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THE GENERA PETRIELLIDIUM AND PITHOASCUS (MICROASCACEAE)

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Keys are given to the genera of the Microascaceae and to the species of *Petriellidium* and *Pithoascus*. In *Petriellidium* six species are accepted, *P. desertorum*, *P. ellipsoideum*, *P. fusoideum*, and *P. africanum* are described as new. In *Pithoascus* also six species are enumerated, *P. platysporus* and *P. stoveri* are described as new, for *Microascus exsertus* Skou the combination *Pithoascus exsertus* is proposed.

INTRODUCTION

The family Microascaceae, covering five genera of ascomycetes, has been treated by Malloch (1970). *Microascus*, *Petriella* and *Lophotrichus* are accepted for species with ostiolate ascomata; the non-ostiolate counterparts are classified in *Kernia* and the new genus *Petriellidium*. A further genus *Pithoascus* has been proposed by von Arx (1973) for some species hitherto classified in *Microascus*.

The Microascaceae can easily be recognized by the characteristics of the ascospores, which are one-celled, smooth, relatively small, yellowish, straw coloured, reddish or copper coloured, dextrinoid when young, and with an often indistinct or inconspicuous germ pore at both ends. The formation of conidia is characteristic in most of the genera. Typical *Microascus* and *Kernia* species include a *Scopulariopsis* or *Wardomyces* conidial state; all *Petriella* species have a *Graphium*-like conidial state, and in all *Petriellidium* species a *Scedosporium*- and often also a *Graphium*-conidial state is present. No conidial states are known in *Lophotrichus*- and *Pithoascus*-species. The latter genus can also be recognized by the very slow growth of the colonies and by glabrous ascomata, which may be ostiolate or non-ostiolate.

The Microascaceae are a natural family, related to the Melanosporaceae. The genus *Lophotrichus* is in some respects intermediate, especially the species *L. incarnatus* Seth with bright ascomata and larger ascospores points to *Melanospora*, *Corynascus* and other genera with elongated, smooth ascospores with 2 prominent germ pores.

A number of cultures of Microascaceae have become available recently to the author. Some of them could not be identified with any described taxon, but can be classified within the genera *Petriellidium* and *Pithoascus* and will be described below.

KEY TO THE GENERA

1. Conidial states absent; ascospores usually yellowish or straw coloured and without observable germ pores 2

1. Conidial states usually present (from genera *Scopulariopsis, Wardomyces, Graphium, Scedosporium* and others), ascospores yellowish, reddish or copper coloured, with often inconspicuous germ pores 3
2. Ascomata discrete, usually ostiolate, especially apically setose or hairy; ascospores usually symmetrical; colonies spreading . . . . . *Lophotrichus*
2. Ascomata often form dense crusts, black, glabrous, often non-ostiolate; ascospores usually narrow, colonies very restricted in growth . . . . . *Pithoascus*
3. Ascospores reniform, triangular or ellipsoidal, yellow or straw coloured, shorter than 6 µm; conidial state is *Scopulariopsis* or *Wardomyces* 4
3. Ascospores usually ellipsoidal or broadly fusiform, longer than 6 µm, yellow or reddish, conidial state usually is *Graphium* and/or *Scedosporium* 5
4. Ascomata ostiolate; ascospores usually asymmetrical . . . . . *Microascus*
4. Ascomata non-ostiolate, usually with appendages; ascospores symmetrical or asymmetrical . . . . . *Kernia*
5. Ascomata ostiolate, often setose, ascospores reddish or copper coloured, usually asymmetrical . . . . . *Petriella*
5. Ascomata non-ostiolate, rarely with a small ostiolum, usually submerged, ascospores yellowish or straw coloured, rarely reddish, usually symmetrical or nearly so *Petriellidium*

The genera *Microascus* and *Petriella* have been treated by Barron & al. (1961a, b), *Kernia* was studied by Malloch & Cain (1971), *Lophotrichus* by Seth (1971) (compare also Malloch, 1970). The distinction of *Lophotrichus* and *Kernia*, however, is not yet satisfactorily defined! The genera *Petriellidium* and *Pithoascus* will be treated in the following.

