

New and Interesting Records of South African Fungi.

By

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Sometimes the author has the good fortune to collect, or to be sent, fungi which are apparently not recorded for South Africa. It seems desirable to place such species on published record and consequently this paper, the first of what is hoped will be a series, is presented.

It is a pleasure to thank all those who have assisted by sending collections. The author is also deeply indebted to the Director of the Commonwealth Mycological Institute and members of his staff, for their help and courtesy in checking some of the determinations. Without such collaboration it is often impossible to be sure of the identity of a fungus suspected of being a new record for the country.

No attempt has been made to list all the literature concerned with each species, nor to present a complete synonymy, since many of the most important papers are not available. Reference is made to papers which were useful in naming the collections, and in some of these there are lists of synonyms.

Unless otherwise stated, the numbers quoted below refer to collections in the Mycological Herbarium of the Department of Agriculture, Pretoria.

PATELLARIA ATRATA (Hedw.) Fries, Syst. Myc. 2 (1823) 160; Nannfeldt, Studien über die Morphologie und Systematik der nicht-Lichenisierten inoperculaten Discomyceten (1932) 328–330, f. 47; Phillips, Brit. Discomycetes, 2 Ed. (1893) 366; Rehm in Rabenh. Krypt.-Fl. 1, Abt. 3 (1896) 334 and 295, f. 1–6.

Lichen atratus Hedw., Spec. Musc. Frond. 2: p. 61, t. 21, f. A.

Lecanidion atratum (Hedw.) Rabenh.; Boudier, Icones Mycologicae 3 (1905–1910), Pl. 564; Butler in Mycologia 31 (1939) 612–623, Figs. 1 and 2; Ibid in Mycologia 32 (1940) Fig. 1 b., f. 2, f. 4a–d., descr. p. 799–803.

For synonyms see Rehm, l.c.

Illustrations: Nannfeldt, l.c.; Rehm, l.c.; Butler, l.c.; Boudier, l.c.; Text Fig. 1.

Collections: No. 39186, P. H. B. Talbot on dead wood, Fountains, Pretoria, Nov. 1948.

Apothecia superficial on wood, adhering closely right up to the margin, waxy to subcoriaceous, black, sessile, plane or slightly convex, with raised margin, 0.5–1 mm. in diam. Asci cylindric-clavate, hyaline, with thickened apex, with a peculiar mode of dehiscence (see below), 11–13 × 60–78 μ . Ascospores hyaline, fusoid to subclavate (5–6.5)–8–9.6 × (30)–43–50 μ , with (3)–8–11 septa. Paraphyses exceeding the asci and forming an agglutinated layer at the apex, filamentous, septate, branching near the apex into short branches, the terminal cells of which are inflated and encrusted with blackish material.

There is apparently no published record of this species in South Africa, though there is a specimen of it, which the author has not seen, in the S.A. Museum [S.A. Mus. No. 33426, MacOwan (1058), on living bark of *Acacia karroo*, Boschberg]. The species is interesting on account of its peculiar mode of ascus dehiscence. This feature has been carefully studied by Butler, loc. cit., who summarises his investigations thus: "*Lecanidion* has been placed in the inoperculate Discomycetes, but has a method of spore discharge unique for that group. The outer ascus wall breaks at, or near, the

apex and rolls back; an inner membrane, here termed the endoascus, pushes up above the epithecium nearly one-third the length of the ascus; the spores are then shot out successively and forcefully from the apex of the projecting endoascus."

PERROTIA FLAMMEA (Alb. and Schw.) Boudier in Bull. Soc. Myc. de Fr. 17 (1901) 24, Icones Mycologicae Vol. 2, Pl. 321; Seaver, North Am. Cup-Fungi (1928) 154. *Peziza flammea* Alb. and Schwein., Consp. Fung. (1805) 319, Pl. 1, f. 6. *Lachnella flammea* (Alb. and Schw.) Fries, Summa veg. Scand. (1849) 365; Phillips, Brit. Discomycetes 2 Ed. (1893) 407; Rehm in Rabenh. Krypt. Fl. 1, Abt. 3 (1896) 858.

For synonymy see Seaver, loc. cit.

Illustrations: Boudier, Icones Myc. Pl. 321; Text Fig. 2.

Collections: No. 39187, *N. J. G. Smith*, on dead twig of *Acacia* sp., Hennops River, Pretoria distr., Sept., 1948.

Apothecia at first round, commonly up to 0.5 mm. diameter, later elongated 1.1-1.3 × 0.6-0.8 mm., occurring superficially on wood, characterised by bearing a dense covering of brick-red hairs over the whole outer surface, especially well developed towards the apex of the apothecium, its base eventually becoming glabrous and black in colour. The margin is strongly inrolled. Asci are cylindrical, tapering at the base, 90 × 8 μ, operculate, octosporous. Ascospores biseriata, hyaline, fusoid-elliptical, eventually two-celled, straight or typically slightly curved, 3.2 × 14.4-15.3 μ. Paraphyses simple, hyaline, septate, filamentous, exceeding the asci in length. External hairs simple, fuscous at the base, paling quickly above to hyaline, covered externally with minute brick red granules, septate, somewhat thick-walled, 3.2-4.8 μ wide.

The maximum dimensions of the various organs cited by Seaver far exceed the measurements recorded here. These are nevertheless a very close match with those given by Rehm. There appears no doubt as to the identity of this collection. The species has not previously been recorded for South Africa.

ATICHA GLOMERULOSA (Ach.) Stein in Cohn Crypt. Flora ii, Part 2, p. 356; Rabenhorst, Krypt.-Fl. Band 1, Abt. 3 (1896) 500; von Höhnelt in Ann. Jard. Bot. Buitenzorg suppl. iii (1910) 19; Saccardo, Syll. Fung. 33 (1913) 769; Cotton in Kew Bull. Misc. Inf. (1914) 54-63; Fraser in Proc. Linn. Soc. New S. Wales 61 (1936) 279.

For synonymy see Cotton, loc. cit., p. 62.

Illustrations: Text Fig. 3.

Collections: No. 36995, *G. A. Hepburn*, associated with sooty moulds and scale insects on the upper surface of Valencia Orange leaves, Martindale, C.P., Dec. 1948.

Colonies globular, black, gelatinous when moist, 200-600 μ diam., obscurely lobed or sometimes expanded into a stellate body up to 2 mm. diam. and composed of (4)-5-6-(9) distinct rays attached lightly to the substratum by a brief stalk and gelatinous disk. There is no ordinary mycelium, the thallus being composed of branched chains of yeast-like cells held in a gelatinous matrix. The individual cells are hyaline, or dilutely coloured at the periphery, thick-walled, 8-9.6 μ diam., subglobose or elongated ovoid. The conidia are aggregated into balls known as "propagula" borne in a longitudinal, somewhat elliptical cleft on the upper surface of each ray in the stellate forms, or in groups near the surface in the globular forms. The propagula are roughly globose, 20-30 μ diam., composed of subglobose to elliptical cells, each 5.8-7 μ diam., with thick integuments, and dilutely coloured in a mass. Asci are found below the upper surface of the thallus, not in an apothecium; their exact location on the thallus could not be determined. The asci are pyriform, hyaline, with wall thickened as much

as 7.8μ at the apex, $23-28 \times 40-44 \mu$. Ascospores colourless, bicellular, deeply constricted at the septum, $5.8-7 \times 13.6-5.6 \mu$. No free ascospores were seen, so these may not be mature in size.

This collection appears to fit well the description of *A. glomerulosa* given by Fraser (1936, l.c., p. 279) and differs notably from other species whose descriptions have been traced. The species usually occurs on conifers, and in the globular form, but Fraser reports the stellate form and also records that the species is associated with *Capnodium citricolum* in some of McAlpine's collections. McAlpine's writings relevant to these collections have not been seen [Proc. Linn. Soc. N.S.W. 21 (1896) 469-497], but the present writer assumes that the host-plant was *Citrus*.

The systematic position of the Atichiaceae is discussed by Cotton (1914) and by Fisher [in Ann. Bot. n. ser. iii (1939) 399-426]. The other genus of the Atichiaceae, *Phycopsis*, is known in South Africa from the species *P. africana* Syd. [in Ann. Myc. 24 (1926) 265], but is distinguished from *Atichia* by an irregular distribution of the propagula (i.e., they are not restricted to definite areas on the thallus) and less importantly by the complete absence of a stellate thallus.

