only from Java and is rare, at least Dr. Bernard does not report it. It grows on rotten bamboo stems. It is of the same size

and appearance as the preceding little species, but the gleba-bearing portion is strongly covered with little processes, instead of being rugulose.

JANSIA ANNULATA (Fig. 34).—This plant is known only from a figure published from Australia. No specimen exists. The stipe is white, the gleba-bearing portion “red-ochre” and “annulated.” The plant is therefore probably a *Jansia*, but this is not surely known.

JANSIA BONINENSIS (Fig. 35).—This species from Bonin Island, is only known, I think, with certainty, from one collection in alcohol. The gleba bearing portion is slightly rugulose, and it seems intermediate between *Mutinus* and *Jansia*, being typically neither. The type collection is in alcohol in Berlin. I am not sure that *Mutinus minimus* and *Mutinus borneensis* are not both the same as this species.

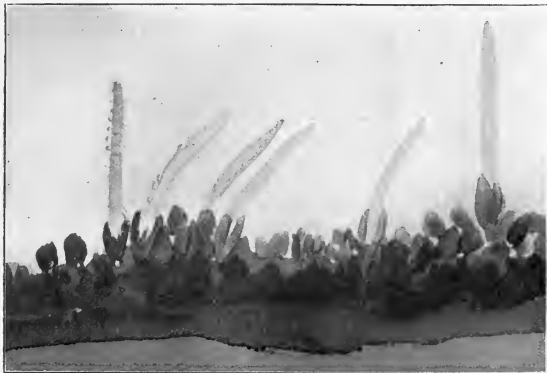


Fig. 36a.

FLOCCOMUTINUS ZENKERI.

(Showing habits of plant.)



Fig. 36.

FLOCCOMUTINUS ZENKERI.

(Much enlarged)

THE GENUS FLOCCOMUTINUS.

This genus is very curious and is intermediate between the pileate and non-pileate phalloids. The gleba covers a *loosely attached* network surrounding the stipe, and while *similar* to the veil of a *Phallus*, it is analogous to the *pileus* of a *Phallus*. The drawing by Professor Fischer (our figure 36) gives a good idea of this structure. The exact

attachment of this network I could not make out from the type owing to the minuteness of the parts, though that it is attached (loosely) in some manner is evident. It appears to me as a very distinct genus, essentially different in its basic structure from both the genera *Jansia* and *Mutinus*, with which it has been recently united.

FLOCCOMUTINUS ZENKERI (Figs. 36 and 36a).—But one collection of this curious genus is known, which is in alcohol in the museum at Berlin. It is accompanied by a colored sketch of the fresh plant, made by the collector, showing well its habits. We reproduce this drawing (Fig. 36a), though, owing to the difficulty of photographing colors, our figure does not do the drawing justice. In habits *Floccomutinus Zenkeri* is very similar to *Jansia elegans* of Java. The little plants are borne caespitose on a common, mycelial pad. The eggs are elongated in form and open at the apex. The volva is not accurately shown in Figure 36.

THE GENUS *LYSURUS*.

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*⁹ (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.

⁹ Ever since the species was published there has been a difference of opinion as to whether the arms were united or not, a difference of opinion that was legitimate from the fact that the type specimens at Kew do not bear out the original statement in this respect. Before seeing the specimens Fischer decided they were united, and changed the classification on that account. Masseur, who had the type in charge, writes: "The segments are not organically united at the tip, but during the young stage are closely pressed together, and having been dried in that condition appear to be united. 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 in the herbarium." Knowing the direct divergence of opinion on the subject, I went very carefully into the question on my previous visit to Kew. Some of the specimens appear to have never been united (see photograph, Figure 38a, from one of the types), and while in many specimens they are convergent and covered with the gleba, I did not believe there was any union between them, and so published. I included them in *Lysurus*, where I think the plant is best classed, though as they are united it becomes necessary to modify the definition of this genus. Mr. Petch, who has observed two specimens fresh, finds the tips of the arms united by a delicate membrane, a fact that could not be told from the dried specimens at Kew. He puts it in the genus *Colus*, although it has no resemblance or analogy to that genus. In order to justify his name he changed the definition of the genus *Colus*, and gives it a definition that excludes from the genus the original and only species known to belong to it. I believe a man has a right to modify a definition of a genus to include species which he thinks should be classed in the genus, but he has no right to draw up his definition so as to exclude the original species and change the original idea entirely.

LYSURUS MOKUSIN (Fig. 37).—This is the original species of *Lysurus* and was one of the first foreign phalloids known. It was figured in 1774 by Father Cibot, a missionary in China. The stem is strongly fluted and bears free arms, which are also fluted. It has been found in several stations in China and Japan, but is unknown from other parts of the world. We have a drawing from Professor Gono, Japan, that shows a white stem and red arms. We do not know, however, that these colors are constant.



Fig. 38a

LYSURUS GARDNERI.
(Photo of a type.)



Fig. 39.

LYSURUS
AUSTRALIENSIS.
(From the type.)



Fig. 40.

LYSURUS BOREALIS.
(Stocky form.)

LYSURUS GARDNERI (Figs. 38 and 38a).—This species has been known for many years only from the original collection from Ceylon, at Kew. It has been recently discovered in Ceylon by Mr. Petch, but is of rare occurrence and only recorded from the island. Mr. Petch's observations of the fresh plant show that the arms are united by a very distinct membrane, which would take it out of the genus *Lysurus* as formerly defined. As it was originally classed in this genus, however, and as its relations are evidently with the genus *Lysurus*, I think it better to modify the definition of the genus to in-

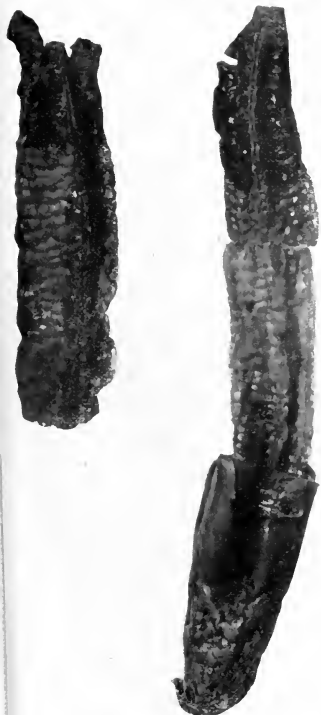


Fig. 37.

LYSURUS MOKUSIN.

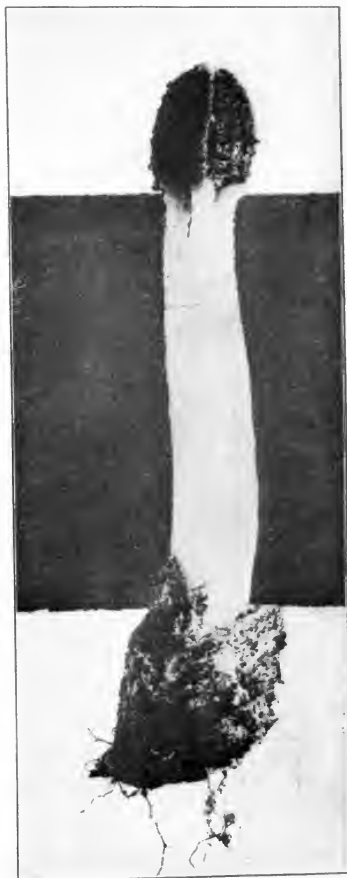


Fig. 38.

LYSURUS GARDNERI.

clude it.¹⁰ The photograph of *Lysurus Gardneri*, as well as the dried specimens, has a close resemblance to the two following species, and I have heretofore believed that in time they would all three prove to be the same species. We must abandon this idea now that Professor Petch has demonstrated that the arms of *Lysurus Gardneri* are organically united, for they are entirely distinct in both of the following species.

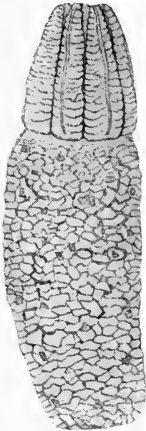


Fig. 42.

LYSURUS
CLARAZIANUS.

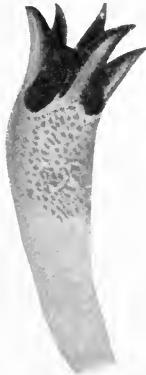


Fig. 43.

LYSURUS SANCTAE-
CATHERINAE.



Fig. 45.

LYSURUS WOODII.
(From the co-type.)

LYSURUS AUSTRALIENSIS (Fig. 39).—One collection of a *Lysurus* from Australia is at Kew, published as above. How it differs from *Lysurus borealis* I do not know. Professor McAlpine has advised me of a red *Lysurus* in Australia, but I have not had further details. As I think the published figure of *Lysurus Australiensis* is overdrawn and inaccurate, I present a photograph of the type, which, while not satisfactory, is true as far as it goes.

LYSURUS BOREALIS (Figs. 40 and 41).—This is claimed to be distinct from the preceding, but I know no points of difference.

¹⁰ It has been classed in the genus *Colus*, but for me it has no characters in common with the genus *Colus*, which is a *clathrate* genus. It might be included in *Pseudocolus* according to the definition of that genus, but it is so different from all species of that genus I think it better not to so include it.



Fig. 45a.

LYSURUS (unnamed).

(The limb and an arm enlarged five times.)



Fig. 41.

LYSURUS BOREALIS.
(Slender form.)

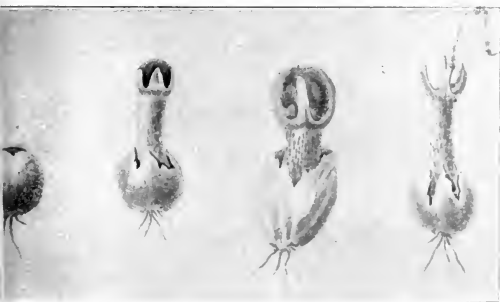


Fig. 44.

LYSURUS CRUCIATUS.

It has a curious history in the United States and Europe and is supposed to be an introduced plant. It grows in gardens, sod, and other cultivated places. It occurs mostly in our Eastern States. In Europe it has been found in three localities, all in recent years. First by Dr. Hennings in Germany, then by Mr. Carleton Rea in England, and then by Mr. Harold Murray, of Manchester, England. Mr. Murray's plant has a white stem and red arms. Professor Long also advised me of a red *Lysurus* in Texas. We present two photographs, one a stocky plant from England, the other a slender specimen from the United States. We are told, however, that these same "stocky" forms occur in the United States.

LYSURUS CLARAZIANUS (Fig. 42).—This was a small plant, described from Argentina. It is red and small, but otherwise seems about the same as the preceding.

LYSURUS SANCTAE-CATHERINAE (Fig. 43).—This was based on a picture from Brazil. It seems to have the gleba in a globose mass on the center of the apex of the stipe rather than surrounding the arms. The color is red. It may be an *Anthurus*.

LYSURUS CRUCIATUS (Fig. 44).—A very small species with four arms, the gleba forming a ball on the top of the stem. It is only known from the original collection, which was from French Guiana, and is preserved at Paris. We present the original drawing in our illustration.

LYSURUS WOODII (Fig. 45).—This is a small, red species, imperfectly known from South Africa. Our photograph is made from the cotype at Kew. The arms are three or four and are "magnificent scarlet," the stem "waxy yellow." The specimens are from Mr. Wood and are the same as those named and figured by Kalchbrenner as *Anthurus Woodii*. While it is unsafe to draw conclusions from dried specimens, we believe the species is a *Lysurus* entirely distinct from the genus *Anthurus* and that Kalchbrenner misconceived and mis-drew the illustration. We, therefore, present a photograph of the dried specimen, which though a very poor illustration is better than an inaccurate drawing.

UNNAMED SPECIES (Fig. 45a).—We have received from F. M. Reader what is surely an unnamed species from Australia. It is a very small species, as will be seen by reference to our photograph, which is an enlargement four diameters. The limb is four-angled, enlarged above, and bears an arm at each angle. The color is red. The specimen sent us (in formalin) had evidently been cut in two pieces and these arms all broken off, so that we could not make much of a picture of it. We think it will be recognized, if found again by our Australian friends, and we do not name it. We hope some one in Australia will give a good photograph of it from the fresh plant and give it a name. We should be glad to have a perfect specimen in alcohol.

THE GENUS ANTHURUS.

Though largely confused with *Lysurus*, the genus *Anthurus* as originally proposed is very distinct. The stem is a *flaring tube*, the limb divided into segments, and it bears the gleba on the inner side of these segments. But one species is satisfactorily known, and that one is due to the work of Prof. D. McAlpine of Australia.



Fig. 46.

ANTHURUS ASEROEFORMIS.



Fig. 49.

ANTHURUS CALATHISCUS.
(The original drawing.)

ANTHURUS ASEROEFORMIS (Fig. 46).—Professor McAlpine describes the plant as follows:

“Receptacle with hollow stem, expanding above into five arms, directed upwards and outwards. Stem salmon pink, slightly darker at top, fully three inches long, rugose with small depressions running more or less in lines and slight ridges running crosswise, so that it looks as if divided into a series of squares, about $\frac{1}{2}$ inch in diameter towards the tapering base and $\frac{7}{8}$ inch at top. Arms three inches long, merging into stem and tapering to a point, blood-red on inner face, convex and broken up into larger or smaller cavities, on outer face there is a continuation of the color of the upper portion of the stem and gradual darkening until toward the tip it is blood-red like inner face with thickened, slightly raised margins and central furrow broken up into small cavities.

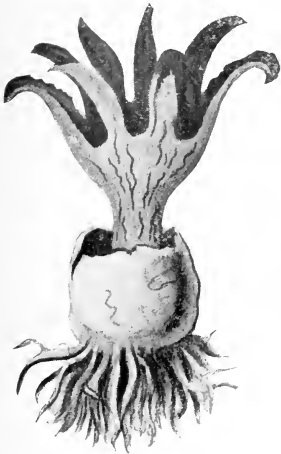


Fig. 47.

ANTHURUS MUELLERIANUS.



Fig. 48.

ANTHURUS ARCHERI.

“Gleba blackish with tinge of bronze green, extending along the inner surface of each arm, but not covering the slender tip.

“Volva somewhat cup-shaped, about as long as broad ($1\frac{1}{2}$ inches) dirty-white, splitting at the apex, tapering towards the base and provided there with turfs of elongated fibrous roots.

“Spores hyaline, cylindrical to elongated ellipsoid, rounded at both ends, sometimes vacuolated but generally homogeneous contents, $6-8 \times 2\frac{1}{2}-3$ mic., occasionally 9 mic. long.

“A solitary specimen growing in a garden among violets, near Melbourne, Victoria, April, 1907. Forwarded by C. French, Jr. It had a very disagreeable smell. Owing to its fragile nature, one of the arms fell away and only the arm to the right in the photograph shows the slender tip.”

This description, taken in connection with the photograph that Professor McAlpine sends, gives a perfect idea of the plant, and it is the only *Anthurus* that is really known.

ANTHURUS MUELLERIANUS (Fig. 47).—This, the original species of the genus, is known only from a drawing supposed to be quite inaccurate. It was from Australia, and the color was described as yellowish-red and shown bright red. I rather suspect that it was based on the same plant as the preceding.

ANTHURUS ARCHERI (Fig. 48).—This is known only from a figure, and that is doubtful. It was from Tasmania. It seems from the figure to be an *Anthurus*, but in the sectional drawing the arms are shown to be bifid, and it seems to incline toward the genus *Aseroe*.

ANTHURUS CALATHISCUS (Fig. 49).—The original of this species, as far as I can learn, is a crude figure found in the herbarium of Montague from Perrottet, India. I think it was published as *Calathiscus Sepia*, and if so, then a most fantastic and imaginary figure was given of it. Perrottet gives the color as "jaune pale." No similar plant has since been sent from India, but his figure evidently is an *Anthurus*.¹¹

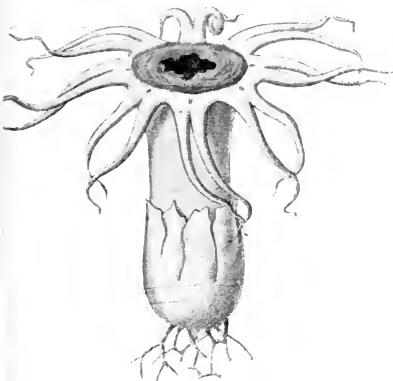


Fig. 51.

ASEROE PENTACTINA.

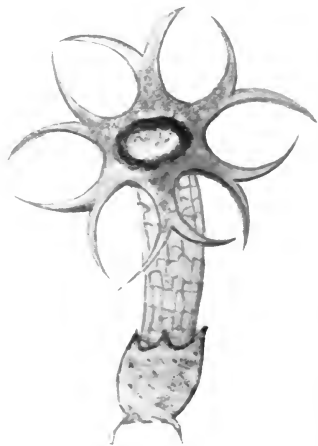


Fig. 53a.

ASEROE PALLIDA.

THE GENUS *ASEROE*.

Stem tubular, abruptly spreading into a horizontal limb, which is divided into a number of long, slender, usually bifid segments.

¹¹ Although I have hunted diligently for the original of the fantastic picture that for sixty years has embellished our phalloid literature, I have found no other evidence than the cut reproduced Fig. 49. It has so little resemblance to the published figure that it does not seem possible to have been the source. It was from "Perrottet, India," and on a sheet with two other sketches taken by Perrottet to be different species, but which appear to me to be forms of the same. Montagne has endorsed this sheet "*Perrottet Calathiscus et Aseroe pentactina* Endl.," and it therefore seems to be the source of his "*Calathiscus*."

These are generally prolonged into long, slender points. The color of most species is bright red, and they are among the most showy phalloids. The genus is at home in Australia, where many forms occur. It also grows in Java and the East. No species is known from America or Europe, and it is vaguely known from Africa.¹² The species



Fig. 50.

ASEROE RUBRA.

all are very similar and have been reduced to two by Professor Fischer. However, the figures that are supposed to represent them seem so different that we would prefer to consider them distinct, at least until more is known about them. We believe, however, that there are three distinct species under which the forms should be arranged: *Aseroe rubra*, which includes the Australian forms and has a *narrow* limb; *Aseroe Zeylandica*, to which all the East Indian forms should be referred, and which has a *broad* limb; *Aseroe arachnoidea*, which is quite distinct from both the others.

¹² At Berlin there is a very imperfect dried specimen of *Aseroe* from Africa!! It is so poor that I would not wish to even venture on its form, but the occurrence of the genus in Africa is not recorded, I think, and is of interest.

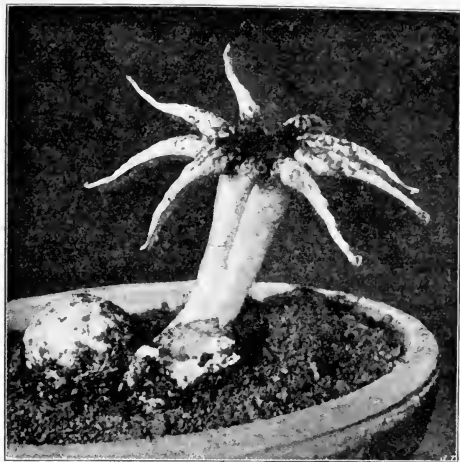


Fig. 55.

ASEROE ARACHNOIDEA.



Fig. 52.

ASEROE HOOKERI.



Fig. 56.

ASEROE ARACH-
NOIDEA. (Section.)

ASEROE RUBRA (Fig. 50).—This was the original form known, and was from Australia. It has short, spreading rays. This exact form does not appear to have reached Europe since, but adventitious plants which are exactly the same have appeared in the hothouses at Kew.



Fig. 53.

ASEROE MUELLERIANA.

ASEROE PENTACTINA (Fig. 51).—From the specimens that reach Europe this form seems to be the most common form in Australia. It has a narrow limb and long, slender rays. The name, pentactina, referred to the number (five) of the rays of the original specimen, but the number varies and is of no importance.

ASEROE HOOKERI (Fig. 52).—This was a very small form with a short stem and narrow rays that came from New Zealand. It is the smallest form described and appears to me quite different from the others.

ASEROE MUELLERIANA (Fig. 53).—This form from Australia has a broad limb and a general resemblance to *Aseroe Zeylandica* of Ceylon. How-

ever, the rays are shorter and differently disposed. I think it is known only from the picture. It seems quite different in its broad limb from the other Australian forms, if any reliance can be placed on the picture.

ASEROE PALLIDA (Fig. 53a).—At Berlin I found a dried specimen of an *Aseroe* from New Caledonia sent by Monsieur Le Rat, with a drawing (Fig. 53a) that seems to be well made. It differs from the Australian form not only in its narrow segments but pale coloration. The stem is "pure white," the limb "pale rose." I think it is worthy of record as a marked form of this variable species.



Fig. 54.

ASEROE ZEYLANDICA.

ASEROE ZEYLANDICA (Fig. 54).—This species is originally from Ceylon and is the largest and most showy of the genus. The broad limb is divided into a number of segments, and the whole plant is bright red. It was collected many years ago in Java (and called

Aseroe Junghuhnii), but is very rare there and was not found by Penzig. It has recently been found again by Dr. Bernard, who has kindly sent us the fine photograph which we publish.

ASEROE LYSUROIDES.—This was figured by Corda from specimens from Australia. It has a long, slender stem and short, broad rays. Corda's figures appear to me to represent two different genera, hence I do not reproduce it as I think there is surely something wrong about it.

ASEROE ARACHNOIDEA (Figs. 55 and 56).—This species differs widely from all that precede. It has simple rays, not bifid, as all others. The color is white: all others are red. It was based on alcoholic material at Paris collected "sur fumier" in Cochin China, by Dr. Harmand. It has since been found abundantly in Java by Penzig and Dr. Bernard, though not on manure. The stem is hollow, and pervious at the top, and the arms crown the limb of the stem.

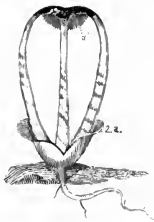


Fig. 59.

LATERNEA TRISCAPA.

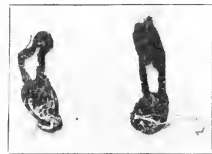


Fig. 60.

LATERNEA PUSILLA.

(From the type.)

THE GENUS LATERNEA.

This genus consists of columns (usually two to five) that are united at the top and bear the gleba clinging to the under side. It is chiefly an American genus, being very common in South America and Southern United States. There is one record from Africa and one species known from Japan.

LATERNEA COLUMNATA (Fig. 57 and 58).—Columns from three to five, usually four. When perfectly developed there is a groove on the outer surface. Color red, or perhaps also white. White plants have been figured from Chile and Africa that are probably the same thing. This is the original species of Laternea, and is the most common one. It is abundant in Southern United States and South America, and is also known from the West Indies and Hawaii.

LATERNEA TRISCAPA (Fig. 59).—This was the second species named, and is known only from the original figure. It is very much the same as Laternea columnata except its small size, and it may be only a small form.

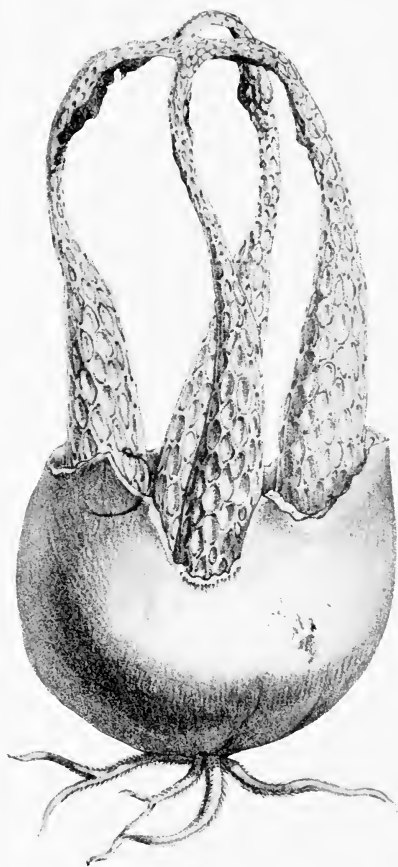


Fig. 62.

LATERNEA ANGOLENSIS.



Fig. 61.

LATERNEA
RHACODES.



Fig. 58.

LATERNEA
COLUMNATA.

It came from the West Indies. The figure shows only three columns, and for a long time that was considered its specific character. It is well known, however, that the number of columns varies in other species and undoubtedly also in this.

LATERNEA PUSILLA (Fig. 60).—This is known from a single specimen from Cuba, preserved at Kew. The character of this specimen is the two columns and its exceedingly small size. As *Laternea pusilla* has never been found since and was never figured, we have used for our illustration a photograph of the type specimen. When these small *Laterneas* are known from more ample collections, it will probably not be possible to draw any line between *pusilla* and *triscapa* and perhaps also *columnata*.



Fig. 57.

LATERNEA COLUMNATA.



Fig. 63.

LATERNEA SPEGAZZINI.

LATERNEA RHACODES (Fig. 61).—In this species the inner cells of the columns are torn and lacerated, and on that account has been made into a new genus (*Blumenavia*). As the same character is afforded by more than one *Clathrus*, which are not separated on this account, we feel it better to include this in *Laternea*, with which it otherwise agrees. *Laternea rhacodes* was originally from Brazil, where it is reported to be common. It is not otherwise known.

LATERNEA ANGOLENSIS (Fig. 62).—This, from the picture, which is all that is known about it, is very similar to *columnata* except that the columns are more slender and reduced at the top, and the color is white. It is probably only a white form of *Laternea columnata*. It is the only record of the genus

Laternea in Africa and was from Angola. The recently described *Blumenavia usambarensis* from Africa is probably the same. The type is in alcohol at Berlin.

LATERNEA SPEGAZZINI (Fig. 63).—This, which we know only from a figure, differs from *Laternea columnata* in having the surface covered with papillate projections. It might well be made the type of a new genus. As far as known, it occurs only in Argentina, South America. The illustration shows only three columns, but the number probably varies.



Fig. 64.

LATERNEA BICOLUMNATA.

LATERNEA BICOLUMNATA (Fig. 64).—Receptacle consists of two columns united at the top and free at the bottom. Columns slightly compressed, cylindrical, tapering above. Gleba attached to the under side of the columns near the apex. Color pale reddish. This species is known only from Japan and is the only *Laternea* recorded from that part of the world. We are under obligations to Professor Kusano for the photograph that we reproduce.

THE GENUS *PSEUDOCOLUS*.

The genus *Pseudocolus* consists of columns (three, as far as known) which are united at the top and at the bottom are consolidated into a stalk. In other words, it is a stipitate *Laternea*. The best known species are from Java and Brazil. Other and less perfectly known species occur in Australia, Reunion Island (Africa), Java, and Ceylon. All species of *Pseudocolus* appear to be very rare, and most of them are only known from a single record.

PSEUDOCOLUS GARCIAE (Fig. 65).—Receptacle consists of three tapering columns, slightly united at the top and bearing the gleba on the under side. Color, white. This is a rare species, known only from Brazil (Moeller) and rare there, for Father Rick has never found it.

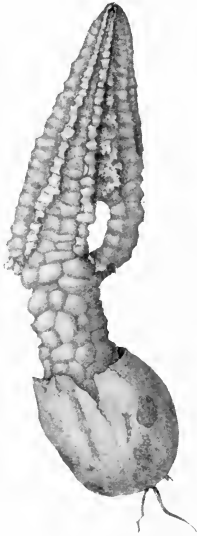


Fig. 66.

PSEUDOCOLUS JAVANICUS.



Fig. 68.

PSEUDOCOLUS
FUSIFORMIS.

PSEUDOCOLUS JAVANICUS (Fig. 66).—From the illustration this seems to be very similar to the preceding species from Brazil. However, this is of a pale red color and grows in Java. It is a very rare plant and is only known from one specimen collected by Penzig. We reproduce Penzig's drawing, which is enlarged twofold from the plant.

PSEUDOCOLUS RUGULOSUS (Fig. 67).—Columns three, slender, united at the apex and into a short stipe at the base. The inner side of the columns are strongly rugulose, fluted. The stipe very short and included in the volva. *Color, red.* All that is known of this species is a figure preserved at Kew and made by Kurz in Java. It was referred to *Laternea triscapa*. If it exists at all it must be quite rare, for neither Penzig nor Dr. Bernard has found it.

PSEUDOCOLUS FUSIFORMIS (Fig. 68).—This species is based on a figure in the Museum at Paris, made on the Island of Reunion (near Madagascar). The plant is red; otherwise, our photograph of this figure (Fig. 68) is all that is known about it. If the plant was correctly drawn, as it seems to be, it appears to me to be very distinct from all the other species. Professor Fischer based the name *fusiformis* on this figure, afterwards withdrew it, referring the plant to *Pseudocolus Javanicus* of Java. That does not seem possible to me.



Fig. 67.

PSEUDOCOLUS RUGULOSUS.
(From the original sketch.)



Fig. 69.

**PSEUDOCOLUS
ROTHAE.**
(From the original
sketch.)

PSEUDOCOLUS ROTHAE (Fig. 69).—Columns three, slender, united above and below into a short stipe which does not extend beyond the volva. Color, rich orange. This species is represented at Kew by two collections from Australia. It seems very similar to the preceding from Java, but is evidently a much more slender species. As no other illustration of it is known, we give a copy of a crude sketch by Bailey, sent with the plant.



Fig. 65.

PSEUDOCOLUS GARCIAE.

THE GENUS CLATHRUS.

This genus has a receptacle consisting of a simple "sessile" network, bearing the gleba on the inner side. When young, the gleba forms a mass, filling the center of the egg; but as the plant expands, the gleba deliquesces and remains attached to the inner surface of the receptacle. The genus *Clathrus* as comprised in this pamphlet consists of two very distinct genera. *Clathrus* (true), with the receptacle composed of large cells, and *Ileodictyon*, with the receptacle formed of tubes. *Clathrus cancellatus* belongs to the former; *Clathrus cibarius* and *gracilis* to the latter. Where the other species belong we do not surely know, and hence do not attempt to maintain them as two genera.

CLATHRUS CANCELLATUS (Fig. 70).—Color, bright red. Meshes of the network subequal. Receptacle subglobose, composed of large cells, becoming torn and lacerate on the inner surface, the outer surface smooth, even. This well-known species is a native of Southern Europe. It is not rare in Italy and Southern France. It is a plant of warm regions and does not occur in Northern Europe except where the climate is modified by the Gulf Stream. It is found rarely on the channel coast, both of France and England, and even extends up into Holland. It occurs in Northern Africa, and has

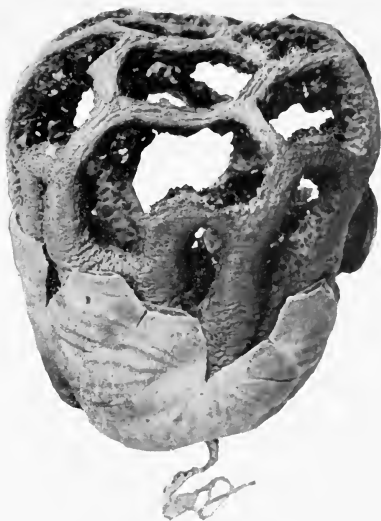


Fig. 70.

CLATHRUS CANCELLATUS.



Fig. 71.

CLATHRUS AMERICANUS.



Fig. 74.

CLATHRUS
CAMERUNENSIS.

been collected at a few stations in Florida and Georgia in the United States. In our country it is rare, and only known with certainty from the South.

CLATHRUS AMERICANUS (Fig. 71).—Color, red. Receptacle, elongated. Meshes subequal above, elongated below. Outer surface slightly grooved, smooth. This is a species of Brazil and the West Indies. It reached me first from Father Schupp, of Brazil, who sent a photograph (Fig. 71) and a dried specimen. Then from

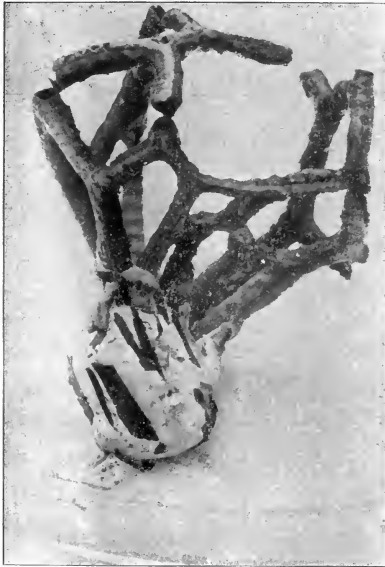


Fig. 72.

CLATHRUS TREUBII.

L. J. K. Brace, from the Bahamas, sent in liquid. In general form it appears to be very much like *Clathrus pusillus*, of Australia, but according to the original figure, that has much more slender branches. At Berlin I found a specimen (unnamed) from Paraguay.

CLATHRUS TREUBEI (Fig. 72).—Color, bright red. Receptacle of large meshes above, below columned. The branches of the receptacle are *tubular*, smooth externally and corrugated on the inner surface. They are reduced in diameter above, and when old they

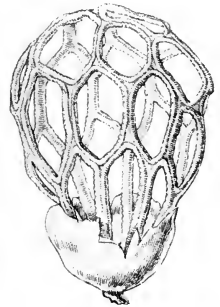


Fig. 73.

CLATHRUS PUSILLUS.

break apart, and the primary columns separate. *Clathrus Treubei* was recently described by Dr. Bernard, from Java. At Upsala there are alcoholic specimens collected in Java by E. Nyman, and an old specimen of the same collection was discovered at Berlin to be a new species of *Laternea* (pentactina).



Fig. 74a.

CLATHRUS CRISPATUS.

(Egg.)

CLATHRUS PUSILLUS (Fig. 73).—Color, bright ruby red. Meshes subequal above, elongated below. Branches of the receptacle wrinkled. This species is only known from the original collection made on the Swan River, Australia, more than sixty years ago. What is apparently a very good figure of it (Fig. 73) was given by Berkeley, though it seems to me the branches of the receptacle are more slender than is borne out by the specimens at Kew.

CLATHRUS CAMERUNENSIS (Fig. 74).—This species was described from Camerun, Africa, and figured. The figure appears to be very much the same as *Clathrus pusillus* from Australia, but the African plant is said to be dark olive and the Australian red. The type is in alcohol at Berlin. It seems to be an *Ileodictyon* with tubular arms. The most marked feature of it to me is the reduced diameter of the upper bars.

CLATHRUS CRISPATUS (Fig. 74a).—This species is only known from the elevated regions of Ceylon and is imperfectly known from there. It was

originally sent to Europe (dried specimens) many years ago, and referred to *Clathrus cancellatus*, to which it seems to have little resemblance. The net is composed of broad, flattened bars which form small meshes. The color is red. No photograph or drawing is known (in Europe) but it must be quite different in appearance from *Clathrus cancellatus*. We reproduce a photograph of an unopened egg. This has a tubercular surface, corresponding to the form of the enclosed net, and is a character not seen at all in the European species. At the British Museum there is a species from *Yucatan* (!) that seems to be this species. Mr. Petch, who has rarely seen it, writes me that the bars are flattened-triangular in section, the broad, flat surface exterior.

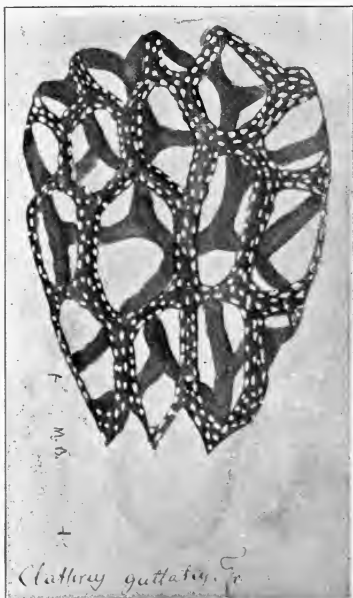


Fig. 75.

CLATHRUS GUTTULATUS.

CLATHRUS GUTTULATUS (Fig. 75).—Color, bright red. Branches of the net narrow, thin, smooth. They appear to be tubes. Color, bright red. Nothing is known of this species excepting the original figure in the collection of Fries. It was made by Oersted, from St. Thomas. The guttae appear to me to be spots of white lead on the drawing, intended to show the porous nature of the receptacle.

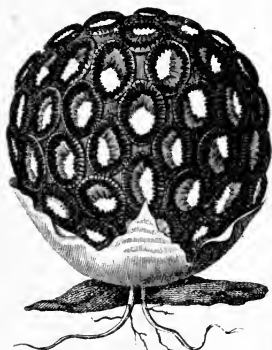


Fig. 76.

CLATHRUS CRISPUS.

CLATHRUS CRISPUS (Fig. 76).—Color, salmon. Receptacle, subglobose, with subequal meshes. Branches of the receptacle broad,

strongly wrinkled. This seems to be a frequent species in the West Indies and is recorded also from Mexico and South America. Plumier, two hundred years ago gave a crude but evident figure of it. Next it seems to have been very characteristically figured by Turpin (Fig. 76). It was sent to Berkeley from Uruguay. It has been recorded several times, mostly from the West Indies. No photograph is known, but the original drawing seems characteristic.



Fig. 77.

CLATHRUS PSEUDOCRISPUS (reduced one-third).

CLATHRUS PSEUDOCRISPUS (Fig. 77).—A figure (Fig. 77) of what is probably only a form of *Clathrus crispus* is found at Kew from Dr. McCarty, Montego Bay, Jamaica. It differs from *crispus*, as is shown by the figure, in having the meshes below elongated. Whether it is a distinct species, a distinct form, or whether *crispus* really has this character we do not know. The color as shown is dark red.

CLATHRUS PSEUDOCANCELLATUS.—This plant was named from Central Africa. It was orange-red and described as having broad, flattened branches. No figure has been given of it from which any idea whatever can be gained of the general appearance of the plant, nor could I form a much more definite idea from the types in alcohol at Berlin. They were probably originally in formalin as they have lost all definite form.

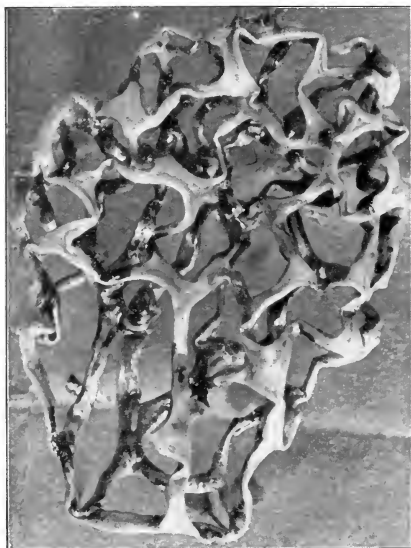


Fig. 79.

CLATHRUS GRACILIS.

CLATHRUS CIBARIUS (Fig. 78).—Color, white. Receptacle with smooth, tubular branches and large, pentagonal meshes. Our figure (78) will give an idea of the general appearance of this plant, but not of the size, for the photograph is evidently much reduced. The plant is four or five inches in diameter. It is a very common species in New Zealand, and it occurs rarely in Australia. It also grows in Chile, and a curious form has been collected in Brazil. It is said that the natives of New Zealand formerly employed the plant for food, hence the name.

CLATHRUS AFFINIS.—At the British Museum there is a specimen collected by G. A. Ramage, Pernambuco, Brazil, which is certainly a distinct form if not specifically distinct. It has the general appearance of *Clathrus*

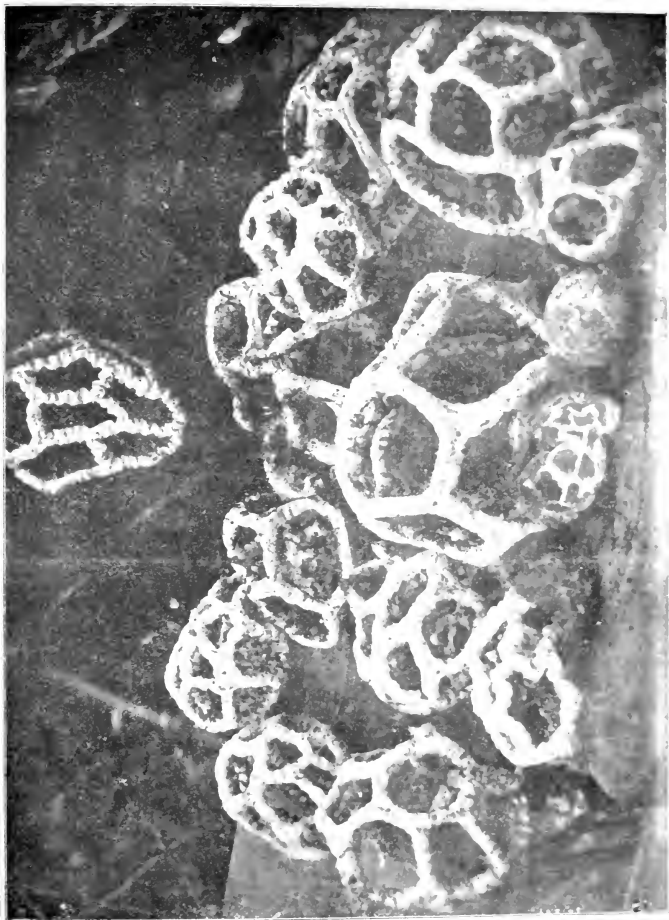


Fig. 78.

CLATHRUS CIBARIUS.
(Reduced about one-half.)

cibarius, but the arms of the upper meshes are narrower than those of the lower, and the latter are somewhat columnar, so that the lower meshes are elongated.

AFRICAN FORM(?).—At the British Museum there is a plant from Africa which, if not a form of *Clathrus cibarius*, is very close. There is a sketch with it which is yellowish (and I understand that the New Zealand type form is white), but otherwise it seems to be the same.

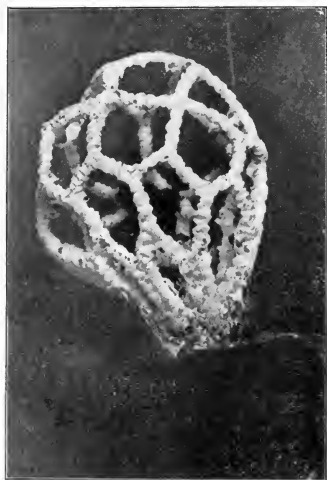


Fig. 80.

CLATHRUS CHRYSOMYCELINUS.



Fig. 81.

CLATHRUS PREUSSII.

CLATHRUS GRACILIS (Fig. 79).—Color white or pale. Receptacle large, globose, with large meshes. The branches of the mesh are flattened, very narrow and slender, and vary from 2 to 3 mm. in breadth. *Clathrus gracilis* is the most common phalloid in Australia. There are numerous collections at Kew, and it reaches me from several collectors. It is very much like *Clathrus cibarius* of New Zealand, in fact might be considered as a small form of it. It does not seem to occur in New Zealand. It is reported from South Africa, and at

Paris there is a very poor specimen, which has been called *Clathrus Fischeri*, but which appears to be *Clathrus gracilis*. The specimen is too poor to judge, however. Notwithstanding that *Clathrus gracilis* is the most common phalloid in Australia, we know of no photograph of it and have to resort to one made from alcoholic material, devoid of volva, which gives only a vague idea of the plant.

CLATHRUS CHRYSOMYCELINUS (Fig. 80).—Receptacle white, with large, polygonal meshes; those below somewhat lengthened. The receptacle arms are united at the base. Mycelium described as being bright golden yellow, hence the specific name. This species is only known from Brazil. Father Schupp finds it, and he writes me the mycelium is not always yellow.



Fig. 82.

CLATHRUS DELICATUS.

CLATHRUS PREUSSII (Fig. 81).—This species from Kamerun, Africa, is one of the few white species of *Clathrus* known. The receptacle has broad, flat arms that are more narrow above. The figure which was published by Fischer shows the plant with the volva cut away. It is only known from the original collection in alcohol at Berlin. The bars of the network are cellular (not tubular) and have a somewhat quadrilateral shape, different from all other known species of *Clathrus*.

CLATHRUS DELICATUS (Fig. 82).—This unique little *Clathrus* is the smallest of the genus and disputes with *Mutinus xylogenus* the distinction of being the smallest phalloid known. It occurs only in Ceylon as far as known. The color is white, and the structure of the arms is tubular, hence it should be included in the genus *Ileodictyon* if taken out of *Clathrus*. The gleba is collected in little globose masses at the nodes of the net.

THE GENUS SIMBLUM.

The genus *Simblum* can be described in a few words as being a *Clathrus* on a stalk. In most of the species known the meshes are more compact than is usual in *Clathrus*. The genus *Simblum* was

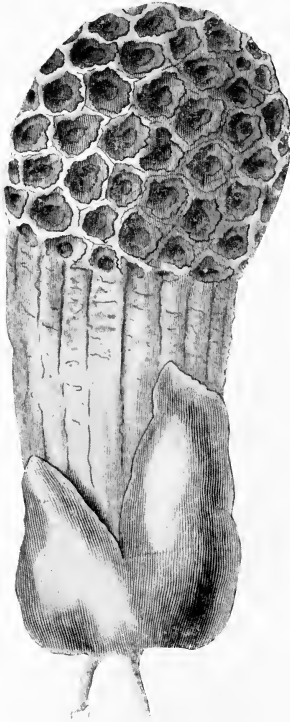


Fig. 83.

SIMBLUM PERIPHRAGMOIDES.

originally known from Mauritius, then from South America, Java, and finally from the United States. At Kew we found an unnamed species from Africa, and there is a doubtful one from Australia. It can be divided into two series according to the color, yellow and red, which seem distinct and do not run into each other. However, the red series has pale or white forms.



Fig. 87.

SIMBLUM MÜLLERI.



Fig. 84.

SIMBLUM GRACILE.



Fig. 85.

SIMBLUM TEXENSE.

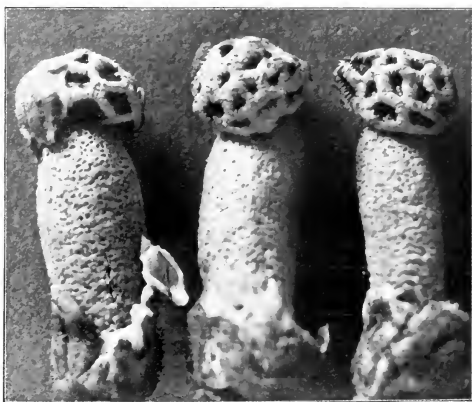


Fig. 86.

SIMBLUM SPHAEROCEPHALUM.

SIMBLUM PERIPHFRAGMOIDES (Fig. 83).—Volva, white. Stipe 3 to 4 inches long by 2 broad, hollow, striate, yellow. Receptacle globose, with small meshes, yellow. This species, which was originally from Mauritius, was sent to Hooker and published in 1831. It is evidently rare in Mauritius, for Dr. O'Connor, who resides there and has collected several other phalloids of this island, but lately found it. The following species, which is common in Java, I at first thought was distinct from its slender form, but at Upsala I have recently seen a series of alcoholic specimens from Java, some so much like the original specimens that I now think them to be one species.

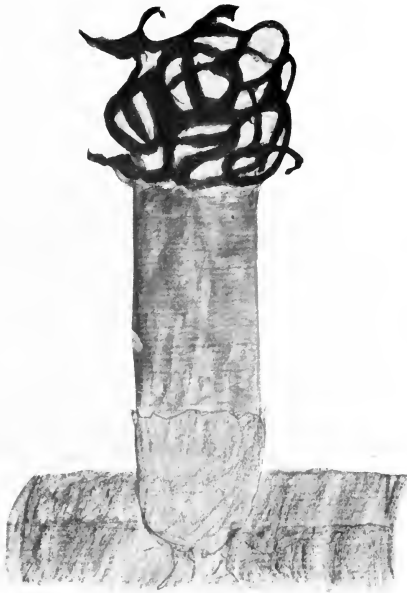


Fig. 88.

SIMBLUM CLATHRATUM.

SIMBLUM GRACILE (Fig. 84).—This has all the characters of the previous excepting the slender form. It is yellow, with a globose head of small meshes. It is a very common species in Java, Ceylon, and India, and has been reported from China. I am convinced, from an examination of a series of alcoholic specimens from Java, at Upsala, that it can not be kept distinct from the preceding species.

SIMBLUM TEXENSE (Fig. 85).—This species, which is only known from Texas, has the same yellow color character as the preceding. It differs in the nature of the network (best shown in our figures) and in the clathrate portion abruptly contracted into the stipe. An excellent account of it has been given by Professor Long.

SIMBLUM SPHAEROCEPHALUM (Fig. 86).—This species differs from those that precede by being red, though pale or white forms occur. It was first noted in South America, where it is an extremely common plant. Then it was published from the United States,¹³ where it is rare, and it reached me from the Bahamas. In shape it is the same as *Simblum Texense*, and the photographs without color notes could not be told apart.

SIMBLUM MÜLLERI (Fig. 87).—This species, which is known from a drawing made from a dried specimen from Australia, is very different from all others in its open network. In its general appearance it is close to *Clathrus pusillus*, excepting that the clathrate portion is borne on a distinct though short stem. When the phalloids of Australia are well known, it may be found that *Clathrus pusillus* varies in this respect and that this is really only a stalked form.

SIMBLUM CLATHRATUM (Fig. 88).—Stem hollow, pale reddish tint, $2\frac{1}{2}$ cm. thick x 7 cm. high. Receptacle a loose, clathrate structure, with large meshes to the net and slender branches. Color, bright red. The clathrate portion is fragile and easily broken. The specimen grew in the botanical garden at Old Calabar, Africa. It is the first red *Simblum* known from Africa, although the original species of the genus came from Mauritius. It was a yellow plant. The only similar plant known is *Simblum sphaerocephalum* from America, which differs widely in having a compact net of small meshes. The specimen and a colored drawing by J. W. Holland are at Kew.

THE GENUS COLUS.

This genus is a *Clathrus* supported on columns which are united at the base into a stipe. Only one species is known, and that only from the Mediterranean regions.

COLUS HIRUDINOSUS (Figs. 89 and 90).—This is a small phalloid, that, as far as is known, grows only in the Mediterranean regions. Originally from Corsica, it was named from Southern France. It has been found in Algeria, and Father Torrend, of Portugal, has recently discovered it abundant in the sand. In Corsica, the original observer stated, it grew only on manure, but the other records are from unnamed places. The color is red; the other characters are all those of the genus and are best shown in our photographs.

In some publications, the genus *Colus* includes plants that in my opinion have very little resemblance or relation to the original species. These we have separated under the name *Pseudocolus*.

¹³ The only stations known are Long Island, N. Y., Gerard; Nebraska, J. M. Bates; Kansas, E. E. Bartholomew; Washington, D. C., W. H. Scudder; Talbot County, Maryland, Chas. McIlvaine. When any one finds this rare plant in the United States I request that it be reported to me so that we can keep a record of its known stations.

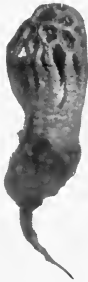


Fig. 89.

COLUS HIRU-
DINOSUS.
(Natural size.)



Fig. 90.

COLUS HIRUDINOSUS.
(Enlarged.)

THE GENUS KALCHBRENNERA.

This is a very peculiar genus, known only from South Africa, and but one species. It has a stipe bearing a clathrate structure similar to the genus *Simblum*, but from the net proceed large, knobbed projections.

KALCHBRENNERA CORALLOCEPHALA (Figs. 91 and 92).—The only species grows in South Africa, and there appears to be rather a frequent plant. It is a very showy plant, of a bright red color in all its parts. The gleba covers the outer portion of the net and to an extent hides the network. It was a number of years before its correct structure was known, and it was Kalchbrenner who made a good picture of it and first showed it.



Fig. 91.

KALCHBRENNERA CORALLO-
CEPHALA.

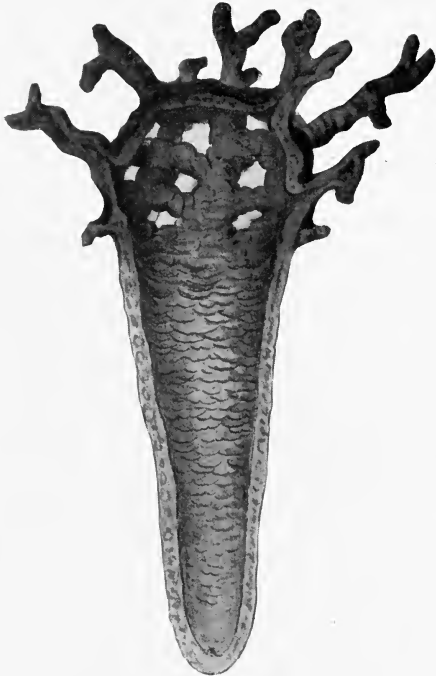


Fig. 92.

KALCHBRENNERA CORALLOCEPHALA.
(Section.)

RELATED PLANTS.

It is a disputed question whether *Phallogaster saccatus* is a phalloid or not. It has no volva as other phalloids have, hence is excluded by some who are theorizing on such things. I do not believe that any one familiar with the fresh plant will ever place it anywhere except with the phalloids. It has the same greenish, fetid gleba that is associated with the phalloids, the same spores and basidia, and it deliquesces in the same way. It seems to me that its relations are entirely with the phalloids, notwithstanding it has no volva.

THE GENUS PHALLOGASTER.

Plants devoid of a volva, the gleba borne in the inner tissue. Peridium white, smooth. In ripening the inner tissue and gleba deliquesce, and the latter adheres to the inner side of the peridium, which breaks irregularly and exposes the adhering gleba.

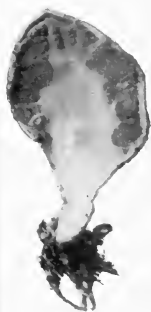


Fig. 93.

PHALLOGASTER SACCATUS.



Fig. 94.

PHALLOGASTER SACCATUS.
(After dehiscence.)

PHALLOGASTER SACCATUS (Figs. 93 and 94).—This species occurs only in the United States and Canada, as far as known, and it is a rare plant there. It has only been known for a few years. I think there can be no trouble in identifying it from our photographs. Another species has been recently published, which appears to me to be rather a depauperate form.

APPENDIX I.

GEOGRAPHICAL DISTRIBUTION.

The real study of the phalloids, as I view it, is the correct characters of the species, the simplest grouping of them into genera, and their distribution. We present a synopsis of the number of phalloids known to occur in various countries, and where the same species occurs in different countries it is included in each. We include as different phalloids all the various forms named in this pamphlet, and all the alleged species so named, whether doubtful or well known.

General Distribution.

When the subject is well known, I think, it will be found that several species are of very wide distribution, but at present we only know two.

Phallus indusiatus occurs without doubt in every tropical country of the world. We give on page 18 the countries from which we have seen specimens, and the list does not embrace perhaps half of the countries where it occurs.

Phallus rubicundus (under the names *aurantiacus*, *gracilis*, etc.) also seems to occur in most warm countries.

	Europe.	North America.	West Indies.	South America.	Australia and New Zealand.	Africa.	Ceylon and India.	Japan and China.	East Indies.
<i>Anthurus</i>, . . . . .	..	..	..	..	3	..	1	..	..
<i>Aseroe</i>, . . . . .	..	..	..	..	6	1	2	2	2
<i>Clathrus</i> ,	1	1	4	5	3	4	2	..	1
<i>Clautriavia</i>, . . . . .	..	..	..	..	1	..	1	..	1
<i>Colus</i> ,	1	..	..	..	..	1	..	..	..
<i>Floccomutinus</i>, . . . . .	..	..	..	..	..	1	..	..	..
<i>Itajahya</i>, . . . . .	..	..	..	1	..	..	..	..	..
<i>Jansia</i>, . . . . .	..	..	..	..	1	..	1	1	2
<i>Kalcbrennera</i>, . . . . .	..	..	..	..	..	1	..	..	..
<i>Laternea</i>, . . . . .	..	1	3	3	1(?)	1	..	1	..
<i>Lysurus</i> ,	1	1	..	3	2	1	1	1	..
<i>Mutinus</i> ,	1	3	..	3	3	..	1	2	3
<i>Phallogaster</i>, . . . . .	..	1	..	..	..	..	..	..	..
<i>Phallus</i> ,	2	5	2	8	10	6	3	5	9
<i>Pseudocolus</i>, . . . . .	..	..	..	1	1	1	..	..	2
<i>Simblum</i>, . . . . .	..	2	1	1	1	2	..	..	1
Total,	6	14	10	25	31	19	12	12	21

Europe.

There are but six phalloids in Europe (including one form). *Phallus impudicus* is the most common and widespread. The form *Phallus imperialis* is rare and local. *Mutinus caninus* is not rare. *Clathrus cancellatus* is of a southern range. It occurs mostly in southern France, Italy, etc. *Colus hirudinosis* is confined to the Mediterranean region. It occurs in Corsica, Southern France, Portugal. *Lysurus borealis* is probably an introduced species. It is known from one collection in Germany and two in England.

United States and Canada.

We have fourteen phalloids in our country. *Phallus Ravenelii* and *Phallus duplicatus* are the most frequent. The form *Phallus imperialis*, which with us replaces *Phallus impudicus* of Europe, is of a Western range, found in California, Colorado, and Texas. But one Eastern station is known, Washington, D. C. *Mutinus elegans* is our most common *Mutinus* in rich woods. *Mutinus caninus* is an Eastern species, and *Mutinus Ravenelii* is local and rare. *Laterna columnata* is common in the South, and *Clathrus cancellatus* is very rare and only known with certainty from the South. *Phallus rubicundus* seems to be fairly common in the South. *Simblum sphaerocephalum* is very rare. A list of known stations is given on page 67. *Simblum Texense* is known only from Texas. *Lysurus borealis* seems to be an introduced plant. Of late years it has been found a number of times, chiefly in the East and in cultivated stations. *Phallogaster saccatus* is of rare occurrence. In addition I have a specimen in alcohol from Florida, species not sure, but probably *Phallus gracilis*.

West Indies.

The phalloids of the West Indies are not well known. Undoubtedly when well observed, several of the Brazilian species will be found in the West Indies. *Clathrus crispus* (and a doubtful form, *pseudocrispus*); *Clathrus Americanus*, recently found in the Bahamas by Mr. Brace; *Clathrus guttulatus*, known only from an old drawing; *Phallus indusiatus*, common; *Phallus rubicundus*, probably common; *Laterna columnata*, common; *Laterna pusilla*, known from one collection; *Laterna triscapa*, known only from an old drawing, and *Simblum sphaerocephalum*, recently collected in the Bahamas by Mr. Brace.

South America.

Most excellent work has recently been done on the phalloids of Brazil by Moeller, and to this work is due most of our knowledge of South American phalloids. He has published in a superb manner *Clathrus chrysomycelinus*, *Pseudocolus Garciae*, *Laterna columnata*, *Laterna rhacodes*, *Mutinus hambusinus*, *Phallus subtilis*, *Phallus glutinolens*, *Phallus indusiatus* (and a form, *Moelleri*), *Phallus callichrous* (which is probably only a color form of *indusiatus*), and *Itajahya galericulata*, a genus only known from South America.

Simblum sphaerocephalum is a most common phalloid in South America, but does not seem to have been found by Professor Moeller. *Clathrus Americanus* is a recent species from Rev. F. A. Schupp, Brazil.

Rev. J. Rick finds in his locality (Sao Leopolda) the following: *Simblum sphaerocephalum*, *Phallus indusiatus*, *Pseudocolus Garciae*, *Laterna columnata*, *Laterna rhacodes*, and *Clathrus Americanus*.

There have been several imperfectly known phalloids from South America. We would list *Phallus Farlowii*, *Mutinus australis*, *Lysurus Sanctae-Catherinae*, *Phallus roseus* (a form of *indusiatus*), *Mutinus xylogenus*, *Lysurus cruciatum*, *Phallus campanulatus*, *Lysurus Clarazianus*, *Clathrus affinis* (a form of *cibarius*, known only from a specimen in the British museum), *Laterna Spegazzini*, and *Laterna crispus*. In addition, several have been proposed by Spegazzini, but they are mostly only word-descriptions, and nothing can be told about them. For me an unillustrated phalloid has no place excepting in the rejected columns. There has also been a "new genus," *Albofiella*, illustrated by Spegazzini. Professor Fischer has suggested, not without reason it seems to me, that it was based on a *Phallus* with an accidental volva cap. Robert E. Fries suggests it was based on *Itajahya galericulata*. If true, in either case, the work was very poorly done.

Australia and New Zealand.

I consider the phalloids of Australia and New Zealand for the most part very imperfectly and inaccurately known. The new species were mostly proposed forty or fifty years ago and illustrated by figures reconstructed from dried specimens, often inaccurate it seems to me, and nothing since has been learned of them. The subject has gotten into such a condition that the local workers in these countries seem to be able to make but very little of their species, and the result is there have been very few original papers by the mycologists of these countries. It is time our friends there observed their phalloids and gave us good accounts and photographs of them. If Australian mycologists will take as a model the photographs and account given on page 42 by Professor D. McAlpine, of *Anthurus aseroeformis*, and supply similar photographs and accounts, it will only be a few years until we have a much better knowledge of the subject.

The two most frequent phalloids are *Clathrus cibarius* and *Clathrus gracilis*, the former in New Zealand, the latter in Australia. Neither has been satisfactorily illustrated. *Anthurus aseroeformis*, a rare species but well known, due to Professor McAlpine. *Phallus indusiatus* is a frequent plant, but the forms and color forms are not worked out. The genus *Aseroe* is at home in Australia. It seems to take very different forms, but their value in classification is not known. With the exception of the above, I consider all the other Australian species more or less doubtful and little known, viz: *Phallus impudicus*, *Phallus rubicundus*, *Phallus multicolor*, *Phallus callichrous*, *Phallus Rochesterensis*, *Phallus discolor*, *Phallus calyptatus*, *Phallus retusus*, *Phallus quadricolor*, *Mutinus pentagonus*, *Mutinus curtus*, *Mutinus papuasius*, *Jansia annulata*, *Lysurus Australiensis*, *Lysurus* (unnamed), *Anthurus Muellierianus*, *Anthurus Archeri*, *Aseroe* (all the five recorded forms, *rubra*, *pentactina*, *Hookeri*, *Muelleriana*, *lysuroides*), *Laternea columnata* (very ??), *Pseudocolus Rothae*, *Clathrus pusillus*, *Simblum Mülleri*. In addition, there is a curious species, *Clautriavia Lauterbachii*, only known from an egg from the neighboring island of New Guinea, and a pale *Aseroe* (*pallida*) is recorded from New Caledonia.

Samoa.

I have spent two winters in Samoa and have hunted the fungi thoroughly. I am satisfied that *Phallus indusiatus* is the only common phalloid that grows on the island, and it is not at all rare. In the museum at Berlin is a specimen labeled *Clathrus gracilis* (and it seems to be correct), also a *Mutinus* (unnamable). Both genera must be very rare in Samoa, as I found neither.

Africa.

Many years ago *Simblum periphragmoides* was well illustrated from Mauritius, and was only recently found again. A slender form is very frequent in the East Indies. *Kalchbrennera corallocephala*, a most striking species, was well illustrated by Kalchbrenner thirty years ago. *Phallus indusiatus* is a common species and has reached me several times from Africa. *Colus hirudinosus* occurs in North Africa. *Lysurus Woodii*, *Laternea Angolensis*, *Clathrus subacutus*, and *Phallus canariensis* were imperfectly published years ago, and nothing has been added to them since.

In recent years Africa has been a fertile field for "new species," but the work has not been done as it should have been. Such work would have passed forty years ago, but it is out of date now. The following have been added, mostly in this manner, in comparatively recent years: *Floccomutinus Zenkeri*, *Phallus rubicundus* (?), *Clathrus camerunensis*, *Clathrus pseudocancellatus*, *Clathrus Preussii*, *Clathrus gracilis* (?), *Simblum clathratum*, *Pseudocolus fusiformis*, *Phallus callichrous*, *Clathrus cibarius* (?). Fine specimens of many of these are in alcohol in the museum at Berlin.

Mr. Chas. O'Connor has been observing the phalloids of Mauritius. He finds the only common one to be *Phallus gracilis*. More rarely he has observed *Phallus indusiatus* and *Phallus Mauritianus*, a related plant. He has only recently rediscovered *Simblum periphragmoides* which was originally from Mauritius, but is very rare there.

Ceylon.

For many years we have had a very imperfect knowledge of the phalloids of Ceylon, but a very recent paper by T. Petch has set the matter right. The following species occur in Ceylon: *Jansia rugosa* (rare, and considered by Petch to be *Mutinus proximus*), *Mutinus proximus* (known only from dried specimens and sketch), *Phallus tenuis* (only previously known from Ceylon from dried specimen at Kew, but recently again reported from Ceylon), *Phallus indusiatus*, the most common phalloid and takes many color forms, viz: callichrous and multicolor), *Clautriavia merulina* (common in the Botanic Gardens at Peradeniya), *Simblum gracile*, common, *Lysurus Gardneri* (rare in Ceylon, but most abundantly represented in the museums at Kew, there being 25 specimens), *Aseroe Zeylandica*, rare in the elevated regions, *Aseroe arachnoidea*, very rare. In addition the unique little *Clathrus delicatus* is only known from Ceylon.

India.

Seventy years ago Perrottet sent Montagne a few phalloid sketches and dried specimens on which were based *Phallus rubicundus* (published as *aurantiacus*), *Anthurus Calathiscus* (supposed to have been very inaccurately published). In addition a few specimens of *Phallus indusiatus* have reached Europe from India, and these are all, I think, that are known from India. At the British Museum there are ten times as many specimens of extinct elephant remains from India as there are of the *live phalloids* that every naturalist in India must observe.

Mr. Hutchins writes me from North Bengal that *Phallus indusiatus* is common, but is the only phalloid he finds. Mr. G. H. Krumbiegel sent me from North Bengal a dried phalloid which, while I would not attempt to reconstruct it, I recognize as a genus unknown.

Java.

From no country in the world have we had a better account of the phalloids than from Java, which was published by Penzig. The following were well illustrated and described by him: *Mutinus bambusinus*, *Mutinus Fleischeri*, *Jansia elegans*, *Jansia rugosa*, *Phallus tenuis*, *Phallus costatus* (form?), *Phallus favosus* (form?), *Phallus indusiatus*, *Clautriavia merulina*, *Phallus multicolor*, *Simblum gracile* (form), *Pseudocolus Javanicus*, *Aseroe arachnoidea*.

Dr. Chas. Bernard has given us a good photograph and account of *Clathrus Treubei*, and has sent me a collection of the Javanese species in alcohol, from which some good photographs have been made.

Aseroe Zeylandica (under the name *Junghuhnii*) was published from Java many years ago, but is very rare and only rediscovered by Dr. Bernard recently. *Pseudocolus rugulosus* is based on an old drawing from Java, and no specimen is known. From the neighboring islands, *Mutinus borneensis* is vaguely described from Borneo and *Phallus celebicus* from the Celebes.

Dr. Chas. Bernard gives the following synopsis of the relative frequency of the phalloids he has observed in Java: *Mutinus bambusinus*, *Clautriavia merulina*, *Phallus indusiatus*, and *Simblum gracile* are common throughout the season, though more abundant, of course, during the rainy season. *Aseroe arachnoidea*, *Jansia elegans*, *Jansia rugosa*, *Phallus multicolor*, and *Clathrus Treubei* are rarer species and will probably only be found during the rainy season. *Aseroe Zeylandica* is a very rare phalloid and only recently rediscovered.

Japan.

An account of the phalloids of Japan was published in *Mycological Notes*, page 400. It was based on notes, drawings, and specimens from Professors Kusano, Gono, and Yasuda. The following were included: *Phallus indusiatus*, *Phallus impudicus*, *Phallus rugulosus*, *Phallus tenuis* (rare), *Jansia boninensis* (as *Mutinus*), *Lysurus Mokusin*, and *Laternea bicolonnata*. In addition, *Phallus rubicundus* under the name *aurantiacus* has been said to grow in Japan.

China.

Little is known as to the phalloids of China, although *Lysurus Mokusin* from China was among the first foreign phalloids figured.

Some alcoholic specimens were sent to Patouillard at Paris a few years ago from Tonkin, and the following species recorded: *Aseroe Zeylandica*, *Phallus indusiatus*, *Phallus gracilis*, *Mutinus bambusinus*, *Mutinus minimus*, *Mutinus borneensis*.

APPENDIX II.

LOST, STRAYED, OR STOLEN.

The following phalloids have not been heard from since they were originally exploited and grave fears are entertained as to their survival. Vague rumors have been circulated of one or two of them having been seen, but when traced to the source have usually resulted from a mistaken identification. Any one noticing a stray phalloid in their neighborhood is requested to seize it and send it in with such notes and marks as may lead to its identification.

	Whence Exploited	Has not been heard from for
<i>Anthurus Müllerianus</i>	Australia	Thirty years.
<i>Anthurus Archeri</i>	Australia	Fifty years.
<i>Anthurus Calathiscus</i>	India	Sixty-eight years.
<i>Clathrus pusillus</i>	Australia	Sixty-five years.
<i>Laternea pusilla</i>	Cuba	Forty years.
<i>Laternea triscapa</i>	West Indies	Eighty-seven years.
<i>Laternea angolensis</i>	Africa	Forty years.
<i>Lysurus cruciatus</i>	French Guiana	Sixty-five years.
<i>Lysurus Clarazianus</i>	South America	Thirty-six years.
<i>Lysurus Sanctae Catherinae</i>	South America	Twenty years.
<i>Lysurus Woodii</i>	South Africa	Thirty years.
<i>Mutinus curtus</i>	Australia	Sixty-five years.
<i>Mutinus papuasius</i>	Australia	Thirty years.
<i>Mutinus discolor</i>	Australia	Thirty years.
<i>Mutinus xylogenus</i>	French Guiana	Fifty-five years.
<i>Phallus Daemonum</i>	Amboy	One hundred and sixty-six years.
<i>Phallus quadricolor</i>	Australia	Twenty-six years.
<i>Phallus calypttratus</i>	Australia	Twenty-six years.
<i>Phallus retusus</i>	Australia	Twenty-five years.
<i>Phallus subuculatus</i>	North Africa	Sixty years.
<i>Pseudocolus fusiformis</i>	Reunion	Thirty years.
<i>Simblum Mülleri</i>	Australia	Twenty years.

APPENDIX III.

SYNONYMS.

There have been nearly three hundred names proposed for phalloids and only about one hundred have been retained in this pamphlet. The other two-thirds are, in our opinion, superfluous. It is an easy matter to propose a new name, but when once proposed it is impossible to ever get rid of it. Writers can refer to "synonymy" all they please, but the next man that comes along has to dig it up and go all over it again, for no two men ever agree as to all the details, and each man is entitled to his own opinion.

Many of the following names are the discoveries made by those who discover "new species," which seem to me to have been "new" chiefly to the discoverer. A large part of the synonyms are from changing plants from one genus to another or making new genera out of sections of old genera. Personally we do not maintain many of these innovations, for the old established genera seem better to us. Of the new genera proposed in the last twenty years we only maintain *Itajahya*, *Jansia*, *Phallogaster*, *Clautriavia*, *Floccomutinus*, and *Pseudocolus*. (The latter we had the assurance to propose ourselves.) Professor Fischer has worked over this same ground and reduced many of these same names to synonymy, and while we agree with him in many instances we have copied him in none, for in every case we have looked up the evidence and formed our own opinion. We have not been as free as he in reducing species, for perhaps twenty names recognized as good in this pamphlet Professor Fischer puts in synonymy. While we suspect many of these have little value, we give them, in all instances, the benefit of the doubt.

There is one class of "new species" exploiters that I have not bothered much with—those who propose new species without illustrating them. In a subject such as the phalloids, where a good illustration tells most of the story, there is no excuse for any one to try to describe a phalloid in words. It ought to be a recognized crime, with a heavy penalty. Such species are listed here as "Nomina nuda." The phalloid fakers who fake up pictures are perhaps worse. The following names are those which in our opinion should be placed in synonymy and the reasons.

<i>Anthurus australiensis</i>	See <i>Lysurus</i> .
<i>Anthurus borealis</i>	See <i>Lysurus</i> .
<i>Anthurus Clarazianus</i>	See <i>Lysurus</i> .
<i>Anthurus cruciatus</i>	See <i>Lysurus</i> .
<i>Anthurus Sanctae Catherinae</i>	See <i>Lysurus</i> .
<i>Anthurus trifidus</i>	Nomen nudum.
<i>Anthurus Woodii</i>	See <i>Lysurus</i> .
<i>Aporophallus subtilis</i>	See <i>Phallus</i> .
<i>Albofiella argentina</i>	Supposed to be a break.
<i>Aseroe actinobolus</i>	= <i>Aseroe pentactina</i> .
<i>Aseroe Ceylanica</i>	See <i>Aseroe Zeylandica</i> .
<i>Aseroe Calathiscus</i>	See <i>Anthurus</i> .
<i>Aseroe corrugata</i>	Nomen nudum.
<i>Aseroe Junghuhnii</i>	= <i>Aseroe Zeylandica</i> .
<i>Aseroe multiradiata</i>	= <i>Aseroe Zeylandica</i> probably.
<i>Aseroe viridis</i>	= <i>Aseroe Hookeri</i> .
<i>Aserophallus cruciatus</i>	See <i>Lysurus</i> .
<i>Blumenavia rhacodes</i>	See <i>Laternea</i> .
<i>Blumenavia usambarensis</i>	= <i>Laternea angolensis</i> (?).
<i>Calathiscus Sepia</i>	See <i>Anthurus Calathiscus</i> .
<i>Calathiscus Puiggarii</i>	Nomen nudum.
<i>Caromyxa elegans</i>	See <i>Mutinus</i> .
<i>Clathrella camerunensis</i>	See <i>Clathrus</i> .
<i>Clathrella crispa</i>	See <i>Clathrus</i> .
<i>Clathrella chrysomycelina</i>	See <i>Clathrus</i> .
<i>Clathrella delicata</i>	See <i>Clathrus</i> .

Clathrella Muelleri	See Simblum.
Clathrella pseudocancellata	Nomen nudum.
Clathrella Preussii	See Clathrus.
Clathrella pusilla	See Clathrus.
Clathrella Treubei	See Clathrus.
Clathrus angolensis	See Laternea.
Clathrus albidus	=Clathrus gracilis.
Clathrus australis	Nomen nudum.
Clathrus Baumii	Nomen nudum.
Clathrus Berkeleyi	=Laternea pusilla.
Clathrus Brasiliensis	=Laternea columnata.
Clathrus columnatus	See Laternea.
Clathrus colonnarius	=Laternea columnata.
Clathrus Fischeri	=Clathrus gracilis(?).
Clathrus hirudinosus	See Colus.
Clathrus intermedius	Nomen nudum.
Clathrus parvulus	Too poorly illustrated.
Clathrus pseudocancellatus	Nomen nudum.
Clathrus Tepperianus	=Clathrus gracilis.
Clathrus triscapus	See Laternea.
Clathrus trilobatus	=Laternea columnata.
Colus fusiformis	See Pseudocolus.
Colus Garciae	See Pseudocolus.
Colus Gardneri	See Lysurus.
Colus Javanicus	See Pseudocolus.
Colus Muelleri	See Simblum.
Colus Rothae	See Pseudocolus.
Colonnaria truncata	Rafinesque's ravings.
Colonnaria urceolata	Rafinesque's ravings.
Corynites brevis	=Mutinus Ravenelii.
Corynites Curtisii	=Mutinus elegans.
Corynites elegans	See Mutinus.
Corynites Ravenelii	See Mutinus.
Cryptophallus albiceps	=Phallus imperialis.
Cynophallus bambusianus	See Mutinus.
Cynophallus caninus	See Mutinus.
Cynophallus papuasius	See Mutinus.
Dictybole texensis	A phalloid fake.
Dictyophallus aurantiacus	=Phallus rubicundus.
Dictyophallus discolor	See Phallus.
Dictyophora bicampanulata	=Phallus indusiatus.
Dictyophora brasiliensis	=Phallus indusiatus.
Dictyophora Braunii	=Phallus indusiatus.
Dictyophora callichrous	See Phallus.
Dictyophora campanulata	=Phallus indusiatus.
Dictyophora chlorocephala	=Phallus callichrous.
Dictyophora collaris	=Phallus duplicatus.
Dictyophora Daemonum	See Phallus.
Dictyophora duplicata	See Phallus.
Dictyophora echinata	=Phallus indusiatus.
Dictyophora Farlowii	See Phallus.
Dictyophora irpicina	=Clautriavia merulina.
Dictyophora Lilloi	=Phallus indusiatus.
Dictyophora merulina	See Clautriavia.
Dictyophora multicolor	See Phallus.
Dictyophora nana	=Phallus indusiatus.
Dictyophora phalloidea	=Phallus indusiatus.
Dictyophora radicata	=Phallus indusiatus.
Dictyophora rosea	=Phallus indusiatus (form).
Dictyophora speciosa	See Phallus indusiatus.
Dictyophora subuculata	See Phallus.

<i>Dictyophora tahitensis</i>	= <i>Phallus indusiatus</i> .
<i>Echinophallus Lauterbachii</i>	See <i>Clautriavia</i> .
<i>Floccomutinus Nymanianus</i>	= <i>Jansia rugosa</i> .
<i>Foetidaria coccinea</i>	= <i>Simblum sphaerocephalum</i> .
<i>Hymenophallus alboindusiatus</i>	= <i>Phallus indusiatus</i> .
<i>Hymenophallus brasiliensis</i>	= <i>Phallus indusiatus</i> .
<i>Hymenophallus duplicatus</i>	See <i>Phallus</i> .
<i>Hymenophallus Hadriani</i>	= <i>Phallus impudicus</i> .
<i>Hymenophallus indusiatus</i>	See <i>Phallus</i> .
<i>Hymenophallus radicans</i>	= <i>Phallus indusiatus</i> .
<i>Hymenophallus roseus</i>	= <i>Phallus indusiatus</i> (form).
<i>Hymenophallus speciosus</i>	= <i>Phallus indusiatus</i> .
<i>Hymenophallus subuculatus</i>	See <i>Phallus</i> .
<i>Hymenophallus tahitensis</i>	= <i>Phallus indusiatus</i> .
<i>Hymenophallus togatus</i>	= <i>Phallus duplicatus</i> .
<i>Hymenophallus tunicatus</i>	= <i>Phallus indusiatus</i> .
<i>Ileodictyon cibarium</i>	See <i>Clathrus</i> .
<i>Ileodictyon gracile</i>	See <i>Clathrus</i> .
<i>Ithyphallus aurantiacus</i>	= <i>Phallus rubicundus</i> .
<i>Ithyphallus Balansoe</i>	= <i>Phallus rubicundus</i> .
<i>Ithyphallus calyptratus</i>	See <i>Phallus</i> .
<i>Ithyphallus campanulata</i>	See <i>Phallus</i> .
<i>Ithyphallus canariensis</i>	See <i>Phallus</i> .
<i>Ithyphallus celebicus</i>	See <i>Phallus</i> .
<i>Ithyphallus coralloides</i>	= <i>Phallus rubicundus</i> .
<i>Ithyphallus costatus</i>	See <i>Phallus</i> .
<i>Ithyphallus cucullatus</i>	= <i>Phallus Ravenelii</i> .
<i>Ithyphallus favosus</i>	See <i>Phallus</i> .
<i>Ithyphallus glutinolens</i>	See <i>Phallus</i> .
<i>Ithyphallus impudicus</i>	See <i>Phallus</i> .
<i>Ithyphallus Lauterbachii</i>	See <i>Clautriavia</i> .
<i>Ithyphallus Muellierianus</i>	= <i>Phallus retusus</i> .
<i>Ithyphallus Novae Hollandiae</i>	= <i>Phallus gracilis</i> .
<i>Ithyphallus purpuratus</i>	= <i>Phallus imperialis</i> .
<i>Ithyphallus quadricolor</i>	See <i>Phallus</i> .
<i>Ithyphallus Ravenelii</i>	See <i>Phallus</i> .
<i>Ithyphallus retusus</i>	See <i>Phallus</i> .
<i>Ithyphallus rubicundus</i>	See <i>Phallus</i> .
<i>Ithyphallus rugulosus</i>	See <i>Phallus</i> .
<i>Ithyphallus sanguineus</i>	= <i>Phallus rubicundus</i> ?
<i>Ithyphallus tenuis</i>	See <i>Phallus</i> .
<i>Jansia Nymaniana</i>	= <i>Jansia rugosa</i> .
<i>Jansia Zenkeri</i>	See <i>Floccomutinus</i> .
<i>Kalchbrennera Tuckii</i>	= <i>Kalchbrennera corallocephala</i> .
<i>Kirchbaumia imperialis</i>	See <i>Phallus</i> .
<i>Laterna australis</i>	Nomen nudum.
<i>Laterna pentactina</i>	= <i>effete Clathrus Treubei</i> .
<i>Lysurus Archeri</i>	See <i>Anthurus</i> .
<i>Lysurus argentinus</i>	Nomen nudum.
<i>Lysurus aseroeformis</i>	See <i>Anthurus</i> .
<i>Lysurus Beauvaisi</i>	= <i>Lysurus Mokusin</i> .
<i>Lysurus corallocephalus</i>	See <i>Kalchbrennera</i> .
<i>Lysurus pentactinus</i>	= <i>Anthurus Archeri</i> .
<i>Lysurus Texensis</i>	Nomen nudum.
<i>Mutinus annulatus</i>	See <i>Jansia</i> .
<i>Mutinus boninensis</i>	See <i>Jansia</i> .
<i>Mutinus bovinus</i>	= <i>Mutinus elegans</i> .
<i>Mutinus brevis</i>	= <i>Mutinus Ravenelii</i> .
<i>Mutinus Curtisii</i>	= <i>Mutinus elegans</i> .
<i>Mutinus discolor</i>	See <i>Phallus</i> .
<i>Mutinus elegans</i> (of Java only)	See <i>Jansia</i> .

Mutinus Muelleri	=Mutinus bambusinus.
Mutinus Nymanianus	=Jansia rugosa.
Mutinus proximus	Nomen nudum.
Mutinus proximus (in sense of Petch)	=Jansia rugosa.
Mutinus Watsoni	Nomen nudum.
Mutinus Zenkeri	See Floccomutinus.
Omphallophallus Muellerianus	=Phallus retusus.
Omphallophallus retusus	See Phallus.
Phallogaster whitei	=depauperate Phallogaster saccatus.
Phallus aurantiacus	=Phallus rubicundus.
Phallus bambusinus	See Mutinus.
Phallus brasiliensis	=Phallus indusiatus.
Phallus caninus	See Mutinus.
Phallus collaris	=Phallus duplicatus.
Phallus curtus	See Mutinus.
Phallus foetidus	=Phallus impudicus.
Phallus Hadriani	Based on a freak.
Phallus irpicinus	=Clautriavia merulina.
Phallus inodoratus	=Phallus impudicus.
Phallus iosmos	=Phallus impudicus.
Phallus merulinus	See Clautriavia.
Phallus Mokusin	See Lysurus.
Phallus Muellerianus	=Phallus retusus.
Phallus Novae Hollandiae	=Phallus gracilis.
Phallus purpuratus	=Phallus imperialis.
Phallus radicatus	=Phallus indusiatus.
Phallus sanguineus	=Phallus rubicundus (?).
Phallus senegalensis	=Imagination chiefly.
Phallus speciosus	=Phallus indusiatus.
Phallus tahitensis	=Phallus indusiatus.
Phallus truncatus	=Mutinus unknown.
Phallus tunicatus	=Phallus indusiatus.
Phallus Watsoni	Nomen nudum.
Phallus xylogenus	See Mutinus.
Protuberata Maracuja	(Not for me a phalloid.)
Satyrtus rubicundus	See Phallus.
Simblum australe	=Simblum sphaerocephalum.
Simblum flavescens	=Simblum gracile.
Simblum Lorentzii	=Simblum sphaerocephalum.
Simblum pilidiatum	=Simblum sphaerocephalum.
Simblum rubescens	=Simblum sphaerocephalum.
Sophronia brasiliensis	=Phallus indusiatus.
Staurophallus senegalensis	=Something unknown.
Xylophallus xylogenus	See Mutinus.

APPENDIX IV.

LIST OF PHALLOIDS IN THE MUSEUMS.

All specimens are not listed, for some are so uncertain that I feel they should not be recorded. In case a plant has been named from these specimens, I sometimes record it under this name, even if I do not maintain it as a valid species.

KEW, ENGLAND.

Phallus multicolor, 3 collections, Australia—*Phallus nanus*, type, Andaman Island—*Phallus indusiatus*, Australia, Africa, British Guiana, Uganda, India, Ceylon, Java, Brazil, Mexico, Surinam Cape, several specimens from each country, also Cuba (? depauperate), Australia (var. *Rochesterensis*)—*Phallus duplicatus*, Carolina—*Phallus Ravenelii*, Connecticut—*Phallus truncatus*, poor specimens, and a drawing from which it appears to me to be rather a *Mutinus*—*Phallus rubicundus*, Southern United States, several—*Phallus rubicundus* (as *aurantiacus*), several from Australia and the form *gracilis*—*Phallus impudicus*, Australia, one only from Bailey and doubtful, England several (one the type of *iosmos*), East Indies but very ??, France, Germany—*Phallus tenuis*, Ceylon, named *Phallus pallidus* by Berkeley but never published—*Phallus aurantiacus*, co-type, ex Montagne—*Phallus gracilis*, South Africa—*Mutinus curtus*, Australia, type—*Mutinus elegans* (type of *Corynites Curtisii*)—*Mutinus Ravenelii*, type, one with a short apex called *brevis*—*Mutinus bambusinus*, nice drawing from Kurz, I think; Java, also dried from Java, also adventitious in hothouses, England—*Mutinus caninus*, a number from England—*Mutinus proximus*, type, Ceylon, poor—*Mutinus pentagonus* (labeled *Australiensis*) also labeled *pentagonus* from Bailey, Australia—*Kalchbrennera corallocephala*, South Africa, collection and also Kalchbrenner's fine drawing¹⁴—*Simblum gracile*, Ceylon, also several specimens from Kurz, Java, and a nice drawing originally named "*Thyridocephalus flavescens, Mihi*"—*Simblum sphaerocephalum*, Brazil, Glazion (labeled *Simblum Brasiliense*, also drawing of the type of *S. pilidium*)—*Simblum periphragmoides*, type in good condition, Mauritius in Hooker's herbarium—*Clathrus pusillus*, type, Australia—*Pseudocolus rugulosus*, type drawing ex Kurz, Java, labeled *Clathrus triscapus*—*Pseudocolus Rothae*, two collections and sketch from Bailey—*Laterna columnata*, Brazil, also (very ???) from Australia, also Cuba, the latter more slender, also several from the United States—*Laterna pusilla*, type, Cooke—*Clathrus cancellatus*, England, France—*Clathrus pseudocrispus* type drawing ex McCatty, Jamaica, also poor specimens—*Clathrus crispatus* ex Thwaite, Ceylon (published as *cancellatus*)—*Clathrus cibaricus*, about a dozen collections, all from New Zealand excepting one from Chiloe, an island off the coast of Chile—*Clathrus gracilis*, several, all from Australia—*Clathrus delicatus*, type, Ceylon—*Clathrus crispus*, Cuba, San Domingo, Uruguay—*Simblum clathratum*, type drawing and specimens, Old Calabar, Africa ex J. H. Holland—*Lysurus Gardneri*, abundant types, Ceylon—*Colus hirudinosus*, Corsica, Alpes Maritimes—*Lysurus Australiensis*, type, Australia—*Lysurus Woodii*, South Africa ex Wood, and same as co-type of *Anthurus Woodii*—*Aseroe Zeylandica*, type, Ceylon—*Aseroe rubra*, several from Australia—*Aseroe Hookeri*, type, New Zealand.

BRITISH MUSEUM, LONDON.

Phallus indusiatus from Philippines, Angola (Africa), China, Ceylon, India, Borneo, and St. Vincent (the latter a small form = *nana*)—*Phallus multicolor*, type with the original colored sketch and also a colored sketch by Broom—*Phallus impudicus*, several exsiccated from Europe, also specimens from Britain—*Phallus tenuis*, Ceylon—*Phallus quadricolor*, type—*Phallus calyptratus*, type—*Phallus Ravenelii* from Ravenel with his original notes—*Phallus auran-*

¹⁴ "The *Kalchbrennera* is very rare. Only twelve specimens have been found in five years."—Extract from letter from MacOwan.

tiacus, Australia—*Mutinus caninus*, photo ex. Krieger, also several specimens from England and the continent—*Mutinus elegans*, sketch from Morgan, labeled *Ravenelii*—*Mutinus Ravenelii* with a letter from Ravenel stating that the plant has been mis-cited in *Grevillea* (which is true)—*Mutinus proximus*, drawing by Broom—*Kalchbrennera corallocephala*, original description but no specimen from Welwitsch, drawing as reproduced in *Trans. Linn. Soc.*—*Simblum gracile*, Ceylon—*Laterna columnata*, abundant specimen from Ravenel—*Laterna Angolensis*, original description and drawing (no specimen) from Welwitsch. It was described as “*splendida albida*”—*Simblum Muelleri* (?) poor, Australia—*Clathrus cancellatus*, several specimens from Europe—*Clathrus delicatus*, co-type, Ceylon—*Clathrus gracile*, co-type, Australia—*Clathrus cibarius*, New Zealand, also Chiloe, Chile, also a form (see page 60) Pernambuco, also a specimen and sketch of a very similar species from Mombasa, East Africa. There are no color notes, but the sketch is dull yellow—*Clathrus crispus*, Vera Cruz, also specimen, poor, so labeled, from Australia, but not the species, I think—*Clathrus crispatus*, *Yucatan*, dried specimen, but seems the same as the original at Kew from Ceylon—*Lysurus Gardneri*, co-type, Ceylon—*Colus hirudinosus* (alcohol) from Meadow Valley, Asia Minor—*Aseroe rubra*, Australia.