PETRIELLIDIUM Malloch

Petriellidium Malloch *in* Mycologia **62**: 738. 1970. — Type species: *P. boydii* (Shear) Malloch (= *Allescheria boydii* Shear).

KEY TO THE SPECIES

1. Ascospores about 12×9 µm, conidia often catenulate . . . . . *P. desertorum*
1. Ascospores usually 3–6 µm wide 2
2. Ascospores ellipsoidal, about 8×5 µm . . . . . *P. ellipsoideum*
2. Ascospores about 7×4 µm or smaller 3
3. Brownish conidia (chlamydospores) present, 7–12×4–7 µm in size, ascomata up to 180 µm in diameter, ascospores 6–7×3.5–4 µm . . . . . *P. boydii*
3. Conidia smaller, yellowish, straw coloured or hyaline 4
4. Ascospores fusiform, attenuated at both ends; 6–8×3–4 µm; ascomata 50–100 µm in diameter; conidia usually borne in synnemata . . . . . *P. fusoideum*
4. Ascospores ellipsoidal, with rounded ends; synnemata usually absent 5
5. Ascospores about 6×4 µm; conidia hyaline, 4–5×3 µm; ascomata 50–90 µm in diameter . . . . . *P. africanum*
5. Ascospores narrow, about 7×3.5 µm; conidia clavate, 6–10×4 µm; ascomata up to 150 µm in diameter, dark, covered with hyphae . . . . . *P. angustum*

1. PETRIELLIDIUM BOYDII (Shear) Malloch

Allescheria boydii Shear *in* Mycologia **14**: 242. 1922. — *Petriellidium boydii* (Shear) Malloch *in* Mycologia **62**: 738. 1970.

CONIDIAL STATE.—*Scedosporium apiospermum* (Sacc.) Sacc.

Monosporium apiospermum Sacc. *in* Annls mycol. **9**: 254. 1911. — *Scedosporium apiospermum* (Sacc.) Sacc. (1914, sensu Dodge, 1935; not validly published).

Colonies on oat-meal agar with a daily growth rate of 4–5 mm at 25°C, at first whitish or greyish, floccose or lanose, later with grey or brown shades; ascomata spherical, non-ostiolate, usually submerged, 140–200 μm in diam., often covered with brown, thick-walled, septate, 2–3 μm wide hyphae, with a 4–6 μm thick wall, composed of 2–3 layers of meandrically interwoven, flattened, 2–6 μm wide, dark brown hyphal cells; asci ellipsoidal or nearly spherical, 12–18 × 9–13 μm, evanescent, 8-spored; ascospores ellipsoidal, symmetrical or slightly flattened, straw coloured, with 2 germ pores, 6–6.5(–7) × 3.5–4 μm; conidia of 2 types: 1) conidia [*Scedosporium apiospermum* (Sacc.) Sacc.] broadly clavate or ovoidal, rounded above, at the base attenuated and truncate, with a rather thick, brown wall, 6–12 × 3.5–6 μm, borne terminally or laterally on solitary conidiogenous hyphae, chlamydospore-like; 2) conidia clavate or nearly cylindrical, truncate at the base, hyaline, 5–7 × 2–3 μm, borne in short sympodulae on elongating conidiogenous cells, which usually arise in erect synnemata.

The above description is based on CBS 254.66, isolated from savannah soil, Abidjan, Africa, by J. L. Renard. In CBS 101.22, the type culture, only *Scedosporium*-chlamydospores could be observed, 7–14 × 4–6 μm in size. In CBS 593.73, recently isolated from soil from Surinam by J. H. van Emden some erumpent ascomata showed the formation of an apical papilla (an ostiolum) and the ascospores were extruded through the pore in a droplet. Size and shape of ascomata, ascospores and chlamydospores, however, indicate the identity of this strain with *Petriellidium boydii*.

