

P E R S O O N I A

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RAMGEA, A NEW GENUS OF PEZIZALES FROM THE NETHERLANDS

J. VAN BRUMMELEN

*Rijksherbarium / Hortus Botanicus, Leiden*

A new ascomycetous genus, *Ramgea*, related to genera of the Thelebolaceae, is proposed with *Ramgea annulispora*, spec. nov. as type species.

*Ramgea* Brumm., gen. nov.

Ascomata paragymnohymenialia, sessilia, minutissima. Excipulum superficie textura globulosa. Asci clavati, apice tholiformi, incrassati, irregulariter aperiente, pariete iodo haud caerulescente. Ascosporae ellipsoideae, hyalinae, ornatae. Paraphyses simplices, filiformes, apice globulatae. Fimicola.

Typus generis: *Ramgea annulispora* Brumm.

Ascomata paragymnohymenial, sessile on a narrow base. Receptacle at first cylindrical to turbinate but not closed, finally lentiform, hyaline. Hypothecium and flesh not clearly differentiated. Excipulum of one or a few layers of isodiametric cells (textura globulosa). Asci clavate with a broad base and a dome-shaped apex, irregularly opening; the wall not staining blue with iodine. Ascospores ellipsoid, colourless, ornamented. Paraphyses simple, filiform, globularly enlarged at the tip. Fimicolous.

**E t y m o l o g y.** — An abbreviation formed from the initials of Dr. R. A. Maas Geesteranus, and suffix *-ea* for euphony. Gender feminine. — It is with great pleasure to dedicate this new genus to Dr. R. A. Maas Geesteranus, to whom I express my cordial thanks for his advice and co-operation over many years.

*Ramgea annulispora* Brumm., spec. nov.—Figs. 1–3

Ascomata gregaria, superficialia, sessilia vel substipitata, 40–90(–150)  $\mu\text{m}$  diam., 45–90  $\mu\text{m}$  alta, paragymnohymenialia. Receptaculum initio cylindricum vel turbinatum, denique lenticularium, albidum vel pallide luteum, laeve; margine indistincte evolutum. Discus planus, denum convexum, pallide luteus. Hymenium usque ad 45  $\mu\text{m}$  altum, ab initio expositum. Excipulum corticale 7–20  $\mu\text{m}$  crassum, hyalinum, cellulis angularibus vel subglobularibus 5–14  $\times$  4–12  $\mu\text{m}$  (textura globulosa). Asci clavati, apice tholiformes irregulariter aperientes, stratis parietis secedentibus cavum formantibus, 27–35  $\times$  6.7–9.0  $\mu\text{m}$ , vulgo sporas 4 bene evolutas continentem; pariete iodo haud caerulescente. Ascosporae ellipsoideae, 5.7–8.1  $\times$  4.0–5.1  $\mu\text{m}$ , annulis vel spiris obliquis ornatae. Paraphyses septatae, filiformes, simplices, hyalinae, apice globulariter incrassatae, 5–9  $\mu\text{m}$  latae. In fimo phasianii (*Phasianus colchicus* L.).

Typus: *L. Raaijmakers*, 11.III.1990, Stiphoutse Bossen, Helmond, Neerlandia (holotypus, L.).

Ascomata gregarious to closely crowded, superficial, sessile on a small base or shortly stipitate, 40–90(–150)  $\mu\text{m}$  diam., 45–90  $\mu\text{m}$  high, paragymnohymenial. Receptacle at first cylindrical to turbinate, finally lentiform, white to yellowish, translucent; surface smooth; margin not differentiated. Disc flat then convex, pale yellowish. Hymenium exposed from the beginning, up to 45  $\mu\text{m}$  thick. Hypothecium and flesh scarcely differentiated. Cortical excipulum 7–20  $\mu\text{m}$  thick, hyaline, with a thin layer of pale yellowish brown amorphous pigment