CRYPTOGAMIC MUSEUM, PARIS, FRANCE.

Aseroe arachnoidea, type specimens in alcohol from Harmand, Cochin China—*Anthurus trifidus*, in alcohol, type from Japan, Dr. Harmand, specimen is broken, but I think is a *Pseudocolus*—*Aseroe rubra*, New Zealand, Raoul—*Phallus impudicus*, several, France—*Phallus Ravenelii*. There is an historical specimen more than two hundred years old in the herbarium of Vaillant. It was “*Boletus phalloides*” and was “ex Canada, 1702”—*Phallus aurantiacus*, type, India—*Mutinus caninus*, several, France—*Mutinus elegans*, type, Ohio, good condition—*Mutinus Ravenelii* ex Ravenel—*Mutinus curtus*, fragment from Berkeley—*Mutinus xylogenus*, types ex French Guiana and drawing (good) from Leprieur—*Pseudocolus fusiformis*, type drawing from Reunion, all that is known—*Lysurus Gardneri* ex Berkeley—*Laterna triscapa* from Chile, the specimen is very small, but probably a small *columnata*—*Laterna columnata* ex Ravenel, also Chile—*Clathrus gracilis* ex Berkeley, also a specimen so referred from New Caledonia, the latter also published as *Colus hirudinosus*, but so poor it should not have been named—*Clathrus cancellatus*, a number all from Southern France and one Algeria—*Clathrus gracilis*, ex Berkeley, Australia, also a very poor specimen ex Africa, similar to *gracilis*, but too poor to judge. It was named *Clathrus Fischeri*—*Clathrus cibarius*, type ex New Zealand, in alcohol, also from Chile!—*Lysurus cruciatus*, a number of type specimens, but all much broken, French Guiana—*Colus hirudinosus*, specimen from Pyrenees, Algeria, and Corsica, the latter received by Montagne in 1820, thirteen years before it was published, and is labeled “*Clathrus hirudinosus nobis*”—*Phallus subuculatus*, type from Algeria, “very common and less fetid than *impudicus*,” says the collector—*Phallus duplicatus* ex Ravenel—*Phallus indusiatus*, in alcohol, from French Guiana, also dried, the type of “*Sophronia brasiliensis*” from Brazil, also type of “*Phallus radiatus*” from French Guiana, also from Tonkin and New Caledonia—*Anthurus Calathiscus*, no specimen was received, but the drawing is there from Perrottet, India, on which I think Montagne based his imaginary “*Calathiscus Sepia*.”

UPSALA, SWEDEN.

In alcohol.—There is a very abundant collection made by E. Nyman in Java a number of years ago.

Phallus indusiatus, twelve collections, ten of the usual form with broad pilei and two with slender pilei.

Clautriavia merulina, two collections. This is a frequent species in Java. *Simblum periphragmoides* (and the form *gracilis*), five collections, which convince me that *gracilis* is at the best a form of *periphragmoides*.

Mutinus bambusinus, one collection.

Clathrus Treubei, three collections, two old, with the arms broken apart, as shown in *Myc. Notes*, p. 382, fig. 212.

Jansia rugosa, one collection.

There is also at Upsala, in alcohol, a specimen of *Aseroe rubra* from New Zealand, collected by G. von Scheele; *Clathrus cancellatus* from Montpellier, France, and ten collections of *Phallus impudicus* by various collectors in Sweden.

Dried specimens.—*Aseroe rubra* from New Zealand, Berggren, and a drawing from the fresh specimens—*Clathrus cancellatus*, Tirol, Bresadola—*Clathrus pusillus*, "New Holland, ex. Berk."—*Mutinus elegans* from Curtis, and labeled "Corynites brevis," which was a manuscript name for it—*Clathrus cibarius*, New Zealand, Berggren—*Lysurus Gardneri*, co-types, ex. Berkeley—*Macowanites agaricus*, co-type from Kalchbrenner. (Not usually classed in the phalloids, but to my mind closely related)—*Mutinus caninus*, ex. Quélet, France—*Mutinus* (unnamed), Guadeloupe, L'Herminier. (Something curious but unnamed, and I think this specimen unnamable)—*Phallus impudicus* Fautrey, France—*Clathrus guttulatus*, no specimen but the type drawing from Örsted on which the species was based.

BERLIN, GERMANY.

Dried Specimens: *Clathrus cancellatus*, from a hothouse at Berlin. It probably does not occur in the open as far north as Berlin. Three collections from southern Europe—*Clathrus gracilis*, three from Australia, also so-labeled from Samoa (!) and it seems correct.—*Clathrus Bäumeri*, the types, dried specimens but better unnamed from such material.—*Clathrus crispus*, Guadeloupe—*Simblum sphaerocephalum*, three from Brazil and Uruguay—"Anthurus" Woodii, co-types and the type drawing. I think it is a *Lysurus*—*Lysurus borealis* var. *Klitzingii*, same exactly I think as our American form—*Aseroe* (sp.?) from *Africa!*—*Aseroe pallida*, type and drawing from New Caledonia—*Phallus indusiatus*, specimens from Samoa, Usambara, New Guinea, Brazil and Australia—*Phallus rubicundus*, specimens from South Africa and Australia (labeled *aurantiacus*)—"Onphalophallus" *calvescens* and *Muellerianus*, both co-types (Australia) and both same, but specimens too poor for comment, much less to be named—*Phallus* (unnamed) from Brazil, on the order of *Ravenelii* but much too large—*Mutinus caninus* seven collections from Germany—*Mutinus elegans* from Rau, Penn.—*Mutinus* (sp.?) from Dr. Reinecke, Samoa. I found no *Mutinus* in Samoa.—*Phallus impudicus*, many specimens, mostly from Germany—*Kalchbrennera corallocephala* from MacOwan, South Africa, also a drawing (labeled *Aseroe Tuckii* and the type of this "new species")—*Floccomutinus Zenkeri*, the original drawing from Zenker.

In alcohol: *Clautriavia merulina*, Java—*Simblum periphragmoides*, Java—*Phallus indusiatus*, nine from Java, two from Africa, three from New Guinea. One of the African forms has unusually large meshes to the veil—*Clathrus camerunensis*, type; Africa—*Clathrus Americanus* (unnamed) from Paraguay—*Clathrus chrysomycelinus*, type Brazil—*Laternea columnata*, Brazil—"Laternea pentactina", type, Java. It is an old condition of *Clathrus Treubei*, the arms broken apart as shown in figure 212, page 382, *Myc. Notes*—*Simblum sphaerocephalum*, Brazil—*Aseroe rubra*, New Guinea. I can not say as to the exact form, but it seems to have a broad limb and to tend towards the East Indian species.—*Lysurus borealis*, var. *Klitzingii*, Berlin, same I think as our American form—*Clautriavia Lauterbachii* (type of *Echinophallus Lauterbachii*) unfortunately only known from eggs as it is a most peculiar genus—Eggs of a *Clathrus* determined as *Preussii*? but I think the species is?—*Mutinus boninensis*, type, all known, intermediate between *Mutinus* and *Jansia*—*Jansia elegans*, abundant, from Java, type of "*Floccomutinus Nymanianus*" but quite different from the genus *Floccomutinus*, I think.—*Floccomutinus Zenkeri*, type Africa, a very distinct genus, in my opinion—*Mutinus bambusianus*, several collections from Java. Some have rather short heads and in size approach *Mutinus caninus* of Europe. The gleba-bearing portions are more pointed and not so even as *caninus*—*Mutinus caninus*, Germany—*Blumenavia rhacodes*, type, Brazil—*Itajahya galericulata*, type Brazil.—*Phallus glutinoides*, type, Brazil. All are in egg state.—

Clathrus pseudocancellatus, type, Africa. It was probably originally in formalin as it is now flabby and shapeless.

Phalloids in alcohol in the show department of the Museum at Berlin: At Berlin there is the finest collection of phalloids, both as to numbers and condition, that exists anywhere. It was the work of the late Dr. Hennings, and the specimens are most beautifully prepared and displayed. The following is the list: *Laterna columnata*, Brazil—*Clathrus cancellatus*, Europe—*Colus hirudinosus*, Sardinia—*Clathrus gracilis*, Australia—*Mutinus Moelleri*, type, Brazil (=for me, *bambusinus*)—*Floccomutinus Zenkeri*, type, Africa—*Jansia elegans* (type of *Floccomutinus Nymaniensis*)—*Phallus rubicundus*, Africa (type of *Phallus sanguineus*)—*Phallus tenuis*, Java—*Clautriavia Lauterbachii* (type of *Echinophallus*)—*Itajahya galericulata*, type, Brazil—*Phallus impudicus*, two from Java, one Africa, also a slender form from Java (type of *echinata*)—*Clautriavia merulina*, two, Java—*Lysurus borealis* (var. *Klitzingii*)—*Aseroe rubra*, New Caledonia, also New Guinea—*Blumenavia usambariensis*, type, Africa—*Clathrus Preussii*, type, Africa—*Simblum sphaerocephalum*, Argentina—*Simblum periphragmoides*, Java—*Mutinus caninus*, Berlin—*Mutinus Fleischeri*, type, Java—*Mutinus bambusinus*, two, Java—*Phallus celebicus*, type, Celebes—*Phallus impudicus*, three, Berlin—*Kalchbrennera corallocephala*, South Africa (labeled *Kalchbrenneri Tuckii* var. *clathroides*, Henn.)—*Clathrus camerunensis*, type, Africa—*Blumenavia rhacodes*, type, Brazil.

THE LLOYD MUSEUM, CINCINNATI, OHIO.

Note.—As this list is made in England from the published records without having access to the specimens, some may have been overlooked. All listed are dried specimens unless otherwise noted.

Europe.

- Clathrus cancellatus*, Portugal, Rev. Torrend.
- Clathrus cancellatus*, Italy, M. Bezzi.
- Clathrus cancellatus*, France, L. Rolland.
- Clathrus cancellatus*, Spain, T. de Aranzadi.
- Clathrus cancellatus*, France, Auguste Bernin (fresh!) (alcohol).
- Mutinus caninus*, Ireland, Greenwood Pim.
- Mutinus caninus*, Germany, C. Engelke.
- Mutinus caninus*, Germany, Otto Jaap.
- Mutinus caninus*, France, C. G. Lloyd.
- Mutinus caninus*, Germany, W. Krieger, photograph.
- Phallus imperialis*, Italy, M. Bezzi.
- Phallus impudicus*, France, C. G. Lloyd.
- Phallus impudicus*, France, L. Rolland.
- Phallus impudicus*, Italy, M. Bezzi.
- Lysurus borealis* (red arms), England, Harold Murray, photograph.
- Colus hirudinosus*, Portugal, Rev. Torrend (alcohol).

United States.

- Laterna columnata*, Florida, L. N. Fowler (alcohol).
- Laterna columnata*, Florida, Dr. J. F. Maddox (alcohol).
- Laterna columnata*, Florida, C. E. Pleas.
- Laterna columnata*, Florida, C. G. Lloyd (alcohol).
- Laterna columnata*, Florida, C. E. Pleas (photograph).
- Mutinus caninus*, Canada, Jas. Fletcher.
- Mutinus caninus*, Maryland, W. T. Lakin.
- Mutinus caninus*, New Jersey, E. B. Sterling (alcohol).
- Mutinus elegans*, Ohio, Pennsylvania, and Kentucky, C. G. Lloyd (alcohol).
- Mutinus elegans*, Pennsylvania, Dr. Herbst (alcohol).
- Mutinus elegans*, Ohio, M. E. Hard (photograph).
- Mutinus elegans*, Connecticut, C. C. Hanmer (eggs).
- Mutinus Ravenelii* (?), New Jersey, E. B. Sterling.
- Mutinus Ravenelii*, Ohio, Chas. Dury (alcohol).

Mutinus Ravenelii (?), Florida, G. C. Fisher.
 Mutinus Ravenelii, Ohio, A. P. Morgan.
 Lysurus borealis, Ohio, H. C. Beardslee.
 Lysurus borealis, Massachusetts, Geo. B. Fessenden.
 Lysurus borealis, Connecticut, C. C. Hanmer (photograph).
 Lysurus borealis, Massachusetts, Miss L. C. Allen.
 Lysurus borealis (? red), Texas, W. H. Long, Jr.
 Lysurus borealis, Massachusetts, G. E. Stone (alcohol).
 Phallogaster saccatus, Ohio, C. G. Lloyd (alcohol).
 Phallogaster saccatus, West Virginia, C. G. Lloyd.
 Phallus duplicatus, Ohio, H. C. Beardslee (alcohol).
 Phallus duplicatus, California, L. A. Greata.
 Phallus duplicatus, Iowa, L. R. Waldron.
 Phallus duplicatus, Ohio, C. G. Lloyd (alcohol).
 Phallus duplicatus, Florida, G. C. Fisher.
 Phallus duplicatus, Ohio, A. P. Morgan (alcohol).
 Phallus duplicatus, Ohio, Prof. W. H. Aiken (alcohol).
 Phallus imperialis, Colorado, E. B. Sterling.
 Phallus imperialis, Texas, W. H. Long, Jr.
 Phallus imperialis, California, L. G. Yates.
 Phallus imperialis, Washington, D. C., F. J. Braendle.
 Phallus imperialis, California, L. A. Greata.
 Phallus imperialis, California, W. H. Henderson.
 Phallus imperialis, Colorado, E. Bethel.
 Phallus gracilis, Florida, L. N. Fowler (alcohol).
 Phallus Ravenelii, Pennsylvania, Wm. Herbst (alcohol).
 Phallus Ravenelii, Iowa, F. J. Fitzpatrick.
 Phallus Ravenelii, Ohio, C. G. Lloyd.
 Phallus Ravenelii, Ohio, Mrs. Carl Langenbeck (alcohol).
 Phallus Ravenelii, Ohio, M. E. Hard (photograph).
 Phallus Ravenelii, New Jersey, E. B. Sterling (fresh) (alcohol).
 Phallus Ravenelii, Florida, G. C. Fisher.
 Phallus rubicundus, Texas, W. H. Long, Jr.
 Simblum sphaerocephalum, Nebraska, Rev. J. M. Bates.
 Simblum sphaerocephalum, Texas, W. H. Long, Jr.
 Simblum Texense, Texas, W. H. Long, Jr.

Brazil.

Itajahya galericulata, Rev. A. Schupp (photograph).
 Clathrus chrysomycelinus, Rev. A. Schupp.
 Clathrus Americanus, Rev. A. Schupp (dried).
 Clathrus Americanus, Rev. A. Schupp (photograph).
 Laternea rhacodes, Rev. A. Schupp.
 Laternea rhacodes, Rev. A. Schupp (photograph).
 Laternea (cfr. columnatus), Rev. J. Rick.
 Laternea (unnamed?), Rev. J. Rick.
 Phallus (labeled rugulosus), Rev. J. Rick.
 Simblum sphaerocephalum, Rev. J. Rick.

West Indies.

Clathrus crispus, Jamaica, Miss Barrett.
 Clathrus crispus, Jamaica, Wm. Chadwick.
 Clathrus (sp.?), Bahamas, L. J. K. Brace (egg).
 Clathrus Americanus, L. J. K. Brace (formalin).
 Laternea pusilla (?), Jamaica, W. Jekyll.
 Phallus indusiatus, Jamaica, H. E. Cox.
 Phallus indusiatus, Jamaica, Miss Barrett.
 Simblum sphaerocephalum, Bahamas, L. J. K. Brace.

Samoa.

Phallus indusiatus, C. G. Lloyd (photograph and dried).

Hawaii.

- Phallus rubicundus, D. D. Baldwin.
Phallus rubicundus (form gracilis), N. A. Cobb.

Australia and New Zealand.

- Aseroe Hookeri, Miss Jessie Dunn.
Aseroe Muelleriana, A. G. Hamilton.
Anthurus aseroeformis, Prof. McAlpine (photograph and description).
Clathrus cibarius, Robert Brown.
Clathrus cibarius, Miss Jessie Dunn.
Clathrus cibarius, S. Duncan.
Clathrus cibarius, W. H. Laing.
Clathrus cibarius, Rev. J. Wilson.
Clathrus gracilis, Prof. D. McAlpine.
Clathrus gracilis, J. T. Paul.
Clathrus gracilis, F. M. Reader.
Clathrus gracilis, J. H. Spencer (alcohol).
Clathrus gracilis, Margaret Flockton (alcohol).
Clathrus gracilis, Edmund Jarvis.
Clathrus gracilis, J. G. O. Tepper.

Africa.

- Kalchbrennera corallocephala, Cape, J. M. Wood.
Clathrus (undetermined), Dr. Labesse (alcohol).
Clathrus (unnamed), Congo, Edouard Luja.
Phallus indusiatus, Congo, Edouard Luja (dried).
Phallus indusiatus, Congo, Edouard Luja (photograph).
Phallus indusiatus, C. B. Ussher.
Unnamed genus, C. B. Ussher.

Mauritius.

- Phallus gracilis, Chas. A. O'Connor (alcohol).
Phallus indusiatus, Chas. A. O'Connor (alcohol).
Phallus Mauritianus, Chas. A. O'Connor (alcohol).

India.

- Genus unnamed, G. H. Krumbiegel.

Japan.

- Phallus indusiatus, Professor Gono (drawing).
Phallus impudicus, Professor Kusano (drawing).
Phallus rugulosus, Professor Kusano (drawing).
Phallus rugulosus, Professor Kusano (alcohol).
Phallus rugulosus, T. Nishida (alcohol).
Phallus tenuis, Professor Kusano (drawing).
Phallus tenuis, Professor Kusano (alcohol).
Mutinus boninensis (?), Professor Kusano (alcohol).
Mutinus boninensis (?), Professor Kusano (alcohol).
Lysurus Mokusin, Professor Gono (drawing).
Lysurus Mokusin, Professor Kusano (drawing).
Laternea bicornata, Professor Kusano (photograph).

Java.

- Clathrus Treubei, Dr. Ch. Bernard (photograph).
Clathrus Treubei, Dr. Ch. Bernard (alcohol).
Phallus indusiatus, Dr. Ch. Bernard (alcohol).
Clautriavia merulina, Professor Patouillard (photograph).
Clautriavia merulina, Dr. Ch. Bernard (alcohol).

Simblum gracile, Dr. Ch. Bernard (photograph).
Simblum gracile, Dr. Ch. Bernard (alcohol).
Jansia rugosa, Dr. Ch. Bernard (alcohol).
Aseroe arachnoidea, Dr. Ch. Bernard (alcohol).
Aseroe arachnoidea, Dr. J. P. Lotsy (alcohol).
Mutinus bambusinus, Dr. Ch. Bernard (alcohol).

APPENDIX V.

SOURCE OF ILLUSTRATIONS.

Photographs.

The best illustration of a phalloid is a good photograph, and we confidently look to photography to dispel much of the doubt that surrounds many of the species of foreign phalloids. We present herewith a list of those who have published or supplied photographs of phalloids or furnished material to illustrate phalloids by photography, and have indicated our figures that are taken from these sources. America leads the world in the use of photography to illustrate fungi. Well illustrated books have appeared by Atkinson, McIlvaine, Hard, and Marshall, all containing illustrations of phalloids. We have not cited them in detail, however, as they all cover the same restricted field of a few species. We think the following is otherwise a complete list of those who have aided in the work. We hope this pamphlet will awaken interest in the subject in other countries and that the next résumé of the subject will have a much larger list. If you find a phalloid that is not illustrated in this work by a good photograph, we hope you will not fail to secure a good photograph of it, if possible.

Dr. Chas. Bernard, Java.

Aseroe Zeylandica (Fig. 54).
Clautriavia merulina
Jansia rugosa (Figs. 30 and 31).
Clathrus Treubei (Fig. 72).
Simblum gracile (Fig. 84).

Auguste Bernin, Monaco.

Clathrus cancellatus (Fig. 70).

N. A. Cobb, Hawaii.

Phallus gracilis (Fig. 6).

Robt. E. Fries.

Itajahya galericulata.

C. C. Hanmer, Connecticut.

Lysurus borealis (Fig. 41).

M. E. Hard, Ohio.

Phallus Ravenelii (Fig. 8).

W. Krieger, Germany.

Mutinus caninus (Fig. 23).

Professor Kusano, Japan.

Laternea bicornata (Fig. 64).

W. H. Long, Jr., Texas.

Phallus rubicundus (Fig. 5).
Simblum Texense (Fig. 85).
Simblum sphaerocephalum (Fig. 86).

D. McAlpine, Australia.

Anthurus aseroeformis (Fig. 46).

Alfred Moeller (from Brazil).

Phallus indusiatus.
Phallus Moelleri (Fig. 13).
Clathrus chrysomycelinus (Fig. 80).
Laternea columnata.
Laternea rhacodes.
Phallus glutinolens (Fig. 10).
Pseudocolus Garciae (Fig. 65).
Mutinus bambusinus (Fig. 26).
Itajahya galericulata (Fig. 22).

Harold Murray, England.

Lysurus borealis.

Chas. O'Connor, Mauritius.

Phallus Mauritanus (Fig. 17).

N. Patouillard, Paris.

Clautriavia merulina.

Otto Penzig (from Java).

Aseroe arachnoidea (Figs. 55 and 56).
Phallus indusiatus.
Phallus favosus (Fig. 4).
Clautriavia merulina.
Phallus multicolor (Fig. 14).
Simblum gracile.
Jansia elegans (Figs. 32 and 33).
Jansia rugosa.
Mutinus Fleischeri (Fig. 27).
Pseudocolus Javanicus (Fig. 66).

T. Petch, Ceylon.

Jansia rugosa.
Phallus indusiatus.
Clautriavia merulina (Fig. 19).
Clathrus crispatus (Fig. 74a).
Clathrus delicatus (Fig. 82).
Simblum gracile.
Lysurus Gardneri (Fig. 38).

C. E. Pleas, Florida.

Phallus duplicatus (Fig. 16).
Laterna columnata (Figs. 57 and 58).

Carleton Rea, England.

Lysurus borealis (Fig. 40).

Rev. J. Rick, Brazil.

Laterna rhacodes (Fig. 61).
Simblum sphaerocephalum.

Rev. A. Schupp, Brazil.

Itajahya galericulata (Fig. 21).
Clathrus Americanus (Fig. 71).

Rev. J. Torrend, Portugal.

Colus hirudinosus (Figs. 89 and 90).
Simblum sphaerocephalum.

Photographed by the writer.

Phallus impudicus (France) (Fig. 1).
Phallus Ravenelii, Ohio (Fig. 7).
Phallus indusiatus, Samoa (Fig. 12).
Mutinus elegans, West Virginia (Fig. 24).
Mutinus Ravenelii, Ohio (Fig. 25).
Phallogaster saccatus, Ohio (Figs. 93 and 94).

Figures.

Next to a photograph, an accurate drawing is the best illustration. In a few instances we have used Penzig's figures in preference to his photographs. I think all figures are not good, especially the old ones reconstructed from dried specimens. However, as to many species they are all we have, and the following are the sources from which they have been reproduced. There are phalloids unillustrated by even a crude drawing. It is a standing reproach that authors are found to engage in such work. In a few such cases we have photographed the type as a makeshift illustration, but the most of such work we think is better considered as "nomina nuda" and relegated to "synonymy."

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|----------|--------------------------------|----------|---------------------------------|
| Fig. 2 | Drawing by Otto Penzig. | Fig. 62 | Drawing by Welwitsch. |
| Fig. 3 | Drawing by Ed Fischer. | Fig. 63 | Drawing by Spegazzini. |
| Fig. 9 | Drawing by Ed. Fischer. | Fig. 67 | Drawing by Kurz. |
| Fig. 11 | Drawing by Alfred Moeller. | Fig. 68 | Drawing at Paris. |
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APPENDIX VI.

Reproduction of the original figures of doubtful and little known species of the genera *Phallus* and *Mutinus*. Most of them I think have no value whatever, but there is no way of getting rid of them.



Fig. 95.



Fig. 99.



Fig. 102.

PHALLUS DISCOLOR.

PHALLUS CELEBICUS.

PHALLUS QUADRICOLOR.



Fig. 98.

PHALLUS CAMPANULATUS.



Fig. 96.

PHALLUS CALYPT-
TRATUS.



Fig. 106.

MUTINUS PA-
PUASIUS.



Fig. 107.

MUTINUS ARGENTINUS.

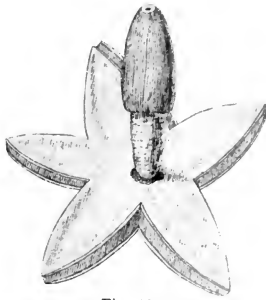


Fig. 105.

MUTINUS CURTUS.



Fig. 100.

PHALLUS CA-
NARIENSIS.



Fig. 103.

MUTINUS MINIMUS.



Fig. 104.

MUTINUS BORNE-
ENSIS.

APPENDIX VII.

ASEROË RUBRA LA BILL. VAR. JUNGHUHNII SCHLECHT.

PAR DR. CH. BERNARD.

Avec deux photographies.

Il y a peu de temps, j'ai publié dans les Annales du Jardin botanique de Buitenzorg (Vol. XXII, 1908. 2^{ème} partie, pp. 224-238), une petite note sur cette Phalloïdée très curieuse, assez rare, et jusqu'alors assez mal connue. Je déplorais à cette occasion de n'avoir pas pu faire une photographie convenable de ce type, et je signalais certains points dont l'étude demandait à être reprise ultérieurement. Depuis lors, j'obtins, toujours grâce à l'extrême amabilité de M. le Dr. *J. Bosscha*, plusieurs magnifiques exemplaires de cet organisme, et entre autres les deux individus dont M. *Huysmans* a bien voulu faire les deux photographies qui accompagnent cette note. Tous ces échantillons provenaient de la plantation de Taloen, sur le plateau de Pengalengan, au Sud de Bandoeng, c'est à dire de la même station où avaient été récoltés les



exemplaires décrits dans ma précédente note. Ces nouveaux individus n'ont permis de faire certaines observations venant jeter quelque lumière sur des détails laissés jusqu' à présent dans l'ombre, et je ne crois pas inutile de publier ici ces quelques lignes qu' illustreront les deux photographies en question, et qui viendront fixer ou rectifier certains points d' importance secondaire, car je dois dire dès le début que, dans leurs caractères importants, ces individus coïncidaient très exactement avec ceux déjà observés.

Je disais entre autres: "*Aseroë rubra* est une espèce extrêmement polymorphe; . . . il est impossible de trouver dans la série de ses formes de "passage une solution de continuité permettant de séparer des espèces . . .

“et la forme qui nous occupe ici vient diminuer encore la valeur des variétés nettement délimitées. . . . Il importe donc de ne séparer les types qu’avec la plus grande prudence, car il est probable que pendant bien longtemps, chaque fois qu’on découvrira un exemplaire de ces champignons éminemment variables, ce nouvel individu constituera un anneau de cette longue chaîne de types voisins, atténuant les différences et supprimant telle ou telle variété.”

Les échantillons dont il sera question dans la présente note apporteront un argument de plus en faveur de cette opinion, et si, par certains de leurs caractères, ils se rapprochent des individus que j’ai décrits antérieurement, la disposition de leurs bras, qui est fort typique, établit un passage vers d’autres formes. Je me contenterai de donner une description de ces exemplaires, les points sur lesquels je veux fixer l’attention ressortiront d’eux mêmes de la description et de l’examen des photographies.



Les deux échantillons que j’ai pu faire photographier n’étaient pas de dimensions particulièrement considérables, et le nombre des bras était de 18 chez l’un et de 22 chez l’autre, ce qui correspond aux indications que j’ai données antérieurement. De même l’extrémité plus ou moins régulièrement enroulée des bras est caractéristique. La disposition de la volve, du pied assez court, de la glèbe, les couleurs, l’odeur, etc., ne distinguaient en rien ces formes de celles déjà décrites. Pour tous ces détails je renvoie donc à ma précédente

publication. Mais le point important et sur lequel je tiens à insister est le suivant: tandis que les exemplaires que j'ai observés jusqu'ici établissent un passage entre les var, *zeylanica* et *Junghuhnii* de *Aseroë rubra*,—certains de leurs caractères, comme je l'ai démontré p. 235, rappelant ceux de l'une ou de l'autre de ces deux variétés,—les types dont nous nous occupons aujourd'hui et surtout l'un d'entre eux sont beaucoup plus voisins de la variété *Junghuhnii*; et même par la plupart de leurs détails, ils coïncident presque exactement avec cette variété comme nous la trouvons décrite d'ordinaire; cependant en comparant tous mes échantillons, j'ai pu me convaincre qu'il n'y a nulle raison de séparer les unes des autres ces différentes formes qui toutes du reste proviennent d'une seule et unique localité; elles appartiennent non seulement à la même espèce, mais aussi à la même variété, cela ne fait aucun doute et il me semble que la question que se posait E. Fischer dans le "Sylloge Fungorum," Vol. VII, p. 25, quand il se demandait à propos de *A. Junghuhnii*: "An ab *A. zeylanica* diversa?" doit être certainement résolue par le négative. Non seulement il ne saurait s'agir de deux espèces différentes, mais encore il me paraît que les deux types doivent être rangés sous un même nom de variété.

Le caractère important auquel je fais allusion est la disposition des bras; je disais à ce propos: "Les bras étant séparés les uns des autres et le disque, dans certains échantillons étant très peu développé, cela parle en faveur d'une identité avec *A. zeylanica*. Cependant il faut remarquer que le disque peut être remarquablement développé (caractère de *A. Junghuhnii*) puis que, si les bras sont le plus souvent nettement séparés les uns des autres jusqu'à leur base, il existe cependant des cas, assez rares, où l'on pourrait croire à de vagues indications de rapprochements par paires." Dans les formes qui nous occupent, il ne s'agit plus de vagues indications. Un des deux individus photographiés n'est pas encore très convaincant à cet égard, il est cependant facile de reconnaître que ses 18 bras sont rapprochés par paires les uns des autres. Mais l'autre individu est des plus typiques, et ses 22 bras sont très nettement et très régulièrement rapprochés deux par deux les uns des autres. Dans les deux échantillons le disque est assez fortement développé.

Pour terminer je crois qu'il m'est permis de maintenir, en la renforçant, la conclusion que j'énonçais à la fin de mon précédent travail, mais que je n'osais encore affirmer, à savoir que les variétés *zeylanica* et *Junghuhnii* d'*Aseroë rubra* devront être réunies dans la suite sous un même nom.

Cette petite note n'a pas d'autre prétention que de présenter deux individus de cet intéressant champignon qui, s'il a été souvent décrit, et plusieurs fois dessiné, n'avait pas encore, que je sache, été photographié jusqu'ici.

Les deux photographies reproduisent le champignon à peu près en grandeur naturelle.

EDITOR'S NOTE.

We publish the above article by Dr. Chas. Bernard, and we take no editorial liberties with it, but publish it just as received. We are particularly glad to get the photograph, which is the first published of this species of the East Indies. As we have stated in detail on page 44 our views as to the species of *Aseroë*, we shall not discuss the matter here. We believe, however, that the Ceylonese plant, *Aseroë Zeylandica*, and the Javanese plant, *Aseroë Junghuhnii*, are one and the same but quite distinct from the New Zealand and Australian forms which go to make up *Aseroë rubra*.—C. G. L.



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INDEX.

In making up the pages it was not practicable to keep the figures in serial order nor always in close relationship to the corresponding text. In this index we have given the page on which will be found the text and also the figure for each species.

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SYNOPSIS

OF THE

GENUS HEXAGONA

By

C. G. LLOYD

CINCINNATI, OHIO, - - JUNE, 1910

UNIVERSITY OF CALIFORNIA

AT LOS ANGELES

JAN 20 1942

LIBRARY



P. HARIOT.

To Monsieur P. Hariot, Curator of the Cryptogamic Museum at Paris, France,
I beg to dedicate this pamphlet, in recognition of the many courtesies
extended to me while working in the Museum.—C. G. LLOYD.

THE GENUS HEXAGONA.

Definition.—The genus *Hexagona* can be described in a few words as being fungi with large, round or hexagonal pores, or *Polyporus* with large, round or hexagonal pores. It is a tropical or sub-tropical genus, and does not occur in temperate regions. Theoretically the genus is purely artificial, based on a single character, but it is a very convenient genus, and to attempt to break it up would only make a needless complication.¹

In context *Hexagonas* are usually corky-woody, and as Fries knew only such species, he specified this as a character of the genus. There are a few species with hexagonal pores of which the context is rather fleshy-cartilaginous. We should include them also in *Hexagona*, believing it to be better to take the genus literally on its pore character.

Size of the pores.—While the basic idea of the genus is *large*, round or hexagonal pores, the word *large* is, of course, only relative. There has been associated (unintentionally perhaps) with the genus *Hexagona* the idea of regularity of pores. Thus there is a series of forms related to *Hexagona tenuis* which have by common consent always been classed in *Hexagona*. The pores are rather small, but they are *regular* and *shallow*. Many other polyporoids with larger pores are classed with *Polyporus* or *Trametes* when the pores are deep.

There is also a group of species, such as *Polystictus pinsitus*, with equally as large and as shallow pores, but they are irregular, with thin, angular, uneven pore-walls. This section is generally included in *Polystictus*, and I think that is preferable, but sometimes species of this section have been called *Hexagona*.

Spores.—The color of the spores was not taken into account by the old authors in the genus *Hexagona*, but as they are practically all supposed to have white spores, we should make that a character also of the genus. We have never seen a single spore of any species of what we include in *Hexagona*, as spores of white-spored polyporoids are *rarely found* in herbarium specimens. But the fact that we do not find the spores is a strong evidence that they are white.²

¹Any one who is so disposed, however, can discover as many and as useless "new genera" in it as have several times been discovered in *Polyporus*.

²It is well known that species of polyporoids with colored spores have the spores usually (if not always) in abundance. I have no doubt that all *Hexagonas* have white spores, though I have not positive evidence of the fact in a single instance.

There are but two cases where plants have been classed as *Hexagona* which I have found to have colored spores, viz.: *Hexagona decipiens*, of Australia, and *Hexagona gracilis*, of Brazil. I shall exclude them both, however, from *Hexagona* and include them in the section of *Polyporus*, where they belong, not only on their spore color, but their general natures, which are closer to other *Polyporus* than to *Hexagona*.



Fig. 276 X 6

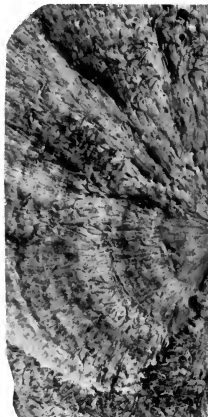
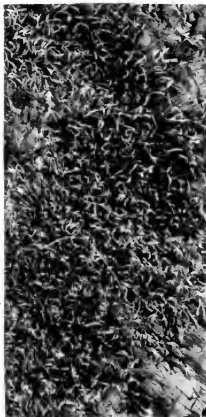
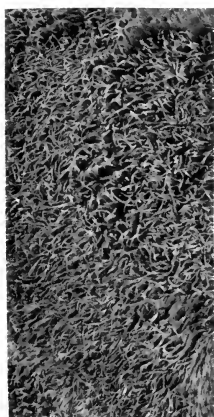


Fig. 277.

Surface markings.—The next character that we use in grouping the species is the nature of the surface.

Setosus.—There is a very marked section of *Hexagona* with dense, coarse, rigid, black hairs or setae on the surface. This is the same character that is so familiar in the common *Trametes hydnoides* of the tropics. In fact, there is a series of species beginning with *Trametes hydnoides* with minute pores and ending with *Hexagona apiaria* with the large pores. This series has the same form, context, color, peculiar surface hairs, and differs chiefly in the size of the pores. It is a very natural group and might well be discovered to be a new genus. The hairs (Fig. 276 X6) are peculiar, being more or less wedge-

shaped and incised. They are detersive and fall away from old specimens.³ Our figure (277) shows the same species (of Australia) in three different conditions. But there are species that we include in this section in which these hairs are not so strongly developed. *Hexagona Deschampsii* (Fig. 282) has the hairs or fibrils strongly agglutinate with only a few free fibrils. It resembles old, worn conditions of the previous species. And finally we include in this section species strongly marked with entirely agglutinate fibrils as *Hexagona elegans* (Fig. 284).

Velutinus.—This section includes species with fine, soft, velutinate hairs (Fig. 289). It embraces but a few species.

Glaber.—Surface smooth, but often zoned or uneven, but not hirsute, velutinate or with strongly agglutinate fibrils.

General shape.—There are of course intermediate specimens, but most species can be arranged in one of three sections according to their general shape. All *Hexagonas* are sessile without stems,⁴ or (as in *albida*) sometimes a rudimentary-lateral stem.

Ungulaformis.—This section, which comprises but a very few species, has the pileus thick with deep pores. It is usually hard and sub-woody and corresponds to the genus *Fomes*, though the pores are never stratified.

Applanatus.—The texture is softer and general shape is flatter than in the previous section. The shape corresponds to the usual shape of *Fomes applanatus*. Usually it is a centimeter or more thick. We include in this section also some species such as *Kurzii* that are thinner and tend toward the next section but have deeper pores, 5 mm. or more.

Tenuis.—The character of the section *tenuis* is the very *thin* pileus, rarely over two or three mm. thick, and the small (for *Hexagona*) shallow, regular pores.

The setae in the pores.—There are some species of *Hexagona* that have conspicuous, colored setae in the pores. Sometimes these setae are large enough to be seen with the naked eye, and can easily be

noted on the accompanying figure (278), which is enlarged six diameters. These setae are always in connection with ferruginous or cinnamon context. They are much larger than the microscopic setae found on many polyporoids, (Cfr. Pol. Issue, page 2), and often called cystidia. Klotzsch noticed these setae and proposed a new tribe,



Fig. 278 X 6.

Scenidium, but the idea never found favor. The inner surface of the

³ Mr. Murrill states that the plants are "nearly glabrous when young" and are finally clothed with these hairs. I think his explanation should be taken backwards.

⁴ This statement excludes *Hexagona gracilis*, which, however, is not a *Hexagona* for me.

pores of *Hexagona leprosa* appears finely pubescent, but under the lens the hairs are sub-hyaline and are of quite different nature from the colored setae of other species.

Color of context.—Most species have a colored context. It is hard for me to designate the exact color, though it is customary to describe it as cinnamon, ferruginous, gilvous, etc. In this pamphlet I designate these as having "colored context." A fewer number have a context color white or pale ochraceous, much paler than the former. We indicate these as "pale context." The difference between these two context colors is so marked that the character can be used to advantage in classification, and we base on it one of our groups.

The glaucescence of pores.—Many collections of *Hexagona* have pores strongly silvery glaucous, and it is a puzzling question how much stress to place on it in classification. In itself, I think it is not of much value, for many collections show some specimens glaucous and others not or only partially so. It seems to me to be a sort of deposit on the pores, with age perhaps. At Kew there is a specimen of *Hexagona apiaria* where most of the pores are strongly glaucous and the outer (younger) ones not at all. It is one of the species that has setae on the pores. The setae are quite noticeable on the non-glaucous pores, but in the glaucous ones they are not visible and have been covered up (apparently) with this deposit.

History of the genus.—In the very old days all fungi that had pores were called *Boletus*, and under this name are included in Linnaeus' *Species Plantarum*. Palisot-de-Beauvois, who was a collector of African plants, included a few fungi in his plates, and the Polypores he divided into two genera, those with large, round, hexagonal, or elongated pores, that he called *Favolus*, and those with small, round pores that he called *Microporus*. Fries divided Palisot's first genus into two, those with hexagonal pores which he called *Hexagona*, and those with elongated pores that he called *Favolus*. He took the name *Hexagona* from a probably inaccurate illustration of Pollini, which however showed hexagonal pores, and the genus was based on this one character. It has been taken in this sense by mycologists for about eighty years and about a hundred alleged new species have been named in accordance. The early mycologists, Persoon, Klotzsch, and Berkeley, were at first not disposed to consider a "large pored" genus of much value, but after the appearance of Fries' *Epicrisis* (1838), where he collated all the known species, no one has presumed to deny the genus.⁵ The first species to reach Europe was undoubtedly sent to Linnaeus, who named it *Boletus favus*. It was from China, but is not in the Linnaean herbarium, but was stated by Klotzsch, Berkeley, and Hariot to be the same as *Hexagona Wightii*, which it probably is.⁶ The next were two species from Africa, beautifully illustrated by Palisot-de-Beauvois, and the specimens (one at least) are

⁵ Recently a little cheap juggling was attempted to change all *Hexagonas* to *Favolus* and all *Favolus* to *Hexagona*, thus making new combinations for them all, and a muss in general. It was based on such a flimsy pretext that it is not worth discussing in detail. Monsieur Hariot, who first showed how the trick could be turned (*Bull. Soc. Myc. de France*, 1891, p. 203), dismissed it with the very sensible remark: "Mais la tradition Friesienne s'est imposée et il serait difficile dans l'état actuel de la science d'intervertir les désignations générales de plus d'une centaine d'espèces. Le remède deviendrait pire que le mal et force est de s'en tenir aux idées admises."

⁶ How this was overlooked in the priority hunt I do not know. 1753 is such a "prior" date to arrange alleged synonyms that a good thing like that ought not to be overlooked.

now in the Delessert Herbarium at Geneva.⁷ Next, *Hexagona tenuis*, the most common species of the tropics was named by Hooker from South America. The specimen is in fair condition in Hooker's herbarium at Kew. Then Persoon published *Hexagona apiaria* and *Hexagona vespacea* from the island of Rawak, and both are in good condition at Paris, the latter rather scanty however. When Fries issued his *Epicrasis* (1838) twelve species were supposed to be known, and Fries had overlooked one of Palisot's.⁸ Since the *Epicrasis* there has been a steady output of "new species." There are in my index 125 names of supposed species, but this includes a few that were not called *Hexagona* but which in my opinion should have been, and a larger number that were called *Hexagona* and should not have been.

The work in this pamphlet.—In my work with the polyporoids I have visited and studied and photographed the species of *Hexagona* in the following museums: Kew London, British Museum London, Leiden, Berlin, Upsala, and Paris, and the private herbarium of Monsieur Patouillard at Paris. Most of the historic material is preserved in these museums and of the 125 species named in my index I have seen the type (or in a few cases the co-type) of all that exist but eight.

Classification.—For convenience we arrange the species in sections or groups. We have tried to make these groups as natural as possible for the benefit of the future "new genus" discoverers.

First (*Setosus*).—Typically the surface is clothed with dense, coarse, branched, rigid hairs, usually detesive and then the surface is fibrillose. We include also species which are covered with agglutinate fibrils generally with free ends.

Second (*Velutinus*).—Surface covered with fine, soft pubescence, or velutinate hairs. Plants that we include here are all thin and as to shape belong in section 5 (*Tenuis*). A few species that are pubescent we arrange on general relations in other groups, viz.: *Pobeguini* in *Applanatus*; *macrotrema* in *Pallidus*; *bipindiensis* in *Pseudofavolus*.

Third (*Ungulaformis*).—Thick, hard, with long pores and generally hoof-shaped. This section corresponds to the woody (*Fomes*) section of *Trametes* and might be called *Hexagona-Fomes*. We include here also *Hexagona resinosa* on its general nature, although it has a pale context and might be placed in the group *Pallidus*.

Fourth (*Applanatus*).—General shape applanate or flattened as distinguished from *Ungulaform* or hoof-shaped. Plants of this section are of a softer nature than the previous section. We include here for this reason *Hexagona amplexens*, that from its shape alone should be included in the preceding, and for a similar reason we include in the preceding *resinosa* which from its shape alone belongs in this section.

Fifth (*Tenuis*).—Pileus very thin, rarely two or three mm. thick with small (for *Hexagona*) regular, shallow pores. Surface smooth. We include in *Velutinus* species with pubescent surface.

Sixth (*Pallidus*).—Context white or pale ochraceous. (All the preceding except *resinosus* have context that is more deeply colored, ferruginous, cinnamon, etc.)

Seventh (*Pseudofavolus*).—All the previous have context suberose or subligneous. In this section we include the species with fleshy, tough nature. Usually they have been classified with the genus *Favolus* from which they differ essentially in their pore shapes. Patouillard bases on them a genus (*Pseudofavolus*). In our opinion, they should be included in *Hexagona*.

⁷ I have never seen these, but Palisot gave such fine illustrations that it is not necessary to see them. One can be as sure from such illustrations as from the specimen itself.

⁸ Viz: *Hexagona glabra*. As Saccardo seems to have started his compilation of the polyporoids with Fries's *Epicrasis*, this species does not occur and has been lost to all modern books.

Eighth (*Resupinatus*).—I think no resupinate species occur, but the section is convenient for a resupinate "species" so claimed.

GROUP 1, SETOSUS.

HEXAGONA APIARIA (Fig. 279).—Color dark. Surface densely covered with coarse, branched, dark hairs which are deterrentive,

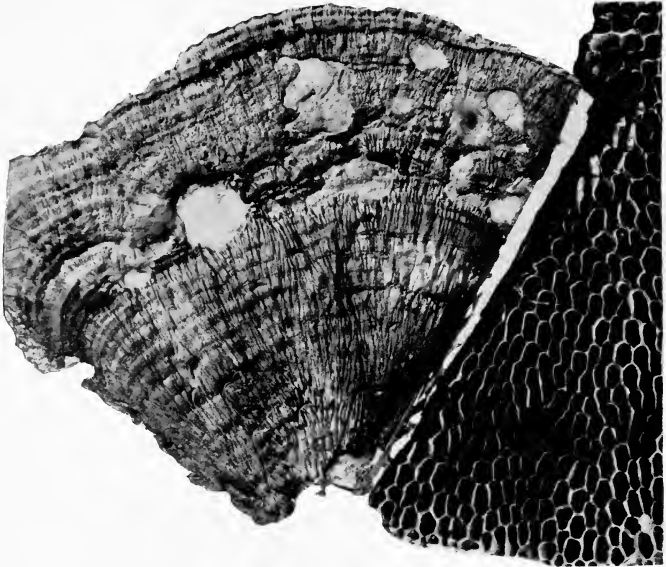


Fig. 279

Hexagona apiaria. Type at Paris.

and old specimens have the surface coarsely fibrillose. Pores large (3-4 to cm.) from 5-10 mm. deep, ferruginous, often glaucous *with prominent setae* (cfr. page 3, fig. 278 x6.) Context thin, ferruginous.

History.—A frequent plant in the Philippines, India, Ceylon, and Australia, and as found in the museums usually called *Hexagona Wightii*. At Berlin there is a specimen from New Guinea and one from Guadeloupe.⁹ Linnaeus named something (none knew what) *Boletus favus* which came from China, and was evidently a *Hexagona* and probably this plant.¹⁰ The first specimen

⁹ This is the only specimen from an American station, but the plant is not included in N. A. F., which professes to include all West Indian species. Owing to the superficial work done by the author in the museums of Europe, he probably never saw the specimen.

¹⁰ The specimen does not exist in the Linnaean herbarium, though there is in the herbarium a specimen of *Hexagona tenuis* named "*Boletus favus*, Linn." by Dickson, many years after Linnaeus died.

known to reach Europe was from Rawak and was named *Polyporus*¹¹ *apiarius* by Persoon and a good figure given. The specimen (Fig. 279) is in good condition at Paris. Next Klotzsch got a specimen from Wight, India, which he called *Polyporus Wightii*, and also gave a good figure of it.¹² He noticed the setae (See fig. 278, page 3) in the tubes, which are evident even to the naked eye, and gave an exaggerated figure of them and based on them a "new tribe," *Scenidium*.¹³ A number of specimens have since reached Europe and are usually referred to *Wightii*. At the time he described the plant Klotzsch published that it was the same as *Boletus favus* of Linnaeus, and that was also Berkeley's opinion, and I think was probably true.¹⁴

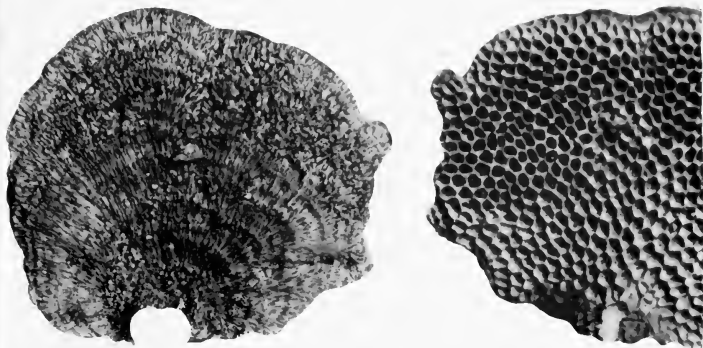


Fig. 280

Hexagona hirta.

HEXAGONA HIRTA (Fig. 280).—Color dark. Surface covered with a dense coat of rigid, branched, dark hairs. These are often detersive. Context dark, ferruginous. Pores medium (about 8 to 10 to cm.) about 5 cm. deep. Owing to the depth and relatively small size of the pores it is often put in *Trametes*, and it belongs there about as well as in *Hexagona*.

History.—It seems to be a common plant in Africa, but only in Africa as far as I know. It was most beautifully and accurately illustrated by Palisot-de-Beauvois more than a hundred years ago (1805) and his specimen is at Geneva. Notwithstanding it frequently reaches Europe, but one single specimen has ever been referred to Palisot's name. Fries discovered it was a new species

¹¹ Persoon at the time was aware of the genus *Hexagona*, but declined to consider it a genus, stating that the size of pores is only a relative character.

¹² I think the type does not exist. The only specimen I have seen from India is at the British Museum, but was not collected by Wight.

¹³ Under these conditions it seems to me very careless, to say the least, for Mr. Murrill to describe the pores of *Hexagona Wightii* as "glabrous within."

¹⁴ Klotzsch does not seem to have been consistent in his views of "*Boletus favus*, Linn." He gives this plant as being the same, and then he refers another plant to *Hexagona sinensis*, which was only a name-change of "*Boletus favus*."

and called it *Hexagona crinigera*. Klotzsch got it from Mauritius and referred it to Linnaeus' (alleged) species under a Friesian name-change, *Hexagona sinensis*. Berkeley decided it was not the Linnaean species and changed it to *Trametes Klotzschii*. (He was only guessing, but probably guessed right.) I think this name has been most generally used for it. Then Lévillé got a specimen from Madagascar, and found it to be another new species, *Trametes crassa*. Then Cooke got the *same collection* (Perville, Madagascar) and described it as *Trametes adelphica*, but he does not seem to have taken himself very seriously, for he never changed his manuscript name on his specimens and they are found to-day in his collection as *Hexagona strigosa*.



Fig. 281
Hexagona capillacea.

HEXAGONA CAPILLACEA (Fig. 281.) — Color light, ferruginous or cinnamon, covered with a dense coat of concolorous hairs. Pores large, 3-4 mm. deep, with thin, flaccid walls. Bright ferruginous in color, devoid of setae.

History.—This is known from a single specimen (Fig. 281) from Venezuela, South America, now in the herbarium of Patouillard. From the figure it is evidently close to *apiaria*, but is lighter color, has finer hairs and thinner, more flaccid pore-walls.

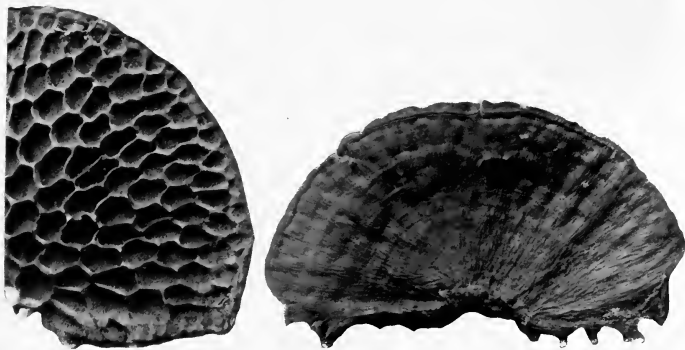


Fig. 282
Hexagona Deschampsii.

HEXAGONA DESCHAMPSII (Fig. 282).—Pileus dark reddish brown, with adpressed fibrils, a few with free ends. Context thin, ferruginous. Pores large, 3 to cm., rather shallow (3-4 mm. deep) bright, ferruginous (never glaucous) and with prominent setae.

This species is quite similar to *apiaria* but is smaller, thinner, and never has the dense coat of rigid hairs characteristic of *apiaria* in its prime. It is only known from Ceylon. Abundant specimens reached Berkeley and were by him referred to *crinigera* of Africa (from which it is quite different). Then a single specimen, having strayed into Paris, was named *Hexagona Deschampsii*.

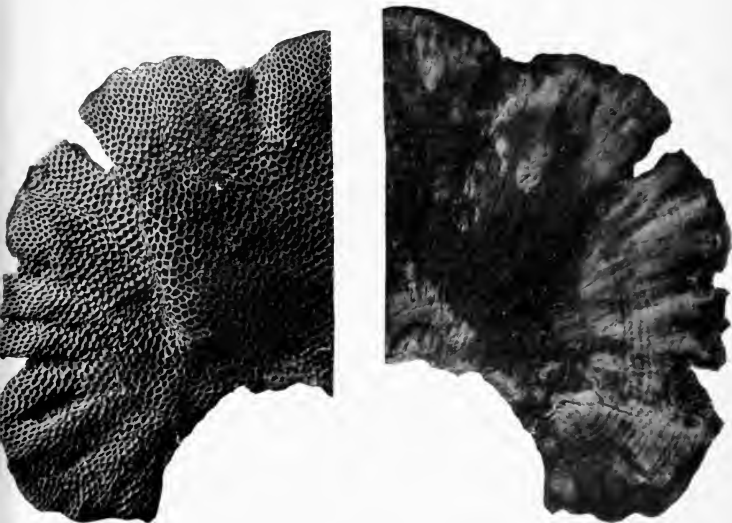


Fig. 283

Hexagona aculeata. Type at Paris.

HEXAGONA ACULEATA (Fig. 283).—Color reddish brown, with appressed, fibrillose, zonate surface. Pileus thin. Pores medium, 5-6 to cm., regular. Color ferruginous.

This is known only from one collection made in French Guiana by Leprieur. It is in Montagne's herbarium, and there is also a co-type at Upsala. It has about the same sized pores as *Hexagona hirta*, but is a lighter colored plant, is thinner, and does not have the same dense coat of hairs.

HEXAGONA ELEGANS (Fig. 284).—Color dark, reddish brown. Surface with appressed, rigid fibrils and zonate. Pores medium, 5-6 to cm., 6-8 mm. deep, glaucous.

A single specimen of this is in the museum at Paris and its origin is not known. It is not as close to *Hexagona aculeata* as might appear from the

photograph. It is a thicker plant and the pores are glaucous, also the surface is not so strongly zoned.

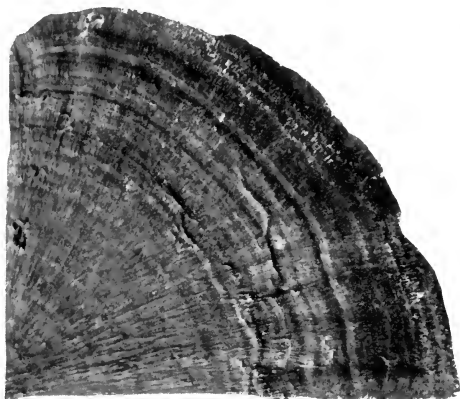
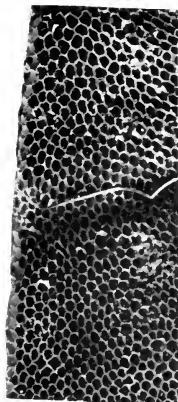


Fig 284

Hexagona elegans. Type at Paris.

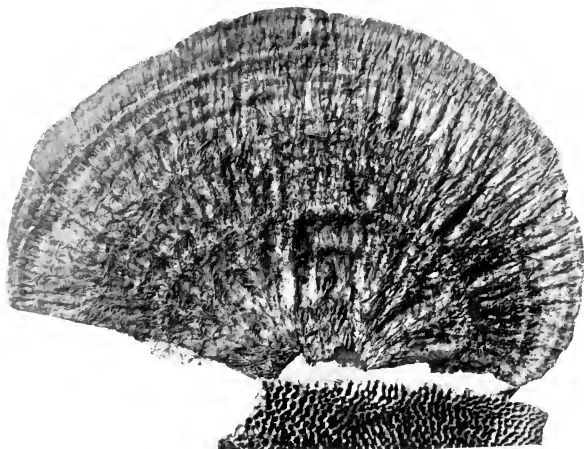


Fig. 285

Hexagona Dybowski. Type at Paris.

HEXAGONA DYBOWSKI (Fig. 285).—Pileus thin, flexible, of a pale color. Surface rugulose, zoned with a dense coat of pale, slender hairs, which are detersive, and old specimens evidently become almost smooth. Pores medium, pale, with angular walls disposed to become somewhat irpicoid.

There are three collections of this plant from the Congo, Africa, in the Museum at Paris, but it has never reached any other museum. It is a unique species, very different from all others of this section in its pale context color and the general color of the plant. Its affinities are rather with *Trametes* or *Polystictus* than with *Hexagona*.

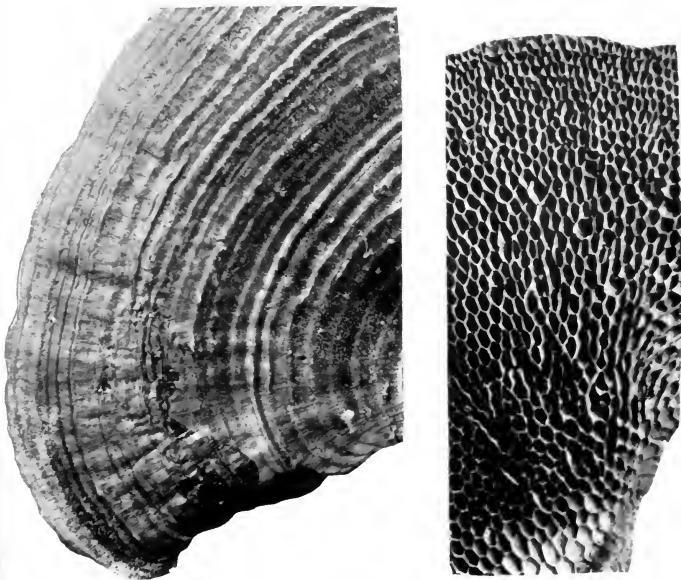


Fig. 286

Hexagona Henschalli. Type at Kew.

HEXAGONA HENSCHALLI (Fig. 286).—Color reddish brown. Pileus thin, strongly zoned. Most of the zones are smooth or appressed fibrillose, a few with free fibrils. Pores large, rather shallow, glaucous, with thin walls and disposed to become a little irpicoid.

A single specimen is at Kew from Java, and named *Hexagona Henschalli* by Berkeley. It was never published, but was placed in the *apiaria* cover from which species it seems to me to be quite different.

GROUP 2, VELUTINUS.

We include in this group only the thin, velutinate plants that correspond to the group *Tenuis* in form and thickness. There are three other pubescent or velutinate plants (mentioned on page 14) which are included in other groups. As included here, the entire group might be considered a single species. All are very similar plants, thin with zonate, velutinate surface, and small, regular, shallow pores. It is chiefly an American group and abundant specimens are in the museums from the West Indies, Mexico, and South America. Of other than American specimens there are only three collections known, viz.: one each from New Caledonia, Africa, and Ceylon.



Fig. 287.

Hexagona variegata.

HEXAGONA VARIEGATA (Fig. 287).—Pileus thin, with ferruginous context. Surface velutinate with fine hairs and strongly marked with variegated, colored zones. Pores small, regular, shallow, smooth, usually ferruginous color, but sometimes glaucous.

This is a strongly marked species, the upper surface resembling bright forms of *Polystictus versicolor*. The contrast of zones usually alternate seal brown and blood brown. Sometimes plants are more evenly colored and then it runs into the next "species." It is a common plant in Mexico, Central America, West Indies, and South America, and many specimens are in the museums. Most of them are called *variegata*, and Berkeley so labeled most of his specimens. There is no question, however, that it is the same plant that Berkeley at a much earlier date named *Hexagona papyracea* and as he himself virtually so

stated. The name *variegata* is a much better name and has been generally employed.¹⁵

The two following may be called varieties or species, as you may prefer.



Fig. 288
Hexagona scutigera.

HEXAGONA SCUTIGERA (Fig. 288). — In Balansa's *excicatae* are found specimens so labeled on Spegazzini's authority. It is practically the same as the preceding except the surface is of a uniformly brownish color and is perhaps more rugulosely zoned. In any large collection of *Hexagona variegata*, however, all connecting forms occur, and it is at best a form. No type exists, but I judge it is correctly named, in which event it is a case for the date dictionary experts.

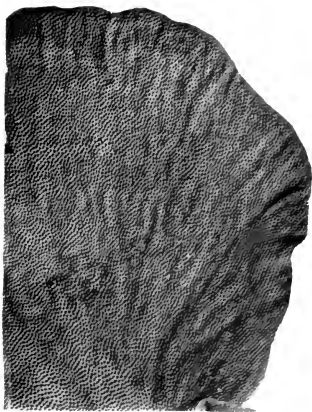
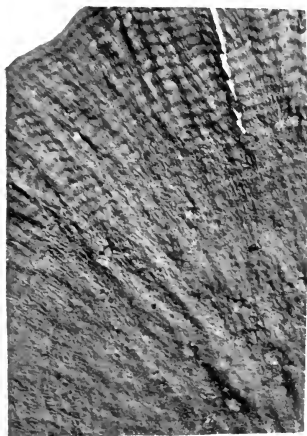


Fig. 289
Hexagona velutina. Type at Paris.

¹⁵ Even Mr. Murrill uses it, though in order to excuse his disregard of dates he puts a question mark after *Hexagona papyracea*. If any doubtful mark should be used, it should be after *variegata*, for the type specimen of *Hexagona papyracea* is in good condition and unquestioned, and there is no type of *Hexagona variegata* so labeled. As a matter of fact I believe there is a "type" from which *variegata* was named, but it is labeled *Hexagona papyracea*.

HEXAGONA VELUTINA (Fig. 289).—The only specimen of this section known from Africa has a uniform brown color with narrow zones. It also has smaller pores. Otherwise it is the same as variegata. It is known from a single specimen and was called velutina. Nearly the same plant (one collection) reached Berkeley from Ceylon. He referred it to variegata.

Note.—The following species with pubescent pilei are placed in other sections: Pobeguini in *Applanatus*; macrotrema in *Pallidus*; bipindiensis in *Pseudofavolus*.

GROUP 3, UNGULAFORMIS.

(Hexagona of the "Fomes" type are few in number, but very marked species.)



Fig. 290.

Hexagona nitida. Type at Paris.

HEXAGONA NITIDA (Fig. 290).—Pileus with a hard, smooth, sulcate, polished crust. Context ferruginous, hard. Pores medium (5 to cm.) deep, $1\frac{1}{2}$ to $2\frac{1}{2}$ cm., reaching the crust.

This is the only *Hexagona* that occurs in Europe, and it is known only from two stations in the extreme south. It was first found in 1829 in the Pyrenees, and in Algeria in 1844. Both were on the live oak (*Quercus Ilex*) and came to Montagne, who named the species. He gave a good figure in Flora of Algeria. Then Dr. Marcucci seems to have collected it abundantly in Sardinia and his specimens (*Exsiccatae* No. 69) are in most of the museums under the name "*Hexagona (Favolus) Mori* Poll.," Dr. Marcucci having referred it in error to an old figure of Pollini, to which it has little resemblance. Afterwards Baglietto, noting the mistake, naturally discovered it must be a new

species and called it *Hexagona Marcucciana*.¹⁶ At Paris, where it can be compared with Montagne's specimen, I doubt if one can be told from the other if they were transposed. I think Professor Maire has collected it in Greece, but I have seen none of his specimens. *Hexagona nitida* from what is known seems to occur only on the live oak (*Quercus Ilex*) and only in the Mediterranean countries. There are several of Marcucci's collections in the museums, mostly now badly eaten. The only good specimen I have seen is the Algerian collection in Montagne's herbarium, from which our figure (290) has been made.

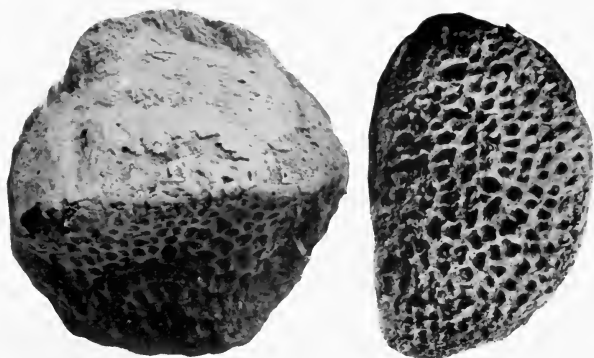


Fig. 291

Hexagona Gunnii. Co-type at Paris.

HEXAGONA GUNNII (Fig. 291).—Pileus unguiform, with a thin, fragile, smooth, reddish brown crust which appears to me slightly laccate. Context thick, ferruginous.¹⁷ Pores large, concolorous, with thick walls.

This species is represented at Kew by several collections from Tasmania and Australia. I think it grows on Eucalyptus trees. Berkeley named it in 1839 as *Polyporus vesparius*, and then changed it (unfortunately without Otto Kuntze's consent) to *Hexagona Gunnii*.¹⁸

HEXAGONA SULCATA (Fig. 292).—Pileus subligneous, with a hard crust and deep, sulcate ridges. Context ferruginous. Pores medium (4-5 to cm.) deep, rigid, pale wood color.

¹⁶ This was in "Erbario Crittogamico Italiano," where Marcucci's collection was again distributed. The advertisement is given in Saccardo as "Bagl. & de Not," but they were both lichen men. I suspect Cesati was really responsible for it, as he seems to have been the chief fungus man of these exsiccatae.

¹⁷ I think this is the only species known with a strong development of the context. Usually the pores almost reach the crust.

¹⁸ I do not know why Berkeley changed the specific name when he put it in *Hexagona*, but he no doubt had good reasons for it, and he thought he had the right. At any rate it was before our "lawmakers" had legislated on the subject as to what a man has a right to do in his own private affairs.

This strongly marked species is only known from Ceylon. Berkeley published it in 1847 with a good figure and sent specimens to both Fries and Montagne. That sent to Montagne (Fig. 292) was typically sulcate, but the specimen to Fries (Fig. 293) was more even. Berkeley did not retain a specimen in his own herbarium, and when some twenty years later he received the smooth form also from Ceylon he described it as *Hexagona durissima*. It is the same as the specimen of *sulcata* he sent Fries. Whether or not it is the same species as *sulcata* I do not know, but I think probably only a smooth form.



Fig. 292
Hexagona sulcata.

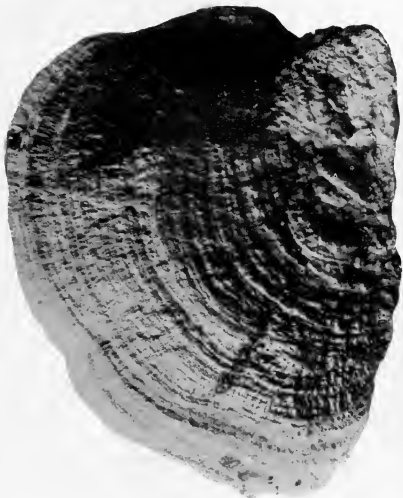


Fig. 293.
Hexagona durissima.

HEXAGONA DURISSIMA (Fig. 293).—This seems to be practically the same plant as *sulcata* except it has a more even crust. It is known only from Ceylon, but recently I have seen a specimen so referred, and probably correctly, from Java.

HEXAGONA RESINOSA (Fig. 294).—Pileus applanate, with a dark resinous crust. Context hard, sub-woody, pale alutaceous or pale ferruginous. Tubes medium, 5 to cm., 1 to 1½ cm. deep, pale color, with rigid walls. Spores (teste Murrill) hyaline, smooth, 4 x 6.

This species was recently well named by Murrill, from the Philippines, and is very different from all others. It is known only from one collection or record.¹⁹ Its natural relations I think are with *Fomes pinicola*, the same

¹⁹ *Polystictus Copelandii*, as distributed by the Philippine Bureau of Science, No. 1214 (specimen sent to Kew), is evidently *Hexagona resinosa*, through some transposition of specimens. Mr. Murrill has introduced enough confusion with his jargon of names among the Philippine polyporoids, without having the subject further confused by transposition of specimens in distributed sets.

resinous crust, same context, and the coloration both of context and crust is similar. There is no similar plant in the genus *Hexagona*, and it might well be made the type of a new genus. We place it in this section on account of its evident "Fomes" relationship, though as to form it belongs in the next, and as to context color it approaches the section *Pallidus*.

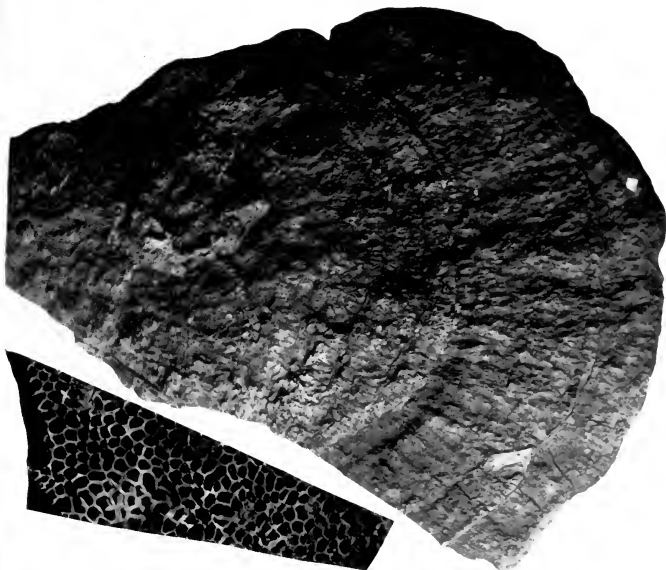


Fig. 294.

Hexagona resinosa. Co-type in museum at Berlin.

Note.—*Hexagona laevis* was based on nondescript material from Andaman Islands. There is one poor specimen at Kew and another at the British Museum. I judge it belongs in this section.

GROUP 4, APPLANATUS.

This is an artificial group to include species that have no one prominent character to throw them into other groups, and which are flat but not too thin.

HEXAGONA POBEGUINI (Fig. 295).—Pileus applanate, with concentric, sulcate zones, and minutely pubescent. I think the pubescence wears off to a certain extent on old specimens. Context subligneous, harder than others of this group, ferruginous. Pores large 2-3 to cm., ferruginous, with rigid walls and setae.

This seems to be a frequent plant in Africa, and several collections are at Paris and Berlin. One at the British Museum was named *Hexagona Welwitschii*. In fact, the plant was discovered to be a "new species" in each of

the three museums where it is to be found.²⁰ The zones of the pileus are sometimes (in the type specimen) colored with different shades of brown. The pores of the type were crenate, but that was only an accidental character of this particular specimen. The pores vary in size, as shown in our figures.

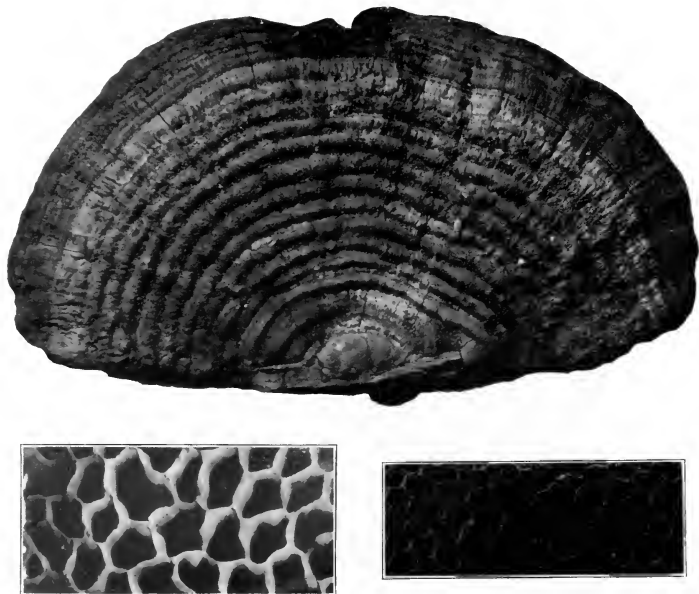


Fig 295

Hexagona Pobeguini.

HEXAGONA NIAM-NIAMENSIS (Fig. 296).—Pileus *smooth*, unicolorous, with narrow zones. As to surface it much resembles *Hexagona tenuis*. Context ferruginous. Pores medium, about 4 to cm., regular, with thin hexagonal walls, $\frac{1}{2}$ cm. deep. They have no evident setae and some of them (not all) are glaucous.

This is known from a single specimen (Fig. 296) from Africa at Berlin. The specific name, while alleged to be Latin, is more probably from an Ethiopian dialect. It is a terrible misfortune for a plant to have to bear such a name as that.

²⁰ In a case of this kind we are very much disposed to take the best name, as we believe plants should be given decent names. Where a poor plant has had the misfortune to be named Pobeguini, Stuhlmanni, and Welwitschii, there is not much choice.

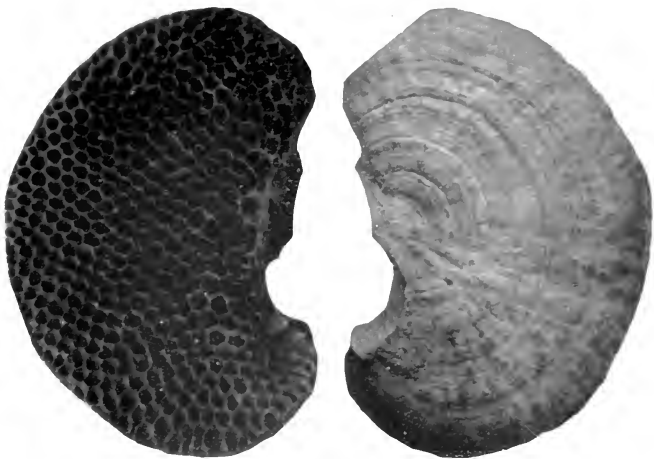


Fig. 296.

Hexagona niam-niamensis. Type at Berlin.

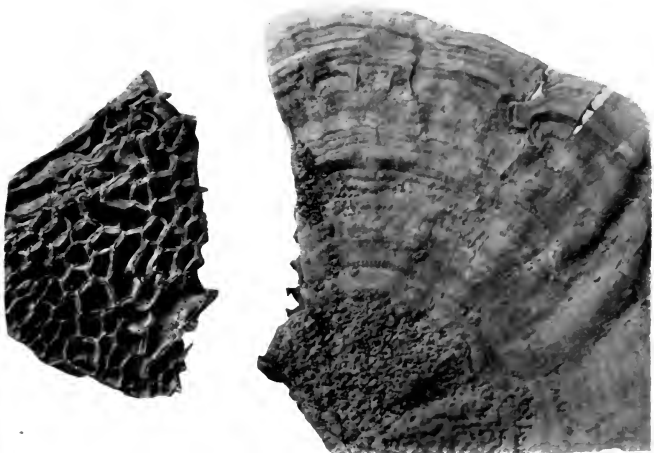


Fig. 297.

Hexagona chartacea. Type at Paris.

HEXAGONA CHARTACEA (Fig. 297).—Pileus rather thin, smooth, with narrow zones. Pores large, about 3 to cm., 5 mm. deep, with thin walls. Color ferruginous and setae evident.

This is rather a thin species for this group and is known from two collections from Africa. One of the collections was named *Hexagona obversa*, but seems to be too close to be kept distinct. I can see very little application of the name *chartacea* to this plant.

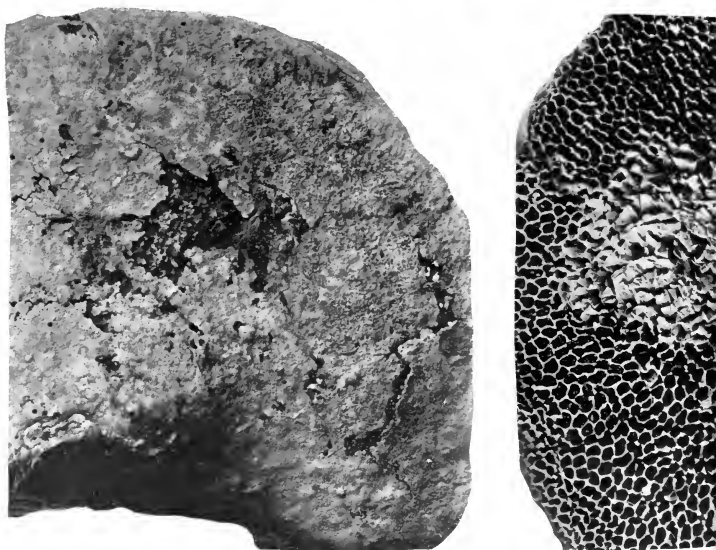


Fig. 298.

Hexagona leprosa. Type at Upsala.

HEXAGONA LEPROSA (Fig. 298).—Pileus with a thin, dull, slightly pubescent crust, not zoned. Context soft, spongy, ferruginous. Pores medium, 4-5 to cm., $1\frac{1}{2}$ -2 cm. long, with thin walls. The inner surface of the pores is pubescent under the lens, with short, pale hairs. The color of the entire plant is almost uniform.

This is known only from a single specimen, collected in the West Indies,²¹ about sixty years ago and preserved in a jar at Upsala. There is a small co-type fragment also at Kew.

²¹ It has been stated "also in Brazil." I know not the source of this statement, but am sure there is no specimen from Brazil in any museum of Europe that I have visited.

HEXAGONA SPECIOSA (Fig. 299).—Pileus with a thin, zoned, smooth crust. Context and pores ferruginous. Pores medium large, about 4-5 to cm., 1-1½ cm. deep, with thin walls becoming lacerate.

In size, shape, and color this plant is much like the preceding. It is known from a single specimen in a jar at Upsala and a co-type at Kew. It came from South Africa sixty years ago.

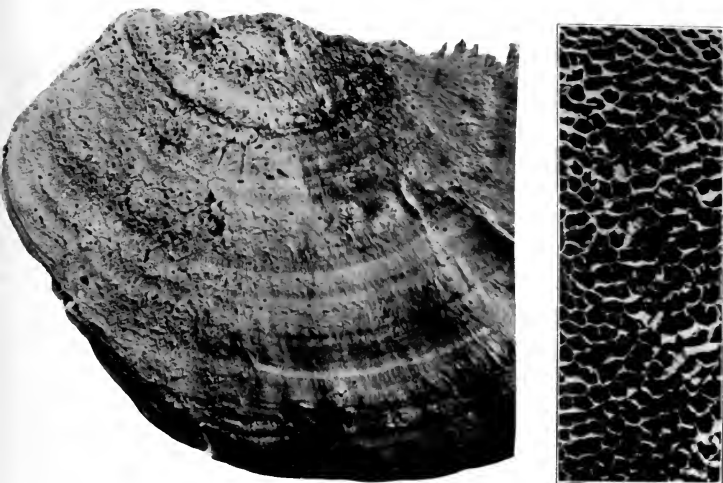


Fig. 299

Hexagona speciosa. Type at Upsala.

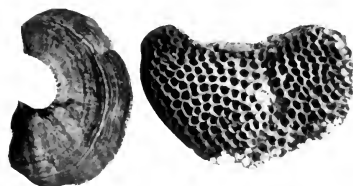


Fig. 300.

Hexagona Kurzii.

HEXAGONA KURZII (Fig. 300).—Surface dark reddish brown, rugulose, zoned. Pores medium 5 to cm., 5 mm. deep, strongly glaucous.

This came from India and has a general resemblance to Hexagona polygramma.²² The pores are too deep, however, to be entered in the section with polygramma.

HEXAGONA ERUBESCENS (Fig. 301).—Pileus *rigid*, about 2 cm. thick, with a smooth zoned crust. Pores irregular, angular, about 5 to cm., 1-1½ cm. deep, with *rigid*, rather thick walls. No setae.

²² The co-type collection is at Kew on a sheet of polygramma.

This is based on a collection by Spruce, Brazil, and is at Kew. The collector states "Hymenium vinosum," hence Berkeley named it *erubescens*. The pores have lost all vinous color now. The strong character of the species for me is its *rigidity*, both of pileus and pores. The species is found in Saccardo in section "Hirtae." The type has not a sign of a hair of any kind. There is a collection at Kew, however, that was referred to *erubescens*, and which has appressed fibrils, but I think it quite another (and a "new") species. I should prefer that some one else name it.

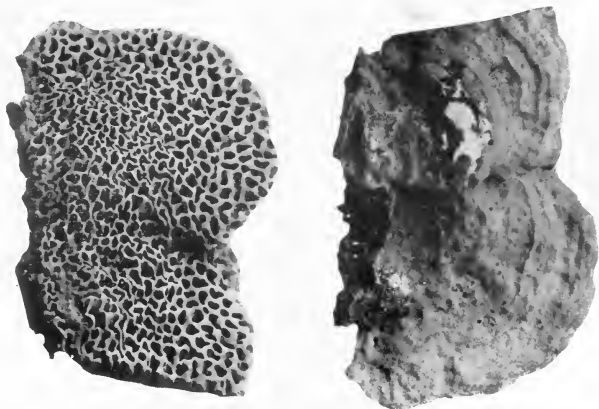


Fig 301.

Hexagona erubescens. Type at Kew.



Fig. 302.

Hexagona amplexens.

HEXAGONA AM-
PLEXENS (Fig. 302).—
Pileus small, ungulaform,
gibbose, smooth, with sul-
cate zones. Context brown,
suberose. Pores 5-6 to cm.,
5-8 mm. deep, concolorous,
with thin walls, no setae.

This little species is unique in size and shape. It is known from one collection in the herbarium of Patouillard, and came from New Caledonia. It evidently grew on small branches which it partially encircled.

SECTION 5, TENUIS.

This group is the most important of all for it embraces the only common species that grows in many warm countries, viz.: *Hexagona tenuis*. They are *thin* plants, rarely over two or three mm. thick, with smooth, concentric-zoned pilei. The pores are small and shallow. Sometimes the plants are called membranaceous, but I think are not thin enough to be called membranes.



Fig 303

Hexagona tenuis. (Type form.)

HEXAGONA TENUIS (Fig. 303).—Pileus rigid, with a smooth, concentric-zoned surface. Context thin, about 2 mm., ferruginous. Pores small, regular, round, 8-12 to cm., shallow.



Fig. 304

Rugulose form classed as *Hexagona tenuis*. (Kew.)

This is a widely distributed plant and occurs in most warm countries of the world. Like all widely distributed plants it varies, and it is not practicable to maintain all the specific names that have been given to it. As to pore size those with the smallest pores were named *Hexagona pulchella* (Fig. 305), then the type size (Fig. 306) and the largest size (Fig. 307) were called *Hexagona polygramma*. With hardly two collections with exactly the same sized pores, it is difficult to maintain these "species." And yet the pore sizes have some value for they are usually uniform in specimens of the same collection. They also vary as to color, and particularly in the development of a glaucous pore covering. Some collections have no sign of it, others are partially glaucous, and others strongly glaucous. *Hexagona cervino-plumbea* is only a glaucous form.

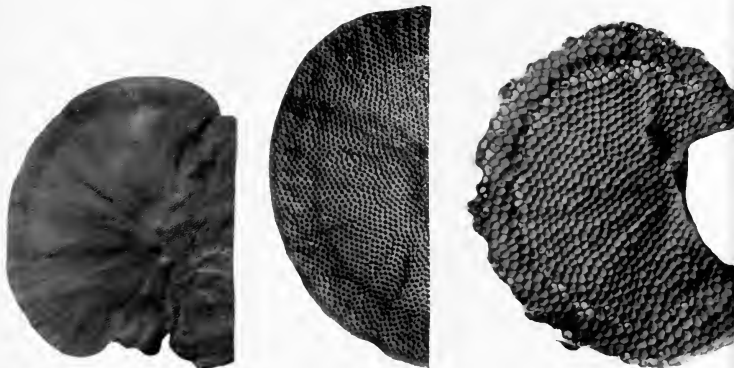


Fig. 305.

Fig. 306

Fig 307

Comparative pore sizes. Fig. 305, *pulchella*. Fig. 306, *tenuis* (type). Fig. 307, *polygramma*.

History.—The first specimen recorded was brought by Humboldt from South America and is still preserved in Hooker's herbarium. It was published by Hooker as *Boletus tenuis* in Kunth Synopsis (1822) and in the preceding paragraph an anomaly of the same species as *Boletus reticulatus*.²³ However, this was not the first specimen to reach Europe, for it is found in the Linnean herbarium with no clue to its source. It is labeled "*Boletus favus*, Linn.," an obvious error as pointed out first by Klotzsch, then by Berkeley, and very recently by Mr. Murrill.²⁴ *Hexagona tenuis* is a very common species in many

²³ As this was published at a "previous date," according to Kuntze's method of reckoning dates, it was necessary to find another species called *reticulatus* to put forth as a reason for not taking the name. This was not a *Hexagona*, but that was a minor matter compared to the importance of Hooker having published *reticulatus* in a previous paragraph to *tenuis* in the same book. It was Klotzsch who first recognized that *reticulatus* was only an altered condition of *tenuis*, and he so indorsed it on the label, from whence was obtained the information that was diluted upon at length recently, forgetting to mention that it had all been published in full by both Klotzsch and Berkeley many years ago.

²⁴ "Im Linne'schen Herbarium, *Boletus favus* ist *Polyporus tenuis*, Hooker."—Klotzsch, 1832.

"*Hexagona tenuis* is marked in the Linnean herbarium *Boletus favus*, but not by Linnaeus, with whose description it does not correspond. The name is evidently not authoritative."—Berkeley, 1842.

"This species is found in the Linnean herbarium marked *Boletus favus*, but not by Linnaeus, nor with his sanction."—Murrill, 1905.

Had Mr. Murrill, instead of copying Berkeley, done a little investigating in the Linnean herbarium he would have found that "this species" was named by Dickson many years after Linnaeus died, and under the circumstances he would have had considerable trouble in obtaining Linnaeus' "sanction."

countries and like all such species has been discovered to be "new" on numerous occasions.²⁵ A number of these seem to me to be absolutely the same plant, and I can see no difference whatever on which to base "new species."²⁶ Others do differ slightly from the type form, but whether this is of specific importance or not it is difficult to say.

Forms of *Hexagona tenuis* or related plants.

HEXAGONA PULCHELLA (Fig. 305).—This plant from Java seems exactly the same as the type form except smaller pores.

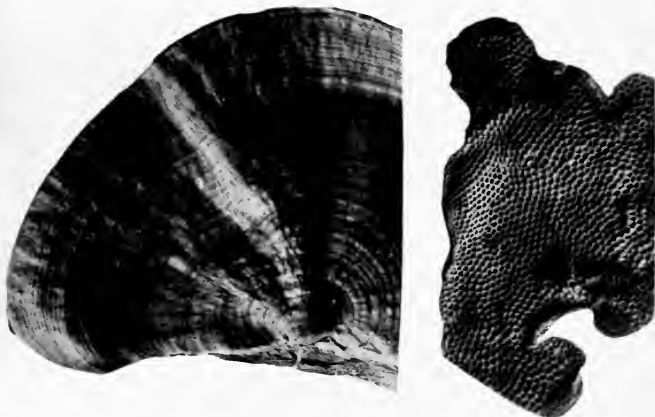


Fig. 308.

Hexagona polygramma.

HEXAGONA POLYGRAMMA (Fig. 308).—Originally from Cuba, the type is practically the same as that of *tenuis* with pores slightly larger. In most museums, however, all these similar plants are arranged in two covers, one "*Hexagona tenuis*, Hooker," the other "*Hexagona polygramma*, Mont." I can not believe that the namers have any distinct idea of a difference, for in both covers I have found indiscriminately collections varying as follows:

Size of spores.—From very small, as shown in Fig. 305, to size medium, as shown in Fig. 307.

Surface.—Relatively smooth and evenly zoned, as Fig. 303, to strongly rugulose, as shown in Fig. 304.

Color of pileus.—Very pale, almost white to brown, and many deep reddish brown.

²⁵ Not necessarily all, however, that are raked up and tabulated. Thus "*Polyporus bivalvis*, Pers.," given as a synonym, has little resemblance to it and is not a *Hexagona*. A good specimen is in Persoon's herbarium. "*Hexagona cingulata*, Lév.," and "*Hexagona unicolor*, Fries," are also said to be synonyms, but that is only a vague guess, as no specimens of either exist, and the compiler knew nothing about them.

²⁶ For further details see list of synonyms, pages 43 to 45.

Color of pores.—Pure cinnamon or ferruginous to dark (*fuscus*), sometimes bright silvery, glaucous.

At Kew there are ninety-two collections in these two covers and scarcely any two of them exactly the same. Under these conditions it is only practical to do as has been done and refer all to one or two species.

The following we should consider as forms of *Hexagona tenuis*, and we could manufacture as many more if we were so disposed.

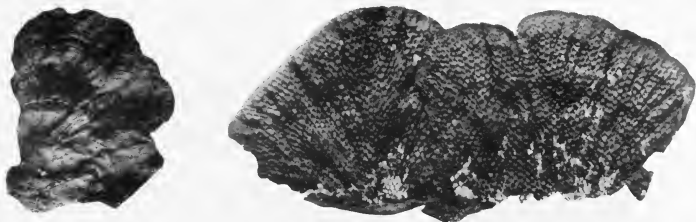


Fig. 309.