GLONIOPSIS LEVANTICA Rehm in Hedwigia 25 (1886) 142; Saccardo, Syll. Fung. 9 (1891) 1118; Bisby in Trans. Brit. Myc. Soc. 25 (1941) 130-135, Fig. 1 D; Ibid. 27 (1944) 26.

Illustrations: Text Fig. 4.

Collections: No. 36812, *P. H. B. Talbot*, on *Acacia mollissima*, Lions River, Natal, 17/5 48; No. 36994, *P. H. B. Talbot*, on *Clerodendron glabrum*, Meintjies Kop, Pretoria, July, 1948.

Hysterothecia erumpent or more or less superficial, solitary or crowded, usually straight, but occasionally curved at the centre when long, dull black, not striate, carbonous, fusoid, $0.5-0.7-1.4 \times 0.2-0.3$ mm., about 0.3 mm. high. Asci cylindrical or somewhat clavate, with short blunt base, fanning out in mounts, surrounded and exceeded by paraphyses, the asci $(14.4)-17-21-(25.5) \times 90-120 \mu$. Ascospores hyaline, when young divided into 2-4 cells, later dictyosporous with (6)-8-9 cells longitudinally and 2-3(-4) cells in width, the cells highly refractile, distichous, occupying almost all the ascus. The spores are more or less elliptical with broad rounded ends, and constricted at about the centre into two parts, the upper of which is slightly larger; surrounded by a thick gelatinous envelope, scarcely visible, $1.6-3.5 \mu$ thick, which appears to be divided transversely at the central constriction of the spore. Spores (including envelope) are $(9.6)-10.7-12.8-(16) \times 20-27-(34) \mu$. In some specimens the envelope is dissolved, leaving a thin spore wall visible. Paraphyses surrounding and exceeding the asci in length, branched, intertwined, hyaline or pale coloured in mass near the apices, indistinctly septate, 1.4μ or less in width.

The species has apparently not been recorded before in the Union. The author is indebted to Dr. G. R. Bisby for identifying No. 36812 as this species. Dr. Bisby noted that the spores of this specimen were perhaps a trifle large for the species, but that it is known to be rather variable. The spores of No. 36994 agree well in size with those of European specimens.

This species was once found in association with *Septonema spilomeum* (in collection No. 36972), but this is probably fortuitous, since *G. levantica* is not known to produce *S. spilomeum* as an imperfect stage.

GLONIUM PARVULUM (Gerard) Saccardo, Syll. Fung. 2 (1883) 735; Ellis and Everhart, N. Am. Pyrenomycetes (1892) 682; Lohman in Pap. Mich. Acad. Sci. Arts and Lett. 13 (1931) 141-157, Ibid. 17 (1933) 248; Bisby in Mycologia 24 (1932) 326.

Hysterium parvulum Gerard in Bull. Torr. Bot. Club. 5 (1874) 40.

Illustrations: Lohman, l.c., Pl. 29, 30, 31; Text Fig. 5.

Collections: No. 36814, *W. G. Rump*, on dead wood, Pietermaritzburg district.

Hysterothecia dull black, straight, not striate, superficial, carbonous, very closely aggregated in lines almost touching each other, $0.4-1.1 \times 0.2-0.3$ mm., with narrow straight cleft. Asci cylindrical, narrow, sometimes bent, $3.3-4.4 \times (41.5)-47-54-57 \mu$, including a long indistinct basal "tail." Ascospores hyaline, 2-celled with deep median constriction, fusoid, $2.7-3.3 \times 6.5-8.7 \mu$, the upper cell usually slightly larger. Paraphyses, hyaline, branched, septate, intertwined, filamentous, sometimes with a very small globose apex, about the same length as the asci, about 1.1μ wide.

This specimen was kindly identified by Dr. G. R. Bisby, who wrote: "Rather immature, but I found some spores $6-8 \times 2.5 \mu$ that were mature enough to escape from the asci. The fungus agrees closely with *Glonium parvulum* (Gerard) Sacc. described from North America and carefully redescribed by Lohman. It has been reported with some doubt from Europe."

HYSTERIUM INSIDENS Schweinitz, Syn. N. Am. 2078; Ellis and Everhart, N. Am. Pyrenomycetes (1892) 696; Bisby in Mycologia 24 (1932) 314 and 326; Lohman in Pap. Mich. Acad. Sci. 17 (1933) 262-266, f. 38.

Hysterographium insidens (Schw.) Saccardo, Syll. Fung. 2 (1883) 778.

Illustrations: Text Fig. 6.

Collections: Nos. 36957, 36943, 36993, *P. H. B. Talbot*, all on *Acacia mollissima*, Atholl Expt. Stn., E. Tvl., Feb. 1949... Locally abundant.

Hysterothecia black, carbonous, closely gregarious, often confluent along the sides, erumpent on wood and bark, linear, straight or curved, or short and navicular, $0.4-2.5 \times 0.4-0.5$ mm. Striations parallel to the cleft are evident. Asci clavate, octosporous, interspersed with branched, threadlike, hyaline paraphyses; the asci $120 \times 14.5 \mu$ (mature or nearly so). Spores uniformly brown with (5)-6-(7) cross septa, rounded at both ends, somewhat fusiform with the third cell usually larger than the others, and usually a constriction next to it, $6.5-8-9 \times 22.7-28.3-29.5 \mu$. In one collection the spores were mostly $7.6 \times 24 \mu$; in another $8 \times 24-27 \mu$. On the same piece of wood were larger hysterothecia with spores $9.6-12.8 \times 32-35-(40) \mu$.

Dr. G. R. Bisby kindly confirmed that "No. 36993 agrees very well on morphology with *Hysterium insidens*, as suggested." Lohman (1933, l.c.) found that American collections of this species produced *Septonema spilomeum* Berk. as a conidial state. Dr. Bisby later undertook ascospore cultures of No. 36993, and found that the same *Septonema spilomeum* state as produced in North America developed slowly on the culture plates of this South African material. He generously sent me part of the dried cultures, from which it was possible to establish the identity of some collections of *Septonema spilomeum* occurring naturally on *Acacia mollissima* at Atholl Experiment Station. A description of these collections follows.

SEPTONEMA SPILOMEUM Berk. in Hook. Lond. Jour. Bot. 4 (1845) 310, T. 12, Fig. 5; Cooke, Handbk. of Brit. Fungi 2 (1871) 481; Saccardo, Syll. Fung. 4 (1886) 399; Lohman in Pap. Mich. Acad. Sci. 17 (1933) 264-266, Fig. 38.

Illustrations: Lohman loc. cit; Text Fig. 7.

Collections: Nos. 36971, 36972, 36973, *P. H. B. Talbot*, on dead wood and bark of *Acacia mollissima* twigs, Atholl Experiment Station, E. Tvl., Feb. 1949. Locally abundant.

Sporodochia deepseated, usually gregarious but discrete and seldom coalescing, more or less hemispherical, 1-1.5 mm. diam., pulvinate, dark reddy-brown to almost black, pulverulent. Conidiophores not readily distinguished from the lowest, least developed conidia, but dilutely coloured, minutely roughened, about 3.2μ diam. Conidia cylindrical or ellipsoidal, opaque, dark brown, in simple chains which occasion-

ally fork, at first transversely septate, usually with 4–6 transverse septa, slightly constricted at each septum and more so at the central septum, with rough, granular surface, $8\text{--}11\text{--}12.8 \times 16\text{--}35\text{--}43 \mu$. The conidia are occasionally separated in the chain by a small colourless cell. Mycelium of the sporodochium is scanty, hyaline, infrequently septate, branched, filamentous, about 2μ diam.

Lohman (loc. cit.) emphasises that the conidia are progressively larger from the base to the apex of each filament, that the conidial filament is seldom oppositely branched, that the conidia are much constricted at the central septum, and that the terminal conidia are frequently muriform. She also notes that the isthmian chains are characteristic of the form genus *Polydesmus*, and the chains of muriform conidia of *Sirodesmium*. To judge by Linder's description and figures of *Bonordeniella aspera* [Linder in *Mycologia* 26 (1934) 439 and illustrations] it is possible that this is synonym of *Septonema spilomeum*, but the types have not yet been compared.

Dr. G. R. Bisby kindly confirmed the identification of No. 36972. He stated: "This specimen is like the type and other material of *Septonema spilomeum* from America—even to the colour. Kew has some fifteen specimens from the eastern United States and one from Australia; none from Europe (at least under the above name) where *Hysterium insidens* may be absent. I did not touch the type, which is now nearly bare, but your fungus is microscopically the same as Ellis 353, which Lohman says is the same as the type. It is easy to find spores 40μ long and up to 12.5μ wide in Ellis 353. The problem of the generic name to use cannot finally be settled until the types of *Septonema*, etc., are restudied. Meanwhile the binomial *S. spilomeum* can safely be applied to No. 36972."