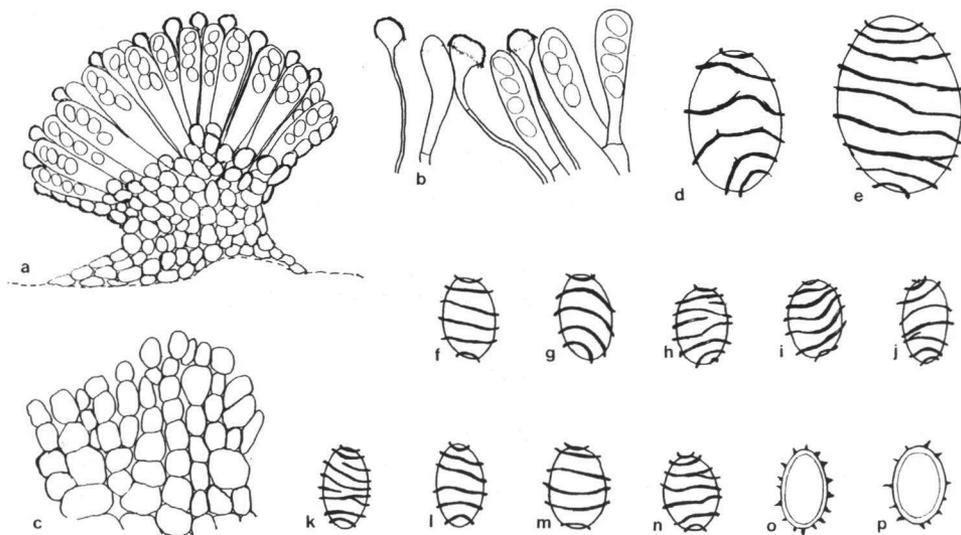
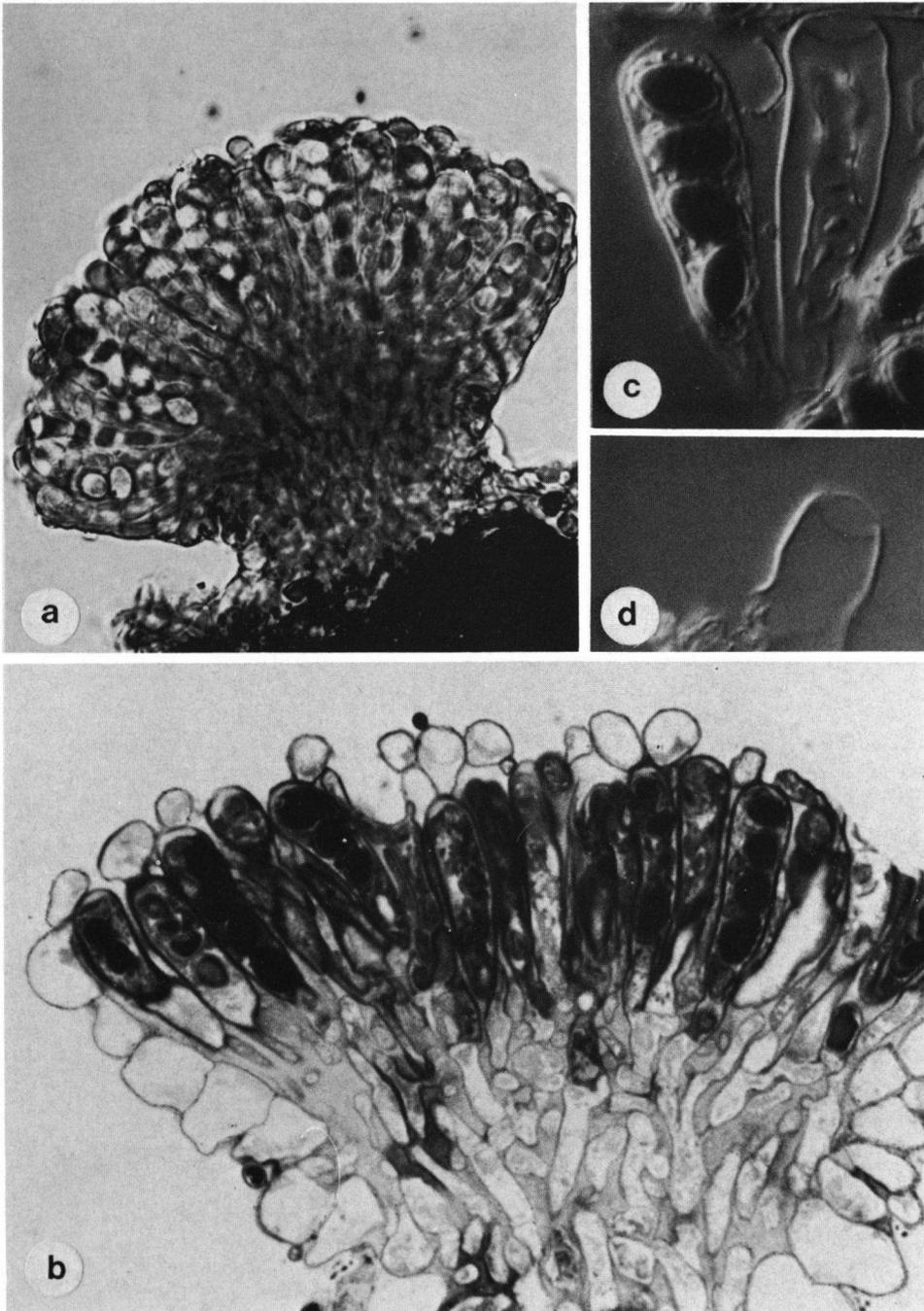