Hexagona umbrinella. Small one is the type at Upsala.

HEXAGONA UMBRINELLA (Fig. 309).—This has a dark reddish brown, rugulose surface.²⁷ The same thing is also called *Hexagona Dregreana*. *Hexagona Boneana* is also too close.

HEXAGONA CONCINNA is a very thin plant with small, dark pores and dark reddish pileus.

HEXAGONA DISCOPODA is a plant with the reddish stain only *partially developed* over the base of the pileus so that the plant is decidedly *two-colored*. It seems to be a frequent form in Africa and abundant specimens reached Hennings and were referred by him to *Hexagona polygramma*. It is probably the same as *tricolor* named by Fries from Africa many years ago (because of its color contrasts), but no specimen is known now.

HEXAGONA SUBTENUIS was named by Berkeley from India, but I think not published. It has ferruginous colored pores that to me under a lens appear slightly pubescent.

HEXAGONA PHAEOPHORA is a form with pale pileus and *dark* pores.

All the preceding are *thin* plants, very similar to *Hexagona tenuis*, and differing principally in color, pore color, and pore size. The four following, *rigida*, *similis*, *Muelleri*, and *nigrocincta*, are thicker plants (relatively), but with the same general characters and small regular pores. They differ among themselves as do the forms of *tenuis*. All come from the same geographical region, Australia, New Caledonia, and the Pacific Islands, and all, I think, are better considered as forms of one species.

HEXAGONA RIGIDA (Fig. 310).—Pileus about 3 mm. thick, with smooth or slightly rugulose zoned surface and small regular pores.

²⁷ The "co-type" that Fries sent Berkeley of *Hexagona umbrinella* is a much thicker specimen than is to be found in his own herbarium. I think it is not the same species.

The plant is close to *Hexagona tenuis* as to color and general appearance, with slightly deeper pores. It came from Australia. *Hexagona Muellerei*, also from Australia, and based on a single specimen, is practically the same with slightly more rugulose surface. *Hexagona nigrocincta* is for me a pale form of *rigida*, paler color and smoother than type of *rigida*. It came from New Caledonia, and the ordinary form of *rigida* also occurs there.



Fig. 310.

Hexagona rigida. Type at Kew.

HEXAGONA SIMILIS.—The type specimen is of a very dark color with agglutinate, fibrillose zoned surface, so that it has relations to the section *Setosus*. None of the fibrils are free, however, and I think it is closer to *rigida*. The pores are quite small and dark colored. The "type" is the only one in the cover that has the agglutinate fibrils strongly marked. Others so referred seem to me much closer to *rigida*.

HEXAGONA ATROSANGUINEA (Fig. 311).—Plant growing on under side of stick, and largely resupinate with narrow, pileate margin. Pileus thin, smooth, deep *blood brown* color. Pores small, rugulose, shallow, many *colored similar to the pileus*, and also with a glaucous deposit.

This species is very marked and the only one I have noted where the pores are strongly colored red-brown. Its habit of growth is also different from usual, and abundant specimens at Berlin all seem to have the same habits. Whether it ever takes a truly pileate form I do not know, but I judge not, as I think all the abundant types at Berlin are of the same nature. It came from Africa and is only found in the museum at Berlin.

HEXAGONA SACLEUXII (Fig. 312).—Pileus rigid, with a smooth, pale, strongly concentrically ridged surface. Pores vary in the

same collection (as shown in our figures) as to size. The large pores are about 5 mm. deep and strongly glaucous.

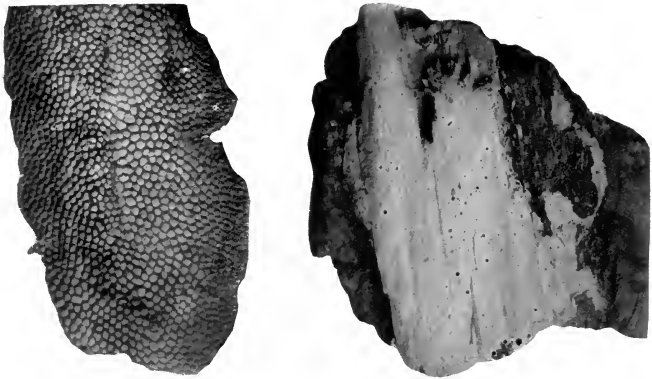


Fig. 311

Hexagona atosanguinea. Type at Berlin.

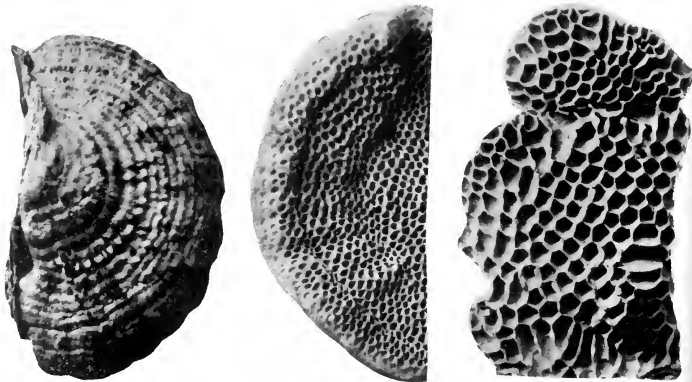


Fig. 312

Hexagona Sacleuxii. Type at Paris.

This is known from three collections at Paris, all from Africa. The pores are deeper than others of this group, otherwise it is close to *rigida*. The variation of pore sizes in the same collection is unusual, and I am not sure but that it is due to different ages. The large pores are strongly glaucous, the small pores not at all.

SECTION 6, PALLIDUS.

This section is quite distinct from all that precede in the *pale color* of its context. One species (*albida*) when fresh is *pure white* but discolours some in drying. The usual color of the museum specimens of this section may be called pale ochraceous or isabelline. I doubt if there are any in this section that are true *Hexagonas*. Probably all have the character of the *variation of the hymenium* strongly developed. In *Hexagona albida* (cfr. Figs. 313 and 314) and particularly in *Hexagona ochroleuca* the hymenium takes *hexagonal, daedaloid, and lenzitoid* forms and this tendency to *variation* is as much a *specific character* as any character a species can have.

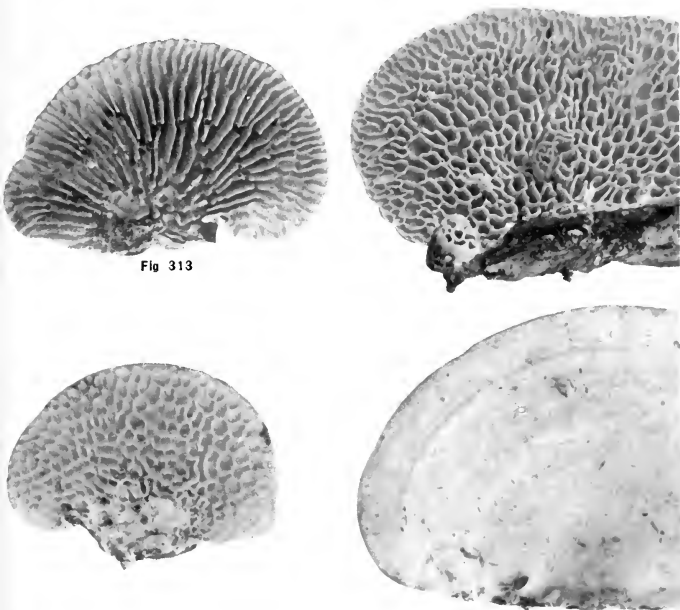


Fig 313

Fig 314

Hexagona albida. Photographed in Samoa.

HEXAGONA ALBIDA (Figs. 313 and 314).—Pileus pure white with soft, smooth, faintly zonate surface. Context soft, almost fleshy when fresh, in drying it becomes discolored in time and more tough. Pores large, irregular, about 5 mm. deep with thin walls. Sometimes lenzitoid forms (Fig. 313) are found growing with the hexagonal forms and our figures (313 and 314) are specimens that grew from the *same mycelium*.

History.—This plant was described under this name by Berkeley from the Philippines, and seems to occur mostly in Australia and the Pacific Islands. I found it in Samoa, but it is not common there. In Samoa it usually took the hexagonal form, rarely the lenzitoïd form, but in other localities it may run more often to lenzitoïd forms. It is the same plant, I believe, as *Daedalea inconcinna*, also from the Philippines, and *Daedalea intermedia* from Australia. I think *Hexagona Cesatii* from Borneo is exactly the same thing, with a tendency to become a little cyclomycoïd. When the history of these polymorphic plants is worked out it will probably be found to have names in other genera such as *Lenzites*.

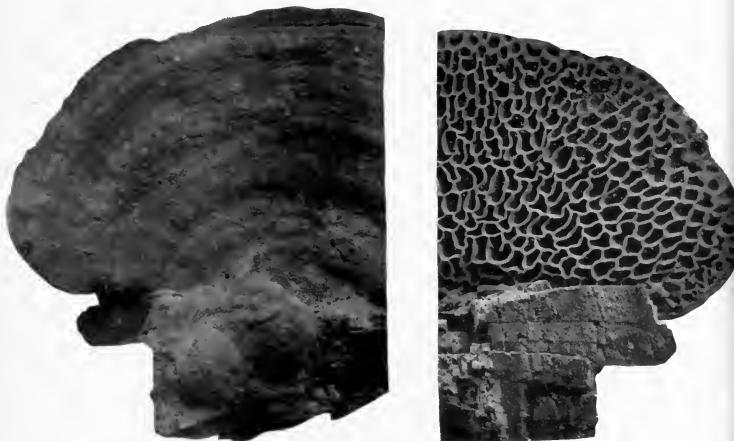


Fig. 315

Hexagona macrotrema. Type at Leiden.

HEXAGONA MACROTREMA (Fig. 315).—The description of *Hexagona albida* covers this species also, for it is the same thing excepting that the surface is distinctly pubescent. However, they are undoubtedly forms of the same species and they occur over the same region (Pacific Islands).

Hexagona macrotrema was first collected by Junghuhn in Java and so named by him on the label. The specimen is to-day found in Leiden in good condition and bears only Junghuhn's original label. Before he published it, however, L veill  visited the museum, saw the specimen, changed its name, and published it as *Hexagona Molkenboeri*. This did not please Junghuhn (naturally) and he wrote to Fries, who, when he published it used Junghuhn's name.²⁸ The name *Molkenboeri* is therefore "prior" from an Otto Kuntze point of view, and while I have great regard for priority it does not appeal to me when served with so much rascality. Therefore I use the name *macrotrema*.

Hexagona macrotrema is rather rare in the museums and has been mostly named *albida*. I have seen only the following three specimens: Java (Leiden),

²⁸ The plant is found in Saccardo, vol. 6, p. 369, under both names, pretending to be two different species, although both names were based on exactly the same specimen.

New Guinea (Berlin), Tropical Africa (Kew). As in the case of *Hexagona albida*, it is probable that it takes other hymenial forms.

HEXAGONA OCHROLEUCA (Figs. 316 to 319).—We shall not enter here into any detailed account of *Hexagona ochroleuca*, for it is usually not a *Hexagona*. In fact the name *glabra* is the only specific name that was given to it as a *Hexagona*, although it has a dozen other names, as *Trametes*, *Daedalea*, *Lenzites*, *Sistotrema*, etc. Generally it is a *Lenzites*, and if we ever consider it in detail it will be as a *Lenzites*, its usual form.

Hexagona ochroleuca is the most polymorphic species known, I think, and takes hexagonal, lenzitoid, irpicoid, and daedaloid forms, often in the same specimen. Our figure (318) shows three distinct hymenial forms. The hexagonal forms are rare and the type of *glabra* (Fig. 317) is the only one so named as a *Hexagona*, though several "species" of *Trametes* are based on the same thing. I have seen many lenzitoid forms. Lévillé named this specimen *Hexagona glabra*, and another specimen of the same collection (Roux, India) he called in the same paper *Sistotrema ochroleucum*. These plants are in the same cover at Paris, and they are surely the same species notwithstanding the hymenium is so different.

Hexagona ochroleuca has but few constant characters, none of a hymenial nature, and can only be learned by experience. Its consistency, color of context (alutaceous, not white when fresh), surface, and distant plates are the main characters by which it can be known from its equally abundant and equally polymorphic neighbor, *Lenzites repanda*. *Hexagona ochroleuca*, in its various forms as *Trametes*, *Lenzites*, etc., is a very abundant plant in India, Java, Philippines, and the East in general, and also in Australia.

We have not thoroughly investigated its synonymy, though we believe the following should be included: *Polystictus lenziteus* (Zollinger Col.), *Sistotrema ochroleucum*, *Hexagona glabra*, *Daedalea lurida*, *Daedalea pruinosa*, all by Lévillé, who seems to have discovered it was a "new species" every time he saw a specimen.

Trametes Beyrichii (as to Berkeley's Philippine determination, Cummings 2202),²⁹ *Trametes colliculosa* from Ceylon, *Trametes lobata* from India, *Trametes laticolor* from Ceylon, *Daedalea Hobsoni* from India (or Australia?),³⁰ and numerous recent determinations from the Philippines.³¹ *Daedalea Schomburgkii*

²⁹ As to Fries, from Brazil, it is doubtful, as *Hexagona ochroleuca* is not known from America. No specimen of *Trametes Beyrichii* exists, and what it was is unknown.

³⁰ *Daedalea Hobsoni* was published in a paper on Australian fungi and was based on a collection cited, made by Schomburg in Australia. Hobson collected in India, and Berkeley refers to his specimen incidentally as "the original specimen," though never formally published. Under these conditions our lawmakers ought to specifically tell us which is the "type locality" and which the "type specimen," as they put so much stress on those things. In this instance I think it makes no vital difference, because both are the same plant. Cooke afterwards discovered the "type specimen" of *Daedalea Hobsoni*, which Berkeley had labeled *Daedalea Schomburgkii* and sent Saccardo (cf. Vol. 6, p. 376) a description of this interesting "new species," though based on exactly the same specimen that Berkeley had described sixteen years before. As evidence of the value of our literature Saccardo puts it in a different section of the genus from the one in which he places *Daedalea Hobsoni*, although both were based on the same specimen.

³¹ It appears to me that Mr. Murrill's priority investigations were very superficial as to these plants (as with most others). He uses the name *Hobsoni* (1865), and it has a dozen names "prior" to that. Bresadola habitually calls the plant "*Daedalea lenzitea* (Lév.), Bres.," which was 1854, and Lévillé had four names prior to *lenzitea*, to say nothing of Berkeley's discoveries. In the whole list it does not have a suitable name, or I should use it without regard to the date. Lévillé's name *ochroleuca* is probably the best. I presume, however, some enterprising individual could take the synonyms I have cited, look up their dates, arrange them chronologically, and produce weighty evidence why *ochroleuca* can not be used.



Fig. 316

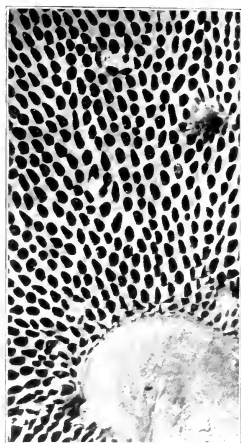


Fig 317



Fig. 318



Fig 319.

Hexagona ochroleuca. Figs. 316 and 317, type forms as *Hexagona*. Fig. 318, a specimen reduced, showing three variations of the hymenium. Fig. 319, an irpicoid form named *Sistrotrema ochroleucum*.

from Australia, *Daedalea tenuis* from Philippines, *Daedalea aulacophylla* from Australia, *Daedalea flabellum* from Andaman Islands, *Daedalea ochracea* from India, *Daedalea sub-confragosa* from the Philippines, *Lenzites Guilfoylei* from Australia, *Lenzites ochrophyllus* from India.

The old mycologists took the "genera" *Trametes*, *Daedalea*, *Lenzites*, etc., literally, and based a new species on almost every specimen of this plant in every hymenial form that reached them. When the science of mycology gets beyond its "new species" babyhood, and workers take a broader view of species than single "type" collections, then I believe all the species I have mentioned will be held to be the same plant. I call it in this paper *Hexagona ochroleuca*, but were I writing on *Trametes* it would be *Trametes ochroleucum*. The same applies to *Daedalea*, *Lenzites*, or *Irpex*. I think its better name is as *Lenzites* to correspond with its usual hymenial form, and the equally polymorphic *Lenzites repanda*.



Fig 320.

HEXAGONA VESPACEA (Fig. 320).—This may be exactly the same plant as *macrostrema*. It was one of the early Persoonian names (1826) and came from the island of Rawak. No other collection has ever been referred to Persoon's name, and the original collection is only known from two little specimens, one at Paris (Fig. 320), another in Persoon's herbarium at Leiden. These are *thinner* than specimens of the preceding species, and *darker*, though the dark color may be due to age. Persoon described them as smooth, but that they are somewhat pubescent can be seen from our photograph. (Fig. 320.)

HEXAGONA SEURATI (Fig. 321).—Context surface and pores unicolorous, pale alutaceous or isabelline. Context soft, homogeneous

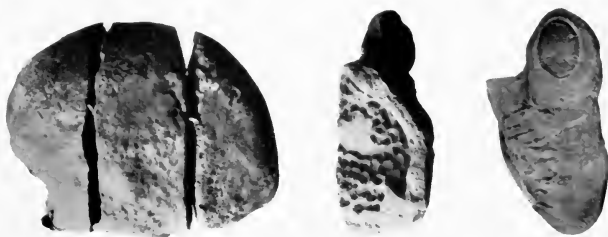


Fig. 321

Hexagona Seurati. Type at Paris.

with the pores. Surface smooth, no distinct crust. Pores large, shallow, many superficial.

This species is known only from one collection (Fig. 321) in the herbarium of Professor Patouillard. It came from Raiatea, one of the Society Islands.

HEXAGONA AEQUALIS (Fig. 322).—No better description of this can be given than to say that it is a hexagonal, tropical form of *Daedalea quercina*. The color, context, surface, everything, is exactly the same as the common



Fig. 322.

Hexagona aequalis. Type at Paris.

plant of Europe excepting the hymenial configuration. The pores, as will be seen from our photograph, are not truly hexagonal, but tend to daedaloid. *Daedalea quercina* is presumed not to occur in the tropics. If it does, this plant must be referred to it. It is known from but one collection, South America.³²

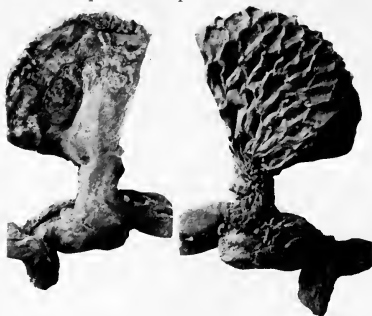


Fig. 323.

Hexagona rhombipora.

HEXAGONA RHOMBIPORA (Fig. 323).—Color pale alutaceous or isabelline, concolorous. Context thin. Surface smooth, no distinct crust. Pores large, flaccid, concolorous, tending to favoloid.

This is known from a single half specimen (Fig. 323) in the herbarium of Montagne. It came from Brazil. No similar specimen has ever reached Europe from South America. I have an impression that it is an aberrant, hexagonal form of some *Lenzites* perhaps.

³² I think it was a Mr. Smith who some years ago distributed some specimens from Central America "determined" by Ellis. Among others was a specimen labeled "*Irpex maximus*." It has no resemblance whatever to "*Irpex maximus*," which is only an irpicoid condition of the common *Polystictus occidentalis* of the tropics. Ellis, of course, had no way of knowing that, and his determinations of tropical species were but little more than a vague guess. The plant that he called "*Irpex maximus*" I have always considered as a tropical, irpicoid form of *Daedalea quercina*, the same as I consider *Hexagona aequalis* to be a tropical, hexagonoid form of the same species.

GROUP 6, PSEUDOFAVOLUS.

This section differs from all that precede it in its fleshy, tough nature, rather than corky-woody. It is not usually classed in *Hexagona*.³³ Several have been placed in *Favolus*, from which it differs in the basic idea of the genus *Favolus*, viz.: the shape of the pores. In my opinion, the species should be included in *Hexagona*, or if not, should be made into a separate genus. There are but few species known, including, however, the only *Hexagona* known from the United States.

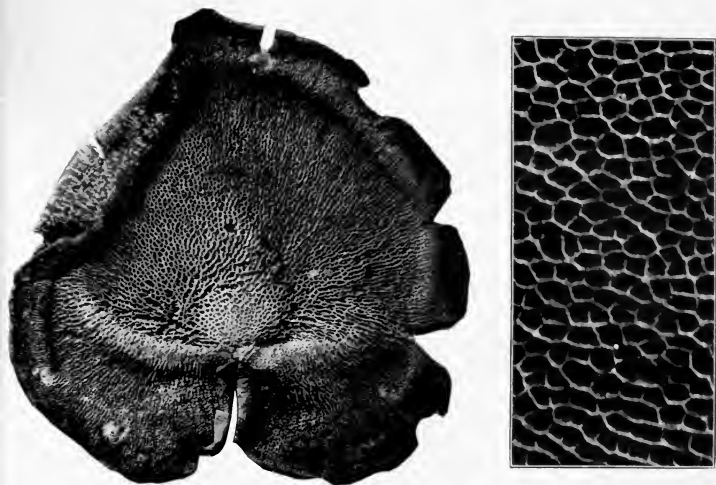


Fig. 324

Hexagona cucullata, natural size and pores x6.

HEXAGONA CUCULLATA (Fig. 324).—Pileus orbicular, reniform, attached by a short disk-like stem. Surface smooth, even, when fresh Mars yellow, when old deep, reddish brown. Pores concolorous, orbicular, a scant mm. wide, shallow.

This seems to be a rather rare plant, occurring in Southern United States, West Indies, and South America. At Kew there are but ten collections, including one from Ceylon (but probably the same) named by Cesati, *Favolus chartaceus*. In addition it has two other synonyms from the United States, *Favolus curtipes* and *Favolus Taxodii*, and I think a third, the recently described *Pseudofavolus auriculatus*³⁴ from Louisiana.

³³ But one of the species, *Hexagona Miquelii*, is placed in this genus in Saccardo.

³⁴ I have seen no specimen of this, as when I called it was not to be found. I feel so well convinced, however, that *Hexagona cucullata* is the only one we have in the United States that I have very little doubt as to its being the same thing.

Related plant.—POLYPORUS ORINOCENSIS (Fig. 325).—With the same color and other characters except its small pores, we mention *Polyporus Orinocensis* here, for we feel it is a very closely related plant notwithstanding its small pores. Professor Patouillard now places it in the same section with *cucullata*. It has small pores and they are paler than those of *cucullata*. When fresh they were probably white. It would not do to classify such a small-pored plant as a *Hexagona* and we wish Nature would be more consistent and make her species so they would fit into the man-made genera. It would be so much simpler. *Polyporus Orinocensis* is known from but one collection (Fig. 325) in the herbarium of Professor Patouillard.

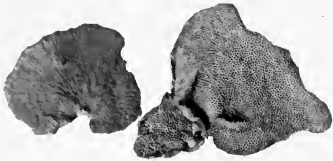


Fig. 325.

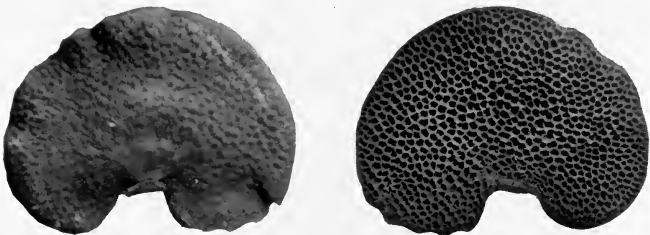


Fig. 326

Hexagona Miquelii. Type at Paris.

HEXAGONA MIQUELII (Fig. 326).—Pileus orbicular, reniform. Color deep reddish brown. Surface glabrous, but *strongly tessellate*. Pores orbicular, shallow, colored.

This, as to coloration, texture, and all characters, is exactly the same as *Hexagona cucullata*, except that it is strongly marked with a tessellate pileus. It is a very rare plant and but three specimens have ever reached Europe, all of which were discovered to be "new species." First, from Surinam, named *Polyporus Miquelii* by Montagne, a nice specimen (Fig. 326) in the herbarium of Montagne. Then from Java, by Zollinger, named *Polyporus pustulosus* by Léveillé, specimen in the herbarium of Professor Patouillard. The third from St. Domingo, named by Berkeley *Favolus induratus*. All are exactly the same plant.³⁵

HEXAGONA BIPINDIENSIS (Figs. 327 and 328).—Pileus thin, orbicular or reniform. Color reddish brown. Surface minutely velutinate, *strongly tessellate*. Pores pale, probably white when fresh, medium round, shallow.

³⁵ In a case of this kind, when Mr. Murrill uses the last name, *induratus*, his reasons are very puzzling to understand. As he has made so much fuss about "priority," we do not know whether he does not know it is the same plant or whether he thinks 1852 is prior to 1841.

This is represented by an abundant collection at Berlin. It came from Africa. It was named as *Hexagona bipindiensis* on the label by Hennings, but I do not know whether this was published. It is not his *Favolus bipindiensis*. A single specimen of what seems to me practically the same is found in Patouillard's herbarium under the name *Favolus velutinus* (Fig. 328). It came from Tonkin and has the same peculiar, velutinate surface. The pores are a little



Fig. 327



Fig. 328

Hexagona bipindiensis. Fig. 327 is type at Berlin.

larger and not so regular. I believe it to be, however, the same plant. The specific name *velutina* can not be used for a *Hexagona* as it is already occupied.

HEXAGONA MIRABILIS (Fig. 329).—Pileus white, smooth, thin, with a thin crust. Context none, the pores reaching the crust. Pores 1 to 2 mm. deep, 10-12 to cm., round or hexagonal, white.

This was a rare plant that I collected in Samoa in but one locality. When fresh it was pure white and a marked species, being so different from ordinary polyporoids. At that time I was not acquainted with any species of this group and was entirely at a loss to know where to place the plant. It is the only white *Hexagona* known in this section.

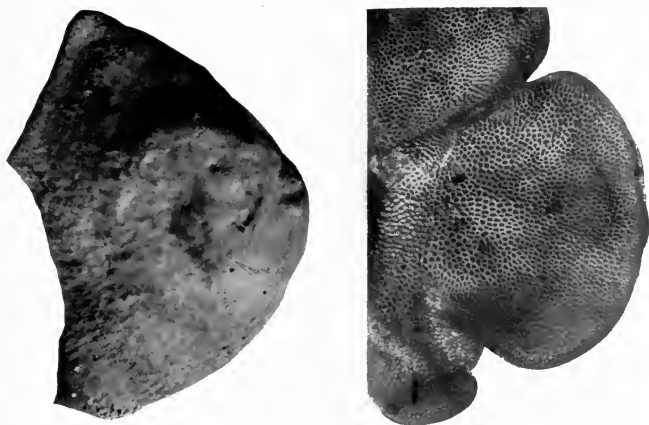


Fig. 329

Hexagona mirabilis. Photographed in Samoa.

SECTION 8, RESUPINATUS.

I believe there are no truly resupinate *Hexagonas*. The only one that has any claim is *heteropora*, and that is probably a resupinate form of something else. Some resupinate plants that have been named as *Hexagonas*, such as *carbonaria* and *Bartlettii*, are evidently so closely related to the ferruginous *Porias* that we shall so place them.



Fig. 330.

Hexagona heteropora. Types at Paris.

HEXAGONA HETEROPORA (Fig. 330).—Context pale. The remainder of the "description" can be made from our photograph. But three collections have been so named, which came from South America. We present photographs of all of them. The plant was named heteropora from the varying size of the pores, and it is evidently (from our figure) well named, if they are all the same species, which I doubt.

APPENDIX I.

NOMINA CONSERVANDA.

The following is an alphabetical list of the names of Hexagonas that we would "conserve." It does not have the formal sanction of our professional law-makers, but we think it has a better claim, namely, use, merit, and truth.

We give in addition to the name the country whence described, and as we think the name and country are the most important, we place them in heavy-face type. In lighter face type we summarize other details, viz.: the book citation, where published, and, what is more important, the museums where the type specimens are preserved. We also give what is of least importance of all, except to the parties concerned, the names of the wonderful discoverers.

ACULEATA—South America.—Ann. Sci. Nat. 2, vol. 13, p. 205. Montagne. Type, Museum at Paris.

AEQUALIS—South America.—Journ. de Bot., vol. 3, p. 258. Patouillard. Type in his herbarium.

ALBIDA—Philippines.—Jour. Linn. Soc., vol. 16, p. 47. Berkeley. Type at Kew.

AMPLEXENS—New Caledonia.—Bull. Soc. Myc. de France, vol. 18, p. 299. Patouillard. Type in his herbarium.

APIARIA—East Indies.—Voyage of Uranie, p. 169 (as Polyporus). Persoon. Type in museum at Paris.

ATROSANGUINEA—Africa.—Engler's Jahrb., vol. 23, p. 545. Hennings. Type at Berlin.

BIPINDIENSIS—Africa.—Not published, as far as I know. Hennings. Type at Berlin.

CAPILLACEA—South America.—Bull. Soc. Myc. de France, vol. 4, p. 36. Patouillard. Type in his herbarium.

CHARTACEA—Africa.—Bull. Soc. Myc. de France, vol. 9, p. 209. Patouillard. Type in museum at Paris.

CONCINNA—Africa.—Bull. Soc. Myc. France, vol. 9, p. 209. Patouillard. Type in museum at Paris.

CUCULLATA—Cuba.—Ann. Sci. Nat. 2, vol. 17, p. 125 (as Favolus). Montagne. Type in museum at Paris.

DESCHAMPSII—Ceylon.—Bull. Soc. Myc. France, vol. 7, p. 207. Hariot. Type in museum at Paris.

DISCOPODA—Africa.—Bull. Soc. Myc. France, vol. 9, p. 209. Patouillard. Type in museum at Paris.

DURISSIMA—Ceylon.—Jour. Linn. Soc., vol. 14, p. 57. Berkeley. Type at Kew.

DYBOWSKI—Africa.—Bull. Soc. Myc. France, vol. 8, p. 54. Patouillard. Type in museum at Paris.

ELEGANS.—Unknown, probably from Africa. Bull. Soc. Myc. France, vol. 7, p. 207. Hariot. Type in museum at Paris.

- ERUBESCENS**—Brazil.—Hooker's Jour. 1856, p. 237. Berkeley. Type at Kew.
- GUNNII**—Tasmania.—Flora of Tasmania, vol. 2, p. 255. Berkeley. Type at Kew.
- HENSCHALLI**—Java.—See page 11; not previously published. Berkeley. Type at Kew.
- HETEROPORA**—South America.—Jour. de Bot., vol. 3, p. 166. Patouillard. Type in museum at Paris.
- HIRTA**—Africa.—Flore d'Oware, p. 1, t. 1 (as Favolus). Palisot-de-Beauvois. Type at Geneva.
- KURZII**—India.—Trans. Linn. Soc., 2d ser., vol. 1, p. 126. Currey. Type at Kew, on sheet of polygramma.
- LEPROSA**—West Indies.—Nov. Symb., p. 101. Fries. Type in jar in museum at Upsala.
- MACROTREMA**—Java.—Nov. Symb., p. 101 (Junghuhn). Fries. Type in error in Box 42 of Persoon's herbarium at Leiden.
- MIQUELII**—South America.—Ann. Sci. Nat. 3, vol. 4, p. 357 (as Polyporus). Montagne. Type in museum at Paris.
- MIRABILIS**—Samoa.—Described on page 37. Type deposited at Kew.
- NIAM-NIAMENSIS**—Africa.—Engler's Jahrb., vol. 14, p. 348. Hennings. Type in museum at Berlin.
- NITIDA**—Algeria.—Sylloge, p. 170. Montagne. Type in museum at Paris.
- OCHROLEUCA**—India.—Ann. Sci. Nat. 3, vol. 5, p. 145 (as Sistrotrema). Lévillé. Type in museum at Paris. It is only a hexagonal form of a Lenzites.
- PHAEOPHORA**—China.—Bull. Soc. Myc., vol. 23, p. 74. Patouillard. Type in his herbarium.
- POBEGUINI**—Africa.—Bull. Soc. Myc. France, vol. 8, p. 28. Hariot. Type in museum at Paris. (Did not get in Saccardo's sweep net.)
- POLYGRAMMA**—Cuba.—Ann. Sci. Nat. 2, vol. 8, p. 365 (as Polyporus). Montagne. Type in museum at Paris.
- PULCHELLA**—Java.—Ann. Sci. Nat. 3, vol. 2, p. 200. Lévillé. Co-type in herbarium of Patouillard. It is only a small pored form of *Hexagona tenuis*.
- RESINOSA**—Philippines.—Bull. Torr. Club, vol. 35, p. 398. Murrill. Co-type in museum at Berlin.
- RHOMBIPORA**—South America.—Ann. Sci. Nat. 4, vol. 5, p. 370. Montagne. Type in museum at Paris.
- RIGIDA**—Pacific Islands.—Jour. Linn. Soc., vol. 16, p. 54. Berkeley. Type at Kew.
- SACLEUXII**—Africa.—Jour. de Bot., vol. 6, p. 19. Hariot. Type in museum at Paris.
- SCUTIGERA**—Brazil.—Elenchus Fung., vol. 1, p. 73 (as Polyporus). Fries. No type exists.
- SEURATI**—Pacific Islands.—Bull. Soc. Myc. France, vol. 22, p. 48. Patouillard. Type in his herbarium.
- SIMILIS**—Australia.—Hooker's Jour., 1846, p. 4. Berkeley. Type at Kew.
- SPECIOSA**—Africa.—Fungi Natalensis, p. 137. Fries. Type in a jar in museum at Upsala.

- SUBTENUIS**—India.—Not previously published. Berkeley. Type at Kew.
- SULCATA**—Ceylon.—Hooker's Jour., 1847, p. 510. Berkeley. There is no type at Kew, but a co-type in Montagne's herbarium, also one in that of Fries.
- TENUIS**—South America.—Kunth. Synopsis, vol. 1, p. 10 (as Boletus). Hooker. Type at Kew.
- UMBRINELLA**—Africa.—Fungi Natalensis, p. 137. Fries. Type in museum at Upsala.
- VARIEGATA**—Central America.—Proc. Amer. Acad., vol. 4, p. 122. Berkeley. There is no type so labeled, but there is no question that it is a specimen labeled *Hexagona papyracea* at Kew.
- VELUTINA**—Africa. Bull. Soc. Myc. France, vol. 9, p. 209. Patouillard. Type in museum at Paris.
- VESPACEA**—East Indies.—Voyage de Uranie, p. 170. Persoon. Only known from one little type in museum at Paris, another in Persoon's herbarium at Leiden.

APPENDIX II.

GEOGRAPHICAL DISTRIBUTION.

The real study of mycology, as I view it, is the study of species and their variations and the geographical distribution. Very little can be told of the geographical distribution at present, for much more abundant material will have to reach Europe before anything definite can be determined. We have arranged in the following tables the species found in the museums under nine geographical divisions, as follows:

- No. 1, United States and Canada.
- No. 2, Mexico, Central America, and West Indies.
- No. 3, South America.
- No. 4, Europe.
- No. 5, Africa.
- No. 6, India, Ceylon, and Malay Peninsula.
- No. 7, Japan and China.
- No. 8, Philippines and East Indies.
- No. 9, Australia, New Zealand, New Guinea, and Pacific Islands.

The sign † indicates localities from which we have seen one or but a few specimens; if a number of collections it is indicated by a heavy face **C**; if the species is only known from the type collection, we indicate that fact with a star (*). Species that are very closely related and perhaps better called subspecies are indicated by being indented under what we consider the "type" form.

	UNITED STATES.	WEST INDIES, ETC.	SOUTH AMERICA.	EUROPE.	AFRICA.	INDIA, ETC.	JAPAN & CHINA.	EAST INDIES, ETC.	AUSTRALIA, ETC.
Group 1, Setosus.									
<i>Apiaria</i> ,		†				C		C	C
<i>Deschampsii</i> ,						C			
<i>hirta</i> ,					C				
<i>capillacea</i> ,									
<i>aculeata</i> ,									
<i>elegans</i> (probably),									
<i>Henschalli</i> ,									
<i>Dybowski</i> ,									

	UNITED STATES.	WEST INDIES, ETC.	SOUTH AMERICA.	EUROPE.	AFRICA.	INDIA, ETC.	JAPAN & CHINA.	EAST INDIES, ETC.	AUSTRALIA, ETC.
Group 2, Velutinus.									
variegata,	C	C	.	.	.	.	.	.
scutigera,	C	C	.	†	†	.	.	.
velutina,
Group 3, Ungulaformis.									
nitida,	†	†	.	.	.	†
Gunnii,	*	.	.	.
sulcata,	†	.	†	.
durissima,	*	.
resinosa,	*	.
Group 4, Applanatus.									
Pobeguini,	C	.	.	.	.
niam-niamensis,	*
leprosa,	*
speciosa,	*
chartacea,	*
Kurzii,	†
erubescens,	*	*
amplexens,
Group 5, Tenuis.									
tenuis,	C	C	.	C	C	.	C	C
pulchella,	†	.
polygramma,	C	C	.	C	.	.	C	.
umbrinella,	C	.	.	.	.
discopoda,	C	.	.	.	.
subtenuis,	*	.	.	.
phaeophora,	†	.	.	†
rigida,	C
similis,	*
atrosanguinea,	*
Sacleuxii,	†
Group 6, Pallidus.									
albida,	C
macrotrema,	†	.	.	†	†
vespacea,	†	.
ochroleuca,	C	.	C	C
Seurati,	*
aequalis,	*
rhombipora,	*
Group 7, Pseudofavolus.									
cucullatus,	†	†
Miquelii,	†	†	†	†	.
bipindiensis,	†	.	†	.	.
mirabilis,	*
Group 8, Resupinatus.									
heteropora,	*

APPENDIX III.

SYNONYMS AND SPECIES IMPERFECTLY KNOWN.

The following is the list of specific names which we would refer to synonymy and our reasons for the same. We give also the countries from whence proposed, and the individuals responsible for them. We hold them responsible who published them, though in some cases the names were taken from and credit given to manuscript names. We also indicate a few manuscript names under which specimens are labeled in our principal museums. While of course a question in synonymy is largely a question of individual opinion, the following list (except in such cases as specially stated) is our conclusions as to authentic specimens examined. We have studied in the British Museum, the Museums of Kew, Paris, Berlin, and Upsala, which list embraces all the museums of Europe where much historic material is preserved, except the Java specimens at Leiden. We visited Leiden twice for this purpose, but both times found the Java specimens had been loaned. We would not pretend to publish as synonyms (as has recently been done) names that we have merely copied from others, nor would we perpetrate the fraud of pretending to pass upon specimens we never saw, and which in many cases do not exist. It is a fact well known to those who have investigated the subject that the usual description is a mere empty form. Plants can be recognized from systematic work in which those of a section or country are described by contrast, but it is impossible to describe a specimen as an isolated fact so that it can be surely recognized in one case out of a hundred. If the labels were removed from the type specimens in the museums I believe that not ten per cent of them could ever be replaced from anything that has been published about them, and I doubt if one per cent could. Under these conditions I feel it is useless to carry in our literature names and descriptions of specimens that do not exist. It is a part of the system of "science" to pretend to be able to judge from these descriptions as to the identity of the plants described, but I do not think that any one who has had experience really believes it (except in very exceptional cases), and I decline to subscribe to any such fiction.

If a plant has not acquired a name by use, or if it was not characteristically illustrated, and if authentic material does not exist in some museum or where it can be examined, there is little occasion to further encumber literature with it.

While the following list is specific names of plants placed in Hexagona, it does not follow they were all so placed by the authors stated. This may have been done by some one else, and who it was is immaterial and not worth recording. Nor does it follow that the species are all invalid in other genera where they belong, but not in my opinion in Hexagona.

Where we state "no type exists," we have been unable to find the type in the museum where it should be preserved, or authentic material in any other museum. We have made careful and systematic search, and taken time, and we believe the statements are literally true. Still we are aware there is always the possibility of the type turning up in some obscure place. Often we have found historic specimens in drawers or in cupboards, where the casual visitor would never think of looking.

The following is the list that we would refer to synonymy, and the reasons. We state also the name of the country whence described, and the names of the discoverers of these "new species." It is remarkable how many "discoveries" are made in "science," chiefly noteworthy from the fact that they are not true.

adelphica, Africa, Cooke=Hexagona hirta.

adnata, Ceylon, Berkeley=an anomaly of some kind.

affinis, Pacific Islands, (Published?) Berkeley=Hexagona tenuis.

arata, Pacific Islands, Berkeley. It is not a Hexagona, but a Polyporus related to gilvus.

auriculata, United States, Patouillard. Specimen not found for me, but I have little doubt it is Hexagona cucullata, which is the only species we have in the United States, I think.

Bartlettii, South America (Published?), Masee. Better classed as a ferruginous *Poria* related to *contigua*.

Blumci, Java, L veill . No type known to me.

Boneana, Africa, Patouillard. Too close to *umbrinella*.

brevis, Ceylon, Berkeley. No type exists.

Burchelli, Mss.=*umbrinella*.

carbonaria, United States, Berkeley. Better classed as a ferruginous *Poria*, close to *contigua*.

Casuarinae, New Caledonia, Patouillard=*Hexagona tenuis*.

cervino-plumbea, Java, Junghuhn=*Hexagona tenuis*.

Cesatii, Borneo, Cesati=*Hexagona albida*, a little cyclomyoid.

ciliata, Philippines, Klotzsch=*Polystictus versatilis*.

cingulata, West Indies, L veill . No type known to me.

crinigera, Africa, Fries=*Hexagona hirta*.

cladophora, Philippines, Berkeley. Not a *Hexagona* for me. A better *Trametes*.

Cookci, New Guinea, Saccardo. Change of *Hexagona favoloides* of Cooke, which being *Hexagona albida*, the change was not necessary.

coriacea, Brazil, Berkeley. Type inadequate to judge.

crassa, Africa, L veill =*Hexagona hirta*.

cruenta, South America, Montagne=*Trametes Persoonii*.

cyclophora, African island, L veill . No type exists.

decipiens, Australia, Berkeley. For me not a *Hexagona*. It has colored spores and is a better *Polyporus*.

dermatodes, Philippines, L veill . It is a *Polystictus-Trametes*.

discolor, Australia, Fries. No type exists.

Dregeana, Africa, L veill =*Hexagona umbrinella*.

fasciata, Pacific Islands, Berkeley. No type exists.

favoloides, Central America, Peck=*Hexagona tenuis*.

favoloides, New Guinea, Cooke=*Hexagona albida*.

favus, China, Linnaeus. No type exists. Supposed to be *Hexagona apiaria*.

flabelliformis, Philippines, Berkeley. Type material inadequate.

Friesiana, South America, Spegazzini=*Polystictus villosus*.

glabra, Africa, Palisot. No type is said to exist, but there is a good picture. Probably the same as *Hexagona umbrinella*.

glabra, India, L veill . A hexagonal form of *Lenzites ochroleucus*.

gracilis, Brazil, Berkeley. Belongs to a section of *Polyporus*.

inconcinna, Philippines, Berkeley (as *Daedalea*)=*Hexagona albida*.

induratus, West Indies, Berkeley=*Hexagona Miquelii*.

intermedia, Australia, Berkeley (as *Daedalea*)=*Hexagona albida*.

Klotzschii, Africa, Berkeley=*Hexagona hirta*.

Koenigii, Ceylon, Berkeley=*effete Hexagona apiaria*.

laevis, Pacific Island, Cooke, nondescript.

lurida, Java, L veill =*Hexagona glabra*.

Marcucciana, Italy, Baglietto=*Hexagona nitida*.

Molkenboeri, Java, L veill =*Hexagona macrotrema*, and based on same collection.

Mori, Italy, Marcucci (as *Favolus*)=*Hexagona nitida*.

Muelleri, Australia, Berkeley. Too close to *Hexagona rigida*.
nigro-cincta, Pacific Island, Patouillard=pale form of *rigida*.
orbiculata, Africa, Fries=*Hexagona tenuis*.
obversa, Africa, Patouillard. Too close to *chartacea*.
pallens, Mexico, Saccardo. Unknown to me
pallida, African Islands, Schröter. Unknown to me.
papyracea, locality unknown, Berkeley=*Hexagona variegata*.
peltata, Africa, Fries. No type exists.
pergamenea, Ceylon, Berkeley. Not a *Hexagona*. Close to *Polystictus*
dermatodes.

picta, East Indies, Berkeley. Type inadequate.
pustulosus, Java, Lévillé=*Hexagona Miquelii*.
sericea, United States, Fries=*Polystictus villosus*.
sericeo-hirsuta, United States, Klotzsch (as *Polyporus*)=*Polystictus villosus*.
sinensis, Africa, Klotzsch=*Hexagona hirta*.
sinensis, China, Fries. In reality merely a change of name of *Boletus favus*,
of which no type exists. Fries states "v. s.," but the specimen he saw was from
Klotzsch and was *Hexagona hirta*.

strigosa, Africa, (Mss. name) Cooke=*Hexagona hirta*. It was published
as *Trametes adelphica*.

Stuhlmanni, Africa, Hennings=*Hexagona Pobeguini*.

subaculeata, Borneo, Cesati. Unknown to me.

subrigida, Philippines, Murrill. Unknown to me.

tabacina, Java, Lévillé Not a *Hexagona*, but the same as *Polystictus*
cichoriaceus. Lévillé also discovered the same plant was another "new species"
in another genus and called it *Polyporus fuscus*, but little matters of this kind
did not bother Lévillé.

Taxodii, United States, Murrill=*Hexagona cucullata*, teste the author.

Thollonis, Africa, Patouillard. Unknown to me. Type is at Brussels,
but not seen by me.

Thwaitesii, Japan, Berkeley=*Hexagona tenuis*. Thwaite collected in Ceylon,
and had nothing to do with this plant from the island of Bonin. Why it was
named after him I do not know.

tricolor, Africa, Fries. No type exists. From the description I think it is
the same as *Hexagona discopoda*.

unicolor, Africa, Fries. No type exists.

velutina, China (published?), Patouillard=*Hexagona bipindiensis*.

versicolor (ascribed to Fries). No such plant was named or published,
which, however, did not prevent Spegazzini from so determining specimens.

vitellina, Borneo, Cesati. Unknown to me, but I have not much faith in
there being a yellow *Hexagona*.

vittata, Central America, Ellis=*Polystictus villosus*.

Welwitschii, Africa, Smith=*Hexagona Pobeguini*.

Wightii, India, Klotzsch=*Hexagona apiaria*, but in the museums mostly
known under this name.

Note.—There is a variation in the spelling of the generic name. Some spell
it *Hexagona*, others *Hexagonia*.

INDEX TO THE SPECIES OF HEXAGONA.

Those marked with a star (*) are perhaps better called sub-species or varieties or are of minor importance.

Aculeata	9	Miquelii	36
Aequalis*	33	Mirabilis	37
Albida	29	Niam-niamensis	18
Amplexens	22	Nitida	14
Apiaria	6	Ochroleuca	31
Atrosanguinea	27	Phaeophora*	26
Bipindiensis	36	Pebeguini	17
Capillacea	8	Polygramma*	25
Chartacea	20	Pulchella*	25
Concinna*	26	Resinosa	16
Cucullata	35	Rhombipora*	34
Deschampsii	9	Rigida	26
Discopoda*	26	Sacleuxii	27
Durissima*	16	Scutigera*	13
Dybowski	11	Seurati	33
Elegans	9	Similis*	27
Erubescens	21	Speciosa	21
Gunnii	15	Subtenuis*	26
Henschalli	11	Sulcata	15
Heteropora	39	Tenuis	23
Hirta	7	Umbrinella*	26
Kurzii	21	Variiegata	12
Leprosa	20	Velutina*	14
Macrotrema*	30	Vespacea*	33

SYNOPSIS

OF THE SECTIONS

MICROPORUS, TABACINUS AND FUNALES

OF THE GENUS

POLYSTICTUS

By

C. G. LLOYD

CINCINNATI, OHIO, - AUGUST, 1910

UNIVERSITY OF CALIFORNIA

AT GLENDALE

JAN 20 1942



N. PATOUIILLARD.

To Monsieur N. Patouillard, Paris, France, I beg to dedicate this pamphlet, in recognition of his eminent standing as a mycologist, and his many favors to me.—C. G. LLOYD.

THE SECTION MICROPORUS OF POLYSTICTUS.

The subject of the Polyporoids is so extensive, there being about two thousand alleged species, that one can not hope to do much with it as a whole without first breaking it up into sections and studying them one at a time.

The section Microporus is a very natural section, although it runs through thicker forms into Polyporus. The characters of the section are the thin, rigid pileus, the minute pores in a very thin layer, and the color. It is usually stipitate, but the stipe varies much in length and insertion. In some specimens it is mesopodal, and sometimes in others of the same collection it is pleuropodal or lateral. In some specimens it is black, and in others yellow. The color of the pores is usually white when fresh, though sometimes, I think, yellowish, and in the herbarium specimens they usually change to isabelline or wood color. The surface is either smooth, minutely velvety, or zoned with pubescent zones. The color of the pileus is reddish brown, bay, or sienna brown. It varies in degree to almost black in depth, but the "ground color" is always the same.

The "species" are extremely variable and run into each other in a most puzzling manner. They could be called one species, which would be the easiest way to dispose of the matter. The objection to this would be that the extreme forms vary so much that it does not seem possible to include all in one species. And these different forms do have a value, for in the same collection the specimens are usually much alike and there is undoubtedly a geographical significance in these forms.

The species are distributed in Saccardo through two sections, "Sacri," a mesopodal section, and "Discipedes," a lateral stemmed section. This arrangement is quite embarrassing from the fact that in the same collection are specimens that belong to both sections. At the same time the insertion of the stem is the best leading character to divide the species. Most collections and undoubtedly most localities show a decided preponderance of specimens in favor of one or the other series.

We believe that a few definite ideas should be associated with each "species," and may be expressed in a very few words. Under this plan most of the specimens will readily fall into some "species" though no plan can be devised that will cover every case. Even in the same collection individual specimens may deviate. However, collections should be classed by their prevalent characters and not from any one specimen. There are two extreme forms: Polystictus xanthopus with a central yellow stem and glabrous pileus, and Polystictus flabelliformis with a lateral, black stem and pubescent, zoned pileus. All the species can be arranged between these two extremes.

Key to the species.

Stipe mesopodal—

- Stipe smooth, yellowish. Pileus glabrousxanthopus.
- Stipe black. Pileus, soft-velvetyconcinus
- Stipe black. Pileus with pubescent zonesHolstii
- Stipe black. Pileus densely pubescentpseudo-perennis

Stipe lateral—

- Stipe concolorous or black. Pileus glabrousaffinis
- Same character but a *thicker*, more robust plantluteus
- American form (probably the same)porphyritus
- Stipe black. Pileus dark, almost black; smooth. Pores
- darkcarneo-niger
- Stipe black. Pileus with pubescent zonesflabelliformis

Stipe none—*Microporus*-*Apus*. (The section *Microporus* might be confined to stipitate species, and a new section made for the sessile species. As it has exactly the same texture, color, and pores, and a piece of the pileus of one can not be told from a piece of the pileus of the other, I think they should be classed together.) Pileus smooth. Pores white. . . . *pterygodes*

Geographical Distribution.—The home of these plants is Africa, where they grow in the greatest abundance, but they occur over the East Indies, India, Ceylon, Philippines, Australia, and the Pacific Islands. Generally speaking both the mesopodal and the pleuropodal species occur over this vast territory, but the African collections run to mesopodal species and those of the Pacific Islands to pleuropodal species.¹ In tropical America they are very rare. But two species I think are known from tropical America, viz.: *porphyritis* and *pterygodes*, and but very few collections of these.² In our consideration of



Fig. 336

Polystictus xanthopus.

the species we shall only give the prominent key characters. We deem it useless to repeat under each the characters common to all, as many of the "descriptions" are drawn up.

POLYSTICTUS XANTHOPUS (Fig. 336).—Stipe yellow, smooth, varying in length from a cm. to five cm. or more, usually central, often eccentric, but not lateral. Pileus smooth, even.

¹In Samoa, where *flabelliformis* is very abundant, I have never seen a specimen of a mesopodal form.

²In Fries' herbarium is a typical specimen of *Polystictus xanthopus* ascribed to Mexico, but I think the locality is due to some error in labeling.

This is the most frequent species in Africa, though it occurs over most of the territory where similar forms occur. It was probably first published by Ehrenberg as *Polyporus Katui* and a good figure was given of it. Fries named it *xanthopus* in the same year. I do not know which was prior, but Fries had more influence and established his name, giving Ehrenberg's as a synonym.³ Then Persoon published it, from Rawak, as *Polyporus saccatus* and also gave a good figure of it. His specimen is at Paris. It is needless to say that Persoon's name was soon dumped into synonymy.

Forms.

POLYSTICTUS FLORIDEUS.—Originally from India, it has a short, thick yellow stem and a smooth, *dark bay* pileus. It can only be held as a dark form of *xanthopus*.



Fig. 337.

Polystictus concinnus.

POLYSTICTUS CONCINNUS (Fig. 337).—Stem slender, black, usually central, but sometimes lateral. Pileus dark bay, faintly zoned, covered with a *fine, soft, downy, velvety* pubescence.

³ The type of *Katui* is in good condition at Berlin. No type of *xanthopus* exists, though there are several specimens of Fries' naming.

This is a rare form, originally and beautifully figured by Palisot. It is only known from Africa, and all but one of the specimens are in the museum at Berlin. They were labeled by Dr. Hennings "Polystictus xanthopus form nigripes," and Mr. Herter has endorsed on them the name "Polystictus Mildbrachii."



Fig. 338.

Polystictus Holstii.

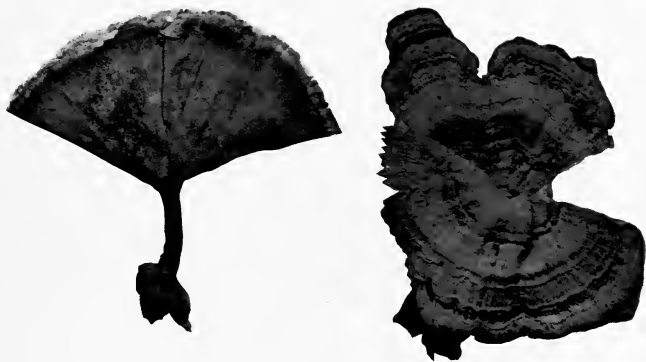


Fig. 339

Polystictus pseudo-perennis.

POLYSTICTUS HOLSTII (Fig. 338).—Stipe dark or black, central. Pileus with pubescent zones.

This is an African form which is found in the museum both at Kew and Berlin. At Kew the stems are more yellowish and it was referred as a variety of *xanthopus*. Dr. Hennings gave the same form the name as above.

POLYSTICTUS PSEUDO-PERENNIS (Fig. 339).—Pileus densely covered with appressed velvety hairs, faintly zoned with narrow, subglobose zones. Pores minute, cinereous. Stem dark.

This is only known from one collection from Africa in the museum at Berlin. It was referred by Dr. Hennings to *Polystictus Holstii*.⁴ It is a strongly marked plant and at first view does not seem to belong in this group. The dense coat of pale, velvety hairs on the pileus and the size give it a resemblance to old, weathered specimens of *Polystictus perennis*.

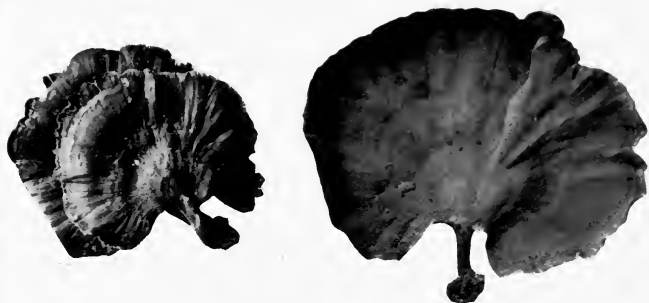


Fig. 340.

Polystictus affinis.

POLYSTICTUS AFFINIS (Fig. 340).—Stipe lateral, smooth, dark bay, or black. Pileus smooth.

I have not seen the type of this, but it was well illustrated by Nees von Esenbeck. Plants corresponding to the figure are not rare in the museums, though all plants so named in the museums do not correspond to the figure. It is the form intermediate between the two extremes, with the smooth pileus of *xanthopus* and the form and stem insertion of *flabelliformis*.

POLYSTICTUS LUTEUS (Fig. 341).—Stipe lateral, smooth, dark. Pileus glabrous, but rugulose.

This plant was also well illustrated by Nees von Esenbeck, but badly named, for it is no more "luteus" than any other species, nor is it so shown. It is practically the same plant as *affinis* except more robust, thicker, and with more obese stem. *Polystictus Makuensis* from Africa is only an extremely robust form. In the museums one often finds pale yellowish specimens of *Polystictus xanthopus* determined as this species, but there is no warrant for such determinations excepting that *luteus* is misnamed.⁵

⁴ As I remember it, it is the only collection in the *Holstii* cover, the types of *Polystictus Holstii* being in the exhibition department.

⁵ *Polystictus luteus* does not occur in the United States, nor is any similar plant found, though a number so named by Berkeley are in existence. They should have been referred to his own new species, *Polystictus mutabilis*.



Fig 341.
Polystictus luteus.

POLYSTICTUS PORPHYRITIS (Fig. 342).—This is the American form, practically the same thing, I think, as affinis and luteus.



Fig. 342.
Polystictus Porphyritis.

While I would wish to know more about them before I put them together, I know no reason, except geographical, why they should not be put together. It is a rare plant and known surely only from the "type" collection from Brazil.

Polystictus porphyritis is the only truly stipitate member of the section *Microporus* found on the American continent, and this is known from a single collection from Brazil.⁶

POLYSTICTUS CARNEO-NIGER (Fig. 343).—Stipe lateral. Pileus dark, almost black, smooth. Pores dark.

⁶ Specimens so referred from Cuba are very poor and not at all certain.

This is an unusual form distinguished by the dark color of all the parts. *Polystictus celebicus* as named from a single specimen at Berlin is the same thing.



Fig. 343.

Polystictus carneo-niger.



Fig. 344.



Fig. 345.

Polystictus flabelliformis.

POLYSTICTUS FLABELLIFORMIS (Figs. 344 and 345).—
Stipe black, lateral. Pileus with pubescent zones.

This was originally from Mauritius and the type is at Kew. It is common over a wide territory and particularly in the Pacific Islands. I found it

abundantly in Samoa and am satisfied that it is the only form on the island, but I have seen this Samoan plant in the museums under several names.⁷ As we have previously stated, *Polystictus flabelliformis* may be considered the extreme form at the other end of the arc from *Polystictus xanthopus*, and all the intermediate "species" between can be held to be connecting forms.

RELATED SECTION, MICROPORUS-APUS.

If I were dividing *Polystictus* into genera I should hold a stipe as the first badge of a genus, but like all characters I would want to disregard it at times. There is one species of sessile fungi that accords with the section *Microporus* in every character except that it has no stipe. We shall consider it here.



Fig. 346
Polystictus pterygodes.

POLYSTICTUS PTERYGODES (Fig. 346).—Pileus sessile, thin, smooth, rigid, dark bay color. Pores minute, pale or white.

Pieces of the pileus of *Polystictus pterygodes* and *Polystictus xanthopus* could scarcely be distinguished. With the exception of stem characters they are practically the same. The context of *pterygodes* is a little thicker. *Polystictus pterygodes* was originally from Africa, but it is a rare plant. No type exists, but there is a good illustration and Fries' description. Recently specimens have reached Europe from the Philippines that accord with both Fries' description and figure. It is also known, but rarely, from South America.⁸ I have recently received specimens from Rev. Rick, Brazil.

NOMINA CONSERVANDA.

We give the following statistical matter with reference to names used in this article, as it is usually held to be of much more importance than the identity

⁷ The type form from Mauritius (Fig. 344) was densely zonate with pubescent zones, but as it occurs in Samoa it is much smoother, with only a few pubescent zones, and they are not strongly developed (Fig. 345). But the pileus of the Samoan form is never entirely smooth, hence I would refer it to *flabelliformis* rather than to *affinis*.

⁸ Fries described *Polyporus modestus* as named by Kunze in Weigel's *exsiccatae*, from Surinam. The type is therefore the one in Fries' herbarium at Upsala. The specimen in Weigel's *exsiccatae* at Kew is not the same as the one at Upsala, but as Berkeley thought it was the same, *Polyporus modestus* in the sense of Berkeley (excepting his very early determination) is not the same as *Polyporus modestus* in the sense of Fries. *Polyporus modestus* of Berkeley is *Polyporus pterygodes* of Fries, and *Polyporus modestus* of Fries was *Polyporus albo-cervinus* of Berkeley, and also other "new species" of his, if I mistake not.

of the plants named. We include the name of the country from whence the species was named, the book reference where it was "described," the museum in which the type is found, and what is of most importance (to them) the names of the namers.

AFFINIS—Java.—Nova Acta Acad. Caes. Leop. Car. vol. 13, t. iv, p. 18. Nees ab Esenbeck, type not known to me.

CARNEO-NIGER—Australia.—Grevillea, vol. xii, p. 15. Cooke, type at Kew.

CONCINNUS—Africa.—Flore d'Oware, Pl. 43, p. 73. Palisot-de-Beauvois. Type, if it exists, is at Geneva.

FLABELLIFORMIS—Mauritius.—Limnaea, vol. 8, p. 483. Klotzsche. Type at Kew.

FLORIDEUS—India.—Hooker's Journal, 1854, p. 137. Berkeley. Type at Kew.

HOLSTII—Africa.—"Pilze Ostafri, p. 57," Hennings. Type in exhibition department in museum at Berlin.

LUTEUS—Java.—Nova Acta Acad. Caes. Leop. Car. Vol. 13, t. iv, p. 16. Nees ab Esenbeck. Type not known to me.

PORPHYRITIS—Brazil.—Hooker's Journal, 1856, p. 196. Type at Kew.

PSEUDO-PERENNIS—Africa.—Description on page 53. Type in museum at Berlin.

PTERYGODES—Africa.—Epicrisis, p. 445, figure Rel. Afzelianae t. 3, fig. 7, Fries. No type exists.

XANTHOPUS—Africa.—Obs. Mycol. vol. 2, p. 255, Fries. Type does not exist in Fries' herbarium, but there are others of his naming.

SYNONYMS.

In our opinion the following names belonging in this section should have been mostly referred to "old species." We give the country from whence described, the name of the discoverer, and the museum where the type is preserved. In case of a mss. name only we do not give the author as we feel a man should only be held responsible when he goes into print.

celebicus, East Indies, Hennings. Type at Berlin=*carneo-niger*.

crassipes, India, Currey. Type at Kew=*xanthopus*.

cupro-nitens, Australia, Kalchbrenner. Co-type at Kew=*xanthopus*.

incomptus, Africa, Fries. Type at Upsala=*flabelliformis*.

Katui, Marshall Island, Ehrenberg. Type at Berlin=*xanthopus*. Whether prior or not is unknown to me. It was beautifully illustrated, published the same year, and on its merits this name should have been used.

limophorus, India, Masee=*affinis*. Type at Kew.

Makuensis, Africa, Cooke=*luteus*. Same exactly as Nees figured only larger. Type at Kew.

microloma, Philippines, Lévillé. Unknown to me. Seems from description to be *flabelliformis*.

Mildbrachii, Africa, mss. name, at Berlin=*concinus*.

modestus in the sense of Berkeley only (not the type at Upsala)=*pterygodes*.

Perula, Africa, Palisot. Figure seems to be a depauperate *xanthopus*.

saccatus, Island Rawak, Persoon. Type at Paris=*xanthopus*.

squamaeformis, Borneo, Berkeley. No type exists, but specimens so determined by Cooke are small forms of *affinis*. Murrill refers it to *badius*, which appears to have been a bad guess.

subverniceps, Philippines, Murrill. Co-type collection at Berlin=*pterygodes*. Teysmanni, Tasmania, mss. name at Kew=*affinis*.

subvernicosus from Brazil. According to a photograph I made of the type seems close to *porphyritis*, but having misplaced my notes I would not give it as a synonym without a reexamination.

THE SECTION TABACINUS OF POLYSTICTUS

The group of species that was separated by Patouillard under the very inappropriate name *Cyclomyces* is a very natural group if one disregards hymenial configuration. As to the color, texture, surface, thickness, and general appearance they are much the same. In addition they are characterized by having on the hymenium colored setae (often called cystidia) similar to those on which was based the genus *Hymenochaete* in the *Thelephoraceae*. We look upon hymenial configuration as of first importance, and hence do not take the section in exactly the same sense as does Patouillard, excluding from it the cyclomyoid species, *Cyclomyces fuscus*.¹⁰

Color.—The color of all specimens when dry is a dark brown, well designated by Montagne as *tabacinus* in the naming of the first species. All portions of the plant, hairs, surface, context, and pores, are a very similar color. When moist they are darker, almost black.

Surface.—All have pilei very similar as to the surface. It is unicolorous, velvety with a thick coat of fine, silky hairs, and concentrically zoned, with raised zones. One species could hardly be told from another from the upper surface of the pileus.

Spores.—The spores are stated by Patouillard to be *white*¹¹ and I do not question it, though I have not found them. Compare note 2, page 1, of *Hexagona Synopsis*.

Colored setae.—On all species there are abundant, sharp, dark-colored setae on the hymenium. These are easily seen with a low power microscope.

Distinction of species.—The other characters being practically the same, the only one on which species can be based is the size of the pores. These are of three grades:

Pores minute	<i>Polystictus tabacinus</i> .
Pores medium	<i>Polystictus iodinus</i> .
Pores large	<i>Polystictus cichoriaceus</i> .

While the usual collection can be referred to one or the other of these species on the average pore size, no doubt many connecting sizes occur and all can be referred to one "species" on the evidence of connecting forms. All species favor the warm countries and are absent from Europe and from the United States except in the South. The small pored specimens are more common in tropical America, the larger pored specimens in the East.

History.—The first species reached Montagne from Chile and was named *Polyporus tabacinus*. Next he got a slightly larger pored form from French Guiana which was called *Polyporus iodinus*. Then Berkeley received the largest

¹⁰ Pores of the larger pored species sometimes show a tendency to become cyclomyoid, particularly in the one specimen known of *Polystictus campyloporus*. I have no doubt if we knew all the connecting forms there would be a continuous series from *Polystictus tabacinus* on one hand to *Cyclomyces fuscus* on the other.

Mr. Murrill purloined the idea of this "genus" from Patouillard, and juggled the name just a little to *Cyclomycetella*. He took as his type species *Polystictus pavonius*, which does not belong to it and has little resemblance to it. When he found what blunder he had made in publishing that *Polystictus pavonius* was a synonym for *Polystictus iodinus* he patched up the matter with a new juggle, this time *Cycloporellus* and a new "type species," *Polystictus iodinus*. A "type species" seems to be a movable affair that may be shifted around at pleasure to meet the exigencies of the juggler.

¹¹ As an illustration of the modern method of discovering "new genera" now in vogue, Mr. Murrill, when he discovered this "new genus," based it on the *color of the spores*, which he states are brown, and includes it in the section with brown spores. The spores are stated by Patouillard to be white, and no doubt truly. To make his inconsistency complete, Mr. Murrill discovered a new species, *barbatulus*, or rather he discovered an old species, the first one named *tabacinus*, which he called new, and described the spores as hyaline. If they are hyaline I can not understand why he should include it in a new genus which he had discovered, with "brown" spores as the type character.

pored form from the Philippines, which was called *Polyporus intybaceus*, but the name being preoccupied it was changed to *Polyporus cichoriaceus*. A single collection of a large, irregularly pored form was called *P. campyloporus* by Montagne, and a thick form of *P. cichoriaceus* was named *P. setiporus* by Berkeley. The remainder of the history is the rediscovery and renaming of the same things by L veill , Junghuhn, and Murrill. L veill  discovered three "new species," all new only to him, and two of them, which he put in different genera, were the same plant.

POLYSTICTUS TABACINUS (Fig. 347). — Dark tobacco-brown. Surface finely velutinate and with narrow, raised, concentric zones. Pores minute, round, dark. Colored setae abundant.



Fig. 347

Polystictus tabacinus.

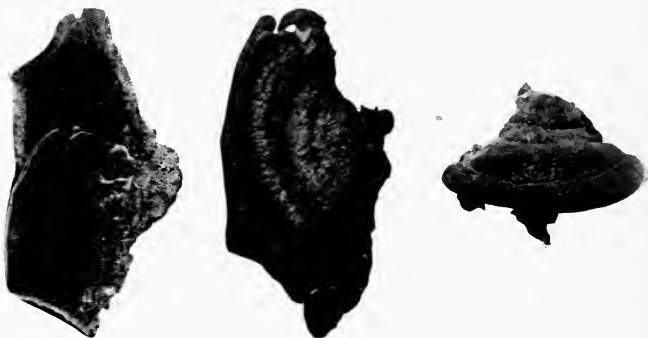


Fig. 348

Polystictus iodinus.

This species with minute pores was originally from Chile, but occurs also in Africa, the East Indies, and is particularly abundant in Australia. The pores are usually darker than the context and I have Australian collections in

which the pores are really black. I have never seen it from the southern United States. The specimens so distributed by Ellis should have been referred to *Polystictus iodinus*.

POLYSTICTUS IODINUS (Fig. 348).—This is the same plant as the preceding, excepting it has larger pores. The color is a lighter shade of brown, and the color of pores and context are more uniform. It was named from French Guiana, and seems to be the most common form in northern South America, the West Indies, and southern United States.

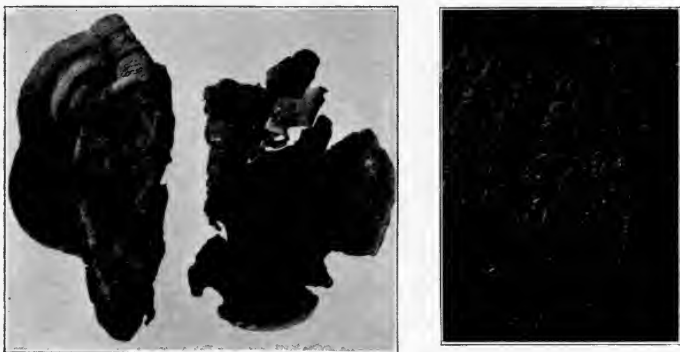


Fig. 349.

Polystictus campyloporus.

Form—**POLYSTICTUS CAMPYLOPORUS** (Fig. 349).—Known from a single collection from French Guiana is only a form of *Polystictus iodinus*, tending toward *Cyclomyces fuscus*. It is a curious fact that *Cyclomyces fuscus*, which is common in the East Indies and occurs in Africa and the Philippines with typically cyclomycoïd gills, is absent from the American tropics, this form being the nearest approach we have to it.

POLYSTICTUS CICHORIACEUS (Fig. 350).—Pileus thin, lobed, imbricate, with brown, velutinate, zoned surface. Pores rather large, angular, dark.

This species was originally from the Philippines and was named *intybaceus*. The name was changed to *cichoriaceus* when it was found that *intybaceus* had been used. I judge the name refers to the plant *cichorium* and its lobed leaves. This, which is the most common species in the East Indies and the East in general, I found abundantly in Samoa. It is thinner and more lobed than the American plant *Polystictus iodinus*, which it otherwise closely resembles.

POLYSTICTUS SETIPORUS (Fig. 351).—This has the same sized pores as *Polystictus cichoriaceus* and I think must be referred as a form. It is thicker and more even, which is the only difference I can note. It came from Ceylon.

When Berkeley named it he noticed the colored setae on the hymenium, gave a good figure of them, and named the plant in accordance. He had not noted these setae on his previously named species, *Polystictus cichoriaceus*, and it is evident that he was never aware of what a common character these setae are on the hymenium of brown polyporoids.

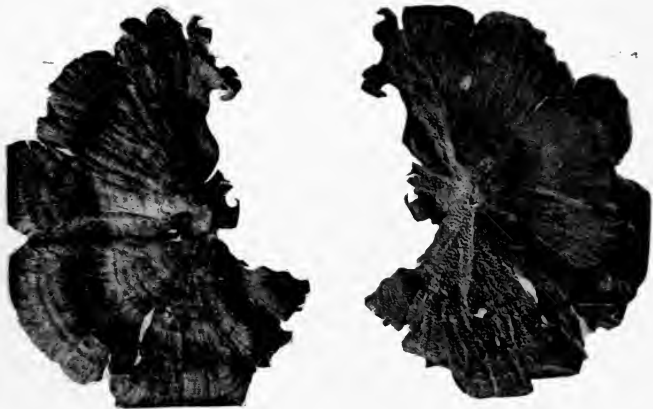


Fig. 350

Polystictus cichoriaceus.



Fig. 351

Polystictus setiporus.

NOMINA CONSERVANDA.

Those with a star are better varieties or forms.

CAMPYLOPORUS*—**South America**.—Ann. Sci. Nat. 4, vol. 1, p. 132, Montagne. Type in museum at Paris. It is only a sub-cyclomyroid form of *Polystictus iodinus*.

CICHORACEUS—**Philippines**.—Hooker's Journal, 1842, p. 149 (as *intybaceus*, afterwards changed to *cichoriaceus*), Berkeley. Type at Kew, also co-type at Berlin.

IODINUS—**South America**.—Ann. Sci. Nat. 2, vol. 16, p. 108, Montagne. Type in museum at Paris.

SETIPORUS*—**Ceylon**.—Hooker's Journal, 1847, p. 505, Berkeley. Type at Kew. In my opinion only a thicker form of *cichoriaceus*.

TABACINUS—**Chile**.—Ann. Sci. Nat. 2, vol. 3, p. 349, Montagne. Type in museum at Paris, also co-type at Kew and Upsala.

SYNONYMS.

barbatulus, Philippines, Murrill=*tabacinus* (co-type at Kew).

fuscus, Java, Lévillé=*cichoriaceus*. Type at Paris.

intybaceus, Philippines, Berkeley. Name changed to *cichoriaceus*.

microcyclus, Java, Lévillé=*tabacinus*. Co-type at Kew.

spadiceus, Junghuhn, Java=*tabacinus*, teste Bresadola on a label. I have not seen authentic material.

tabacinus, Java, Lévillé (as *Hexagona*)=*cichoriaceus*. Co-type in herbarium of Patouillard.

transiens, Borneo, Cesati (as *Favulus*, sic)=*Polystictus cichoriaceus*, co-type at Kew.

xerampelinus, Australia, Kalchbrenner=*tabacinus*. Type at Kew.

THE SECTION FUNALES OF POLYSTICTUS.

There occur in the tropics a few species, but abundant specimens, that are covered with a thick, dense mat of coarse fibrils resembling the shaggy coat of some animal. These fibrils are closely interwoven and united into bundles and are almost dense enough to be called a tissue, in fact, the thin context of the plants is resolved into this coat

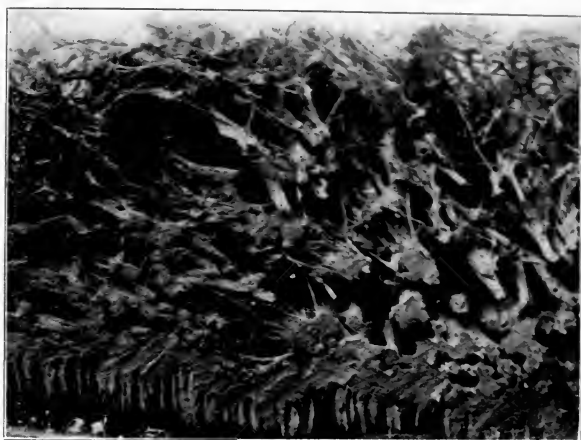


Fig. 352.
Section of *Polystictus leoninus* (X6).

of fibrils. Our figure 352 (x6), a section, will give a good idea of this structure. The pores are large and angular and, in the East Indian species, are disposed to become irpicoid. The spores are supposed to be white.

I think there are but two real species in this section, *Polystictus leoninus*, which occurs in abundance in the East Indies, Ceylon, India, and Africa, but very rarely if at all in America,¹² and *Polystictus trichomallus* which occurs in tropical America in abundance but is unknown from other tropical countries. It is a curious fact regarding these two common tropical species, each is abundant in its own territory and neither encroaches on the territory of the other.

History.—Fries was the first to separate these plants as a section of *Polystictus*, then Patouillard discovered them to be a new genus. Cooke maintained the section in his arrangement and it has been carried into Saccardo, but a number of plants were included in the section in Saccardo that really do not belong to it. Mr. Murrill distorts the meaning entirely and included plants that do not have the pileate structure, and then discovers that plants with this structure form a "new genus," characterized mainly by the same characters as the old section *Funales*.

¹² Taking the view that *Polystictus stupeus* is not the same plant.

POLYSTICTUS LEONINUS (Fig. 353).—Color light fauve or fulvous, well likened by Klotzsch to that of a lion, in the naming of the species. The entire plant, including the pores and the matted surface, is of a similar color when fresh, but in old specimens the color becomes darker. Context, a thin layer covering the pores and merging into the superlying thick coat of matted hairs. These hairs are densely branched and interwoven, and form bundles of tissue similar to the context. Pores are large, angular, and the edges are prolonged into irpicoid teeth. Spores are supposed to be white.



Fig. 353.

Polystictus leoninus.

Distribution.—This is a very common plant found in Africa, India, and the East Indies, and the East in general.

History.—It first reached Hooker from Dr. Wight, India, and was named by Klotzsch *Polyporus leoninus*, from a resemblance to the color of a lion. Then Fries received it from Africa and called it *Polyporus funalis*.¹³ His specimens are exactly the same as those of Klotzsch so far as I can note on comparison of the two types. Most of the specimens in the museums are under the Friesian name. Junghuhn collected the plant in Java and called it *Polyporus Mons Veneris*.¹⁴

Forms.

The three "species" previously mentioned do not differ from each other in the least that I can note and the following appeals to me as being a form.

¹³ From the cordlike bundles of matted hairs.

¹⁴ I have not seen his specimen, but it is referred to *funalis* by Montagne, and Junghuhn's figure shows no difference. I do not question that it is a synonym.

POLYSTICTUS DYBOWSKI (Fig. 354).—With the same nature, color, pores, and partial range, but with much finer hairs on the pileus I should consider it as a form of *Polystictus leoninus*. It came from Africa, but was not named for one of the natives as might be inferred from its name.



Fig. 354.

Polystictus Dybowski.

POLYSTICTUS STUPEUS (Fig. 355).—Pileus rather thin, with a dense coat of branching hairs. Pores large, regular, with thin walls. Mouths even. Color of entire plant, including hairs, "fauve."

This is an American species with a curious history. It is rare in America and I have never received it from a correspondent. I know of but four collections, all at Kew. Berkeley found a small, unsatisfactory specimen in the Richardson collection from British America which he named *Trametes stupeus* and gave the locality "Carleton House, British Columbia, Apr. 23rd." And it is a curious coincidence that there is another collection at Kew made by Palliser, who collected in British America, and is endorsed "Sur les vieux troncs de *Salix* près Carleton, 18 Mai, 1858." This was referred to *Trametes gallica*¹⁵ but is the same as *Polystictus stupeus*, and apparently from the same locality though some ten years after it was named. Then Berkeley got it from Texas, Wright, and called it *Trametes Lindheimeri*.¹⁶ This collection has smaller pores than the Canadian plant but otherwise seems close. In Cooke's herbarium is a collection, "India, Herb. Griffith" that seems exactly the same as the Canadian plant.

¹⁵ "*Trametes gallica*" was based on an old French figure, more than a hundred years old, and has never been recognized in France to this day with certainty. In his forty years' experience Boudier tells me he thinks he has seen it twice. The improbability of its being found in British America I presume never appealed to the man who so referred this collection.

¹⁶ A good type specimen is at Kew, in good condition, not eaten at all by insects, as has been misstated, and our figure 355 is made from it.

Polystictus stupeus is a species intermediate between *Polystictus leoninus* and *Trametes hispida*. It has the same color as *P. leoninus* and the same large pores, which however do not show a tendency to become irpicoid. It is not a true *Funales* for the context is more compact. Still it approaches this section and the hairs are of the same general nature as those of *Polystictus leoninus*.



Fig. 355

Polystictus stupeus.

POLYSTICTUS TRICHOMALLUS (Fig. 356).—The entire plant is a dark fuliginous color, by which it can be known at once from *leoninus*. Pores dark, fuliginous, irregular, sinuate, daedaloid, with thin, sometimes somewhat irpicoid edges. Context practically none, being replaced by a dense, thick coat of matted, rigid, almost black hairs.

This is a most abundant plant in tropical America (Mexico, Central America, West Indies, Brazil, etc.) and there are many collections in the museums. It is not known to occur in any other tropical region, however, except America. It seems to have reached Europe first from French Guiana, collected by Poiteau. It was named *Polyporus Perrottetii*, by Lévillé, who however published it as coming from Perrottet, Java.¹⁷ Then five years later Montagne described the plant as *Polyporus trichomallus* from this same collection, and every one without exception since has used Montagne's name, notwithstanding that all legal authority provides to the contrary.¹⁸

Notes 17 and 18 on next page.

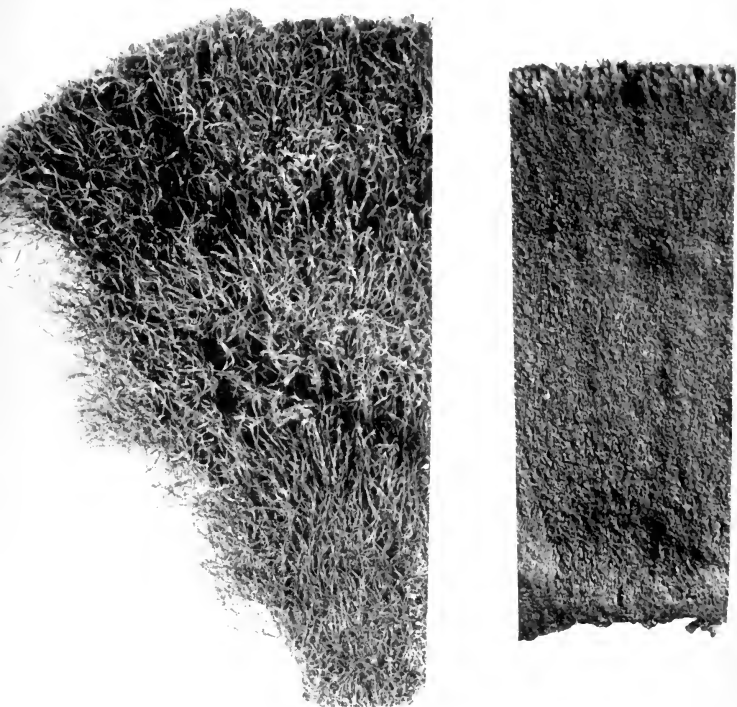


Fig. 356.

Polystictus trichomallus.

¹⁷ Rarely have new species promoters done more careless work than did L veill  with this plant. The type is at Paris in good condition and is labeled "Polyporus (Trametes) Perrottetii, L v.," in L veill 's writing and on a printed label "Guyane francaise, M. Poiteau." L veill  named it after Perrottet, who not only did not collect it, but never collected anything at all like it.

That this specimen is the type there is no question. First, it answers L veill 's description. Second, L veill  states he saw the plant in the Museum at Paris, and there are no plants collected in Java by Perrottet in the Museum at Paris. Third, no plant that can be confused with it grows in Java. Fourth, it is labeled by L veill  himself.

L veill  published it in 1844. Mr. Murrill uses a name published in 1849. It seems to me this is not giving due respect to the sacred principles of priority nor to those celebrated "rules."

¹⁸ When I received the plant from tropical America I sent it to a good mycologist in Europe, who named it for me *Polystictus funalis*, and I have always supposed that this was its name until I studied the subject in the museums of Europe. I have so named it for one or two correspondents. Ellis seems to have had the same misinformation given to him, as he usually so named it. While in America we had no way of knowing the difference, in Europe they should have known better, as there are abundant specimens of both species in all the European museums, and the two species have little resemblance to each other.

Related Plants.

There are a number of related plants with coats of coarse hairs on the pileus that have been included in the section *Funales*. I think, however, the section should be restricted practically to the two species *leoninus* and *trichomallus* where the context is replaced by this dense layer of matted hairs. We would include in another section those species in which the hairs are more on the surface, such as *cladotrichus*, *aculeifer*, *versatilis*, *philippinensis*, *ozonioides*, etc. Sometimes these plants are called *Trametes* and sometimes *Polystictus*. We think no one really knows what a *Trametes* is, and a *Polystictus* is a thin *Trametes*.

NOMINA CONSERVANDA.

DYBOWSKI—Africa.—Bull. Soc. Myc. vol. 8, p. 53, Patouillard. Type at Paris, a fine haired form of *leoninus*.

LEONINUS—India.—Linnaea, vol. 8, p. 486. Klotzsch. Types at Kew, Berlin, and Upsala.

STUPEUS—British America.—Ann. Nat. Hist. vol. 7, p. 453, Berkeley. Type at Kew.

TRICHOMALLUS—South America.—Ann. Sci. Nat. 3, vol. 11, p. 238, Montagne. Type in museum at Paris.

SYNONYMS AND MISPLACED SPECIES.

We list here all those species that have been referred to the section *Funales*, though a number do not belong to it. While we give the authors responsible for the "species," it must not be inferred that they are always responsible for the plants being put in *Funales*. In most instances that was done by others. *aculeifer*, Cuba, Berkeley. I think it is better classed in *Polystictus*, section *Hirtus*.

andina, South America, Patouillard, same remarks.

endothrix, Brazil, Berkeley=*trichomallus*, based on a single thick specimen, surely the same as *trichomallus*. Type at Kew.

ciliata, Klotzsch, Philippines=*Polystictus versatilis*. Type at Berlin.

cilicoides, Philippines, Fries=*Polystictus versatilis* and based on the same collection. Type at Upsala.

cladotrichus, Cuba, Berkeley, better classed in section *Hirtus*.

Fergusonii, Africa, Cooke=*Trametes hispida*. Type at Kew.

funalis, Africa, Fries=*Polystictus leoninus*. In the museums the plant is usually known under this name. Type at Upsala.

hispidula, Cuba, Berkeley, only "known from the type locality" and not well known from there as the types are small and unsatisfactory. Probably *Trametes hispida*, I think. Type at Kew.

holophaeus, Europe, Montagne=*Polyporus Schweinitzii*. Type at Paris, also co-type at Kew.

leonotus, Australia, Kalchbrenner. No authentic material known to me. A specimen so labeled in a jar in the Museum at Upsala, but the determination is doubtful, as is the species.

Lindheimeri, United States (Texas), Berkeley=*Polystictus stupeus*. A good type is at Kew, and our figure 355 of *stupeus* is made from this specimen. *ozonioides*, India, Berkeley, better classed in the section *Hirtus*.

Peckii, United States, Kalchbrenner. It is not a synonym for *Polystictus stupeus* as recently stated, but is a synonym for *Trametes hispida*, a common plant in the United States, but not compiled in N. A. F., other than this mis-reference to *stupeus*. *Peckii* is exactly the same plant as *hispida* of Europe and a different plant in my opinion from *stupeus*, in not having branched, compound hairs on the pileus. That *stupeus* and *hispida* may run into each other I think probable, but *stupeus* does not occur in Europe and *hispida* (or *Peckii*) is common in Europe. Type of *Peckii* at Berlin.

Perrottetii, South America, Léveillé=*Polystictus trichomallus* and not only a prior name for it, but described from the same collection. It was erroneously stated to have been collected by Perrottet in Java. Type at Paris.

Philippinensis, Philippines, Murrill. Better classed in the section *Hirtus* or *Setosus*.

versatilis, Philippines, Berkeley. Better classed in section *Hirtus*.

villosus, Jamaica, Swartz. The type at the British Museum is the common plant in the tropics, usually called *Polystictus pinsitus*, and while specimens so named by Fries are in existence, I now think the name should be confined to the white pored form that occurs in Brazil, and that this dark pored form should be called *Polystictus villosus*. Mr. Murrill never saw Swartz's specimen, but that did not deter him from applying Swartz's name to *Polystictus versatilis*, a most abundant species in the tropics which has little resemblance to it. He not only guessed at it, but he made a very bad guess.

INDEX TO THE SPECIES OF POLYSTICTUS.

Those marked with a star (*) are perhaps better called sub-species or are of minor importance.