2. PETRIELLIDIUM ANGUSTUM Malloch & Cain

Petriellidium angustum Malloch & Cain *in* Can. J. Bot. **50**: 66. 1972.

Colonies on oat-meal agar with a daily growth rate of 4–5 mm at 24°C., at first whitish and lanose by the development of aerial hyphae, soon becoming dark by abundant formation of ascomata; ascomata spherical, non-ostiolate, dark brown, 100–150 μm in diam., usually submerged, often covered with dark hyphae, with a 4–6 μm thick wall, composed of 2–3 layers of interwoven flattened, brownish hyphal cells; asci ellipsoidal or nearly spherical, evanescent, 8-spored, 14–18 × 8–10 μm; ascospores narrowly ellipsoidal or nearly cylindrical with rounded ends, with 2 indistinct germ pores, at first hyaline, straw-coloured or yellowish, 6–7 × 3–3.8 μm; conidia clavate or nearly cylindrical, rounded above, truncate at the base, hyaline, 5–10 × 3–4.5 μm, borne singly on short hyphal branches or in small sympodulae.

TYPE.—CBS 254.72=TRTC 45321, isolated from sewage half digestion tank, Deyton, USA.

This species is very close to *P. boydii*; it can be distinguished by a more abundant production of ascomata, by narrow ascospores and by the absence of brown, chlamydospore-like conidia. Only a few conidia could be observed in sub-cultures of the type.

3. **Petriellidium africanum** v. Arx & Franz, *spec. nov.*

Coloniae in agaro farina maydis addita 24 °C in diebus 3–3.5 mm crescunt; primum hyalinae, deinde fuscae; mycelium aerium sparsum; ascomata plerumque submersa, sphaerica, non ostiolata, fusca, 50–90 μm diam., pariete 7–11 μm e cellulis hyphalibus applanatis, intertextis composito; asci ellipsoidei, evanescentes, 13–17 × 12–15 μm; ascosporae late ellipsoideae, dilute luteae, continuae, duobus poris germinationis distalibus praeditae, 5.5–7 × 3.5–4.5 μm; conidia clavata vel ellipsoidea, continua, hyalina, 4–5 × 2.5–3.5 μm e cellulis conidiogenis sympodialiter elongatis oriunda cicatrices ducentia. Typus: CBS 311.72, isolatus e terra arenosa, Tsiutsabis in Africa austro-occidentali.

Colonies on oat-meal agar with a daily growth rate of 3–3.5 mm at 24°C, at first light greyish, later with some darker shades, flat; superficial mycelium sparse, composed of branched, septate, hyaline or brownish, 2–4 μm wide hyphae; ascomata spherical, non-ostiolate, submerged or nearly superficial, blackish brown, 50–90 μm in diameter, with a 7–11 μm thick wall composed of 2–3 layers of irregularly interwoven, flattened, brown, 3–6 μm wide hyphal cells or of 6–11 μm wide cells; asci ellipsoidal or nearly spherical, evanescent, 8-spored, 13–17 × 12–15 μm; ascospores broadly ellipsoidal, often inequilateral, with rounded ends with 2 germ pores, yellowish or golden brownish, 5.5–7 × 3.5–4.5 μm (usually (6 × 4 μm); conidia of one type, ellipsoidal or nearly clavate, broadly rounded above, at the base rounded or slightly truncate, 1-celled, hyaline, 4–5 × 2.5–3.5 μm, with 2 or 3 refractive bubbles, borne at the top of sympodially elongating cells.

TYPE.—CBS 311.72, isolated by G. Franz from sandy soil, South Western Africa, Tsiutsabis, sent for identification (No. 105).

This species resembles *P. angustum*, but differs by smaller conidia, wider but shorter ascospores and smaller ascomata.