HELICOMA CURTISII Berk. in *Grevillea* 3 (1875) 106; Linder in *Ann. Mo. Bot. Gard.* 16 (1929) 312 and 241, Pl. 21, f. 1–10; Pl. 30, f. 1; Pl. 31, f. 2.

Illustrations: Linder, loc. cit; Text Fig. 8.

Collections: No. 36998, *P. H. B. Talbot*, on *Eucalyptus*, Hennops River, Pretoria district, September 1948 (mixed collection); Nos. 36917, 36999, 37001, 37000, *P. H. B. Talbot*, on bark of *Eucalyptus* sp., Buffelspoort, Rustenburg district, 12/8/1948.

Fungus forming black discrete patches on bark, hirsute in appearance, brownish under the dissecting microscope. Conidiophores arising from the short dark mycelial cells which are little developed, erect, unbranched, septate, deep fuscous, lighter at the apex, which is rounded and tapered to a single sporogenous tooth, $136\text{--}178 \times 7\text{--}8.5 \mu$, slightly flexuous. Conidia hyaline to very dilutely coloured, coiled $1\frac{1}{4}$ times in one plane, 4–8 septate, $4.5\text{--}5.3 \mu$ thick, base tapering-rounded and slightly recurved, diam. of coil $13\text{--}17.5 \mu$.

In the collection No. 36917 the *Helicoma* was found in association with *Lasiosphaeria pezizula* (B. and C.) Sacc. which Linder [in *Ann. Mo. Bot. Gard.* 16 (1929) 239–240] has shown to be its perfect stage. In both stages it is a new record for South Africa.

LASIOPHAERIA PEZIZULA (B. and C.) Sacc. *Syll. Fung.* 2 (1883) 195; Linder in *Ann. Mo. Bot. Gard.* 16 (1929) 314.

Sphaeria pezizula Berk. and Curt. in *Grevillea* 4 (1876) 106.

Herpotrichia pezizula (B. and C.) Ellis and Everhart, *North American Pyrenomycetes* (1892) 160.

Illustrations: Text Fig. 9.

Collections: No. 36917, *P. H. B. Talbot*, on bark of *Eucalyptus* sp., Buffelspoort, Rustenburg Dist. 12/8/1948.

Perithecia small, smooth, black, about 300μ in diam., the walls composed of dark, polygonal cells. Perithecium globose with papillate ostiole, drying to a concave disc,

closely gregarious but not confluent. Asci 100–150 × 20–24 μ , broad clavate, 8-spored, with marked hyaline thickening at the apex. Ascospores hyaline (becoming dilutely coloured), 5–7–(8) septate, straight, or more often slightly curved, almost cylindrical, tapering towards the ends to a rounded or somewhat pointed end, 41–56 × 5.5–8.5 μ .

The identity of this, and its imperfect stage *Helicoma curtisii*, was kindly checked at the Commonwealth Mycological Institute by Mr. E. W. Mason.

CINTRACTIA LEUCODERMA (Berk.) P. Henn. in Hedwigia 34 (1895) 335; Hennings in Fungi in H. Baum, Botanische Ergebnisse der Kunene-Sambesi Expedition, Berlin (1903) 156. Whetzel and Kern in Mycologia 18 (1926) 119–120.

Ustilago leucoderma Berk. in Ann. Mag. Nat. Hist. ii, 9 (1852) 200; Saccardo, Syll. Fung. 7 (1888) 460.

Illustrations: Whetzel and Kern in Mycologia 18 (1926) Pl. 16A.

Collections: No. 37002, P.G.C. Brett, on *Rhynchospora cyperoides*, S.A.S.A. Experiment Stn., Mount Edgecombe, Natal, April 1949.

Sori 2.5–3.5 cm. in length, surrounding the stem or peduncle of the grass, or forming elongated patches on these but not fully surrounding them. The stem or peduncle forms a central columella to the sorus. Sori are black inside, composed of a hard mass of agglutinated, not pulverulent spores, and white on the outside due to a thick white membrane which soon flakes off. The membrane is composed of fungous cells of a degenerated, gelatinous appearance under the microscope. The spores are deep brown with a thick brownish-black, minutely warted epispore, and are subglobose to angular by compression, 14.4–16 × 16–19.2 μ .

This fungus has been reported on *Rhynchospora aurea* and *R. dolichostyla* from localities which include parts of tropical and East Africa, but not yet, it would seem, from South Africa itself, though it has been compiled in certain works dealing with South African Ustilaginales. [See Verwoerd in Ann. Univ. Stellenbosch 4 (1926) 22, and Zundel in Bothalia 3 (1938) 316.]

TRICHODERMA VIRIDE Pers. ex Fr., Syst. Myc. 3 (1829) 215; Persoon, Syn. Meth. Fung. (1801) 231; Bisby in Trans. Brit. Myc. Soc. 23 (1939) 149–168, Text Figs. 1–5.

Illustrations: Bisby (1939) loc. cit.; see also references in Wakefield and Bisby, Trans. Brit. Soc. 25 (1941) 60.; Text Fig. 10.

Collections: No. 36808, P. H. B. Talbot, on prune agar cultures isolated from rotten potato leaves from Buffelspoort, Transvaal, 10/8/1948; No. 37003, C. van der Merwe, on soil and soil cultures from Kroondal Expt. Stn., Rustenburg, August, 1949.

Vegetative hyphae hyaline, 3–4–9 μ wide, thick-walled, branched, giving rise to the finer hyphal system from which the branched conidiophores arise. Conidiophores not easily distinguishable from the vegetative hyphae, 1.7–3.4 μ wide, hyaline, septate, branched, usually with opposite branches arising at right angles from a characteristically swollen node of the parent hypha, the branches producing terminal and lateral phialides on which the conidia are borne. Phialides shaped like a ninepin, straight or curved, arising singly or in opposite pairs, or in whorls of seldom more than three, 6.5–9.1 × 2.5–3.4 μ . Conidia abstricted from the phialides, unicellular, hyaline to pale bright greenish, globose, ovoid or broad elliptical, formed in slimy balls at the apex of each phialide, or occasionally in short chains. Conidia 3.4 μ diam., or 3.4 × 4.6 μ , smooth-walled. [Bisby (1939) mentions occasional inconspicuous roughenings of the spore wall.] Chlamydospores terminal or intercalary, subglobose to broad elliptical, very pale yellow, scanty, thick-walled, 8.8–9.6 × 11.2 μ . Colonies on prune agar fluffy white to blue-green to deep green, with a marked smell of coconut.

This fungus is a common contaminant of culture plates at the Division of Botany and Plant Pathology, but as far as the author is aware has not been recorded or described from South Africa under its valid name. Records refer only to *T. lignorum* [see Doidge

and van der Plank in S.A. Dept. Agric. and Forestry Sci. Bull. No. 162 (1936) 23], which Bisby points out is invalid. No specimen of the fungus had previously been preserved in the National Herbarium at Pretoria. The Transvaal Chamber of Mines Timber Research Laboratory isolated this fungus from underground mine timber (*T.R.L.* 249) and from the coat of a native miner (*T.R.L.* 427). I am grateful to Dr. G. R. Bisby for confirming my identification of specimen No. 36808.

NIGROSPORA ORYZAE (B. and Br.) Petch in Journ. Ind. Bot. Soc. 4 (1924) 24.

Monotospora oryzae B. and Br. in Journ. Linn. Soc. Bot. 14 (1873) 99.

Illustrations: Mason, Annot. Account of Fungi Received at the Imp. Myc. Inst., list ii, fasc. 2 (1933) 53, f. 17. Compare also Mason in Trans. Brit. Myc. Soc. 12 (1927) Pl. 15, f. 1-9; Molliard in Bull. Soc. Myc. de Fr. 18 (1902) Pl. 9.;

Text Fig. 11.

Collections: No. 35552, *G. J. M. A. Gorter*, on *Zea mays* (Anveld var.), Prinshof, Pretoria, April 1946; No. 36992, *G. J. M. A. Gorter*, on *Zea mays* (inbred Hickory King), Potchefstroom Agric. Coll., June 1949.