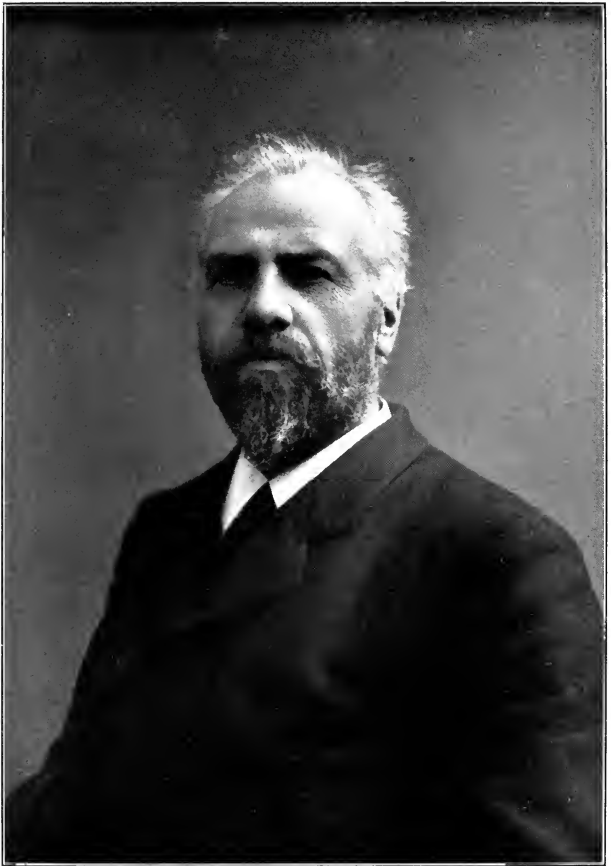
Section Microporus	Section Tabacinus.
Affinis	Campyloporus*
Carneo-niger	Cichoriaceus
Concinus	Iodinus
Flabelliformis	Setiporus*
Florideus*	Tabacinus
Holstii	
Luteus	Section Funales.
Porphyritis	Dybowski*
Pseudo-perennis	Leoninus
Pterygodes	Stupeus
Xanthopus	Trichomallus

SYNOPSIS
OF THE
SECTION OVINUS
of POLYPORUS

By
C. G. LLOYD.

CINCINNATI, OHIO, . OCTOBER, 1911.

UNIVERSITY OF CALIFORNIA
AT LOS ANGELES
JAN 20 1912



LARS ROMELL.

To my good friend, L. Romell, Stockholm, Sweden, who has the best knowledge of Swedish fungi of any mycologist, I beg to dedicate this pamphlet in recognition and appreciation of the many kindnesses and favors received from him,—C. G. LLOYD,

THE SECTION OVINUS OF POLYPORUS.

Pileus borne on a stem which is central or more or less excentric. Fleishy, usually obese, plants growing in the ground, rarely on wood.

In dividing the Polyporei into sections we think the best and simplest plan is to follow the lines laid out by Fries, and the section Ovinus is the first division in the Friesian system. We would modify it slightly by including also the fleshy plants with black stems, which Fries kept out as a separate section. As applied only to the plants of Europe the "black stems" are quite a natural group in the main for the most of them are really forms of two species (*Polyporus varius* and *squamosus*). In foreign species however it would remove from Ovinus such plants as *Polyporus radicans* and *Hartmanni*, which so evidently belong to Ovinus in their leading characters that we think should be so included.

The presence or absence of a stipe is of as much value as a character in dividing Polyporei as any other *one* character, and we would make it the basis of the first division of the subject. Most species that have stipes have them always except in some abnormal cases, and species devoid of stipes do not develop them excepting rarely when growing in abnormal positions.¹ Fries used the stipe character as a leading idea in the division of the Polypores and we believe it is a wise arrangement.

The advantages of the Friesian system are that it is probably as natural and as convenient an arrangement as can be devised; that it has been generally accepted and used for many years and that most of our text-books have employed it, and most of the species have been named in accordance with it. The disadvantages of the system are that genera are large and unwieldy, but I believe the proper plan would be to break the genera up into a few natural sections and they may in time come into use, just as the old sections of the old genus *Agaricus* have come into general use as genera.

All of the species of *Polyporus* which we include in the section Ovinus have pale flesh and white spores. There is one Indian species, *Polyporus indicus*, with colored flesh and spores that might be placed here. However, the flesh is more tough and dry and we would include it in another section.

History of the juggling.—Karsten (1881) discovered that the section Ovinus of Fries was a "new genus" which he called *Polyporus*, and would have us believe that this was all the *Polyporus* that exists. Quélet (1886) discovered the same species to be a "new genus" which he called *Caloporus* and two years later he added other plants that he also called *Caloporus*.² Patouillard (1900) united the sections Ovinus and *Merismus* of Fries which he called *Polyporus* and would call all others by different names. And last but not least our own Mr. Murrill made the remarkable discovery that the section Ovinus of Fries was the same as *Scutigera* in the sense of Paulet, and on the strength of this wonderful discovery wrote the name "Murrill" after each of the dozen (alleged) species that he considered.³

¹ There are cases that violate the rule, thus *Polyporus Schweinitzii* when growing from the earth or a buried stick will normally have a central stipe, often an excentric or even a lateral stipe, and when growing on the side of a tree it is usually dimidiate, attached by a broad, sessile base. These exceptions, while embarrassing to the general arrangement of species on the character of a stipe, do not necessarily make void the character, for the species should be classed on its normal characters.

² Quélet juggled names so freely that the names were largely changed in every work he wrote. He gave no more thought to changing a plant name than he would to changing his cravat. His juggling was done without any definite plan. The only idea he seems to have had was to use names not used by Fries or others.

³ Paulet was one of the first crude writers on fungus and did not have the most vague idea of their relationships. He included in *Scutigera* two polyporoids (sic, four hydnum sic, and an agaric sic). How Mr. Murrill reached the conclusion that this misfit aggregation of Paulet is the same as the section Ovinus of Fries we will leave to our readers to guess. It is beyond our comprehension.

Distribution.—I think we have a fairly good knowledge of the species that occur in Europe and the United States. In Europe ovinus and confluens are the most frequent species of this section in the pine woods of northern Europe. Squamosus is common all through Europe. Tuberaster, leucomelas, griseus, cristatus, pes caprae, squamatus and Boucheanus are the rare species of Europe. Politus is only known from an old collection.

In the United States griseus and radicans are most frequently collected. Caeruliporus, confluens, Pes caprae, Ellisii and squamosus are more rare.

Very little is known of the species of foreign countries. Of the thirteen collections received in Europe from foreign countries twelve of them have been found to be "new species." It is needless to say that the subject is not exhausted nor a great deal known of the distribution from the single collection known of each of these "new species."

Divisions of the section Ovinus.—We would arrange the species into a few groups, based on the most prominent characters.

1st. Species produced by a sclerotium	page 74
2d. Stems usually mesopodial, pores small	page 76
3d. Stems usually mesopodial, pores large	page 79
4th. Stems usually excentric or irregular, pores small	page 79
5th. Stems excentric, pores large	page 83

Melanopus.

Stems black, at least at the base (all preceding do not have this character).

6th. Pores large	page 85
7th. Pores small	page 87

GROUP 1. SPECIES PRODUCED FROM A SCLEROTIUM.

There are several noteworthy Polyporoids that produce their fructification from underground tubers or sclerotia as they are called. The best known in Europe is Polyporus tuberaster; in Australia, Polyporus Mylittae; in Africa, Polyporus sacer, which however we would not class in the section Ovinus.

POLYPORUS TUBERASTER.—Pileus fleshy, convex then infundibuliform,⁴ yellowish, scaly when old. Flesh white. Pores white, at first small, round, then larger and more angular. Spores large, 4 x 12, hyaline, smooth.

This plant, which is said to be "cultivated" and used as food in Italy is rather rare in the museums of Europe. Most of the specimens I have seen were collected by Trog in Switzerland. While it is called tuberaster it really does not have a true sclerotium. The hard masses (known as Pietra in Italian, or stones as translated in English) are formed of earth cemented into a stone-like body by the mycelium of the fungus. They are said to be cultivated in Italy to produce the fungus for food, somewhat in the same manner that mushrooms in our country are produced from spawn. A further account by Prof. Mattiolo and illustration will be found on pages 92 and 93.

POLYPORUS GOETZII (Fig. 496).—Pileus umbonate, about four inches in diameter, with a pale, dull, smooth surface. Pores large, sub-angular with thin walls, pale colored or discolored but not ferruginous I think. Stipe mesopodial, growing singly from a black

⁴ Strongly so as shown in Jacquin's plate. In the specimens found in the museums, mostly from Trog, Switzerland, this character is not so pronounced, nor is it so shown in Venturi's plate, which seems to be the best.

sclerotium about two inches in diameter. Spores said to be 5-8 x 6-9, pale yellowish.⁵

This is known from a single specimen from Africa found in the museum at Berlin. It has the sclerotium attached. No illustration of it has been published heretofore. There is another species in Africa with a sclerotium (*Polyporus sacer*) which seems to be much more common, but it is quite different from this.



Fig. 496

Polyporus Goetzii with sclerotium attached.

POLYPORUS SAPUREMA.—This species from Brazil has a large sclerotium about eight inches in diameter, and Moeller records large specimens weighing when dry more than twenty pounds.

⁵ I did not examine the spores, but I do not question that I should have found them white, as I think few if any plants with such pale context have colored spores.

The only specimen known in Europe is in alcohol in the museum at Berlin. In this specimen the sclerotium has produced three white, mesopodal fructifications. The pores are small and white. I think the species has never been formally described,⁶ though the name was printed and a figure given in Engler and Prantl. Professor Moeller seems to have been under the impression that it may prove to be *Polyporus tuberaster* of Europe, which I think is not possible as the latter does not have a true sclerotium.

POLYPORUS MYLITTAE.—For many years the tuber called “native bread” has been known in Australia and like the Tuckahoe of our southern United States its true nature was unknown.

Berkeley named it *Mylitta australis* and it was supposed to be related to the Ascomycetes. In 1885 Mr. H. T. Tisdall found specimens that had developed fructification of a *Polyporus* and he gave an account of it in the *Victorian Naturalist*. It was sent to Kew and named *Polyporus Mylittae*. The pileus is fleshy, tough, white with a short, deformed stem and white pores. The spores were recorded as elliptical, 4×8 . The specimen was not preserved as far as I can find. I have seen a more elaborate account of this curious species with illustrations in some Australian publication, but at present I can not place it.

Note—*Polyporus tumulosus* (see page 86) is supposed to produce large, conglomerate masses of mycelium, “often found when trenching around Brisbane,” but I can not see from the account that the connection of the fungus is established with these masses. *Polyporus basilapidiodes*, an Australian species, produces a very hard, conglomerate, mycelial mass. It is not classed in this section. There are two other *Polyporoids* known to me that have true sclerotia, but I would class both in another section. These are *Polyporus sacer*, which seems common in Africa, and *Polyporus rhinocerotis*, known only from Malay.

GROUP 2. STEMS USUALLY MESOPODIAL, PORES SMALL.

POLYPORUS OVINUS (Fig. 497).—Pileus fleshy, white with a dull surface. Flesh firm, white. Stipe usually mesopodial, rarely excentric, fleshy, white, similar in texture to the pileus. Pores minute, round, regular. Spores subglobose, $3\frac{1}{2}$ -4, hyaline, smooth, guttulate.

This is the most common plant in the group that grows in the pine woods of Sweden. I have noted it in the market of Stockholm, and it is used as a food. In central and southern Europe it is more rare, being found chiefly in the Alpine regions of central Europe. It has not been recorded from England and it is doubtful if it occurs in the United States. I have never collected it, but have seen species so determined by Peck and Farlow, and I received one collection from Geo. L. Morris, Massachusetts, that I think (with doubt) should be referred here. These specimens were all small, black and unsatisfactory.⁷ In drying the plant is apt to turn black, in which character it differs from *Polyporus confluens* which when fresh and growing singly may be confused with it.⁸ Particularly as *Polyporus ovinus* when old often takes a “scorched” appearance somewhat similar in color to that of *confluens*. The plants can be readily told apart in the colors they assume in drying, blackish in *ovinus*, red in *confluens*.

⁶ In pidgin Latin according to the rules, and hence in the eyes of the law it has no existence.

⁷ At Kew there are two American specimens determined as *ovinus* by Berkeley; both I think wrong. The one from Lea, Cincinnati, is quite different in its quite distinct spores, is unknown to me and is in my opinion an unnamed species.

⁸ There are American specimens of *Polyporus confluens* determined as *ovinus* in several museums of Europe, and some of Trog's Swiss distribution were so misdetermined.



Fig. 497

Polyporus ovinus.

The two following are I think color forms of one and the same species, and yet they appear to me distinct *when fresh*. They have the same *very peculiar* spores (see fig. 498) and the dried specimens take very much the same dark color, so that they can not be distinguished when dry.



Fig 498

POLYPORUS LEUCOMELAS. — Pileus fleshy, *dark, fuliginous* with a dull, slightly silky surface. Stipe usually mesopodial, concolorous with the pileus. Flesh white. Pores irregular, white or light grayish, *contrasting with the dark pileus and stem*. Spores (fig. 498) *peculiar* globose, elliptical, *tubercular*, white.

This is a rare plant in Europe and I have never seen fresh specimens but once, at a fungus show in Paris. It has been finely illustrated by Gillet, also very well by Fries (*Icones* t. 179). The contrast of color between the pileus and pores is the only difference between it and the next if that can be held to be a difference. This form is not known from the United States.

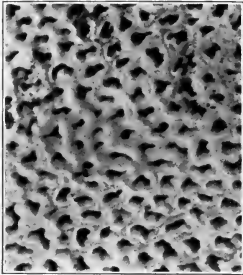


Fig. 499 (X 6)

POLYPORUS GRISEUS (Fig. 500). —Pileus fleshy, irregular, repand, color pale smoky gray. Surface dull, minutely silky. Stipe short, solid, usually thick and obese. Flesh soft, spongy, grayish white. Pores small, (Fig. 499 X6) irregular, round with thick walls, grayish, almost concolorous with the pileus. Spores roundish-elliptical, tubercular, 6-8 mic., white, the same as the peculiar spores of the preceding plant.⁹

Polyporus griseus is a rather frequent plant in the eastern United States, and a rare one in Europe. In the United States the plant was discovered to be a new species and named *Polyporus griseus* by Peck. In Europe it is stated that Linnaeus named it *Boletus squamosus* a hundred and fifty years ago. While I have little doubt of the

squamosus a hundred and fifty years ago. While I have little doubt of the



Fig. 500

Polyporus griseus.

⁹ The fact that these two plants have the same peculiar spores, and that these peculiar spores are not known in any other species of *Polyporus*, would indicate they are the same species. A few *Polyporoids* have *echinulate*, globose spores, but these are the only two to my knowledge with *tubercular* spores.

identity of the American and European plants, I think no one knows what Linnaeus so named so many years ago and few know it in the sense of Fries.¹⁰ An excellent illustration has recently been given of the plant by Boudier under the name *Polyporus leucomelas*.¹¹

POLYPORUS CAERULIPORUS.—Pileus fleshy, broadly convex, and when in its prime it is bright, violaceous or blue, losing the bright color and becoming brownish when old. Stipe central, concolorous. Pores short, angular, bright, bluish color when fresh. Spores subglobose, $4\frac{1}{2}$ -5, hyaline, smooth.

This is a most striking species, bright colored as any *Cortinarius* when in its prime. Unfortunately it is as rare¹² as it is beautiful in the United States and is unknown in Europe. Peck found and named it thirty years ago. Recently Atkinson found it in North Carolina and as it was "new" (to him) he also named it. When one does not know about such striking and marked species as *Polyporus caeruliporus* it is a very easy matter to discover "new species."

POLYPORUS POLITUS.—A description of the plant is given in Fries *Hymenomyces*, page 525, and it is figured in his *Icones*, t. 179. It is a very rare plant in Europe, only known from Fries' record and but one specimen at Kew which was sent to Berkeley by Fries.¹³ It is a peculiar reddish color and the specimen seems to this day to bear out the color as shown in the *Icones*. The spores as I find them are globose, 3-4 mic., hyaline, smooth. It grew in frondose woods. *Polyporus pachypus* which was referred here by Fries as a synonym, is according to specimens in Persoon's herbarium quite another thing. Should it develop that *Polyporus politus* was only regular mesopodial specimens of *Polyporus confluens* I would not be surprised.

The three following species are unknown to me:

Polyporus violaceo-maculatus.—Described from China as brownish gray, thin with white flesh. Pores white, spotting brown-violaceous at the touch, small, decurrent. Spores ovoid, $6 \times 8-10$, hyaline, smooth.

Polyporus decurrens from California, said to have a rough, "tuberculose," brown surface, thin, white flesh, small, decurrent, white pores and to be "only known from the type locality," which means that no one else has "discovered" it except the wonderful discoverer.

Polyporus myclodes, as published in Greville and found in Saccardo is said to be a typographical mistake for *myelodes*. No specimen exists at Kew, and Kalchbrenner who named it was not a very certain authority. Described as being infundibuliform, yellowish with thin, white flesh. Pores small, white. It came from Australia.

GROUP 3. STIPE CENTRAL. PORES LARGE.

Polyporus tuberaster, which would otherwise have belonged in this section, we have placed in the first section, on account of having a (false) sclerotium. It would probably be better to place it here.

GROUP 4. STEMS USUALLY EXCENTRIC OR IRREGULAR. PORES SMALL.

We have placed in this group two plants that were placed by Fries in the

¹⁰ Fries gives a poor picture of it, I think (Sv. Atl. t. 53), and the present mycologists in Sweden do not find it at all. I think they do find it rarely, but call it *Polyporus leucomelas*.

¹¹ Our figure 498 of the peculiar spores has been taken from this plate. Copied through the kindness of Miss Wakefield at Kew.

¹² I have never seen it fresh and have received dried specimens from only four correspondents, viz: H. C. Beardslee, North Carolina; John Dearness, Canada; J. Vroom, New Brunswick and G. U. Hay, New Brunswick. It loses all blue color in drying and turns brown.

¹³ Fries kept none in his own collection.

section Merismus. The latter section embraces plants that bear numerous pilei proceeding from the branches of a common stem. In the two species in question (*cristatus* and *confluens*) each pileus is borne on its distinct stem, and while they sometimes grow caespitose and the stems grow more or less confluent we look upon this as the cohesion of separate stems and not as the division of a common stem. In addition we find specimens growing singly with a normal, single stem much more frequently than those that grow together and coalesce. Usually the stem is more or less lateral or irregular, but not truly merismatoid.



Fig. 501

Polyporus cristatus.

POLYPORUS CRISTATUS (Fig. 501).—Pileus drying dingy or greenish yellow color, with a rough, somewhat scabrous, usually

rimose surface. Stipes sometimes mesopodial but usually excentric or even lateral. Often the plants grow in clusters with deformed stems. Flesh, thin, brittle, yellow. Pores at first are small and round, becoming larger and more angular and torn when old. Long, decurrent on the stem. Spores are subglobose, smooth, hyaline, 5-6 mic. with a small, lateral apiculus.

This is by no means a rare plant in the United States, where it has generally been known under a name given to it by Berkeley, viz: *Polyporus flavo-virens*. I have long suspected it to be the same as the European plant but could not convince myself from the scanty specimens I found in the museums of the European plant. I got my first clear idea of the European plant from abundant collections I found at Berlin, made by Dr. Hennings. I then felt quite sure and sent material to Bresadola, who confirmed my view. In some respects this is unfortunate for *flavo-virens* was a most excellent name for the plant and we dislike to give it up in favor of a poor name such as *cristatus*. Schweinitz many years ago recorded *cristatus* from the United States, and while no specimen exists in his herbarium he undoubtedly had it right. In Europe *Polyporus cristatus* seems to be a rather rare species, but it is recorded from most countries of Europe. I rarely receive it from correspondents in Europe and it is poorly represented in most of their museums. It has there the reputation of growing in beech woods. It has been illustrated in several of the old works (Barla, Krombholz, Rostkovius) but none of them are very good. The latter gives a fair idea of its color but a very poor one of its usual form. Our photograph (Fig. 50r) was made by Professor Beardslee.

Form.—I made one collection at Trexlertown, Pennsylvania, of what when fresh was the usual form and color of *Polyporus cristatus*, but in drying the pores turned *brick red*. Therefore the dried specimens seem different from the ordinary plant. I think this form has no name unless it is the plant that has been described as a new species, *Polyporus Whiteae*, which is unknown to me.

POLYPORUS CONFLUENS.—Pileus reddish, leather or ochre¹⁵ color, sometimes growing singly but often several in a cluster which are very irregular and confluent.¹⁶ Flesh, white, firm, not changing when cut. Stipe short, usually more or less excentric and irregular, often more or less confluent but not merismatoid. Pores short, white or pale, minute, decurrent. Spores subglobose, 3-3½ mic., hyaline, smooth.

This is rather a frequent plant in the pine woods of Sweden. I think it is not recorded in England but is not rare on the continent. Also in America it occurs in the northern and New England States. Often it grows caespitose and then more or less irregular and confluent, but not merismatoid as generally classed. Often I have found it in Sweden, growing singly and then it is sometimes liable to be confused with scorched specimens of *Polyporus ovinus*. *Polyporus confluens* is one of the few plants that can be recognized when dry more easily than when fresh for it turns red in drying and the older it gets the redder it becomes. A number of the old (always red) specimens are in the museums and in several instances are misnamed, *Polyporus ovinus*. As it is considered edible it has been illustrated a number of times. One of the best figures is that issued in Romell's wall atlas of the edible fungi of Sweden.

¹⁵ Fries states that it varies from flesh to ochre but never orange.

¹⁶ The best illustration showing its usual method of growth is Barla t. 29. The old figure of Schaeffer is quite misleading.

POLYPORUS DISCOIDEUS (Fig. 503).—Pileus thick, fleshy, with a smooth brown cuticle. Stipe excentric (or sub-lateral) short, thick. Pores probably white when fresh, discolored in the dried specimens, minute, round. Spores not found by me.



Fig. 503

Polyporus discoideus (small specimens).

This is a tropical American species, originally from Cuba. Recently specimens have been sent me by Rev. Rick, Brazil, from which our figure (503) has been made. The original specimen from Cuba was larger, about four inches in diameter. It grows on logs as I understand it, hence has been placed in the section *Lentus*. It is so much more obese and fleshy than the true *Lentus* that I think it is better placed in *Ovinus*.

POLYPORUS POPANOIDES.—Pileus uniformly pale, isabelline color.¹⁷ Flesh rather soft. No distinct cuticle, but the surface seems harder than the flesh. Stipe short, thick, *excentric*, inserted very near one side. Pores minute, concolorous, about 5 mm. deep. Spores subglobose, $3\frac{1}{2}$ -4, hyaline, smooth.

This is known from one collection at Kew made in Mauritius, but the collector's name is not given. It is about ten inches in diameter, an inch thick and has a *short, thick* stem near one side.

POLYPORUS LUTEOLUTEUS.—This was named by Professor McGinty from the United States, and probably belongs to this section but is unknown to me.

¹⁷ It was described as "whitish" and it may have changed.

GROUP 5. STIPE EXCENTRIC. PORES LARGE.

POLYPORUS PES-CAPRAE (Fig. 504).—Pileus fleshy, reddish-brown, covered with squamose hairs. Flesh white. Stipe excentric or sub-lateral, short, white, yellowish at the base. Pores large, angular, shallow, white, turning greenish when bruised. Spores ovoid, piriform, 8×12 mic., hyaline, smooth, tapering to an apiculate base.

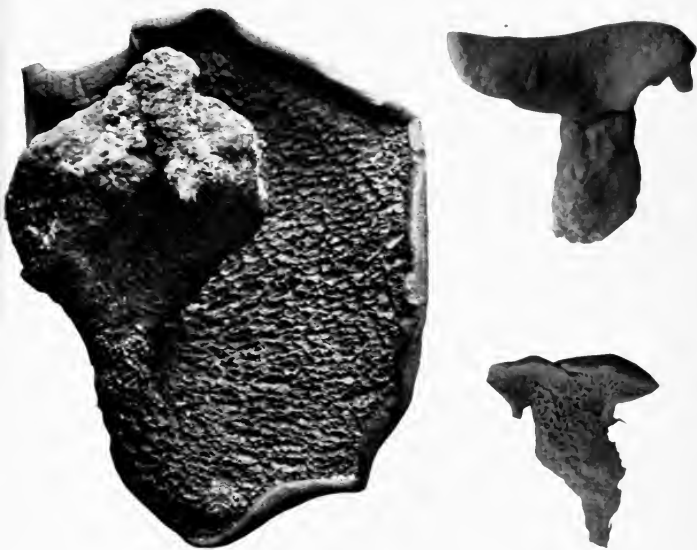


Fig. 504

Polyporus Pes-caprae.

This is a rare species in the Alpine regions of Europe, but is said to be common and used as food in Italy and certain parts of France. It is unknown from northern Europe and England, and is not recorded from the United States. I have always thought that *Polyporus retipes* as named from our Southern States by Underwood was a good species, but when in writing this article I began to consider the characters which would distinguish it from *Pes-caprae*, I did not find any. It has the same general habits, surface, pores, stem insertion and spores (!), and I now believe is the same plant. The large specimen in our Fig. 504 is a co-type specimen. It is a very rare plant in the United States, only known from a few collections from Alabama and a recent collection (the small plants of Fig. 504) from Mrs. Hannah Streeter, collected at Laurel Springs, New Jersey, near Philadelphia. Our description has been drawn from European plants and records, our figures from American specimens.

POLYPORUS ELLISII.—Pileus when fresh sulphur-yellow with large, dense, fasciculate warts. Flesh white, when dry discolored. Pores when young white, angular, decurrent becoming sinuate and somewhat irpicoid when old. Color when fresh is white, changing to greenish when wounded. In the dried plant they are darker than the pileus. Spores (teste Underwood) oval, 6×9 , smooth.

This is one of the rarest of American species. I think it is known from but three collections, made many years ago, viz: Ellis in New Jersey, Ravenel in South Carolina, and Underwood in Alabama. An illustration was given in our Polyporoid Series, page 29.

POLYPORUS SQUAMATUS (Fig. 505).—Pileus mesopodial, fleshy, covered with large cone-like scales. Pores large, angular. Color of the dried plant dark, almost black, excepting the pores, which take a red color similar to that



Fig. 505

Polyporus squamatus.

of *Polyporus*, *confluens* when dry. Plant is imperfectly known from a collection made in Hungary by Kalchbrenner and determined as *Polyporus ovinus*. Specimens are at Berlin.

Compare *Polyporus Boucheanus*, page 85, next section, which, although it does not have a black stipe, is so placed in the pamphlet on account of its evident relationship to *Polyporus squamosus*.

MELANOPUS.

The species with black stipes were separated by Fries into a distinct section which he called *Pleuropus*. If confined to the plants of Europe, it is not a bad section as they can all be referred as forms of two species, viz: *squamosus* and *varius*. In foreign countries however it would include such species as *Polyporus radicans* of the United States and *tumulosus* of Australia and others that have little relation to these plants of Europe and which we feel are much better classed in the section *Ovinus*. We would therefore divide the species that Fries separated as *Pleuropus* between the sections *Ovinus* and *Lentus* of Fries.

GROUP 6. MELANOPUS. PORES LARGE. STIPE BLACK, AT THE BASE AT LEAST.

POLYPORUS SQUAMOSUS.—Pileus thick, fleshy, with soft, white flesh. Surface with large, appressed darker scales. Pores at first shallow and mere reticulations¹⁸ elongated in diameter, becoming longer and irregular with age, white, soft. Stipe excentric or sub-lateral (rarely central) short, thick, black at the base. Spores oblong, 5-6 x 12-15 mic., hyaline, smooth.

In Europe this is a most abundant species on frondose wood, particularly the ash tree and other cultivated shade trees. It sometimes attains a very large size and is said to do a great deal of damage in the parks and yards, producing rapid decay in the affected trees. It is curious however (and perhaps fortunate) that in the United States it is quite a rare species. I have observed it there but a few times.

Forms.—The specimens vary much in size but are fairly constant in the leading characters. I have collected very thin forms in the United States with central stems. Sometimes abortive, monstrous forms occur in caves or hollow trees and these may be confused with similar monstrosities of *Lentinus lepideus*.

Polyporus pallidus was based on a drawing sent Fries from Hungary. The drawing seems to represent only a small scaled form of *Polyporus squamosus*. A smooth plant has been so referred and recorded by Professor Peck. The same plant by Berkeley was referred to *Polyporus Rostkowii*. I think they are both correct and both are better classed as scaleless forms of *Polyporus squamosus*. As to flesh, texture, color and spores they seem to be the same as the ordinary form.

POLYPORUS LENTINOIDES.—This is a Brazilian plant that Dr. Hennings so named as a variety of *Polyporus squamosus*. It is very close to this species but is smooth and the context is firmer. I would place more stress on the difference in context texture than on the surface difference. I have received the same plant from Brazil from Father Rick.

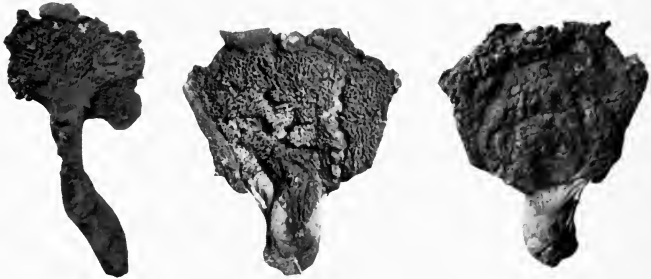


Fig. 506

Polyporus Boucheanus.

¹⁸ I think the statement made originally by Fries that the "pores of *Polyporus squamosus* are at first minute, then large, angular" is an error. I think they are at first large, angular, shallow, merely large reticulations in fact, and that they really become smaller in diameter as they grow in depth. I have never observed this point in the field but often see dried specimens which I do not question are this species, young, with such large, shallow pores.

POLYPORUS BOUCHEANUS (Fig. 506).—Pileus fleshy, plane or cyathiform, yellowish with small squamae. Pores large, angular, decurrent, white. Stipe short, pale, hirsute, excentric or often lateral. Pores 7×12 , hyaline, smooth.

This is a rare species in Europe and it appears to me to have been badly confused. The only type (Fig. 506, the long stemmed one) is at Berlin. It was called Favolus Boucheanus and it appears in Saccardo under Favolus. It was described by Klotzsch as having a dark stem and was put in Melanopus by Fries. Polyporus Forquignoni as called by Quélet is the same plant I think although said to have a stem "white as snow." I think the truth is the stem is neither white nor black, but concolorous, hence does not come in this section, but I place it here as I think it is so closely related to squamosus. In fact, except as to its small size and pale stem, it is squamosus as to color, flesh, pores, texture and spores. In England and the United States Polyporus Boucheanus has been confused with Favolus europaeus with which it has no relation and to which it has but little resemblance.

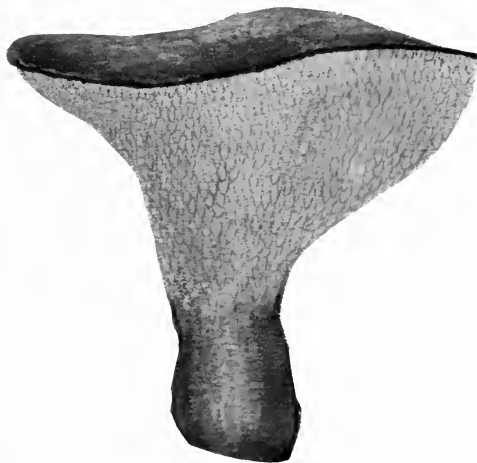


Fig 507

Polyporus tasmanicus.

POLYPORUS TUMULOSUS.—This is known from but one collection made in Australia and preserved at Kew. It is quite a distinct thing with a pileus resembling in some respects that of *Polyporus betulinus*. It has soft, white, flesh and a thin, papery, smooth cuticle. The stems are short, thick and mesopodal. They are so covered with adhering dirt that it can not be told whether or not they belong in the section with black stems. The pores are large, irregular and apparently have turned black in drying. Spores not found by me.

"On the hard, stony ridges about Brisbane, when trenching the land, large masses of mycelium are often met with. Some of the masses would weigh over a hundred weight. From its consistency one might fancy that a quantity of dough had been buried. My idea has always been that it was the mycelium of some *Boletus*."—Quotation (from Bailey?).

Cooke named this plant *tumulosus* under the impression that it produced these mycelial masses. I can not see any direct connection between this fungus in the account as published and these mycelial masses, and I think it is not certain that there is any connection.

POLYPORUS TASMANICUS (Fig. 507).—Pileus fleshy, turbinate, with a brown, smooth surface. Flesh soft, white, thick. Pores large, angular, white, decurrent, about 5 mm. deep. Stipe short, thick, black. Spores $4.5 \times 12-14$, oblong, hyaline, smooth.

This is based on a specimen and what appears to be an excellent drawing (Fig. 507) made by Rodway in Tasmania. It is preserved at Kew and is known from but this single collection.

Polyporus novo-guineensis, from New Guinea, seems to belong in this section but little can be told about it from the type material. Compare the note on page 90.

GROUP 7. MELANOPUS. STIPE BLACK AT BASE. PORES SMALL.

POLYPORUS RADICATUS (Fig. 508).—Pileus with a brown, minutely tomentose even surface. Flesh white, soft. Pores small, white, round, or elongated. Stem dark, velvety, mesopodal, tapering to a long, rooting base. Spores oblong, $6-8 \times 12-16$ mic., hyaline, smooth.¹⁹

This is a very striking and characteristic American plant, rather rare but not unusual, at least in the vicinity of Cincinnati.²⁰ I have collected solitary specimens several times and once I found quite a colony. As far as I have seen it always grows in the earth and has a long, slender, radiating base to the stem. I do not know, but presume this is attached to buried wood. It seems to never grow on logs. Schweinitz named this plant years ago and Lea collected it and sent a long account to Berkeley who correctly referred it. Peck called it *Polyporus Morgani* but I think he has since corrected it, at least both he and Morgan admitted years ago that it was but a synonym.²¹

POLYPORUS HARTMANNI.—Pileus with a brown, smooth, minutely velvety surface. Flesh pale, soft, fragile. Pores minute, decurrent, black in the dried specimens but according to collector's notes were white when fresh. Stipe solid, excentric, covered with a dark brown velvet, bulbous below but tapering to the base. Spores not found by me.²²

¹⁹ They are given by Mr. Murrill as $5 \times 6-8$, about one-half their size, but many of his spore records are inaccurate. I know not whether this is due to copying from inaccurate sources, or to careless work. No two observers will measure spores exactly the same, and the most careful will vary from one to two microns in their records. They ought, however, to be approximately the same.

²⁰ A specimen collected by Morgan was sent to Berlin and bears this endorsement—"This fungus is a species of *Boletus* (probably new but from dried specimens not determinable). Also spores are *Boletus*, pale yellowish, $5-6 \times 10-12$ mic." All of which goes to show that sometimes eminent authorities are in error.

²¹ Mr. Murrill adds two other alleged synonyms (chronologically arranged) one of which (*Kansensis*) is most probably wrong, and the other (*hispidellus*) is most assuredly wrong, for it has not the slightest resemblance or relation to *Polyporus radicans*.

²² Teste Cooke—"minute, elliptic, white."



Fig. 508.

Polyporus radicans (reduced about one-fourth). Pore details natural size.

This species is represented by two collections at Kew, one from Toowoomba, the other from Brisbane, Australia. It was illustrated in Cooke's Handbook but the color I judge from the specimen is too bright. The plant is I think more brown than red.

SYNONYMS, NOTES, AND REJECTED SPECIES.

We follow the usual custom in this section of citing the authors of these "new species," and we wish them much pleasure in the advertisement.

alpinus, Europe, Sauter. Unknown to me. From the description seems to be *Rostkowi* or rather *scaleless squamosus*.

asperellus, Europe, Lévillé. Probably based on a crude attempt to draw *Pes-caprae*.

bulbipes, Europe, Beck. Known only from the illustration and probably the same as *Boucheanus*. Spores seem a little different but that is all.

cadaverinus, Europe, Schulzer. Something abnormal. The type drawing (*Kalchbrenner*, t. 35) is found in Fries' collection at Upsala.

Campbelli, India, Berkeley. Known only from a thin section. Probably could not be determined on comparison.

caudicinus. A cheap juggle of *Polyporus squamosus*. It originated in Europe, but has been copied in the United States.

Clusianus, Europe, Britzelmayer. Unknown except from the crude work of Britzelmayer. Seems to be compared to *squamosus*.

decurrens, United States, Underwood. See page 79.

Earlei, United States, Underwood=*griscus*. I have a co-type in my collection.

flavo-squamosus, United States, Underwood=*Polyporus Ellisii*, and is a much better name for the plant.

flavovirens, United States, Berkeley. The plant is fairly frequent in the United States and has been generally known under this name which is an excellent name for it. I am sure now that it is unfortunately the same as *cristatus* of Europe. Schweinitz had it right and was the only American mycologist who did.

Forquignoni, Europe, Quélet. In my opinion the same as *Boucheanus*.

fuliginus, Europe, Persoon. Neither Persoon nor any one else apparently has seen the plant and it was only a change of name of Bulliard's Plate 469. Quélet records the species in his early work but omits it in his final work. Fries states that he has seen specimens collected in Sweden but none are found in his herbarium or elsewhere that I have seen. As to shape and color it is similar to *Polyporus politus* and may have been based on small specimens of that species. The name has no application to it.

hispidellus, United States, Peck. Given with a doubtful mark by Murrill as a synonym for *Polyporus radicans*. I suppose the doubtful mark indicates a guess. If so, it was a bad guess for it has no resemblance or relation to *Polyporus radicans*. Nor do I see any occasion for guessing as he examined Peck's herbarium where good material is preserved and had he known *Polyporus radicans* would have known that it had no resemblance whatever to *hispidellus*.

holocyaneus, United States, Atkinson. I have not seen this, but it is surely the same as *caeruliporus*, the most striking and noteworthy mesopodial *Polyporus* that we have in the United States. If the author of this "new species" (new to him apparently though well known to every one else) ever heard of Peck's remarkable species he was surely remiss in not mentioning the fact when he re-described the same thing.

Kansensis, United States, Ellis. I have seen no material but it is referred as a synonym for *Polyporus radicans* by Murrill. I am inclined to doubt the reference, as it grew on logs and I think *radicans* never grows on logs. If the spore measurements given by Ellis are correct, "5 x 6-8," it is surely not a synonym for *radicans* for the spores are only about half the size of those of *radicans*. This is probably the source from which Murrill got his erroneous spore record of *radicans*.

laeticolor, United States, Murrill. Name being preoccupied has been changed to *Polyporus luteoluteus* by Professor McGinty. Name from *lutum*, mud, and *luteus*, yellow, that being the color of the fresh plant as described.

Michelii, Europe, Fries, was based on an old, crude figure of Micheli (T. 61, f. 2) which tells nothing whatever except that it had large pores and was said to be white. As no one has met any such plant since the days of Micheli, one hundred and fifty years ago, we might as well forget it.

Morganii, United States, Peck. Well known for years to have been based on a small specimen of *Polyporus radicans* and both Morgan and Peck have so admitted to me.

myclodes, Australia, Kalchbrenner. See page 79.

nodipes, India, Berkeley. No type exists.

Novo-guineensis, New Guinea, Hennings. Although it bears Hennings' advertisement, the only specimen I have found is at Kew. It was evidently a fleshy, mesopodial plant which has turned black in drying. It might be recognized on comparison, but I think little can be told of the characters of the fresh plant from this material. See page 87.

olivaceo-fuscus, Ceylon, Berkeley. Known from two thin sections of a small immature specimen, from which nothing can be told excepting the collector's notes—"whole plant dull olive-brown." It is most probably a young *Boletus*.

pallidus, Europe, Schulzer. The type drawing found in Fries' collection is surely only a small, scaled form of *Polyporus squamosus*. Professor Peck's determinations are rather *Rostkowii*, the scaleless form of the same species. See page 85.

persicinus, United States, Berkeley. This plant has no relation to the section *Ovinus*. Mr. Murrill however puts it in this section and tells a most amusing romance about it. He provided for it a "stem, central, thick, conical, dark-purple, 5 cm. long, 4-8 cm. thick." He might just as well and with as much truth have provided it with a cloven hoof and a forked tail. The plant is sessile and grew flat on the side of a tree and has no stem of any kind.

poripes, United States, Fries. No type exists and no plant known to me in the United States that corresponds to the description. Fries got it from Curtis and cites Curtis' number 552. It may be found in the Curtis herbarium at Cambridge. There is nothing at Upsala and at Kew I have not noted this number. Berkeley endorsed on the Curtis manuscript a note opposite this number "very near *Polyporus pes-caprae*," but did not publish it in the synopsis in *Grevillea*. Ravenel distributed *cristatus* as "*poripes*, Fr." but the determination is without value. The same can be said of Murrill's guess that it is a prior name for *flavo-virens*.

punctiporus, Europe, Britzelmayer. Not worth the trouble to look it up, as nothing whatever can be told from Britzelmayer's cartoons.

retipes, United States, Underwood, same as pes-caprae of Europe.

Rostkowii, Europe, Fries. See page 85.

Schweinfurthianus, Africa, Hennings, was based on a Boletus.

scobinaceus, name used as a juggle for tuberaster.

subradicatus, United States, Murrill. I have seen no specimens but it is distinguished in the key character by having "irregular tubes" which "in radicatus are regular and entire." As the tubes in radicatus are neither regular nor entire (cfr. Fig. 508) the distinction does not seem to me to be very good.

subsquamosus, Europe. Attributed to Linnaeus, but I do not believe that any one has ever known what Linnaeus so called and very few know the plant in the sense of Fries. In my opinion it is the same plant as griseus of the United States, which is so much better and so much more certain that I have used it.

tessulatus, Europe, Fries. Based on an old crude figure of Micheli's nearly two hundred years ago, not found since and probably imaginary in the start.

violaceo-maculatus, China, Patouillard. See page 79.

virellus, Europe, Fries. Based on Italian figures which appear to me to be regular specimens of cristatus as named by the author. Specimens distributed by Sydow as virellus (No. 2512) are surely cristatus.

viscosus, Europe, Persoon, is not a Polyporus but a Boletus. The type is in Persoon's herbarium, also what seems to be the same collection at Kew.

Whiteae, United States, Murrill. See page 81.

xoilopus, Europe, Rostkovius. Only known from the original figure, which seems to me to be a young Boletus.

ADDITIONAL NOTES.

Previous portions of this pamphlet were written at Kew, April, 1911. When I reached home (October, 1911) I found it in type. Very little has been added to my knowledge of this Section Ovinus.

During the past summer I visited Rev. Bresadola, in the Dolomite Mountains, of Tyrol. Rev. Bresadola I believe to have the best knowledge of Polyporoids in general of any one, but nothing developed in my conversations with him to require any change from what I had previously written on the subject. The following are a few additional notes that have come up since the previous work was written.

POLYPORUS CRISTATUS.—Rev. Bresadola tells me that he sometimes collects this species in Tyrol, not growing in beech woods as I suppose it occurs in Europe, but in acerous woods.

POLYPORUS CONFLUENS.—I found this plant in the Tyrol Mountains. There it is smaller, more confluent, and very little stem developed, and the entire plant is much more abortive than it is in Sweden. This may be due, however, to the season, as it was a very dry summer. I have never seen it in Sweden excepting with well developed stems.

POLYPORUS HARTMANNI.—A specimen has since been received from Miss Margaret Flockton, Australia. The spores are elongated, 5×12 mic., hyaline, smooth.

POLYPORUS MYLITTAE.—Since the article was written I have found a photograph of Polyporus Mylittae that was sent by Cooke to the British Museum. It shows the abortive fructifications growing from the tuber. I have never found a specimen of Polyporus Mylittae at Kew or its photograph, although it is possible that they are preserved in the Economic Museum, where I did not search for them.

POLYPORUS TUBERASTER.—As I have stated in the body of the pamphlet, Polyporus tuberaster is said to be cultivated in Italy. The references in literature that I have examined are mostly so old that I wrote to Prof. Mattiolo, asking him if it was now produced. He has kindly replied in detail, giving me the literature on the subject and the following note. The bibliography was mostly quite ancient, the latest being dated about fifty years ago, so that I do not reproduce it. The following, however, is the information Prof. Mattiolo gives me on the subject in regard to the use of the plant at the present time:

“As to Pietri or Polyporus tuberaster, plants are collected to this day in the Campania, and I have an example obtained from the market in the vicinity of Camerino. I have myself cultivated the sclerotia and obtained and eaten some excellent Polyporus at Turin. Previously the sclerotia were in cultivation much more frequent and were sold in the markets and villages of Southern Italy. In Naples they are preserved in caves to obtain the edible Polyporus. The sclerotia have gradually diminished in recent years, due to the clearing of the forests.”

Professor Mattiolo favored me with a photograph of the plant growing from a sclerotium, which I reproduce herewith (Fig. 509).



Fig. 509

Polyporus tuberaster.

Photograph from Professor Mattiolo.

INDEX, DISTRIBUTION AND ADVERTISEMENTS.

The following is an index of the species considered valid in this publication, the countries from whence known, and the personal name to be added to the specific name by those who believe in this system of advertisement:

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SYNOPSIS
OF THE
STIPITATE
POLYPOROIDS

By
C. G. LLOYD.

CINCINNATI, OHIO, . MARCH, 1912.

UNIVERSITY OF CALIFORNIA
AT LOS ANGELES

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REV. G. BRESADOLA.

Who has in my opinion, the best critical knowledge of foreign Polyporoids and to whom I am indebted for many determinations and advice, I beg to dedicate this pamphlet in appreciation of the many kindnesses received from him.—C. G. LLOYD.

THE STIPITATE POLYPOROIDS.

The subject of the polyporoids is quite extensive, embracing as it does about three thousand alleged species. We have been engaged in the study now two or three years, but except in a general way have not been able to cover the entire field. We would divide them roughly into about five divisions as follows:

- 1st, The stipitate species, embraced in this pamphlet.
- 2d, The genus *Fomes*.
- 3d, The genus *Polyporus*, sessile section.
- 4th, The genus *Polystictus*, sessile section.
- 5th, The allied genera such as *Favolus*, *Laschia*, etc.

During the past two or three seasons we have visited all the museums of Europe and America where most of the historical material is preserved, and have made our studies, notes, and photographs of the type specimens. This embraces the museum at Kew, the British Museum at London, the museums of cryptogamic botany at Paris, Leiden, Berlin, and Upsala. We have looked over a small collection at Copenhagen, and some of the specimens in the private collection of Professor Patouillard at Paris. We did not have time to thoroughly work over Patouillard's species while in Paris, hence a number of his species are unknown to us. In America in our own collection we have more American specimens than there are in all the other museums combined. We have thoroughly studied the collection of Professor Peck and the specimens of Schweinitz at Philadelphia. The New York specimens we have not seen, as on both of our visits to New York Mr. Murrill was absent and we did not wish to work with his material in his absence.

Our final work on this pamphlet was done at Kew, during February, March, and April, 1911. There is no other institution in the world where one can work to such advantage as at Kew, where there is not only the largest collection of historical specimens, but the most perfect library, and where the conveniences are best.

The conclusions recorded in this pamphlet are our own, made on examination and study of authentic material. We have not indulged in the too common practice of passing on species we never saw. We may be mistaken in some of our opinions, but we have perpetrated no fraud. When we record a species as unknown, this means of course that it is unknown to us. In a few instances where we have not seen specimens we have adopted the opinion of the Rev. Bresadola, but in each such case this is distinctly stated.

The first and we think the best division of the pore species was made by Fries (1851) in his *Novae Symbolae*. At that time but relatively few plants were known, but Fries' divisions were based in the main on the most prominent characters, and of the eleven sections into which we have divided the stipitate species, nine of them have been taken mostly in their original signification from Fries' work. Professor Patouillard has outlined a plan of division which we think on the whole is not as good as that of Fries, but it embraced a few new ideas and two of them, the sections *Ganodermus* and *Amaurodermus* we have adopted.

In addition there has been no lack of men who have amused themselves by inventing new names for the sections of polypores. In the start we have Karsten who was the first to engage in such work. He discovered that most of Fries' sections were "new genera" and gave them names. The work had so little merit and had evidently so little originality as a whole that although proposed thirty years ago, no one except the author has followed it since, and it figures, when it has figured at all, chiefly in synonymy.

Monsieur Quélet, a leading French mycologist, learned the greater part of what he knew from Fries and his works, and in his first publication could not find words to express his appreciation of the "grand mycologue d'Upsala." After he had gotten a little insight into the subject he passed the latter part of his life juggling the names of his great master, and he did it so thoroughly that very few of his colleagues, even in France, have ever been disposed to use his work. This is unfortunate, for Quélet was a field mycologist and knew well the species that occur in France. As far as I have been able to decide there was no system or logic to his juggling, his only object apparently being to propose names in place of Fries' names.

Schroeter would divide the *Polyporus* species into three genera on the color of the spores and context, which while answering very well for the few species that he knew, if generally applied would bring the bulk of them, about a thousand, into one genus.

The last man to engage in this line of name changing is Mr. Murrill, who has no more trouble discovering "new genera" and concocting new names than if there had not been three men doing exactly the same thing with the same plants before him. I question if there is an institution or mycologist in Europe that attaches any importance or pays any attention to this kind of work, and very few in America. In my opinion such work is of little value or avail.

The principal work that these men do is to get up new "generic" names on various pretexts, and of course one can make a "genus" out of every species if he wants to. Their chief work, however, is to take the old sections of Fries' genera and then juggle up excuses to give them new names usually under the cover of some "rule." Such work, in my opinion, has so little to commend it that I do not consider it worth citing in detail even as synonyms.

When Fries proposed the divisions of the subject he knew but very few species, but in the years that have followed "new species" have been published in quantities, chiefly by Berkeley, who proposed so many of them that no one has been able to do much with them since. He was not, however, the only one to name foreign species, although he named a large part of them. Twenty-five per cent of the species considered good in this pamphlet were named by Berkeley.

In the early days Klotzsch and Junghuhn named quite a number. Then came Fries, Montagne, and Berkeley. Then Lévillé and Cooke, and Kalchbrenner. In the latter years we have Hennings, Patouillard, and Murrill. It would be more accurate to state that they named collections, for I do not think that any of them knew much about

what the others had done, and it has been very much of a haphazard proceeding from the beginning.

Junghuhn and Montagne, I think, did the best work, or rather the specimens they left are the best. Fries' foreign specimens have largely disappeared and many of them will never be known. Kalchbrenner did the worst work of anybody and renamed as "new species" the commonest, old, well-known things. He did not seem to have had the most elementary idea of the subject. Léveillé's work was in the main very poor, and Murrill's recent work is almost as bad. Berkeley, Hennings, and Patouillard have named as new a large part of the collections that come into their hands. Naturally they got a number that are good, and many that I think are not. Spegazzini grinds the "new species" out by the wholesale from South America, but very few of his specimens reach Europe, and such as have are largely misnamed. I think no one knows what he is doing, not even he.

Very little can be told from any "description" that can be drawn from a *Polyporus*, and the most of the determinations that are made from "descriptions" are wrong. The only way to get names for the plants is to hunt them up in the various museums where they are preserved, and then it is often not satisfactory. One finds the same thing named over and over again. Names based on little frustules that never did give the slightest idea of any character and many other irregular things that would not be tolerated except in "Science." I believe Bresadola to be the only man in Europe who has made an earnest effort to hunt up and learn the characters of the "old species" of *Polyporus* in the various museums of Europe to-day. I do not always agree with him in all the details, but I think no two who endeavor to learn names for fungi from the fragmentary, indefinite, and conflicting specimens on which the names have been based will ever agree in all cases.

Cooke tried to arrange the names according to the Friesian system, but owing to the number of species and the hurried manner in which the work was done, it was very inaccurate and in its details was most erroneously done. This was not all Cooke's fault. Many of the "new species" are described in such a way that not only can nothing be told about their identity, but in many cases from the description one can not even place them in the section where they belong. In this pamphlet, when species stated to be unknown (to me) are placed in sections, I do not claim that such disposition is anything more than a guess.

Having nothing else to follow, Saccardo adopted Cooke's arrangement, which is quite unfortunate, as Saccardo is used as a basis of classification in most museums, and by this method species are brought into the same division that have little resemblance and often no relation.

In this pamphlet the stipitate species are divided into eleven sections, or genera if one so desires to call them, but we prefer to call them sections. We disclaim having discovered any "new genera" or anything else new in the classification. Nine of our divisions we have taken from the work of Fries and two from that of Patouillard. If

we have succeeded in arranging the species where they belong in these sections that will be enough "novelty" to satisfy us, for we think it has not been even approximately done before.

As this pamphlet is proposed simply as an arrangement of the species, we have given but very brief descriptions, in fact only the more salient points. We think very few species are ever learned except from specimens, and that the largest part of the bad Latin that is used in describing species is purely a waste of good printer's ink and of no avail whatever as far as identifying the species is concerned. We have introduced a number of photographs that will be found to be of more service in this respect than the most minute descriptions that could be written. We have not given in detail the source of these illustrations, but we believe them to all be true to name, and the greater part of them are made from the type specimens.

As to nomenclature we have employed the sectional name as the first binomial (except in one case where it would produce the barbarism called tautology) and these sectional names are all old and familiar and will not lead to any confusion. If these sectional names are taken as genera, it is absolutely senseless to record who used the sectional name first as a generic name for any particular species. Mycologists are so very busy recording in great detail *who* did this and *who* did that, and *who* called it this and *who* called it that, and *who* made this combination and *who* made that combination, that they often have little time left to consider *what* was done.

As to specific names, in the body of this work we have not added personal names to the specific names, believing that in the case of most of the plants the authors being dead, it would not serve the usual purpose of ministering to self-conceit. We have given them in our synonyms where we think they are quite appropriate. We have given these names also in our index, according to the wishes of the authors in most cases, although not all. Some writers are so selfish they wish to advertise only themselves, others divide the advertisement with a collector or with a friend. It has been suggested that it would be a gracious thing to give all the advertisement to the collector, and I think the latter is the best plan, at least I adopt it in this pamphlet where I am concerned. In several cases in arranging the species it occurs that sometimes two in the same section have the same specific name. We have made no change, merely indicating the second by the word *bis* and would prefer to leave the work of changing names to others. We have endeavored to make this pamphlet a practical summary of what is known (to us) on the subject, and have indicated by the size of the type the relative value of the species as they appeal to us. Those printed in the larger type are the leading marked, characteristic species which we believe have merit and value. Those in smaller type are forms or doubtful species or plants imperfectly known to us. Where I have not seen and studied a species I usually place it in the section "unknown" (to me) for I think there is nothing gained by my guessing a second time concerning what was in many cases largely an original guess. If I have done any guessing as to the identity of

those specimens I have not seen, I have plainly so indicated it in each instance. The eleven sections in which the species are divided being mostly the old, familiar sections, need little explanation. The two that are least known are the sections *Ganodermus* and *Amaurodermus*, which at our hands have undergone changes of gender in order to be uniform with the others.

The section *Ganodermus* was first proposed for the common *Polyporus lucidus* of Europe. There are but few species in temperate regions, but it is more common in the tropics. The main characters are usually a strongly laccate surface, colored context, and the real character is a spore character. The spore (Fig. 395) has a hyaline membrane or episporium which is large and projects at the base beyond the colored endospore. This empty base usually collapses, then the spore becomes truncate at the base. It has been stated that this is not the base but the apex of the spore, a statement I do not believe.

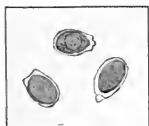


Fig. 395.

Amaurodermus is a tropical section. All species have stems, usually central but also lateral. The surface is generally dull and the stems velutinate. The spores (Fig. 396) usually in abundance, are colored, globose or oblong, large, and the endospore fills the episporium. The apiculus is rarely prominent. We have included in this section several thin species in which we have not found the spores and which we doubt really belong to it.

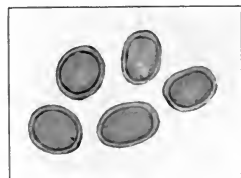


Fig. 396.

The other sections that we adopt are the well-known sections of Fries' system that need no special explanation other than our key. Some species present characters that would place them in two sections. In such cases we use our own judgment in placing them where we think they best belong. The names for the sections are mostly the same that Fries used. In one case, *Perennis*, we use another name, *Pelloporus*, for reasons we have previously stated, viz., the plants are not perennial.

KEY TO THE SECTIONS OF STIPITATE POLYPOROIDS.

There are included here only the stipitate species of the old genus *Polyporus*. The allied genera as *Favolus*, *Laschia*, etc., are not here considered.

Sub-woody.

With woody fibrils but not perennial and not having the pores in strata (except as to the first).

Pores in areas of growth (indistinctly stratified)Fomes.

Pores Not Stratified.

Spores colored (mostly elliptical) with a strong apiculus. Context colored. Surface of most species laccate. (Cfr. also p. 99)....Ganodermus.

Spores colored, mostly globose, with none or a small apiculus. Context colored. Surface of most species dull. (See p. 99).....Amaurodermus.

Spores white. Context (except sec. II) pale or whiteLignosus.

Fleshy or Coriaceous.

Stipe lateral (Spores white)Petaloides.

Stipe branching and bearing several pileoliMerismus.

Stipe Central or Excentric (Rarely Lateral).

Flesh spongy, light (Spores white or colored)Spongiosus.

Spores colored. Fleshy or coriaceousPelloporus.

Spores white. Fleshy, soft, usually terrestrial, with thick pileiOvinus.

Spores white. Fleshy-pliant, coriaceous, usually thin pilei, and epoxy-
lousLentus.

Lentus with black stemsMelanopus.

SECTION FOMES (STIPITATE.)

Although the first sixty-one species placed in *Fomes* in Saccardo (Vol. 6) have stems, I believe there is but one of them that can be so included on the definition there given and generally accepted for this genus, viz.: "perennis, successive strata nova gerens." Many are subligneous in texture, but are annuals in temperate regions, and in the tropics if they persist more than one season (which is doubtful) they do not produce successive pore strata. The following is the only one in which I have noticed the slightest indication of strata.

DIABOLICUS (Fig. 397).—The entire plant (except the pores and context) is black. Stem mesopodal, with pale, solid context, and black, smooth, dull crust (1-1½ x 8-10 cm.). Pileus (8-14 cm.) black, even, depressed in the center, with black, smooth, dull surface. Context (5 mm.) pale cinnamon color. Pores minute, at first cinnamon, but black when old. If not in layers at least in distinct areas of growth. Colored setae very abundant on the hymenium. Spores not found, doubtless white. This is a rigid, black plant, growing on wood in Brazil. It is known only from Spruce's original collection. In its context color, setae, and spores (probably) it is related to *Fomes pomaceus*, but there is no other similar stipitate species known.



Fig 397
Fomes diabolicus.
(Reduced)

SECTION GANODERMUS.

The section *Ganodermus* is characterized by peculiar spores (see page 99) and also usually the stipe and pileus are laccate (viz.: covered with a dark, resinous, shining crust). The context and spores are colored.

2. SPORES SMOOTH OR BUT SLIGHTLY ROUGH.

LUCIDUS.—Stipe and pileus strongly laccate. Context cinnamon or fulvous, varying lighter. Pores not stratified. Spores 6×10 , slightly rough. A strongly marked species of Europe and America and its forms (?) are found in the tropics. It is difficult to draw the line as to the tropical forms, although I am disposed to refer to *lucidus* all those with the same stem insertion and similar context color. The stipe is usually pleuropodal, rarely mesopodal, but the pileus is never in my opinion sessile. The three following I think are but forms of *lucidus*.

VALESIACUS.—Only a form with paler context, and not really a form at that, for *lucidus* varies much as to context color and is never very dark. The common American plant that corresponds to this European form has been called *Ganodermus Thugae*.

JAPONICUS.—Europeans usually refer the Japanese form to *lucidus*. In the Japanese lists it figures as *Polyporus Japonicus*. I think both are right. Forms that I have seen from Japan are blacker than the European plant but are surely the same species.

LAUTERBACHII.—A thin, tropical form of *lucidus*. It seems thinner and more rigid, but for me it is only a form.

OTHER FORMS.—Plants received from India I would refer to *lucidus* as forms. They are not so strongly laccate, more dull, and often mesopodal.

INCRUSTANS.—We have in the United States a curious form, or perhaps an abnormality, of *lucidus* which instead of taking the usual shape with a lateral stem is often thin, cup-shaped, with an indistinct stem. It has usually been referred to *lucidus*, but is quite different in its habits. It grows usually in grassy places, incrusting the blades of grass.

CURTISII.—Context, spores, and stipe as *Polyporus lucidus*, but not strongly laccate and color is yellowish. I have collections which are pale, almost white. It is a plant of a southern type in the United States, frequent in the South and extends up the coast to New Jersey and is rarely found in New England. In the museums of Europe there are several specimens exactly the same, from Africa.

AMBOINENSIS.—This is based on an old figure by Rumphius. Many specimens so named are in the museums, but I have seen but one that resembles the figure. This is a Philippine collection in the British Museum. The stem attachment is like that of *fornicatus*, but the stem is very slender and the plant appears to have grown erect as Rumphius shows it. The stem is not branched as originally shown, otherwise the specimen corresponds exactly. This was the first foreign species in this section to be illustrated. Fries referred to it pictures that appear

SECTION GANODERMUS.

quite different. The many specimens so named in the museums often have little resemblance to each other, or to the original picture.

COCHLEAR.—Plant with a black, laccate crust. Stipe thick (about an inch) 6-10 inches long, dorsally attached. Context cinnamon. Pores minute with white mouths. Spores 8×14 , smooth or slightly rough. This is a common species in Java and the East Indies, but we have seen no specimen from any other section. There are a number of collections at Leiden, and it was sent to us abundantly by Dr. Konigsberger from Java. We take it in the sense of Bresadola's determination at Leiden, though we doubt if it is the same as Nees illustrated, especially as to the stipe. The plant has the same (*dorsal*) stem insertion as *fornicatus* and *amboinensis*, but much more obese stem.

AFRICANUS.—Pileus thick, obese, with a mesopodal, obese stem. Context dark, umber. Surface dull, resinous. Spores 7×10 , minutely rough. In its relationship, color of context, and spores this plant is close to the sessile species such as *applanatus* and widely departs from all others in this stipitate section. The type came from South Africa and was misnamed *Polyporus Umbraculum* by Kalchbrenner and fragments were so distributed (de Thümen, 708). It seems to have the same color characters as *fulvellus*, which is a sessile species, and the *exsiccatae* number was cited under that species.



Fig. 398
Ganoderma fornicatus.



Fig. 399.
Ganoderma Lingua.

SECTION GANODERMUS.

FORNICATUS (Fig. 398).—Pileus and stipe with black, laccate crust. Stipe slender, dorsally-lateral, attached. Context thin, cinnamon, fulvous. Pores *minute, hard, compact*. Mouths at first white (contrary to description), then *purplish* brown. Spores 6×10 , smooth. No type exists, but it is frequent in Brazil, the "type locality," according to numerous collections of Spruce (No. 48, 79, 172). It is characterized by the peculiar stipe attachment. In Australia are similar plants, but the spores are rougher. There is also a similar plant common in Ceylon (teste Petch), but I have seen no specimens. Specimens from New Caledonia determined as *amboinensis* I take to be the same.

MASTOPORUS.—Stipe thick, lateral, with a smooth laccate crust. Context thin, cinnamon, scanty. Pores hard, *minute, compact*, dark purplish brown. Spores 5×8 , smooth. Very similar to *fornicatus* as to the peculiar hard pores. Type from Singapore at Paris, but it comes to me frequently from Africa and is probably common throughout the East.

FLEXIPES (bis).—Pileus unilateral, attached, small (1-2 cm.) with a strongly laccate, black crust. Stipe slender, cylindrical, with a smooth strongly laccate, black crust. Pores small, pale cinnamon. Spores 5×10 , smooth. Known from one collection, from China, in the herbarium of Patouillard. It differs from all others in this group in its slender stem and habits. It has a general resemblance (except small pores) to our figure (411) of *Polyporus longipes*.

LINGUA (Fig. 399).—Pileus small, rarely more than two or three cm. wide, but deep (2-3 cm.) in proportion to its width. Attached by a dorsal-lateral, short stem. Surface dark reddish brown, laccate, sulcate. Pores long, reaching the crust, small. Context cinnamon. Not common in the museums, but specimens seen from Java, Sumatra, and New Guinea. Known from its small size and peculiar shape. Type has not been seen. We take the species in the sense of Montagne's determination. It does not exactly correspond to the original illustration, but we have seen no specimen that does.

BONINENSIS.—Stipe dorsally prolonged. Surface dull, ferruginous or cinnamon, not laccate. Context dark tabacinus. Spores 6×12 , smooth. Known only from the type at Paris from Bonin Island, collected by Wright and distributed (U. S. Expl. Exp.) as *Polyporus lucidus*. The corresponding collection at Kew is a different (laccate) plant.

REGULICOLOR.—Surface dull, reddish brown, not laccate. Stipe lateral, apparently proceeding from a rhizome or a rooting stem. Known from a single specimen at Kew stated to be from Cuba, but I think the locality is doubtful.

SECTION GANODERMUS.

3. SPORES DISTINCTLY ROUGH.

OCHROLACCATUS (Fig. 400).—Pileus small but deep, attached by a short rudimentary, dorsal stem. Crust *pale, ochraceus*, faintly laccate, rugulose, zoned. Pores medium with white mouths, long, not stratified but reaching the crust, very regular, arranged in lines. Spores *large*, 16×32 (!), with small apiculus, distinctly rough. A strongly distinct species, very rare and known only from the Philippines. Types at Paris and at Kew and the British Museum. These collections which are surely the same species vary some in external appearance. The type at Paris is our figure 400. That at Kew is almost white with a dull surface. That in the British Museum is sessile and has a pale, smooth, shiny crust as if waxed but not laccate.

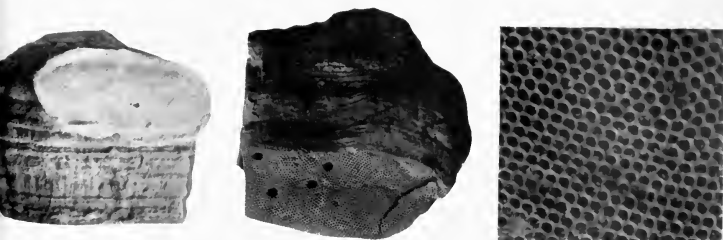


Fig. 400

Ganodermus ochrolaccatus (pores enlarged X6).

PLACOPUS.—Pileus with an intense *black, shining, laccate* surface, becoming dull in old specimens. Stipe lateral, with similar crust. A small species, thin, an inch or two in diameter. Spores 8×12 , distinctly rough. Only known to me from Bresadola's naming from Java at Leiden. As I have found no types in any of the museums, I judge his determination was made from the description only.

EMINI (Fig. 402).—Pileus small, usually pleuropodal, rarely mesopodal. Stipe long, with black, strongly laccate, smooth crust, rooting at the base. Spores large with distinct apiculus 20×28 , rough. The pileus is not as strongly laccate as the stipe. A marked species known from abundant types at Berlin from Africa.

HENNINGSII (Fig. 401).—Pileus and stem strongly laccate, smooth, dark. Pileus 3-4 inches in diameter with a mesopodal, rooting stem. Pores small, pale. Spores 10×12 , rough, subglobose, but distinctly apiculate. Known from one collection at Berlin from Africa, made by Stuhlman and confused by Hennings with the preceding.

SECTION GANODERMUS.



Fig. 401

Ganodermus Henningsii.



Fig. 402

Ganodermus Emini.

OPACUS.—Pileus 3-4 cm. x 5-10 mm. thick, with a fragile, dull, brownish crust. Stipe mesopodal with similar crust. Context *pale* cinnamon, thin. Pores minute with concolorous mouths, 4 mm. long. Spores 8-10 oval, with small, hyaline apiculus and are *strongly rough*. This is known from two collections at Paris, one from Brazil, the other from Cuba.

SECTION GANODERMUS.

ALLUANDI.—Pileus with a smooth, black crust. Stem 1 cm. thick, 15 cm. long, laterally (dorsally) attached to the pileus, smooth, black crust. Pores small, round, some large and sinuate, with thin walls and concolorous mouths, long, reaching the crust. Context scanty, cinnamon. Spores $10 \times 16-18$ with a distinct apiculus and distinctly rough. Known from a single specimen at Paris (in the cupboard) from Africa.

UNNAMED.—Pileus with a thin crust, mat, minutely velvety, with a few darker, slightly metallic zones. Context very thin, pale cinnamon. Pores 1 cm. long, *minute*, pale cinnamon with concolorous mouths. Stipe mesopodal, 24 cm. long, sulcate, with sterile branches, covered with a smooth, black crust. Spores *strongly reticulate* (the only reticulate polyporoid spores known to me) obovate with small, apiculate base, 12×20 , pale colored. Type found by me unnamed, without label, in a cupboard in the Museum at Paris, the origin unknown but probably from Africa. I do not name it as I presume they will wish to do so at Paris.

HILDEBRANDI.—Pileus, context, and stem exactly the same as the small form (*ramosii*) of *Polyporus rugosus*. Spores conidial, ovoid, 4.5×5.7 , distinctly rough. Known from one specimen at Paris. I suspect it is a conidial form of *Polyporus Ramosii*.

4. ANOMALOUS SECTION WITH A FALSE STEM.

PISACHAPANI.—This is, I judge, an anomalous species. It is flat, branched like the fingers of a hand, and the stem is made of discs growing from each other, as if the plant started to produce a succession of pilei and then changed its mind and produced a false stem. The surface is smooth, laccate. Nees named and figured it from Java. I found a single specimen of this curious growth from Samoa. In my specimen the pores are not perfectly formed and I find no spores.

SYNONYMS, REJECTED AND UNKNOWN SPECIES.

I doubt if a more cumbersome, inaccurate, or impractical system could be devised for the naming of plants than the one that has been adopted by "Science" in the naming of fungi. The European work of Persoon and Fries was based for the most part on a practical knowledge that they had of the growing plants, and the greater part of their work was of the highest merit and will always stand. The only weak part is the species that were founded on old pictures, often inaccurate and erroneous, and the names were based often on the inaccuracies of the pictures. For many of them no plant is known that corresponds.

As to foreign (to Europe) species the whole subject has been a haphazard proceeding from the start. The earlier namers had very scanty material, but they based a "new species" on almost every collection that they received, and many of them were evidently but slight varieties or individual forms to which the same authors would have paid no attention had they seen the forms growing in their woods. As the years rolled by new "authorities" came into the field and each one has discovered a large part of the plants he got from foreign countries to be "new species" and gave them names, although not one of them, I think (except Bresadola), has made any serious endeavor to learn the names that others have given to largely the same plants.

SECTION GANODERMUS.

The result is a mess of about 3,000 names of Polyporei mostly compiled into Saccardo to date, and no one can tell anything whatever as to their identity from what has been written about them. The only way to learn the names is to hunt them up in the museums where they are preserved, and when they are not preserved, and many of them are not, nothing will ever be known about them. This hunting up process is rather difficult and ordinarily is not possible.

Of the 3,000 "species" of Polyporei that have (mostly) been scraped up into Saccardo I doubt if one-fourth of them represent anything of value, and it is more trouble to learn which are of value than the subject is worth. If I had spent the same time and work on something useful, that I have working over these old puzzles, I do not doubt that a great deal more good could have been accomplished. But with me it has been a recreation and a pleasure that the subject would probably not have yielded had it been exploited in an intelligent manner, and had anything definite been known about it.

There are about 700 alleged species (names) that are supposed to be stipitate and considered in this pamphlet. Of these I have seen about 500 authentic specimens, and of those seen 225 impress me as being good species and having merit and 58 others have been retained as having some possible value. The others I have seen to the number of about 215 chiefly reflect I believe the lack of knowledge or judgment on the part of the authors. In addition there are 65 stipitate species (dead) carried in our literature of which no authentic material can be found. Nothing will ever be really known about any of them, though it is the fashion nowadays for tourists to make running visits to the various museums and come home and tell just as big yarns about those that do not exist as they tell about those that do. As long as they can arrange a lot of Latin names in a row and give the dates, it seems to be immaterial whether there is any truth in the arrangement or not. There are 105 alleged species marked in this pamphlet unknown (to me) that do not exist in any of the principal museums. They may be found in some out of the way museum or private collection, though I doubt if they are worth the trouble to look them up. Still I presume they have the same possible value as those that are in the museums as they are all a very uncertain quantity.

The species of fungi are relatively few and widely distributed, a fact that is becoming more firmly fixed every day. What constitutes a species, however, can not be defined by words. It is only a matter of experience and individual opinions. The question of variation which is a large factor in the truth of the problem is hardly taken into account at all by the promoters of "new species." And it is a question of course in which there is room for many differences of opinion.

In the following lists of synonyms we have given our opinions of the specimens we have seen. We do not do it with the idea that it will settle the questions in any way, for that is impossible. "Science" nowadays consists in raking over these old "synonyms" and arranging them chronologically, and we suppose this process will be continued to the end of time. A "new species" is like a spot of ink. It may not have the slightest merit or value, and may be based solely on the fact that its author was not informed on his subject, but there is no way to ever get rid of it.

albo-cinctus, Congo, Patouillard. Unknown to me. Seems to have the stipe attachment of *fornicatus*.

argillaceus, Cuba, Murrill. Unknown.

asperulatus, Philippines, Murrill. Unknown.

avellaneus, Central America, Murrill. Unknown.

coffeatus, West Indies, Berkeley. Type is a few fragments from which nothing can be learned.

Currani, Philippines, Murrill. Unknown.

declivis, Pacific Island, Kalchbrenner. Unknown to me, but the description reads like *fornicatus*.

flaviporus, West Indies, Murrill. Unknown.

SECTION GANODERMUS.

formosissimus, South America, Spegazzini. Only known to me from Rick's determination, which (teste Bresadola) is the same as *renidens*.

Haenslerianus, New Zealand, Hennings. No specimen found by me at Berlin.

incrustatus, Central America, Fries. No type exists.

Javanicus Java, L veill . Type at Leiden in very bad condition, but I think belongs to the section *Ganodermus* and has no relation whatever to *Polyporus varius*, of which it was given as a "variety" by L veill .

neglectus, Central America, Patouillard. Type is a mere fragment from which little can be told. The species was based on large, globose spores, which are not the normal spores of the plant. The basidial spores are typically those of the section *Ganodermus* (not *Amaurodermus*, as named).

nutans, Central America, Fries. No type exists and its identity is unknown. The determinations at Paris, Berlin, and London are all different from each other and all are probably wrong. Murrill's elaborate account was only worked up from Fries. He tells "spores not examined," which was not strange as he never saw an authentic specimen, and I do not see how he could have examined the spores of a specimen he never saw.

perzonatus, Cuba, Murrill. Unknown.

Pes-simiae, Brazil, Berkeley. No type exists. From the description it seems to be *Pisachapani*.

praelongus, Cuba, Murrill. Unknown.

pulverulentus, West Indies, Murrill. Unknown.

stipitatus, Central America, Murrill. Unknown.

subamboinensis, Brazil, Hennings. Same as *Lauterbachii*, and both are but tropical forms of *lucidus*.

subformicatus, Central America, Murrill. Unknown.

subincrustatus, West Indies, Murrill. Unknown.

Tsugae, United States, Murrill. Same as the common *Polyporus lucidus* of Europe, the distinction given being that it has paler context and that *Polyporus lucidus* has "one to many-layered strata varying in distinctness," all of which was chiefly imagination on the part of the author. *Polyporus lucidus* is an annual and never has strata of pores, though as it has been called "Fomes" Mr. Murrill was undoubtedly right in thinking if it did not have strata it ought to have. As to the paler context the same form had been named *Valesiacus* in Europe, but it is not even a distinct form of *lucidus*.

SECTION AMAURODERMUS.

The section *Amaurodermus* is quite close to the preceding section, but is distinguished by large, globose, oval, colored spores, which usually have no distinct apiculus. All are stipitate plants with usually dull (not laccate) surface and often velutinate stems. Species rarely have smooth, laccate stems. Context and hyphae are colored. All are plants of the warm countries, no species being known in temperate regions. (Cfr. also p. 99).

5. POLYPORUS. SPORES SMOOTH OR BUT SLIGHTLY ROUGH. STEM SLENDER, USUALLY MESOPODAL.

RUGOSUS.—Pileus dark brown, rugulose with a dull, mat surface. Stem olive brown with a dull, minutely velutinate surface. Context pale cinnamon, when freshly cut it turns reddish. Pores small with thin walls. Spores globose, smooth, 6-8 or 8-10. This is quite a common species in the East and numerous specimens from Java and Ceylon are at Kew. I have not seen the type but Nees gave a good figure of it, and specimens from Ceylon (Thwaité, No. 728) exactly



Fig. 403

Amaurodermus rudis

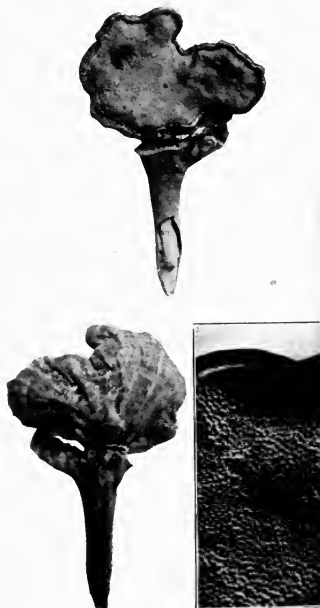


Fig. 404

Amaurodermus Sprucei with enlargement of pore mouths.

SECTION AMAURODERMUS.

accord with this figure. The fresh plant when bruised turns dark and herbarium specimens are usually black.

RAMOSIL.—Bresadola endorses this as a synonym for *rugosus*, and I think it is a slender form. The spores and other characters are in the main the same, but the plants are more slender and the context thinner. It occurs over the same regions as *rugosus* and also the Philippines.

RUDIS (Fig. 403).—Pileus strongly rugulose with mat, dull surface, minutely velutinate, light in color. Stems with olive, velutinate surface. Pores medium, with thin walls. Context light cinnamon. Spores globose, 9-12, with thick walls, minutely rough. The type of *rudis* I have not found, but there are abundant collections so named by Berkeley from Australia, where it seems to be common. It is close (too close perhaps) to *rugosus* of the East, but seems to be more rugulose, has larger pores and spores, and when mature retains its color. Young specimens, however, turn black in drying.

SPRUCEI (Fig. 404).—(Change of *Porothelium rugosum* of Berkeley.) Pileus dark brown, rugulose, with narrow, concentric zones. Surface mat. Stipe pleuropodal with mat surface, concolorous. Pores and context pale, the pore mouths pustular, hence put in the genus *Porothelium* (sic) when originally named. Spores globose, 8 mic., smooth, very pale. Known only from the (abundant) types collected by Spruce in Brazil. It departs from others of this section in its spores and context being paler.

VARIABILIS (Fig. 405).—Pileus from 2 to 6 cm. broad and about 5 mm. thick, with a lateral, slender stipe. Color pale alutaceous, both pileus and context. Surface dull. Spores 9 x 12, oval, smooth. This is quite a distinct species, characterized by its pale color and oval spores. It is known from two collections (Nos. 57 and 183 part) made by Spruce in Brazil. It is badly named for it is quite uniform, but there was confused (and figured) with it quite a different plant (cfr. *Polyporus unilaterus*, in the next section).

CALCIGENUS.—Pileus about an inch in diameter, with a reddish brown, laccate crust. Context pale olive. Stem mesopodal, slender, with brown, mat surface. Spores abundant, oval, large, 12 x 16, deeply colored, smooth. Quite distinct but known from a single specimen at Kew from Spruce, Brazil.

RIVULOSUS.—Pileus glabrous, rugulose (not rivulose, I think), reddish brown with paler margin. Stem pleuropodal, branched, sometimes bearing two pilei, with a smooth, dark reddish crust. Context thin, ligneous, pale cinnamon. Pores minute, pale but darker than the context. Spores globose, 14 mic. faintly reticulate, with thick walls. Known only from the type in the Museum at Paris from Java. It has the general appearance of a *Ganodermus*, but from its spore characters belongs to *Amaurodermus*.

SECTION AMAURODERMUS.



Fig. 405
Amaurodermus variabilis.



Fig. 406
Amaurodermus Chaperi.
Reduced one-half.

CHAPERI (Fig. 406).—Pileus 15 cm. broad, with a smooth, dark crust, but not laccate. Stem hollow, with sterile branches, with smooth, pale grayish surface. Pores minute, short with dark mouths. Spores globose, smooth, or minutely punctate, 8-12. Known from a single and quite old specimen in a cupboard at Paris. It was first referred (through error) to *Polyporus scleropodius* of Africa, then described and named as above.

INTERMEDIUS.—Pileus soft, velutinate (now wrinkled) black. Stipe mesopodal with a hard, black, smooth, laccate crust. Spores abundant, globose, smooth, apiculate, 12 mic. Known from a single specimen kept in a drawer at Berlin, from Africa. It was originally sent in glycerin and is still soft and sticky.

SECTION AMAURODERMUS.



Fig 407

Amaurodermus Auriscalpium.



Fig 408

Amaurodermus praetervisus.



Fig. 409

Amaurodermus omphalodes.

AURISCALPIUM (Fig. 407).—Pileus reniform, the upper surface rugulose, zonate, mat. Stipe lateral with a dull crust. Color reddish brown. Spores 6-8, globose, smooth, pale colored. The original Persoonian specimen from Brazil is still well preserved at Paris. Montagne referred here several collections from South America which Berkeley and Patouillard have held to be different.

PRAETERVISUS (Fig. 408).—This is based on a single specimen from Brazil, referred to the preceding by Montagne. As to shape, size, context, color, and spores it is very much the same, but it has larger pores and a thicker, blacker, harder crust.

OMPHALODES (Fig. 409).—Pileus orbicular, with a mesopodal stem, but rarely perfect, being usually more or less lobed and divided to the stem. Surface glabrous but not laccate, rugulose, more or less zoned. Stipe slender with a mat, dull surface. Pores small, 2 mm. deep. Spores globose, 12 mic., smooth, pale. Abundant specimens were sent to Kew from Spruce, Brazil. All have very much the same general size and stature as our figure. At Paris are much larger, obese (but otherwise apparently the same) specimens from South America, called "var. fulvaster."

SECTION AMAURODERMUS.

6. POLYPORUS. SPORES DISTINCTLY ROUGH. STEM
SLENDER, USUALLY MESOPODAL.

a. STIPE SMOOTH, NOT LACCATE SURFACE.

ANGUSTUS (Fig. 410).—Pileus large (10 inches in diameter) with glabrous, strongly rugulose, zoned, dull, grayish brown, not laccate, crust. Stipe mesopodal, an inch thick, with spongy context and hard, smooth, gray, not laccate crust. Pores minute, soft, *pale isabel-*



Fig. 410

Amaurodermus angustus. (Reduced more than one-half).

SECTION AMAURODERMUS.

line, as is the context. Spores (only conidial, I think) globose, colored, strongly tubercular, rough, 8 mic. A remarkable species known from one specimen at Kew collected by Spruce in Brazil. It is the largest, mesopodal polyporoid I have noted and grew on wood. I suspect that its normal spores would be found to be quite different, and that the plant is not well classed in this section. No other plant in this section, I believe, grows on wood, and most of them have subterranean rhizomes.

b. STIPE WITH A SMOOTH, LACCATE CRUST.

LEPTOPUS.—Pileus 5 cm. broad, $1\frac{1}{2}$ cm. thick, with a dark, smooth crust. Stem, almost gone now, but enough remains to show that it was mesopodal, about 12 cm. long, one cm. thick, and had a dark, smooth, shiny, laccate crust. Context pale cinnamon. Pores small, about one cm. long, pale cinnamon. Spores globose, 12 mic., strongly rough. The species was referred by Fries, who never saw it, to *umbraculus*, of which no type exists, and I think there are no grounds for accepting the reference. It was so accepted by Patouillard, however, who drew his characters from Persoon's specimens and knew nothing whatever about Fries' plant. The species is only known from the original, Persoonian specimen, preserved at Paris. It was from the island of Rawak.

LONGIPES (Fig. 411).—Pileus unilateral, attached, with a reddish brown crust which is not polished (laccate) as the stipe. Stipe slender, with a black, shiny, laccate crust. Pores large, *pale* cinnamon, reaching the crust. Spores unique, globose, 12-14 mic., strongly rough, having the *asperities arranged in distinct bands or arcs*. This is a very peculiar species, known only from one quite abundant collection from French Guiana. Collector unknown. Leprieur, who made large collections from the same locality, never found it.

RENIDENS.—Pileus dull reddish brown. Stipe lateral, smooth, laccate crust. Context scanty, cinnamon. Pores and pore mouths concolorous. Spores globose, 8-9, rough. Known to me only from the type at Berlin, from Brazil, collected by Moeller. (Plants distributed by Rick as *formosissimus* are said to be the same. I have not examined their spores.) Except as to the spores this species has the general appearance and character of *Polyporus lucidus*.

BASILAPIDOIDES (as *Laccocephalum*).—Pileus brownish fawn, with strongly pitted surface. Context whitish. Stem short, thick, mesopodal, forming at the base a large, hard, false sclerotium, consisting of agglutinated grains of sand fixed by the mycelium. Spores globose, orange yellow, echinulate, "44-50 in." (mic.?) in diameter. This Australian species, called the "stone making fungus," is only known in Europe from the description and figures in an Australian publication. It was proposed as a "new genus," but I judge from its spore characters it should be classed here.

SECTION AMAURODERMUS.



Fig. 411

Amaurodermus longipes.



Fig 412

Amaurodermus insularis.

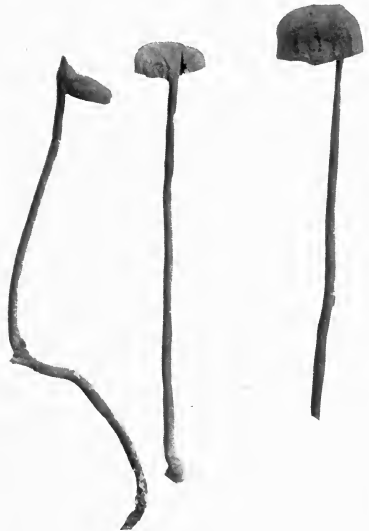


Fig. 413

Amaurodermus unilateralis.

SECTION AMAURODERMUS.

c. STIPE WITH DULL, MINUTELY VELUTINATE SURFACE.

UNILATERUS (Fig. 413).—Pileus small (1-1½ cm.) reddish brown, dull surface, unilaterally attached. Stem slender (1½-2 mm. x 7-9 cm.) with dull surface. Pores minute, 5-8 mm. deep, pale cinnamon with white mouths. Spores large, globose (or subglobose) 20 mic., distinctly rough. The types at Kew (Spruce, No. 207) from Brazil were named by Berkeley in manuscript "ellipticus," but when published they were included and figured as part of *Polyporus variabilis*. They differ from *variabilis* not only in different stem insertion but have very different spores.

FASCICULATUS.—Pileus unicolorous, pale fauve in some specimens, fuliginous in others, marked with prominent, raised, narrow, concentric zones. Context cinnamon. Stem with dull, velutinate surface, light brown color. Pores minute, 3-4 mm. deep, darker color than the context, the mouths stuffed, isabelline. Spores subglobose, 12-14, strongly rough, pale colored. A strongly marked species known only from two collections, both from Congo, Africa. The original is in the herbarium of Patouillard at Paris, others sent me by Édouard Luja, Congo Belge. A character of both of these collections is that each pileus is borne on two or more distinct stems, or perhaps the pilei of two or more stems are consolidated into one, but they do not seem to have that appearance.

INSULARIS (Fig. 412).—Pileus 3 cm. with a strongly wrinkled, dull, mat surface. Pores large, pale cinnamon, in the "type" mostly torn and destroyed. Stipe mesopodal with mat, finely velutinate surface. Spores large, oval, 12 x 16, minutely but distinctly rough. Known from a single specimen at Paris from New Caledonia.

7. POLYSTICTUS, PLANTS WITH THIN PILEI AND PORE LAYERS.

Spores of some species said to be globose, colored, but I have rarely found them, and hence can not state from my own knowledge. Context and pores colored, brown. Hyphae colored. I suspect some at least have hyaline spores.

a. PORES LARGE.

GRACILIS (Fig. 414).—Pileus lateral (or unilateral) thin, dark reddish brown, with dull surface. Stipe slender (1-2 mm. thick by 5-15 cm. long) with a dull surface, proceeding from a rhizome or buried rootstalk. Pores large, 1 mm. in diameter, round or hexagonal. Spores not found by me. This is a unique species only known from the original collection, Spruce, Brazil. It was classed by Berkeley in the genus *Hexagona* where it really belongs on its pore characters alone. However, there is no other similar species in the genus *Hexagona*, and in its habits, context, surface, also spores probably, it is evidently so close to this section *Amaurodermus* that it should be placed here.

SECTION AMAURODERMUS.

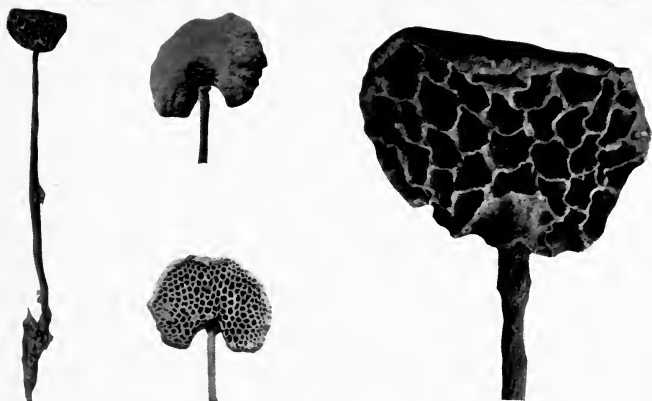


Fig. 414

Amaurodermus gracilis. (One specimen enlarged X6).



Fig. 415

Amaurodermus ocellatus.



Fig. 416

Amaurodermus Schomburghii

SECTION AMAURODERMUS.

b. PORES SMALL.

OCELLATUS (Fig. 415).—Pileus thin but *rigid*. Surface smooth, faintly zoned. Pores very minute, rigid with thick walls. The colored hyphae have thick walls so that a cross section appears like thickened cells. Stipe central or lateral, slender, mat, light brown. Spores not found. Known only from Brazil collections (Spruce). The pores are so minute that they are hardly visible, but it is all a mistake that "the pore mouths are contracted, etc."