4. **Petriellidium ellipsoideum** v. Arx & Fassatiová, *spec. nov.*

Coloniae in agaro farina maydis addita 24 °C in diebus 2.5–3 mm crescunt; primum albidae, floccosae vel lanosae, deinde griseolae vel rubro-brunneae; ascomata vulgo submersa, sphaerica, non ostiolata, brunnea, 75–180 μm diam., pariete 4–7 μm crasso e cellulis hyphalibus rubrobrunneis, applanatis, irregulariter intertextis composito; asci ellipsoidei, evanescentes, 8-spori, 15–23 × 14–18 μm; ascosporae ellipsoideae, stramineae, duobus poris germinationis praeditae, 7–9 × 5–6 μm; conidia clavata vel cylindrica, utrinque truncata, hyalina vel dilute flava, 6–9 × 3–3.5 μm. Typus: CBS 418.73, isolatus e terra in Tadzhikistanis ab O. Fassatiová.

Colonies on oat-meal agar with a daily growth rate of 2.5–3 mm at 24°C, at first whitish or greyish with a floccose or lanose aerial mycelium, later becoming greyish or reddish brown; ascomata immersed or semi-immersed, spherical, glabrous or covered with loose hyphae, non-ostiolate, brown, 75–180 μm in diameter, with a 4–7 μm thick wall composed of irregularly interwoven, flattened, reddish-brown, thin-walled cells, 7–15 × 3–6 μm in size; asci ellipsoidal or spherical, very evanescent, 8-spored, 15–23 × 14–18 μm; ascospores broadly ellipsoidal, mostly symmetrical, rounded at both ends, brightly straw coloured, with 2 germ pores, 7–9 ×

5–6 μm; conidia borne on superficial hyphae or on short lateral branches, clavate or nearly cylindrical, with a truncate base, hyaline or straw coloured, thin-walled, 6–9 × 3–5.5 μm.

TYPE.—CBS 418.73, isolated from soil, Tadzhikistan, USSR, sent for identification by O. Fassatiová (T11).

This species is close to *P. boydii*, but differs by larger ascospores and smaller conidia.

5. **Petriellidium fusoideum** v. Arx, *spec. nov.*

Coloniae in agaro farina maydis addita 24°C in diebus 2.5–3 mm crescunt; primum albidae, deinde viridibrunneae, floccosae; ascomata submersa, sphaerica, fusca, non ostiolata, 50–100 μm diam., pariete e cellulis hyphalibus applanatis, intertextis composita; asci ellipsoidei, 8-spori, evanescentes, 12–15 × 10–12 μm, ascosporae fusiformes, stramineae, duobus poris germinationis praeditae, 6–7.5 × 3.5–4 μm; conidia modo Scedosporii formata clavata, basi truncata, dilute lutea vel hyalina, 5–10 × 3–5 μm, lateralia vel terminalia e hyphis oriunda; conidia modo Graphii formata clavata, basi truncata, hyalina, 4–7 × 2.5–3.5 μm, e cellulis conidiogenis sympodialiter elongatis cicatricibus relictis verticillatis in synnematibus dispositis. Typus: CBS 106.53, isolatus e terra in Panama a L. Ajello.

Colonies on oat-meal agar with a daily growth rate at 24°C of 2.5–3 mm, at first whitish, soon becoming greyish, greenish or brownish; mycelium composed of branched, septate, hyaline or brownish, 2–4 μm wide hyphae; ascomata submerged or semi-immersed, spherical or nearly so, non-ostiolate, dark brown, 50–100 μm in diameter, with a 4–6 μm thick wall, composed of 2–3 layers of flattened, meandrically interwoven, brown, 3–5 μm wide hyphal cells; asci ellipsoidal or nearly spherical, evanescent, 8-spored, 12–15 × 10–12 μm; ascospores broadly fusiform, attenuated at both ends, yellowish or straw-coloured, with 2 distal germ pores, 6–7.5 × 3.5–4 μm; 2 types of conidia are formed: *Scedosporium* conidia clavate, rounded above, truncate at the base, yellowish or nearly hyaline, 6–10 × 3.5–5 μm, borne laterally on the hyphae or terminally on short hyphal branches, separated by a septum; *Graphium* conidia clavate, truncate at the base, hyaline, 4–7 × 2.5–3.5 μm, borne on 1.5–2 μm wide scars on sympodially elongating, 10–18 μm long and 1.5–2 μm wide cells, formed in verticils on small, erect, 100–160 μm high synnemata.