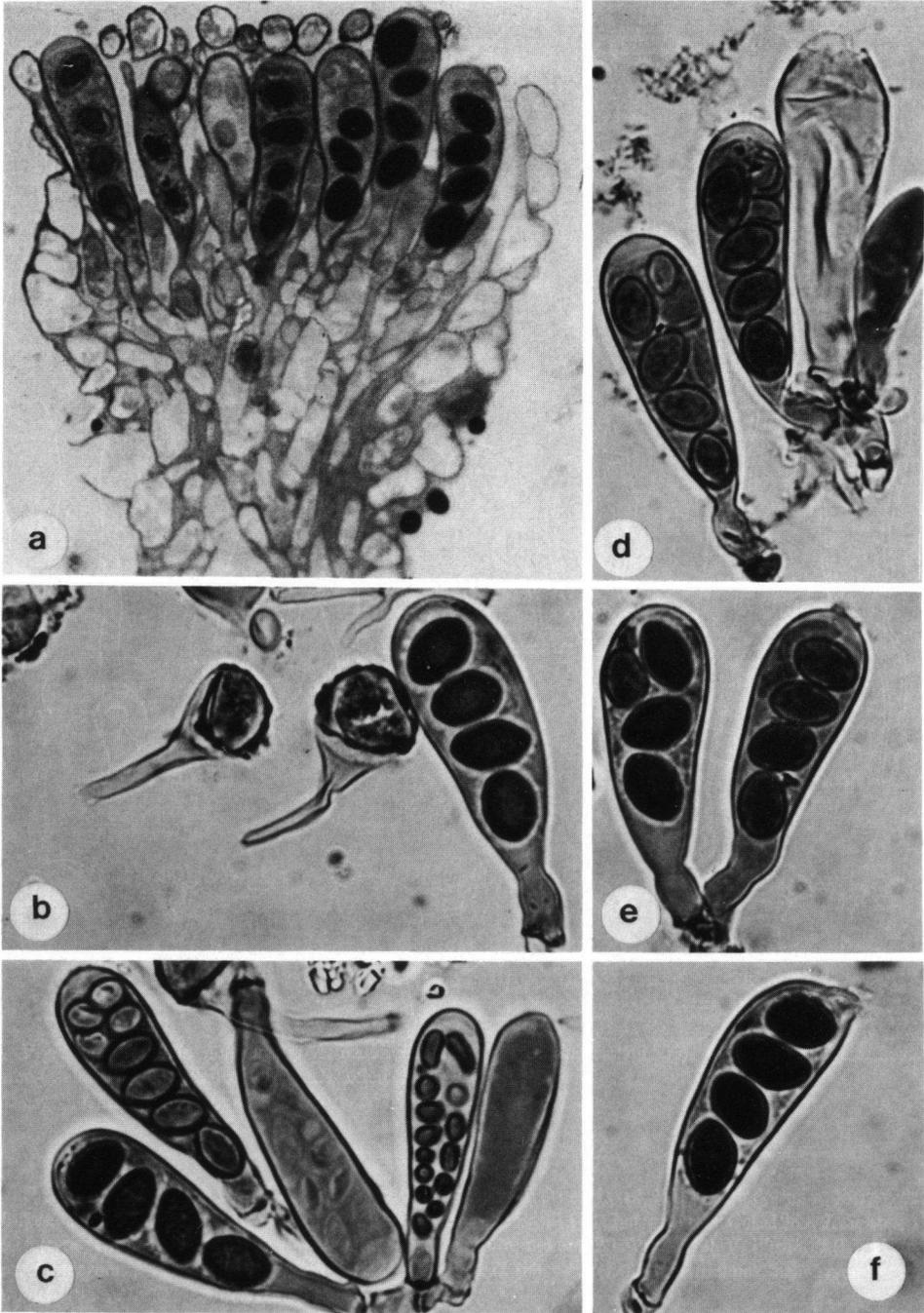
Fig. 1. *Ramgea annulispora*. — a. Habit of fruit-body,  $\times 400$ . — b. Asci and paraphyses,  $\times 630$ . — c. Texture of excipulum near the margin seen from outside,  $\times 630$ . — d, e. Ascospores,  $\times 3200$ . — f–n. Ascospores,  $\times 1600$ . — o, p. Ascospores in optical section,  $\times 1600$ . (All from holotype.)