MACER.—I did not cut the single specimen that represents it (Spruce, Brazil) but as to the pileus and pores it seems to me the same as the preceding. The lateral stem, however, is blacker and I think it a different species. The determinations, "macer, Berkeley," both at Berlin and Paris have no resemblance to it.

SCHOMBURGKII (Fig. 416).—Pileus mesopodal or pleuropodal, thin with zonate, smooth surface. Pores concolorous, minute. Stipe dull, slender. Named from specimens from British Guiana in Hooker's herbarium, but afterwards found by Spruce in Brazil.



Fig 417
Amaurodermus sericatus.
119

SECTION AMAURODERMUS.

SERICATUS (Fig. 417).—Pileus thin, seal-brown, depressed in the center, coriaceous, with a smooth, minutely velvety, shiny, satiny surface. Stipe mesopodal, long (15-20 cm.), slender (3-5 mm. thick) with dark, dull velvety surface. Pores minute (1-1½ mm. deep) clear seal-brown, with concolorous mouths. Hyphae deeply colored. Setae none. Spores not found, probably white. A single specimen is at Kew, collected by J. H. Holland at Old Calabar, Africa, and referred by error to rugosus.

HETEROMORPHUS.—Pileus depressed in the center, brown, sub-zonate. Pores with white mouths, at least when young. Stipe mesopodal, with dull surface. The types both at Paris and at Kew are young collections. Several specimens in the museums I think are referred here in error.

RENATUS.—Pileus thin, reniform, with a lateral stipe, dark reddish brown. Pores minute, white then brown. Stipe slender (1½-2 mm.) with dull surface. Known from Spruce's collection in Brazil. Ellis also determined it from Nicaragua and I think correctly. It seems to me very close to the next, but is larger and pleuropodal.



Fig. 418

Amaurodermus exilis.



Fig. 419

Amaurodermus marasmioides.

SECTION AMAURODERMUS.

JURIENSIS.—Pileus thin, rigid with a minutely velutinate, rugulose, dark, zonate pileus. Pores minute, white, bruising brownish. Stipe mesopodal, slender with dark, dull, velutinate surface. Spores globose, pale colored, $3\frac{1}{2}$ -4 mic. Collected in Brazil and called *Polystictus sacer* var. *juriensis* by Hennings. It has no resemblance or remote relationship even to *Polyporus sacer*.

EXILIS (Fig. 418).—Pileus thin, mostly mesopodal, with smooth, faintly zonate surface, small, 1-1½ cm. Pores minute. Stipe filiform (1 mm. thick) long, wiry. Known from Spruce's collections from Brazil. Placed in *Fomes* (sic) by Cooke.

MARASMOIDES (Fig. 419).—The smallest species in this section, but with the exception of size it has the same characters as *exilis*, and I think is only a small *Polyporus exilis*. The specimens sent to Paris by Berkeley have a little filiform stem, not over 2 cm. long, with pilei about ½ a cm.

SYNONYMS, REJECTED AND UNKNOWN SPECIES.

- auriscalpioides*, Brazil, Hennings=*auriscalpium*.
- bataanensis*, Philippines, Murrill. Unknown.
- boleticus* (Bull. Soc. Myc.) misprint for *boleticeps*.
- Boleticeps*, South America, Patouillard. Unknown to me except from illustration (Bull. Soc. Myc. France, 1888, pl. 12). Seems close to *omphalodes* and came from same region.
- cassiaeicolor*, Brazil, Berkeley. A single specimen so named which, though thick, I believe to be a thick specimen of *Schomburgkii*.
- Clemensiae*, Philippines, Murrill. Unknown.
- Elmerianus*, Philippines, Murrill. Unknown.
- nigripes*, Brazil, Fries. No type exists. Unknown. The description reads much like *leptopus*.
- Pala*, South America, Lévillé. Unknown. No type exists.
- Parmula*, Brazil, Berkeley=*exilis*.
- passerinus*, Brazil, Berkeley=*renatus*.
- procerus*, Brazil, Berkeley. Only two specimens so named, both immature. One specimen has quite a long stipe. I think both are heteromorphous.
- pulcher*, Africa, Fries. No type exists. Figure (Afz. 19) seems to be in this section although it has a laccate stipe.
- pullatus*, China, Cooke. This is a manuscript name that Berkeley gave to an old specimen from Hong Kong, but afterward concluded that it was *rudis* of Australia and did not publish it. Cooke afterward dug it up and published it. I do not think the old specimen is *rudis*, but it was too poor to publish.
- rufobadius*, South America, Patouillard. Unknown to me except from illustration (Bull. Soc. Myc. France, 1889, pl. 10). Seems to me to be too close to *omphalodes*.
- rugosus*, Berkeley, Brazil (as *Porothelium*). The specific name being a duplicate, was changed to *Spraguei*.
- subrenatus*, Central America, Murrill. Unknown.
- subrugosus*, Samoa, Bresadola=*rugosus*.
- Umbraculum*, Africa, Fries. No type exists. Unknown. Used by Patouillard as a substitute for *leptopus* of Persoon which was not justifiable as he knew what *leptopus* was and did not know as to *Umbraculum*. Specimen determined by Kalchbrenner and distributed (de Thünen 708) has no possible resemblance to Fries' description or the figure cited.
- xylodes*, Brazil, Berkeley=*Schomburgkii*.

SECTION LIGNOSUS.

This section embraces stipitate species, that are subligneous but not perennial. In texture they are similar to the preceding. They are never soft and fleshy. The hyphae and spores are pale, in which characters they differ from the two preceding sections. Most of them are included in Fomes in Saccardo, but none of them are Fomes according to the definition of the genus that Saccardo gives.

8. PLANTS WHICH FORM A SCLEROTIUM. CONTEXT PALE OR ISABELLINE. SPORES PROBABLY WHITE.

SACER (Fig. 420).—Pileus thin, with minutely velutinate, zonate surface. Color pale to dark brown. Stipe mesopodal, dull, pale surface, proceeding from an underground sclerotium. Context and pores isabelline. Pores medium small with thin walls. Polyporus sacer is represented in the museums by a number of collections, all from Africa. It first reached Fries and was of much interest from the fact of having a sclerotium. The name "sacer" refers to some superstition that the negroes are said to attach to it.

RHINOCEROTIS.—Pileus glabrous, rugulose zoned, at first thin, then thicker and indurated. Stipe mesopodal with a dull surface, not "laccate" as erroneously described, proceeding from a sclerotium two or three inches in diameter. Context pale. Pores *minute*. This plant is so close to Polyporus sacer that our photograph (Fig. 420) could well represent either. It is quite different however in its *minute* pores, and the tissue of old specimens becomes more thick, hard, and woody. It was known for many years only from the imperfect type from Malay, but recently a fine specimen was sent to Kew from Perak, and Professor Petch has made one collection in Ceylon.

9. PILEI UNILATERAL AND SUPERIMPOSED. CONTEXT PALE.

SUPERPOSITUS (Fig. 421).—Pileus unilateral and superimposed, arranged one above the other or on one side of stem, like shelves. Surface pale isabelline, smooth. Context pale isabelline. Hyphae pale. Spores not found, doubtless white. This species is most curious in the peculiar arrangement of the pilei. It is known from three collections, all at Kew. First it reached Berkeley from "New England," Australia (not "Amer. Bor." as Saccardo incorrectly compiles it) then Cooke got a collection from Perak and one from New Guinea. These three from widely remote localities are all I have seen of this most peculiar species.

10. STIPE MESOPODAL OR PLEUROPODAL. CONTEXT WHITE OR PALE. SPORES WHITE.

CORRUGIS (Fig. 423).—Pileus with pleuropodal (rarely mesopodal) stipe. Surface of pileus and stipe minutely velvety-brown with

SECTION LIGNOSUS.



Fig. 420

Lignosus sacer, the plant (reduced) and pore surface (natural size).

faint, metallic zones. Context white. Pores medium, firm. This is a rare species of Europe known only from the Alps and rare there. I have seen but three collections. First, at Berlin, collected by Morthier at Neuchatel and determined as "triqueter, Fr." Second, sent to me by Dr. Butignot, Switzerland, and third, in the herbarium of Boudier, also from Dr. Butignot (and labeled *Trametes Butignotii*, not published?). In its context, color, and pores it closely resembles *Polyporus benzoinus* (a sessile species). It was named *Polyporus rugosus* by Trog, then changed to *Polyporus Trogii* by Fries (Cfr. Sacc. 6, 82) but when Fries published it, *Hym. Eur.* p. 536, he called it *Polyporus corrugis*. No type exists in Fries' herbarium, nor I am told in that of Trog.

SECTION LIGNOSUS.



Fig 421

Lignosus superpositus.

PREUSSII.—Pileus with a dark, nearly black, rugulose surface. Stipe mesopodal. Context and pores pale isabelline, rigid. Pores minute. Spores not found, but I think are white. Known from one specimen at Berlin from Africa. The photograph would closely resemble *Polyporus rugosus*, but the plant is quite different. It is close to the preceding if not the same. It was named by Hennings as *Ganodermus*, but does not belong to that section though it might be called a *Trametes*.

DEALBATUS (Fig. 422).—Pileus lateral or unilateral with a stem 3-8 mm. thick. Surface pale, smooth, dull with a minutely velutinate coat (compared in its naming to a coat of whitewash). Context pale. Spores globose or compressed-globose, 5-6, smooth. This

SECTION LIGNOSUS.



Fig. 422
Lignosus dealbatus.



Fig. 423
Lignosus corrugis.

species has been badly confused (see page 190). It was originally collected by Ravenel in South Carolina and Curtis also found it in North Carolina, but I think no specimens exist except these original types. It is found in Saccardo (page 159) as *Fomes* and also (page 218) as *Polystictus*, and it is neither.

PANSUS.—Pileus rugulose, with a dull surface, strongly zoned with brown and darker zones. Stipe mesopodal with a mat, dull surface. Context thin, almost none, pale. Pores minute, $1\frac{1}{2}$ -2 mm. long, isabelline color which may be due to age, as it is described as white. Spores abundant, globose, 8 mic., pale colored, which may also be due to age. This is a strongly marked species of which several specimens have reached Kew from northern South America.

DUBIOPANSUS.—This has all the characters of the preceding except that the pores have *orange mouths*. This is quite uniform and appears to me a natural

SECTION LIGNOSUS.

color. I am told that it is caused by a Hypomyces, but I am unable to detect the mycelial threads of a parasite in the tissue and it does not seem to explain it to me. The spores which I think are conidial are subglobose, hyaline, apiculate, and distinctly rough. I have a specimen from L. Damazio, Brazil, and there is one at Kew from Georgetown, British Guiana.

PAULENSIS.—Known by a single specimen from Brazil at Berlin. If not the same it is quite close to pansus. It has a well developed, ligneous, white context and *hyaline* globose, 6-7, smooth spores. Otherwise it seems the same as pansus, particularly in its peculiar, zoned surface.

HYPOPLASTUS.—Surface dark, almost black, faintly zonate. Stipe black, smooth, with a resinous crust. Context pale isabelline. Spores not found, but I think they are white. The type is a mesopodal plant, but Berkeley refers here (and I think correctly) two flabelliform specimens. All are from northern South America. This plant differs from all others in this section in its laccate stem. While I have found no spores, I believe it does not belong to the section Ganodermus.

CAMERARIUS.—Pileus reniform, smooth, even, glabrous, beautifully zoned with narrow, regular, concentric, brown zones. Stipe is pleuropodal (in one specimen, probably the same, it is mesopodal) with a dull crust. Context pale isabelline, probably white when fresh, 2-3 mm. deep, almost reaching the crust. Spores not found, probably white. Several specimens of this are at Kew, all from northern South America.

ARENATUS.—Pileus flabelliform, subligneous, incurved in drying. Surface gray, strongly zoned. Context white. Stipe lateral, short, thick. Pores minute, rigid, pale. A strongly marked species from New Guinea found in the Museum at Paris.

RHIZOMATOPHORUS.—Pileus flabelliform, thin, with smooth, pale isabelline surface. Pores minute, concolorous. Stipe slender, long, attached to a slender, long rhizome. A single specimen of this is at Berlin, from Brazil. It is endorsed “=Trametes Rhizophorae” which is surely an error.

PUDENS.—Known from a single, young, half specimen at Kew, from India. It has a long rhizome and in some respects it resembles the preceding. I think not much can be ascertained from this single, immature type, but it may be recognized through comparison if found again.

POLYDACTYLUS.—This is known from one apparently abnormal specimen from Brazil. It has white context and a lateral stipe which divides and bears on the ends of the branches little, orbicular, disc-like pilei. The surface is minutely velutinate, brown, and marked with metallic zones. In its general nature I think it is related to corrugis of Europe.

ATRO-PURPUREUS.—This is also known from a single specimen from Brazil, and has the same context color and surface marking as the preceding. The pilei are thinner and borne in different manner. The pore mouths are white, but when bruised are reddish. I think the plant is badly named.

SECTION LIGNOSUS.

II. CONTEXT BROWN OR GILVUS. SPORES WHITE
(PROBABLY.)

a. STIPE NOT BLACK.

BRUNNEO-PICTUS.—Pileus suborbicular or reniform with a smooth, brown zoned surface. Context *brown*, hard, with hyphae deep yellow under the glass. Pores minute with pale mouths but brown context. Stipe lateral, hard, with dull brown surface. Spores not found, but I think without question are white. This is a rigid, well-marked species, known from several collections of Spruce, all from Brazil. When young it is thin, but becomes thicker with age. The thin, young specimens contract strongly in drying and were called *Polyporus semiclausus* by Berkeley.



Fig. 424

Lignosus Zambesianus.
(Top of Pileus)

SECTION LIGNOSUS.

ZAMBESIANUS (Fig. 424).—Pileus strongly rugulose with a distinct, dull crust, brown, zonate. Context gilvus, rigid. Stipe mesopodal (but not preserved with the type). Pores small, 8 mm. deep, gilvus context and brown mouths. Hyphae bright yellow under the microscope. Setae none. Spores not found, but doubtless white. This is known from a single specimen, preserved at Kew and collected in Zambesi in 1881. It was misreferred to rudis. It is the only mesopodal polyporoid I ever saw with *gilvus* context.



Fig. 425

Lignosus scopulosus.

b. STIPE BLACK—MELANOPUS.

SCOPULOSUS (Fig. 425).—Pileus with a smooth, pale, thin crust. Stipe lateral, black, with a black crust. Context punky, isabelline, with slender, pale hyphae. Pores minute, isabelline, with concolorous mouths. Spores hyaline. This is a frequent plant in the East and has been well illustrated by Reichardt under the name *Trametes Rhizophorae*, under which name it has been well known to me for a number of years. It is a noteworthy plant with its black stem, and smooth, pale pileus. It is given in Saccardo as a *Fomes*, but is a ligneous *Polyporus* or might be classed as a *Trametes*.

SECTION LIGNOSUS.

SYNONYMS, REJECTED AND UNKNOWN SPECIES.

Butignoti, Europe, Boudier (as *Trametes*, published?)=*corrugis*.
canalium, China, Loureiro. Too ancient and vague to be entitled to a place
even in synonymy. "Described" 120 years ago and never seen since. Said to
be "white and viscid."

hemibaphus, Brazil, Berkeley=*obese camerarius*.

obsoletus, Brazil, Fries. No type exists. I judge it is similar to *brunneo-*
pictus.

pallidus, Brazil, Berkeley=*camerarius*.

Rhizophorae, East Indies, Reichardt (as *Trametes*)=*scopulosus*. It was well
illustrated and has generally been called under this name.

rhodophaeus, Java, Lévillé. This was described as having a short, lateral
stipe (or sessile). The type specimen (at Leiden) is sessile and is now referred
to *semilacatus*, which is I believe always a sessile species.

scleropodius, Africa, Lévillé=*sacer*.

semiclausus, Brazil, Berkeley=*brunneo pictus*.

Trogii, Europe, Fries. This was a name proposed for *rugosus* of Trog,
but when Fries published it he called it *Polyporus corrugis*.

triqueter in the sense of Quélet is *corrugis*. Not the same as in the sense
of Romell and Bresadola.

SECTION PETALOIDES.

We include in this section most species that have lateral stipes, embracing
for the most part the divisions *Petaloides* of *Polyporus* and *Discipedes* of
Polystictus as found in Saccardo. The more woody species (*Lignosus*) are
classed in the preceding sections. Also in the section *Melanopus* are found those
species with black, lateral stems.



Fig. 426

Petaloides hirtus.

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12. CARNOSUS. FLESHY, SOFT, THICK SPECIES.

HIRTUS (Fig. 426).—Surface brown, velutinate or hirsute. Flesh white. Stipe lateral. Spores peculiar, *fusiform*, $6 \times 14-16$, hyaline, smooth. A very rare plant both in Europe and the United States.

AQUOSUS.—This has a strong, lateral stipe. Flesh white, soft, watery, thick, drying thin. Pores small, white. Known from two collections, both from Brazil, also one (?) from India.

RUTROSUS.—A good picture of a petaloid, fleshy, white species with medium large pores, published by Rostkovius seventy years ago. Found or imagined in Germany, but known to no one since.



Fig. 427

Petaloides fusco-maculatus

FUSCO-MACULATUS (Fig. 427).—Flesh soft, watery, not “papyraceus-membranaceous” but so drying. Surface spotted with minute spots. Pores large. Spores oblong, $3-4 \times 8-10$. Found by me in Samoa. Has no relation to squamosus to which it was compared.

GLUTINIFER.—Known from a single, sliced specimen at Kew, and is I think probably the same as the preceding. It is said to have come from Mauritius, but it was more probably from Australia.

Osseus. See Addenda, page 191.

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13. POLYPORUS. FLESHY, THIN SPECIES, COLOR WHITE OR PALE. PORES SMALL.

ANNULATUS (Fig. 428).—A small, white species with a short stipe expanded into a disc at the base. Originally from Java (well illustrated by Junghuhn). Found by me in Samoa. It grows attached to sticks on the ground.

RHIPIDIUM.—Stipe lateral, expanding above. Color white (?) when fresh, reddish when dried. Pores medium with thin walls. The type form is rare in the United States. It is large, but otherwise the same as the little form, called pusillus by Persoon, which occurs frequently throughout the tropical world.

FRACTIPES.—White, with a lateral, white stipe. Pores small, slightly rose colored. Surface dull. Rare in the United States. Also found in Brazil, by Rev. J. Rick.



Fig. 428

Petaloides annulatus.

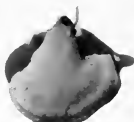


Fig 429

Petaloides nivicolor.

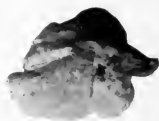


Fig. 430

Petaloides biokoensis.

NIVICOLOR (Fig. 429).—Pure white, with smooth surface. Pores small, white. Not truly stipitate, but the pileus extends behind into a stipe-like prolongation. Known only from New Zealand, but there are abundant specimens at Kew.

BIOKOENSIS (Fig. 430).—Pileus clear yellow when fresh, bleaching out to white in drying. Surface smooth, faintly zoned. Stipe short, lateral, concolorous. Pores minute, yellow when fresh, isabelline when dry. Spores (conidial?) globose, hyaline, smooth, 4-5 mic. The plant contracts in drying and the color change is unusual and marked. Very rare in Samoa, collected by me but once. Named by Bresadola. Type unknown to me. (Published?)

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PENETRALIS.—Pileus spathulate, tapering to a long stem. Color pale. Pores small. Grew on stem of tree ferns in greenhouse in England. No type in the museums, but it is well illustrated. (Jour. Bot., 1875, t. 162.)

CANDIDUS.—Pure white with a lateral stipe. Pores small. Seems to be well illustrated (Persoon, Myc. Europe, t. 15), but is unknown from specimens in any museums or recent collection. Referred as being a form of *chioneus* by Fries, but it is surely not.

OBLIQUUS.—Context pale, darker in drying. Pores $1\frac{1}{2}$ -2 mm. long. Pileus with a long, lateral stem. Known from one collection, New Guinea, at Kew. With the exception of long pores it has a resemblance to *obovatus*.

14. POLYPORUS. FLESHY, THIN SPECIES, COLOR WHITE OR PALE. PORES LARGE, FAVOLOID.

JANSEANUS (Fig. 431).—Pileus thin, fleshy, pure white, tapering to a long stem. Pores large, favoloid. Known from one collection from Java, preserved in alcohol at Berlin.



Fig 431

Petaloides Janseanus.

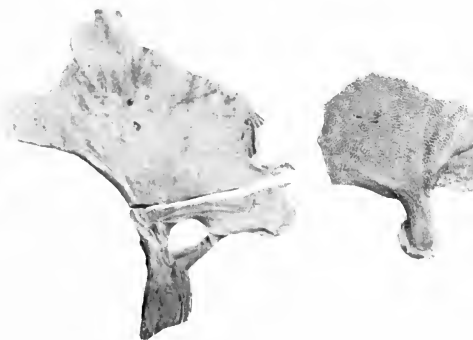


Fig. 432

Petaloides brachyporus.

BRACHYPORUS (Fig. 432).—Pileus thin, tapering to a lateral stipe. Pores large, *shallow*. Dried specimens dark and brittle, but I judge white or pale when fresh. Originally from French Guiana, in the herbarium of Montagne. There is also a collection at Berlin from Brazil, which Hennings has named as a "new species," but I have mislaid my memorandum as to what he called it.

15. **POLYPORUS. THIN, RIGID. COLOR PALE ROSE OR REDDISH BROWN. NOT ZONATE OR ONLY FAINTLY ZONATE.**

MODESTUS (Fig. 433).—Color when fresh pale cinnamon or rose, becoming in old specimens reddish brown. Pores minute. Surface dull. Rarely distinctly stiped, but reduced to a short stipe-like base. Appears to be frequent in tropical America and usually named by Berkeley *albo-cervinus*.

RUBIDUS.—This from the East is close to *modestus*, and I know of no marked difference. It is thicker, not so spathulate, and has but a faint indication of a stipe. I am told by Professor Petch that when old, dark discolored patches usually appear on the top. It is common to Ceylon and I think in other parts of the East.



Fig 433

Petaloides modestus.

Fig 434

Petaloides Didrichsenii.

BRUNNEOLUS.—The best specimen is in the British Museum. Those at Kew are poor. It is quite close to *rubidus*, but the context and general color are more brown. It seems to be common in the Philippines, and in recent determinations under the name *atypus* is confused with *rubidus*.

PETALODES.—Surface dark reddish brown with appressed fibrils. Context pale. Pores minute. Stipe lateral, thick. Known from a single specimen at Kew, collected in Brazil by Spruce.

DIDRICHSENII (Fig. 434).—Very similar to *modestus*, but with distinctly larger pores. Only type known, from Borabora (Society Is.), is at Kew. It seems to be frequent in the East and was received abundantly from Ceylon and called *Menziesii* by Berkeley.

BRUNNEO-MACULATUS.—Abundant specimens are at Kew, named *brunneo-pictus* by Cooke from Malay. They are light brown, with medium pores and subzonate, slightly rugulose pilei, marked with darker brown spots. It is the basis of the record of

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brunneo-pictus from Malay, in Saccardo, but has no resemblance to the original from Brazil.

MARIANUS.—Known only from the original. It is close to modestus, but not the same. The color is not the same and it is more rigid. The two following are close to Marianus.

ASPERULUS.—From New Caledonia. Type at Paris.

BRACHYPUS.—From West Indies. Type at Paris.

Konigii.—The only type at the British Museum from Ceylon comes in this section, but I have not a very clear idea of it

16. POLYPORUS. THIN, RIGID. STRONGLY ZONATE WITH GRAYISH ZONES.

GALLOPAVONIS.—Pileus rigid, thin, usually orbicular or reniform with short, lateral stem. Surface with narrow, concentric, gray zones. Pores minute, pale yellowish. Very common in the East, in Java, the Philippines, Samoa, and Australia.

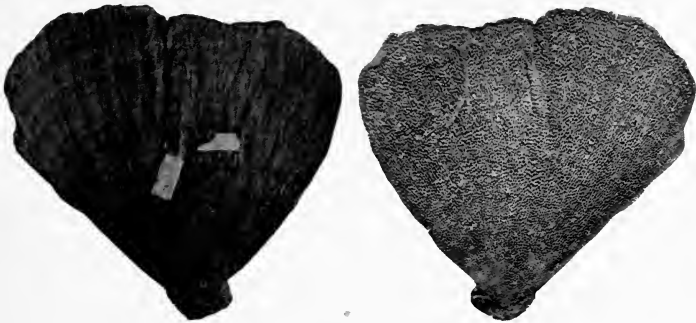


Fig 435

Petaloides Gaudichaudii.

GAUDICHAUDII (Fig. 435).—Pileus thin, with short, lateral stipe. Surface with narrow, concentric, gray zones. Pores medium. Close to the preceding but thinner, flexible, and the pores are distinctly larger. Specimen distributed in Zollinger's collection as *Blumei* belongs here.

INCURVUS.—Pileus thin, rigid, incurved in drying. Surface with strongly cinereous or fuliginous zones. Stipe lateral, from 2-8 cm. long. Pores small, dark. Specimens from Java and Malay.

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17. PILEUS YELLOWISH BROWN, GILVUS. HYPHAE DEEP YELLOW UNDER THE MICROSCOPE.

MALIENCIS.—Pileus dark tobacco-brown, rigid, foliaceous, the type being crenately lobed. Stipe short, thick, lateral. Pores short, dark, small. Setae none. There are liberal collections at Kew from Perak.

ARATOIDES.—Close to the preceding and so referred by Bresadola. The type from New Caledonia is more even, not crenate. However, it is probably the same plant.

DISCIPES.—Close to maliencis, but *longer pores*, not foliaceous, and the type is not so dark in color. Type at Kew is from Ceylon.

GLAZIOVII.—Pileus orbicular, thin, brown, with long, lateral stem, in the same plane. Pores minute, brown. Context is thin, brown. Hyphae yellow (but not deep yellow, hence not truly in this section). Stipe lateral, dull surface. Spores not found, but I believe are white. Only known from specimens at Kew from Brazil.



Fig. 436

Petaloides musashiensis.

MUSASHIENSIS (Fig. 436).—Entire plant brown, gilvus. Pileus orbicular, thin, dry, rigid, with soft, velutinate surface. Stipe laterally-dorsally attached, concolorous. Pores minute, concolorous, with soft, velutinate pore mouths. Colored setae rare. Spores not

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found but surely white. As to its context, color, velutinate surface and colored setae this corresponds to *Fomes pomaceus*, but the presence of a stipe removes it from all species with similar structure. Specimen collected by S. Kawamura, Japan. Referred to Hennings' species on the description only as there was no type in the cover when I visited Berlin.

18. GRAMMOCEPHALUS GROUP. PILEUS MARKED WITH RAISED LINES.

A varying assortment of plants that could be referred to one species, and still have marked differences. Those with large pores run into *Favolus*.

a. PORES SMALL. SETAE NONE.

GRAMMOCEPHALUS (Fig. 437).—The type form from the Philippines is orbicular or reniform, reddish brown with medium small pores. This is quite a frequent plant in several countries and seems to vary, so it is hard to decide what to consider as its varieties.

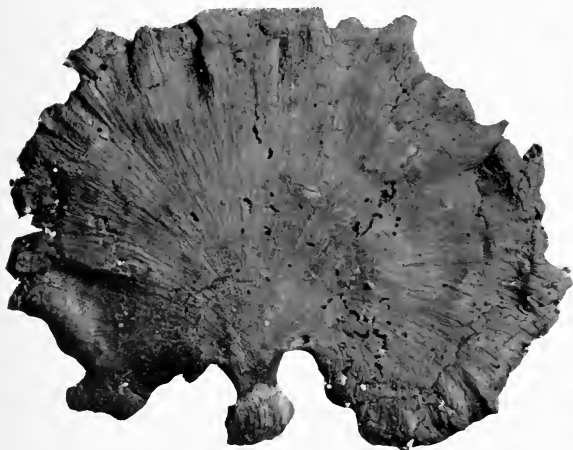


Fig 437

Petaloides grammacephalus.

PERVERSUS (Fig. 438).—Only a variety of *grammocephalus*, more spatulate and of darker color. Determined, published, and distributed (Copeland, No. 18) as *Polyporus coracinus* which, teste the description, viz.: with colored setae, and teste Bresadola, is quite a different plant. I have not seen *coracinus* except this evidently mis-named specimen. This form of *grammocephalus* is common in Samoa.

CAYENNENSIS (Fig. 440).—The American form from South America. Pores minute. Color pale, form spatulate.

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Fig 438

Petaloides perversus.

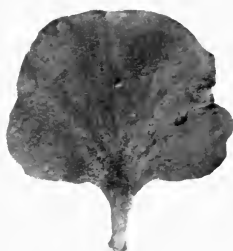


Fig. 439

Petaloides albellus.

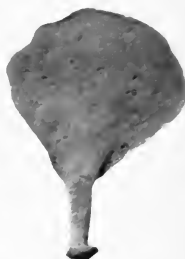


Fig. 440

Petaloides Cayennensis.

ALBELLUS (Fig. 439).—Similar to the preceding but has larger pores. White. From India, also from Chas. O'Connor, Mauritius.

MACULATUS.—A spotted form (?), dark, known only from a single specimen, Malay.

PLATOTIS.—Known from a partial specimen (Australia). It seems from the color, surface, and pores to be *thick* grammocephalus, but is much too thick, and apparently does not belong to the section.

b. PORES LARGE, FAVOLOID, RUNNING INTO FAVOLUS.

EMERICI.—Pileus the same as that of the type form of grammocephalus, but the pores are larger. From India.

FUSCO-LINEATUS.—This is an *obese* form of grammocephalus with a short, thick stem, 1-1½ cm. thick. The pores are larger than the type form. The surface is smooth, but lined. It was figured in the Trans. Linnean Soc., 2d series, vol. 1.

FAVOLOIDES.—(As a form of grammocephalus.) Pileus corresponds to the type form of grammocephalus, but the pores are large, favoloid. I think it is a better Favolus. Known from Africa.

DORCADIDEUS.—Color rich cinnamon brown. Surface velvety-tomentose with soft, brown hairs. Marked with branched, vein-like reticulations. Pores large, 2-3 mm. deep. Stipe short, lateral. The surface is covered with simple, colored hairs, which have no relation to those of russiceps. There are no cystidia on the hymenium. This strongly marked species is known from but one specimen at the British Museum, from Australia.

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c. SETAEFERA.

Bearing on the pileus and in one species on the hymenium, very peculiar colored spiny or branched setae. See Fig. 441.

CINNAMOMEO-SQUAMULOSUS (Fig. 441).—Pileus and pores dark cinnamon brown, both densely covered with peculiar, colored, branched setae. Pores small. A most striking species known from collections of Dr. Zenker, Camerun, Africa.



Fig. 441

Petaloides cinnamomeo-squamulosus with two types of peculiar cystidia found on the hymenium. (Drawing by Miss Wakefield).

RUSSICEPS.—Color of pileus dark cinnamon brown, same color and peculiar setae as the preceding, but in this species the setae are absent from the pores. Pores small, pale. Not a form of *grammocephalus* as given, but closely allied to the preceding. Only known from Ceylon.

19. POLYPORUS. SPECIES DARK COLORED, ALMOST BLACK AT LEAST WHEN DRY.

a. SETAEFERA.

MEGALOPORUS (Fig. 442).—Pileus dark, spotted, with short, lateral stipe. Pores large, subfavoloid. Hymenium with numerous very peculiar setae (same nature as those of the preceding section). Known from one specimen in Montagne's herbarium from South America. It is close to *Favolus princeps* in its peculiar setae, but otherwise I think it is different.



Fig. 442

Petaloides megaloporus with the peculiar cystidia. (Drawing by Miss Wakefield).

b. WITHOUT SETAE.

COCHLEARIFORMIS.—Plant black now but has probably changed in drying. Spathulate with a long stipe. Context thin, of peculiar, thick-walled hyphae cells such as have not been otherwise noted by me. Pores small, dark now. Spores globose, 5 mic., white. Only known from types at Kew, from Malay.

TRISTICULUS.—Color dark, almost black, thin, smooth. Pores small. Stipe short, lateral. Known from but two specimens, one at Paris and the other at Kew.

(Cfr. also *stereinus* and *holotephrus* in Section 22.)

20. **POLYPORUS. COLORED CONTEXT AND SPORES.**

(All of the preceding are supposed to have white spores.)

I do not know that there are any species with colored context and spores and lateral stems except in the section *Ganodermus*. The cotype specimen at Kew of *Polyporus sideroides* has these characters, but the type specimen at Leiden has a thick, spongy, pleuropodal stipe and would be looked for in section 35 of *Spongiosus*.

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21. ABERRANT SPECIES FORMING "NEW GENERA."

POCULA (Fig. 443).—A little species, the smallest known, and for many years supposed to be a *Sphaeria*. A full account is given in *Myc. Notes*, Pol. Issue p. 44. It is not rare in the United States and occurs also in South America, Australia, and Japan.

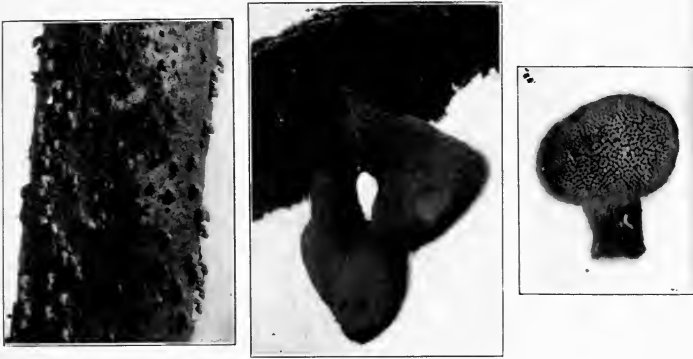


Fig. 443

Petaloides Pocula. Natural size; also two specimens (X6), and the face of pores (X6).



Fig. 444

Petaloides pusiolus. Enlarged six diameters. Also drawing by Miss Wakefield showing cystidia much magnified and a section of the pores enlarged.

PUSIOLUS (Fig. 444).—Pileus obconic, pendant, 3-4 mm. in diameter, with a short stipe. Surface brown, appearing velutinate from the enlarged projecting ends of the hyphae tissue. Context isabelline,

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the hyphae pale colored. Spores not found but on the hymenium are peculiar, horn shaped, acute, *hyaline* cystidia. This diminutive species came from Sarawak and there are co-types at Kew. I was much pleased to find in it an analogue of the little *Polyporus pocula* of the United States, heretofore supposed to be unique. It figures in our "literature" as a *Fomes* (sic). It is the antithesis of *Fomes*.



Fig. 445

Petaloides obovatus.



Fig. 446

Petaloides mutabilis.

22. **POLYSTICTUS. PILEUS PALE (IN ONE SPECIES DRYING BLACK), USUALLY SPATHULATE OR FLABELLIFORM, THIN. PORES IN A THIN LAYER, WHITE OR PALE, MINUTE.**

MUTABILIS (Fig. 446).—Pileus thin, marked with ochraceous or grayish zones. Very common in Brazil and also occurs in southern United States.

OBOVATUS (Fig. 445).—Very close to the preceding and I am not sure that it is distinct. It is not so strongly zoned. Usually tapering to the stem. Seems common in Java and the East. I have

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seen no authentic specimens of *obovatus*, but teste Bresadola, *dilatus* (bis) of Berkeley is a synonym and there is an abundance of that at Kew.

PETALIFORMIS.—Usually cuneate, tapering to the base. I judge from specimens I saw at Berlin that it has a rooting stem. Usually faintly zonate and marked with striations. Close to *mutabilis* and of the same distribution, but is quite different I think.

STEREINUS.—Pileus thin, attenuate behind and sometimes with a short stem, evidently soft and watery when fresh but drying thin, rigid, incurved, and turning black. It seems very common in tropical America, also from the East.

HOLOTEPHRUS.—Spathulate, attenuate at the base but hardly stipitate. Pores minute. Color almost black with metallic zones, and I think has not changed in drying. Known from the type at Kew from Cuba.

ARMENICOLOR.—Pileus thin, minutely pubescent, brown-zoned, tapering to a short but distinct stipe. Pores small, white. Except as to its distinct stem this plant is more closely allied to the *versicolor* group. It is known from one collection at Kew from Cuba.

ANTILOPUS.—This is quite a frequent plant in the museums, and I found it also in Samoa, that had been misdetermined either as *russogramme* or *rasipes* or *palensis*. It is referred by Bresadola to "*vibecinus* var. *antilopus*, Kalch." and it agrees with the cotype at Kew. No specimens of *vibecinus* are preserved and I think no one knows what it was.

23. POLYSTICTUS-MICROPORUS. LATERAL STEM.

(Cfr. also pleuropodal species page 173.)

The section *Microporus*, which has been held to be a genus, is characterized by its thin, rigid context, reddish brown color and minute pores in a very thin layer. We have published a "Synopsis of the section *Microporus*" with illustrations of the species.

AFFINIS (Fig. 447).—Stipe lateral, smooth, dark bay or black. Pileus smooth. Frequent throughout the East.

LUTEUS.—Same as *affinis* but more obese and thicker. Frequent and runs into *affinis*.

MAKUENSIS.—Same as *luteus* but with distinctly larger pores. Referred in my *Synopsis* as a synonym for *luteus*, which I think on re-examining the type is an error. Known from one collection at Kew from Africa.

PORPHYRITIS.—Probably the same as *luteus*, but from America, where all of this section are rare.

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Fig 447

Petaloides affinis.

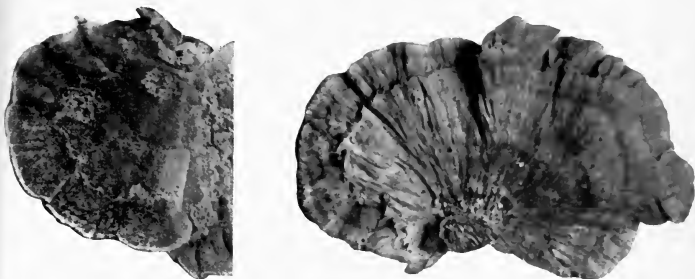


Fig. 448

Petaloides vernicipes.

CARNEO-NIGER.—Same characters as *luteus* except its black color. Occurs in the East. It is the same plant as *microloma*, an earlier name for it.

FLABELLIFORMIS.—Stipe black, lateral. Pileus with pubescent zones. Same as *luteus* except the pubescent zones of the pileus. It varies in all degrees however as to this character. It is the most abundant species in Africa, Samoa, and the East in general.

PTERYGODES.—Pileus sessile; hence does not belong to this section but placed here from analogy, as it is surely a sessile plant of the same nature as the other and perhaps simply a sessile condition of *xanthopus*.

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24. POLYPORUS (CORRESPONDING TO POLYSTICTUS, BUT THICKER) WITH COLOR AND PORES OF THE SECTION MICROPORUS.

VERNICIPES (Fig. 448).—Pileus smooth, rugulose, faintly zonate, shiny, thick, 2-3 mm., rigid. Pores minute. Specimens from Japan, Philippines, and Africa.

SUBFULVUS.—Plant smooth, rigid, pale ochraceous, smooth, with a short, thick, sublateral stem. Pores concolorous, minute, rigid, 2-3 mm. long. Specimens (Wright 135 & 355) at Kew from Cuba, published as ochrotinctus of Bonin Island. Subfulvus was Berkeley's manuscript name and a good name for it.

SIENNAECOLOR.—Comparable to a thick specimen of Polystictus luteus. Same color and pores, but on the Polyporus order with a thick, short, dorsal stem. Known from one specimen from Ceylon. The Brazilian specimen cited was something else I think.

25. RED SPECIES.

SANGUINEUS.—Perhaps no other one species is as abundant in the museums as this. It is the common red species that grows in every warm country of the world. It is strangely rare in Samoa, however. A short, lateral stem, often disciform at the base, is a feature of most collections, but not always, as museum specimens are sessile and even dimidiate. It is close to Polystictus cinnabarinus, the red species of temperate regions, but typically it is thinner and smoother and I think cinnabarinus is never stalked. There is no other bright red species of the tropical world that is likely to be confused with Polystictus sanguineus. Bleached specimens are sometimes collected that have lost all their red color.

CINNABARINUS.—The red species of the temperate world, very similar to the above but thicker and not so brightly colored. It rarely if ever has a distinct stalk, hence does not belong in this section, but we so place it from its evident close relation to the preceding. While not stipitate, it is attached by a reduced base, rarely dimidiate, hence it is related even in its attachment to the stipitate species. Polystictus cinnabarinus is rather rare in Europe, usually on birch, very common in America and favors especially cherry and beech. While ordinarily easily distinguished from the southern species, sanguineus, specimens occur in intermediate territory that are hard to refer.

(Miniatus of Java from its shape might be sought in this section. The brittle, caseous flesh so closely allies it to sulphureus that we place it in that section.)

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26. POLYSTICTUS. WHITE SPECIES.

CONCHIFER.—Pileus white, with a short, lateral stem. Bearing usually secondary, abortive pilei. For a full account see Polyporoid Issue page 41. A common plant, always on elm branches, in the United States.

Note.—A number of species of *Polystictus* such as the form *elongatus* of *pergamenus*, have the pilei usually reduced to an attenuate base and might be sought in this section.

Note.—*Glaberrimus*, South America, Montagne (as *Irpex*) and *nepalensis*, India, Berkeley and Pocos, Japan, Berkeley, each known from a single collection, have short, lateral stems, and would be sought here. *Glaberrimus* is close to *biformis* as to its pores. The types of *nepalensis* are quite poor and it may be the same as *glaberrimus*. Pocos has *hirsute* pileus and medium large pores.

SPECIES UNKNOWN TO ME.

Except *leiodermis* no specimens of any of these have been found by me in the museums of Europe

Agaricon, Java, Zollinger.
 albo-luteus, Asia, Rostrup.
 atro-albus, Africa, Hennings.
 bambusicola, India, Hennings.
 Baurii, Africa, Kalchbrenner.
 cotyledoneus, South America, Spegazzini.
 cuneatiformis, Philippines, Murrill.
 decrescens, Java, Zollinger.
 dilatatus, Java, Léveillé.
 discifer, Java, Patouillard.
 evanido-squamulosus, Africa, Hennings.
 Gregonii, Africa, Smith.
 Gualaensis, South America, Patouillard.
 hirto-lineatus, Java, Patouillard.
 incompletus, Borneo, Cesati.
 labiatus, West Indies, Patouillard.
 leiodermis, South America, Montagne. My photograph and notes as to this plant do not agree, hence I can not refer it at present.
 manubriatus, Sumatra, Léveillé.
 monachus, South America, Spegazzini.
 olivascens, Asia, Rostrup.
 parvmarginatus, South America, Spegazzini.
 Pentzkei, Australia, Kalchbrenner.
 prostratus, China, Patouillard.
 subhydrophilus, Brazil, Spegazzini.
 subpendulus, United States, Atkinson.
 substereus, Cuba, Murrill.
 tigrinus, Asia, Rostrup.
 udus, Java, Junghuhn.
 vitensis, Pacific Island, Reichardt.

SYNONYMS AND REJECTED SPECIES.

Adami, Ceylon, Cooke. Change of *dilatatus* (bis) which is *obovatus*.
 albo-cervinus, Brazil, Berkeley=*modestus*. This is the name generally used by Berkeley, who took *modestus* correctly at first but afterwards changed on the evidence of a specimen in Kunze's *exsiccatæ* which is not the same as the specimen in the same *exsiccatæ* at Upsala.
 anisoporus, Europe, Montagne. Type inadequate, probably a little, undeveloped specimen of *Favolus europæus*.
 annularius, Java, Fries. Merely an unauthorized and unnecessary change of *annulatus* of Junghuhn.
 apophysatus, Europe, Rostkovius. Only known from an old picture which is probably something abnormal.
 atro-cervinus, Brazil. Error in Saccardo for *albo-cervinus*.
 atypus, Java, Léveillé. No type exists as far as I could find at Leiden. In the sense of Bresadola it is *brunneolus*. Determinations of Murrill are largely *rubidus*.
 aurora, Borneo, Cesati (as *Trametes*). Not seen by me, but stated by Murrill to be a synonym for *atypus*, in which case it is probably *rubidus*, as many of Murrill's determinations of *atypus* are.
 bomfinensis, Brazil, Hennings (as *Fomes*, sic)=*Polystictus mutabilis*.

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- caryophyllaceus, South America, Cooke. Type a little remnant, inadequate but probably or possibly mutabilis.
- celebicus, East Indies, Hennings=*carneo-niger*.
- cervicornis, West Indies, Cooke. Something abnormal, but not a synonym for mutabilis as stated.
- cervino-nitens, South America, Berkeley (Schweinitz mss.)=*modestus* and was at first so referred.
- cinerascens, East Indies, Lévillé. No type found by me. In the sense of Bresadola it is the same as *incurvus*, of which nice specimens are at Kew.
- confundens, Borneo, Cesati=*gallopavonis*.
- coracinus, Philippines, Murrill. Unknown to me. The specimen distributed to Kew (Copeland No. 18) and cited by the author is a form of *grammocephalus*, which does not have cystidia and is an entirely different species from the "type," teste Bresadola in a letter. I have not seen the type, but it was described as having "branched cystidia" and, teste Bresadola, is close to *cinnamomeosquamosus* if not the same.
- crenatus, Ceylon, Berkeley. This at best is a form of *flabelliformis* with the pubescence covering a small area at the base of the stipe rather than in zones. Only types are at the British Museum. Specimens of Lévillé's naming at Leiden and Paris are both wrong.
- cretatus, United States, Cooke. Change of *Ravenelii* (bis) which being in his sense mutabilis was not worth changing.
- cupuliformis, United States, Berkeley=*pocula*.
- Curranii, Philippines, Murrill=*vernicipes*.
- decolor, Brazil, Berkeley. Type inadequate.
- delicatus, United States, Berkeley=*a small specimen of fractipes*.
- dendriticus, Mexico, Fries. No type exists. Fries cites Curtis' number 1481 which I do not find at Kew, but on Curtis' notes Berkeley has endorsed "arcticus, Klotzsch."
- dilatatus (bis), Ceylon, Berkeley=*obovatus*.
- diminutus, Australia, Masee. Type is not preserved, but from the figure and description I have no doubt it was based on *rhipidium*.
- eripus, Borneo, Cesati. Unknown to me. Seems from the description to be *flabelliformis*.
- fibro-radians, South America, Montagne=*mutabilis* or close.
- flabellato-lobatum, Africa, Hennings. Teste Bresadola=*cinerescens* (*brunneolus*). I found no type at Berlin.
- gallinaceus, Brazil, Berkeley=*mutabilis*.
- geminella, Moeller, Brazil (as new genus, "Henningsii")=*petaliformis*.
- hispidellus, United States, Peck=*hirtus* of Europe.
- Holstii, Africa, Hennings, also in my Synopsis,=*incomptus*.
- Hostmanni, South America, Berkeley. Type inadequate. There is a better specimen at the British Museum.
- humilis, United States, Peck=*fractipes*.
- hydrophilus, Cuba, Berkeley. Type inadequate. Compare *sterneus*.
- inconspicuus, Africa, Miquel. Said by the author to be the same as *Hostmanni*.
- intonsus, Tasmania, Berkeley. No type exists.
- involutus, Europe, Britzelmayr. Not worth the trouble to bother with his cartoons.
- Kurzianus, Java, Cooke=*Blumei*.
- lacer, Java, Saccardo or Cooke, change of *lacerus* (why?).
- lacerus, Java, Jungluhn=*obovatus* probably, more thin and tapering it seems to me.
- languidus, Africa, Fries. (Fomes in Saccardo.) No type exists. Stated by Fries to be the same as *monochrous*, which if true is the same as *modestus* and surely not a Fomes.
- lenzitoides, Brazil, Berkeley. Same plant as *aquosus*, which is a much better name for it.

SECTION PETALOIDES.

Leprieurii (bis), South America, Montagne (as *Enslenia*)=*pocula*.
Léveilléi, Java, Cooke. Change of *cinerescens*, then changed back.
Libum, Australia, Berkeley. Type inadequate.
limphorus, India, Masseur=*pale* form of *affinis* or possibly a dark form of *obovatus*.

Liebmanni, Mexico, Fries. Type at Upsala, inadequate, a little piece about the size of an oyster cracker. Teste Bresadola it is the same as *stercinus*. It is black and curved in drying, but I think is rather thick for *stercinus*.

ligoniformis, Europe, Bonorden. Unknown. Alleged to be yellow, small pores, white flesh, reddish when broken.

liturarius, Pacific Island, Berkeley. No type exists.

malacensis, error in Saccardo for *malicensis*.

Meleagris, Pacific Island, Berkeley,=*gallo-pavonis*.

Menziesii, Sumatra, Berkeley=*Didrichsenii*.

microloma, Philippines, Léveillé=*carneo-niger*, and an earlier name for it. I have seen the type since my Synopsis was published, it having been placed in its cover since.

minutissimus, Asia, Rostrup. I have not seen this, but I judge from the description it is *rhipidium*.

Mollerianus, Africa, Saccardo. Teste Bresadola, this is a stipitate form of *Polyporus vinosus*. I have seen no stipitate forms. Bresadola refers *vinosus* to *badius* of Junghuhn, not Berkeley.

monochrous, South America, Montagne,=*modestus*. It was first referred to Feei. This is in the sense of Berkeley. "Monochrous, Mont." is quite a different plant.

murinus, Java, Léveillé. No type found by me at Leiden. Teste Fries and Bresadola it is same as *brunneolus*. Most of Murrill's Philippine determinations are *gallopavonis*.

Muelleri, Australia, Kalchbrenner is *grammocephalus* or a form at best.

nanus, Australia, Masseur=*rhipidium*.

nigrescens, Brazil, Cooke=*stercinus* (??)

notopus, Java, Léveillé. (*Nothopus* in Saccardo.) The type at Paris is a little specimen, too inadequate to form an opinion.

palensis, Philippines, Murrill. I have seen more than one species so named by the author, but most of them I would refer to *antilopus*.

petatus, Central America, Fries. No type exists.

pendula, an alleged synonym for *pocula* used as a juggle. Not based on any evidence but is contrary to the specimens of the author.

peroxydatus, Australia, Berkeley. No type exists.

petaloides, Europe, Fries. No specimens or figures exist. It was based on one collection sent from Pomerania. Unknown now.

phlephorus, New Zealand, Berkeley. Same as *nivicolor*, which is a much better name for it.

polygrammus, Cuba, Berkeley=*petaliformis*.

pseudo-cinerascens, New Guinea, Hennings=*gallo-pavonis*.

puellaris, Pacific Island, Kalchbrenner=*atypus*, teste Bresadola on the label at Berlin. For me *atypus* in sense of Bresadola is *brunneolus*.

pusillus, West Indies, Léveillé (or Persoon, mss.)=*rhipidium*.

putidus, Central America, Fries. No type exists.

rasipes, East Indies, Berkeley=*obovatus*.

Ravenelii (bis), United States, Berkeley. No type found by me. In the sense of Cooke it=*mutabilis*. There is a cotype in the British Museum from Ravenel, which is same as *mutabilis*, but has no resemblance to *dealbatus* as erroneously stated.

rigescens, Perak, Cooke=*stercinus*.

rufo-ochraceus, South America, Patouillard=*mutabilis*.

russogramme, East Indies, Berkeley. Type inadequate. It has large pores and seems to be something well marked.

SECTION PETALOIDES.

- squamaeformis, Borneo, Berkeley. No type exists.
stereoides, Cuba, Berkeley. Not published but is a manuscript name for plants published as stereinus. The reference in Saccardo, p. 219, probably refers to a Brazilian collection which is mutabilis.
sterinoides, Brazil, Hennings=petaliformis.
Stuckertianus, South America, Spegazzini. Seems from the description to be rhipidium, the large, type form.
subflabellum, Africa, Hennings. The types are in alcohol and I can not form much of an opinion of them.
subpulverulentus, Cuba, Berkeley. A form of rhipidium at the best.
subverniceps, Philippines, Murrill=pterygodes.
subvernicosus, Brazil, Hennings=porphyritis or close to it. It seems to be a slightly thicker plant.
subzonalis, Australia, Cooke=gallo-pavonis, pale form.
tomohomiensis, East Indies, Hennings=grammocephalus.
torquescens, Africa, Saccardo=biokoensis, teste Bresadola=zonalis, teste Patouillard. Unknown to me.
ungicularis, Mexico, Fries. No type exists. Judging from the description it is probably the same as mutabilis. Mr. Murrill informs us that it is "only known from the type locality" and that he did not examine the spores. As he evidently never saw a specimen, as none exists, it would have been much more strange and worthy of record under the circumstances if he had examined the spores.
verniciifluus, Tasmania, Berkeley. Type inadequate.
vibcinus, Africa, Fries. No type exists. From the description it is close to grammocephalus.
virgineus, United States, Schweinitz=conchifer.
virax, India, Berkeley. Types at Upsala seem the same as Liebmanni to me on comparison, but I am not so certain that it is the same as stereinus.

SECTION MERISMUS.

The section Merismus embraces plants that have numerous pilei proceeding from the branching of a common stem or rootstalk. Some of them form very large clusters. We also include here the section Conglobatus where the pilei proceed from a common tubercular core. As a matter of truth the section Conglobatus is quite different from Merismus in its manner of growth, but we include it here in order to reduce the number of sectional names.

27. SPORES GLOBOSE, ECHINULATE.

Plants of this section having echinulate, globose spores form a very natural group.

BERKELEYI.—Pilei imbricate, arising from a short, thick stem or root stalk. Surface pale, dull, slightly tomentose and obscurely zoned. Context ($\frac{1}{2}$ -1 inch thick), white becoming isabelline in old specimens, brittle when dry. Pores large, unequal, white. Spores globose, 8 mic., distinctly echinulate. This is the largest and a quite frequent species in the United States, growing usually at the base of a tree.

MONTANUS.—This is the European analogue of *Polyporus Berkeleyi*, and has the same surface, context, spores, and general character. It is much smaller and simpler and more regular. It is quite a rare plant in Europe and very few specimens are in the museums. It occurs in the Alpine regions of France, extending east.

SECTION MERISMUS.

Dickinsii.—This, which is known from a single pileolus at Kew, from Japan, is thinner but seems to have the same context and spores as Berkeley's and is probably the same plant.

ZELANDICUS.—Pileus thin, lentus. Pores large and lacerate. Spores globose, hyaline, echinulate. Known from one collection at Kew from New Zealand. As to pilei it is very similar to *giganteus*, and as to spores it is similar to Berkeleyi.



Fig 449

Merismus Talpae.

TALPAE (Fig. 449).—Pilei very large, forming a clump several feet in diameter. Surface dark, dull, minutely velutinate, soft to the touch. Pores in the dried specimen small, cinereous. Spores globose, hyaline, 8 mic., slightly rough. This is the largest known species of fleshy Polyporus. A specimen from Dutch Guiana at Leiden measures $7\frac{2}{3}$ feet in circumference. It occurs only as far as known in Brazil and other parts of northern South America.

SECTION MERISMUS.

28. SPORES SMOOTH, HYALINE. PLANTS FLESHY.

UMBELLATUS (Fig. 450).—Stem dividing into many branches, each bearing a small pileus centrally attached. Flesh white. Pores decurrent on the branches of the stem, with angular mouths. Spores 3×10 , hyaline, smooth. The stem is said to arise from an underground, thickened rootstalk or sclerotium. This is a most striking and peculiar species and very rare both in Europe and the United States.



Fig. 450

Merismus umbellatus. (Reduced more than half).

FRONDOSUS.—Pileoli very numerous, imbricate, dimidiate or spatulate, fuliginous gray, with white, decurrent pores. They proceed from a common root stalk. This species, which is quite common both in Europe and the United States, sometimes forms large clusters two feet in diameter. It usually grows at the base of a tree or stump. It can be readily known from the more rare species (*umbellatus*) by the insertion of the pileoli, though in their general habits they are very similar.

WYNNEI.—Pileus merismatoid, imbricate, irregular, semi-incrusting, and in habits of growth resembles somewhat *Thelephora terrestris*. Upper surface yellowish brown, smooth but uneven, rugulose. Context thin or a mere pellicle. Pores medium, elongated, round,

SECTION MERISMUS.

4 mm. long. Spores globose, 3 mic., hyaline, smooth. When fresh this is soft and would hardly be sought in *Polystictus* where it is placed in our text books. It is quite a rare plant, known from England, France, Germany. It is not a true *Merismus*, but is more close to this section than any other in its appearance and habits.



Fig. 451

Merismus cremeo-tomentosus



Fig. 452

Merismus Ridleyi.

GIGANTEUS.—Pilei thin, tough with a dark brown surface and white pores that turn dark when bruised or in drying. Spores globose, 5-6 mic., hyaline, smooth. This which is large, but hardly large enough to be called "giganteus," is of frequent occurrence in both Europe and the United States. It is similar to *frondosus* but thinner with larger pilei and is tougher.

SECTION MERISMUS.

ANTHRACOPHILUS.—Pilei arising from a hard, woody root-stalk, flabelliform, tapering at the base. Surface rugulose, dark. Pores white when fresh. Spores 4×5 subglobose, hyaline, smooth. This plant is very similar to *giganteus* in some respects but is smaller and the dried specimens are hard and subwoody. It is only known from one or two collections at Kew, from Australia.

CREMEO-TOMENTOSUS (Fig. 451).—Pilei thin, flabelliform, tapering to the base and proceeding from the apex of a woody root-stalk, contracted and curved in drying. Surface soft, velutinate. Pores minute. The entire plant is a pale isabelline color. The several pilei proceeding from the apex of a woody rootstalk might be treated as simple pilei and classed in Section 12. It was described by Hennings as a *Fomes*. It never was a *Fomes*. Known from a single specimen from Ule, Brazil.

MULTIPLEX.—Pilei numerous, small, imbricate, with very much the appearance of being small *Polyporus frondosus* with similar general habits and pores. At the base, however, there are numerous white, mycelial fibrils, and it grew on rotten wood, totally at variance with the method of growth of *frondosus*. Known from a single specimen at Kew from Mueller, Australia, but I believe was not formally published.

LITHOPHYLLOIDES.—Only known from the types from Japan at Paris. They are black now, probably discolored from having been sent in alcohol. The small, imperfect pilei proceed from a thick, rooting system. It is quite different in appearance from all others and was compared by the author to the genus *Lithophyllum*, which seems to be a genus of seaweed.

29. **MERISMUS-POLYSTICTUS. THIN PLANTS HAVING THE HABITS OF THE SECTION MERISMUS.**

RIDLEYI (Fig. 452).—Pileus thin, flabelliform, tapering to the base and proceeding from a rootstalk. Surface smooth, even, gray and beautifully zoned. Pores white, rather large, shallow, elongated. This is a fine species, having the same texture and color and zones as Section 16, page 134, but is merismatoid in its habits of growth. Known from one collection at Kew from Tasmania.

COLENSOÏ.—Pileoli very numerous, much branched and crispid, thin with dark surface. Pores probably white when fresh, large, shallow. Known from a single rather poor collection at Kew from New Zealand. In general appearance it resembles *Polyporus frondosus* but is much thinner and has smaller pileoli.

FIMBRIATUS (Fig. 453).—Pileus thin, usually imbricate-multiplex, but often more simple, variously cut and lobed. Color pale, dark when dried. Pores white, shallow, usually imperfectly developed and incomplete, the portions of the undeveloped pore walls resembling

SECTION MERISMUS.



Fig. 453

Merismus fimbriatus with section of the hymenium enlarged.

in a faint degree a *Hydnum*. Spores ovate, 4×5 , hyaline, smooth. This is a common species in Brazil and abundant specimens have been sent to Europe, particularly by Glaziou. Owing to the peculiar hymenium it has been variously classed as *Polyporus*, *Polystictus*, *Hydnum*, *Thelephora*, *Craterellus* and *Beccariella*, with a corresponding number of specific names.

3c. MERISMUS CASEOSUS.

I am not sure that the plants listed here are all merismatoid. The common species of Europe and America, *Polyporus sulphureus*, when growing at the base of a stump usually has a common stem or tubercle, but on the side of a tree it is often sessile, in several imbricate layers. Sometimes on logs it occurs that it has a single pilei, each with its lateral stem. The feature common to all the following species is the caseous, brittle flesh, light and crumbling when dry.

SULPHUREUS.—Pileus bright reddish yellow and when in its prime furnished with a yellowish juice. When old it loses its bright color and becomes dry, light and crumbling. Pores minute, bright sulphur yellow when in prime condition. This is a common species in both Europe and America and occurs in Ceylon, Mauritius, and probably many countries. On the oaks where it habitually grows in Sweden it forms large, conspicuous masses noticeable from a distance. In the United States a form with a stem is quite common at the base of stumps. I have also collected it growing with simple, flabelliform pilei, each with its own short stem.

SECTION MERISMUS.

MINIATUS (Fig. 454).—This is represented at Leiden by the type from Java also a colored drawing. It is simple, thin, with a short, lateral stipe, and is brick-red when fresh. It loses its color with age and has the same brittle flesh and other characters, and I take it to be only a small, simple, thin form of *Polyporus sulphureus*.



Fig 454

Merismus (Caseosus) miniatus.

SORDULENTUS.—Named from a single, small collection from Chile. It has the same habits, texture, context color (of discolored specimens) and surface, and in my opinion is only a form of *Polyporus sulphureus*. The pores are distinctly larger than the European form which, as far as I can note, is the only real difference.

RETIPORUS.—This from Australia has the appearance of being sulphureus with larger pores and firmer context. I think it will prove to be only a form.

31. CONGLOBATUS CARNOSUS.

I believe there is no true fleshy species with central core, but that *Polyporus sulphureus* rarely takes this form. Such a specimen was distributed collected by Toldt in Tirol under the name *Polyporus imbricatus*. I judge it is the same plant that was named *Polyporus flabellatus* by Bresadola.

32. CONGLOBATUS FOMES.

But one species of *Fomes* is known with imbricate pilei proceeding from a central core. (Cfr. Pol. Issue, p. 43.)

GRAVEOLENS (Fig. 455).—Pilei numerous, densely imbricate like tiles, on a hard, woody, central core. Context and pores brown and of a hard, woody texture. Pores minute with darker mouths. Spores not found by me, but I think are hyaline. A unique species known only from the United States. It is not common and found only so far as known on oak or beech.

SECTION MERISMUS.

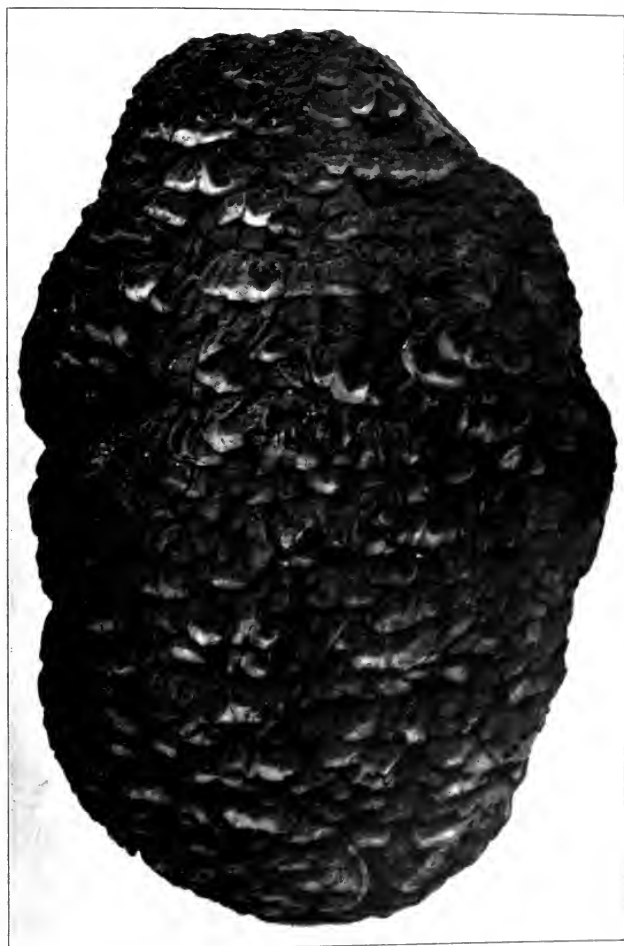


Fig. 455

Fomes gravecolens.

SECTION MERISMUS.

SYNONYMS, REJECTED AND UNKNOWN SPECIES.

acanthoides, Europe, Bulliard. In the sense of Fries a flabelliform specimen of *rufescens*. In the sense of Bulliard a poor picture of *giganteus*. Used as a juggle for *giganteus* by Quélet.

alligatus, Europe, Fries. Based on Sowerby, t. 422, but no such species known. The picture probably represents an unusual development of *rufescens*.
amygdalinus, United States, Berkeley. The type is very poor, so poor I doubt that it could be recognized on comparison. Said by Ravenel, the collector, to have a strong odor of vanilla or almond. It does not belong in the section *Merismus*.

anax, United States, Cooke. Berkeley's manuscript name for the plant that had been named *Polyporus Berkeleyi*. The species was one of Cooke's posthumous varieties.

Barrelieri, Europe, Viviani. Plate 28 cited by the author is a good picture of *sulphureus*. Plate 36, cited by Fries, is *frondosus*.

Beatiei, United States, Peck=*Berkeleyi*.

bonariensis, South America, Spegazzini. Unknown.

botryoides, "incog.," Léveillé=*Fomes graveolens*, which being such an obvious fact, was a long time being found out. I dug the type out of a cupboard at Paris and at once recognized it.

caespitosa, Brazil, Cooke (as *Beccariella*)=*fimbriatus*.

candidus, Europe, Roth. Unknown to me. No illustration. No specimens in museums. Bresadola told me that he considers it a good species, but I only know what he told me in conversation. I have never seen the plant.

casearius, Europe, Fries. Generally admitted to be only a discolored form of *sulphureus*.

Ceratoniae, Europe, Risso. Based on Barla's *Icon*. t. 30, f. 1-3, which is surely only *sulphureus*.

Cincinnatus, United States, Morgan=*sulphureus*, a bright colored form that grows in great abundance at the base of stumps, at Preston, Ohio.

conglobatus, United States, Berkeley=*graveolens*.

discolor, Mauritius, Klotzsch=*sulphureus*.

eurocephalus, Ceylon, Berkeley. The type is much decayed and full of globose, strongly asperate, hyaline spores. Teste Petch, these are spores of a *Hypomyces*, and in viewing them in that light I think it is correct, though I had no suspicion of it when I examined it and mistook them for the spores of the plant.

flabellatus, Europe, Bresadola. From the description I think it is the same plant as has been distributed from Tirol by Toldt as *Polyporus imbricatus*. In my opinion it is an abnormal development of *Polyporus sulphureus*.

Glaziovii, Brazil, Berkeley. This was included in Cooke's *Praecursores* twice, No. 166 and No. 394, the first as a *Polyporus*, the second as a "Fomes," and both with the *same citation*. The second as a "Fomes" is a *Polyporus* (cfr. page 135) and the first as a *Polyporus* in section *Merismus* is an illusion or error of some kind.

Glaziovii (bis), Brazil, Hennings=*Talpae*.

helopus, Exotic, Patouillard. This is based on a single specimen preserved in the museums at Paris. It is probably abnormal and surely adventitious and was found in the *Jardin des Plantes*.

imbricatus, Europe, Bulliard. Said by Fries to be rare and local in Sweden and is unknown to any one now. I think it was based on *intybaeus* that grew horizontal, hence the lobes are more flat. The common plant called *intybaeus* in England is surely *frondosus*. Most modern books carry both, but I think no one knows two different plants to correspond.

irregularis, England, Sowerby. The *Icones* 423 was referred to *amorphus* by Fries. The color is not right for *amorphus*. When Berkeley first met *Polyporus Wynnei* he referred it to this picture and sent specimens to Montagne. It has a general resemblance to *Wynnei*, but Sowerby's mention of "shallow pores" does not accord.

SECTION MERISMUS.

- lactifluus*, United States, Peck=Berkeleyi.
lobatus, Europe, Hudson. Unknown. Fries cites Schaeffer, t. 316 & 317, which are too crude to even be cited. Although attributed to Hudson, this plant was never known to English mycologists.
Merrittii, Philippines, Murrill=sordulentus.
multiceps, South America, Patouillard. Unknown to me.
multifida, Portorico, Klotzsch (as *Thelephora*)=fimbriatus, teste Bresadola on a label.
Oleae, Europe, Panizzi. Unknown to any one I think.
Oxyporus, Europe, Sauter. Unknown to any one I think.
Pauletii, Europe, Fries. Based on an old crude figure from which nothing whatever can be told.
plumarium, Cuba, Berkeley (as *Hydnum*)=fimbriatus. Some of the "plumes" are sterile, proliferous pilei on this particular type specimen. While there are many specimens of the plant in the museums under many names, I think the "plumes" are "only known from the type locality."
ramosissimus. An old name often used as a juggle for *umbellatus*.
ramosus, United States, Schweinitz. Published? Poor specimens, but authentic, are *frondosus*.
Rostafinskii, Europe, Blonski. Unknown to me, but the description seems to be *sulphureus*.
rubricus, India, Berkeley. Based on decayed, discolored specimens of *sulphureus*.
scabriusculus, Australia, Berkeley. No type exists.
sparassioides, South America, Spegazzini (as *Craterellus*)=fimbriatus.
speciosus. An ancient relic of Europe, 1755, alleged to be the same and used as a cheap juggle for *Polyporus sulphureus*.
subgiganteus, United States, Berkeley,=Berkeleyi, as Berkeley did not seem to know his own namesake.
Sumstinei, United States, Murrill,=the common *Polyporus giganteus* both of Europe and the United States and which has not the slightest difference as it grows in either country. I should think Mr. Sumstine would feel quite proud of the honor.
Todari, Europe, Inzenga=sulphureus.
trichrous, United States, Berkeley. No type exists.
Warmingii, Brazil, Berkeley=fimbriatus.

SECTION SPONGIOSUS.

The section *Spongiosus* embraces those species with soft, light, spongy flesh. These characters are more strongly evident in the dried specimens.

33. CONTEXT PALE OR WHITE. SPORES WHITE.

RUFESCENS (Fig. 456).—Pileus soft, spongy, hirsute. Pores large, daedaloid, pale flesh color when fresh. Spores are globose, 8 mic., hyaline, smooth. Also usually abundant, conidial spores 4 x 6, hyaline, smooth, oval. Not rare in Europe and quite variable. When well developed with a mesopodal stem as shown in Fig. 456 and Persoon's *Icones Pictae* t. 6, often more pleuropodal stem, Sow. t. 191, or lateral stem or even dimidiate (var. *flabelliforme* of Persoon). In the United States perfect forms occur but very rarely. A distorted form is more frequent, called *Polyporus distortus*. The pores of the European form are large and daedaloid and in France it is often called *Daedalea biennis*. In the United States there is not such a strong daedaloid tendency. The two following should be held as forms.

SECTION SPONGIOSUS.



Fig. 456

Spongiosus rufescens.

HETEROPORUS (Fig. 457).—The flabelliform or dimidiate form of *Polyporus rufescens*. Frequent in Europe. Apparently absent from the United States.

DISTORTUS (Fig. 458).—A frequent plant in the United States which I believe to be only a distorted form of *Polyporus rufescens*. Rarely perfect forms are also found in the United States.

ANTHELMINTICUS.—A plant said to be used in India as an anthelmintic is not represented in the museums of Europe by specimens good enough to tell much about its classification. It was compared to *rufescens* by Berkeley.

HYSTRICULUS (Fig. 459).—Known from a single specimen at Kew from Australia, but strongly marked. Surface with rigid, dense, dark hairs. Flesh white, soft. Pores round, medium, flesh color. Spores probably conidial, globose, hyaline.

SECTION SPONGIOSUS.



Fig. 457

Spongiosus heteroporus.



Fig. 458

Spongiosus distortus.

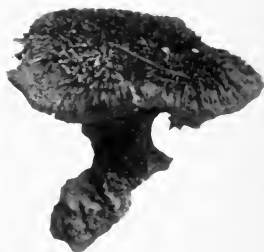


Fig. 459

Spongiosus hystriculus.

34. CONTEXT DEEPLY COLORED. SPORES SUPPOSED TO BE WHITE.

SCHWEINITZII.—Pileus dark brown covered with matted tomentum. Context brown, soft, spongy when fresh, brittle when dry. Stipe usually short and thick, rarely central, usually excentric, sometimes wanting. Pores large at first, meruloid, shallow, becoming longer, irregular and often lacerate when old. Spores white in mass, elliptical 4×6 , hyaline, smooth. A frequent plant in both Europe and the United States, but growing usually in pine woods. Sometimes quite large, one to two feet in diameter.

REPSOLDI.—Described from Brazil as growing on trunks and having a "gigantic" stem. Spores 5×7 , hyaline. Not found by me at Berlin, but the description is close to Schweinitzii except the pores are *minute*.

PACHYPUS.—Known only from unsatisfactory specimens in the Herbarium of Montagne. It came from Cuba and seems to me to be closely related to Schweinitzii.

35. CONTEXT DEEPLY COLORED. SPORES COLORED BUT OFTEN BUT FAINTLY.

a. WITH COLORED SETAE ON THE HYMENIUM.

CIRCINATUS.—Context thick, spongy, deeply colored. Stipe mesopodal in the type form, usually pleuropodal. Setae curved.

SECTION SPONGIOSUS.

Spores pale color, 7×12 (or 3×5 in the American plant). The type form which is mesopodal is only known in Europe from Fries' *Icones* t. 3. The pleuropodal form occurs but is also rare. In the United States the mesopodal form is not rare in New England and the pleuropodal form is still more common.

TOMENTOSUS.—Same as the preceding plant but thin, the upper, spongy context layer being very slightly developed. Same color and setae. Frequent in the pine woods of Sweden. If it occurs in central Europe it is rare, and it is unknown from the United States.

The following two are not stipitate, but we mention them here on account of their evident close relationship to the preceding.

TRIQUETER.—In the sense of Fries (?) and Romell, a thick, sessile form of *circinatus*. Same context, color, and setae. It is rare in Europe. In the original sense of Persoon it is in my opinion the same as *cuticularis*.

LEPORINUS.—A thin, dimidiate form of the same plant. Rare in Europe and the United States.

b. SETAE NONE.

SIDEROIDES.—Context ferruginous, spongy. Spores abundant, colored, globose, 8-9 mic. Stipe in the type form thick, pleuropodal, spongy. This species is represented at Leiden by several collections from Java, but not in other museums (except one cotype at Kew). The most perfect forms have a general resemblance in color and shape to *Polyporus Schweinitzii*. Thin forms occur with lateral stipes, and the type of *Polyporus Korthalsii*, at Leiden, appears to be a sessile form.

PUIGGARIANUS.—Context spongy, soft, brown. Spores abundant, *conidial*, globose, minutely rough. According to the collector's notes a large, infundibuliform species. Known from a piece of the pileus at Berlin, from Brazil.

ALBERTINII (Fig. 460).—Pileus mesopodal, with thick, obese stem. Surface and context, pores and stem concolorous, ferruginous. Context soft, spongy with large, inflated hyphae. Pores large, angular, decurrent on the stem. Setae none. Spores abundant, colored, 6×8 , smooth. Specimen at Kew from Endeavor River, Australia, referred by Cooke to *Schweinitzii*, which it closely resembles in general appearance. Named for Albertini, who was the tutor of Schweinitz.

MONTAGNEI.—Pileus obese, ferruginous, with uneven surface. Pores concolorous, medium large, decurrent. Spores 8×10 , pale colored, smooth. Setae none. Rare in both the United States and Europe. This plant is usually placed in the next section, but is rather obese for the allied plants of that section.

FRAGILISSIMUS.—Context soft, spongy, cinnamon-ferruginous. Pores concolorous. Spores $3-4 \times 4-5$, deeply colored, smooth. Stipe mesopodal. Known only from pieces of the pileus in the herbarium of Montagne from French Guiana.

SECTION SPONGIOSUS.



Fig. 460

Spongiosus Albertinii.

SUB-BULBIPES.—Imperfectly known from a half specimen at Berlin from Brazil. It has a soft, spongy context and I judge from my photograph a thin crust. Spores I did not find, but Hennings records them as globose, $3\frac{1}{2}$ -4, light yellow. The plant may belong in Section 5 of *Amaurodermus*.

SYNONYMS, REJECTED AND UNKNOWN SPECIES.

- abortivus*, United States, Peck=*distortus*.
acanthoides, Europe. In the sense of Fries=*rufescens*. In the sense of Bulliard=poor picture of *giganteus*.
benquetensis, Philippines, Murrill=*circinatus*. (?)
biennis, Europe, Bulliard=*rufescens*. Often called *Daedalea biennis*.
conglobatus, Europe, Karsten. Unknown to me, but the description reads much like *distortus*.
dualis, United States, Peck. (Also Polyp. Issue, p. 4)=*Icporinus* of Europe.
hispidoides, United States, Peck=*Schweinitzii*.
holophaeus, Europe, Montagne=*Schweinitzii*.
Kalchbrenneri, Europe, Fries. Based on small specimen of *tomentosus* now labeled *perennis* through error of R. Fries.
Korthalsii, Java, L veill . The type specimen appears to be a sessile form of *Polyporus sideroides*, same spores, context, texture, and color. In other namings of L veill  (viz., Zoll. 872) it is *Fomes Harkarlii*, which has no relations whatever to the type at Leiden.
maximus, Europe, Brotero. No one knows and no one doubts but that it equals *Schweinitzii*.
Memmingeri, United States, Murrill. Unknown to me. Seems close to *Montagnei*.

SECTION SPONGIOSUS.

obesus, United States, Ellis (also Polyp. Issue, p. 11)=Montagnei.
occultus, Europe, Lasch. I judge from the little co-type frustule I have seen (Rabh. Exsic. 617) that it is rufescens.
platyporus, India, Berkeley. Type very scanty and inadequate but=I think rufescens, form heteroporus.
proteiporus, Australia, Cooke=rufescens.
Sahranpurennis, India, Hennings. Not found by me at Berlin, but from description seems to be Schweinitzii.
scutiger, Europe, Kalchbrenner. Changed by Fries to Kalchbrenneri and based on small specimens of tomentosus.
sericellus, Europe, Saccardo=rufescens, form heteroporus.
Sistotrema, an old synonym for Schweinitzii, often used as a juggle.
spectabilis, United States, Fries=Schweinitzii.
spongia, Europe, Fries=Schweinitzii. The only type is at Kew.
tabulaeformis, United States, Berkeley=Schweinitzii.
tubulaeformis, United States, Saccardo, misprint for tabulaeformis.

SECTION PELLOPORUS.

Context dry, ferruginous, or yellowish brown with deeply colored hyphae. Setae rare. Pores concolorous. Spores colored, pale in most species. Plants growing in the ground and usually concolorous. Rarely epixylous. This section is practically the same as the section Perennes of Fries, but we do not use the name as it is misleading for the plants are not perennial.

36. PELLOPORUS POLYPORUS. CONTEXT FLESHY, TOUGH, RATHER BRITTLE, MOSTLY MORE OBESE THAN THE NEXT SECTION.

INDICUS (Fig. 461).—Pileus rugulose, dark brown, zonate. Flesh 5 mm. thick, pale rhubarb color. Hyphae deep yellow. Stipe mesopodal, subligneous, irregular. Pores small, round, 5-8 mm. long, darker than the context with pale mouths. Spores abundant, globose, 5 mic., smooth, deeply colored, mostly guttulate. Known from specimen sent me by B. S. Cavanagh, Baroda, India.

CUMINGII.—Context thin. Pores minute, 2 mm. long, concolorous. Stipe slightly spongy. Spores 3-3½, pale colored. Plant mesopodal. Only known from types at Kew from Philippines (also Mexico?).

VALLATUS (Berkeley).—Context thick, subligneous, bright color. Surface dull, concolorous. Pores small. Known from two specimens at Kew from India. One seems pleuropodal, the other mesopodal.

The two following are much smaller than those that precede, but the rigid, brittle flesh more closely allies them than to the next section.

LUTEO-NITIDUS (Fig. 462).—Pileus irregular, mesopodal or pleuropodal. Stipe slightly spongy, often long rooting. Context thin. Pores minute. Very similar but a larger species than the next. Seems frequent in tropical South America.

SECTION PELLOPORUS.



Fig. 461

Pelloporus indicus. (Top of pileus). Reduced



Fig. 462

Pelloporus luteo-nitidus.



Fig. 463

Pelloporus multiformis.

MULTIFORMIS (Fig. 463).—Stipe lateral, rooting. Pileus flabelliform, thin. Surface striate. Spores 3×4 , colored. Very similar in color and habits to preceding and in the same region. It is smaller and not disposed to take mesopodal forms. Known from three collections all at Paris. It may be only small forms of the previous.

SECTION PELLOPORUS.

37. PELLOPORUS POLYSTICTUS. CONTEXT THIN, FLEXIBLE.

Small plants growing in the ground with mesopodal stems. This is the old section *Perennes* of Fries.

a. COLOR DULL CINNAMON.

PERENNIS.—The most frequent species of the section in both Europe and the United States. Known from its dull, zonate, cinnamon color. Pores small. Spores 4-5 x 8-10, pale colored.

FOCICOLA.—Very similar to the preceding species but with larger pores (1 mm. or more). Frequent in the *southern* United States and there replaces the *perennis* of the northern states. Unknown from Europe.

DECURRENS.—A rare plant if not a form, based on one collection, from Massachusetts (Cir. Pol. Issue, p. 12).

PICTUS.—It is a little, slender species known only from specimen in the Herbarium of Fries. It has very thin context, $\frac{1}{2}$ mm., pores 2 mm. long, and the color now is black. Distinct but rare. Spores 6 x 8. The reference Bulliard No. 254 is an error as also are the French records of this plant.

b. COLOR BRIGHT, FERRUGINOUS CINNAMON.

CINNAMOMEUS.—A uniformly bright colored plant with silky, shining, appressed, radiating fibrils. Very rare in Europe, more frequent in the United States. Pores small. Spores 5-6 x 7-10, pale colored under the microscope. The forms from Ceylon and India are otherwise the same but have more globose spores, 6-7 x 8.

OBLLECTANS.—The Australian plant (and it is evidently very common in Australia) differs from the European in having usually larger pores and more erect fibrils on the pileus. Spores are 5 x 8, pale. The color is the same and the plants have been held to be the same, but I feel that the Australian plant is entitled to a name.

OBLLECTABILIS (Fig. 464).—This, which is based on specimens collected in Brazil, distributed by Ule (No. 48) has been referred to *oblectans* of Australia. It is similar in color but is more slender, has larger, more shallow pores. The margin is thin and fimbriate and the spores more narrow and more pointed. The spores are 4 x 10, pale colored and tapering at one end.

OBLVIONIS (Fig. 465).—Entire plant unicolor, of a bright cinnamon color. Pileus soft, subzonate, appressed, fibrillose. Context thin, less than 1 mm. Pores minute, 2 mm. deep. Stipe slender, 3-4 mm. thick, soft tomentose, 7 to 10 cm. long. Spores abundant, elliptical, 7-8 x 10-12 mic., colored. This is a beautiful species known from one collection at Kew from Brazil. It is much larger than any other brightly colored species of this section.

SECTION PELLOPORUS.



Fig. 464

Pelloporus oblectabilis.

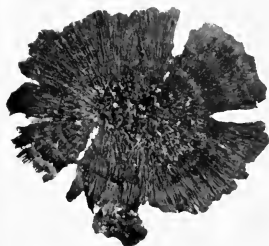


Fig. 465

Pelloporus oblivionis.

CUTICULARIS.—Pileus very thin with large, long pores, and was published in Pol. Issue page 11, and has since been received from the same locality. It is a very rare species of the New England States. It is badly named as it is liable to be confused with *Polyporus cuticularis*, to which it has no resemblance.

DEPENDENS.—A most curious little species which hangs pendant from the under side of logs somewhat in the manner of a wasp's nest. Entire plant bright cinnamon color. Spores colored, 5×7 . It is very rare in the United States.

See *Polyporus hamatus*, Addenda, p. 195.

(*Polyporus Montagnei*, see Section 35, is a thicker, more obese plant than others of this section, but its relations are undoubtedly closer here than where we have placed it.)

SECTION PELLOPORUS.

SYNONYMS, REJECTED AND UNKNOWN SPECIES.

- bulbipes, Australia, Fries. No type exists=oblectans, teste Fries, but he claimed to have named it in manuscript first.
- carbonarius, Europe, Fries. Based on an old picture (Micheli) and unknown. Said to have white pores, hence can not belong in this section.
- Cladonia, Australia, Berkeley. Types very young=oblectans, young, I think.
- connatus, United States, Schweinitz=perennis.
- connatus, United States, most writers,=focicola.
- Ehrenreichii, Brazil, Hennings. Type inadequate.
- Euphorbiae, China, Patouillard. Unknown to me.
- fimbriatus, Europe, Bulliard=perennis.
- parvulus, British Columbia, Klotzsch=cinnamomeus.
- parvulus, United States, most authors=focicola.
- perdurans, Tasmania, Kalchbrenner. Nothing authentic has been seen by me, but the determinations at Berlin are oblectans.
- peronatus, Europe, Schulzer. Only known from a drawing, showing a volva (sic) surely inaccurate.
- proliferus, United States, Lloyd. Something abnormal.
- Salpincta, New Zealand, Cooke. Types inadequate. Probably an abnormal oblectans. The illustration in the Handbook is largely made up.
- saxatilis, Europe, Britzelmayer. It is purely a waste of time to bother with his work.
- scutellatus, Siberia, Borszczow. Seems from the description to be focicola which, however, is not known excepting in America.
- scutiger, Europe, Kalchbrenner. Changed by Fries to Kalchbrenneri. It was based on a small specimen of tomentosus.
- simillimus, United States, Peck. At best a form of perennis, but it is not possible to maintain it even as a form.
- spatulatus, South America, Hooker. Type in two little fragments. It is probably the same as multiformis.
- splendens, United States, Peck=cinnamomeus.
- subsericeus, United States, Peck=cinnamomeus.
- Verae-crucis, Mexico, Cooke. Known from but one collection from Mexico which I think on comparison is the same as Polyporus Cumingii, known only from the Philippines.

SECTION OVINUS.

In the section Ovinus we give very scanty accounts, as the section has been recently considered and illustrated in full by us in a separate pamphlet. Ovinus embraces the thick, fleshy species of Polyporus with mesopodal or pleuropodal or rarely lateral stems.

38. WITH SCLEROTIUM.

TUBERASTER.—Sclerotium (false) of earth, agglutinate with mycelium. Pores small, white. In Italy, Switzerland.

GOETZII.—Sclerotium small, 2-3 inches. Plant mesopodal. Known from one specimen at Berlin from Africa.

SAPUREMA.—Sclerotium large, bearing several plants. Specimen in alcohol at Berlin from Brazil.

SECTION OVINUS.

MYLITTAE.—Sclerotium, the well known "native bread" of Australia. In the museums I have visited there are no specimens with the fruit, but a photograph of a sclerotium with the *Polyporus* is at the British Museum.

39. STIPE USUALLY MESOPODAL. PORES SMALL.

OVINUS.—White. Pores small. Spores $3\frac{1}{2}$ -4. Common in Sweden and is also found in Alpine regions of central Europe. Its record in the United States is not certain.

LEUCOMELAS.—Pileus fuliginous. Pores pale. Spores tubercular. Rare in Europe. Not known from the United States.

GRISEUS.—Pileus and pores smoky gray. Spores tubercular. Frequent in the United States. Rare in Europe.

CAERULIPORUS.—Pileus and pores bright blue when in prime. Brown when dry. Very rare in the United States.

POLITUS.—Color dark reddish. Very rare in Europe. Only known from Fries' *Icones* and a specimen at Kew. Possibly it is a small mesopodial form of *confluens*.

Peckianus, *cfr.* *Lentus*, p. 171.

40. STIPE CENTRAL. PORES LARGE.

(Compare *tuberaster* in 38.)

41. STIPE USUALLY EXCENTRIC OR IRREGULAR. PORES SMALL.

CRISTATUS.—Color greenish yellow. Frequent in the United States. Rare in Europe.

CONFLUENS.—Color pale reddish, becoming deeper red in drying. Often confluent and irregular. Frequent in Europe and eastern United States.

DISCOIDEUS.—White, becoming isabelline in drying. Grows on logs. Brazil and the type from Cuba.

POPANOIDES.—White or yellowish when dry. No distinct cuticle. With short, thick stipe near one side. Known only from one collection from Mauritius at Kew.

42. STIPE EXCENTRIC. PORES LARGE.

PES CAPRAE.—Surface with small, fasciculate scales. Alpine regions and southern Europe. Very rare in the United States.

SECTION OVINUS.

ELLISII.—Pale yellow with large floccose scales. Very rare in the southern United States.

SQUAMATUS.—With large scales. Dark reddish when dry. Known from one collection from Hungary at Berlin.

(Cfr. *Boucheanus* in next section.)

43. MELANOPUS. PORES LARGE.

SQUAMOSUS.—Pileus scaly. Pores favoloid. Stipes usually excentric. Common in Europe, rare in the United States.

ROSTKOVII.—Smooth form of squamosus. Rare in Europe and the United States.

BOUCHEANUS.—Small, smoothish form of squamosus with uncolored stipes. Rare in Europe.

LENTINOIDES.—Tropical, smooth form of squamosus.

TUMULOSUS.—Pileus with a smooth, thin cuticle, recalling *betulinus*. Stipe short, central. Supposed to form large, mycelial masses. Known from the type at Kew from Australia.