Mould found in cobs and on the base of maize seeds, forming a thin hyphal web punctuated by dark purple-black spots which are the conidia. Hyphae creeping, septate, dilutely coloured to fuscous, up to 9 μ diam. (fide Mason, 1933, l.c. p. 55, they are 10-18 μ wide). Conidiophores inflated globose to ampulliform, borne laterally and terminally on a branched, septate mycelium which may become dilutely coloured. Conidia jet black, opaque, shiny, smooth, globose to broad elliptical depending on the angle of view, i.e., they are depressed spheres (11.4)-13.7-(14.8) μ , shot off at maturity.

Mason (1927) showed that the genus *Basisporium* Molliard was a synonym of *Nigrospora* Zimm. and that three species could be provisionally accepted on the basis of spore measurements, but not on the basis of hosts and geographical distribution. For the small-spored form on maize (Mason, 1927, p. 157-160) the name *N. oryzae* was suggested, and is accepted here. A form with larger spores was designated *N. sphaerica* (Sacc.) Mason. Mason (1933), p. 61) and Reddy [Agric. Expt. Stn. Iowa State Coll. Research Bull. No. 167 (1933) 5] both showed that in culture the large spored form tended to produce smaller spores. For that reason and the fact that both forms have the same host range and distribution, and also that Mason's studies did not include pathogenicity tests, Reddy included both forms under the name *Basisporium gallarum* Molliard. Durrell [in Agric. Expt. Stn. Iowa State Coll. Research Bull. No. 84 (1925)] preceded Reddy in attributing the dry rot of corn in the United States to *B. gallarum*. *B. gallarum* was first described by Molliard [in Bull. Soc. Myc. de Fr. 18 (1902) 167-170], and is not to be confused with the soil isolation named *B. gallarum* by Dale [in Ann. Myc. 10 (1912) 466] which was renamed *Monotospora daleae* Mason (Mason, 1933, loc. cit. p. 50, Pl. 16).

Mason's studies (Mason, 1927, l.c.) clearly indicated that the fungus in question is congeneric with *Nigrospora* Zimm. It appears desirable in recording this fungus as new to South Africa to place it in the genus *Nigrospora*, and, as the small-spored form, it is recorded as *N. oryzae*. If it should subsequently be established that *N. sphaerica* and *N. oryzae* are cospecific no harm is done, for the latter epithet has priority and will stand. (*Monotospora oryzae* B. and Br., 1873; *Trichosporium sphaericum* Sacc. 1882.)

TORULA HERBARUM (Pers.) Link ex Fries; Fries, Syst. Myc. 3 (1829) 501; Link in Magaz. Ges. Naturf. Freunde Berlin 3 (1809) 21; Saccardo, Syll. Fung. 4 (1886) 256; Masee, Brit. Fung. Flora 3 (1895) 362; Ferraris, Flora Italica Cryptogama, Pars. 1 Fasc. 8 (1912) 224; Mason, Annot. Account of fungi received at the Imp. Myc. Inst. List ii Fasc. 3 (special part) (1941) 113-117, Figs. 33, 34.

Monilia herbarum Pers., Syn. Meth. Fung. (1801) 693.

Septonema toruloides Berlese in Bull. Soc. Myc. de Fr. 8 (1892) 103, Pl. 10, Figs. 18-20.

Illustrations: Berlese, loc. cit.; Mason, loc. cit.; Text Fig. 12.

Collections: No. 36929, P. H. B. Talbot, Hennops River, Pretoria district, Oct. 1948.

Pulvinate to effused, black with an olivaceous tinge, pulverulent. Repent hyphae superficial or just within the substratum, fuscous, septate, branched, 1.5-3 μ diam., giving rise to laterally borne conidiophores. Conidiophores short, inflated, subglobose, smooth, thin-walled, 4-4.8 μ diam., single, sessile or on a very brief stalk. Conidia in chains which are typically much branched, fuscous, minutely spinose or smooth under the oil immersion lens, each conidium composed of 3-6-(20 or more) subglobose cells, with constrictions at the septa; width 5-6 μ ; the apical cell of each conidium commonly the lightest in colour and smaller than the others.

Mr. E. W. Mason very kindly determined this species, and commented: "Almost exactly the same as Wallace No. 1507 on *Zea mays* from Tanganyika. . . . Many of the chains are formed exclusively of short conidia, 3-6 celled; but some preparations show conidia of 20 or more cells. The breadth of the conidia is mainly between 5 and 6 μ diam. Except for these long conidia it is almost exactly the same as a soil isolation from Great Britain kept in the culture collection, but in that the longest conidium so far seen consists of only 8 cells."

LACELLINA GRAMINICOLA (B. and Br.) Petch in Ann. Roy. Bot. Gard. Peradeniya 9 (1924) 171; Hopkins in Mem. Dept. Agric. S. Rhodesia No. 2 (1939) 6.

Chaetopsis graminicola Berk. and Br. in Journ. Linn. Soc. Bot. 14 (1875) 90.

Mesobotrys graminicola (B. and Br.) Sacc., Syll. Fung. 4 (1886) 325.

Gymnosporium cinctum B. and Br. in Journ. Linn. Soc. Bot. 14 (1875) 90,

Coniosporium cinctum (B. and Br.) Sacc., Syll. Fung. 4 (1886) 243.

Illustrations: Text Fig. 13

Collections: No. 36996, P. H. B. Talbot, on dead leaves of *Miscanthidium junceum*, Rustenburg Kloof, Transvaal, 24/5/1949.

Colonies dense black, velutinous, superficial, elliptical or oval, discrete, rarely coalescing, up to 1 \times 2 mm. Setae present, numerous, unbranched, smooth-walled, opaque, black-brown at the base becoming paler and pellucid near the rounded apex and there revealing septa, 9.6-15 \times 500-700 μ . Conidia fuscous, subglobose to broad elliptical or ovate (flattened in one plane) with rather thick walls, smooth when mature, minutely sculptured when young, 4.6-6.2-(6.6) \times (5.4)-6.2-6.9-(7.3) μ . A few outside conidia 4.6 \times 8.5-9.6 μ are present. Conidia borne terminally and laterally in evanescent chains and groups, easily becoming detached as a fuliginous powder. Conidiophores sub-hyaline or pale golden brown, 3.5-4.8 μ wide, thick-walled, with strongly verrucose walls, sparingly branched, suberect, the apex often swollen or expanded and appearing shortly moniliform owing to the presence of young catenate conidia, arising from a sparse repent mycelium of the same appearance and all forming a loose network surrounding the base of the setae.

This interesting species is a new record for South Africa, though it is known from Rhodesia. The author was fortunate in being permitted to borrow Dr. Hopkin's Rhodesian material to study (Myc. Herb. Dept. Agric. S.R. No. 2308, on *Aristida* sp., leg. J. C. Hopkins, Salisbury, 1/3/1933). The colonies in Dr. Hopkin's specimen were somewhat smaller (0.5-1 mm. diam.) and the setae less pointed at the apex, but in all other particulars there was very close correspondence of characters and measurements.

To make sure of their identity these specimens (Hopkins, 2308 and Talbot, 36996) were sent to the Commonwealth Mycological Institute. Mr. M. B. Ellis very kindly compared them with authentic material of *Lacellina graminicola* (Thwaites 505), and

stated that there seemed to be no doubt that they matched this species. Mr. Ellis reported: ". . . the conidia are flattened in one plane, smooth to verruculose, pale brown 5-7 (5.7) μ \times 3-4 μ (measured in lactic acid) and are borne on subhyaline or pale golden-brown rough-walled conidiophores which are 3-4 μ in diameter. The setae are dark brown, 11-15 μ in diameter at the base and 10 μ about the middle; in *Thwaites* 505 they vary in length from 300-1,200 μ , in your material (Dr. Hopkin's) from 270-700 μ plus (most of the setae have had their tips broken or eaten off). . . . Although we have not been able to examine material of *L. libyca* Sacc. and Trott. it is quite likely that this again is the same thing."

Lacellina libyca Sacc. and Trott. [in *Ann. Myc.* 11 (1913) 419; Saccardo, *Syll. Fung.* 25 (1931) 781] is obviously closely related and in fact the author first disposed his collection as this species. As the above measurements will show, there is a good deal of variation in the size of the conidia and setae which may indicate that the two species intergrade.

Petch states that the conidia form groups and chains only accidentally after abscission. My observations support the view of Saccardo and Trotter that the conidia are in evanescent chains or groups before abscission. The young conidia, still attached, are clearly connected by isthmi, while if a colony is inverted over a slide and tapped gently the conidia fall onto the slide still retaining their positions in groups and short chains.