TYPE.—CBS 106.53, isolated from soil, Panama, in 1953 sent to CBS by L. Ajello (as *Allescheria boydii*).

Petriellidium boydii differs from *P. fusoideum* by much larger ascomata, by ellipsoidal ascospores and by larger and pigmented *Scedosporium*-conidia.

6. **Petriellidium desertorum** v. Arx & Moustafa, *spec. nov.*

Coloniae in agaro farina maydis addita 24°C in diebus circa 3 mm crescunt; primum albidae, tomentosae vel floccosae, deinde griseo-brunneae; ascomata submersa vel fere superficialia, non ostiolata, 80–100 μm diam., pariete tenui e strato cellularum hyphalium intertextarum composito; asci sphaerici, 8-spori, evanescentes, 25–30 μm diam.; ascosporae ellipsoideae, primum hyalinae, dextrinoideae, maturitate aeri cyprio similiter coloratae, duobus poris germinationis inconspicuis praeditae, 11–14 × 7.5–10 μm; conidia breviter cylindrica vel clavata, hyalina, 4–8 × 3–4.5 μm, singula vel catenata, successione basipetali fragmentatione formata. Typus: CBS 489.72, isolatus ex arena salina in Kuwait ab A. F. Moustafa.

Colonies on oat-meal agar with a daily growth rate of about 3 mm at 24°C, at first whitish, due to a tomentose or floccose aerial mycelium, later greyish brown; hyphae hyaline or yellowish, septate, 3–5 μm wide; ascomata spherical, non-ostiolate, submerged or nearly superficial, 80–110 μm in diameter, with a thin wall composed of a layer of irregularly interwoven, flattened, light greenish or reddish brown, 3–5 μm wide hyphal cells; asci spherical or ellipsoidal, evanescent, 25–30 μm in diameter; ascospores ellipsoidal, at first hyaline, dextrinoid, reddish brown or copper coloured when ripe, with a thick wall and 2 indistinct germ pores, 11–14 × 7.5–10 μm in size; conidia (arthroconidia) short cylindrical or clavate, hyaline, 4–8 × 3–4.5 μm, borne singly or in chains in basipetal succession on the hyphae or on integrated cylindrical conidiogenous cells fragmenting to form the conidia.

TYPE.—CBS 489.72, isolated from salt marsh soil in Kuwait by A. F. Moustafa, sent for identification (Nr.44).

This species differs from all others by its larger, especially wider ascospores, by the thin wall of the ascomata and by a deviating conidial state with usually catenulate conidia.

PITHOASCUS v. Arx

Pithoascus v. Arx *in* Proc. K. Ned. Akad. Wet. (C) **76**: 295. 1973. — Type species: *P. nidicola* (Massee & Salmon) v. Arx = *Microascus nidicola* Massee & Salmon.

KEY TO THE SPECIES

1. Ascospores broadly ellipsoidal, reddish brown, about 7 × 5 μm . . . . . *P. platysporus*
1. Ascospores less than 4 μm wide, yellowish 2
2. Ascospores 8–12 μm long 3
2. Ascospores 5–8 μm long 4
3. Ascospores 3–4 μm wide, ascomata ostiolate . . . . . *P. schumacheri*
3. Ascospores 1.5–2 μm wide, ascomata usually non-ostiolate . . . . . *P. exsertus*
4. Ascospores 5–6 × 2–2.7 μm, ascomata ostiolate . . . . . *P. intermedius*
4. Ascospores 6–8 μm long 5
5. Ascomata usually ostiolate, 90–160 μm in diameter . . . . . *P. nidicola*
5. Ascomata non-ostiolate, 50–110 μm in diameter . . . . . *P. stoveri*

1. PITHOASCUS NIDICOLA (Massee & Salmon) v. Arx

Microascus nidicola Massee & Salmon *in* Ann. Bot., Lond. **15**: 313. 1901. — *Pithoascus nidicola* (Massee & Salmon) v. Arx *in* Proc. K. Ned. Akad. Wet. (C) **76**: 292. 1973.