TASMANICUS.—Pileus turbinate. Stipe short. Known from one collection from Tasmania at Kew.

44. MELANOPUS. PORES SMALL.

RADICATUS (Fig. 465 bis).—Mesopodal with a long, rooting base. Not rare in the United States.

HARTMANNI.—Brown, velutinate, with short, thick, excentric stipe. Two collections from Australia at Kew.

SYNONYMS, REJECTED AND UNKNOWN SPECIES.

alpinus, Europe, Sauter. From the description seems to be *Rostkowii*.
asprellus, Europe, Lévillé. Based on a crude figure of *Pes caprae*.
bulbipes, Europe, Beck. Known only from an illustration and is probably the same as *Boucheanus*. Spores seem a little different, but that is all.
cadaverinus, Europe, Schulzer. Some abnormality.
Campbelli, India, Berkeley. Type is inadequate.
caudicinus. A cheap juggle of *Polyporus squamosus*. It originated in Europe, but has been copied in the United States.
Clusianus, Europe, Britzelmayr. Unknowable.
decurrans, United States, Underwood. Unknown.
Earlei, United States, Underwood=*griseus*.
flavo-squamosus, United States, Underwood=*Ellisii*.
flavo-virens, United States, Berkeley=*tristatus*.
Forquignoni, Europe, Quélet=*Boucheanus*.
fuliginus, Europe, Fries. Unknown, based on an old figure.
holocyaneus, United States, Atkinson=*caeruliporus*.
Kansensis, United States, Ellis. Not seen by me, but is probably *Polyporus melanopus*.



Fig. 465 bis.

Ovinus radicatus (reduced about one-fourth). Pore details natural size.

SECTION OVINUS.

laeticolor, United States, Murrill. Preoccupied. Changed to luteo-luteus by McGinty.

luteo-luteus, United States, McGinty. Unknown to me.

Michelii, Europe, Fries. Unknown, based on an old figure.

Morganii, United States, Peck=*radicatus*.

myclodes, Australia, Kalchbrenner. Unknown.

nodipes, India, Berkeley. No type exists.

ново-гуинеенсис, New Guinea, Hennings. Nondescript.

olivaceo-fuscus, Ceylon, Berkeley. Type consists of two sections from which nothing can be told. It is probably a young *Boletus*.

pallidus, Europe, Schulzer=*squamosus* with small scales.

poripes, United States, Fries. Unknown. No type exists.

pseudoboletus, South America, Spegazzini. Unknown.

punctiporus, Europe, Britzelmayer. All of his species are unrecognizable.

retipes, United States, Underwood=*Pes caprae*.

Schweinfurthianus, Africa, Hennings. Not a *Polyporus* but a *Boletus*.

scobinaceus, Europe. Used as a juggle for *tuberaster*.

subradicatus, United States, Murrill. Probably=*radicatus*, which the author does not seem to know very well.

subsquamosus, Europe, Linnaeus. Unknown. Probably=*griseus*.

tessulatus, Europe, Fries. Unknown. Based on an old picture.

violaceo-maculatus, China, Patouillard. Unknown to me.

virellus, Europe, Fries. Based on picture=*cristatus* sans doubt.

viscosus, Europe, Persoon. Not a *Polyporus* but a *Boletus*.

Whiteac, United States, Murrill. Unknown to me.

xoilopus, Europe, Rostkovius. Unknown except from a doubtful picture.

SECTION LENTUS.

This section generally has mesopodial stipes. They are thinner, more pliant, or coriaceous than the section *Ovinus*. Also they are mostly epixyloous in habitat. All as far as known have pale context hyphae and white spores.

45. LENTUS. PORES SMALL.

a. WHITE.

TRICHOLOMA (Fig. 466).—White, strongly marked with ciliate hairs on the margin when young, but they are detersive. Pileus depressed in the center. Spores 4×6 , hyaline, smooth. Frequent in tropical America.

CRYPTOPUS (Fig. 467).—Growing attached to grass stems in western United States. Similar to *rhizophilus* of Tunis, but has smaller pores and spores.

CORYLINUS.—Only known from illustration (Viv. t. 1) from Italy, but seems very distinct.

LEPTOCEPHALUS.—Only known from an old illustration (Jacq. Misc. 1, t. 12) but seems quite characteristic. In short, it is *elegans* without a black stipe.

(albiceps, see page 180. Specimens with uncolored stems would be sought here.)

b. GRAYISH OR FULGINOUS BROWN.

BRUMALIS.—Stipe and pileus fuliginous. Pores small but elongated, white. Common both in Europe and the United States, on branches, late in the season.

SECTION LENTUS.



Fig. 466

Lentus tricholoma. With section enlarged, showing marginal hairs.

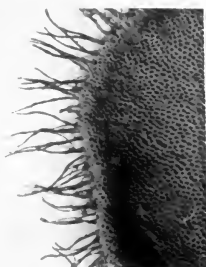


Fig. 467

Lentus cryptopus.

CILIATUS.—Very close to *brumalis* but lighter color and more slender and grows often attached to buried sticks. It is rare in Europe.

LEPIDEUS.—Close to *brumalis* but of a different color, pale yellowish, fuliginous. Very rare in Europe, known only on birch.

SCABRICEPS.—Known from one specimen at Kew from Cuba. Close to *brumalis* but has more scabrous pileus. Still it is not well named.

GUARANITICUS.—Close to *brumalis* as to shape and size. Close to *lepideus* as to color, but the pores are small and *round*.

VERNALIS.—Close to *brumalis* but more slender and yellowish. Rare in Europe and only known to me from the figure by Quélet.

UMBILICATUS.—Close to *brumalis* but more smooth and *rigid*. Known from the type at Kew from India. I have also a specimen from India from Rev. Theissen.

c. COLOR YELLOW OR REDDISH BROWN.

FUSCIDULUS.—Rare, and the only collection known is in Cooke's herbarium and was collected in England. Figured by Bolton (t. 170). When fresh seems to have white flesh and *yellow* pores.

PECKIANUS.—Pileus thin, infundibuliform, with a central stem. Pale yellow when fresh as are the small pores. Grows in the ground, hence might be sought in *Ovinus*, but is too thin for that section.

SECTION LENTUS.



Fig. 468

Lentus virgatus

VIRGATUS (Fig. 468).—Known from one abundant collection from Cuba. The type is at Kew. Pileus of peculiar reddish brown color and appressed fibrils. Context and pores also reddish brown.

SUBVIRGATUS.—A plant of India very close to *virgatus* of the American tropics as to color, shape, and size, but is devoid of the virgate fibrils and the pores are not at all irregular.

IRINUS.—Known to me only from the figure (Bull. Myc. France, 1888, t. XII). Seems to be a reddish plant with a zonate pileus.

REPANDO-LOBATUS.—Specimen at Paris which is very close to *virgatus* and endorsed by Patouillard on the label as same, but which seems to me to be a little different.

Unknown to me Except from Description.

Guarapiensis, South America.
pauperculus, South America.
tucumanensis, South America.
fuegianus, South America.
Brazilienis, South America.
dictyoporus, West Indies.
depressus, South America.

SECTION LENTUS.

d. MICROPORUS. THIN, RIGID WITH MINUTE, WHITE PORES IN A VERY THIN LAYER. COLOR REDDISH BAY OR SIENNA BROWN.

A natural section (or perhaps one species) which runs also to forms with lateral stems (Cfr. page 142). (See also Synopsis of Microporus section published, 1910.)

XANTHOPUS (Fig. 469).—Stipe smooth, yellow. Pileus smooth. A very common species, particularly in Africa, but it occurs also in the East in general. It seems to be absent from the American tropics.

FLORIDEUS.—At best only a dark form of xanthopus with a short stipe.

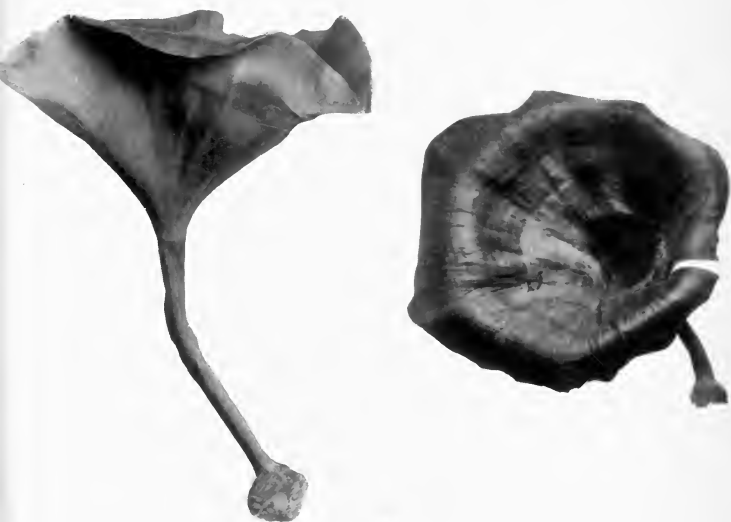


Fig. 469

Lentus xanthopus.

CONCINNUS.—Stem slender, black. Pileus covered with a uniform, fine, downy, velvety pubescence. This is a rare form in Africa.

INCOMPTUS.—Stem dark or black. Pileus with pubescent zones. This appears to be a common form in Africa and is frequently sent to Europe with xanthopus. However, I believe they are distinct. It was included in my Synopsis under the name *Holstii*.

SECTION LENTUS.

PSEUDO-PERENNIS.—Stipe dark or black. Pileus densely covered with appressed pubescence, faintly zoned, with narrow, glabrous zones. Known from a single collection at Berlin from Africa. Though the plant has no relations, it has a general resemblance to *Polystictus perennis*.

46. PORES LARGE.

Some of these might be placed in *Favolus* to probably better classification.

a. WHITE.

FAVOLOIDES (Fig. 470).—Known only from one specimen from Africa, in alcohol at Berlin. A very marked species with thin, white, umbilicate pileus, long, slender stem, and large, white, favoloid pores.



Fig. 470

Lentus favoloides.



Fig. 471

Lentus partitus.



Fig. 472

Lentus nanus.

NANUS (Fig. 472).—Known from one collection from Algeria at Paris. A little species growing in the sand. Spores are globose, 4-5, hyaline, smooth. Color seems to me to have been white though described as pale yellowish.

RHIZOPHILUS.—Collected by Patouillard. Common in Tunis, attached to grass culms. Very similar to cryptopus of the United States but has larger pores and spores.

SECTION LENTUS.



Fig. 473

Lentus Marmellosensis.



Fig 475

Lentus ciliatus (bis).



Fig. 474

Lentus orbicularis.

PARTITUS (Fig. 471).—Pileus thin, mesopodal and usually more or less parted or lobed, reddish brown, rigid. Pores thin, large, shallow with thin walls, white. Stipe mesopodal, lateral from the imperfect formation of the pileus, slender, dull, dark surface. Known from several collections from Spruce, Brazil, at Kew, also one collection at Berlin.

b. COLOR BRIGHT YELLOW.

TILIAE.—Known only from *Icones*, Kalchbrenner, t. 38. All parts of the plant are bright yellow. Very peculiar if correctly depicted, but probably an exaggeration or imagination of some kind, as the author was much given to drawing imaginary pictures. No such plant is now known in Europe.

c. COLOR BROWN OR BROWNISH.

ARCULARIUS.—Pores large, favoloid, white. Pileus brownish, often infundibulform, more or less scaly. A widely distributed plant

SECTION LENTUS.

in most countries of the world. In the United States it is common in the spring. In Europe it is of a southern range only. Frequent in the tropics.

SPECIES WHICH ARE CLOSE IF NOT THE SAME AS ARCULARIUS.

squamiger (as Favolus), Australia.
cremoricolor, India.
aemulans, Cuba.
maculatus, India.
tunetanus Algeria. Placed in Melanopus, but I think belongs here.
arculariellus, United States. The late summer form of arcularius.
arculariformis, United States.

CILIARIS (as Favolus) (Fig. 475).—This plant occurs in tropical America and is very close to Polyporus tricholoma but *with much larger pores* and close to Polyporus arcularius, but *with smaller pores*. It was distributed by Ue as a variety of Polyporus tricholoma.

ORBICULARIS (Fig. 474).—Known to me from one collection at Berlin made in that vicinity, referred by Hennings to Boucheanus but surely not that. It has a sublateral stipe and large, favoloid pores. It seems to answer the description, but of course that is only a guess.

LENTUS.—Very much the same as arcularius excepting its color which is paler and the plant is more tough. Formerly collected, apparently in abundance, on old stems of gorse (Ulex) in England, but not in recent years. Recorded in error from the United States.

MARMELLOSENSIS (Fig. 473).—Known from but one specimen from Brazil at Berlin, which is most peculiar. Thin, dark, reddish brown with *large, white, round* pores. So thin it might be sought in Polystictus or really in Hexagona from its pore shapes. It is the only similar plant known.

(Boucheanus, see Ovinus, page 168, probably better classed here.)

LENTUS SPECIES UNKNOWN TO ME AND NOT FIGURED.

Incendiarius.—Smooth, white, said to be "copious" in Russia, but unknown in the museums of Europe.

Penningtonia, South America.

Velutipes, China. Said to have a viscid pileus and contorted pores.

Fagicola, United States. Known only from the type locality.

Variiporus, West Indies. Said to resemble Tricholoma, but has large pores.

47. LENTUS. SUBGELATINOUS WHEN FRESH (TENDING TOWARD LASCHIA.)

GRACILIS.—Smooth, reddish brown, small pores, with smooth, reddish stem. When fresh it is subgelatinous. Several collections are known, all from tropical America. Original at Kew from the West Indies. The color of the dried specimens is reddish brown, but we suspect that when fresh it is white.

FORM.—We have from Rev. Rick of Brazil a collection which we think is the same species as the preceding but with notably larger pores.

SECTION LENTUS.

48. LENTUS. ABERRANT SPECIES AS TO SHAPE. INFUNDIBULIFORM, GIBBOUS, OR VERY MINUTE.

CRATERELLUS.—Infundibuliform, brown now, described as white or yellow, and it may have been white. Spores abundant, 4×5 , hyaline, smooth. Only known from original collection at Kew from Cuba.

CONFUSUS (Fig. 476).—In shape, size, and color apparently the same as the preceding and so originally determined. Spores $3-4 \times 12-14$. Known from a collection from Louisiana, sent by Ellis to Kew.

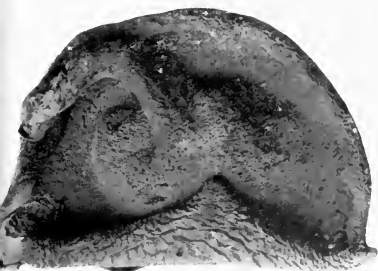


Fig. 476
Lentus confusus.



Fig. 477
Lentus Tuba.

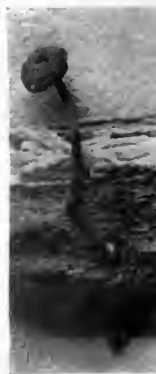


Fig. 478
Lentus acicula
(enlarged six times).

TUBA (Fig. 477).—Peculiar, gibbous shape which has been inaccurately described as cup-shaped. Known only from the original collection at Kew from Cuba.

ACICULA (Fig. 478).—If it is a Polyporus, and I can not say it is not, it is unique in its small size, not much larger than a pin head and known from a single specimen from Cuba at Kew.

SECTION LENTUS.

SYNONYMS, REJECTED AND UNKNOWN SPECIES.

- agriceus*, Ceylon, Berkeley=*arcularius* as Berkeley himself referred.
alveolaris, United States, Bosc. Figure is a crude representation of *arcularius*.
apalus, Brazil, Berkeley=*gracilis*.
Armitii, Australia, Cooke. No type exists. It was figured in *Grevillea* but I do not know as to its accuracy. Referred afterwards to *stipitarius*, but that surely was an error if the figure at all represents it.
bataviensis, Java, Holtermann. From the figure I judge it is *Laschia caespitosa*.
Binnendykei, Java, Cooke. No specimen exists. Based on an old drawing, probably pale *arcularius*.
cachoeriensis, Brazil, Hennings=*partitus*.
callochrous, L veill . Neither specimen nor locality known.
clypeatus, South America, Patouillard (as *Laschia*)=*gracilis*.
collybioides, Australia, Kalchbrenner. Type inadequate.
Columbiensis, United States, Berkeley. Oregon, not South Carolina as inaccurately compiled by Mr. Murrill. The type is a little discolored frustule that tells nothing and which should never have been named.
conspicabilis, Europe, Britzelmayr. Not worth the trouble of bothering with his crude cartoons.
Cowelli, West Indies, Murrill. From the description I judge it is the same as *gracilis*, which the author does not seem to know although there is a good type at Kew.
crassipes, India, Curry=*xanthopus*.
cupreo-nitens, Australia, Kalchbrenner=*xanthopus*.
Curtisii, United States, Berkeley (as *Favolus*), a late form of *arcularius*, changed to *arculariellus* by Murrill.
cyathiformis, L veill , West Indies. No type exists. Probably the same as *Polyporus craterellus*.
dibaphrus, United States, Berkeley=*brumalis*.
esculentus, Europe, Britzelmayr. Cartoon.
favularis, East Indies, Fries. No type exists.
flavidus (bis), United States, Peck. Changed to *Peckianus*.
flexipes, Brazil, Fries. No type exists. Supposed by Fries to be the same as *gracilis*, but I have little doubt it was the same as *Polyporus Tricholoma*.
floccopus, Europe, Rostkovius. Seems from the crude picture to be the same as *lentus*.
fuligineo-albus, Europe, Trog. Unknown to me.
hapalus, Brazil, Saccardo. A variant spelling of *apalus*.
Humphreyi, West Indies, Hennings. No specimen in the cover at Berlin, but said by Murrill to be the same as *Polyporus Tricholoma*. Whether he saw it or merely guessed at it he does not state.
Katui, Marshall Island, Ehrenberg=*xanthopus*. It was finely illustrated under the name *Katui* and on its merits this name should be used.
luridus, United States, Berkeley=*brumalis*.
meizoporus, Cuba, Berkeley (in Saccardo as a variety of *stipitarius*). I find no type.
melanocephalus, Japan, Patouillard. Type small and inadequate. Probably discolored by alcohol.
Mildbachii (Mss. at Berlin), Africa,=*concinus*.
mycenoides, New Caledonia, Patouillard=*Laschia caespitosa*.
obolus, Central America, Ellis. I have not seen this, but the description indicates *gracilis*.
obscura, China, Kalchbrenner. Unknown. Probably *arcularius*.
paraguayensis, South America, Spegazzini. Same as *guarapiensis*, but more pleuropodal.
Perula, Africa, Palisot. Picture probably represents deformed specimen of *xanthopus*.

SECTION LENTUS.

phaeoxanthus, United States, Montagne. Type is a mere frustule (cfr. Myc. Notes, p. 492).

pisiformis, Australia, Kalchbrenner. "Type" is a little incipient sessile, undeveloped pad, about the size and appearance of a wart. Should never have been named at all and most certainly should never have been put in the section *Lentus* of *stipitate* fungi where Cooke placed it.

planus, Europe, Wallroth. Unknown. As it grew in the ground it may not belong to the section *Lentus*.

platensis, South America, Spegazzini. Unknown.

Polyporus Polyporus. This gibberish sounds to me more like the college yell of the Carlisle Indians than "Latin," but is alleged to be a Latin name for *Polyporus brumalis*. I doubt if a Roman barmaid would have been guilty of employing such silly language, and yet men who claim to be "scientific" have the assurance to go into print with such names under the pretext that they are employing Latin.

Puiggarii, Brazil, Spegazzini. Unknown.

quadrans, Australia, Berkeley. No type exists. From the description it seems to be *xanthopus*.

rubripes, Europe, Rostkovius. Known only from an old picture which is probably inaccurate.

rubro-maculatus, Europe, Britzelmayer. Cartoon.

saccatus, Rawak, Persoon=*xanthopus*.

similis, Brazil, Berkeley. Type very scanty but probably=*Polyporus Tricholoma*.

squamoso-maculatus, India, Saccardo. Change of *maculatus* of Berkeley because Peck, twenty years later, published another under the same name. Berkeley's name does not seem to have needed changing very badly on this account.

stipitarius, Cuba, Berkeley=*Polyporus Tricholoma*.

substriatus, Europe, Rostkovius. Only known from an old illustration which appears to me to be the same as *leptideus*.

tubarius, Europe, Quélet. Unknown except from his figure, which seems too close to *vernalis*.

umbilicatus, Java, Junghuhn=*arcularius*, teste Fries. Bresadola claims it is different from *arcularius*, but by such slight structural differences that I can not grasp them. The types at Leiden I should refer to *arcularius*.

Vossii, Europe, Kalchbrenner=*brumalis*, teste Bresadola.

Weddelii, Brazil, Montagne. No type exists.

Zenkeri, Africa, Hennings. No specimens found at Berlin. Seems from description to be pale *xanthopus*.

Zollingeri, Java, Saccardo. Unknown and unknowable from such descriptions.

SECTION MELANOPUS.

Plants that have black stems are called Melanopus, but we include in this section only those with pilei that would be classed as Lentus. The soft, fleshy species are included in Ovinus, Sections 43 and 44. Others with black stems will be found in Section Petaloides, Section 23, and in Microporus, Section 45d.

49. STIPE PLEUROPODAL OR CENTRAL, RARELY LATERAL. PORES MINUTE.

VARIUS.—Pores very minute, white. Pileus dark bay to almost black, smooth. Flesh firm. Type form is common in Europe and it occurs under varying forms in many countries. The following eight could easily be considered as forms.

ALBICEPS.—Pileus white, smooth, with firm, compact, white flesh. Pores very minute, white, decurrent. Stem mesopodal, white, rarely slightly black at the very base. The stem is not always black at the base hence the plant may not be sought for in this section. Its firm flesh, small pores, and other characters bring it very close to Polyporus varius even if occasional specimens were not found showing a "black stem." The plant is rare in the United States.

ELEGANS.—This has all the characters of varius except the small size which is so constant that on this one character it is generally held to be a good species.

PICIPES.—Name applied to the black form of varius with more velvety stems. Frequent in England. In the United States this name is applied to a thin dark form of varius.

LEPRODES.—A deformed, irregular, submerismatoid form of varius. Rare in Europe and the United States. Given in Fries as a variety of Polyporus melanopus.

ADMIRABILIS.—A large, *white*, thick plant with a rudimentary stem. Very different from varius in some features but very close in the essentials. Rare, and occurs in the extreme eastern part of the United States.

BLANCHETIANUS.—For me this is a tropical, reduced form of varius. Short stem, small size, but in all essential characters it is the same as varius.

DICTYOPUS.—For me the tropical form of picipes-varius. Color *black* and it is smaller than the form of temperate regions. Usually known as infernalis of Berkeley which is the same thing. Widespread in tropical countries, Brazil, Africa, Ceylon.

PAUCHERI (Fig. 482).—A form of the preceding with striate pileus. Common in Australia and at Kew it is referred to infernalis.

MELANOPUS.—Pileus villose or rarely scaly. Growing in the ground attached to buried sticks by which habits it can be told from varius which usually grows on trunks or decayed spots of living trees. Rather rare in both Europe and the United States.

SECTION MELANOPUS.

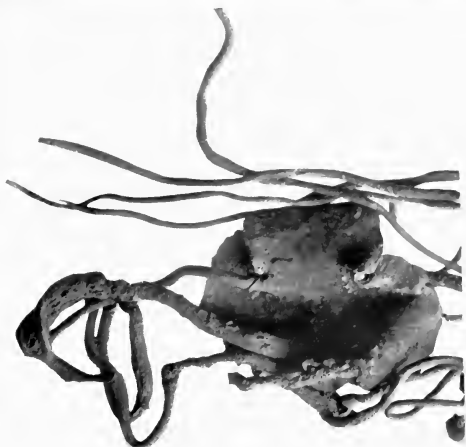


Fig. 479

Melanopus Rhizomorphus.



Fig. 480

Melanopus veluticeps.



Fig. 481

Melanopus Lepreurii



Fig. 482

Melanopus Paucheri.

SECTION MELANOPUS.



Fig. 483

Melanopus rubrocastaneus.



Fig. 484

Melanopus hemicapnodes.

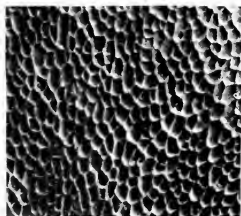


Fig. 485

Melanopus Guyanensis (with pores enlarged X6).

RHIZOMORPHUS (Fig. 479).—Produced by long, black, woody rhizomes which I judge are aerial. Known from abundant material in Montagne's herbarium from tropical America.

VERNICOSUS.—Mesopodal, black. Quite peculiar structure, having the dark hyphae prolonged into protruding pointed setae in the pores. Known from a single specimen at Kew from Brazil.

VELUTICEPS (Fig. 480).—Quite different from all others of this section, the pileus having the general appearance and color of *Polystictus perennis*. Stem black, spores doubtless white. Not related to *perennis* however. Known from one collection from Africa at Kew.

HEMICAPNODES (Fig. 484).—Slender, smooth, sometimes infundibuliform at first. The slender, black stipe is sometimes mesopodal and lateral in the same collection. Originally from Ceylon, common in Samoa and seems to occur in the East generally.

SECTION MELANOPUS.

LEPRIEURII (Fig. 481).—Entire plant including the minute pores is dark, fuliginous. Stipe mesopodal or in most of the specimens lateral. Known from very abundant collections sent Montagne from French Guiana.

HYDNICEPS.—Stipe short, rudimentary but black. The “hydroid” processes of the pileus from which the plant was named are much exaggerated. Known from three apparently undeveloped specimens at Kew, from Cuba. I should not be surprised if it develops into the section *Merisma* when it is well known.

RUBRO-CASTANEUS (Fig. 483).—Stem short, black, mesopodal. Pileus infundibuliform, reddish brown, smooth. Pores small, decurrent. Hyphae pale colored. Spores not found. This is the only truly infundibuliform species with black stem. The pileus is the same peculiar reddish color as *Polyporus virgatus*. Specimens from Malacca (Malay) at Kew.

50. STIPE PLEUROPODAL OR CENTRAL. PORES MEDIUM.

GUYANENSIS (Fig. 485).—Slender with a dark, slender stipe. Pores white, medium, favoloid in shape. Seems to be frequent in tropical America.

PODLACHICUS.—Unknown to me, but described as similar to *elegans* but *larger pores*. Rare in Europe, no doubt.

51. STIPE PLEUROPODAL OR CENTRAL. PORES LARGE. FAVOLOID.

(Probably all better classed in the genus *Favolus*.)

PUTTEMANSII (Fig. 486).—Pileus white, with dull, smooth surface. Pores large, favoloid, white. Stipe all black. Known from a half specimen at Berlin from Brazil. I have also a specimen from Rev. Rick.

WRIGHTII (Fig. 487).—Pileus white with striate surface. Pores large, white. Stipe mesopodal, black, abruptly enlarged at the base. Type from Cuba (Wright 201) but not found at Kew nor cited by Berkeley. Known to me from a specimen from Rev. Rick, Brazil, which seems to accord with the description, but of course I can not say that it is correct.

VADOSUS.—Pileus rigid, pale, with smooth or slightly virgate pileus. Stipe mesopodal, black, with a rooting base. Pores large, favoloid, shallow. Based on a specimen at Berlin, collected in Guadelupe by Duss and determined, evidently in error, as “*Favolus dermoporus*, Pers.” This may be the same as *marasmioides*, which is unknown to me.

SECTION MELANOPUS.



Fig. 486

Melanopus Puttemansii.



Fig. 487

Melanopus Wrightii.



Fig. 488

Melanopus palpebralis.

PALPEBRALIS (Fig. 488).—Pileus dark, thin, with a minutely tomentose surface. Margin ciliate with short hairs. Pores dark, favoloid. Stipe mesopodal, slender, black. Based on a specimen at Paris from French Guiana, labeled by Montagne “*ciliaris vel affinis*.” It is close to *ciliaris* but differs in its dark color and *black* stipe.

MARASMIOIDES.—Not seen by me, but it seems peculiar in its slender form and habitat (seed of *Melioma*). Perhaps it is the same as *vadosus*.

SECTION MELANOPUS.

52. STIPE LATERAL, BUT THE PILEUS IS NOT SPATHULATE. PORES MINUTE.

LATERATUS.—Pileus reniform, white, firm. Pores minute, now dark. Stipe lateral, black. Named by Persoon from a specimen from Rawak now preserved in good condition at Paris. Referred by Fries, who never saw it, to *Polyporus affinis*, to which it has no affinity, and compiled in error in Saccardo as a synonym. In my opinion it is a lateral stemmed form of *elegans* of Europe.



Fig. 489

Melanopus nephridius.

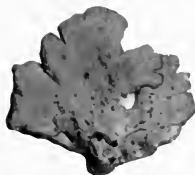


Fig. 490

Polyporus melanopus (bis).

NEPHRIDIIUS (Fig. 489).—Pileus bay brown, with a slightly scabrous surface. Stipe lateral, short, black. Pores white, minute. Known from a few collections from South America. It is a plant intermediate between this section and the section *Microporus*, but is closer to this.

GAYANUS.—Pileus rigid, firm, smooth. Context pale. Stipe black, lateral, rudimentary. Known from one collection made in Chile by Gay, which has another name, *cycliscus*.

(*Dietyopus* and *hemicapnodes* in the preceding sections sometimes have lateral stipes.)

53. STIPE LATERAL BUT PILEUS NOT SPATHULATE. PORES MEDIUM OR LARGE.

PUSILLUS (bis or tris).—A minute, little plant, known from one single specimen, less than 1 cm. in diameter, at Upsala, collected in Brazil, eighty years ago. Stipe lateral, short, round, black. Pores favoloid. Referred by Fries to his then new genus, *Favolus*, but is quite distinct from the type of plants that have since become known under that name.

SECTION MELANOPUS.

MELANOPUS (bis) (Fig. 490).—Pileus reniform, smooth. Pores medium favoloid. Stipe lateral; smooth, black. Known from two little specimens in Montagne's herbarium from South America. Classed by Montagne in Favolus but its relations are entirely with this section.

54. (PETALOIDES) STIPE LATERAL. PILEUS SPATHULATE, TAPERING TO THE STIPE.

These plants could be put in a section Melanopus of Section Petaloides with equal propriety.

GUILFOYLEI (Fig. 491).—Pileus thick, rigid, smooth, pale or yellowish. Pores very minute. Pileus tapering to a short, black stipe. Originally from Australia. Specimens at Kew from Australia, Samoa, Philippines, Malay, and Mexico.



Fig 491

Melanopus Guilfoylei.

Fig. 492

Melanopus Warburgianus.

WARBURGIANUS (Fig. 492).—Pileus thick, rigid, smooth, *dark*. Pores minute, *dark*. Stipe short, black but there is no distinct ring at the base as shown in Hennings' figure. Known from a single specimen at Berlin from the Celebes. Classed by Hennings and found in Saccardo as Fomes (sic). Murrill's Philippine references are all wrong.

XEROPHYLLUS (Fig. 493).—Pileus subreniform, but tapering to the short, black stipe. Surface strongly raised, striate. Pores minute. Known from a single specimen at Kew from New Zealand.

SECTION MELANOPUS.



Fig 493

Melanopus xerophyllus.



Fig 494

Melanopus radiato-scruposus.



Fig 495

Melanopus malnominus.

RADIATO-SCRUPOSUS (Fig. 494).—Pileus spathulate, dark brown, strongly rugulose, striate, tapering to a short, lateral black stipe. Pores small. Known only from the type specimens at Berlin from Brazil.

MALNOMINUS (Fig. 495).—Pileus spathulate, reddish brown, smooth, with crenate, lobed, thin margin, tapering to short, smooth, lateral, black stipe. Pores minute, probably white when fresh. Specimens at Paris from Mexico which had been sent to Cooke and named "Teysmanni, Berk." which does not exist, and the name is not appropriate for a Mexican plant.

SYNONYMS, REJECTED AND UNKNOWN SPECIES.

- atratus*, Mexico, Fries. No type exists.
- atripes*, Asia, Rostrup. Unknown.
- atrofuscus*, South America, Lévillé. Type inadequate. Probably only a short stemmed specimen of *lateralis*.
- Beccarianus*, Borneo, Cesati. Unknown.
- Calyculus*, South America, Patouillard. Unknown to me, but from the figure I judge it is *hemicapnodes*.
- cyathoides*, Europe, Swartz. Unknown in the museums and referred to a small form of *melanopus*.
- cycliscus*, South America, Montagne=*Gayanus* and based on the same collection.
- diabolicus* (bis), Brazil, Spegazzini. Unknown.
- dimorphus*, Malay, Cooke=*hemicapnodes* with a lateral stipe.
- fissus*, United States, Berkeley. Type inadequate. Probably *depauperate picipes* and not *fissile*.
- glabratus*, Australia, Kalchbrenner. Unknown.
- infernalis*, Brazil, Berkeley=*dietyopus*, but most of the specimens in the museums bear this name.
- Juranensis*, Brazil, Hennings (as var. of *Leprieurii*)=*Guyanensis*.
- maculosus*, Central America, Murrill. Unknown.

SECTION MELANOPUS.

- minimus, Europe, Fries. A tiny, little form of elegans. No specimens known.
- nephelodes, South America, Léveillé. No type exists. Said by Fries to be the same as infernalis.
- nigripes, Africa, Masee=hemicapnodes.
- nummularius, Europe, Bulliard=elegans.
- pertenuis, Asia, Kalchbrenner. Unknown.
- pusillus, Asia, Rostrup. Unknown to me. Said to be zoned, hence probably does not belong in this section.
- rufo-atratus, Brazil, Berkeley=rhizomorphus (sans rhizomes).
- scabellus, West Indies, Patouillard=nephridius.
- seminigrita, Brazil, Berkeley=Guyanensis.
- Strangerii, Australia, Mueller. Unknown. Seems from the description to be dictyopus.
- subelegans, West Indies, Murrill. Unknown to me. The description suggests xerophyllus or radiato-scruposus.
- tephromelas, South America, Montagne=Leprieurii.
- Teysmanni, Mexico, Cooke. (Mss.) Changed to malnominus.
- trachypus, United States, Montagne. Based on an abortive picipes.
- tubaeformis, Europe, Karsten. Evidently close to varius and given as a form in Saccardo.
- Underwoodii, United States, Murrill. I think will prove to be the same as admirabilis.
- versiformis, India, Berkeley. Based on two little specimens, one of which seems to be melanopus, the other I think is different.



Fig. 496

Petalos osseus.

ADDENDA.

NOTES. COMMENTS AND OMISSIONS.

The following points have come up since this pamphlet has been in type. We include here some comments on Romell's article on Brazilian fungi, a critical and valuable paper which we did not have at Kew, when the main portion of this pamphlet was written.

MESOPODIAL AND PLEUROPODIAL.

These terms which are really coined words, meaning central and excentric stemmed, are for the most part spelled Mesopodal and Pleuropodal in the body of the work. The correct spelling is probably Mesopodial and Pleuropodial to correspond with the word podial as spelled in the Century Dictionary.

SECTION GANODERMUS 2.

LUCIDUS.—Several collections received from C. D. Mahaluxmirala shows that this is one of the most puzzling and variable species in the tropics. The tropical form so referred are not as strongly laccate as the European form. The stem is usually shorter, thicker, and often mesopodial. It is usually pleuropodial in temperate regions. It varies in the tropics also greatly as to the color. Numerous intermediate species connect it with *Curtisii*.

SECTION AMAURODERMUS 5.

AURISCALPIUM.—A fine collection has recently been received from Gustav Peckolt, Brazil. It is evidently quite a common plant in Brazil. The stipe proceeds from a deep rooting rhizome and probably connected with a creeping rhizome, though none of these specimens show it.

Most of the specimens are "auriscalpium" in shape, though some are mesopodial. I expect in time that *Auriscalpium*, *omphalodes*, *praetervisus*, *boleticeps*, and *rufobadius* will all prove to be one and the same species.

SECTION AMAURODERMUS 5.

CHAPERI (Page 112, fig. 406).—We have recently received a specimen from Gustav Peckolt, Brazil, which is the second specimen known. The original in the museum at Paris was supposed to come from Cuba.

It has a character that I have noted in but very few species (*Polyporus vernicosus* p. 182, and *Fomes pachyphloeus* Myc. Notes Pol. Issue, p. 34). The ligneous, colored, hyphae fibrils of the pore walls are pointed on the ends and project into the pores simulating the colored setae of many species, which are called cystidia, and which are distinct from the subhymenial tissue.

SECTION AMAURODERMUS 5.

RUDIS.—Specimens received from Australia are much larger than any in the museums of Europe. One specimen had a pileus eight inches in diameter.

SECTION AMAURODERMUS 5.

VARIABILIS (cf. p. 111).—I think this is only known from the original collections of Spruce (No. 57 and 183 part) and Berkeley confused under this name two quite different species. Romell refers here and figures a plant from Brazil that must be different, first in its dark color (*atrocastaneus*). *Variabilis* is pale-colored. Second, in its much more obese habits (cf. Romell's figure, Tab. 2, f. 31, with our figure 405 of the type). Third, in the spores described as "granulis," and they are smooth as far as I can note in the type.

SECTION LIGNOSUS 10.

DEALBATUS.—Few plants have been worse confused than dealbatus. It was originally collected by Ravenel and Curtis and named by Berkeley in 1853. These types are all I have seen. (There are cotypes also in Ravenel's collection in British Museum). They are found in a "Fomes" cover at Kew, but should be classed as a Polyporus.

At the same time Berkeley named mutabilis also from Ravenel's collection. It has little resemblance to dealbatus (cfr. figs. 422 and 446), and is a thin, zonate plant, a Polystictus as classed. Ravenel distributed (Fasc. 3, No. 10), Polystictus mutabilis as dealbatus, and Berkeley, when he made his resume in Grevillea, cites this distribution as being correct. Berkeley made so many "new species" he could not remember them himself.

Dealbatus is found in Saccardo, vol. 6, p. 159, as a "Fomes," and also page 218 as a "Polystictus," both with exactly the same description, word for word, and "Polystictus" has as much resemblance to "Fomes" as a piece of paper has to a lump of coal. It is a good example of the value of our "literature."

Murrill, in his half-hour studies in the principal museums, probably never saw the type specimen, for he gives mutabilis as a synonym for dealbatus. He uses the word dealbatus in keeping with the sacred principle of priority, it having been published in a "prior" position (the previous page) in the same article. Of course, that is much more important for the purpose of a juggle than the fact that the plants have little resemblance or relation to each other, and should not be classified in the same section. Then to make the matter more binding he discovers that mutabilis and unguicularius (which no one knows anything about) and a few others form a "new genus" and takes Polyporus dealbatus as his "type species."

SECTION LIGNOSUS 10.

PAULENSIS.—In a letter just received from Bresadola, he writes me that paulensis is a young specimen of angustus. I should never suspect it and the spores, according to my observations, were not the same.

SECTION LIGNOSUS 11 C.

Context colored. Setae present.

(See Musashiensis, page 135, Fig. 436. Also remarks on page 191).

SECTION LIGNOSUS 11B.

SCOPULOSUS.—This is a marked species with its black stem and smooth pale pileus crust. It was named by Berkeley from Australia fifty years ago, and the type is in good condition although "effete." Then Reichardt published a good figure of it under the name Trametes Rhizophorae. It grows in Australia and in the East abundantly, and has been known to European mycologists from abundant collections for years. It was sent to Murrill from the Philippines in quantities, and he referred it to a "new genus" that he had discovered under the specific name anebus, to which species it has no resemblance whatever. On his second visit to Kew he probably noted that the specimens that Cooke had referred to "anebus" were badly named and he "corrected" it, this time discovering it was another "new genus" and referred it to "Warburgianus," to which species it has less resemblance than to "anebus." It is curious how much easier it is to discover a "new genus" than it is to learn an old, common and well-known species, which is abundantly represented in the museums. We have specimens from A. D. Machado, Perak; S. Hutchings, Bengal; and Bresadola, Philippines.

When in its prime the surface is smooth, but weathered specimens become scrobiculate. Such a specimen was the "type," and was named evidently from this "character." This is one of the misfortunes that plants often suffer from being named by those who have very scanty knowledge of them.

SECTION PETALOIDES 12.

OSSEUS (Fig. 496, page 188).—We have not included *Polyporus osseus* among the stipitate species, although as the pilei taper to short stem-like bases, it might be sought in this section. Its general habits of growth are imbricate, like many sessile species belonging to the section *Apus* of Fries. We know of no other species similar in this respect. *Polyporus osseus* is a rather rare plant in Europe as it is in the United States. The flesh when growing is firm and in drying becomes quite hard, hence it is not badly named. The European plant is white as far as I have seen specimens, but the American plant is gray. I have known it in America for years without a name for it, for I did not associate it with the white European species. However, Bresadola so refers my American specimens, and I believe correctly. (See Figure 496, page 188).

SECTION PETALOIDES 13.

FRACTIPES.—This has a *lateral stem* and is a *white* plant. The "type" specimen of *fractipes* may have had its stem broken, but the name has no application to the plant usually, and it seems a pity to have a plant so misnamed on account of an accidental feature of the type. It grows more common in the South, but has been found by Peck and called *Polyporus humilis*. It also reaches me from Rev. Rick, Brazil.

Polyporus Peckianus is a *yellow* plant with a *central* stem. It is very rare and I have but two collections (D. B. Griffin, Vermont, and A. S. Bertolet, Canada). It is given as a synonym for *fractipes* by Murrill, but differs entirely. He calls the plant "*fractipes* Berk." and draws the description from Peck's specimen. He puts it in the section *Merismus*, and neither *fractipes* nor *Peckianus* belongs there. One belonging to the section *Petaloides* with lateral stem, the other to *Lentus* with a central stem.

SECTION PETALOIDES 15.

MODESTUS AND RUBIDUS. The former is frequent in South America, the latter in the East, and I have been very much puzzled to decide if they are the same or different species. Both, I think, are rose-colored when fresh, but the old specimens I have seen are more brown, having lost the fresh color. Romell records both from Brazil (with different spores), but as he compares the color of *rubidus* with *vinosus* I judge the determination is doubtful. At Leiden I have seen old specimens determined as *rubidus* which are dimidiate and imbricate, but I do not know if correct or not.

Modestus is confused in the *Kunze exsiccatae*, the specimen at Kew not being the same as the type at Upsala. Berkeley at first had it right, but afterwards misled by the *Kunze* misdetermination he referred it usually to *albo-cervinus*, which is a synonym for *modestus*.

SECTION PETALOIDES 17.

MUSASHIENSIS (page 135, fig. 436).—This, I think would have been better placed in a section of *Lignosus* than *Petaloides*. It should go in Section 11c, being the only species in the section with setae. In its structure it is allied to *gilvus*, etc. My reference of Mr. Kawamura's specimen to Henning's species, on the description only is of course doubtful. The specimen was submitted to Bresadola and was unknown to him, and he probably is acquainted with *Musashiensis*.

SECTION PETALOIDES 18A.

PERVERSUS.—We have so indicated a form of *Polyporus grammacephalus*, which was collected by Copeland (No. 18) in the Philippines and recorded and distributed to three museums in Europe as being *coracinus*, as named by Mr. Murrill. This collection was probably so named by Mr. Murrill, but is quite different in its structure in having no cystidia whatever. The original *coracinus* has very peculiar cystidia, I am told by Bresadola, and is the same or close to *cinnamomeo-squamosus* as illustrated, Fig. 441. I have not seen the original of *coracinus*, and until I learned of the mistake I took these Copeland specimens in good faith.

SECTION PETALOIDES 18 C.

It develops that there are several polyporoids with very peculiar setae, as illustrated in Figures 441 and 442. The species considered in this pamphlet are *cinnamomea-squamosus* (p. 138) *russiceps* (p. 138), *megaloporus* (p. 138), and *coracinus* (p. 146, unknown to me). In addition, *Favolus princeps* of Cuba has these same peculiar cystidia and perhaps other species of *Favolus*. Bresadola is inclined to refer them all to one species. They seem different to me in macroscopic characters, though the microscopic characters are quite close.

SECTION MERISMUS 28.

DISPANSUS (Fig. 498). Pileus submerismatoid, appearing to be borne irregular from a common base. Surface smooth. Color yellowish. Pores small, colored, reddish brown (about same color as those of *Polyporus rutilans*). Context thin, the pores almost reaching the cuticle. Spores abundant, globose, smooth, $3\frac{1}{2}$ -4 mic., hyaline.



Fig. 498.

Merismus dispansus.

Type from A. Yasuda (No. 7) from Sendai, Japan.

This is quite similar in its habits to *Polyporus Wynnei* of Europe, which is the only plant to my knowledge that it suggests. Both are doubtfully included in the section *Merismus*. The Japanese plant is abundantly different from the European in its colored pores, and spore shape. We have no plant in the United States that approaches either.

SECTION MERISMUS 29.

FIMBRIATUS.—The common plant in the American tropics which has the peculiar hymenial configuration, as shown in Figure 453, has been classed in six different genera. We consider it as a degenerate type of a polyporoid. We refer it to *fimbriatus* following Bresadola, though the type specimen of *fimbriatus* at Upsala has perfect pores. Otherwise it seems to be the same to us.

SECTION PELLOPORUS 36.

ORIENTALIS (Fig. 499).—Entire plant concolorous, ferruginous brown, turbinate, tapering to a short thick stipitate base. Surface smooth, faintly zoned, minutely velutinate, soft to the touch. Context ferrugineous. Hyphae colored. Pores minute. Setae colored, pointed, straight, thickened at the base. Spores 4×5 , pale colored or sub hyaline.

Type from Jintaro Umemuro (No. 1) Akazaki, Japan.



Fig. 499.

Pelloporus orientalis.

This species is allied to *Polyporus tomentosus*, but differs in its form, setae, and surface, and has no spongy upper layer. The spores we have not found in numbers so that we are very sure about them, and possibly they are hyaline. In that case the plant in its context color, setae and spores is close to *Polyporus musashiensis* (page 135). While the plant is evidently more closely related to *Polyporus tomentosus* than to any in the section *Pelloporus*, we feel it can not be placed with *tomentosus* in the section *Spongiosus*.

SECTION PELLOPORUS 36A.

(Related to Amaurodermus).

TURBOFORMIS (Fig. 500).—Pileus depressed on top, turbinate, tapering to a short, thick stem at the base. Surface rugulose, reddish brown. Context light gilvous yellow, sublignous. Hyphea



Fig. 500

Pelloporus turboformis.

deep yellow. Pores brown, darker than the context, minute, with glancing mouths. Setae none. Spores globose, non-apiculate, deep colored, smooth, 5-6 mic. in diameter.

Type from G. H. Krumbiegel, Baroda, India.

This species is quite different from anything that I have found named in the museums. It resembles a *Ganoderma* in its general effect, but is quite different in its context color and spores. I am at a loss where to place it for it really should form a section of lignose plants close to *Amaurodermus*. However, I do not like to multiply the sections. It has a distant relationship to *Polyporus vallatus*, hence I place it (provisionally) in a related section, but according to our key characters it would be sought in *Amaurodermus*.

SECTION PELLOPORUS 36.

We have a collection from Prof. A. Yasuda (No. 12), Sendai, Japan, which is unknown to us and we believe unnamed. It seems to have an abortive and probably fictitious stipe. The color context and pores is ferrugineous. Setae none. Spores globose 4-5 white (or perhaps very pale color). We would prefer not to name it until we learn more as to its normal stipe characters.

SECTION PELLOPORUS 37C.

Context thin. Hymenium with Setae.

HAMATUS.—Mesopode, subcoriaceus, infundibuliform. Context thin (not spongy). Setae slender curved. Spores colored, elliptical, smooth, 5-6 x 8-9.

I know this only from Romell's excellent description and figure based on material from Brazil. It differs from all others of the section Pelloporus in having setae. In the nature of the setae (curved) it is close to Polyporus circinatus (p. 159) in the section Spongiosus.

SECTION OVINUS 39.

We have an unnamed specimen from Prof. Petch, Ceylon, that we would refer to this section, although it is thinner and not so fleshy as others in this section. It might be included in Lentus, although as it grows in the ground in its habits it is more allied to Ovinus. Prof. Petch tells me it is quite rare in Ceylon and grows in circles.

SECTION MELANOPORUS 44.

HARTMANNI.—The only collections are two at Kew and one recently received by me from Miss Margaret Flockton, Australia. The spores are 5 x 12, hyaline, smooth. The species is badly figured in the Handbook, as it is evidently not red as shown, but brown.

SECTION LENTUS 45 (d MICROPORUS).

INCOMPTUS.—This was given in my Synopsis as a synonym for flabeliformis, my view being based on a specimen named by Fries, which has a lateral stipe. In the sense of the figure given in Reliquiae Afzelianae it has a mesopodial stipe and is the same (and for me the correct name now) as what was called in my pamphlet Polystictus Holstii. Fries evidently did not attach any value to the mesopodial and pleuropodial characters in this section.

SECTION LENTUS 46A.

PARTITUS (cfr. p. 175).—Romell records and figures this plant from Brazil. He records the spores as elliptical, "hyaline-lutcolae" 7 x 11-12.

SECTION MELANOPORUS 54.

GUILFOYLEI AND WARBURGIANUS.—These two species are not as close as might be inferred from our figures. Guilfoylei is a pale colored plant and Warburgianus is almost black. Merrill refers Guilfoylei as a synonym for elegans, which is almost as bad a reference as his determination of scopulosus, first as anebus, then as Warburgianus. The five species Guilfoylei and elegans, anebus scopulosus and Warburgianus, which he has muddled have no resemblance and little relation one to the other.

INDEX SYNONYMS, MISTAKES, ETC.

Species which in my opinion, are synonyms, errors, mistakes or blunders, species that rest on some old vague description of which no material exists, also the species that have not been seen by me and of which no specimens have been found in the principal museums, together with the country from which they have been exploited, and the names of those who are responsible for this work.

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LETTER No. 25.

List of specimens received at Paris from countries (other than the United States) from November, 1908, up to my departure for England, January 12, 1909. At the time this letter is issued I am at Kew Gardens, England, but I trust my correspondents will continue to send their packages to my Paris address, and I will advise them in regard to them as soon as they come into my hands.

New Species.—While I think there are very few "new species" in Europe or the United States, they are constantly being received by me from foreign countries. I do not claim to be able to recognize them, however, excepting in the Gastromycetes, which I have studied specially for the past six or eight years with a view to learning the *old* species. As I do not make a practice of naming and "discovering" new species excepting when working on a monograph or other systematic work, I much prefer that my correspondents who send in new species should name and describe them themselves. In these Letters I indicate the unnamed species that reach me, and if the senders desire to publish them, it is perfectly agreeable to me. I shall not do it unless it comes in connection with systematic work. Isolated descriptions of new species as usually published are very much of a form, and not one out of ten can be recognized from the publication. At the same time we have to have names for plants, but I would much prefer that some one else would propose them when I have occasion to use them.

Please note my recent change of address in Paris, which is now,

C. G. LLOYD,

January, 1909.

63 rue Buffon,

Paris, France.

BARBIER, MAURICE, France:

Trametes hispida (?).

BERNARD, DR. CHAS., Java:

Scleroderma (unnamed). Peridium *bright yellow*, thin, smooth, with a short, rooty base. Gleba lead color. Spores small, 5-6 mic., *very slightly rough*. This is the only *bright yellow Scleroderma* I ever saw.—*Scleroderma Geaster*, yellow form, (very doubtful or new species). It has the general appearance of being unopened *Scleroderma Geaster*, but is immature, and of course we can not say that it would dehiscence like *Scleroderma Geaster*. The peridium is thinner than the European plant and when broken is *bright yellow*.—*Scleroderma verrucosum*. Practically the same plant as the European form.—*Cyathus sphaerosporus* (or very close). Spores 16 x 18, subglobose.—*Scleroderma nitidum*—*Cyathus Montagnei*, although I have never studied the type, I do not question that it is also *Cyathus byssisedus* which Junghuhn figured from Java. Spores are 12 x 20.—*Cyathus Montagnei*. Same as the preceding, but the cups are darker.—*Cordyceps* (sp.)—*Xylaria* (?) very curious, but unknown to me.—*Hypocrea* (sp.).

BONNET, PAUL, France :

Polystictus perennis (undeveloped).—*Tremella frondosa*. Fresh specimens, and the first I have seen.

BRACE, L. J. K., Bahamas :

Cyathus pallidus, spores in this collection 10 x 12—*Cyathus* (unnamed). It belongs to Section 4 of "The Nidulariaceae," but unlike all others of this section it does not have *pale* cups, but *dark* ones. Spores are 16 x 20.—*Lenzites striatus*—*Geaster velutinus* (form). It is exactly the same as Plumier's old figure on which Fries based *Geaster saccatus*. Not the same, however, as the plant so generally known in temperate regions, nor I think as the "type" at Upsala.—*Guepinia spathulata* (or very close)—*Pyrenomycetes*—*Clathrus Americanus*, a new species that will be published shortly in a synopsis on which I am at work, of the phalloids of the world. I have received this same plant before, also a photograph of it from Rev. A. Schupp, Brazil. It is of the same general form and size as *Clathrus pusillus* of Australia, but has the back of the arms creased.—*Simblum* (sp.) Probably small *S. sphaerocephalum*.

BRANDIS, REV. E., Bosnia :

Panis rudis—*Lenzites saepiaria*—*Pleurotus sapidus*—*Polystictus hirsutus*—*Fomes pinicola*—*Polystictus pergamenus*—*Polystictus versicolor*.

BUTIGNOT, DR., Switzerland :

Polyporus. Something unique and rare. I do not know it, and have never seen it in any of the museums. I suspect that it is *Polyporus corrugis*, but it is not the plant that I have received from a correspondent under this name.

CEPÉDE, C., France :

Bovista plumbea.

DESSENON, MONSIEUR. France :

Trametes Bulliardii—*Fomes Euonymus*—*Trametes gibbosa*—*Daedalea unicolor*—*Polystictus zonatus*. By French mycologists usually determined as a form of *versicolor*.—*Polystictus versicolor*—*Polyporus adustus*—*Lenzites betulina*.

GALLAGHER, W. J., Malay States :

Scleroderma (?) immature. No spores found. The peridium is much more yellow than any European species.

HARIOT, P., France :

Podaxon Farlowii (from Mexico.)—*Polyporus corruscans* (on pine ?) Sent to Bresadola, who referred it to "*Pol. Friesii*, Bres." *Cystidia* none. Spores *numerous*, colored, $4\frac{1}{2} \times 6$, smooth. Probably the same as I got in Sweden, and, while the man who brought it to the museum stated it was found on pine, that is dubious.—*Polyporus Braunii*, Cherbourg in hothouse. This species introduced from some tropical country is well established in hothouses in Europe.—*Fomes officinalis*, from the Hautes Alpes, on *Laricis*. A fine specimen of a rare species.—*Hexagona Dybowskii*, from the Congo—*Ganoderma colossus*. This species which is said to be frequent in Africa has other

names, but having studied the type at Upsala I feel sure of its identity as above.—Gyrodontium (viz. Hydnum with colored spores) species unknown, from Cuba.—Fomes robustus, on oak, near Paris. I am told this is what is called igniarius in France.—“Fomes Hartgii,” co-type, but the same as Fomes robustus, except as to host.—Lenzites tricolor.

JAAP, PROFESSOR OTTO, Germany.

Poria calcea (as labeled)—Polyporus leucomelas—Lenzites saepiaria—Poria rancida (?)—Poria rhodella (?) on Fagus—Polyporus amorphus (resupinate)—Poria rhodella (?) on Salix—Polyporus brumalis.

KLINCKSIECK, PAUL, France.

Polyporus euticularis—Polyporus radiatus—Polystictus pergamenus (From Mr. Jahandiez, Carqueranne).

LLOYD, DR. F. E., Mexico.

Battarrea Digueti (cfr. Tylostomeae p. 7, pl. 75). A number of fine specimens, every one with the peridium attached, which is the character of this species, if it has any.

LUDWIG, MONSIEUR, France:

Trametes (resupinate)—Irpex deformis, also “deformed”=Irpex paradoxa—Granularia (sp.)—Sebacina (?)—Helicobasidium purpureum (teste Patouillard).—Fomes robustus, on oak. M. Ludwig tells me it is frequent around Paris. The French botanists call it Fomes igniarius, but it has context of a different color.—Fomes igniarius (on poplar).—Trametes Bulliardii, or as we would call it in America, Daedalea confragosa, but we do not have this deep red form, called Trametes Bulliardii in Europe.—Poria radula, and two Porias unknown to me.

MASSALONGO, PROFESSOR C., Italy:

Polyporus rutilans (rare in Italy)—Polystictus versicolor (very dark form)—Hirneola auricula-Judae.

MILLE, REV. L., Ecuador:

Lycoperdon polymorphum—Bovista nigrescens—Calvatia lilacina (form). A marked form and entitled to a name, and Spegazzini I think has a name for it. It has no sterile base. Spores are small, 4-5 mic. and not strongly rough. Color of the gleba dark purplish. It is close to what we call var. occidentalis in the United States.—Catastoma, called Catastoma Pila (mss.) in the United States, but never described. The spores of these South American plants are not so strongly pedicellate as our plant, but I think the same thing. I have also seen the same plant collected by Robert E. Fries in northern Argentina.—Catastoma circumscissum. This has the general appearance of being C. subterraneum, but has small spores.

NAVAS, REV. L., Spain:

Paxillus pannoides, on timbers in a mine.

O'CONNOR, CHAS. A., Mauritius:

Calvatia Gardneri, beautiful specimen.—Cyathus Berkeleyanus. Spores 5 x 8 to 6 x 12. This species corresponds to Cyathus striatus of Europe, excepting its small spores.—Lycogala Epidendrum—Cyathus triplex (cfr.

Nidulariaceae p. 23) Spores 12×20 .—*Cyathus Poeppigii*, I find no spores, but do not question the species—*Cyathus stercoreus*, small-spored form. Spores globose, 20 mic. in diameter.

PATOUILLARD, PROFESSOR N., France:

Gautieria morchelliformis (from the Jura.)

PIERRHUGUES, DR., France:

Fomes rubriporus, on *Quercus*—*Fomes pomaceus*, on *Prunus*—*Fomes pinicola*, on *Pinus pineo*—*Trametes hispida*, on *Populus*—*Polyporus cuticularis*, on *Quercus*—*Polystictus perennis*, on burnt ground—*Fomes* (unknown to me) on *Laurus*, at Toulon.

READER, F. M., Victoria:

Lycoperdon nigrum (cfr. *Lyc. Aust.* p. 30)—*Stereum hirsutum*—*Morchella conica*—*Stereum* (sp.) Section *Podosecypha*—*Geoglossum*, belongs to the section with black clubs and hyaline spores. No species of that section is included in the Australian Handbook—*Lysurus* (unnamed species) sent in formalin. It is quite different from anything known, having a *short*, quadrangular stem and an arm at each corner. I hope Mr. Reader will be able to secure a photograph of it. I have labeled it (ad interim) *Lysurus brevipes*, but should be quite glad to adopt another name if Mr. Reader will publish a good account of the phalloid and name it.

ROLFE, F. W., England:

Scleroderma aurantium.

TEPPER, J. G. O., South Australia:

Clathrus gracilis, the most frequent phalloid in Australia—*Scleroderma aurantium*—*Polysaccum pisocarpium*—*Catastoma hyalothrix* (cfr. *Lyc. Aust.* p. 27). I think this is the first time the species has reached me.

VAN BAMBEKE, PROF. CHAS., Belgium:

Lycoperdon umbrinum—*Polyporus biennis*—*Polyporus radiatus*—*Daedalea unicolor*—*Ceriumyces albus*.

WOULFF, E., Austria:

Fomes fomentarius—*Trametes* (unknown to me) close to *pini*, I think, but has small pores. Similar setae, however. Spores hyaline. On *Picea*.—*Polyporus pubescens* (?)—*Irpex lacteus*—*Trametes odorata*—*Lycoperdon pratense*—*Trametes trabea*, in the sense of Bresadola.—*Polyporus* (unknown to me)—*Scleroderma verrucosum*—*Polystictus hirsutus*—*Polyporus fumosus* (?)—*Polyporus montanus*. The first specimen I ever saw. Spores globose, 6–7 mic., hyaline, echinulate. A good species, and the only one in Europe known with such spores. It is close to *Polyporus Berkeleyi* of the United States.—*Stereum hirsutum*.

LETTER No. 26.

Kew Gardens, England, Jan. 1909.

List of specimens from the United States and Canada that were sent to my address at Cincinnati, Ohio, and shipped to me at Paris, France, December, 1908.

We thank our many friends for the liberal collections of polyporoids during the season of 1908. It is only by the handling of an abundance of material that anything approximating the truth can be learned concerning the fungi. The mistakes and blunders of mycology (and a large part of the published accounts fall under that head) are largely due to inadequate material and opportunities, supplemented by the personal vanity of those who like to see their names in print. The names of specimens used in this Letter are according to the usual nomenclature of American mycology. They are in keeping with the traditions of the subject, but as often emphasized in previous Letters, I claim no critical knowledge of fungi except as to *Gastromyces*.

C. G. LLOYD,

Court and Plum Sts.,

Cincinnati, Ohio.

BARTLETT, H. H., Georgia:

Polyporus gilvus—*Polystictus pergamenus*—*Polystictus pergamenus* var. *laceratus*—*Polystictus versicolor*—*Lenzites corrugata*—*Lycoperdon fuligineum*, rare and of a southern distribution only.—*Lycoperdon gemmatum*—*Stereum bicolor* (fine specimens)—*Stereum complicatum*—*Lenzites betulina*.

BATES, REV. J. M., Nebraska:

Polystictus cinnabarinus—*Lenzites saepiaria*—*Panus rudis*—*Lycoperdon cepaeforme*—*Fomes pomaceus*—*Cyathus stercoreus*—*Dacdalea confragosa*—*Panus*?—*Lycoperdon umbrinum*.

BRENCKLE, DR. J. F., North Dakota:

Secotium acuminatum, fine specimens—*Bovistella* (cfr. *dealbata* and Letter No. 20)—*Calvatia lilacina*, var. *occidentalis*—*Lycoperdon* (unnamed). It belongs to the polymorphum group, having the same capillitium and peculiar sterile base. It differs from all named species of this group, with its generally obese form and distinctly rough spores. Some of the specimens have "soldered" warts which, however, I think are an atrophied condition.

BROWN, CHAS. E., Wisconsin:

Geaster hygrometricus—*Scleroderma flavidum*—*Polyporus*, on white oak, unknown to me.

CLUTE, W. N., Illinois:

Geaster hygrometricus—*Trametes hispida*—*Trametes hispida* (thin form)—*Polyporus Spraguei*—*Polyporus* (unknown to me. Perhaps a form of *Spraguei*)—*Secotium acuminatum*—*Geaster triplex*—*Scleroderma aurantium*—

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Scleroderma tenerum—*Lenzites saepiaria*—*Polystictus cinnamomeus* (Pol. Issue page 6. I am beginning to doubt the reference of our American plant to the European species. I do not find exactly the same in Europe. It is *Polystictus parvulus* of Klotz, certainly!)—*Fomes Everhartii*—*Lycoperdon subincarnatum*—*Crucibulum vulgare*—two *Pezizas* unknown to me—*Daedalea confragosa*—*Tremella foliacea*. I am well acquainted now with this species in Europe. I think Mr. Clute's specimens are the same, but would not be sure without a comparative study. It is not a frequent plant in the United States.

DAVIS, SIMON, Massachusetts:

Cyclomyces Greenii. Formerly reputed to be a very rare plant, but it has reached me a number of times.—*Hydnum imbricatum*—*Stereum fasciatum*—*Polystictus cinnabarinus*—*Hydnum repandum*, form *rufescens*—*Daedalea confragosa*, trametoid form—*Hydnum* (unknown to me)—*Polyporus rutilans*—*Hydnum adustum*—*Polyporus aurantiacus* "on maple." I thought it only grew on hemlock.—*Polystictus cinnamomeus*—*Polyporus elegans*—*Polystictus versicolor* (pale form)—also four collections of polyporoids unknown to me.—*Polyporus brumalis*—*Polyporus*, unknown to me, close to *gilvus*, but no "setae."—*Polyporus admirabilis*. This specimen is firmer and harder than Professor Peck's specimen as I remember it, and I am not sure it is the same, but very close.—*Polyporus carneus*. In my opinion not the same as *Fomes roseus* of Europe, many "authorities" to the contrary notwithstanding.

FISHER, G. C., Ohio:

Stereum rubiginosum—*Polystictus conchifer*—*Polyporus adustus*—*Fomes Ohiensis*—*Panus rudis*.

FISHER, G. C., New York:

Polystictus cinnabarinus—*Stereum ochraceo-flavum*—*Irpex cinnamomeus*—*Clavaria fusiformis*—*Daedalea quercina*—*Stereum sericeum*—*Scleroderma aurantium*—*Fomes leucophaeus* (brown)—*Polyporus Spraguei*—*Exidia glandulosa*—*Polyporus pocula*. The smallest *Polyporus* known. This was on cherry. Its usual host is chestnut-oak.—*Fomes rimosus*—*Geaster hygrometricus*—*Polyporus betulinus*—*Polyporus* (sp.)—*Polystictus pergamenus*—*Polystictus versicolor*—*Daldinea concentrica*—*Daedalea confragosa*—*Polystictus* (cfr. *hirsutululus*)—*Favolus Europaeus*, form *microporus*—*Cantharellus cinnabarinus*.

FOWLER, JAMES, Canada:

Lenzites saepiaria—*Polystictus pergamenus*—*Lycoperdon subincarnatum*—*Polyporus* (species unknown to me).—*Polyporus Schweinitzii*—*Lentinus lepideus*.

GARRETT, A. O., Utah:

Morchella (cfr. *conica*)—*Polyporus alboluteus*.

GOESSEL, CHAS., Wisconsin:

Daldinea concentrica.

HILL, OSCAR, Massachusetts:

Hydnum graveolens.

HONE, DAISY M., Minnesota :

Phlebia rubiginosa—*Fomes salicinus*—*Polyporus gilvus* (?) "on living lilaes, killing the branches." These specimens are black on top. I find no setae on these, and the determination is doubtful—*Fomes Everhartii*—*Stereum complicatum*?—*Bovista plumbea*—*Polyporus adustus*, resupinate—*Polyporus* (cfr. *arcularius*)—*Lenzites betulina*—*Polystictus conchifer*—*Boletinus porosus*—*Geaster Smithii*, the second collection made in the United States. The first was from Florida.—*Geaster limbatus*, tending toward *rufescens*—*Calvatia lilacina*—*Bovista pila*—*Fomes leucophaeus*, a brownish form tending toward *applanatus* of Europe, but much harder than the European species.—*Secotium acuminatum*—*Fomes leucophaeus* (typical)—*Polyporus Schweinitzii*—*Lenzites vialis* (or *trabea*, teste Bresadola)—*Polyporus adustus*—*Fomes pinicola*—*Poria tulipifera*—*Polyporus gilvus* (unusually thick form)—*Stereum tabacinum*—*Fomes fomentarius*—*Polyporus picipes*—*Fomes*, unknown to me (cfr. *laevigatus*)—*Poria*, unknown to me—*Fomes conchatus*—*Polystictus pergamenus* (rosette form)—*Polystictus versicolor*—*Irpex lacteus*—*Daedalea confragosa*—*Polyporus carneus*—*Polyporus* "resinosus"—*Daedalea unicolor*—*Fomes ribis*—*Stereum fasciatum*—*Fomes leucophaeus*—*Polystictus velutinus* (true, I think)—*Polyporus*, something very peculiar, but entirely unknown to me.—*Polyporus adustus*, a thick velutinate form—*Lycoperdon piriforme*—*Lycoperdon nigrescens* (?)—*Lycoperdon Wrightii*—*Polyporus resinosus*—*Fomes leucophaeus*.

JACKSON, H. S., New Jersey :

Geaster hygrometricus.

LANE, R. H., California :

Bovista plumbea.

LANGTON, THOMAS, Canada :

Polystictus hirsutus—*Polystictus versicolor*—*Polystictus pergamenus*—*Irpex lactea* (fine specimen)—*Daedalea unicolor*—*Lenzites vialis*—*Stereum sericeum*—*Phlebia radiata*—*Lenzites saepiaria*, trametoid form—*Stereum rugosum* (?)—*Daedalea confragosa*—*Polyporus albellus*—*Polyporus gilvus*—*Polyporus rutilans*—*Polyporus betulinus*—*Polyporus adustus*—*Favolus Europaeus*—*Polyporus pubescens* (?)—*Polyporus elegans*—*Panus stipticus*—*Fomes nigricans*?—*Xylaria polymorphum*—*Fomes pinicola*—*Schizophyllum commune*—*Hydnum* (sp.)—*Hydnum aurantium*—*Lenzites betulina*—*Daldinea concentrica*—*Polyporus distortus*—*Polyporus radicans*—*Thelephora intybacea* (?)—*Daedalea confragosa*—four *Myxomycetes* and two *Hypoxylon* species unknown to me.—*Discomycetes*, unknown to me.

MARSH, JOSEPH W., Oregon :

Bovista pila—*Lycoperdon cepaeforme*—*Lycoperdon subpratense*.

NOBLE, MRS. M. A., Florida :

Trametes hydnoides.

RICKER, P. L., Washington, D. C. :

(Specimens from various localities.) *Polystictus perennis*—*Polystictus hirsutus*—*Stereum versicolor*—*Polyporus arcularius*—*Stereum* (Hym.) *Curtisii*, as labeled—*Poria subacida*—*Irpex lactea*—*Hydnum Auriscalpium*—

Pleurotus nidulans—*Marasmius rotula*—*Stereum rufum*, as known to Fries. In America it is called *Hypocrea Richardsoni*, *Corticium pezizoideum* and *Tubercularia pezizoidea*.—*Daedalea unicolor*.

SETCHELL, W. A., California:

Elasmomyces russuloides (type specimens.)

SMITH, T. L., Massachusetts:

Polyporus elegans—*Polystictus pergamenus*—*Stereum tabacinum*—*Polystictus* (unnamed, I think). Close to *Pol. cuticularis*, *Pol. Issue*, page 12.—*Fomes leucophaeus*, typical. In my opinion very different from *Fomes applanatus* of Europe—*Polyporus Schweinitzii*—Unknown to me. I have collected the same thing in Canada, but never found any hymenium.—*Polystictus cinnabarinus*—*Trametes* (sp. unknown to me)—*Irpex cinnamomeus*—*Fomes fomentarius*—*Fomes connatus*—*Paxillus Curtisii* (illustrated by Atkinson as a "new species," *Paxillus corrugatis*)—*Polyporus radiatus*—*Polyporus aurantiacus*, a rare plant—*Geoglossum hirsutum*—*Poria violacea* of Fries!! (= *Merulius Ravenelii* of Berkeley and *Poria taxicola* of Bresadola)—*Polystictus velutinus* (true, I think)—*Poria* (close to "obliqua" of U. S., not of Europe)—*Daedalea confragosa*—*Polyporus carneus* of the U. S. Professor Peck is surely right. It is quite different from *Fomes roseus* of Europe, notwithstanding "authorities" to the contrary.—*Polyporus abellus*—*Daedalea unicolor*—*Poria tulipifera*—The following eight species were named by Rev. Bresadola: *Hydnum caeruleum*—*Hydnum suaveolens*. These had an even top. As I have observed it in Europe it is colliculose—*Hydnum fuligineoalbum*—*Hydnum scobiculatum*—*Hydnum ferrugineum*—*Hydnum aurantiacum*—*Peniophora aurantia*—*Peniophora incarnata*.

STERLING, E. B., New Jersey:

Mr. Sterling is my most liberal correspondent. He sends specimens in great variety and quantity.

Thelephora Schweinitzii—*Thelephora merismatoides*—*Sebacina in crustans*—*Polyporus hispidus*, on black oak. A rare plant in northern United States, and this is the first time we have received it excepting from Florida.—*Calvatia rubro-flava*. Mr. Sterling finds it in a "wild" situation. It usually grows only in cultivated ground.—*Thelephora vialis*—*Hydnum adustum*—*Hydnum*, related to *adustum*, but surely different. A new form or a "new species" I think.—*Hydnum velutinum*—*Polyporus Curtisii*—*Trametes* (sp. unknown to me)—*Irpex* (cfr. *deformis*)—*Hypoxylon* (sp.)—*Stereum complicatum*—*Fuligo septica*—*Polystictus hirsutus*, abnormal—*Irpex lactea*—*Irpex cinnamomeus*—*Favolus Europaeus*—*Pleurotus nidulans*—*Leotia lubrica*—*Polystictus conchifer*—*Polystictus* (cfr. *focicola*)—*Daedalea quercina*, a liberal collection—*Polyporus frondosus*, very fine specimens—Many *Clavarias*, not determinable by me—*Polyporus*, species unknown to me, but interesting. A large number of specimens in addition to these, sent by Mr. Sterling, will be acknowledged in the next letter.

LETTER No. 27.

List of specimens received since last reported. My best thanks are extended to those who continue to send me specimens.

January, 1910.

C. G. LLOYD,
63 rue Buffon,
Paris, France.

ALLEN, D. B., England:

Fomes connatus, on ash.

ARNOULD, MONSIEUR, France:

Lenzites betulinus—also three *Hydniums* unknown to me.

BECKER, DR. H., South Africa:

Phellorina strobilina (cfr. Australian *Lycoperdaceae*, p. 10). This is the first record of this species other than the Australian, and it is a rare species in Australia.—*Geaster saccatus*—*Geaster pectinatus*—*Cyathus vernicosus*—*Polyporus*, species unknown to me, but close to *brumalis*, though quite distinct.

BERNIN, A., Monaco:

Polyporus lucidus—*Fomes applanatus*—*Daedalea quercina* (abnormal).

BIERS, MONSIEUR, France:

Stereum hirsutum—*Fomes annosus*—*Fomes fomentarius*—*Polyporus adustus*—*Polyporus fragilis*—*Fomes pomaceus*.

CAMUS, F., France:

Scleroderma Geaster, unopened, with a thick, *smooth* peridium. I think the peridium is usually rough.

CAVANAGH, B. S., India:

Lentinus (sp.) *Polyporus lucidus* (typical form)—*Polyporus* (unnamed). I was sure when I received it that it could be nothing known unless it was *Polyporus vallatus*, from India, at Kew. I have since compared it with *Polyporus vallatus* and it is quite different.

CÉPEDE, CASIMIR, France:

Polystictus versicolor—*Lenzites betulina*—*Stereum hirsutum*.

CHEESMAN, W. N., Canada:

Fomes pinicola (?? young)—*Polyporus radiatus* (?? It has setae and is too brightly colored)—*Lenzites saepiarla*?—*Fomes salicinus*? *Polystictus* (cfr. *zonatus*)—*Polyporus distortus*, approaches close to *rufescens* of Europe—*Poria viticola*?

CROSSLAND, CHARLES, England:

Polyporus albidus, nice specimen on *Abies*—*Polyporus varius*—*Polyporus rutilans*.

DESSENON, PROFESSOR, France:

Daedalea quercina—*Polystictus versicolor*—*Merulius tremellosus*—*Daedalea rufescens*, fresh! Usually classed as a *Polyporus*, but the hymenial form of this specimen is a *Daedalea*.—*Fomes applanatus* (young)—*Polystictus hirsutus* (rare near Paris)—*Polyporus spumeus*—*Fomes ribis*—*Lenzites saepiarla*—*Lenzites betulina*.

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DUMÉE, MONSIEUR, France:

Daedalea confragosa, very peculiar form—Fomes annosus—Fomes connatus—Polyporus adustus—Trametes Bulliardii—Polyporus Schweinitzii—Trametes gibbosa—Fomes applanatus—Fomes igniarius—Fomes fomentarius—Fomes pinicola—Fomes robustus, usually misdetermined in France as igniarius.—Daedalea quercina—Daedalea quercina, polyporoid form called Trametes hexagonoides by Quélet and Fries.—Polyporus, sp. unknown to me—Polyporus brumalis—Polyporus stipticus—Polyporus lucidus—Solenia anomala—Polyporus varius—Fomes fraxineus—Polyporus rutilans—Polyporus sp. unknown to me—Irpex fusco-violaceus—Pachyma Cocos (from China)—Polyporus betulinus—Poria (sp.)—Xylaria polymorpha—Panus torulosus—Daedalea unicolor—Fomes laccatus (called resinous in Quélet)—Cyphella (?)—Polyporus amorphus, the brightest yellow form I ever saw.—Poria contigua, exactly agreeing with Persoon's type at Leiden.—Trametes hispida, closely approaching Bulliard's figure on which "Gallica" was based.—Fomes nigro-laccatus (as labeled in museum at Paris)—Fomes (sp. unknown to me.) The last two specimens are from some foreign country.

DUPONT, E., Reunion Island:

Lycoperdon piriforme.

FROGGATT, WALTER W., Solomon Islands:

Calvatia. Probably a new species. It has broad, flaccid, septate, hyaline capillitium and is the first Calvatia I have noted with such a character. It is close to Calvatia candida, which is common in Australia and may be a form of it, although this species according to my records does not have this broad capillitium.—Lycoperdon piriforme? Lycoperdon (unplaced by me).

GIBBS, THOMAS, England:

Polyporus picipes (as labeled, but I doubt if it is different from varius)—Polyporus adustus (pale form)—Polyporus varius—Polyporus frondosus.

GRELET, L. J., France:

Daedalea quercina—Polysaccum crassipes, a fine, large specimen measuring 26 cm. high and the stem 6 cm. thick.

HAGLUND, ERIK, Sweden:

Trametes odorata—Poria laevigata—Poria eupora—Poria vulgaris, on frondose wood, not I think the true which is a pine wood species.—Polyporus caesius—Polyporus vulpinus, fine specimens. Rare. It develops however, that it is the same as Polyporus rheades of Persoon's herbarium.—Polyporus destructor (as named, unknown to me)—Polystictus zonatus—Merulius serpens (so labeled).

HARIOT, P., France:

Lenzites repandus (from French Guiana)—Lentinus Tuber-regium (from Madagascar)—Trametes hispida (from southern France). A most rare form with *yellow context*. It was so referred by Professor Patouillard, which I was at first inclined to doubt, but on comparing it with the ordinary form I think it is correct. It is a color form. It has no special name, I think, though well entitled to one.—Polyporus brumalis (?) (France).

HUTCHINGS, S., Bengal:

A nice collection of tropical species of much interest to me. *Polystictus sanguineus*—*Polystictus flabelliformis*—*Polystictus xanthopus*—*Polystictus gallo-pavonis*—*Trametes Mülleri*—*Lenzites repanda*—*Polyporus* (unknown to me but close to *gilvus*)—also two *Trametes* and two *Lenzites*, species unknown to me.

JAHANDIEZ, M. E., France:

Polystictus pergamenus—*Polyporus lucidus*—*Polystictus hirsutus*.

JARVIS, E., Queensland:

An unnamed species of *Bovistella* and an interesting addition to this genus. It has separate capillitium and *apiculate* spores, the first species I have seen that does not have pedicellate spores. I have labeled it *Bovistella pusilla*.

LIND, J., Denmark:

Fomes robustus—*Poria contigua* (so named).

MAIRE, PROFESSOR R., France:

Polystictus perennis—*Daedalea unicolor*—*Polyporus radiatus*—*Polyporus spumeus*—*Polyporus amorphus* (old?)—*Polyporus stipticus*—*Polyporus fumosus* (old) *Polyporus fumosus* (young)—*Fomes euonymus*.—Also from Sweden, *Polyporus tephroleucus* (?)—*Polyporus* (sp.?)—*Polyporus pubescens* (?)

MANGIN, PROFESSOR, France:

From the exposition at Paris, 1909. *Polyporus leucomelas*. Exactly agreeing with Gillet's figure. This is somewhat different from the form I have collected in Sweden, as shown in Boudier's recent figure, and raises the question if there are not two forms included in *leucomelas*.—*Geoglossum glabrum*—*Lenzites tricolor*—*Polyporus Wynnei*, the first fresh specimen I have ever seen. I was unable to name it and submitted it to Rev. Bresadola. *Polyporus Wynnei* in my opinion has no relation to *Polystictus abietinus* as found in Fries, nor to *Polyporus fragillis* as found in Quélet. I would place it in the section *Merisma*.

MASSALONGO, PROFESSOR C., Italy:

Calvatia caelata (smooth form)—*Lycoperdon pusillum*—*Tylostoma mammosum*—*Lycoperdon atropurpureum* (globose form)—*Lycoperdon spadicum*—*Lycoperdon* (cfr. *nigrescens*).

O'CONNOR, CHARLES A., Mauritius:

Geaster subiculosus—*Simblum periphragmoides*, alcoholic specimen and sketch. Mauritius is the original station for *periphragmoides* ("type locality" as our Kunzeite friends call it.) However, these specimens have the shape on which *Simblum Texense* was based and tend to the conclusion that *Texense* is the same thing as *periphragmoides*.—*Clathrus Fischeri*, alcoholic specimen and color notes which, for this time at least, place *Fischeri* on a firm basis as a valid species. It was not recognized as "good" in my recent Synopsis on account of the inadequate "type" from which little can be told. *Clathrus Fischeri* seems to be exactly the same plant as *Clathrus gracilis*, so common in Australia, with this difference that

the African plant is yellow and the Australian is white. While we do not hold that a color distinction alone makes a valid species, we do so maintain if it is based on a geographical difference. Unless it is shown that white species occur with the yellow in Africa, or yellow specimens with the white in Australia, we shall hold that they are distinct.

PANAU, CHARLES, France:

Trametes hispida—*Lenzites abietinus*—*Lenzites saepiaria*—*Polyporus fumosus*—*Polyporus adustus*—*Merulius tremellosus*—*Polyporus fragilis* (or *mollis*).

PATOUILLARD, PROFESSOR N., France:

Mitremyces Le Ratii, co-type from New Caledonia.

PIERRHUGUES, DR., France:

Fomes torulosus. Fine specimen on *Laurus nobilis* at Toulon. Around Paris it is generally on oak. Usually known in France as *Fomes rubriporus*, but it has recently developed that it is Persoon's species as abundantly preserved in his collection—*Polyporus squamosus*, on oak, Hyères, France.—*Polyporus triqueter* (in sense of Romell).

RICK, REV. J., Brazil:

Laschia pezizoidea—*Laschia saccharina* (many collections)—*Poria carneo-pallens*—*Calvatia* (cfr. *craniiformis*)—*Geaster pectinatus*—*Campanella pezizoidea* (labeled by Rev. Rick "*Merulius pezizoides*, Speg." but it belongs to Henning's genus.)

RODRIGUEZ Y LOPEZ NEYRA, DR. M., Spain:

Polystictus versicolor—*Polystictus hirsutus*—*Trametes pini*—*Fomes annosus*—*Polyporus lucidus*—*Polyporus sulphureus*—*Stereum hirsutum*—*Trametes hispida*.

ROUSSEAU, MADAME, France:

Polyporus adustus.

TURNER, MISS E. J., Australia:

Geaster saccatus—*Polystictus oblectans*, if really different from *cinnameus*. These are very close to the American plant.—*Thelephora* (sp.)—*Stereum hirsutum*—*Polystictus sanguineus*—*Auricularia auricula-judae*—*Hydnum* (sp.) fragrant.

USSHER, C. B., Straits Settlements:

Clathrus multicolor, with photograph and color sketch. This is a color form of *Clathrus indusiatus* (cfr. Synopsis, p. 20.)

VAN BAMBEKE, PROFESSOR CHARLES, Belgium:

Daedalea unicolor—*Polyporus lucidus* (sessile)—*Daedalea quercina*—*Fomes connatus*—*Poria versipora*.

WASTENEYS, H., Australia:

Calvatia lilacina—*Lepiota procera* (or close).

WILSON, REV. JAMES, Australia:

Morchella conica.

Specimens received from Europe and foreign countries since last report.

August, 1910.

C. G. LLOYD,
63 rue Buffon,
Paris, France.

ACLOQUE, A., France:

Tylostoma mammosum—*Bovista nigrescens*—*Polyporus squamosus*—*Polystictus versicolor*.

ALLEN, W. B., England:

Fomes amosus (very doubtful, not developed).

de BELLAING, J., England:

Polyporus betulinus.

BECKER, DR. H., South Africa:

Mycenastrum Corium—*Geater plicatus*. Surely only a form of *Geater pectinatus*.—*Podaxon carcionalis*—*Stereum* (cfr. *versicolor*)
Scleroderma verrucosum—*Psora* (sp.) of lichen.

BERNARD, DR. CH., Java:

Ascroe arachnoidea (alcohol)—*Simblum gracile* (alcohol) —
Jansia rugosa (three tubes, in one of which the hymenium takes a papillate form and would seem to indicate that *Jansia elegans* is only a modification of *Jansia rugosa*.)—*Lycogalopsis Solmsii*, an extremely rare genus and these are the first unquestioned specimens I have ever seen.—*Peziza Hindsii*, as compared at Kew.—*Scleroderma* (unamed)
—*Scleroderma tenerum*—*Cyathus* (sp.) It belongs to section 4 (*Pallida*) of the genus, but I know no species that exactly accords. Spores are abundant, when perfect are globose, 20-22 mic. but many are imperfectly developed, more or less elliptical and smaller.—*Lycoperdon Wrightii* (or close)—*Geater saccatus*—*Calvatia Gardneri* (probably).

BOUDIER, E., France:

Polyporus minusculus, co-type—*Polyporus montanus*, rare, in Jura only. Spores globose, tubercular.—*Trametes Butignotii*, Boud. As yet unpublished. The only *Trametes* found in Europe with a mesopodal stipe. At base of *Abies* in the Jura. —*Poria sulphurea-flavida* (determined by Prof. Maire.)—*Polyporus Forquignoni*, the first good specimen I have seen of this collection.—*Gastromycete?* It seems close to *Scleroderma* but has smooth, colored spores. Is it not the genus *Pompholyx* (?) I think there is no specimen of this genus in any museum.

BROWN, GEO., New Zealand:

Geater saccatus, unopened—*Hydnocystis* (?) I judge an unnamed species of a most interesting genus.

COTTON, A. D., England:

Poria, on pine.

CRADWICK, WM., Jamaica:

Geater velutinus, unopened. The exoperidium is usually dark in the tropics, but these are as light colored as if they had grown in temperate regions.

CROSSLAND CHARLES., England:

Fomes connatus—*Polyporus* (sp.)—*Trametes suaveolens*—*Fomes fraxineus*—*Merulius tremellosus*—*Polystictus versicolor*—*Polyporus frondosus*—*Polystictus abietinus*—*Polyporus* (sp.)—*Polyporus radiatus*—*Daedalea confragosa*, trametoid form—*Polyporus melanopus*—*Polyporus adustus*—*Fomes ulmarius*.

DRAKE, HENRY C., England:

Polyporus betulinus—*Polystictus hirsutus* on ash—*Daedalea quercina*—*Polystictus versicolor*—*Fomes annosus*.

EYRE, REV. W. L. W., England:

Fomes annosus, on fir—*Fomes pomaceus*, on plum.

FRIES, ROBERT, F., Sweden:

Lycoperdon abscissum, co-type from Bolivia—*Catastoma Pila*, co-type from Argentina—*Lanopila pygmaea*, co-type from Argentina. All have recently been named and described by Mr. Fries, cfr. *Myc. Notes*, p. 441.

FRY, MISS AGNES, England:

Fomes appplanatus, on elm—*Fomes appplanatus*, on *Ilex*—*Fomes pomaceus*, on *Prunus*—*Polystictus hirsutus*, on elm(?)

GOETHART, J. W., Holland:

Polyporus talpae, very large specimen from Dutch Guiana. It agrees exactly with the type at Kew.—*Fomes pachyphloeus*, as named by Bresadola. It is the *largest Fomes* ever sent to Europe. It came from Java.—*Polyporus Japonicus* (from Java). For me a form of *lucidus*—*Polyporus zonatus* (from Java). A common species in the tropics, with many names.

HARIOT, P., France:

Elaphomyces granulatus—*Fomes australis* (from French Guiana).

HAWLEY, H. C., England:

Polyporus Wynnii—*Polyporus amorphus* (?) white form—*Polyporus albidus* (on *Abies*)—*Polyporus* (unknown to me) on ash. It evidently belongs in the section with *amorphus*, *dichrous*, etc.—*Fomes ulmarius*—*Fomes fraxineus*—*Polyporus fumosus*—*Polyporus rufescens*—*Trametes cervinus*—*Polyporus caesius*—*Polyporus floriformis*—*Polystictus zonatus* (?)—*Polyporus* (four, species unknown)—*Poria* (sp.).

HEMET, L., Algiers:

Geaster hygrometricus.