GONATOBOTRYS RAMOSA (Karst.) Reiss in Fresenius Beitr. ii 44 (1852) Tab. 5, Fig. 22-23; Saccardo, *Syll. Fung.* 4 (1886) 169; Lindau in Rabenh. Krypt. Fl. Band. 1, Abt. 8 (1905) 357.

Glomerularia ramosa Karst. in Bot. Zeit. 7 (1849) 368, Tab. 6, Fig. V., p. (fide Lindau).

Illustrations: Text Fig. 14.

Collections: G. J. M. A. Gorter, on germinating seeds of *Zea mays* in the laboratory. Pretoria, 17/3/49.

Colonies white, composed of arachnoid or densely interwoven hyphae and conidiophores. Repent hyphae hyaline, sparsely branched, septate, 2.6-5.3 μ diam. Conidiophores erect, very long, slender, very rarely branched, hyaline, septate, up to 660 μ long and 4-8 μ wide, bearing always at the apex, and sometimes at the penultimate cell as well, or irregularly distributed, a slightly swollen area covered with numerous spicules on which the conidia are borne. The spicules are cylindrical with rounded apex and up to 5.3 μ long by 2 μ wide. Occasionally in the swollen conidium-bearing areas are short lateral vesicular branches of the conidiophore which also bear a few sporogenous teeth. The conidia are ovate to elliptical and basally apiculate, hyaline, thin-walled, large, (10.4)-11.2-12.8 \times 17.6-22.4 μ , smooth.

This interesting species was noticed by Mr. Gorter and subsequently sent by him to the Centraalbureau voor Schimmelcultures at Baarn, for determination. Unfortunately no specimen was preserved in the Herbarium in Pretoria, and further attempts to isolate the fungus from maize seeds failed.

ACREMONIELLA ATRA (Corda) Saccardo, *Syll. Fung.* 4 (1886) 302; Lindau in Rabenh. Krypt. Fl. Band 1, Abt. 8 (1906) 675; Mason, Annot. Account of Fungi received at the Imp. Myc. Inst., List ii, Fasc. 2 (Special Part) (1933) 29-39, Fig. 11; Bainier in Bull. Soc. Myc. de Fr. 23 (1907) 237, Pl. 18.

For synonymy see Mason, loc. cit.

Illustrations: Text Fig. 15.

Collections: E. E. Schaefer, cultures from seeds of *Zea mays* from Onderstepoort, Pretoria, August, 1949.

The aleuriospore stage of this fungus was found by the writer in cultures made from maize seeds, in which there was a preponderance of other mould species. The stage showing aspergilliform phialospores (see *Papulaspora aspergilliformis* illustrated by Bainier in Bull. Soc. Myc. de Fr. 23 (1907) pl. 18] was not seen, and attempts to get the fungus into pure culture failed. The aleuriospore stage is briefly described below.

Hyphae branched, hyaline, septate, whitish, 2.5–5 μ diam. Aleuriophores formed as lateral branches from the hyphae, hyaline, tapering to a point at the apex, occasionally branched, septate, 44–53 \times 5.3–6.6 μ , bearing a single spore at the apex. Aleuriospores obovate or elliptical, light cinnamon brown, smooth, 21.3–28 \times 13–16–20 μ .

TRICHURUS GORGONIFER Bainier in Bull. Soc. Myc. de Fr. 23 (1907) 229–234, Pl. 25, Figs. 1–6; Saccardo; Syll. Fung. 22 (1913) 1452.

Illustrations: Bainier l.c.; Text Fig. 16.

Collections: No. 39188, C. O'Connor, contaminant on peanut husk cultures, March, 1949; No. 39189, E. E. Schaefer, contaminant on potato slice culture, March, 1949; No. 39190, L. Kresfelder, contaminant on peanut husk culture, August 1949; No. 39197, P. H. B. Talbot, contaminant on prune agar culture, Sept. 1949. All these collections were made at the Division of Botany and Plant Pathology, Pretoria.

The fungus arises as a web of whitish then pale cinereous or pale violaceous-cinereous mycelium interspersed later with synnemata. The synnemata are 1.2–2 mm. in length, the width of the fertile head being 80–140 μ and that of the sterile part of the stalk being 40–48 μ . The fertile head is cylindrical to clavate, and in gross appearance is pale cinereous, violaceous-cinereous or later becoming ashen or pale brownish in colour. The stalk is blackish brown. The synnemata are usually unbranched, but frequently in some cultures they are branched. They arise singly or in groups direct from the mycelium or from a thick mycelial strand or even from peculiar balls of hyphae resembling sclerotia but soft, subglobose or irregular in shape, brown, 160–290 μ in diam. The stalk of the synnema is composed of parallel hyphae, closely united, brown, septate, 2–4.3 μ in width and irregular in width along short pieces of a single hypha. Mycelial hyphae are similar, 1.6–4.4 μ wide. In the fertile part, the synnema hyphae have terminal or lateral branches which bear very compact penicillate structures terminating in phialides and chains of conidia. Such penicillate structures may also originate from the mycelial hyphae before the formation of synnemata. The phialides are dilutely coloured, 2.7–3.3–4.3 \times (5.5)–7.6–10.8 μ . The conidia are catenate, easily becoming separated, ovoid or broad elliptical, very dilutely coloured, (2.7)–3.3 \times 4.4–(4.9) μ . In a mass they are pale violaceous-cinereous, later ashen or pale brownish. Arising as branches among the penicillate phialides are numerous long, unbranched, septate, dilutely coloured, straight or undulate or curved (but not coiled) hairs, varying in width from (3)–5.5 μ , with rounded apex, and 55–150 μ in length.

The sterile hairs arising from the fertile part of the synnemata are characteristic of the genus *Trichurus*, and distinguish it from *Stysanus*. Bainier (l.c.) has compared three species of *Trichurus*, and our collections agree very well with his description of *T. gorgonifer*. The fungus grows readily on a medium composed of peanut husks and wheat grains, used for the culture of *Phytophthora*, where it was first noticed and brought to my attention by Miss C. O'Connor.

PASSALORA GRAMINIS (Fuckel) v. Höhnelt in Centralblatt für Bakt. 60 (1924) 6; Sampson and Western, Diseases of Brit. Grasses and Herbage Legumes (1941) 22, text Fig. 6, Pl. 3, Fig. 6.

Scolecotrichum graminis Fuckel Symb. Mycol. (1869) 107; Johnson and Hungerford in Phytopath. 7 (1917) 69; Wakefield and Bisby in Trans. Brit. Myc. Soc. 25 (1941) 87.

Illustrations: Sampson and Western, loc. cit.; Text Fig. 17.

Collections: No. 39198, comm. *S. J. Truter*, on *Dactylis glomerata*, Riversdale Farm, Himeville, Natal, January, 1950.

Fungus forming numerous very small chocolate-brown spots on both sides of the leaves, the infected parts of the leaves crinkling and withering. The spots are composed of very densely fasciculate conidiophores which are brown coloured, straight, curved or slightly geniculate, unbranched, obscurely septate near the apex, $(4.6) - 6.6 \times 70 - 80 \mu$, with a single apical scar. Conidia lightly coloured, 2-celled, the upper cell frequently somewhat narrower and more elongated than the lower, both cells tapering towards the ends, the basal one marked with a very distinct scar, smooth, borne apically on the conidiophores, $10 - 11.3 \times 36 \mu$.

Sampson and Western (l.c.) figure conidiophores with more than one conidial scar, and the assumption is that the conidia may be produced acropleurogenously, though in the present material only acrogenous conidia were found in a mature state. In some of the young conidiophores two lobes were seen at the apex, one representing a very young conidium and the other the growing tip of the conidiophore. Thus there appears to be little doubt that in our material more than one conidium per conidiophore may be produced. *Passalora graminis* is a new record for South Africa.