Colonies on oat-meal agar with restricted growth, daily rate at 24°C about 1.5 mm, at first whitish or light greyish, flat, without aerial mycelium, becoming dark by the production of the ascomata; immersed hyphae hyaline, septate, 1.5–3 μm wide; ascomata aggregated, often confluent or forming glabrous crusts, black, spherical or obovate, 90–160 μm in diameter, apically papillate, with a 15–20 μm wide pore, surrounded by dark-walled cells; wall of the ascomata 6–10 μm thick, composed of a pseudoparenchyma of brown, flattened, 4–8 μm wide cells; asci ellipsoidal or barrel-shaped, arranged in vertical rows, 10–15 × 7–12 μm, 8-spored, evanescent; ascospores navicular or nearly lunate, asymmetrical, often plano-convex, straw coloured or nearly hyaline, 6–8 × 2–2.5 μm.

The description is based on CBS 197.61=IMI 86,918, isolated by C. W. Emmons from *Dipodomys merriami*.

2. **Pithoascus stoveri** v. Arx, *spec. nov.*

Coloniae in agaro farina maydis addita 24°C in diebus minus quam 1 mm crescunt; hyalinae, hyphae praecipue submersae; ascomata partim submersa, aggregata, saepe crustosa, sphaerica, glabra, non ostiolata, nigrescentia, 50–110 μm diam., pariete e duobus vel tribus stratis cellularum fuscitunicatarum, applanatarum composito; asci ellipsoidei, 8-spori, evanescentes, 11–15×7–10 μm; ascosporae reniformes, stramineae, 6–7.5×2–3 μm. Status conidialis non visus. Typus: CBS 176.71, isolatus e radicibus betae a W. L. White.

Colonies on oat-meal agar growing restrictedly, with a daily growth rate of less than 1 mm at 24°C, consisting of mainly immersed, hyaline or greyish hyphae, at first light greyish, flat, without aerial mycelium, later becoming dark due to the densely aggregated ascomata, which ripen within 6–8 weeks; ascomata basally immersed, becoming superficial with the upper part, rarely discrete, usually aggregated into dark crusts, spherical, non-ostiolate, glabrous, blackish brown, 50–110 μm in diameter, with a 4–7 μm thick wall, composed of 2–3 layers of flattened, dark-walled cells, 4–7 μm in size; asci ellipsoidal or barrel-shaped, broadly rounded above, at the base often slightly attenuated, 8-spored, evanescent, 11–15 × 7–10 μm in size; ascospores reniform, planoconvex, attenuated at both ends, straw coloured or golden brownish, 6–7.5 × 2–3, usually 7×2.5 μm in size, germ pores indistinct.

TYPE.—CBS 176.71=ATCC 11173, isolated from roots of sugar beet seedlings by W. L. White, received as *Papulaspora stoveri* Warren.

Pithoascus stoveri is close to *P. nidicola*, but can be distinguished by smaller, non-ostiolate ascomata and by relatively shorter but wider ascospores.

3. PITHOASCUS INTERMEDIUS (Emmons & Dodge) v. Arx

Microascus intermedius Emmons & Dodge *in* Mycologia **23**: 313. 1931. — *Pithoascus intermedius* (Emmons & Dodge) v. Arx *in* Proc. K. Ned. Akad. Wet. (C) **76**: 292. 1973.

Colonies on oat-meal agar restricted, with a daily growth rate of less than 1 mm at 25°C, flat, at first whitish, becoming dark by the formation of the ascomata, mycelium usually submerged; ascomata semi-immersed or nearly superficial, aggregated in dense crusts, spherical, with a short cylindrical, often curved ostiolum, rarely non-ostiolate, glabrous, black, 95–150 μm in diam., with a 6–8 μm thick wall composed of a pseudoparenchyma of flattened, greenish black, 4–8 μm sized cells; asci formed in vertical rows, broadly clavate or barrel-shaped, above broadly rounded, evanescent, 8-spored, 10–15 × 6–9 μm; ascospores navicular, straw or honey coloured, 5–6 × 2–2.5 μm.