HUTCHINGS, S., Bengal:

Polystictus sanguineus—*Hexagona tenuis*—*Hexagona albida*—*Trametes Persoonii*—*Hirneola auricula-judae*—*Polystictus flavus*, a fine specimen. It is as good an *Irpex* as a *Polystictus*. As I have published, it should bear Junghuhn's advertisement, not Klotzsch's as usually given.—*Daldinea concentrica*—*Polystictus hirsutus*, pores cinereous—*Polystictus affinis*—*Lentinus dactyliophorus*, the only species known I think with an annulus—*Polyporus*, on the order of *gilvus*, but not *gilvus*.—*Tremella fuciformis*, a fine specimen from which I have a good photograph. When moistened it came out in a few minutes as fresh and plump as if just collected. Spores are 8x10, apiculate, elliptical-globose, hyaline, smooth. Basidia cruciate.—*Trametes hololeucus*, according to specimens at Kew. It is close to *Trametes Muelleri*, but I think somewhat different. It is a beautiful, white species, but not a "*Polystictus*". Species unnamed, I think. With a short, black base, and white crust. Pores and context isabelline.—*Lenzites repanda*, a ? form I think, though it has the pores and ordinary form of *Trametes Persoonii*.—*Lenzites* with a "smoky top", not named I think.—*Stereum* (sp.)—"Sistotrema" *ochroleuca*, same as type. This specimen is

an irpicoid form.—Polyporus (cfr. *grammocephalus*)—Poria (curious species with large pores).—Trametes *versatilis*—Polyporus (cfr. *lucidus*) (Sessile, with same context color, surface and appearance of *lucidus*, but spores are *smooth* and smaller, 6×8).—Polystictus, unknown to me. If not called *dealbatus*, it might be so called as it appears "white-washed".—Polystictus, unknown to me. It has the same color and appearance as the *Tabacinus* section but there are no setae on the hymenium. The spores (clearly seen) are subglobose, $3\frac{1}{2} \times 4$, smooth, pale color. Hyphae deeply colored, slender.—Polystictus *badius*, I believe on comparison with the type at Kew. It has slightly smaller pores and *much smaller* than those recently so referred from the Philippines.—Hexagona *tricolor*, at least it is a form of *Hexagona tenuis* with dark reddish stain, and I suppose it to be the species as named by Fries, of which no type exists. It is close if not the same as *Hexagona discopoda*.—Lentinus *Kurzianus*, compared with the type at Kew. Its characters are the scaly pileus and dark gills. When wet the gills are brown, but on drying they become much darker, particularly on the edge. Spores are cylindrical, straight, $3\frac{1}{2} \times 10$ mic., hyaline, smooth.—Polystictus (sp.)—Lenzites (sp.).

LAING, H. W., New Zealand:

Lycoperdon (sp.). Cortex gone, probably not determinable. It belongs to the *gemmatum* group with smooth spores and strong columella. The deeply colored capillitium removes it from *gemmatum* or *piriforme*.—*Cyttaria Gunnii*, Berk. The genus *Cyttaria* is a most peculiar genus, known only from extreme South America and Australasia. It is a Discomycete and grows on the branches of indigenous Fagus. It was first brought to Europe by Darwin on his voyage around the world, and was published by Berkeley. Darwin noted the plant as quite abundant on semi-desert region of Patagonia and was used as a food by the natives. I am very glad to obtain specimens of this curious genus for our museum.

LINDS, J., Denmark.

Polyporus cuticularis.

LUDWIG, MONSIEUR, France:

Trametes pini (young)—*Polyporus adustus*—*Odontia cristulata*?—*Polyporus* (sp.) on birch—*Polyporus fragilis*—*Polyporus stipticus*.

MAIRE, PROF. R., France:

Fomes robustus—*Polystictus hirsutus* (depanperate).

McALPINE, D., Australia:

Jansia truncata. Type specimen in alcohol. Also photograph and description.

MENEZES, CARLOS A., Madeira Islands:

Phallus impudicus (dried). This is not the type form of Europe. The pileus is more bell shaped and yellowish. It is close to the form *favosus* of Java and very close to the form that occurs (rarely) in Australia.

PANAU, CHARLES, France:

Poria medullae-panis—*Fomes fraxineus*—*Lenzites betulina*—*Polystictus versicolor*—*Polystictus* (sp.).

PATOUILLARD, N., France:

Physalacria Orinocensis, co-type material.

PETCH, T., Ceylon:

Genus unknown to me. Gastromycete with very peculiar spores with *detersive* spines.

REA, CARLETON, England:

Fomes ulmarius—Fomes pomaceus—Fomes fraxineus—Polyporus lucidus—Fomes applanatus (the abnormal form called vegetus)—Fomes ribis—Polyporus benzoinus—Trametes gibbosa—Poria purpurea.

ROLFS, P. H. England:

Polyporus lucidus—Polystictus versicolor—Poria versiporus—Lenzites betulina—Polystictus perennis—Polyporus adustus—Polyporus lucidus—Fomes applanatus—Lycoperdon gemmatum.

SALMON, E. S., England:

Fomes pomaceus. A fine specimen. Professor Salmon writes me that it is a destructive disease of the plum trees in England.—Polyporus hispidus—Fomes laccatus, on beech, a rare plant.

SHADWELL, MISS B., England:

Fomes annosus (on Cornish elm) — Fomes applanatus (on beech and ash) Polyporus adustus (on beech).

SMITH, E. HARTLEY, England:

Fomes ulmarius — Stercum hirsutum (?)

SWANTON, E. W., England:

Fomes annosus (on Pinus sylv.) — Fomes applanatus (on beech) — Polyporus Schweinitzii (on larch) — Polyporus nodulosus (on beech) — Polyporus leprodes (on a post) — Polyporus rutilans (on beech) — Polyporus benzoinus (on Abies) — Fomes (resupinate, on Pinus sylv.) Unknown to me. Polyporus lucidus — Polystictus versicolor — Polyporus radiatus — Poria laevigata (or close) on beech and holly. — Poria versiporus.

WEIDMAN, ANT., Bohemia:

Trametes odorata — Polyporus fumosus — Fomes igniarius — Fomes roburneus, in the sense of Bresadola — Fomes fraxineus, on pine!! Its usual host is frondose wood. — Fomes Hartigii — Fomes robustus, on oak. — Fomes pomaceus, on Prunus — Fomes pomaceus on Platanus — Polyporus Schweinitzii — Lenzites protracta — Trametes serialis — Lycoperdon pratense — Lycoperdon piriforme, form growing in moss. — Lycoperdon piriforme var. cupricolor, see Myc. Notes p. 265. — Fomes annosus — Lycoperdon gemmatum — Polystictus versicolor (?) Color is pale and pores are dusky.—Poria callosa — Poria (sp.) — Polyporus adustus—Polyporus (unknown to me) — Polyporus salignus (Bresadola refers it to imberbis) — Poria unknown to me — Polyporus amorphus — Fomes annosus, resupinate — Poria medullae-panis, I think.—Polyporus mollis — Fomes roburneus, teste Bresadola. It was on birch and has same context color and texture as igniarius,, but has a smooth *black* crust. It has abundant cystidia. — Stereum (Hymenochaete) It has abundant, *pale* setae, partially colored.— Trametes trabea — Corticium — Trametes pini—Poria—Trametes (undeveloped)—Irpex (?) — Polyporus fragilis — Trametes gibbosa — Fomes pinicola — Polystictus zonatus — Polyporus fumosus — Polyporus betulinus.

LETTER No. 29

List of specimens received from correspondents in the United States and Canada since the last report. I extend my sincere thanks to all who send me specimens.

C. G. LLOYD,
Court and Plum Streets,
Cincinnati, Ohio.

AIKEN, W. H., Ohio:

Geaster rufescens—*Tylostoma Lloydii*. Professor Aiken finds this rarely around Cincinnati, and he is the only one who does find it. The "species" is not of much importance.

ALLEN, MISS LIZZIE C., Massachusetts:

Bovistella Ohioensis, a rare plant in New England, common in the South. — *Cordyceps ophioglossoides*, with a sketch of the fresh plant.

AMES, FRANK H., New York:

Polyporus fumosus, true, I think.—*Polystictus hirsutus* (form)—*Polyporus* (sp.)—*Guepinia spathulata*—*Stereum fasciatum*—*Fomes fomentarius*—*Polyporus gilvus*—*Thelephora* (sp.)—*Hydnum adustum*—*Polyporus lucidus*—*Hydnum velutinum*—*Daedalea unicolor*, fauve form—*Hydnum* (sp.)—*Polyporus rutilans*—*Daedalea confragosa*, lenzitoid form—*Crucibulum vulgare*—*Polystictus foecicola*—*Polyporus* (sp.)—*Panus stipticus*—*Daedalea confragosa* (trametoid form)—*Daedalea quercina*, curious. The position of the growing plant has evidently been reversed. It has started a new hymenium on the under side and filled in the old pore mouths. —*Schizophyllum commune*—*Polyporus radicans*, rarely reaches me.—*Polyporus picipes*—*Lenzites protracta* (Note 1)—*Irpex pachylon*—*Fomes leucophaeus*—*Daedalea confragosa*—*Polyporus* (two species)—*Stereum spadiceum*—*Thelephora albido-brunnea*, a beautiful specimen—*Stereum purpureum*—*Radulum pallidum*—*Polystictus hirsutus*, white pored form—*Polystictus conchifer*—*Trametes* (sp.)—*Polyporus cuticularis*—*Pleurotus nidulans*—*Stereum hirsutum*—*Polyporus albellus*—*Stereum sericeum*—*Irpex lacteus*—*Polystictus pergamenus*—*Merulius tremellosus*—*Irpex* (sp.)—*Polyporus frondosus*—*Polystictus hirsutus*—*Polyporus dichrous*—*Panus rudis*—*Polystictus cinnamomeus*.

BAKER, C. F., California:

Scleroderma Cepa? In the gleba of this specimen are distinct threads or hyphae, unusual in the genus *Scleroderma*.

BALLOU, W. H., New York:

Polyporus lucidus—*Fomes leucophaeus*—"*Thelephora dendroidea*" a rare and somewhat mysterious species. Its spores and basidial characters are unknown. *Ganoderma sessile*—*Corticium*. Sent as a *Merulius*, so it is probably meruloid when fresh. There are several plants of this nature. *Merulius fugax*, in the sense of Fries, is one of them though it is a *Peniophora*. A plant that is a *Merulius* when fresh and a *Corticium* when dry gives rise to a legitimate difference of opinion as to how it should be classed, as it may be placed in either genus.—*Polystictus abietinus* (irpicoid form=fusco-violaceus)—*Fomes rimosus*—*Fomes Everhartii*, fine specimen.—*Trametes pini*—*Fomes annosus*—*Radulum Ballouii*. This was named "*Steccherinum Ballouii*" and it impresses me as being a very distinct and marked "new species". However, it would be included in *Radulum* by any one who is familiar with Fries' genera.

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BARTLETT, HARLEY H., Massachusetts:

Daedalea confragosa, form—Polyporus carneus, Nees—Panus stipticus—Lenzites betulina—Lenzites sepiaria—Trametes sepiaria—Daedalea unicolor—Polyporus adustus—Geaster hygrometricus—Scleroderma Geaster, small form in sand—Scleroderma Geaster, large, thin form in loam—Scleroderma verrucosum. The type form only occurs in the sandy soil of our Atlantic Coast. Mr. Bartlett finds it abundant and noted a disagreeable odor. I think the odor is a decomposition product. While occasionally specimens occur that are caespitose and more or less confluent and deformed, each pileus has its own distinct stem and it should be classified with the simple stem section. As previously stated the Rostkovius' figure from which Fries got his idea is abnormal.

BEARDSLEE, H. C., North Carolina:

Fomes pinicola—Fomes fomentarius—Fomes rimosus—Fomes connatus (on hickory)—Fomes connatus (on dog wood)—Fomes pomaceus (on plum)—Polyporus caesius—Polyporus adustus—Polyporus adustus, an unusual form with the pileus also "adustus"—Polyporus gilvus, tending toward licnoides—Polyporus rutilans—Polyporus cinnabarinus—Polystictus velutinus—Polyporus hirsutus—Fomes leucophaeus—Fomes annosus—Fomes igniarius?, resupinate—Polyporus, unknown to me, on pine.—Polyporus Schweinitzii.

Collected in Ohio: Polystictus cinnamomeus—Daedalea confragosa—Daedalea ambigua.

Collected in Michigan: Fomes fomentarius, on beech—Trametes sepiaria.

Collected in Illinois: Fomes Everhartii, on oak.

Collected in Maine: Polystictus perennis—Polyporus caeruleiporus, a rare plant.—Daedalea unicolor (fauve form)—Polyporus radiatus, on alder—Thelephora palmata var. Americana.

BLACKFORD, Mrs. E. B., Massachusetts:

Polyporus griseus. A fine, abundant collection. In previous years I have confused this species with leucomelas of Europe, which is quite close, but I think distinct. It has developed that Polyporus griseus is the same as Polyporus subquamosus in the sense of Fries. The name subquamosus is not a good name for the plant, and in addition is attributed to Linnaeus. It is not known what Linnaeus' plant was and it is very doubtful if this was the plant, hence we shall use Professor Peck's name which is a very suitable one.—Irpex pachylon—Polyporus confluens, a rather rare and scantily known species in the United States. I have collected it frequently in Sweden, but this is the only collection I have from the United States. I have seen American specimens in European museums labeled Polyporus ovinus.—Daedalea quercina—Polyporus hispidus. Rare in the United States, common in Europe.—Hydnum velutinum—Hydnum aurantiacum—Daedalea confragosa, unusual form—Polyporus rutilans—Fomes carneus—Fomes connatus—Lenzites saepiaria—Polyporus rutilans—Polyporus squamosus—Hydnum adustum—Lycoperdon gemmatum—Thelephora terrestris—Trametes suaveolens—Merulius lachrymans, sterile, mycelial pad.—Polyporus radiatus—Thelephora (cfr. caryophyllea—Hydnum (sp.)—Hydnum adustum (young)—Lycoperdon atropurpureum—Fomes carneus—Lenzites saepiaria—Polystictus hirsutus—Polyporus squamosus, taking almost an agaricoid form. I do not think I have ever seen one before where the transition to an agaric is so strongly marked.—Genus unknown to me.

BRENCKLE, Dr. J. F., North Dakota:

Gyrophragmium, an unnamed species.—Polyporus cyptopus, the second collection known to me.—Irpex lacteus, Fr.—Geaster asper—Secotium acuminatum—Catastoma circumscissum—Geaster floriformis, also a number of other species of microscopic fungi, not in my line of study.

BURNHAM, STEWART A., New York:

Polystictus planus, an extremely rare plant. This is the second collection only that I have received.—*Daedalea confragosa*, trametoid form—*Polyporus rutlanus*—*Boletinus porosus*—*Trametes hispida*—*Polyporus gilvus*—*Fomes ignarius*, form *nigricans*.

COOK, MEL T., Delaware:

Polystictus hirsutus—*Bovistella Ohiensis*—*Hypoxylon*—*Irpex tulipifera*—*Stereum complicatum*—*Polystictus pergamenus*—*Polystictus cinnabarinus*—*Merulius incarnatus*—*Lycoperdon piriforme*—*Stereum fasciatum*—*Fomes leucophaeus*.

DAVIS, SIMON, Massachusetts:

Daedalea confragosa—*Hydnum ochraceum*—*Leotia lubrica*—*Leotia lubrica* var. *Stevensonii*—*Peziza*—*Hydnum imbricatum*—*Favolus europaeus*—*Polyporus elegans*—*Cordyceps militaris*. Mr. Davis finds this abundantly. It rarely reaches me.—*Polyporus Curtisii*. This plant is of a southern type—*Polyporus carneus*—*Reticularia Lycoperdon*—*Daedalea confragosa*—*Geoglossum luteum*—*Polystictus cinnabarinus*—*Polyporus albellus*—*Lenzites saepiaria*—*Polyporus brunale*—*Polystictus pubescens*—*Myxomycetes*—*Polyporus admirabilis*, well named. It is rare, but Mr. Davis finds it on old apple trees.

DEARNESS, JOHN, Canada:

Polyporus caeruleoporus, a rare plant—*Polyporus spumeus*—*Polyporus albellus*—*Polyporus versicutis*? I think Professor Dearness is the only one who finds this plant, and it is not certain that it is the same as the original which was from Cuba.—*Polystictus biformis*—*Polyporus* (two species)—*Polystictus circinatus*, Fries—*Polystictus circinatus*, form with thin context and lateral stipe—*Polystictus perennis*—*Cantharellus floccosus*—*Polystictus Montagnei*—*Hydnum auriscalpium*—*Hydnum suaveolens*—*Hydnum* (two species).

EDGERTON, C. W., Louisiana:

Arachnion album, Schw.—*Stereum spadiceum*, Fr.—*Favolus Brasiliensis*, Fr.—*Polystictus membranaceus*? While the pores are white, I am more inclined to refer it to a pale form of *pergamenus*. Two species of *Corticium*.—*Fomes torulosus* Persoon. A frequent plant around Paris but this is the first time it is known from America. Persoon knew it well and named it. Mr. Edgerton collected it on the trunk of a living Live Oak in Audubon Park at New Orleans.

FISHER, G. C., Florida:

Bovista plumbea, Persoon—*Hirneola auricula-judae*—*Polyporus arcularius*—*Cyathus vernicosus*—*Cyathus stercoreus*—*Xylaria*—*Geaster annulatus*—*Tylostoma campestre*—*Tylostoma albicans*, but with a darker stipe—*Tylostoma tuberculatum*—*Tylostoma Longii*—*Tylostoma* (sp.)—*Trametes "serpens"*—*Trametes obtusus*—*Rhizopogon* (two species) *Hydnumium*—*Hydnum erinaecium*—*Polyporus carneus*—*Scleroderma Cepa*,—*Hydnum* (sp.).

FISCHER, O. E., Michigan:

Polystictus conchifer—*Fomes connatus*—*Polystictus pergamenus*—*Polyporus rufescens*, rare in the United States.—*Polyporus adustus*, larger pores than usual, tending toward crispus.

FOWLER, JAMES, Canada:

The dried agarics are listed as determined by Mr. Fowler. *Russula lepida*—*Clitopilus prunulus*—*Boletus retipes*—*Flammula polychroa*—*Lactarius volenus*—*Pholiota squarrosa*—*Russula adusta*—*Pleurotus ostreatus*—*Russula emetica*—*Russula virescens*—*Boletus Americanus*—*Hypholoma sublateralitia*—*Clitocybe orella*

—Hypholoma lacrymabunda—Amanita phalloides—Amanita muscaria—Russula purpurina—Entoloma strictius—Russula nigricans—Omphalia epichysium—Lactarius resinus—Lactarius piperatus—Russula fragilis—Hygrophorus hypothecus—Mycena epipterygia—Mycena cyanothrix—Mycena vulgaris—Omphalia campanella—Russula alutacea—Polyporus borealis—Polyporus sulphureus—Lycoperdon gemmatum—Lycoperdon umbrinum—Panus stipticus.

GARMAN, H., Kentucky:

Sclerotium of some unknown species. Found in a garden.

GARRETT, A. O., Utah:

Polystictus versicolor, a beautifully marked variety.

GRIFFIN, D. B., Vermont:

Polystictus cinnabarinus—Daedalea confragosa, lenzitoid form—Polyporus betulinus, a most curious, abnormal form. It is young and has developed no pores, and one not perfectly familiar with the normal form would never suspect its relationship even.

HADLEY, Mrs. A. M., Vermont:

Polyporus sulphureus. The largest specimen of this species I have ever seen. When dried it was about a foot wide and eighteen inches long. When fresh it doubtless exceeded these dimensions considerably.

HALL, J. G., North Carolina:

Lenzites betulina—Polystictus versicolor—Polystictus sanguineus—Stereum hirsutum—Stereum sericeum, Schw.—Polystictus hirsutus—Irpex tulipifera—Hymenochaete—Schizophyllum vulgare—Stereum fasciatum, Schw.

HASSLER, F. A., Colorado:

Scleroderma Ceba.

HEALD, F. D., Texas:

Mycenastrum Corium

HEDGCOCK, GEO. G., Washington, D. C.

Polyporus amarus. From California. Co-type material.

HILL, OSCAR, Massachusetts:

Polystictus versicolor—Polyporus, unknown to me.—Lenzites betulina var. flaccida, teste Bresadola.

HOWELL, GEORGE T., Indiana:

Hydnum adustum, Schw.—Daedalea confragosa, thin form.—Polystictus pergamenus—Daedalea ambigua, Berk.—Lenzites betulina—Daedalea confragosa, trametoid form—Polystictus pergamenus—Stereum. Entirely unknown to me and very marked. It is close to Stereum cinerescens, but quite different with strongly developed pileus and imbedded cystidia. I suppose it belong to the "genus" Lloydiella (sic).—Polyporus adustus—Polyporus salignus—Trametes hispida.

JONES, MISS KATE A., New Hampshire:

Panus stipticus—Polystictus versicolor—Lenzites betulina—Polyporus carneus—Polystictus pergamenus—Polystictus hirsutus.—Polystictus velutinus—Stereum fasciatum—Fomes leucophaeus—Polyporus carneus—Panus stipticus—Polystictus cinnabarinus—Daedalea unicolor—Lenzites saepiaria.

KILLGORE, ANTHONY, New Jersey:

Polyporus sulphureus.

KREKE, REV. MARCUS, Ohio:

Stereum fasciatum, an unusual form of this common species.

LAKIN, W. T., Maryland;

Lenzites protracta, Fr. (See note 1)—*Guepinia spathulata*—*Polystictus hirsutus*—*Fomes leucophaeus*—*Myxomycetes*—*Polyporus cristatus* (Note 2)—*Daedalea quercina*—*Stereum fasciatum* (Note 3)—*Hydnum pulcherrimum*—*Daedalea unicolor* (Polyporoid form)—*Daedalea confragosa*—*Polyporus dichrous*—*Polystictus versicolor*, pale form—*Ustulina vulgaris* (conidial form)—*Fomes rimosus*—*Morchella esculenta* (form conica)—*Polyporus adustus*.

LANGTON, THOMAS, Canada:

Polyporus Schweinitzii—*Stereum* (sp.) This belongs to the same genus as *Stereum frustulosum*. They have a new name for this "genus" now in Europe, but I do not recall what it is. The "new genus" is based on the plant's peculiar cystidia.—*Polyporus sulphureus*. This specimen is distinctly stalked, which is unusual for this species.—*Polystictus cinnamomeus*—*Phlebia* (?) Species unknown to me.—*Lenzites saepiaria*—*Hypoxylon coccineum*—*Peziza*—*Guepinia spathulata*—*Calocera cornea*—*Lycogala Epidendrum*—*Xylaria* (conidial)—*Hymenochaete*—*Polyporus Schweinitzii*—*Polyporus*, unknown to me. It is close to pubescens. Spores $2\frac{1}{2} \times 8$ hyaline, smooth, cylindrical, curved.—*Polyporus adustus resupinate*—*Polyporus fumosus*. I think this is the true *fumosus* as illustrated beautifully by Klotzsch. Spores are 4×8 but many are smaller, about $2\frac{1}{2} \times 6$.—*Panus rudis*—*Polyporus brumale*—*Trametes saepiaria*—*Tremella foliacea*—*Hydnum adustum*—*Peniophora*—*Stereum spadiceum*—*Phlebia* (sp.)—*Fuligo varians*—*Poria* (sp.).

LEARN, CLARENCE D., Iowa:

Fomes igniarius (on butternut)—*Fomes leucophaeus*—*Fomes Everhartii*—*Fomes pomaceus*—*Polyporus carneus*.

LEHMAN, E. A., North Carolina:

Daedalea confragosa—*Geaster velutinus*—*Polystictus focicola*—*Mitremyces cinnabarinus*—*Mitremyces lutescens*—*Xylaria* (sp.)—*Hydnum* (sp.)—*Hydnum adustum*—*Polystictus sanguineus*—*Polystictus cinnabarinus*—*Polyporus Curtisii*.

LORDLEY, E. D., Nova Scotia:

Clavaria (sp.) Grew in Sphagnum.

MEDCALF, B. G., Minnesota:

Polyporus arcularius.

MIGNAULT, REV. JOS. B., Canada:

Daedalea unicolor—*Polyporus elegans*—*Polystictus perennis*. One of the specimens is marked with black zones, unusual in this species.—*Polystictus versicolor*—*Polystictus cinnabarinus*—*Daedalea confragosa*—*Panus* (?)—*Thelephora caryophyllum*—*Lenzites saepiaria*—*Polyporus adustus*—*Polyporus Schweinitzii*, Fr.—*Polystictus versicolor*.

MORRIS, GEO. E., Massachusetts:

Polyporus sulphureus—*Polyporus lucidus*—*Polyporus carneus*—*Daedalea unicolor*—*Polyporus cuticularis*, Bull.—*Daedalea confragosa*, trametoid form—*Polyporus brumale*—*Hydnum adustum*—*Polyporus dichrous*,—*Geaster coronatus*, rare—*Polystictus conchifer*—*Polystictus perennis*—*Polyporus rutilans*,—*Trogia crispa*—*Polyporus picipes*, depauperate form.—*Polyporus hispidus*, rare—*Polyporus elegans*—*Fomes leucophaeus*,—*Daedalea confragosa*—*Lenzites saepiaria*—*Polystictus hirsutus*—*Trametes suaveolens*—*Thelephora terrestris*—*Lycoperdon umbrinum*—*Trametes pini*, the thin form called *Trametes abietinus* by Karsten and *T. piceinus* by Peck (cfr. Myc. Notes p. 379).

NELSON, N. L. T., Iowa:

Polyporus adustus—*Polyporus gilvus*—*Polyporus reniformis*—*Schizophyllum commune*—*Granularia*—*Lenzites saepiaria*—*Polystictus cinnabarinus*

— *Polyporus lucidus* — *Daedalea unicolor* — *Cyatrus striatus* — *Polystictus versicolor* — *Polystictus hirsutulus* — *Fomes pomaceus* — *Thelephora Schweinitzii* — *Polyporus adustus* — *Polyporus nodulosus* — *Polyporus betulinus* — *Xylaria corniformis* — *Panus stipiticus* — *Irpex* — *Peziza occidentalis* — *Lentinus lepideus* — *Lycoperdon Turnerii*.

NOBLE, MRS. M. A., Florida:

Trametes hydnoidea — *Otidea* (sp.)

PERCIVAL, MRS. M. S., Tennessee:

Panus rudis — *Mitromyces lutescens* — *Lichen* — *Polystictus versicolor* — *Polyporus lucidus* — *Stereum fasciatum* — *Urnula Craterium* — *Lenzites betulina* — *Fomes leucophaeus* — *Polystictus hirsutus* — *Polystictus pergamenus* — *Hydnum Erinaceum* — *Mitromyces lutescens*. Beautiful specimen of a species I am always glad to receive. — *Phallus Ravenelii*.

RIDDLE L. W., Massachusetts:

Polyporus (cf. *spumeus*) Spores ovate-subglobose, 4–5, hyaline, smooth, *guttulate*, abundant. Grew on an apple tree. I have not my European material of *spumeus* at hand for comparison but it is surely very close, and has the same peculiar *guttulate* spores, though these are smaller than those of the European plant as I remember it. — *Fomes officinalis*, rare in the United States. — *Polyporus sulphureus* — *Polyporus elegans*? A single half specimen. It is *sessile*, hence not the usual *Polyporus elegans* with a black stem. I suspect however it is an abnormal specimen with the stipe undeveloped for some reason. — *Polyporus* (sp.) — *Polystictus membranaceus*. This is a common species in the tropics, but it is very rare in temperate regions. This is the second collection I have gotten from the United States. — *Polyporus leprodes* in the sense of Fries, but I doubt if the same as Rostkovius' figure, on which Fries based the name. In reality it is only a sessile, multiplex form of *Polyporus varius* as Fries states. I have collected it several times on the trees in the park at Upsala, but these I think are the first specimens I have ever seen from the United States.

ROGERS, E. O., Iowa:

Polyporus adustus — *Polyporus* (sp.) — *Polyporus gilvus*, imperfectly developed — *Polystictus versicolor* — *Polyporus gilvus*, normal.

STOCKBERGER, W. W., Washington, D. C.

Stereum ochraceoflavum. Collected in Florida.

STORER, MISS E. D., Pennsylvania:

Polyporus (sp.) — *Polystictus versicolor*.

STREETER, MRS. HANNAH, Pennsylvania:

Lenzites saepiaria — *Rhizina inflata* — *Hydnum adustum* — *Irpex cinnamomeus* — *Daedalea unicolor* — *Polyporus adustus* — *Polyporus gilvus* — *Irpex tulipifera* — *Polyporus hispidus* — *Polystictus versicolor* — *Stereum fasciatum* — *Stereum bicolor* — *Favolus europaeus* — *Urnula Craterium* — *Hydnum suaveolens* — *Lenzites corrugata* — *Daedalea confragosa*, thin form — *Daedalea confragosa*, trametoid form — *Daedalea juniperina* — *Polystictus cinnabarinus* — *Daldinea concentrica* — *Xylaria* — *Polyporus pocula* — *Polyporus dichrous* — *Polyporus griseus* — "Thelephora dendritica" cfr. letter No. 16, p. 8 — *Pyrenomycetes* — *Stereum rubiginosum* — *Thelephora Schweinitzii* — *Polyporus retipes*. The occurrence of this species is of much interest. Heretofore it was only known from the original collection in Alabama. — *Bulgaria rufa* — *Bulgaria inquinans* — *Thelephora vialis* — *Panus rudis*.

From tropical America, probably: *Polystictus trichomallus*.

SUTLIF, MISS, California:

Polystictus perennis — *Daldinea concentrica*.

WALKER, MISS I. M., Ontario:

Polyporus picipes — *Xylaria* (conidial) — *Polystictus perennis* — *Thelephora* (sp.) — *Thelephora terrestris* — *Thelephora* (sp.) — *Favolus europaeus* — *Polystictus versicolor* — *Polyporus elegans* — *Panus rudis* — *Polyporus adustus* — *Fomes conchatus* — *Daedalea confragosa* — *Cyathus striatus* — *Physalacria inflata* (rarely received by me) — *Fomes leucophaeus*.

WHETSTONE, Dr. M. S., Minnesota:

Hydnum adustum — *Polystictus versicolor* — *Peziza* (three species) — *Peziza occidentalis* — *Thelephora Schweinitzii* — *Polyporus croceus* (Note 4). Rare in this country. — Mycelial layer. A thin, soft papyraceous membrane, growing between layers of rotten wood. It has very much the appearance of a piece of chamois skin. It is known to be the mycelial membrane of some fungus, probably a *Poria* or *Polyporus*. I would be glad to trace its connection to the fruiting plant. — *Isaria* (?) — *Polystictus velutinus* (?) — *Daldinea concentrica* — *Peziza* (sp.) — *Polystictus biforinis* — *Panus stipticus* — *Polyporus adustus* — *Polystictus pergamenum* — *Lenzites betulina* — *Xylaria polymorpha* — *Stereum spadiceum* — Genus unknown to me. — *Polyporus gilvas* — *Helvella* (sp.) — *Hydnum* (sp.) — Gall — *Polyporus elegans* — *Xylaria* — *Clavaria pistillaria* — *Polyporus Spraguei* — *Leotia lubrica* — *Geaster saccatus* — Genus unknown to me Curious thing with long chain-like spores. — *Fomes leucophaeus*.

NOTE 1. *Lenzites* (or *Trametes*) *protracta*. — I have always been in doubt about what name to use for this plant which is frequent with us in America. First, I called it *Lenzites vialis*, as Peck discovered it to be a "new species" and so named it. But it developed that it grew in Europe though it is rare there, and Bresadola referred it to *Trametes trabea* of Persoon. I always thought it was not *Trametes trabea* as described by Persoon, as it seems to me there are strong discrepancies between this plant and the description. But Bresadola published that he had studied Persoon's herbarium, and I supposed that his conclusions were based on a specimen. There is no specimen in Persoon's herbarium. Hence, I can not longer use the name *trabea*, believing that it is not the plant Persoon had in hand. The only thing that I feel sure about is that it is the plant illustrated in Fries' *Icones*, t. 191 as *Trametes protracta*, and in future I shall use that name basing it on this figure. There is a bar to the use of *Trametes protracta* according to nomenclatorial (professed) priorists, as it is not the original of that name. It was at first applied to a tropical plant which then had a well established name and the same name it now has. There is therefore no use to drag this plant into the muss and give the details.

NOTE 2. *Polyporus cristatus*. — I am now thoroughly convinced from comparison of European and American material that the plant we have so long known in this country as *Polyporus flavovirens* is the same as *Polyporus cristatus* of Europe. I have suspected this for some time, but the European species is rare, and I did not like to make the statement until I had satisfied myself on the subject. At Kew, Paris and Upsala are very fragmentary specimens only, but at Berlin I found a nice collection that had been made by Dr. Hennings. I also recently received a good collection from one or two of my European correspondents, and on comparison with the American plant I am sure they are the same. I think there is a misapprehension among European mycologists as to the general nature of this plant. Their ideas were obtained from Rostkovius' picture which Fries cites as being "good". It is good as to color, but as to form it is abnormally developed into a multiplex pileus. The normal pileus is simple, in fact, I think the plant does not belong in the section *Merisma* where Fries placed it, but should go in the section *Ovinus*, with a simple stem.

NOTE 3. *Stereum fasciatum*. — In future we shall so name specimens that reach us, using Schweinitz's name for the plant which is better known in American mycology as *Stereum versicolor*, that being the name always used by our own mycologists, particularly Berkeley, Ellis and Morgan. *Stereum versicolor* is a tropical species that came originally from Jamaica. I have looked up the type specimens at the British Museum, and I think it is not our American plant exactly.

NOTE 4. *Polyporus croceus*. — I am now convinced after comparison of the authentic specimens from Europe with the American that the plant known in this country as *Polyporus Pilota* as named by Schweinitz and *Polyporus hypococeus* as named by Berkeley are the same as the European plant. It is extremely rare both in Europe and in America and those who find it may consider themselves fortunate. I have only collected it twice in America and but once in Europe. When fresh it is of a beautiful uniform yellow, called by Persoon *croceus*, and the American plant assumes more orange forms as I remember them. There has never been a colored illustration made of it, although when fresh and in its prime it is the most striking *Polyporus* that grows. It discolors in drying, turning dark, and the pores turn darker than the context. I have long had a suspicion that our American plant would prove to be the same as the European, but have only recently satisfied myself on this point.



LETTER No. 30.

List of specimens received from the United States, Canada, and foreign countries since the last report.

My thanks are extended to the senders.

January, 1911.

C. G. LLOYD.

ABBOTT, DR. E. K., California:

Polystictus circinatus, western form. This does not have the dual context strongly marked. It has, however, same context and peculiar cystidia. It is perhaps more close to what is now called *triqueter* in Europe.—*Helvella Californica*—*Helvella* (Sp.)—*Polystictus perennis*—two species of *Peziza*—*Stereum*, Section "Lloydella"—*Ganoderma leucophaeus* (close to *Australis*)—*Thelephora caryophyllea*.

AIKEN, WALTER H., Ohio:

Stereum frustulosum—*Stereum complicatum*—*Stereum purpureum*—*Stereum albobadium*—*Corticium laeva* (?)—*Peniophora vellereum* (?)—*Peniophora incarnata*—*Arcyria*. Also, determined by himself—*Physarum cinereum*—*Didymium minus*—*Craterium leucocephalum*.

ALLEN, MISS LIZZIE C., Massachusetts:

Polyporus carneus—*Stereum diaphanum*, a rare plant—*Favolus europaeus*—*Lycoperdon piriforme*—*Clavaria* (sp.)—*Peziza aeruginosa*—*Polyporus Spraguei* (?)—*Polystictus perennis*—*Polystictus hirsutulus*.

ALLEN, W. B., England:

Polyporus, close to *Boucheanus*. For me it is a form of *squamosus* with exactly same pileate pore characters, etc., but mesopodal, uncolored stem.—*Lycoperdon pusillum* with a strong cortex development—*Lycoperdon umbrinum* (?)—*Calvatia*, sterile base (probably of *C. saccatum*)—*Calvatia* (cfr. *caelata*) smooth form—*Mycenastrum Corium*—*Lycoperdon cepaeforme*—*Geaster floriformis*—*Bovistella* (cfr. *Dominicensis*).

AMES, FRANK H., New York:

Stereum, unknown to me—*Polyporus albellus*—*Polystictus cinnamomeus*—*Poria tulipifera*—*Lenzites betulina*—*Polystictus Grayii*—*Polystictus versicolor*—*Hypoxylon*—*Fomes connatus*—*Irpex cinnamomeus*—"Xylaria flabelliformis," conidial—*Polyporus salignus*, spores globose, 4-4½ hyaline, smooth—*Geaster hygrometricus*—*Polyporus adustus*—*Polyporus gilvus*—*Polyporus brunalis*—*Trametes confragosa*—*Stereum rubiginosum*—*Stereum fasciatum*—*Fomes rimosus*.

UNIVERSITY OF CALIFORNIA
AT LOS ANGELES

JAN 20 1942

BAKER, C. H., Florida:

Mycena pura (?)—*Cyathus stercoreus*—Insect gall.

BALL, CARLETON R., Texas:

Calvatia lilacina—*Lepiota Morganii*. "The common Hymenomycete of the fairy rings of the higher plains."—*Lycoperdon cruciatum*.

BALLOU, W. H., New York:

"*Thelephora dendritica*"—*Lenzites saepiaria*—four species of *Poria* and two *Thelephoraceae* unknown to me.

BARBIER, M., France:

Trametes Butignotii.

BARKER, W. E., New Zealand:

Crucibulum vulgare.

BEARDSLEE, H. C., North Carolina:

Fomes Eberhartii. Quite common on oak, teste Bresadola.

BERTOLET, A. S., Canada:

Polyporus Peckii.

From North Carolina, *Polyporus obtusus*, fine specimen.

From Tennessee, *Cordyceps militaris*—*Polyporus umbellatus*—*Polyporus croceus*—*Polyporus Berkeleyi*—*Polyporus albellus*—*Tremellodon gelatinosum*.

BEZZI, DR. M., Italy:

Polyporus adustus, thin form—*Scleroderma tenerum*—*Scleroderma Ceba*—*Panus stipticus*.

BLACKFORD, MRS. E. B., Massachusetts:

Merulius tremellosus, effete. I did not recognize when received. Since learned it in the woods in this condition.—*Polystictus cuticularis*, (Pol. Issue p. 12, fig. 205). The second collection that has reached me, and I am glad to have the species thus confirmed. It must not be confused with the common *Polyporus cuticularis*—*Polyporus carneus*—*Polyporus adustus*—*Polyporus salignus*—*Daedalea confragosa*, form *corrugata*—*Polyporus radiatus*—*Polystictus hirsutus*—*Polystictus perennis*—*Hydnum aurantiacum*—*Polystictus abietinus*—*Hydnum suaveolens*—*Calvatia elata*—*Polystictus circinatus*—Three species of *Hydnum*—*Polyporus spumeus*. This is a much thinner plant than I am familiar with in Europe, but with the same context, surface, and peculiar spores I do not question it is the American form.

BONNET, E., France:

Fomes fomentarius, applanate specimen.

BRAENDLE, F. J., District of Columbia:

Hydnum adustum.

BRESADOLA, REV. G., Austria:

My best thanks are extended to Rev. Bresadola for this interesting collection of historic material. They will be very valuable for study and reference. *Poria fulvescens*, co-type—*Polyporus Mariani*, co-type—*Poria confusa*, co-type—*Trametes subsinuosa*, co-type—*Trametes flavescens*, co-type—*Poria nigrescens*, co-type—*Polyporus valesiacus*, co-type. This is the same as Murrill has called a "new species," *Polyporus tsugae*, and both are in my opinion too close to *Polyporus lucidus*—*Polystictus microloma*. This is same as *carneo-niger*, of my recent pamphlet (*Microporus*)—*Trametes Rhizophorae*.

BROWN, CHAS. H., Wisconsin:

Polyporus guttulatus (?)—*Polyporus albellus*—*Merullius tremellosus*—*Trametes hispida*—*Polystictus velutinus*, true in my opinion. Generally a misunderstood species.

BURNHAM, S. H., New York:

Polyporus, unknown to me. Except as to spores it answers to *occidentalis* of Murrill. Context and surface as in *Polyporus obtusus*. Pores small. Spores sub globose, 6-7, hyaline, smooth with a large guttae. It grew on fallen elm.—*Polyporus albiceps*. The indications of black on the stem show that this should be classed in the section with *varius*—*Polyporus melanopus*. It was sent as *radicatus* but differs in its habits (caespitose) and spores (4 x 8) *much smaller*. As to spores and habits it belongs to the section with *picipes* and *varius*, but surface is not the same. In general appearance (except habits) this collection resembles *radicatus*—*Polyporus admirabilis*. Sent as *Underwoodii*, which in my opinion is a synonym.—*Polyporus pubescens* var. *Grayii*.

BUTIGNOTI, DR., Switzerland:

Trametes Butignoti (co-type species)—*Geaster minimus*—*Polyporus benzoinus*—*Trametes odorata*—*Polyporus hirtus*, an extremely rare plant in Europe, and this is the first specimen I have received, though I have seen it in the museums. It is characterized by its large, fusiform spores, unusual in the *Polyporei*. It is the same or very close to what is called in America *Polyporus hispidulus*.

CHEESEMAN, W. N., Canada:

Polyporus albiceps. I think this is *albiceps*, although the blackish stripe would not so indicate. It seems otherwise the same. I do not make out the spores.

CLARKE, J. F., Iowa:

Clitocybe abortivus (?) (Abortive forms).

COMPTON, JOS. S., Illinois:

Polyporus dichrous—*Lycogala epidendrum*.

COONS, G. H., Nebraska:

Secotium acuminatum.

COTTON, A. D., England:

Polyporus benzoinus.

CROSSLAND, CHAS., England:

Polyporus albidus, in sense of Bresadola.

DALLAS, MRS. GEO. M., Pennsylvania:

Polyporus Whitei, Murrill, according to description. It is a variety of *cristatus* (or *flavovirens*).

DAVIS, SIMON, Massachusetts:

Polyporus albellus—*Hydnum albidum* Pk., white when fresh.—*Fomes connatus*—*Polyporus rutilans*, thin form.—*Polyporus carneus*—*Polystictus versicolor*—*Polyporus* (sp.) smell of almond!—*Polyporus spumeus*, thin American form—*Polyporus rutilans*—*Lycoperdon piriforme*—*Polyporus admirabilis*, on apple. Fine specimen of a rare species.

DEARNESS, JOHN, Canada:

Polyporus gilvus—*Polyporus tephroleucus*—*Polyporus albellus*—*Polyporus cristatus*—*Boletinus palustris*—*Boletus Clintonianus*—*Polyporus adustus*.

DEMETRIO, C. H., Missouri:

Stereum fasciatum—*Irpex cinnamomeus*—*Daedalea unicolor*—*Polyporus lucidus*—*Polyporus albo-luteus*. On *Abies Engelmanni* in mountain regions of Colorado. A peculiar, western plant, only one collection known east of the Mississippi River. It is badly misnamed. Cfr. Myc. Notes, p. 411.

DOBBIN, FRANK, New York:

Polyporus betulinus—*Polyporus carneus*—*Fomes pinicola*.

DUPAIN, V., France:

Daedalea biennis—*Daedalea quercina*—*Fomes pomaceus*—*Fomes torulosus*—*Polystictus versicolor* (pale form).—*Daedalea confragosa*—*Trametes hispida*.

DUPRET, H., Canada:

Polystictus cinnabarinus—*Poria tulipifera*.

EDWARDS, S. C., North Carolina:

Polyporus Schweinitzii—*Irpex tabacinus*. I judge from the description. It is the first time I have received it.—Insect Gall on southern cypress. This figures as a "fungus" in our "literature," and is included in Saccardo. The "type" is in Schweinitz's herbarium.—*Stereum fasciatum*—*Stereum bicolor*—*Ganoderma sessile*—*Polystictus sanguineus*—*Polystictus sanguineus*, faded specimen.—*Polyporus gilvus*—*Polyporus albidus*—*Fomes annosus*—*Polystictus villosus*—*Polyporus*, unknown to me but of much interest. I think I have seen it in Europe somewhere, but I can not recall what it is.—*Polystictus azureus*—*Hydnum ochraceum*—*Stereum complicatum*—*Polyporus*

adustus—Polystictus elongatus—Polystictus ectypus. Three collections sent by Mr. Edwards show gradations into Polystictus GrayII of more northern localities.—Lenzites betulina—Trametes.

EYRE, W. L. W., England:
Poria Eyrei, Bres. Mss., co-type.

FAIRMAN, C. E., New York:
Polyporus resinosus—Geaster saccatus—Polyporus adustus—Daedalea confragosa—Polystictus hirsutus—Boletinus porosus—Polystictus versicolor.

FAWCETT, H. S., Florida:
Cladosporium citri, (cfr. Mycologia, 1910, p. 245).

FINK, DR. BRUCE, Ohio:
Diderma testaceum.

FISHER, G. C., New York:
Hydnum albidum, probably from its small size.
—From Florida, Tylostoma subfuscum—Tylostoma (sp.)—Lycoperdon cruciatum—Lycoperdon cruciatum (peculiar cortex)—Geaster minimus—Geaster minimus (pigmy form)—Bovistella floridensis. Professor Fisher is the only one that finds this species, which is strongly distinct.—Scleroderma (?) (Genus (?), too young).—Arachnion album. This characteristic genus rarely reaches me.—Polyporus gilvus, thin form tending toward licnoides—Daldinia concentrica—Bovistella Ohiensis—Calvatia lilacina—Polyporus (Ganoderma) related to lucidus—Polyporus (Ganoderma) Curtisi. The palest collection I ever saw. Some specimens *almost white*. Usually it is more yellowish.

FITZGERALD, MISS MARY, North Carolina:

* Xylaria tentaculata, I think, from the description. It is very rare, and did not fall into Ellis' hands. The spores are 8 x 20-24 and inequilateral. The "tentacular processes" are quite curious and unknown to me on any other species, but I know very little about Xylarias.—Cordyceps herculea as known in American mycology, but not of Schweinitz, I think.—Thelephora. Seems close to Thelephora palmata, but thicker and more recumbent. It is unknown to me.—Butterflies with pollen masses of Asclepias attached to the eyes. I supposed they were Cordyceps or some similar genus, until I sent them to Professor Thaxter, who kindly informed me their nature.—Apple scab on apple twigs—Genus unknown to me. It is black and branches at the top. It has conidial spores, and has been referred as a conidial form of a Pyrenomycete by those to whom I have sent it, but no one has suggested any genus of Pyrenomycetes that takes this shape.—Lentinus ursinus—Microfungus—Craterellus, doubtful, probably abnormal.

FRIES, ROBERT E., Sweden:

Lycoperdon polymorphum—Bovistella echinella, collected at Elfkarleby, Sweden. The third collection made in Europe of this rare, little species.

FROGGATT, W. W., Australia:

Bovistella aspera—*Scleroderma Ceca*—*Bovistella australiensis* (?)
This has gleba of a different color than that I have seen before, but otherwise
the characters seem much the same.—*Bovistella scabra*.

GARRETT, A. O., Utah:

Secotium acuminatum.

GOSSWEILER, JOHN, Africa:

Geaster saccatus—Three *Phalloids*, dried which without color notes
are uncertain.—*Clathrus camerunensis* (probably)—*Phallus* (sp.)—*Lyserurus*
(sp.).

GRELET, L. J., France:

Scleroderma aurantiacum—*Scleroderma Ceca*—*Daedalea biennis*—*Cyathus striatus*.

GRIFFIN, D. B., Vermont:

Lycoperdon gemmatum—*Lycoperdon* form—*Lycoperdon piriforme*—*Lycoperdon umbrinum*—*Geaster triplex*—*Geaster saccatus*—*Daldinia concentrica*—*Xylaria polymorpha*—*Hydnum*—*Pleurotus nidulans*—*Scleroderma aurantium*—*Scleroderma tenerum*—*Polyporus resinosus*—*Polyporus elegans*—*Polyporus brumalis*—*Polyporus radiatus*—*Polyporus picipes* (?) Differs from the usual form in its pale colored pileus.—*Stereum frustulosum*—*Clavaria ligula*—*Polystictus versicolor*—*Lycoperdon echinatum* (rare).—*Polyporus albellus*—*Lenzites betulina*—*Daedalea unicolor*—*Daedalea confragosa*—*Xylaria polymorpha*, conidial.—*Thelephora terrestris*—*Schizophyllum commune*—*Stereum sericeum*—*Ustulina vulgaris*—*Stemonitis splendens*—*Thelephora Schweinitzii*—*Panus stipticus*—*Polyporus adustus*—*Fomes fomentarius*—*Irpelex cinnamomeus*, effete.—*Polystictus hirsutus*.—*Hyphomyces lactifluorum*—*Favolus europaeus*—*Panus rudis*—*Gyromitra esculenta* (?)—*Clavaria stricta*—*Polyporus Schweinitzii*—*Polystictus perennis*—*Panus torulosus*, I think.—*Polyporus*, belonging to the mesopodal section *Lentus*, but species unknown to me.—*Daedalea confragosa* (form *Trametes Bulliardii*).—*Paxillus atroamentosus*—*Craterellus cornucopoides*—*Hydnum* (Sp.)—*Clavaria* (Sp.)—*Polystictus pergamenus*—*Polyporus rufescens*, well developed, "an undistorted, *Polyporus distortus*"—*Polyporus Peckii*—*Polyporus melanoporus*, as I believe, but I do not recall receiving it before from United States. I know the species in Europe.—*Polyporus melanoporus*, same as preceding but thinner.—*Polyporus sulphureus*—*Lenzites saepiaria*, discolored.—*Spathularia flavida*.—*Polyporus picipes*.

GRIFFITHS, DAVID, District of Columbia:

Simblum sphaerocephalum, red when fresh. From Texas.

HADLEY, MRS. A. M., Vermont:

Polyporus lucidus—*Polystictus circinatus*—*Calvatia gigantea*.

HRDLICKA, DR. A., Argentina:

Calvatia lilacina, as it grows in every country of the world.—*Tylostoma australlana*. Seems to agree with my specimen from Australia.—*Discomycete* unknown to me.

HANMER, C. C., Connecticut:

Scleroderma flavidum (?)—*Hydnum septentrionale*—*Polyporus cuticularis*—*Polyporus galactinus* (?)—*Trametes suavcolens*—*Polyporus Schweinitzii*—*Polyporus spumeus* (?) or close. The abundant spores are apple seed shape or subglobose, 4 x 5 hyaline, smooth, guttulate in water. The plant is also much thinner than *spumeus* of Europe.

HARIOT, P., France:

Polystictus lutescens (originally labeled *hirsutus*), from New Caledonia.

HARPER, E. T., Illinois:

Polyporus (cfr. *borealis*).

HARRISON, CATHARINE, Pennsylvania:

Calvatia lilacina.

HASSLER, DR. F. A., California:

Scleroderma Ceba.

HAWLEY, H. C., England:

Polyporus salignus.

HÉMET, L., France:

Lycoperdon piriforme—*Rhizopogon rubescens* (probably).

HILL, OSCAR, Massachusetts:

Polyporus adustus—*Polyporus Spraguei*—*Polyporus benzoinus*—*Polyporus* (sp.)—*Polyporus albellus*, Pk.

HY, F., France:

Geaster minimus (rare in Europe).

JAMES, DAVIS L., Ohio:

Polyporus robinophilus.

JOLIET HIGH SCHOOL, Illinois:

Polyporus adustus, young.

JONES, MISS KATE A., New Hampshire:

Panus rudis—*Daedalea confragosa*—*Polystictus cinnabarinus*—*Polystictus versicolor*—*Polyporus adustus*—*Polyporus lucidus*, on apple stump.

From Vermont, *Panus stipticus*—*Polyporus brumalis*—*Lenzites sepiaria*—*Lenzites betulina*—*Polystictus pergamenus*—*Polystictus versicolor*—*Stereum fasciatum*—*Daedalea unicolor*.

KARSTEN, P. A., Finland:

Specimens from Russia. *Catastoma defossum*—*Catastoma Pila*. Smaller but otherwise same as recently named by Robert Fries from South America.—*Catastoma* (probably unnamed) between *defossum* and *Pila*.—*Lycopodon polymorphum*—*Lycopodon pusillum*.

KAUFMANN, C. M., Michigan:

Fomes pinicola—*Fomes Everhartii*—*Fomes ignarius*—*Fomes ignarius* var. *nigricans*—*Stereum radiatum*, fine specimen.—*Polyporus salignus*—*Trametes sepium*—*Polystictus pergamenus*—*Daedalea confragosa*, abnormal on Tamarac—*Polyporus albellus* (?)—*Poria pulchella*—*Poria attenuata*—*Polyporus gilvus*—*Stereum bicolor*—*Poria subacida*—*Trametes abietis*—*Lenzites protracta*—*Stereum fasciatum*—*Polyporus*. Unknown to me. It is closer to *robiniophilus* than any species I know.—Also several *Porias* and *Corticiums* unknown to me.

KILLGOUR, ARTHUR, New Jersey:

Xylaria polymorpha. The stems of these specimens are *long*, 2-3 inches, not "short or almost none," as stated.

KNOX, WM., Ohio:

Hydnum coralloides.

KRÜGER, W., Germany:

Fomes leucophaeus—*Polystictus hirsutus* (old)—*Polystictus versicolor*.

LANGTON, THOS., Canada:

Pleurotus sérotinus—*Clitopilus abortivus* (?)—*Irpex lacteus*—*Polyporus volvatus*—*Peziza*—*Helvella elastica*—*Polyporus "adriondackensis,"* as the plant has been labeled in my collection for some years since it was collected in the Adirondacks, N. Y. I have never found a name for it, and am sure it is none of Peck's species.—*Stereum spadiceum*—*Phlebia radiata*—*Polyporus albellus* Pk.—*Hydnum adustum*—*Helvella crispa*—*Favolus europaeus*—*Polyporus elegans*—*Polyporus brumalis*—*Polyporus varius*—*Chlorosplenium versiforme*. A much rarer species than *aeruginosum*.—*Daedalea unicolor*—*Stereum tabacinum*—Genus *Dacryopsis* (?) Very interesting and new to me.—*Clavaria ligula*—*Trogia crispa*—*Irpex lactea*—*Polyporus benzoinus*—*Helotium confluens*—*Lenzites protracta* (?) It departs from the usual form.—*Gyrocephalus rufus*. Rare plant which I am always glad to get.—*Helvella crispa*—*Helvella infula*—*Clitocobe robusta* (as named by Mr. Langton)—"*Tremella frondosa*," as known in American mycology, and also I think in the sense of Fries, but not in the original sense as illustrated by Bulliard. The French plant is different as I know it around Paris.—*Coniophora puteana*.

LAUGHLIN, MISS EMMA E., Ohio:

Schizophyllum commune.

LEVY, MISS DAISY J., New York:

Calvatia elata, very young.—*Guepinia spathulata*—*Polyporus* (sp.).

LLOYD, J. U., Ohio:
Calvatia rubroflava.

MACKINTOSH, R. B., Massachusetts:
Hydnum mirabilis, in sense of Peck and probably correct. Said to be also *cristatum* as named by Bresadola.

MACOUN, JOHN, Canada:
Phallus Ravenelii.

MASSALONGO, PROFESSOR C., Italy:
Lycoperdon atropurpureum—*Hydnum* (sp.)—*Thelephora Tremmancensis*, Mss. name—*Polystictus versicolor*—*Lenzites tricolor*—*Lenzites flaccida*.

MILNER, DR. S. G., Michigan:
Pleurotus nidulans.

MORRIS, GEO. E., Massachusetts:
Polyporus albellus—*Trametes suaveolens*—*Polyporus carneus*—*Polystictus conchifer*—*Fomes conchatus*—*Daedalea unicolor* (?) I take this to be an aberrant form with white, rigid, subtrametose pores. It surely is unusual.—*Polyporus Schweinitzii*—*Polyporus radiatus*—*Daedalea confragosa*, thin, trametoid form.—*Polyporus*, thin, rigid, white. This is very much my idea of what floriformis of Quélet should be, but I am much in doubt.

NELSON, N. L. T., Iowa:
Polystictus cinnabarinus—*Polystictus versicolor*—*Polystictus hirsutus*—*Trametes hispida*—*Schizophyllum commune*—*Polyporus gilvus*—*Favulus europaeus*—*Plowrightia morbosa*—*Fomes pomaceus*—*Daedalea unicolor*—*Hirneola auricula-Judae*—*Polystictus sanguineus*, a Northern station—*Panus dealbatus*, rarely received by me.—*Polyporus adustus*—*Fomes leucophaeus*.

NOBLE, MRS. M. A., Florida:
Lenzites saepiaria (three forms).—*Guepinia spathularia*, the Southern slender form.—*Pleurotus nidulans*—*Polystictus sanguineus*—*Polystictus*, not recognized by me, but evidently something that has bleached out.—*Polystictus floridanus*—*Cyathus Lesueurii*—*Panus* (sp.)—*Guepinia spathularia*, a slender, tropical form.

OVERHOLTS, L. O., Ohio:
Hydnum chrysocomum.

PAZSCHKE, DR. O., Germany:
From Germany, *Daedalea unicolor*—*Poria medulla panis*—*Polyporus albidus*—*Polyporus amorphus*—*Polyporus adustus*, resupinate—*Fomes robustus*—*Polystictus zonatus*—*Polyporus salignus*—*Polyporus radiatus*—*Fomes annosus*.

From Belgium, *Trametes*—*Polyporus rufescens*.

From Finland, col. Karsten, *Polyporus amorphus*—*Polyporus ovinus*
—*Poria laevigata* (?).

From New Guinea, *Polystictus occidentalis*.

From Portugal, col. Moeller, *Fomes*, close to *conchatus*—*Fomes ulmarius*—*Trametes hispida*, Bagl.—*Fomes fomentarius*, form.

From South Africa. Many of these are from Kalchbrenner's herbarium, hence are co-types. *Poria* (close to *contigua*), "*Fomes rudis*" of Kalch. determination.—*Polyporus gilvus* (co-type of "*isidoides*," Kalch.)—*Polystictus*, cfr. *versicolor*—*Trametes*—*Polystictus* "*illotus*," co-type—*Polystictus cervino-gilvus* (= *chrysoleucus*, Kalch.)—*Lenzites repanda*—*Polyporus sulphureus*—*Polyporus scruposus*.

PERCIVAL, MRS. M. S., Tennessee:

Polyporus sulphureus—*Mitremyces Ravenelii*—*Mitremyces cinnabarinus*. Mrs. Percival writes me that this is a rare species in her region, much more rare than our other two American species, *lutescens* and *Ravenelii*. In some localities *cinnabarinus* is common, and the only species that occurs.

PLITT, CHARLES C., Maryland:

Fomes graveolens. Rarely received by me.—*Stereum fasciatum*—*Polystictus azureus* Fr. which is a dark blue color form of *Polystictus versicolor*. It was originally from Mexico but reaches me rarely from United States.—*Polystictus pergamenus*.

POOL, R. J., Nebraska:

Polyporus gilvus—*Fomes leucophaeus*—*Daedalea confragosa*, abnormal.—*Fomes pomaceus*—*Stereum albo-badium*—*Trametes sepium*—*Polystictus versicolor* (pale form)—*Stereum hirsutum*—*Poria tulipifera*—*Lenzites protracta*—*Polyporus picipes*—*Polyporus dichrous*—*Daedalea unicolor*—*Polystictus velutinus*—*Daedalea confragosa*—*Trametes hispida*—*Polyporus adustus*—*Merulius corium*—*Polystictus hirsutus*—*Poria*, setae long, slender.—*Stereum*, with slender metuloids.—*Stereum cinerescens*—*Poria*—*Corticium* (sp.)—*Irpex lacteus*—*Poria sinuosa* (?)—*Trametes sepium* (?)

RANKIN, W. H., New York:

Trametes abietis—*Polyporus rutilans*, more rugulose than usual.—*Peniophora cinerea*—*Polyporus chioneus*—*Poria*—*Fomes* (cfr. *laevigata*)—*Polyporus squamosus*. *Lapsus-sessile*, otherwise same.—*Polyporus* "*resinosus*"—*Polyporus elegans*—*Polystictus cinnabarinus*—*Thelephora terrestris*—*Daedalea unicolor*—*Favolus europaeus*—*Fomes igniarius* (form *nigricans*)—*Fomes pinicola*—"*Tremella albidus*"—*Poria attenuata*, a color form of *nitida* of Europe.—*Polystictus hirsutus*—*Ganoderma sessile*.

REA, CARLETON, England:

Polyporus croceus not in the English text-books.—*Polyporus albidus* in sense of Bresadola.—*Polyporus picipes* as known in England. A dark form of *varius*.—*Polyporus dryadeus*—*Polyporus* (*Ganoderma*) *resinaceus* (teste Bresadola).

RICK, REV., Brazil:

Twelve species of Polystictus—Ten species of Polyporus—Polystictus, with peculiar olive context and belongs close to aratus. The hymenial elements are white and spores also, I think.—Polystictus lodinus tending toward tabacinum—Polyporus labeled "Fomes rufitincta."—Two species of Fomes. Also Fomes which looks like "plebius," as determined at Kew from Brazil and Cuba, but surely not the type from India.—Polystictus (cfr. membranaceus).—Polyporus valenzuelianus (= sapinus (?)) (= hemileucus)—Polystictus rigida—Polystictus "mutabilis p. p." I take mutabilis in another sense, but I think this was one of the "types."—Polyporus (salignus, I guess).—Polyporus. There exists no specimen of "Fomes leprosus Fr." as Rev. Rick determined this collection.—Polyporus (I think lignosus Klotz. etc.)—Daedalea—Polyporus. The rose color when young, changing to bay, I presume is the character of this plant. It seems to me to answer to Montagne's description of Polyporus phaeoporus of which a little frustule at Kew is all that exists. It may also have been "Feei," of which no type is known.—Fomes with white, then adustus context. I have seen it at Kew, but can not find it now.—Polystictus, labeled Polystictus roseolus Rick (Published (?))—Polystictus. I have seen it at Kew.

ROBERT, DOCTEUR, France:

Fomes applanatus—Stereum hirsutum—"specimen on Pinus halepensis." Received as "Polyporus conchatus," surely not.

ROLFS, P. H., Florida:

Polyporus gilvus. Form with a dark hymenium. Setae abundant.

ROUSSEAU, MADAME, Belgium:

All but one or two as named by Madame Rousseau. Schizophyllum commune—Merulius corium—Merulius rufus—Poria sanguinolenta—Poria callosa—Poria aurantiaca—Poria ferruginosa—Poria vitrea—Polyporus umbellatus. Sclerotium, or rather I think a tuberous rhizome.—Fomes pomaceus—Daedalea unicolor—Polystictus abietinus—Polyporus adustus—Fomes applanatus—Merulius himantioides (?) Loosely adherent with a white subiculum. Spores abundant, 5 x 10, deeply colored.—Merulius tremellosus—Geaster Schmidelii—Lenzites saepiaria—Polyporus amorphus—Polystictus hirsutus.

SCHUMO, S. L., Pennsylvania:

From Newfoundland, Polyporus albellus.

From New Jersey, Fomes graveolens—Phlebia radiata—Phallus Ravenelii.

From North Carolina, Polystictus perennis (?) More obese, more strongly velutinate and brighter color than the usual form. It comes closer to perennis, however, than any other of our American species. I could easily claim it as a "new species."—Crucibulum vulgare—Conidial Xylaria—Polystictus cinnabarinus—Thelephora Schweinitzii—Fuligo varians—Polyporus gilvus—Lenzites betulina—Polystictus pergamenus—Stereum sericeum—Pa-

nus rudis—*Polyporus sulphureus*—*Polystictus byssinus*. The last-named collected by Silas Schumo in Guatemala and determined by Ellis as *Polystictus occidentalis*. It is also *P. Crocatus*, Fr.

SMITH, G. D., Kentucky:

Polyporus hispidus, a fine specimen on black oak.—*Irpex pachylon*.
From Ohio, *Polyporus cuticularis*—*Polyporus velutinus*.

SMITH, THEODATE L., New Hampshire:

Hydnum humidum, Banker, according to description. Color orange then brown, very fragrant when received.—*Polyporus circinatus*, fine collection.—*Stereum tabacinum*—*Hydnum vellereum*—*Hydnum aurantiacum*—*Hydnum* (sp.)—*Polyporus radiatus*—*Daedalea confragosa*, thin form. Also *Hydnum ochraceum*, from Massachusetts.

STERLING, E. B., New Jersey:

Polyporus albellus—*Hydnum mirabile*, in sense of Peck—*Hydnum erinaceum*—*Polyporus Spraguei*—*Hirneola auriculae-Judae* (?) Note.—This is doubtful. It should be studied in contrast with the usual form.—*Polystictus fomicola* (?) I so reported these but they differ in the bright color, and should be compared with *cinnamomeus*.—*Polyporus hispidus*. Received fresh, the largest specimen I ever saw. It measured 16 x 10 x 3 inches, and weighed 5½ pounds. It is rather a rare plant in the United States.

STOVER, W. G., Ohio:

Polyporus adustus—*Polyporus Grayii*—*Polyporus resinus*—*Polyporus fraxineus*. The annual form and a rare plant in the United States. This is the third collection known to me. In Europe it is more common and there usually a *Fomes*.—*Favolus europaeus*—*Fomes connatus*—*Polyporus salignus*—*Stereum spadiceum*—*Hydnum auriscalpium*. Rare except in pine woods. These (apparently) did not grow on pine cones, the usual habitat—*Fomes Ohioensis*—Two species of *Poria*—*Polyporus gilvus*—*Polystictus pergamenus*, also form with white pores.—*Polystictus hirsutus*—*Stereum fasciatum*—*Polystictus versicolor*—*Stereum complicatum*—*Polyporus rufescens*. Fine specimen, rarely so well developed in this country.—*Stereum rubiginosum*—*Polyporus frondosus*—*Poria* (?) Probably resupinate *adustus*.

STREETER, MRS. HANNAH, Pennsylvania:

Polyporus retipes. A fine specimen of a rare plant. Collected at Laurel Springs, N. J.—*Polyporus griseus*—*Polyporus retipes*. On comparison I think this is same as the original I have from Alabama. I think *Polyporus retipes* has never been collected before except from its original station in Alabama. The finding of this rare species in Pennsylvania is of much interest.

SUTLIFF, MISS MARY L., California:

Scleroderma. Probably an unnamed species. It differs from our eastern form not only in its peridium characters, but in having more reticulate spores.

TRUE, DR. H. L., Ohio:

Hydnum pulcherrimum.

USSHER, CHAS. B., Straits Settlements:

Microscopic fungus.

VAN BAMBEKE, DR. CHARLES, Belgium:

Lenzites saepiaria (?) Very pale for *saepiaria*. It probably is *protracta*, (Fr. Icon. t. 191).—*Polyporus adustus*—*Scleroderma Bovista* (in sense of Dr. Van Bámbeke).—*Polyporus varius*—*Trametes suaveolens*—*Polyporus cuticularia*—*Polyporus fumosus*—*Poria viallantii* (?)—*Irpex obliquus* (?)

WALKER, MISS ISABEL M., Canada:

Clavaria fusiforme—*Spathularia flavida*—*Geoglossum fumosum*—*Mutinus caninus* (fresh).—*Daedalea confragosa* thin form.—*Daedalea unicolor*—*Polystictus hirsutus*—*Polystictus versicolor*—*Lenzites saepiaria*—*Polystictus perennis*—*Daldinia concentrica*—*Polyporus carneus*—*Lycoperdon cepaeforme*—*Polyporus brumalis*—*Thelephora terrestris*—*Spathularia flavida*—*Spathularia velutipes*—*Cordyceps ophiglossoides*—*Leotia chlorocephala*—*Xylaria*—*Xylaria polymorpha* (obese form).—Two species of *Clavaria*.—Three species of *Peziza*.

WARNER, H. E., New Hampshire:

Polyporus albellus.

WEIDMANN, ANT., Austria:

Polyporus salignus.

WESTGATE, J. M., Texas:

Strobilomyces strobilaceus.

WHETSTONE, DR. M. S., Minnesota:

Panus torulosus—*Hydnum albidum*, probably from its small size—*Polystictus hirsutus*—*Polystictus pergamenus*—*Trametes hispidus*—*Stereum spadiceum*—*Polyporus albellus*—*Polystictus hirsutus*—*Daedalea confragosa*—*Polyporus sulphureus*, discolored and also abnormal—*Polyporus adustus*—*Calvatia lilacina*.

WILSON, REV. JAMES, Australia:

An excellent photograph of what is probably *Polystictus pterygodes*.

WOOTON, E. O., New Mexico:

Battarrea Stevenii—*Montagnitis Candollei*—*Gyrophragmium decipiens*—*Chlamydopus Meyenianus*, cfr. Myc. Notes, p. 134, Plate 10. A rare plant in the United States. Known only from New Mexico (Wright and Wooton), and Washington (Piper).

WOULFF, E., Russia:

Irpex lacteus.

F. E. S., Syracuse, N. Y.:

Strobilomyces strobilaceus (or a form).







LETTER No. 31.

List (partial) of the specimens found by me on my return to Paris, February, 1911. I am very much gratified with the liberal sendings of specimens that I received on my return to Paris. There were about five hundred specimens, including I am sure many rare species of tropical countries. The following is a list of those that I recognize, and there are a number of others yet undetermined.

The subject of the Polypores is so extensive, embracing over two thousand alleged species, that it is impossible to carry it all in my mind. My notes made in the various museums and my photographs have all been sent to Kew, where I expect to work for the next three months. I will take the undetermined specimens to Kew, and shall probably be able to determine most of them. I will then publish a supplementary list. Very little is known as to the foreign Polyporei. I hope my correspondents will continue to send such specimens as come to their notice. It is only by contrast, comparison and familiarity, and abundant material that the truth can be learned about them, and I shall be very grateful for specimens to aid in the work.

C. G. LLOYD,

February, 1911.

No. 63 rue Buffon, Paris, France.

ALLEN, W. B., England:

Polyporus picipes.

BARKER, W. E., New Zealand:

Geaster triplex.

BRAUN, DR. K., German Africa:

Ganoderma mangifera—*Ganoderma mastoporus*—*Polystictus* (*Trametes*) *obstinatus*—*Polystictus affinis*—*Polystictus occidentalis*, thin form—*Lentinus dactyophorus*, and a species of *Polystictus* very close to *hirsutus*, and a *Polyporus* unknown to me.

CHEEL, E., Australia:

A fine lot of puff balls including two rare ones.—*Lycoperdon purpureum*—*Bovistella scabra*—*Catastoma anomalum*, fine specimen showing the exoperidium characters—*Calvatia lilacina*—*Tylostoma McAlpinianum*—*Mycenastrum Corium*—*Aseroe rubra*, the type form—*Scleroderma flavidum*—*Geaster vittatus*—*Calvatia rubro-flava*. This is the second time this has reached me from Australia. It is now known from Australia, United States, Brazil, and Argentina.

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CAVE, G. H., India:

Polyporus gilvus—*Fomes* (*Ganoderma*) *australis*—*Polystictus hirsutus*, more uniformly gray than the common plant of Europe.—*Polystictus xanthopus*, and others at present unknown to me.

EVANS, T. B., Transvaal:

Geaster floriformis—*Geaster Schmidellii*—*Lycoperdon pratense*—*Polysaccum crassipes*.

FELIPPONE, DR. F., Uruguay:

Polystictus sanguinarius—*Polystictus cinnabarinus*—*Polyporus gilvus*—*Polyporus adustus*—*Trametes hispida*, darker brown and with coarser hairs than the European plant.—*Scleroderma Ceba*—*Lycoperdon* (cfr. *cruciatum*)—*Polystictus pinsitus*—*Polystictus versicolor*, not exactly the same plant as the European forms, but too close to be considered distinct.—*Schizophyllum commune*—Three undetermined.

GONO, M., Japan:

Polyporus adustus, three collections, thick form—*Polyporus adustus*, thin form—*Lenzites protracta*. Mr. Gono sends me four collections, and it is evidently frequent in Japan. It is the same exactly as is common in the United States and rare in Europe.—*Polystictus versicolor*—Several collections unknown to me.

JACZEWSKI, PROF. A. VON, Russia:

Polystictus abietinus—*Lenzites sepiaria*—*Polyporus amorphus*—*Polyporus sulphureus*—*Fomes pinicola*—*Daedalea quercina*—*Fomes connatus*—*Polyporus radiatus*—*Fomes fomentarius*—*Polystictus perennis*—*Poria medulla-panis* (?)—*Polystictus lutescens*, typical of Persoon's specimens—*Fomes robustus* (?)—*Polyporus fragilis* (?)—*Fomes pomaceus*—*Fomes leucophaeus*—*Poria* (sp.)—*Polystictus zonatus*.

JAHANDIEZ, E., France:

Stereum hirsutum—*Stereum spadiceum*—*Polyporus rufescens*—*Polyporus circinatus*—*Polyporus hispidus*—*Polyporus lucidus*—*Fomes robustus* (?)—*Fomes pinicola*—*Fomes* (sp ?)—*Fomes torulosus* (young ?)—*Polystictus pergamenus*—*Polystictus abietinus*—*Polystictus perennis*—*Hydnum velutinum*—*Hydnum scobiculatum* (?)—*Hydnum ferruginosum*—*Hydnum nigrum*—*Trametes pinl*—*Trametes campestris*.

JARVIS, EDMUND, Australia:

Crucibulum vulgare—*Geaster saccatus*—*Boletus* (sp.)—*Polyporus betulinus*—*Polyporus squamosus*, more reddish brown than the European form but surely the same species.—*Fomes applanatus* (approaching *leucophaeus*)—*Polystictus affinis* (sessile)—*Polystictus cinnabarinus*—*Fuligo septica*—*Schizophyllum commune*—*Guepinia spathulata*—*Polystictus hirsutus*, and a number of others as yet not determined.

KIRTIKAR, COL. K. R., India:

Lenzites ochroleucus, a curious, irpicoid form—*Lenzites ochroleucus*, daedaloid form—*Lenzites ochroleucus*, lenzitoid form—*Hexagona subtenuis*—*Polyporus lucidus*, tropical form, spores distinctly rough.—*Polystictus xanthopus*—*Polystictus flavus*—*Lycoperdon* or *Calvatia* (?) Seems close to polymorphum—*Lycoperdon nigrum*—Several specimens not yet determined.

LUJA, EDOUARD, Congo Belge:

Fomes australis—*Polystictus concinnus*—*Polystictus occidentalis*—*Polystictus flavus*—*Lenzites repanda*—*Trametes Persoonii*—*Stereum lobatum*—*Polyporus lucidus*, curiously developed sterile form—*Polystictus xanthopus*, very abundant—*Polystictus concinnus*, mixed with *xanthopus*, and it may be only a velutinate form of it but it appears very distinct.—*Polystictus sanguineus*—*Hexagona Henschallii*, sent abundantly by Mr. Luja. Previously known in Europe from a single specimen at Kew.—*Polyporus gilvus*—*Trametes Hystrix*. These specimens are not dimidiate, but inserted by a short stipe-like base.—*Hexagona*, a very distinct species that will soon be illustrated in Mycological Notes.—In addition two unnamed species of *Hexagona* and a species of *Fomes* not recognized by me.

MACBRIDE, PROFESSOR T. H., Iowa:

Schenella simplex, co-type specimen.

McALPINE, D., Australia.

Geaster triplex.

MENEZES, CARLOS A. DE, Maderia:

Scleroderma verrucosum (?) *Peridium* smooth. Spores more reticulate.—*Polystictus versicolor*—*Boletus bovinus*—*Schizophyllum commune*—*Fomes pomaceus*—*Fomes torulosus*—*Ganoderma resinaceus*.

O'CONNOR, CHAS. A., Mauritius:

Polystictus sanguineus—*Lycoperdon*, close to *piriforme* as to habits, but differs in having no columella. Hyaline, septate, capillitium and smooth, ovate spores.—*Polyporus gilvus*—*Hirneola auricula-Judae*—*Polyporus* (*Ganoderma*) *mastoporus*, compared with type at Paris.—*Polystictus flabelliformis*, same as types which were from Mauritius—*Fomes fasciatus*, which is the tropical representation of *Fomes fomentarius* of the temperate regions.—*Trametes Hystrix*, only known from Africa, and often confused with *Trametes hydroides*.—*Lenzites repanda*—*Geaster mirabilis*—*Schizophyllum commune*—*Morchella* (cfr. *conica*, but much more deeply alveolate).—*Aseroe Zeylandica*. This is the first definite knowledge we have had of a species of *Aseroe* from Africa.—*Phallus indusiatus*. (Cfr. *Myc. Notes* for an interesting account by Mr. O'Connor of the variations of this species in Mauritius).—*Simblum periphragmoides*, an abnormal, double specimen, but unfortunately broken in transit.

OLIVIER, ERNEST, France:

Polyporus (close to *albidus*)—*Fomes pomaceus*—*Stereum hirsutum*—*Fomes ribis*—*Corticium* (sp.)—*Fomes applanatus*—*Polyporus adustus*—*Polystictus versicolor*—*Polyporus tamaricis*.

PANAU, CHARLES, France:

Polystictus Montagnei, a rare plant in both Europe and the United States.

PATTERSON, W. H., West Indies:

Polystictus occidentalis—*Polystictus pinsitus*—*Polystictus rigens*—*Polystictus lutescens*—*Lenzites saepiaria*—*Hirneola auricula-Judae*—*Schizophyllum commune*—*Polystictus versicolor*, thick, tropical form.

PETCH, T., Ceylon:

Specimen sent as "*Fomes lucidus*, perennial," but it has different spores, and I think *Polyporus lucidus* is never perennial.

READER, F. M., Australia:

Calvatia, unnamed, I think. *Capillitium* hyaline, septate. Spores smooth, guttulate, 4 mic. Gleba olive.—*Scleroderma flavidum*.

PAUL, J. T., Australia:

Scleroderma flavidum—*Polysaccum pisocarpium*—*Polyporus betulinus*, an old friend from a new locality.—*Polystictus cinnabarinus*—*Urnula* (sp.)—Also several *Stereums*, etc., unknown to me at present.

RICK, REV. J., Brazil:

Lenzites erubescens. "First pores yellow, then reddish. Often without stalk."—*Polyporus lignosus*—*Polyporus gilvus*—*Lenzites repanda*—*Polyporus* (or *Polystictus*) *licnoides*. Exactly the same as the type in Montagne's herbarium. Thin forms of *gilvus* often pass for it in the Southern United States.—*Polyporus squamosus* (tropical form)—*Polyporus cubensis*, usually called "*Fomes hemileucus*," which is the same plant but it is not a *Fomes*.—*Favolus brasillensis*—A number of others not determined.

TURNER, MISS E. J., Australia:

Hydnangium (probably *australe*, Berk.)—*Stereum hirsutum*—*Poria*—*Polystictus cinnabarinus*—*Stereum* (section *Podoscypha*)—*Stereum* (section *Lloydiella*)—*Clathrus gracilis*—*Peziza* (sp.)—*Clavaria* (sp.)—*Lycoperdon nigrum*—Genus (?)—*Panus* (?)

USSHER, C. B., Straits Settlements:

Polystictus xanthopus (and fine photograph)—*Polystictus Persoonii*. These are the thinnest specimens I have ever noticed, and could well be classed as *Polystictus*. Usually it is much thicker, and is classed as *Trametes*.—*Lycoperdon Wrightii* (yellow form)—*Trametes obstinatus*—*Xylaria*—*Clavaria*, most peculiar, with a fine photograph.—*Hygrophorus*, growing on Termites nests. I have sent it to Professor Petch, who makes a study of the fungi of Termites nests.—*Lachnocladium*—*Lentinus*—*Mutinus bambusinus*, a fine photograph that will be published soon.—Several *polyporoids* which I do not recognize at present, including one which is very peculiar, and which I am sure is unnamed.

VANDERYST, REV. HYAC., Congo Belge:

Fomes australis—*Lenzites repanda*—*Polystictus sanguineus*—*Polystictus flavus*—*Polyporus gilvus*—*Trametes cingulatus*—*Polystictus occidentalis*—A number of specimens not determined.

WEIDMANN, A., Bohemia:

Polyporus borealis—*Polyporus amorphus*, white form—*Fomes conatus*—*Fomes pinicola*—*Polyporus pubescens* (?)—*Fomes fomentarius*—*Polyporus amorphus*, reddish form. Same color as dichrous, but on pine.—*Poria callosa* (?)—*Poria* sp.—*Polyporus rufescens*—*Polystictus versicolor*—*Lenzites abietina*—*Polyporus brumalis*—*Polyporus radiatus*.

WOOD, J. MEDLEY, Africa:

Lentinus dactylophorus—*Lysurus Woodii*, photograph of dried specimen—*Lepiota* (sp.) with notes and drawing.

YOSHINAGA, T., Japan:

Polystictus pergamenus—*Polystictus pergamenus* with a short stem and pale pores.—*Polystictus*, affected with an orange parasite (probably *Hyphomyces*)—*Lenzites repanda*. This specimen has a reddish stain at the base which I think is not normal.—*Polystictus affinis*—*Lenzites protracta*—*Polystictus sanguineus*—*Polystictus azureus*—*Polystictus versicolor*—A number of others as yet undetermined.

ZENKER, G., Africa:

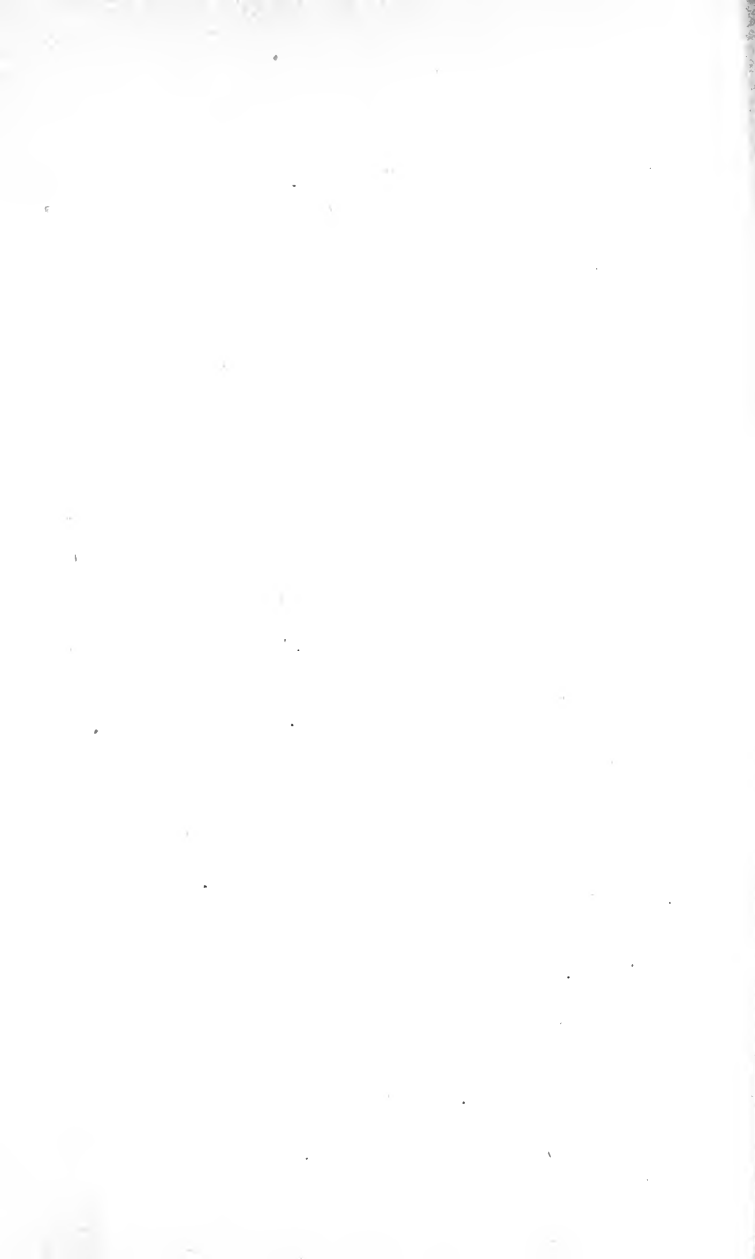
Polystictus sanguineus—*Polyporus lignosus*—*Polystictus occidentalis*—*Polystictus incomptus*. This appeared in my recent pamphlet as *P. Holstii* as named by Hennings, which is the same as *incomptus*, except that it is mesopodal. The type specimen of *incomptus* has a lateral stem, hence was referred by me to *flabelliformis*, but Patouillard calls my attention to Fries' figure of *incomptus* which is mesopodal. Fries did not consider the stem insertion of value, and included both forms. As it is a little inconsistent to consider that Dr. Hennings discovered such a common plant in Africa to be a "new species" at such a late date, I now think that Fries' name should be taken on the strength of his picture and not of his specimen.—*Lycoperdon*, unnamed, I think. It has the general habits and appearance of being little specimens of *piriforme* with the same abundant, white, mycelial threads. Structure quite different. No columella. *Capillitium hyaline*. Spores globose, 4 mic., smooth.

UNKNOWN DONOR (Bag B20), from Australia:

Polystictus sanguineus—*Trametes Muellerii*—*Trametes Muellerii*, thin form—Also a *Lentinus* and a *Trametes* unknown to me.







LETTER No. 32.

List of determinations made at Kew. Most of these specimens were received by me at Paris, but I desired to work further with them before naming them. All concerning which I had any doubt whatever were sent to Rev. Bresadola, who I think has the best critical knowledge of Polyporoid species. In those cases where our views do not coincide, I give both. A number of specimens have reached me that I do not find to be named. I do not name them but indicate them, and would much prefer that the correspondent who sent the specimen would name and publish it. When this is done I hope I shall be advised so that I can adopt the name published. I prefer to name species only when writing systematically on the subject, and only in the event that they are not otherwise named.

April, 1911.

C. G. LLOYD.

RICK, REV. J., Brazil:

Polyporus lentinoides as named by Hennings as a variety of *Polyporus squamosus*. I think it is a smooth, firm form of the European species, but worthy of a separate name.

CAVE, G. H., India, (No. 12):

For me this is unnamed, and I will call it in a forthcoming publication on the stipitate polyporoids, *Polyporus subvirgatus*. It is close to *Polyporus virgatus* of the American tropics. Teste Bresadola—it is too close to *dictyopus*.

CAVE, G. H., India, (No. 3):

Polyporus aquosus as named by Hennings, and *Polyporus lenzioides* by Berkeley. I shall use Hennings' name, as Berkeley's has no meaning in connection with the plant. Both were from Brazil. I am not sure Mr. Cave's plant is the same as the American species, but it is close. When fresh it is soft, fleshy, and watery, probably white. Spores in Mr. Cave's plant are 6-8 x 14-16. Not found in either collection from Brazil.

RICK, REV. J., Brazil:

A thin, tropical form of *Polyporus squamosus* which might have a special name. It is quite different from *fusco-maculatus* of Samoa, as labeled.

O'CONNOR, CHAS. A., Mauritius, (No. 6):

Polyporus albellus as named by Masee, though the name is a duplicate, having been used by Peck. For me it is a form of *grammocephalus* (not for Bresadola).

RICK, REV. J., Brazil:

Polyporus Tricholoma, same as type except it has lost its marginal hairs. Sent as *similis* (Berk.) which is same thing.

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COTTON, A. D., England:

Thelephora spiculosa. Mr. Cotton tells me this is frequent in England, but I think it is not in their text-books. Very rare in the United States, where I have seen it but once. Confirmed by Bresadola.

CROSSLAND, CHARLES, (from Australia):

Trametes lactinea. It is pure white when fresh.

ZENKER, DR. G., Kamerun, Africa, (No. 9):

Lenzites nivea, which I take to be only the lenzitoid form of *Hexagona albid*a (cfr. *Hexagona Synopsis*, fig. 313), and only a smoother form of *Lenzites aspera*. From Africa Dr. Zenker sends all lenzitoid forms. In Samoa I found usually the hexagonal forms.

VANDERYST, REV. HYAC, Congo Belge:

Polystictus (or *Trametes*) *cr*istatus. Compared with type at Kew. It is said that *Zollingeriana* is the same thing. If so, *cr*istatus is a much better name for it.

ZENKER, DR. G., Kamerun (No. 8):

Lenzites repanda. The thinnest specimen of this common, tropical (and much-named) species I ever saw. These are hardly thicker than a sheet of paper.

RICK, REV. J., Brazil:

Polyporus (or *Trametes*) *Feei*, the only type of which is at Paris (sent by Fee). It is not a *Polystictus* as found in Saccardo, but is very close to *Polyporus carneus* "Nees" of the United States, if not the same. Rev. Rick reports it "common in Brazil."

RICK, REV. J., Brazil:

Polystictus versatilis, a frequent plant in the tropics. The fresh specimens have rose-colored pores, a character that disappears from the old herbarium specimens. It was called *Polystictus villosus* by Murrill, probably because that was an earlier date, for the plants have no resemblance whatever. Bresadola advised me that it is also *Polyporus Spegazzinii*, which he based on specimens misnamed *Polyporus Drummondii* by Spegazzini. Spegazzini also called it *Polystictus Hariotii* according to specimens at Paris. Spegazzini was more liberal than particular in passing his compliments around.

YOSHINAGA, T., Japan, (No. 18):

Trametes Dickinsii. Compared with type at Kew which came from Japan. It seems to me quite close to *paleacea* of Africa, but Bresadola says it is quite distinct from that species.

PETCH, T., Ceylon:

Unnamed species of mesopodal *Polyporus*. Mr. Petch tells me that it grows in circles in Ceylon. I am sure Thwaites never sent it to Berkeley.

ZENKER, DR. G., Kamerun, (No. 7):

Favulus, I think unnamed. Teste Bresadola, it is *Favulus princeps* and *Polyporus megaloporus*, all three of which have the same and very peculiar cystidia, but appear to me to differ in other respects.

CROSSLAND, CHARLES, from locality unknown:

Polystictus, I believe unnamed, though it is close to *perennis*. It was referred by Cooke to *cinnamomeus*; surely an error.

GONO, M., Japan, (Nos. 8, 9, and 12):

Trametes (or *Daedalea*) I believe unnamed, close to *Trametes sepium*. It is referred by Bresadola to *styracina* of Hennings, which according to my photograph seems different to me.