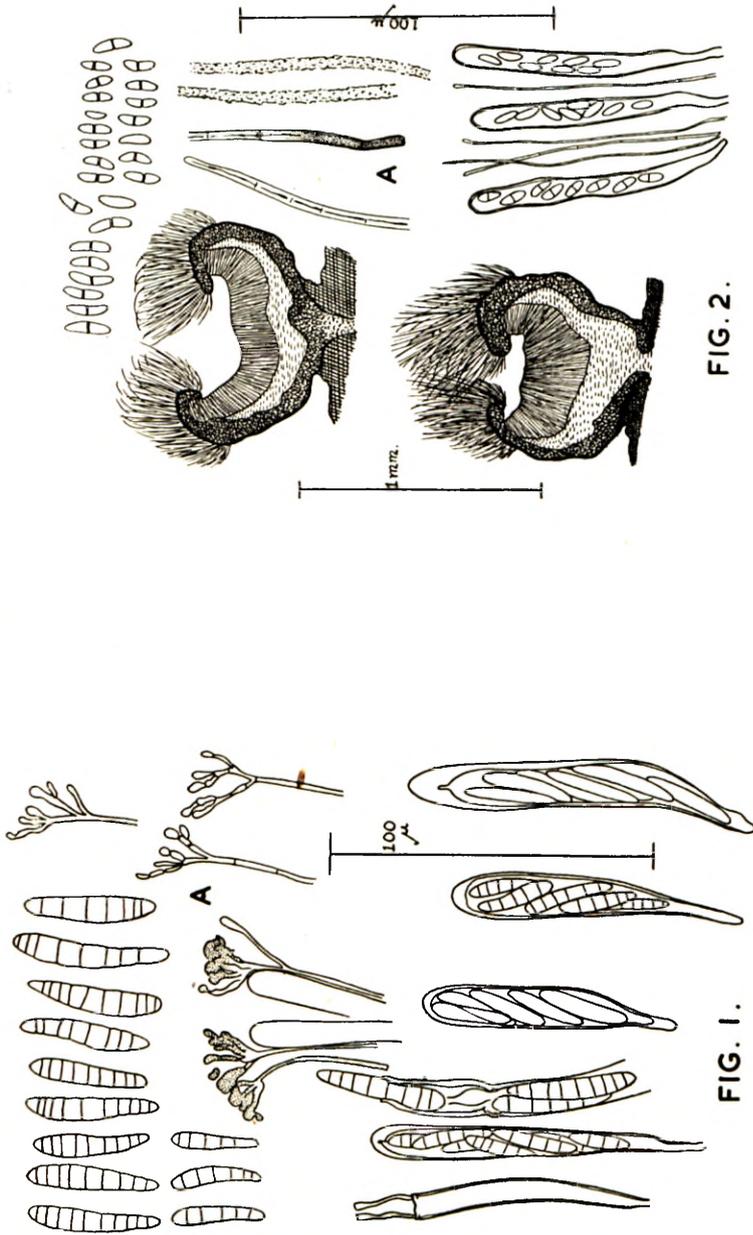


FIG. 1.—*Patellaria atrata* (Hedw.) Fr.
Paraphyses are shown at A.

FIG. 2.—*Perrotia flammea* (Alb. and Schwein.) Boud.

At A is a group of hairs from the outside of the apothecium, those on the right showing the granular incrustation.

FIG. 2.

FIG. 1.

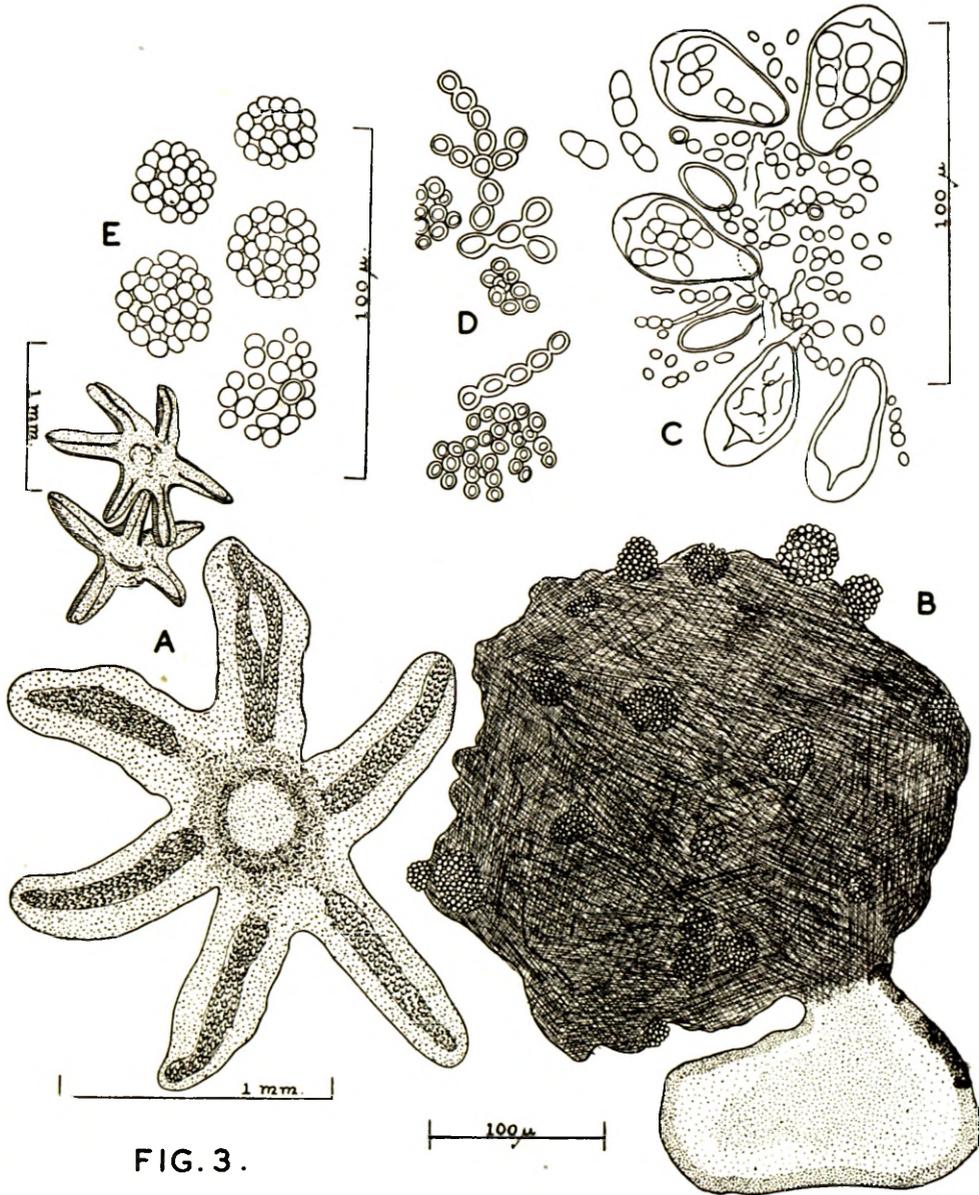


FIG. 3.

FIG. 3.—*Atichia glomerulosa* (Ach.) Stein.

A—Stellate colonies. B—Globular colony. C—Asci and ascospores. D—Yeast-like cells composing the thallus. E—Groups of conidia, i.e., “propagula.”

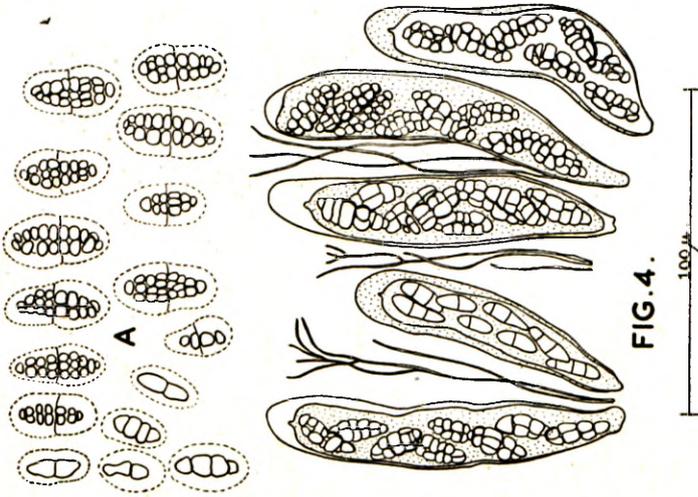


FIG. 4.—*Gloniopsis levantica* Rehm.
A—Ascospores, showing the thick investment of each spore.

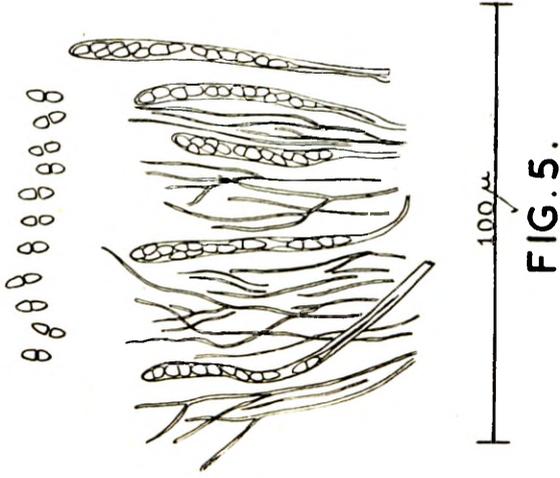


FIG. 5.—*Glonium parvulum* (Gerard) Sacc.
Asci, ascospores and paraphyses.