The description is based on CBS 217.32=IMI 86,917 (type strain), isolated by B. O. Dodge from roots of *Fragaria vesca*. CBS 542.72, received from J. P. Skou, isolated in W-Germany from *Osmia* spec. and CBS 169.73=NRRL 5526 have the same characters.

4. **Pithoascus exsertus** (Skou) v. Arx, *comb. nov.*

Microascus exsertus Skou *in* Antonie van Leeuwenhoek **39**: 529. 1973 (basionym).

This species has been described in detail by Skou (1973). The wall of the spherical ascomata is thinner in the umbilicate upper part and opens here in a late state with an irregular ostiolar pore. The barrel-shaped asci are arranged in vertical rows and contain 8 fasciculate ascospores, cylindrical-navicular, yellowish, 9–11 × 1.5–2 μm. Germ pores could not be observed with certainty.

CBS 819.70 was studied, the type strain, isolated from *Megachile willughbiella* in Denmark.

5. PITHOASCUS SCHUMACHERI (Hansen) v. Arx

Sphaerella schumacheri Hansen *in* Vid. Meddr. dansk naturh. Foren. 1876: 37. 1877. — *Rosellinia schumacheri* (Hansen) Sacc., Syll. Fung. 1: 276. 1882. — *Microascus schumacheri* (Hansen) Curzi *in* Boll. Staz. Patol. veg., Roma 11: 60. 1931. — *Pithoascus schumacheri* (Hansen) v. Arx *in* Proc. K. Ned. Akad. Wet. (C) **76**: 292. 1973.

No cultures of this species were available. It has been described in detail by Barron & al. (1961b).

6. **Pithoascus platysporus** v. Arx & Veenbaas-Rijks, *spec. nov.*

Coloniae in agaro farina maydis addita 25 °C in diebus minus quam 1 mm crescunt; dilute griseae, e hyphis praecipue immersis constant; ascomata partim submersa, acervata, crustas fuscas formant, sphaerica, nigra, glabra, plerumque non ostiolata, 100–240 μm diam., pariete crasso e tribus ad quattuor stratis cellularum fuscarum applanatarum composito; asci ellipsoidei, 8-spori, evanescentes, 15–20 × 12–18 μm; ascosporae ellipsoideae, rubrobrunneae vel aeri cyprio similiter coloratae, poris germinationis absentibus, 6–9 × 4.5–6.5 μm. Status conidialis non visus. Typus: CBS 419.73, isolatus e terra agresti, Wageningen, a J. W. Veenbaas-Rijks.

Colonies on oat-meal agar with restricted growth, daily rate at 25°C less than 1 mm, bright greyish or nearly colourless, consisting of mainly immersed hyphae, composed of 2.5–5 μm wide, thick-walled, hyaline, often swollen cells; later becoming yellowish by development of some aerial hyphae or black by formation of ascomata; ascomata basally immersed, becoming superficial in the upper part, crowded, forming dense crusts, spherical, black, glabrous, 100–240 μm in diameter, usually non-ostiolate, rarely with an inconspicuous ostiolar pore, with a 12–16 μm thick wall, composed of 3–4 layers of dark, flattened, 5–9 μm wide cells; asci ellipsoidal, evanescent, 8-spored, 15–20 × 12–18 μm; ascospores broadly ellipsoidal or ovoidal, symmetrical or slightly flattened at one side, thick-walled, reddish brown or copper coloured, without germ pores, 6–9 × 4.5–6.5 μm, usually 7 × 5 μm.

TYPE.—CBS 419.73, isolated by J. W. Veenbaas-Rijks from agricultural soil, Wageningen.

This species differs from all others by its reddish-brown, broadly ellipsoidal ascospores.

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