GONO, M., Japan, (No. 6):

Not developed.

LUJA, EDOUARD, Congo Belge, (No. 20):

Trametes unnamed.

LUJA, EDOUARD, Congo Belge:

Hexagona Pobeguini.

LUJA, EDOUARD, Congo Belge:

Hexagona dermatiphora, recently published in *Mycological Notes*.

RICK, REV. J., Brazil:

Fomes sulcatus as named by Cooke from Venezuela. This has been referred to *hornodermus* of Africa and the East, but I think it differs in large pores, more punk-like context, and in the context turning dark when cut.

KIRTIKAR, COL. K. R., India, (No. 9):

Polystictus acutus of Cooke. Compared with the type = (*teste* Bresadola) *floccosus* of Junghuhn.

LUJA, EDOUARD, Congo Belge:

Polystictus caperatus. Not so strongly zoned as usual.

YOSHINAGA, T., Japan:

Polystictus, close to *versicolor*.

NOTE 5. It develops that *Polyporus osseus* of Europe occurs in the United States. It is not recorded, I think, hence was not compiled in N. A. F. I have known it many years, having collected it years ago in the Adirondacks; but I never had a name for it until recently when I sent it to Bresadola. The European plant is white. Our plant has a grayish surface, but I think is the same as the European. I do not think that *osseus* can be entered in any of Fries' sections. It is a "new genus" in fact. I would classify it in a section "*Petaloides-Imbricatus*."

NOTE 6. The species common with us, which is now generally known as *Panus rudis*, and which was previously known as *Lentinus Lecomptei* for so many years, is rare or absent from Western Europe, but seems to be common in Eastern Austria, Hungary, etc. I have it abundantly from several correspondents in Austria. I note that it has been distributed three times in Rabenhorst's *Exsic.* (Nos. 212, 1207, and 2403) as *Panus Swainsonii*, Lev. and *Panus Hoffmanni*, Fries, is given as a synonym.

NOTE 7. *Polyporus Feei*. In Letter No. 30 I stated that no type of *Feei* exists. On my last visit to Paris I noticed a plant in the herbarium which was "sent by Feei." I think it is the only type that exists. "*Feei*" has always been known to be a rose

colored species, as is this type. Fries described it as thin, and it passes in Saccardo as a *Polystictus*. It is not a *Polystictus* but a lignescent *Polyporus*, or perhaps a *Trametes*. Rev. Rick finds it common in Brazil.

NOTE 8. *Polyporus* Palliser. I doubt if there was ever a worse confusion made in "science" than the publication of this species. There are two specimens found in Berkeley's herbarium, both the same collection (?), surely the same plant. One was labeled "*Polyporus* Palliser, Berk., Palliser, Brit. N. Am. Exp. Expedition, col. E. Bourgean, 1857-8." The other is labeled "*Trametes* arcticus, Carleton, Brit. Amer. 1858." It is certainly only a form, but quite a distinct form of *Polyporus carneus*, "Nees," so common on pine in the Eastern United States. Whether our *carneus* grows in Java, or whether Nees ever saw it is quite another story. I have just received a fine specimen of the plant from Dr. W. H. Henderson, California, which corresponds exactly on comparison with the specimens at Kew. The context and pores are the same as the ordinary form of *Polyporus carneus*, but the surface is *silvery white with appressed fibrils*, and is a very different looking plant from the usual form. However, it is in the publication that the scientific part comes in. As previously stated, Berkeley labeled one specimen "*Polyporus* Palliser;" another, which is surely the same and probably of the same collection, "*Trametes* arcticus, Berk." He never published either. Cooke referred to "*Polyporus* Palliser," an Australian species which had little resemblance to it, and which had then been named twice by Berkeley. He published (Grev. 10, 98) "*Polyporus* Palliseri, Berk. in Hab. Victoria, Queensland," and drew his description from his Australian misdetermination. He included it the next year in the section of *Fomes* with "rhabarbarino v. ferrugineo" context (it had just been described as having white context) as "*Fomes* Palliseri, Berk. in Herb. = *Trametes* arcticus, Berk.," and Saccardo so compiles it in vol. 6, p. 204, as coming from Victoria, Queensland, and gives the description drawn from the Australian misdetermination. Cooke (Grev. 15, 20) describes "*Polyporus* argentatus, Cooke = *P. Palliseri*, Grev. 10, 98 (non-Berk.);" this time in the section "mollis" of *Polyporus*, though less than a year before he had referred the same plant to *Fomes*. He gives exactly the same description that he previously gave, and Saccardo again compiles it (in *Polyporus*) with exactly the same description word for word as he described to "*Fomes* Palliseri, Berk. in Herb." on another page.

Taking all this into consideration I can not figure out that our American plant has ever been formally described. As it appeared in Saccardo as coming from Australia it was of course not compiled in North American Flora, although the specimens at Kew came from North America and the author of North American Flora claims to have made exhaustive studies of the American species at Kew.

NOTE 9. "*Polyporus* valenzuelianus (= *sapinus* ?) (= *hemileucus*)"—Letter No. 30. This should read *Polyporus cubensis* (= *supinus* ?) (= *hemileucus*).

Polyporus cubensis is a plant that is quite peculiar, but changes with age so that it has been badly confused. When fresh it is white, and Montagne so described his specimens; but with age a dark red stain develops on the upper surface, and finally the whole plant becomes dark. The type of *cubensis* has that character now and the change has been quite evident since Montagne described it. *Hemileucus* of Berkeley is the same plant, also *valenzuelianus* in the sense of Berkeley (not Montagne). *Polyporus* (not *Fomes* as found in Saccardo) *supinus* is doubtful to me. The only type I have seen is in the British Museum. It is small and old, and difficult to determine. Berkeley misdetermined *valenzuelianus* (and endorsed = *resupinatus*, Swartz). Cooke used the date dictionary and gave this as a synonym for *supinus*, and Murrill rakes it up and arranges it with his date dictionary and takes *supinus* as the earliest date. It is quite an early date, and also quite a different plant.

NOTE 10. *Xylaria tentaculata*. On several occasions I have received from Miss Mary Fitzgerald a curious plant that I have been unable to determine. It had hyaline, conidial spores, but never did I find a specimen with ascus spores. I sent it to several and no one could determine it. Recently I received from Miss Fitzgerald a single specimen of a very peculiar *Xylaria* with perfect spores and little processes such as I know in no other species of *Xylaria*. I looked up the "literature" and supposed it was *Xylaria tentaculata*, "described" by Berkeley from South Carolina. I so published it (Letter No. 30) with a question mark. At Kew I recently looked up the type of *Xylaria tentaculata*. It is not the plant I so determined, but is the plant that has so long puzzled me, and which I doubt is even a *Xylaria*. All of which goes to show how much can be learned from our literature.

NOTE 11. Correction.—In Letter No. 29 the last sentence of the report of plants from H. H. Bartlett, beginning with "while occasionally," does not refer to *Scleroderma verrucosum* but to *Polyporus cristatus*, the latter name being omitted through error.

NOTE 12. *Polyporus carneus*, or *Fomes carneus* as it is called, is quite frequent in the United States. It is referred to "Nees," who published from Java a picture from which our American plant was named. I think it is quite doubtful if the reference is correct, as I do not know this species from Java; but it is immaterial as the name for our American plant is so firmly fixed that it would only cause confusion and avail nothing to try to change it. *Polyporus carneus* has been given in Europe (and copied in America) as a synonym for *Fomes roseus* of Europe. In my opinion that is an error. They are quite different plants. *Fomes roseus* is a true *Fomes*, unguulate in shape, and as to form resembles *Fomes fomentarius*. *Polyporus carneus* is always thin and flat. I think it is rather a ligneous *Polyporus* than a *Fomes*. It is very close to *Polyporus Feei* of South America, perhaps the same species, and *Polyporus Feei* passes (in error, however) as a *Polystictus* (sic).

LETTER No. 33.

List of determinations made, at Kew. Most of these specimens were received by me at Paris, but I desired to work further with them before naming them. All concerning which I had any doubt whatever were sent to Rev. Bresadola, who I think has the best critical knowledge of the Polypoid species. In those cases where our views do not coincide, I give both. A number of specimens have reached me that I do not find to be named. I do not name them, but indicate them, and would much prefer that the correspondent who sent the specimen would name and publish it. When this is done I hope I shall be advised so that I can adopt the name published. I prefer to name species only when writing systematically on the subject, and only in the event that they are not otherwise named.

May, 1911.

C. G. LLOYD.

YOSHINAGA, T., Japan, (No. 11):

Lenzites subferruginea, compared with the type at Kew. Named by Berkeley fifty years ago. Discovered to be a new species by Murrill, and called *Lenzites edule*.

YOSHINAGA, T., Japan, (No. 12):

Lenzites nivea, which is only a smoother form of *Lenzites aspera*.

JARVIS, EDMUND, Australia, (Nos. 14, 18, 27):

Stereum illudens.

YOSHINAGA, T., Japan, (No. 2):

Stereum princeps as named by Junghuhn (*Stereum vespilloneum*, *vegetale*, and *contrarium* all seem to me to be the same thing).

PAUL, J. T., Australia:

Stereum lobatum.

PAUL, J. T., Australia:

Stereum Thozetii. The type is small, but I think it corresponds very well. It is the only one at Kew to which I can refer it. Spores hyaline guttulate, smooth, globose, 4 mic.

JARVIS, EDMUND, Australia, (No. 31):

Stereum. This seems to be frequent in Australia, as I have several sendings. I did not succeed in finding it at Kew, however. It is close to

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albobadium of the United States, same color of hymenium, but it has a strongly reflexed portion and is otherwise different. The hymenium is densely covered with crested, hyaline cystidia, hence a "new genus" no doubt.

KIRTIKAR, COL. K. R., India:

Polystictus dermatodes. This was reported in Letter No. 31 as *Polystictus flavus*, but on examining it at Kew I find it has a different structure. The cystidia are the same as the genus *Peniophora*.

JARVIS, EDMUND, Australia, (No. 31 p. p.):

Stereum Thozetii.

JARVIS, EDMUND, Australia, (No. 25):

Stereum vellereum.

O'CONNOR, CHARLES, Mauritius, (No. 14):

Fomes (*Ganoderma*) which I think is not named if it is normal. The tissue is hard, horny, and appears entirely different from the ordinary context of similar species. I find several similar specimens in the museum referred to *Fomes australis*, but I question the reference. I believe *Fomes scansilis* to be a similar abnormality of *Fomes australis*.

PETCH, T., Ceylon:

Polyporus ochroleucus. An old, exoete specimen, such as Berkeley called *Fomes compressus*. When fresh the species is white, but the herbarium specimens gradually turn reddish brown with age. I have specimens from Japan which were white when I received them a year ago, now all are discolored. When exposed to weather the specimens become black (such as this from Mr. Petch), and would never suggest any relation even to the fresh, white plant. It seems to be of wide distribution, Australia, Ceylon, Japan, etc., but is absent from American regions.

LUJA, EDMUND, Congo Belge:

Ganoderma (unnamed) close to *lucidus* and *mangifera*. Spores 5 x 10, smooth. Context too pale for *mangifera* though color, surface, and pores are similar.

O'CONNOR, CHARLES, Mauritius, (No. 2):

Trametes unnamed, I believe. White with a dull upper surface, resembling *Lenzites repanda*. Poor, small, round isabelline. In general appearance close to *Lenzites repanda*, but as to pores it is quite different.

BRAUN, DR. K., German Africa:

Daedalea albo-fuscus as named by Patouillard. I have not seen the type which was described as irpicoid. I should class these specimens in *Polystictus*, close to *biformis*.

O'CONNOR, CHARLES, Mauritius, (No. 11):

Fomes pachyphloeus. This species has very peculiar, microscopic structure, from which it can not be recognized. Superficially it resembles *Fomes fasciatus* for which I at first mistook it without examining it.

FELIPPONE, DR. FLORENTINO, Uruguay, (No. 447):

Fomes (unnamed). Context rhei color. Spores colored, subglobose, 6-7 mic. Setae not found. The above are the leading features of the species. It is close to *Fomes Eberhartii* of the United States, which, however, has abundant setae. It may have been named by Spegazzini, but in Europe there is no way of knowing what he has named.

LUJA, EDOUARD, Congo Belge:

Polyporus vinosus, much thicker than the type from the West Indies, but on comparison I think it is the same. The peculiar, dark, vinous color of the pores is quite characteristic, and the plant is well named. Bresadola (cfr. Rev. Myc. 1890, p. 31) gives also the following synonyms: *badius*, Jungh. Zoll. Plant. Java No. 10; *Mollerinus*, Saccardo, vol. 9, p. 182, and *tristis* as *Trametes* by Leveille. These specimens are quite dimidiate, but it is said to vary, sometimes stipitate.

USSHER, C. B., Straits Settlements, (No. 12):

Fomes mirabilis (as Mr. Ussher will call it). A unique species, not approximating any other known. Pileus hard, woody, with a hard, rugulose, zoned, smooth crust which is brown when wet, pale when dry. Context yellowish when wet but pale when dry, hard, woody with hyaline hyphae. Pores minute, hard, woody, pale brownish context with stuffed, bright yellow mouths. Spores globose, 7-8, light brown color, smooth. This plant is strongly marked, the only *Fomes* known with such strongly yellow pore mouths. As to spores it is an *Amaurodermus* (section), as to crust, pore color, and general appearance it is a *Ganodermus* (section), and it is neither.

JARVIS, EDMUND, Australia:

Fomes pomaceus (form). This Australian form has the same microscopic characters as the common plant of Europe but the context color is brighter (rhei), and the pore mouths are soft to the touch. If the Australian has these features as a usual character, it should have a name as a variety.

LUJA, EDOUARD, Congo Belge:

Fomes unknown to me. In its external characters, the inflated margin, purplish, velutinate hymenium, it is like *torulosus*, but the spores are pale colored, globose 3½-4.

RICK, REV., Brazil:

Trametes stereoides = *Daedalea mollis*, teste Bresadola. I should never have so referred it.

CAVE, G. H., Bengal, (No. 6):

Polystictus pergamenus, old discolored ? ?

YOSHINAGA, PROFESSOR T., Japan, (No. 7):

Polyporus unnamed, close to *Polyporus cuticularis*. Spores abundant, 3 x 4, colored. Setae none.

RICK, REV., Brazil:

Fomes (unnamed) (or *Trametes* ?). Pores and context exactly like those of *Trametes hydnoides*, except pores are in distinct strata. Surface hairs quite different from those of *hydnoides*, being *fine* and *matted*. *Bresadola* suggests perhaps a lapsus of *Trametes hydnoides*.

YOSHINAGA, PROFESSOR T., Japan (No. 24):

Fomes not developed and not determinable.

YOSHINAGA, PROFESSOR T., Japan, (No. 1):

Polyporus semilaccatus, teste *Bresadola*. The specimen is not as old or as dark colored as the type at Kew. The punky context reminds me of young *Fomes fraxineus* of Europe.

FELIPPONE, DR. FLORENTINO, Uruguay, (No. 449):

Unknown to me. Teste *Bresadola* it is an abortive specimen of *Fomes Auberianus*.

VANDERYST, REV. H., Congo Belge:

Unknown to me, but teste *Bresadola* it is *Polystictus auriculiformis*. It has the same context and spines as *gilvus*, but is thin. The surface is velutinate, otherwise close to *licnoides* of the American tropics which has smooth, reddish zones in the type form.

YOSHINAGA, PROFESSOR T., Japan, (No. 15):

Daedalea styracina, old, effete.

JARVIS, EDMUND, Australia, (No. 12):

Polyporus ochroleucus. This is characterized by its large, truncate spores. It is common in Australia and the East, but absent from American territory.

CAVE, G. H., India, (No. 10):

Polyporus adustus, old, effete.

JARVIS, EDMUND, Australia, (No. 23):

Polyporus lilacino-gilvus. The surface of this collection is strongly scrupose with appressed fibrils, which is not always so marked in this species. No. 21 is the same but a thin form.

LETTER No. 34.

Specimens received since last report. I beg to thank those who continue to favor me with specimens. I am now working on the Polyporoid plants, and shall be particularly grateful to receive specimens of this group.

May, 1911.

C. G. LLOYD.

BATES, REV. J. M., Nebraska:

Tylostoma campestris—*Polyporus gilvus*.

DE BELLAING, J., England:

Polyporus squamosus.

BRENCKLE, DR. J. F., North Dakota:

Daedalea unicolor—*Favolus europaeus*—*Trametes hispida*, with white context—*Polystictus versicolor*—*Stereum frustulosum*—*Schizophyllum commune*—*Scleroderma tenerum*—*Fomes* (on cottonwood) unknown to me. It has the same setae and spores as *Fomes pomaceus*, and similar context, but the general appearance is different.

CAHN, MRS. J. A., Michigan:

Polyporus lucidus—*Favolus europaeus*—*Polystictus hirsutus*—*Polystictus versicolor*—*Polystictus cinnabarinus*—*Polyporus albellus*—*Polyporus picipes*—*Stereum complicatum*—*Stereum fasciatum*—*Lenzites saepiaria*—*Polyporus brumalis*—*Polyporus resinosus*—*Polyporus* (unknown to me).

CHESTENNOW, N., Russia:

Daedalea unicolor—*Daedalea sulphurella*, Pk. as labeled, but determination is very doubtful.—*Cyathus vernicosus*—*Corticium polygonium*—*Bovista nigrescens*, more probably *plumbea*.—*Stereum hirsutum*—*Schizophyllum commune*—*Polyporus squamosus*—*Fomes fomentarius*—*Daedalea quercina*—*Polystictus versicolor*—*Polystictus hirsutus*—*Fomes fomentarius*—*Panus stipticus*—*Panus rudis*. It will be noted that these specimens from the distant Caucasian Mountains of Russia are almost all the same as the common species of Europe, a further evidence of the wide distribution of the species of fungi.

CROSSLAND, CHARLES, England:

Lycoperdon cepaeforme—*Bovista nigrescens*, young—*Polyporus fumosus*, much thinner than ordinary—*Polyporus dryadeus*—*Trametes cervinus*—*Polyporus adustus*—*Polyporus tephroleucus*—*Polyporus lacteus* (?)

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—*Poria rancida*—*Polyporus chioneus*, in sense of Bresadola, Fung. Kmet.—*Polyporus caesius*—*Poria sanguinolenta*, spores globose, 5 mic.—*Lenzites repanda*, from Australia—*Fomes australis*, from Australia.

DUMÉE, MONSIEUR, France:
Fomes salicinus.

FISHER, PROFESSOR G. C., Maryland:
Polyporus sulphureus—*Fomes connatus*—*Arachnion album*—*Daedalea confragosa*—*Poria Andersonii*, colored spores and setae—*Lentinus blepharodes*, B. & C. Compared with the type at Kew. It undoubtedly has other names, however. Years ago it was determined for me in Europe as *Lentinus Berterii*, which was a species of India, but I am sure of *blepharodes*, not of the other.

GLATFELTER, N. M., Missouri:
Polyporus robiniophila.

GRIFFIN, D. B., Vermont:
Polyporus lucidus—*Daedalea quercina*—*Fomes leucophaeus*—*Fomes leucophaeus* tending toward *vegetus*.—*Fomes Eberhartii*.

HANMER, C. C., Connecticut:
Tylostoma mammosum, a bleached specimen, collected near Rome, Italy.

HARIOT, P., France:
Poria nitida, color fresh, but I am told was a little yellow when fresh. *Cystidia abundant*, large. Spores 4-5 x 5-6, hyaline, smooth, with granular contents, not guttulate.

HAWLEY, H. C., England:
Polyporus salignus—*Polyporus chioneus* in the sense of Bres. Fung. Kmet. I have not been able to decide as to *chioneus*.

HENDERSON, DR. W. H., California:
Polystictus versicolor—*Polyporus Palliser*, a species named from British America, misdescribed and misascribed to Australia in Saccardo. It is close to *Polyporus carneus* if not a form of it, but has a silvery white surface with appressed fibrils. A bad mess was made of its publication. This specimen has been compared with the type.—*Bovista plumbea*.

JONES, MRS. W. C., Washington:
Crepidotus variabilis—*Crucibulum vulgare*—*Secotium acuminatum*—*Calvatia caelata*, smooth form—*Merulius lacrymans*, a large, thick, white pad just beginning to form its pores. This is the celebrated "dry-rot" that causes so much destruction to floors, etc., and concerning which books have been written.—*Lycoperdon piriforme*.

KAWAMURA, PROFESSOR S., Japan:

Colored sketches of *Pseudocolus Javanicus* and *Laternea bicolumnata*.

LUDWIG, MONSIEUR, France:

Pilacre faginea. I was most glad to get these specimens fresh, as I have never collected it.—*Fomes salicinus*—*Poria* (cfr. *contigua*).

LUJA, EDOUARD, Africa:

Clathrus Fischeri. Nicely dried specimens with color notes which demonstrate, I think, that this is a good species, clearly distinct from *Clathrus cibarius* of Australia.—*Clathrus camerunensis*. This is the first time I have received this species. It is a question if it is not the same as *Clathrus pusillus* of Australia.

MAINGAUD, E., France:

Polyporus betulinus—*Trametes Bulliardii*—*Polystictus hirsutus*—*Polystictus hirsutus*, fauve form = *lutescens*, Pers.—*Peniophora quercina* (determined by Miss Wakefield).

PETCH, PROFESSOR T., Ceylon:

Fomes dochmius, compared with the type—*Polyporus rhinocerotis*, heretofore only known from two specimens at Kew from Malay.—*Poria Ravenelii*, a black species quite common on palm stems in Ceylon.—*Fomes subresinosus*, recently and badly named. A common plant in the museums formerly wrongly referred to *Fomes nigro-laccatus*.—*Polystictus versicolor*, growing on the elevated regions of Ceylon.

ROLFS, P. H., England:

Fomes applanatus—*Poria versipora*—*Fomes pomaceus*—*Polyporus cuticularis*—*Polystictus versicolor*—*Polyporus adustus*—*Polyporus lucidus*—*Polyporus squamosus*—*Polystictus hirsutus*.

SWANTON, E. W., England:

Fomes pomaceus—*Fomes ribis*—*Daedalea unicolor*—*Fomes annosus*. One specimen grew in a perpendicular position and produced a nodular form exactly the same as shown in Bulliard's figure of *Polyporus cryptarum*. It is not Bulliard's "species," however, for the context color is different, but it demonstrates that the peculiar shape of Bulliard's figure is simply due to growing in an abnormal position, and has no specific importance.

SUKSDORF, W. N., Washington:

Crucibulum vulgare—*Polysaccum crassipes*, a nice specimen—*Geaster rufescens*—*Nidula microcarpa*, rare, occurring only in the Northwest.—*Geopora Cooperi*, according to the description. Tuberaceous plants are rarely received. The spores of this specimen are 16 x 28.—*Tylostoma occidentalis*—*Lycoperdon piriforme* (yellow form)—*Geaster hygrometricus* (unopened)—*Lycoperdon cupricum*—*Lycoperdon piriforme*—*Lycoperdon piriforme* (form)—*Lycoperdon umbrinum*—*Lycoperdon atropurpureum*—five collections of *Rhizopogon*, species I can not determine from dried specimens.

TRASK, MRS. BLANCHE, California:

Tylostoma campestris, growing in a low valley, 75 feet below the level of the sea. The genus *Tylostoma* is the only one that would be likely to be found in such a situation.

USSHER, C. B., Straits Settlements:

Phallus indusiatus (dried).

WHETSTONE, DR. M. S., Minnesota:

Hydnum pulcherrimum. Compared with the type at Kew. I judge that *Hydnum cirratum* from Lea, as determined by Berkeley was the same plant. I think *Hydnum cirratum* does not grow at Cincinnati.—*Stereum fasciatum*—*Hypochnus rubro-cinctus*, Ehrenb., probably a lichen. Determined by Miss Wakefield.

NOTE.—Crowded out of Letter No. 26.

STERLING, E. B., New Jersey:

Schizophyllum commune—*Pleurotus dryinus*, teste Peck—*Stereum spadiceum*—*Polyporus dichrous*—*Polyporus gilvus*, abnormal—*Poria radula*—*Polyporus brumalis*—*Polystictus cinnabarinus*—*Polystictus hirsutululus*—*Asterostroma*, a peculiar genus, but the species not known to me—*Merulius Corium* (?)—*Polyporus gilvus*—*Panus stipticus*—*Lenzites corrugata*—*Peziza aurantia*—*Phallus duplicatus*—*Phallus Ravenelii*, both phalloids in quantity—*Fomes leucophaeus*—*Paxillus atrotomentosus*—*Hydnum ochraceum*—*Hypocrea alutacea* (a rare plant)—*Craterellus cornucopioides*, abnormal form—*Polyporus Berkeleyi*—*Polyporus* (sp. unknown to me)—*Polystictus pergamenus*, abnormal—*Guepinia Peziza*, the first time I have received it—*Polystictus fociicola*—*Irpex pachylon*—*Xylaria* (sp.)—*Polystictus versicolor*—*Panus rudis*—*Daedalea unicolor*—*Cantharellus minor*—*Thelephora multipartita* (rare)—*Fomes rimosa*—*Clavaria aurea*—*Lenzites betulina*—*Lentinus vulpinus*—*Lentodium squamulosum*—*Lenzites vialis*—*Daedalea confragosa*—*Polystictus hirsutus*—*Urnula Craterium*—*Craterellus cornucopioides*—*Clavaria* (with a parasite)—*Polystictus pergamenus*—*Polyporus brumalis*—*Tremella* (close to *foliaceus* or *fimbriatus*)—*Geoglossum hirsutum*—*Cantharellus cibarius*—*Stereum versicolor*—*Bulgaria rufa*—*Stereum sericeum*—*Fistulina hepatica*, *conidial form*, teste Patouillard. Very curious. The first time I ever saw it. *Hypocreaceae*. Probably a new genus, teste Patouillard. Immature.—Genus, very curious, unknown to me or to Patouillard.—*Hypomyces Lactiflorum*—*Cyclomyces Greenii* (?) (old specimen)—*Poria tulipifera*—*Thelephora terrestris*—*Daedalea confragosa*, a very peculiar, thin form, which I receive only from Mr. Sterling. It is close to the form known as *Lenzites corrugata*.—*Craterellus dubius*? I think only little, malformed *cornucopioides*.—*Hydnum caput-ursi*—*Hirneola auricula-Judae*—*Hydnum aurantium*—*Polyporus rutilans*—*Thelephora vialis*—*Thelephora* (sp.)—*Polystictus fociicola*—*Hydnum velutinum*—*Polyporus betulinus*—*Polyporus gilvus*.

SWOPE, DR. EUGENE, Ohio:

Fomes graveolens, beautiful specimen.

WHETSTONE, DR. M. S., Minnesota:

Lenzites betulina—*Lenzites saepiaria*—*Polyporus* (cfr. *applanatus*)—*Polyporus adustus*—*Reticularia Lycoperdon*.

LETTER No. 35.

List of specimens received at Kew in May, 1911. These specimens were all sent to my Paris address, No. 63 rue Buffon, and were forwarded to me during the latter days of my stay at Kew. Some of them I do not recognize as to species and had no time to look them up at Kew, hence I have indicated them by a star (*) and will publish them in detail when they are determined.

I beg to thank those who continue to aid me by sending specimens for study. It is only by constantly handling, studying, and comparing them that the subject can be learned. There is one thing that much simplifies the work. It develops that the species of fungi are relatively few and that many common species grow in every country. This makes it easier as every package I receive, no matter from what country, contains species that I recognize at sight and which require no further study on my part. At the same time there is scarcely a package received that does not contain something of special interest. In this letter we record *Polyporus Hartmanni* from Miss Flockton, heretofore known only from the collection at Kew; *Stephensia* from G. Brown, surely without a specific name I think; *Hydnum cinabarinum* from Dr. Becker, South Africa, which was named from the United States, but I do not recall having seen a specimen in any museum and have never before received it.

I hope those who receive my publications will favor me by sending such things as they notice (except the soft, fleshy, watery species that change in drying). It is only from abundant material that much of value can be learned. The scanty material and knowledge on which many "new species" are based is the source of a great deal of the trouble and confusion that now surround the subject.

C. G. LLOYD,
63 rue Buffon,
Paris, France.

CAVARA, FR., Italy:
Polysaccum tuberosum.

PANAU, CHARLES, France:
Daedalea confragosa (trametoid form).

WEIDMANN, ANT., Bohemia:
Polyporus salignus—*Polyporus fumosus*—*Fomes connatus*?, very young.—*Trametes micans*—*Fomes nigricans*, with black pore mouths, were probably white at one time. I have seen the plant in Boudier's collection.

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I think it is not exactly the same plant, the usual form having brown mouths, but it has no distinctive name.—*Trametes serialis*—*Fomes igniarius*—*Poria*??—*Lenzites saepiaria*.

NESPOR, MR., Bohemia:

Fomes robustus (on pine=*Hartigii*)—*Polyporus adustus*—*Trametes serialis*—*Fomes robustus*, on oak—*Lenzites protracta*, abnormal, irpicoid form—*Fomes robustus* (?), color of context too dark (on oak)—*Fomes nigricans*, on birch—*Fomes nigricans*, on willow.

FLOCKTON, MISS MARGARET, Australia:

Polyporus Hartmanni, most interesting, see note 18—*Geaster velutinus*—*Geaster Readeri*—*Polystictus cinnabarinus*—*Scleroderma flavidum*—*Hirneola auricula-Judae*—*Polyporus ochroleucus*—*Schizophyllum commune*—*Polyporus* (probably *Ilacino-gilvus*, young)—*Stereum*—*Clavaria*—*Lycoperdon cepaeforme*—*Fomes*, probably unnamed, see note 14—*Rhizopogon**—*Polyporus Schweinitzii*. This does not correspond exactly with the European plant and may be a distinct form. It has smaller pores and is more firm.—*Thelephora**—*Polyporus**—*Cyathus stercoreus*, probably, no spores found.—*Cyathus stercoreus*.

MAIRE, RENE, France:

Fomes robustus (= *Hartigii*)—*Polyporus pubescens*, Fr.—*Polyporus chioneus*, Fr. (Sense of Bres. *Fungi Kmet.*)—*Polyporus osseus*—*Polyporus tomentosus*, young—*Trametes hispida*—*Polyporus griseus*—*Polyporus velutinus*?—*Polyporus cristatus* (young)—*Fomes terulosus* (malvenu).

CAVE, G. H., India:

Lenzites repanda, a frequent plant in all tropical countries.—*Trametes Persoonii*, an unusual form of a usual species.—*Polyporus licnoides*. Same surface markings and color as the type form from South America but a thicker plant.—*Lycoperdon piriforme*. This grew in high altitude, 8,000 feet.—*Polystictus sanguineus*—*Polyporus adustus*.

RICK, REV. J., Brazil:

Polyporus, unknown to me. Surface with a thin crust, smooth. Context, deep umber, hard but not ligneous. Pores small, paler than the context, the mouths glancing when fresh. No setae. Spores abundant, 5 x 8, smooth, pale colored. Rev. Rick suggests *Fomes scalaris* and *Fomes Patouillardii*. It is not the former and the latter is unknown to me. This plant, however, is not a *Fomes* I think.

BROWN, G., New Zealand:

Sphaerobolus stellatus—*Calvatia caelata*—*Rhizopogon**—*Stephensia** (Note 17)—*Fuligo septica*.

WOOD, J. MEDLEY, Natal:

Polyporus (*Ganoderma*) *Africanus*, undeveloped—Agaric, abnormal, probably deformed *Lentinus*.

HUTCHINGS, S., India:

Calvatia Gardneri.

BECKER, DR. H., Cape Colony:

Panus rudis—*Geaster fornicatus*. A rare species throughout the world, but appearing more common in South Africa.—*Geaster minus*—*Stereum hirsutum*—*Polyporus gilvus*—*Polystictus versicolor*—*Bulgaria**—*Ganoderma* (probably *leucophaeus*, undeveloped)—*Hydnum cinnabarinum* (Note 16).

UNKNOWN DONOR, India:

This package was forwarded to me from Paris to Kew, the original wrapper having been removed at Paris. I could get no clue to its source except that the fungi was wrapped in a newspaper published in India.

Daldinea concentrica—*Cyathus*, spores 12 x 20—*Schizophyllum commune*—*Hirneola auricula-Judae*—two species of *Stereum**—*Trametes ochroleucus*—*Lentinus**—an agaric—*Stereum*,* beautiful white species (Note 13)—*Guepinia spathulata*.

PETCH, T., Ceylon:

Polyporus rubidus.

WOOD, J. MEDLEY, Natal:

Mutinus (or a *Jansia*) dried phalloid. I should not be surprised if it were *Jansia elegans* of Java, but can not say with certainty from a dried specimen.

NOTE 13. An unknown donor of India sends us a beautiful pure white *Stereum*, probably unnamed. We find no such species at Kew. It is light and has more the aspect of a *Polystictus* than a *Stereum*. The hymenium is perfectly smooth, however, and showed no sign of pores. The upper surface is white, strigose.

NOTE 14. A *Fomes*, probably unnamed, has been received from Miss Margaret Flockton, Gladesville, N. S. Wales. It is very close to *Fomes robustus* of Europe and has the same bright rhei context. It has globose, hyaline spores, 8-9 and setae are rarely found on the hymenium. (*Robustus* has smaller spores, 6-7 and I have never found any setae on the hymenium.) Miss Flockton's plant is the Australian analogue of the European species.

NOTE 15. *Polyporus salignus* and *Polyporus fumosus*. Two specimens just received from Ant. Weidmann, Bohemia, illustrate to my mind the difference between *salignus* and *fumosus*, which I believe to be only forms of one species. Both have the same pileus, surface and context, which is a slightly isabelline or adustus color. *Salignus* has pores of the same color as the context, while in *fumosus* they are much darker than the context. I believe *salignus* is a rather common plant on willow. *Fumosus* is much more rare. *Polyporus fumosus* is a plant of very common record, but I think *Polyporus adustus* is often mistaken for it.

NOTE 16. A plant of great interest reaches us from Dr. H. Becker, South Africa. It is a bright cinnabar red, resupinate *Hydnum* and I think is doubtless *Hydnum cinnabarinum*. This species is supposed to have been named by Schweinitz from the United States, but it must be very rare for I do not recall ever having seen it in Schweinitz's herbarium or elsewhere. There is no specimen at Kew. It is supposed that *Hydnum rubrum*, which Persoon records from Russia, is the same plant. Berkeley has stated somewhere that *Hydnum cinnabarinum* is the mycelium of *Polystictus sanguineus*. While it has that general appearance, that is an error if this collection from Dr. Becker is correctly named. The hymenoid spines are perfectly formed and fimbriate with the projecting deep red hyphae. The spores are small, globose, hyaline, 3-4. The entire plant and hyphae have the same bright cinnabar red color as that of *Polystictus sanguineus*.

NOTE 17. G. Brown, of Christchurch, New Zealand, sends us what is always of much interest, a tuberaceous plant, although we have never given this family any detailed study. It belongs to the genus *Stephensia*, but as to species we judge it has no name. The peridium is reddish yellow, smooth. The only species with a yellow peridium that we find named is *Stephensia crocea*, which has a tomentose peridium. No species of the genus *Stephensia* is given in the Handbook, from Australasia.

NOTE 18. *Polyporus Hartmannii*. We are particularly glad to get a specimen of this plant from Miss Margaret Flockton, Gladesville, Australia, as it is an Australian species, only known heretofore from the original sendings at Kew. It is a mesopodal

species with a soft, velutinate, brown surface, soft, spongy, white flesh, and rather small pores that are white when fresh but turn black with age. The spores which were merely described as "minute" are elongated, 5×12 mic., hyaline, smooth. The species is evidently badly figured in the Handbook, as the pileus is not red as shown but is brown. The species nearest to *Polyporus Hartmanni* is *Polyporus radiceatus* of the United States.

NOTE 19. Is *Fomes graveolens* odoriferous? It has that reputation, in fact was so named, and elaborate accounts of it have been written under the name of "sweet knot." It has no odor when dry. I am told by Mr. L. O. Overholts that he has collected it fresh and growing and could not detect any odor. Let us have the truth about this. I hope the next one to find this rare species will note particularly if it has an odor. While we do not question Mr. Overholts' observations, the plant may be odoriferous under certain conditions and not under others. Also what is the color of its spores? Mr. Murrill records them as brown and bases a "new genus" on them. I have never found them but think they will be found to be white. At least most species with similar context have white spores, and the fact that I find no spores in the dried specimens is a suspicious one. Most plants with brown spores have them abundantly in the dried specimens.

NOTE 20. *Polystictus fimbriatus*. This is an abundant plant in Brazil and tropical America, and has reached Europe a number of times. Glaziou sent it in quantities. The hymenium is rarely if ever perfect, usually only part of the pore walls are developed, giving it an appearance something like a *Radulum*, or in a faint degree like a *Hydnum*. It has been variously classed as *Polyporus*, *Polystictus*, *Hydnum*, *Thelephora*, *Becariella* and as a matter of strict accuracy it is neither. It has of course a profusion of specific names to correspond. I confidently expect that Mr. Banker will rise to the occasion and discover it to be a "new genus." Professor McGinty has already made the discovery, but in deference to his distinguished co-worker he writes me he will not announce it at present.

32434.

A recent count of The Lloyd Library shows there are 32434 volumes on the shelves. This is the actual number of the covers or volumes. The pamphlets are collected, twenty-five to fifty in a cover, and each cover counts as one volume.

The Lloyd Library is devoted almost exclusively to Botany and Pharmacy, and one would hardly suppose there had been issued so many books pertaining to these two subjects. And yet we presume that we have up to the present time not been able to get more than one-half that have been published on these subjects.

LETTER No. 36.

BY C. G. LLOYD, CINCINNATI, JUNE, 1911.

THE POLYPOROID TYPES OF LÉVEILLÉ AT LEIDEN.

In the early days the old Dutch botanists made many collections of fungi in Java and other Dutch colonies in the East. With the exception of Junghuhn, they were not published by the collectors, but were vaguely named and preserved in the museum at Leiden. In this museum are many old collections by Korthals, Blume, Zippelius and Junghuhn in the East, and Miquel in Surinam, but very few of them have the collector's name stated on the label.

Léveillé visited the museum about 1844 and when he went back to Paris he published forty-five "new species" that he had noted in the museum at Leiden. He did not endorse his names on any of the labels, but he cited the collectors, often inaccurately I believe, and the names or numbers that the specimens bore. I have worked the collection over and by means of these citations have been able to identify the larger part of the types. It is possible that another search might produce others that I have overlooked, but I went carefully into the matter and believe that very few of those I did not find will ever be found or at least will ever be identified. In my opinion Léveillé did about the poorest work in naming species of any of the old namers, always excepting Kalchbrenner. At that time but few foreign species had been named, but Léveillé did not seem to know even these few. In addition he often based species on very inadequate material, little abortive or undeveloped specimens that should not have been named at all. Recently all the Javanese specimens have been sent to Bresadola and have been named by him. A number of Léveillé's "types" were thus correctly named, but in the renaming they lost their historical value, if Léveillé's work had any value.

There are five series of numbered boxes at Leiden, about a thousand altogether. Léveillé's "types" are distributed through these boxes, hence it was considerable labor to hunt them out, especially as they were not indicated in any particular way.

In the following synopsis I have noted in parentheses the original names or numbers cited by Léveillé, and which have been my chief clue in identifying the types. Of course I have also taken Léveillé's "descriptions" into account to see that the specimens agree, or at least do not too strongly disagree. I have indicated in each case the box number so that it will be an easier task for the next man, if any one else ever thinks it is worth the trouble to hunt out Léveillé's "types."

abnormis (Sist, No. 33). Type not found but from Léveillé's remarks it was probably the common *Polystictus pergamenus*.

albo-marginatus (Zipp. Mss.) Type in Box 51. It is the common *Fomes*, or perhaps *Polyporus*, with brick red context which occurs in the East and is better known and better called *Fomes Kerмес* as Berkeley named it. The white margin may have been "remarkable" at one time, but it is chiefly remarkable now by its total absence, as it is in all of the many specimens of this species that I have seen. To call the plant *albomarginatus* is a case of following priority back to absurdity.

anisopilus (*pubescens*, Fr.). Type in Box 5.* It is found in Saccardo as *Fomes* (sic) and it is a *thin* *Polystictus*. It is rigid, sessile, has *gilvus* context and medium rigid pores. It has been renamed "*Trametes fuscella*, Lév." It has no setae and is not a form of *gilvus*.

aulaxina (*lacerus*) as *Daedalea*. Type in Box 3.* It is a little fragment of a broad-gilled *Lenzites*, probably "*Platyphylla*, Lév." as now named.

acuta (Kor. No. 29) as *Trametes*. Type not found.

atypus (Pol. No. 30). Type not found. There are two collections with this number but neither can possibly be the collection named.

auriculaeformis (Jungh. Mss.). Type in box No. 77, not Jung-huhn's writing, however. It is a single specimen, undoubtedly abnormally developed. It has the same context color and setae as *Polyporus gilvus* and may be an abnormal growth of this species.

Blumei (Magamedon). Type in Box 112. It is a thin, glabrous *Polystictus* with shallow pores, which seems frequent in Java. There are several collections¹ at Leiden, but in other museums this species is usually represented only by *Zollinger*, Coll. No. 11.

Blumei (*viviparus*) as *Hexagona*. Type in Box 183. In my opinion it is a thin, proliferous form of *Hexagona tenuis*.

cinerascens (Pol. No. 82). No type found by me. Specimens in Box 182. So named now and evidently taken as the type, but I think does not agree with the description nor can any connection be drawn from the old labeling.

confertus (*fumosus*, Jungh.). Type in Box 29. I think it is a good species. Zoll. 2d Coll. No. 44 is supposed to be the same thing and better specimens. It is a thin *Polystictus* with *gilvus* context and glabrous, rugulose surface. It has no setae.

convolutus (Zipp. Mss.). Type in Box 169. I should refer it to a subproliferous or lacerated form of *Polystictus Blumei*.

dilatatus (Pol. sector?). Type in Box 178. It is now correctly referred to "*Polystictus Blumei*, Lév." and it is surely the same plant.

flavida, *Daedalea* (Korthals). Type not found, but compare *lurida*.

Hasseltii (*mollis*, van Hasselt). Type not found by me.

Haskarlii (*ferrugineus*, Jungh.). Types are in boxes 213* and 249, although labeled "*ferruginosus*" and probably not from Jung-huhn. It is a common ferruginous *Fomes* in the East with abundant setae and is what I have heretofore been informed is *Fomes Korthalsii*. Léveillé's measurements "4-5 cent." should be I think decimeters. This is evidently *Fomes Korthalsii* in the sense of Léveillé's sub-

sequent publications and of the Zollinger collection, 872, named by L veill , but not the original.

Junghuhnii (Daed. betulina, Jungh.) Lenzites. Type not found.

Junghuhnii (Ins. Bantam) Favolus. Type in Box 209. This is a marked species and I think is the only specimen in any museum. It is a large species with the upper surface strongly "granular-squamulose," arranged in lines. The only similar species I have noted is *Polyporus fuscolineatus* (Type in Brit. Mus.).

Korthalsii (Korth. No. 30). The type cited is in Box 23* and has recently been labeled "*Polyporus sideroides*, L v. form apoda." I think that is correct although it is a plant of quite different appearance from the type of *Polyporus sideroides*. Both have the same context and abundant, globose, colored spores, 8-9 mic. (Compare *Polyporus sideroides*.) I believe that L veill  had *Haskarlii* confused with *Korthalsii* in his later publications and in his naming at Paris and in Zoll. Coll. 872.

leptopilus (Pol. No. 3). Type not found.

lurida (No. 27) as *Daedalea*. The type in Box 143 is now labeled "*Daedalea flavida*, L v.=*Pol. lenziteus*, L v." I think that is correct, also it is in my opinion *ochroleuca*, L v., *Hobsonii*, Berk. and many other names.

Molkenboeri (*macrotrema*, Jungh.) as *Hexagona*. Type in Persoon's Box 42. This was an unauthorized change of Junghuhn's name to which Junghuhn naturally objected. (Cfr. Hex. Synopsis, p. 30 also Letter No. 37.

microcyclus (Zipp. Mss.) Type in Box 138=*Polystictus tabacinus* of Montagne.

multiplex, Favolus (Pol. cristatus). Type in Box 58. I doubt very much if the American specimens usually referred to *Favolus multiplex* in the museums are correctly referred.

murinus (Korthals) as *Lenzites*. Type in Box 242. It is referred to *betulinus* now but I think is a good species. The gills are more of the nature of those of *Lenzites repanda*. The surface is very minutely tomentose, zoned. The context is isabelline.

murinus (*versicolor*, Zipp.) No type found by me. The specimens in Box 137 so labeled now seem to answer L veill 's description but were originally labeled "*Pol. eximius*" which L veill  referred to *Polyporus detonsus*. They are surely the same as *bruncolus* of Berkeley at Kew.

notopus (*proboscideus*, Jungh.) No type found by me at Leiden. There is a specimen so named by L veill  at Paris, but it is too small and scanty to serve any purpose.

Pala (Herb. Miquel). Type not found.

peltatus (Fav. No. 4) as Favolus. Not found by me at Leiden. Specimen named by L veill  at Paris is the same as *Favolus tessellatus*.

platyphylla (Zipp. as Daed.) Type in Persoon's Box 53. It is a broad gilled, white *Lenzites*, a good species probably.

platypilus (Pol. sanguineus, Jungh.) Type not found. There are a number of collections by Junghuhn of *Polystictus sanguineus*,

but they are all correct and none are "50 cm." in diameter. Lèveillé's description would point to *Polystictus Persoonii* though "pores minutissimus" hardly agrees.

plicatus (Blume Mss.). Type not found.

perpusillus (Pers. Mss.). I saw this collection on a previous trip to Leiden but did not look it up this time. It is in Persoon's herbarium. It is a little *Fomes* but there is nothing to indicate that it came from "America boreali" as Lèveillé states, and to my knowledge it is not an American species.

pulchella (*Boletus apus* Kuhl.) as *Hexagona*. Type not found at Leiden. There is a specimen labeled by Lèveillé in Patouillard's herbarium (Cfr. *Hex. synopsis*, p. 25) but it does not agree with his description which was "zonis castaneis." In the original sense it seems to be a common species in the East and in Africa, marked with a dark red stain, and is called in my pamphlet *Hexagona discopoda*, and is probably the same as *tricolor* of Fries.

pusillus (Pers. Mss.). Type in Persoon's herbarium. It is the frequent little species of the tropics, well known under Berkeley's name *Polyporus Rhipidium*. (Cfr. *Pol. Issue* p. 33.)

rhodophaeus (*Rosa mala*, Jungh.) Type in Box 171 has been recently referred to *semilaccatus* of Berkeley.

rigidus (Pol. No. 100). Type not found.

rugulosus (monochrous, Mont.? Pol. No. 57). Type not found by me though I think it must be in some box as there is an index sheet in the covers. This name has been lately taken as referring to the same plant as *Polyporus zonalis* of Berkeley.

sideroides (Pol. No. 24 & 101, Korth.) Type No. 24 is in Box 95. It is the most noteworthy species that Lèveillé named. In general appearance it reminds me of *Polyporus Schweinitzii*. It has a pleuro-podal, *thick, spongy*, tomentose stipe. The context is ferruginous and the abundant spores are colored, globose, 8-9 mic. *Polyporus Korthalsii* in the original sense of Lèveillé is probably a sessile form of the same species. The only specimen I had previously seen of *Polyporus sideroides* is at Kew, named by Lèveillé, and this has a short, lateral stipe. The best specimen of this species at Leiden is in Box 237.

splendens (*sericeus* v. *nitidus*). Type in Box 132.* It is the common *Polystictus pergamenus*.

splendens (Herb. Miq.) as *Daedalea*. Type not found and probably could not be identified if it were.

tener (Sumatra, Korthals) as *Favolus*. Type not found.

tenuissimus (Pol. No. 4). Type not found.

trachodes (*tuberculosis*, Jungh.) Type in Box 34. It is now labeled correctly, *Polyporus scruposus* which is a form of *Polyporus gilvus*.

vittata (Korthals) *Trametes*. Type not found.

LETTER No. 37.

BY C. G. LLOYD, CINCINNATI, JUNE, 1911.

THE POLYPOROID TYPES OF JUNGHUHN PRESERVED AT LEIDEN.

Junghuhn was among the first to name foreign species of fungi. He made large collections in Java and published a paper that was finely illustrated, in 1839. If all of his types were destroyed many of his species would still live, for he gave good accounts of them and good figures of many of them. All of the figures that he cites were not published as it was his intention to continue the work, and he numbered his paper "Fasc. 1," but no further papers were issued by him on the subject. Dr. Gothart assures me that the originals of Junghuhn's figures are not preserved in the museum at Leiden.

However, there are at Leiden colored drawings of a large number of Javanese fungi, and they are the best I have ever seen of tropical fungi. The name of the author of these icones has been lost, but I think I have found evidence to trace them to Zippelius. Most of them are named as new species and it was evidently the intention to publish them, and it is unfortunate that they were not published as they were mostly "new species" at that time. Many of them have been named since. I hope to have more to say as to these icones in a future letter.

Junghuhn's specimens are mostly preserved, and of the thirty-three species that he named I found the types of twenty-seven. The remaining six have probably been misplaced in covers where they do not belong, or his labels for the specimens have been lost. There is no trouble in identifying Junghuhn's types for he labeled each in his peculiar writing.

For many years under the old directors the mycological specimens were neglected in the museum at Leiden, and many specimens were loose in drawers or put away in packages. When I first visited the museum it was not possible to work with any excepting those that were in the herbarium covers. A few years ago Dr. Jongmans had the loose specimens all placed in boxes and numbered and the number that I cite refers to these boxes.

When Junghuhn wrote on fungi several of the Polyporoid genera had not acquired definite meaning and it is a curious occurrence per-

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haps that of the six species of *Favolus*, *Daedalea*, *Laschia* and *Merulius* that Junghuhn named, not one of them would to-day be placed in the genus where Junghuhn placed them. I will give here a short summary of the types of Junghuhn that I have been able to locate and the box or cover where they may be found. It was quite a task to hunt them out among the several hundred boxes of fungi from Java now in the museum. Junghuhn's types have a value that many of them do not possess, for while Berkeley, Montagne, Fries, L veill  and many of the old namers of fungi distributed co-types to other museums, I have never noted any of Junghuhn's specimens except at Leiden.

affinis (as *Merulius*). Type in *Hirneola* cover. It is *Hirneola delicata* which was originally published by Fries as *Laschia delicata*.

annulatus. Type not found by me, but Junghuhn gave such a good illustration that there is no question as to the species. I collected it in Samoa.

asper. Good types in *Polyporus* cover. Good specimens also in Zollinger's set No. 2080. It is a *Trametes*, in the same section as *Trametes hydroides*.

bicolor. Type in cover, also several collections in boxes. It seems to be a frequent plant in the East, marked with a brown spot that appears at the base of the pileus. Berkeley called it *Poyporous anebus*, and Murrill discovered only recently that it was a "new species."

byssogena. Type in Box 107.* It is large pored, white *Poria*. It was published as *byssogena* but Junghuhn labeled his specimen *byssoseda*.

cervino-gilvus. Type in cover. Beautifully illustrated by Junghuhn. Unfortunately it is the same as *dermatodes* which I believe is prior.

cucullata (as *Merulius*). Type in *Laschia* cover. This is a little *Laschia*, as some now class it, with a venose hymenium exactly as shown in the unpublished *Icones* No. 37 and named "*Polyphleps chloroleucus*," unquestionably I think the same species.

crustacea (as *Laschia*). Type in Box 6.* When Junghuhn published *Laschia* as a new genus he was not aware that Fries had used the same name as a fungus genus. Of the two species that Junghuhn includes, the first (*crustacea*) is a *Poria* and the second (*spathulata*) is a *Favolus*. L veill  stated that there were no grounds for basing a genus on *Laschia crustacea* and on his statement the species was compiled in Saccardo as *Poria crustacea* (Vol. 6, p. 333). Montagne and Berke-

ley took the genus *Laschia* to apply to the resupinate species with long, superficial pores, and as the name *Laschia* was preoccupied, it was changed to *Hymenogramme* and *Laschia crustacea* is also entered in Saccardo (Vol. 5, p. 652) under the genus *Hymenogramme*. Whether the genus *Hymenogramme* in the sense of Berkeley and Montagne can be maintained or not is another question, but I think this species at any rate should go in *Poria*.

durus. Type in cover, also in Box 114.* This is quite a distinct species with dark, atropurpureus context. It was named also *cartilagineus* (type at Kew) and *Testudo* (type at British Museum) by Berkeley.

flavus. Types in Boxes 82* and 109.* A common species in the tropics. For me it is a *Polystictius*, which Junghuhn beautifully figured and I think he should be given the credit for the species. As I have published I doubt if it is the same, as has been stated, as *Irpex flavus* of Klotzsch which was from the *arctic regions*.

floccosus. Type in cover and in Box 35.* This is the Eastern analogue of the American plant called *Polystictus rigens*. It has the same context and pores but the surface is different.

fusco-albus (changed to *Junghuhnii* because it is a duplicate name). I did not find the type.

furcatus. No type found by me.

indecorus. Type in *Polyporus* cover. It is a *Trametes* form of *Polystictus Persoonii*.

indica (*Daedalea*). Type in Box 117. It is in very bad condition, eaten by insects, but I think is the common *Lenzites repanda* of the tropics which has so many other names.

lacerus (Why changed to *lacer* in Saccardo?). Type in cover also in Box 77.* It was published as *lacevus* but Junghuhn wrote his label *lacerus* which no doubt was as intended. The plant is the same as *dilatatus* (bis) of Berkeley, which Cooke changed to *Adami*.

macrotrema. The type is (in error) in Persoon's Box No. 42. The name was changed, without Junghuhn's consent or authority, to *Molkenboeri* by Lévêille. (Cfr. *Syn. Hexagonas*, p. 30). It is a white *Hexagona*.

microscopicus. No type found by me.

miniatus. Type in cover. Also a figure in the unpublished *Icones*. In my opinion it is a thin form of *Polyporus sulphureus*.

Mons veneris. Type in Box 176.* It is the same species as *leoninus* as named by Klotzsch, better known as *funalis*, a quite common species in the East.

niveus. Type in Polyporus cover. It is undeterminable, a white, Poria or more probably the resupinate portion of some Polyporus.

obovatus. Only a small fragment remains of the type in Box 20.* I judge it is the same plant as rasipes of Berkeley and very close to laceratus but not the same.

pellucida. Type in Box 21. I believe this is a rare species. The hymenium is rose color and is pubescent under a lens. The microscope shows the slender hairs hyaline and slightly incrustated. The pores are large and shallow. For me it is a Polystictus in the same section as dermatodes. It does not appear to me to be pellucid.

pustulosus (as Favolus). No types found by me and the figure cited was not published. From the description it is evidently a Laschia and probably the same as Holtermann figured as Laschia javanicus. I think Hennings has also named it. In the sense of L veill  (specimen in Patouillard's herbarium) it is Hexagona Miquelii, but L veill  got a great many things wrong.

punctatus. No type found.

roseo-alba. Type in Box 11.* A subresupinate Polyporus or perhaps a Fomes, most probably the same as carneus in the original sense of Nees. I think it is quite different from the plant we have in the United States which we know as Polyporus (or Fomes) carneus, rarely forgetting to add the "Nees" though there exists not the slightest evidence that our American plant ever grew in Java.

spadiceus. Type in cover, also in Box 49* = Polystictus tabacinus. The figure that Junghuhn gave appears smooth but the plant is densely tomentose. The shape is also unusual as the plant is usually dimidiate.

spathulatus (as Laschia). Type in Box 127.* It is a Favolus. The types are in very poor condition.

tropicus. Type in Box 170.* It is a Polyporus (not a Fomes I think) belonging to the section Ganodermma. The spores, which are typically those of this section, are distinctly rough.

umbilicatus. Type in Polyporus cover. It has been stated by Fries to be the same as arcularius and it so appears to me.

venulosus. Type in cover. I think it is a good species of Polystictus. Dimidiate, thin, white, with a glabrous but rugulose surface. Context white. Pores small.

LETTER No. 38.

List of specimens received from correspondents since my last report. There has been some delay in getting out this list, owing to the fact that for the greater part of last summer I was in Germany out of touch with my home office. They have all been promptly advised, however, by letter regarding the determinations as soon as the specimens came into my hands.

I beg to thank those who kindly sent me specimens, for I feel that it is only by familiarity with the plants as they occur in the various countries that a knowledge of the same can be obtained. While one can get the names of a great many species from the named specimens that are in the museums the species can not be learned from this source. Very often the specimen on which the name is based is so poor that it would not be recognized until the species is learned.

C. G. LLOYD,
63 rue Buffon,
Paris, France.

December, 1911.

AIKEN, W. H., Ohio:

Stereum complicatum (young)—*Calvatia rubroflava*—*Polystictus hirsutulus*.

BARKER, W. E., New Zealand:

Daldinia concentrica—*Polystictus versicolor*—*Fomes australis* (not developed) — *Mycenastrum Corium*—*Hirneola auricula Judae*. This is called "Taranaki Wool," as when Taranaki was first settled the collection and shipment to China was an important industry, and it is stated that from this one district it has been exported to the value of more than \$700,000. Cfr. Myc. Notes, p. 495—*Peziza aeruginosum*—*Peziza citrinum*—*Polystictus hirsutus*, a thick trametoid form—*Aseroe Hookeri* with a long stem.—*Anthrus aseroeformis*. "This was very common this year. It grows not in the bush, but in fields, and its quaint, long, red arms make it very conspicuous." W. E. Barker—*Cyathus vernicosus*—*Schizophyllum commune*.

BEARDSLEE, PROF. H. C., North Carolina:

Thelephora cuticularis—*Thelephora terrestris* (?) — *Thelephora multipartita*—*Hydnum graveolens*—*Polystictus fœcicola*—"Thelephora" *Cladonia*—*Xylaria tentaculata* (cfr. Note 10)—*Stereum rubiginosum*—*Polyporus Spraguei*—*Polyporus hispidus*—*Thelephora vialis*—*Thelephora pal-*

mata (depauperate form?)—*Thelephora albido-brunnea*—*Polyporus croceus*—*Merulius incarnatus*—*Thelephora palmata*—*Fistulina pallida* (rarely received by me)—*Polystictus biformis*—*Cordyceps militaris*. An abundant collection showing various forms that the plant takes. Several "new species" might be made from this collection.

BESSEY, DR. E. A., Michigan:

Tylostoma campestris.

BIERS, PAUL, France:

Fomes torulosus.

BLANDENIER, A., Egypt:

Ganodermus not developed and not determinable as to species. I know no species, however, with such narrow, concentric, context zones.

BRAENDLE, FRED. J., Washington, D. C.:

Polyporus distortus "common on our city flats."

BRAUN, LUCY, Ohio:

A set of local Myxomycetes collected and determined by Miss Lucy Braun. These specimens will be of value to future workers in the Myxomycetes in the vicinity of Cincinnati. All the determinations are made, I judge, from Macbride's publication.

Fuligo violacea—*Physarum atrum*—*Physarum flavicomum*—*Physarum leucopus*—*Physarum nefroideum*—*Physarum pulcherrimum*—*Physarum Ravenelii*—*Physarum sp.*—*Diderma crustaceum*—*Diderma floriforme*—*Lepidoderma tigrinum*—*Stemonitis carolinensis*—*Stemonitis fusca*—*Stemonitis Smithii*—*Stemonitis Webberi*—*Comatricha stemonitis*—*Cribraria tenella*—*Cribraria violacea*—*Dictydium cancellatum*—*Arcyria cinerea*—*Arcyria denudata*—*Arcyria digitata*—*Arcyria incarnata*—*Hemitrichia Serpula*—*Hemitrichia stipitata*—*Hemitrichia vesparium*—*Trichia favoginea*—*Trichia persimilis*—*Trichia varia*—and ten undetermined species.

BROWN, GEO., New Zealand:

Clathrus cibarius, young, eggs—*Tylostoma*. This species does not seem to be covered in my monograph, but I must make a comparative study before deciding. It is close to *Tylostoma granulosum* of Europe, but the spores are nearly smooth.

BURCHARD, DR. O., Canary Islands:

Polyporus (Ganoderma) resinaceus.

CARNE, W. M., N. S. Wales:

Fomes applanatus—*Hexagona similis*—*Schizophyllum commune*—*Polystictus cinnabarinus*—*Fomes rimosus*. This specimen has a smooth, black crust and not the usual rimose crust from which it was named. Still, with the same context, color, spores, and other characters, I take it to be the same species.

CASTILLON, LEON, Argentina:

Polystictus sanguineus—*Polystictus cinnabarinus*—*Polystictus iodinus*—*Schizophyllum commune*—*Polystictus versicolor* (or close)—*Lenzites* sp.—*Stereum* (sp.)—*Polyporus* (or *Fomes*)—*Polystictus pinsitus*.

CAVANAGH, B. S., India:

Polyporus lucidus. This form has a short, obese stem, and the spores are slightly more rough than the type form in Europe, but in its essentials it is the same plant.

CHADWICK, WM., Jamaica:

Polyporus albellus—*Polystictus sanguineus*.

CHEESEMAN, W. N., England:

Polyporus adustus.

COMPTON, JAMES S., Illinois:

Xylaria polymorpha—*Lycogala Epidendrum*—*Arcyria punicea*.

DAVIS, SIMON, Massachusetts:

Lenzites confragosa, with a curious malformation growth—*Cordyceps militaris*—*Polyporus brumalis*, a black and a brown specimen—*Polyporus betulinus*, abnormal—*Polyporus albellus*—*Fomes leucophaeus*—*Cordyceps militaris*.

DEARNESS, JOHN, Ontario:

Calvatia saccatus, as I believe, although I did not know that the species grew in America—*Lycoperdon umbrinum*—*Lycoperdon atropurpureum*—*Thelephora terrestris*—*Fomes conchatus*—*Polystictus biformis*—*Polyporus melanopus*, rarely received by me—*Polystictus pergamenus*—*Xylaria filiformis*. A rare plant—*Hydnum septentrionale*.

DUPRET, H., Canada:

Irpex cinnamomeus—*Trametes saepiaria*.

DUTRA, DR. JOAO, Brazil:

Polystictus sanguineus—*Polyporus gilvus*—*Fomes fasciatus*—*Fomes*. Unnamed, I think. It has white context, pinkish pores, and distinct, hyaline cystidia. It is close to *connatus*, also *Auberianus*.

EVANS, I. B. POLE, South Africa:

Geaster saccatus—*Geaster pectinatus*—*Calvatia olivacea* (?)—*Lycoperdon cepaeforme*, form with elliptical spores tending toward "oblongisporus"—*Scleroderma Cepa*—*Scleroderma tenerum*—*Scleroderma* (immature)—*Cyathus dasypus* (probably)—*Cyathus* (cfr. *vernicosus*). Spores same (7 x .12), but differs in small conical cups, also habitat—*Polyporus rufescens*. Exactly the same as grows in Europe and typically as illustrated by Sowerby.—*Fomes applanatus*—*Polyporus* (cfr. *chioneus*)—*Polystictus occidentalis*—*Polystictus sanguineus*—*Lenzites repanda*.

EYRE, REV. W., England:

Fomes applanatus.

FISHER, G. CLYDE, Maryland:

Polyporus sulphureus—*Thelephora Schweinitzii*—*Hydnum laevigatum*—*Hydnum zonatum*. Much more slender than the usual plant so referred, but in this respect closer to the "type" figures.—*Stereum complicatum* (? abnormal).—*Polyporus lucidus*, with all the essential characters of this common species, it has *yellow pore mouths*, hence is a "new species," if one so wishes to call it.—*Daedalea quercina*—*Polyporus frondosus* (subsimple form).—*Stereum spadiceum*—*Poria tulipifera*—*Stereum complicatum*—*Daedalea confragosa*—*Lenzites protracta*—*Polystictus versicolor*—*Stereum sericeum*—*Lenzites saepiaria*, trametoid form—*Lenzites betulina*—*Fomes graveolens*, young—*Calvatia lilacina*—*Polysaccum pisocarpium*—*Scleroderma Geaster*—*Cyathus stercoreus*—*Polyporus Schweinitzii*—*Lycoperdon cruciatum*—*Lycoperdon gemmatum*—*Daedalea unicolor*—*Nidularia pisiformis*, rarely received by me—*Scleroderma tenerum*—*Polyporus albellus*—*Daedalea confragosa*—*Hydnum ferrugineum*.

FORBES, C. N., Hawaii:

Fomes australis—*Fomes australis*, young—*Stereum ochraceo-flavum*—*Schizophyllum commune* (form *umber*)—*Fomes senex*, agrees with original form Juan Fernandez in Herb. Montagne. In the sense of Berkeley and others it is quite a different plant.—*Polyporus zonalis*—*Fomes*. Species unknown to me. Also four *Pyrenomyces*, a family I do not study. They have been sent to H. C. Hawley for determination.

GILLET, REV. J., Congo, Belge.:

Polyporus sacer. A well known species of Africa with a sclerotium. I am most glad to receive these specimens, as they are the first I have gotten.—Hard black balls, their nature even unknown to me. At first I took them for hypogean fungi, but I find in their tissue no spores or other clue to their nature.

GRIFFITHS, D., collected at Chico, Cal.:

Gyrophragmium decipiens.

GRIFFIN, D. B., Vermont:

Clitopilus abortivus—*Polyporus Peckii*. A rare plant, and Mr. Griffin is about the only one of my correspondents who finds it.—*Fomes pinicola*.

HAMILTON, A. G., New South Wales:

Catastoma anomala—*Polysaccum pisocarpium*—*Fomes robustus*. On *Eucalyptus*. This has all the characters of the European species which there grows usually on oak.—*Stereum* (Sp.)—*Polyporus* (Sp.)—*Bovistella bovistoides*—*Geaster saccatus*—*Scleroderma flavidum*—*Bovistella australiana*—Also fine photograph of *Jansia truncata* and *Aseroe Hookeri*, which will be reproduced in *Myc. Notes*.

HEMPEL, A., Brazil:

Fomes igniarius ? ?—*Lenzites striatus*—*Polyporus* unknown to me.—*Auricularia polytricha*—*Stereum lobatum*—*Geaster* (unopened)—*Schizophyllum commune*—*Polyporus gilvus*.

HORNELL, J., Palni Hills (7,000 ft.), India:

Daldinia concentrica—*Hirneola auricula-Judae*—*Polystictus pergamenus*—*Polyporus adustus*—*Fomes australis*—*Schizophyllum commune*—*Polystictus versicolor*, beautiful colored form—*Polystictus hirsutululus*—Also a *Polystictus* and *Polyporus* not recognized by me.

HUMPHREY, C. G., Wisconsin:

Polyporus albellus (?)—*Hymenochaete Curtisii*—*Polystictus abietinus*—*Lycoperdon piriforme*—*Lycoperdon gemmatum*—*Polyporus adustus*—*Polystictus pergamenus*—*Polystictus hirsutus*—*Stereum spadiceum*—*Coniophora* (Sp.)—*Daedalea unicolor*—*Merulius tremellosus*.

IRANI, J. H., India:

Polyporus (*Ganodermus*) *colossus*. This species, originally from tropical America, is far more common in Africa. This is the first collection from India.—*Fungus* (?) indeterminate.

JONES, KATE A., New Hampshire:

Polystictus cinnabarinus—*Polystictus perennis*—*Polystictus Grayii* (?). This is slightly different from the usual form.—*Crucibulum vulgare*—*Lycogala Epidendrum*—*Favolus europaeus*—*Lenzites saepiaria*. Mesopodial form which I do not recall seeing before.—*Polystictus versicolor*—*Polystictus pergamenus*—*Polystictus cinnabarinus*—*Pleurotus nidulans*—*Favolus europaeus*—*Lenzites betulinus*—*Daedalea unicolor*—*Lenzites saepiaria*—*Polyporus elegans*—*Polyporus brumalis*—*Lycoperdon compressum*—*Marasmius rotula*—*Polystictus versicolor*.

KONINGSBERGER, DR. J. C., Java:

My best thanks are extended to Dr. J. C. Koningsberger, Director of the Botanic Gardens of Buitenzorg, for shipping me a large box of Java specimens. I am particularly interested in Java specimens, as most of the historic material from the Dutch East Indies is preserved at Leiden, and I recently spent three weeks at Leiden in a careful study of it. The species sent by Dr. Koningsberger are relatively few, but the collections were ample, and one good, ample collection is worth more in learning the characters of a species than a dozen little fragments of different species such as I often receive. The following were the *Polyporoids* of the collection. A few other specimens were included in families I have not studied as to foreign species.

Ganodermus "fasciatus" (bis) with characteristic spores. It has a hard (not laccate) crust, unguulate in shape, yellowish pore mouths, and little context development. I should call it a form of *Fomes australis*. It is *Fomes fasciatus* in the sense of L veill  and Patouillard, though as it was only a misdetermination of L veill  I think the name has no validity as applied to this plant.—*Polyporus bicolor*, characterized by the reddish stain

that comes on top of the pileus. Spores globose large, 10 mic. hyaline smooth.—*Ganodermus fasciatus* (bis.) Same as previously mentioned, only these specimens have much development of the context.—*Fomes leucophaeus*. It is curious that this species, very common and generally sessile in the United States, in Java often develops an abortive or fictitious stipe. Some of these specimens are sessile, others pseudo-stipitate.—*Ganodermus cochlear* in the sense of Bresadola's naming at Leiden. I shall accept the name for it, being the only one I have noted, though I do not believe it exactly corresponds to the original figure, which showed a differently marked stipe. It seems to be frequent in Java, and several collections are at Leiden, but not found in any other museum or from any other country.—*Stereum princeps*. A large thick *Stereum* common in Java and the East in general. Many collections are at Leiden and Kew, the latter under other names. It was named and illustrated by Junghuhn from Java.—*Fomes Haskarlilii*. Agreeing with the types in boxes 213 and 249 at Leiden (= *Fomes Korthalsii* in sense of Bresadola, not original of L veill .) A very common species in Java, close if not same as *Fomes senex* in original sense from Chili.—*Polystictus affinis* as originally named and illustrated by Nees from Java.—*Polystictus xanthopus* very close to *affinis* (except mesopodial) and these collections darker in color than the usual African collections. It is very common in Africa.—*Trametes Persoonii*. These specimens have partly lost the characteristic red coloring surface of the pileus.—*Polystictus versicolor*, slightly different from the common temperate region forms.—*Polystictus Blumei*. Very close to *Polystictus pergamenus*, but these have white pores and glabrous pileus. I think it is better referred as a form of *pergamenus*, but this seems to be the common form in Java.—*Polyporus lignosus*. A most common species in the tropical world and said to be a destructive parasite of the rubber tree. It is the plant referred to in Petch's writings under the (erroneous) name of *Fomes semitostus*. Synonym is *Fomes Kamphoeveneri* Fr., which name is used by Bresadola.

KREKE, REV. MARCUS, Ohio:

Geaster pectinatus—*Polyporus rufescens*. Unusual form with well developed pilei, but a portion taking the form of *Polyporus distortus* and showing, as I have published, that *distortus* in only the American abortive form of *rufescens*—*Polyporus rufescens*, pileate, normal. Spores very abundant 4-5 x 6-8 hyaline, each guttulate—*Geaster saccatus*—*Daedalea confragosa*.

KUYPER, DR. J., Surinam:

Polystictus sanguineus—*Schizophyllum commune*—*Hirneola auricula-Judae*—*Polyporus lignosus*—*Cladoderris dendritica*. Fine specimens of a very peculiar genus.

LANGTON, THOS., Canada:

Stereum purpurem—*Cantharellus floccosus*—*Physalacria inflata*, a rare plant.—*Polyporus resinousus* (? or *benzoinus*)—*Merulius aureum* (true, in my opinion).—*Stereum rufum*—*Polystictus circinatus*—*Fomes connatus*—*Lenzites saepiaria*—*Lenzites protracta*—*Pleurotus dryinus*? (so named)—*Stereum tabacinum*.

LANGTON, THOS., from Trinidad:

Lenzites repanda—*Favolus braziliensis* with abnormal pores—*Lentinus villosus*—*Polystictus sanguineus*—*Polystictus caperatus*—*Ganoderma* unknown to me—*Fomes* species unknown to me.

LANTIS, VERNON, Ohio:

Polyporus resinosus.

LLOYD, JOHN URI, Ohio:

Calvatia rubroflava.

McALPINE, D., Australia:

Anthurus aseroeiformis, dried. This specimen has arms such as shown in the photograph published (*Synopsis Phalloids* fig. 46), but the tubular portion (if it is entire) is much shorter than there shown.

MATTIROLO, PROF., Italy:

Polyporus tuberaster. Prof. Mattiolo also sends a fine photograph of the plant and interesting notes on the cultivation of the plant for food in Italy—*Polyporus tuberaster*. Mycelial mass which is said to produce the fungus, as mushroom spawn is employed in this country.

MILLER, R., Des Moines, Iowa:

Geaster saccatus—*Polystictus cinnabarinus*—*Lycoperdon gemmatum*—*Polyporus albellus*?—*Lycoperdon pisiforme*—*Panus rudis*—*Trametes hispida*—*Fomes leucophaeus*.

MOUSSET, J. P., Java:

Trametes Persoonii, also young specimens showing that the "red" coloration is a later development.—*Polyporus* (or *Fomes*) *lignosus*, and various forms thick, thin, and resupinate—*Fomes australis*—*Polystictus affinis*—*Polystictus hirsutus*?—*Hirneola auricula-Judae*—*Auricularia delicata*—*Polyporus rubidus*—*Lenzites nivea*—*Lenzites repanda*—*Polyporus vinosus*—*Polystictus xanthopus*—*Trametes obstinatus*? Context white—*Polystictus luteus*—*Lenzites betulina*—*Polystictus occidentalis*—*Polystictus sanguineus*—*Polystictus dermatodes*—*Polystictus vernicipes*—*Polyporus grammocephalus*—Also four species of which I do not recall the name but will report later. Also two *Stereums*, two *Lentinus*, and two *Xylarias*.

NELSON, N. L. T., Iowa:

Polyporus adustus—*Lycoperdon piriforme*—*Trametes hispida*—*Trametes protracta*—*Polyporus gilvus* (unusual form)—*Daedalea confragosa*—*Secotium acuminatum*—*Polyporus lucidus* (from Michigan)—*Stereum spadiceum*.

NEWBERRY, W. J., Natal, South Africa:

Polystictus sanguineus—*Polystictus versicolor*—*Lenzites repanda*—And five species that require further study and three species of *Stereum*.

NOBLE, MRS. M. A., Florida.

Lentinus villosus—*Scleroderma Ceba*—*Scleroderma* (cfr. *Geaster*)
—*Bovistella Ohiensis*—*Geaster hygrometricus* (unopened)—*Polystictus foci-*
cola (unusually large specimen)—*Polystictus floridanus*.

OVERHOLTS, L. O., Ohio:

Stereum diaphanum. The nicest collection of this rare species I
have ever gotten.—*Mucronella calva*. Same I think as I have collected in
Sweden.—*Daedalea unicolor*—*Polystictus biformis*—*Boletinus porosus*—
Polyporus Spraguei—*Polyporus cuticularis*—*Fomes fraxinophilus*—*Poly-*
porus gilvus—*Polyporus distortus*—*Merulius incarnatus*—*Fomes leuco-*
phaeus—*Polyporus dichrous*—And others.

PARISH, S. B., California:

Trametes hispida (typical)—*Trametes*. Close to *hispida*, but pure
white and not so strongly pubescent. It is surely only a variety, but merits
a special name.

PECKOLT, GUSTAVE, Brazil:

Lentinus velutinus—*Hexagona variegata*, old and effete.

PEPPER, C. W., Rhode Island:

Trametes hydroides (from West Indies).

RICK, REV. J., Brazil:

Polystictus caperatus—*Fomes fasciatus*—Also about twenty other
collections, *Polystictus*, etc., the most of which I am unable to name here
at present.

ROPES, WILLIS H., Massachusetts:

Lycoperdon gemmatum.

RYAN, H. VAL., India:

Stereum versicolor. This appears to me exactly the same plant
that we have so common in the United States, there known as *Stereum*
versicolor or *Stereum fasciatum*. In the tropics it takes more luxuriant
forms and is there called *Stereum lobatum*. All are virtually the same, I
think.—*Daldinia concentrica*—*Polystictus pergamenus*—*Fomes nigro-*
laccatus—*Fomes appianatus*. This accords more closely to the type form in
Europe rather than to the usual tropical form (*Fomes australis*) as one would
naturally expect.—*Polyporus* (cfr. *gilvus*). This has the structure of *P.*
gilvus, but is a thick, imbricate, sulcate form. It probably has names as a
“*Fomes*,” as many tropical forms of *gilvus* have.—*Polyporus picipes*. This
is the same thin, black form of *P. varius* we have in the United States—
Genus unknown to me, but an abnormal growth caused by a microscopic
species.—*Fomes senex*. True, I think, not in the usual sense.—*Fomes*. Re-
lated to *ulmarius* of Europe.

SCARFE, W. A., Caversham, New Zealand:

Secotium erythrocephalum—*Cyttaria Gunnii*.

SCHUMO, S. L., from Florida:

Polystictus floridanus—*Stereum ochraceoflavum*—*Stereum fasciatum*—*Polystictus sanguineus*—*Lenzites*, unknown to me—*Polyporus gilvus*—*Scleroderma cepa*—*Trametes hydnoidea*—*Ganoderma zonatum*—*Lenzites striatum*—*Polystictus floridanus*—*Schizophyllum commune*—*Lenzites cinamomeus*.

SMITH, G. D., Kentucky:

Sparassis spathulatus.

STEVENS, F. L., North Carolina:

Scleroderma Geaster.

STIRLING, EDWARD C., Australia:

Fomes rimosus, a fine specimen from Eucalyptus.

TATE, J. M., Iowa:

Daedalea unicolor—*Polyporus adustus*—*Polystictus versicolor*—*Schizophyllum commune*—*Stereum fasciatum* (mesopodial form)—*Lycoperdon piriforme*—*Daedalea unicolor*—*Fomes leucophaeus* very young—*Polystictus hirsutus*—*Polyporus adustus*—*Stereum spadiceum*.

THORNCROFT, GEO., Transvaal, South Africa:

Schizophyllum commune.

UMEMURA, JINTARO, Japan:

Geaster hygrometricus—*Polystictus versicolor*—*Polystictus versicolor*, thick form, which has a special name, I think.—*Polystictus sanguineus*—*Polyporus lucidus*. Form mesopodial, also pleuropodial. It is not so laccate as the European plant.—*Lenzites betulina*—*Polystictus* or *Irpelex*, I am not sure which. It is related to *P. pergamenus*.—*Polyporus* unnamed. Section *Pelloporus*, close to *P. circinnatus*, but very distinct from any species named.

USSHER, C. B., Java:

Peziza Hindsii with sketch and photograph—*Trametes Persoonii*—*Polystictus sanguineus*—*Polystictus occidentalis*—*Polyporus lucidus*. Not so laccate as the European form—*Lenzites repanda*, very thin form, marked with a dark stain on upper side—*Polystictus xanthopus*—*Polystictus versatilis*—*Polyporus gibbosus*—*Fomes lignosus*. This is a distinctive disease of the rubber tree in the East and much has been written about it lately in Tropical Agriculture under the erroneous name *Polyporus semitostus*. The type of *semitostus* has little resemblance to it. Mr. Ussher sends me a photograph showing a rubber tree that has been killed by this parasite. We shall reproduce it in *Myc. Notes*.

WHETSTONE, M. S., Minnesota:

Polyporus gilvus—*Lentodius squamulosum*—*Scorias spongiosa*—*Xylaria digitata*, conidial—*Fuligo septica*—*Hydnum?* not recognized by me.

WILDER, CHARLOTTE M., California:

Geaster limbatus—*Lycoperdon*. Species not sure for me. It has hyaline capillitium and small, globose, smooth spores.

WILLIAMS, MISS CORA, Kentucky:

Mutinus elegans.

WILSON, REV. JAMES, Australia:

Daldinia concentrica—*Polyporus betulinus*—*Strobilomyces pallescens*. This species has fusoid spores, and voids the statement that the "genus" *Strobilomyces* differs from *Boletus* in having "globose" spores.—*Polyporus rudis*, three collections. One is the largest and most obese specimen I have ever seen of this species.—*Polystictus cinnabarinus*.—*Polyporus gilvus*—*Fomes australis*—*Strobilomyces* (Sp.)—*Polyporus* unknown to me and probably unnamed. It is close to *P. corrugis* of Europe.—Also several *Boletus*, species which I can not determine from dried specimens.

WULFF, DR. EUGEN, Russia:

Daedalea juniperinus. On *Juniperus excelsus*. This is the first record of the plant in Europe. It is rare in the United States.—*Daedalea quercina*—*Polystictus hirsutus*.

WYMAN, MISS EDITH, Iowa:

Daedalea unicolor—*Polystictus versicolor*—*Polyporus gilvus*—*Panus rudis*—*Schizophyllum commune*—*Hirneola auricula-Judae*—*Daedalea confragosa*—*Panus stipticus*.

YASUDA, PROF. A., Japan:

Polystictus perennis—*Lenzites striata*—*Polyporus adustus*—*Sparassis crispa*—*Polystictus hirsutus*, form pores adustus—*Polystictus hirsutus* form albida—*Lenzites tricolor*—*Schizophyllum commune*—*Stereum fasciatum*—*Polystictus versicolor*. The pores abnormally colored from some cause unknown to me.—*Polystictus pergamenus*—*Polyporus* unnamed. Same habits and appearance as *Polyporus Wynnei*—*Polyporus cuticularis*, or an unnamed species, different shape, and larger pores than the European plant.—*Polyporus* unknown to me, with a stipe that appears to me not to be normal.—*Daedalea*. Form I think of the polymorphic *Daedalea confragosa*, but very different hymenium shape from any form known to me.—*Lenzites*. Same coloration as *Lenzites tricolor*, but more thick and distant gills.—Also a number of scanty collections of *Hydnums*, *Stereum*, etc., unnamed by me.

ZENKER, DR. G., Kamerun, Africa:

Lentinus dactylophorus—*Polyporus lignosus*—*Lenzites nivea*, only a smooth form of *Lenzites aspera*.

Advice received of packages from Geo. Brown, New Zealand; S. Hutchings, Bengal; and A. Sarmento, Portugal, which I am afraid were lost in transit.

AN INTERESTING LOT OF BLUNDERS.

I recently received from a correspondent an agaric growing on a termite nest, and sent it to Prof. Petch for determination. He replied as follows:

"Your specimen is *Collybia albuminosa* (Berkeley) Petch,

- = *Lepiota albuminosa*, Berkeley (1847),
- = *Armillaria eurrhiza*, Berkeley (1847),
- = *Lentinus cartilagineus*, Berkeley (1847),
- = *Collybia sparsibarbis*, Berkeley & Broom,
- = *Pluteus Rajap*, Holterman,
- = *Flammula Jauseana*, Henning & Nyman,
- = *Pholiota Jauseana*, Henning & Nyman,
- = *Pluteus termitum*, P. Henning,
- = *Pluteus Treubianus*, P. Henning & E. Nyman,
- = *Pluteus bogoriensis*, P. Henning & E. Nyman,
- = *Flammula filipendula*, P. Henning & E. Nyman,
- = *Tricholoma subgambosum* Cesati,
- = *Collybia radicata* of describers of dried tropical agarics,
- = *Volvaria eurrhiza* (Berkeley) Petch,
- = *Collybia eurrhiza* (Berkeley) v. Hohnel,

It is common in India, but the Indian synonyms are not yet known."

It is a pity that they do not know them from India, for it would add so much to the scientific knowledge to include a few more of these "scientific" gentlemen who describe the same plant as a "new species" in nine different genera.

NOTE 20. I recently bought for eight marks a copy of Otto Kuntze's "Revisio Generum Plantarum" in three volumes, a book that originally sold for seventy-eight marks. This is a strong reduction in a few years since it was issued, but is a good index to the value that is now placed in the botanical world on the Kuntze work and his system of juggling names. The whole system was a fraud in the beginning, and it is surprising that any one should have been duped by such palpable trickery.

NOTE 21. Dr. Eugen Wulff has discovered *Daedalea juniperinus* growing on the *Juniperus excelsus* in Russia. This is the first record of the plant we have in Europe. It is rather rare in the United States. It first reached Ellis from Bartholomew, Kansas, and Ellis named it *Daedalea Kansensis*. He also so named it for me when I found it at Mammoth Cave on the red cedar, also for Mrs. Dallas. Mr. Merrill found it in Ellis' herbarium so labeled no doubt, and at once discovered and published it as a "new species" of *Agaricus* (sic). He carefully refrained from any allusion to the fact that Ellis had already named it, and that the name was well known to American mycologists.

Professor Morgan, to whom I sent the plant, was strongly inclined to refer as a variety of *Daedalea quercinus*, and Bresadola, to whom I also recently sent it, is of the same opinion. I can not agree with this view, as I think *Daedalea juniperinus* is strongly distinct from *Daedalea quercinus*, and I believe will so impress any one who is familiar with both plants as they grow. I have also believed that it was *Daedalea submontana* as named by Schweinitz, drawing my conclusion from Schweinitz's scanty description; but no specimen of it exists in any museum, and of course a conclusion drawn from a description merely is very uncertain. Still we would be just as much justified to refer it to Schweinitz's species on the basis of "priority" as a large part of such work is being done nowadays.

NOTE 22. *Polyporus gilvus* in Europe.—*Polyporus gilvus* which occurs in such abundance in America, Africa, India, and many warm countries of the earth, is strangely rare, almost absent from Europe. The only collector that we know to have found it was Quélet, and he discovered (of course) that it was a "new species." A little fragment of Quélet's collection is found in the museum at Upsala, and Bresadola tells me that he has it also from Quélet. It occurs in the English text-books, and you would judge from their publications that you could go into the woods in England and find it any day. None of the English botanists ever saw an English specimen, however. The record in English mycology is due to Fries, who thought he recognized the species in one of Sowerby's pictures. The picture looks little like it to me, but Fries' guess passes in the English text-books, without, however, stating the source of it. Outside the single collection of Quélet, I think there is no other from Europe proper. From one of the Mediterranean islands Marcucci distributed it as "*Fomes fulvus*, Scop." (sic), but it was not the type form of *Polyporus gilvus* but a soft, spongy form that should have a name. The Marcucci collection belongs rather to the African type, where the species is common, rather than to the European flora.

NOTE 23. "*Polyporus plebius* var. *cubensis*." This which was so referred generally by Berkeley is quite common in tropical America. I gathered it in abundance in Florida years ago, and Father Langlois found it common in Louisiana. It was referred by Ellis to *Polyporus hemileucus*, and has been so labeled in my collection for years. It develops that *hemileucus* is a quite different plant. This plant appears in Theissen's Brazil list recently as *Polyporus plebius*. There is no question as to it being Berkeley's "variety," though whether it has any relation to *Polyporus plebius* (of New Zealand) is not at all sure.

The following letter with the names somewhat changed (so that I trust his identity will not be known) will afford, I hope, some of my readers as much amusement as it has me:

PUMPKINVILLE POLYMORPHIC INSTITUTE,
Pumpkinville, Texas.

DEPARTMENT OF BOTANY,
Office of the Professor.

DR. C. G. LLOYD,
The Lloyd Library, Cincinnati, Ohio.

December 19, 1911.

My Dear Mr. Lloyd:

Quite recently I have been looking over your valuable series of "Mycological Notes," and, if you will allow me to compliment you, I may add that I have enjoyed their uniformly serious tone. Your attitude toward nomenclature is in striking contrast to the fine disregard in which so many of our taxonomists hold it. It *is* a serious matter, and I am glad that you for one so regard it.

I have, however, been very much puzzled *in re* one point, which, I feel sure, you, with your knowledge of the field of fungus taxonomy, will be able to elucidate. I find the name of one Professor McGinty mentioned in several instances. I suppose that, even though I must confess to almost entire ignorance of the realm of the fungi from the point of view of classification, I should know this evidently eminent gentleman. But in view of my failure to find his name in the lists of the various botanical and other scientific societies of this country, I venture to ask you, who have a wide acquaintance among the foreign men of science, who this McGinty is. Were it not for exposing my ignorance, I should further venture to ask the publication of this inquiry in your valued "Notes," in the event that you are unable to supply me with the desired information.

Yours very truly,

FRANCIS E. HONONYM.

P. S.—When I was attached to the Lumholz expedition to Mexico, we had a mule (not an ass) who (sic) insisted on rolling every time he reached the middle of a ford. This circumstance led to giving him a synonym, McGinty: for at that time the song "Down Went McGinty" was much in vogue. Having had the intimate acquaintance of *this* McGinty, I am naturally anxious to identify the other, the to me at present unknown McGinty, author of the new genus *Martella*.

Dear Prof. Hononym:

Cincinnati, O., December 22, 1911.

I am in receipt of your inquiry of the 19th inst. I do not like the word "ignorance" which you have used in self-accusation in the letter, but your inquiry as to the identity of Prof. McGinty in a measure merits the term. As he is one of the few American Mycologists who follow the "Rochester Code" of their own free will, his identity is undoubtedly well known to your former associates in New York. In addition he is frequently cited in the botanical journals, particularly the foreign ones. I understand that he is a brother-in-law of Mrs. Sairey Gamp.

Yours truly,

C. G. LLOYD.

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