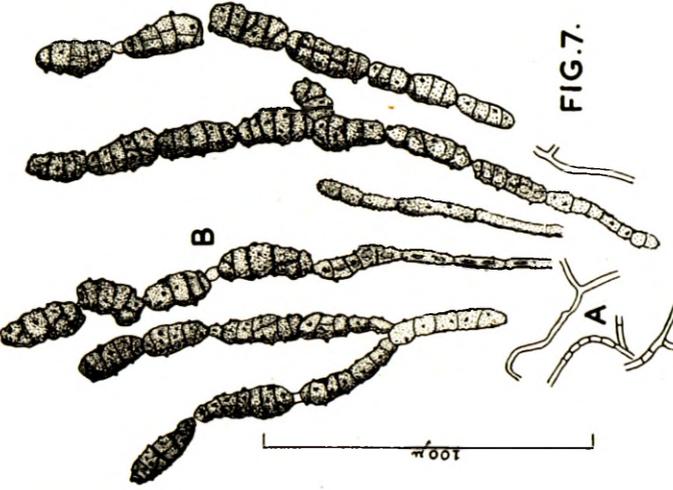


FIG. 7.

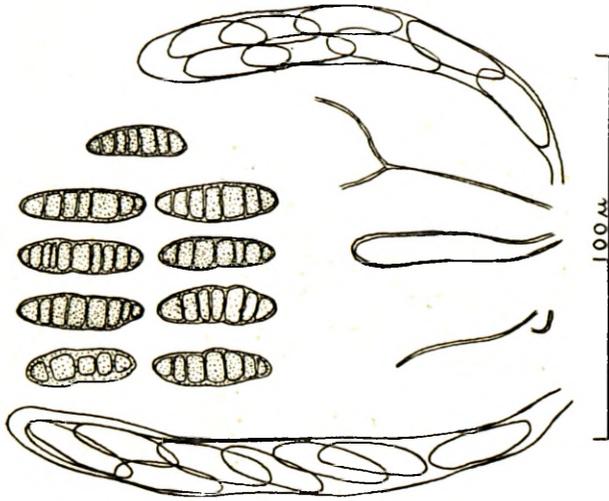


FIG. 6.

FIG. 6.—*Hysterium insidens* Schwein.
Asci, ascospores and paraphyses.

FIG. 7.—*Septonema spilomeum* Berk.

A—Hyphae of the sporodochia. *B*—Chain of conidia separated at *B* by a small isthmus cell.

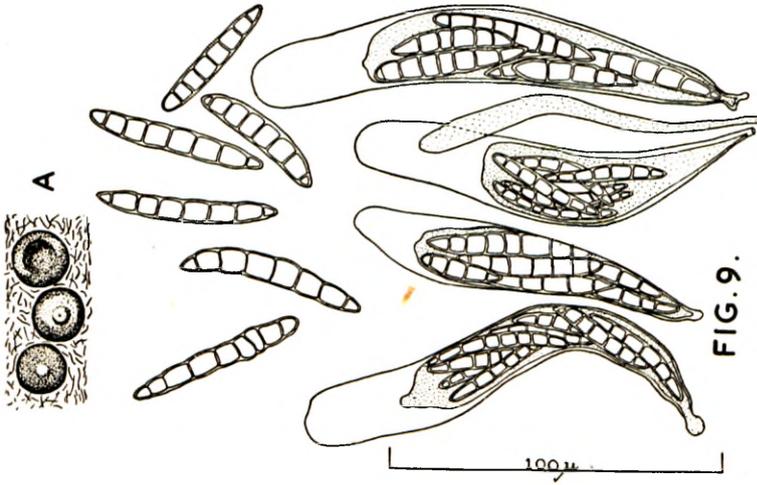


FIG. 9.

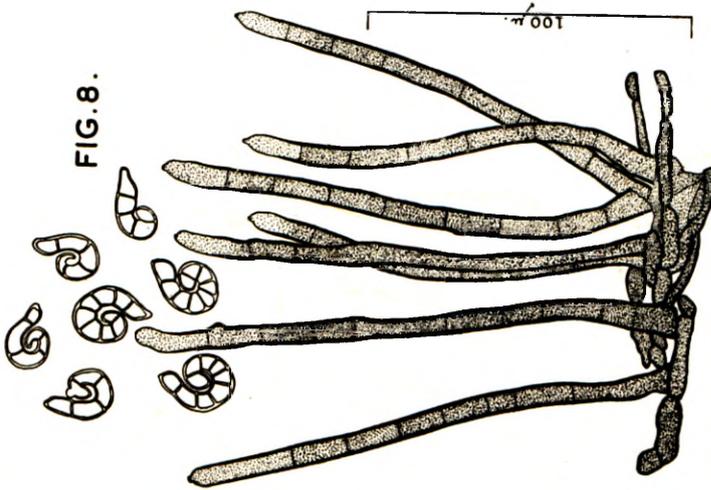


FIG. 8.

FIG. 8.—*Helicoma curtisii* Berk.
Conidiophores and conidia.

FIG. 9.—*Lasio-sphaeria pezizula* (B. and C.) Sacc.
Asci and ascospores. The habit of the fungus on bark is shown at A.

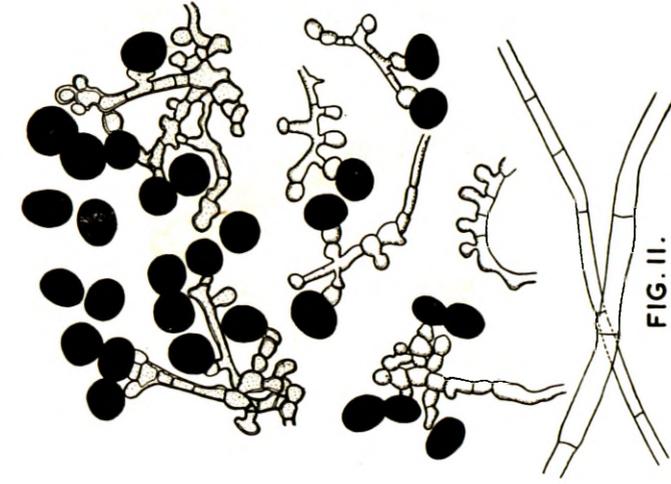


FIG. 11.

FIG. 10.—*Trichoderma viride* Pers. ex Fries.
Hyphae, phialophores, phialides and conidia.

FIG. 11.—*Nigrospora oryzae* (B. and Br.) Petch.
Hyphae, conidiophores and conidia.

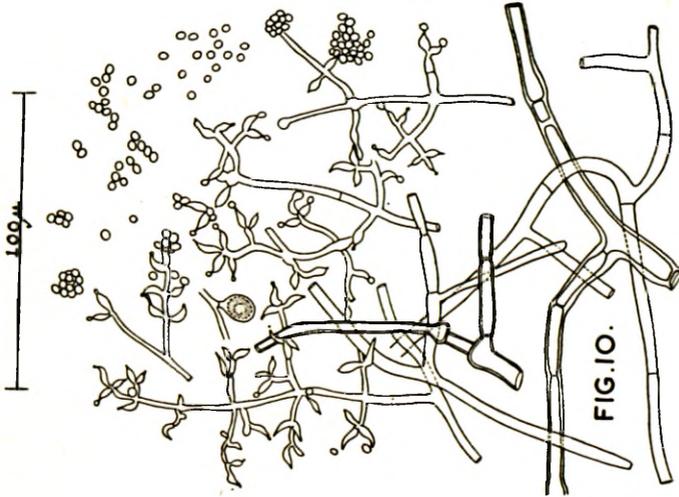


FIG. 10.

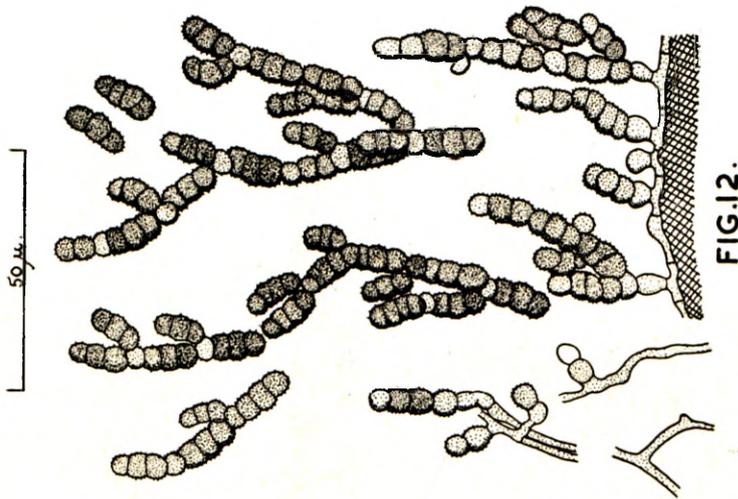


FIG. 12.

FIG. 12.—*Torula herbarum* (Pers.) Link ex Fries.
Conidiophores and branched chains of conidia.

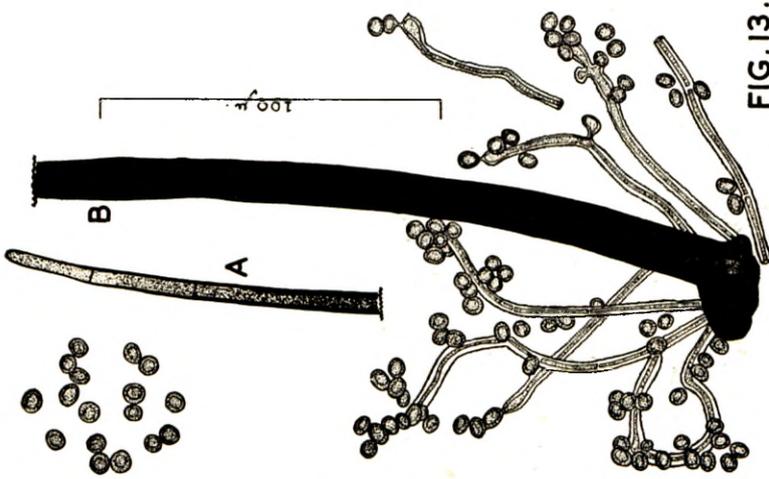


FIG. 13.

FIG. 13.—*Lacellina graminicola* (B. and Br.) Petch.
Conidiophores, conidia and setae. *A* shows the apex, and *B* the base of a seta.



FIG. 14.—*Gonatobotrys ramosa* (Karst.) Reiss.
Conidiophores and conidia.

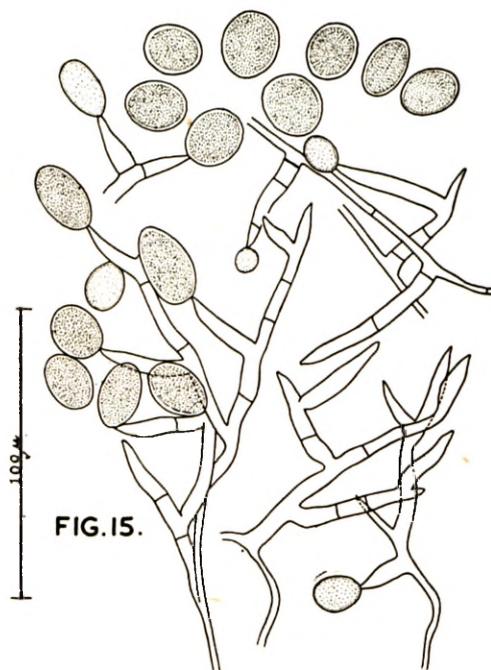


FIG. 15.—*Acremoniella atra* (Corda) Sacc.
Aleuriospores and aleuriophores.

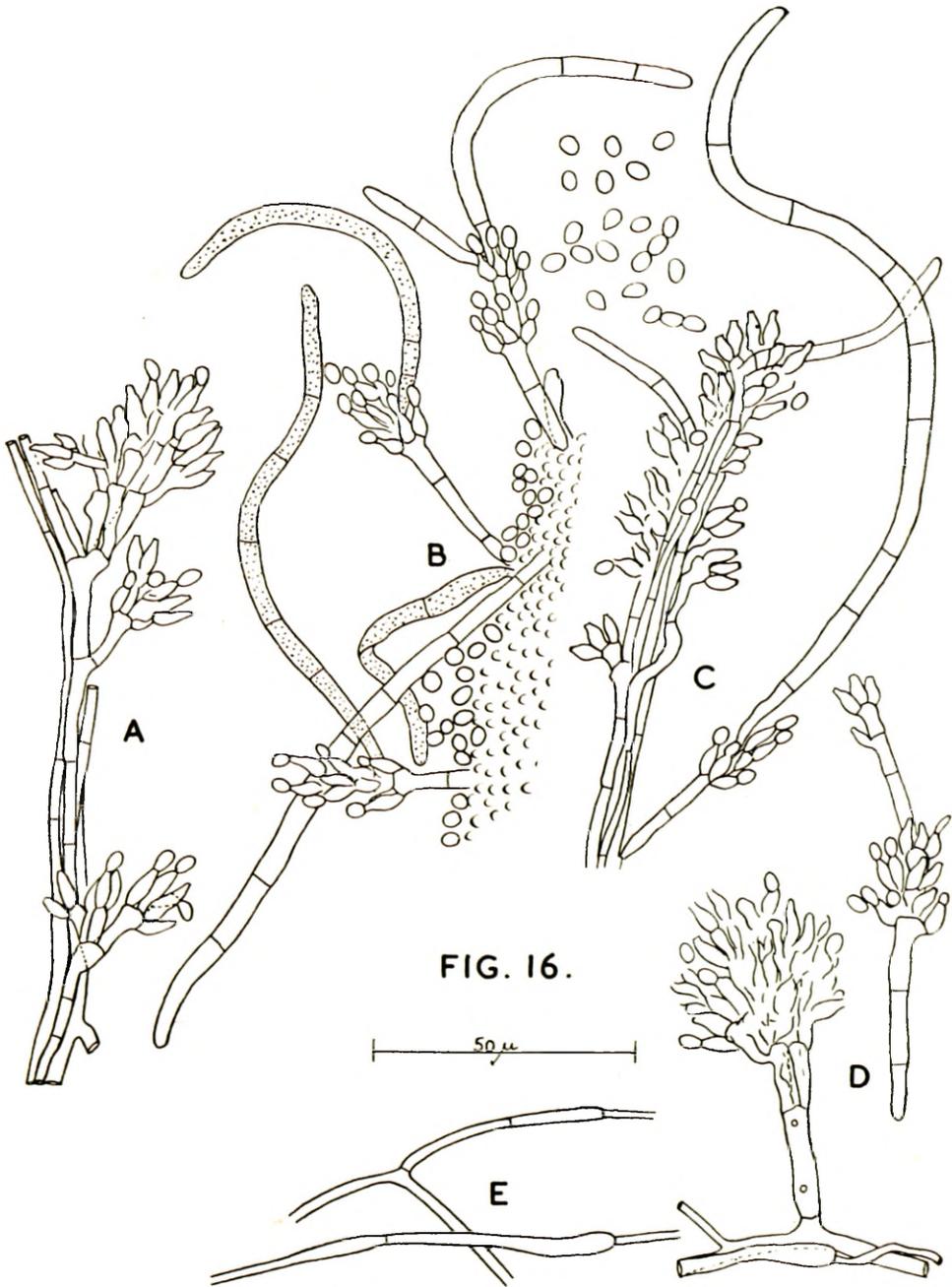


FIG. 16.

FIG. 16.—*Trichurus gorgonifer* Bainier.

A, B and *C* show parts of the synnemata including penicillate structures, phialides, sterile hairs and conidia; *D* shows penicillate structures arising direct from the mycelium; *E*—Hyphae.

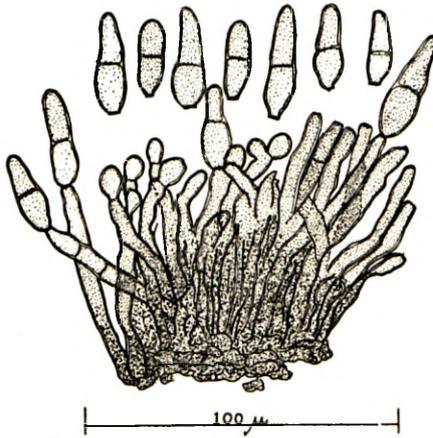
**FIG. 17.**

FIG. 17.—*Passalora graminis* (Fuckel) v. Höhnel.
Conidiophores and conidia.