on the outside, consisting of one or a very few layers of angular and subglobular cells  $5\text{--}14 \times 4\text{--}12 \mu\text{m}$  (texture globulosa), more or less arranged in longitudinal rows, with maturity restricted to the lower part of the fruit-body. Asci numerous, clavate with a short, broad stalk and a dome-shaped apex, irregularly opening at the top, where wall layers are separating to form a cavity,  $27\text{--}35 \times 6.7\text{--}9.0 \mu\text{m}$ , mostly with 4 well-developed spores and (0–)1–3(–4) more or less deficient spores; the wall not staining blue with iodine. Ascospores uni- to bi-seriate or irregularly arranged, ellipsoid (length/width ratio 1.3–1.7, average 1.38–1.51),  $5.7\text{--}8.1 \times 4.0\text{--}5.1 \mu\text{m}$  (without ornamentation), without oil globules or granules, ornamented with coarse outstanding ridges or crests in the shape of oblique rings or spirals; with more than 4 spores in an ascus the ‘extra’ spores are always smaller and without ornamentation. Paraphyses present, septate, filiform, simple, hyaline, in the lower part c.  $2 \mu\text{m}$  thick, strongly globularly enlarged up to  $5\text{--}9 \mu\text{m}$  at the tip, not embedded in mucus, only the exposed part of the tips covered with a rather uniform, thin layer of amorphous pale yellowish brown pigment.

H a b i t a t.—Known only from dung of pheasant.

Fig. 2. *Ramgea annulispora*. — a. Ripe fruit-body in transmitted light,  $\times 800$ . — b. Median section through ripening fruit-body (stained with toluidine blue),  $\times 1250$ . — c. A ripe and an empty ascus with interference contrast optics (after weak staining with Congo red),  $\times 2000$ . — d. Id., detail of the upper part of an empty ascus, showing a faint ring,  $\times 2000$ . (All from holotype.)





**E t y m o l o g y.**—From Latin, annulus, a ring and spora, a seed: with spores possessing rings.

**S p e c i m e n s e x a m i n e d.**—NETHERLANDS: prov. Noord-Brabant, Helmond, Stiphoutse Bosen, on dung of pheasant (culture), 11.III.1990, L. Raaijmakers (holotype of *Ramgea annulispora*, L).

The material of this fungus was kindly sent to the Rijksherbarium by Mr. L. Raaijmakers. With fruit-bodies only occasionally over 100  $\mu\text{m}$  wide, it belongs to the smallest among the Pezizales. Just because the fruit-bodies were growing in groups they could be detected on the substratum. Efforts to isolate this fungus again from dung samples of the same locality remained without success.

Although no developmental studies on living material could be executed, it could be concluded from the youngest stages available, that the ascomata are paragymnohymenial, i. e., only hyphae of limited growth over-arch the ascogonium, without forming a closed sheath during further development (van Brummelen, 1967). As a result swelling and intercallation of asci during ripening the hymenium widens considerably and the surrounding excipulum is stretched and mainly restricted to the basal part of the mature fruit-body.

Strongly swollen tips of paraphyses occur regularly with small ascomata of Pezizales with the same type of development, e. g. in *Saccobolus versicolor* (P. Karst.) P. Karst. and '*Ascophanus coemansii* Boud. Especially when those swollen tips are covered or glued together with pigment or another substance, they form together with the cortical cells of the excipulum a continuous protective sheath around the developing asci.

The number of spores in each ascus is rather variable in *R. annulispora*. Although most asci form four full-grown ornamented spores, in a number of asci also up to four deficient spores can be found (Fig. 3c, d). At one occasion an ascus with twelve very small and two somewhat larger spores was observed (Fig. 3c). This supports the view that the low spore number is reached by reduction from a higher number.

Essential for its taxonomic relationship are the shape and the opening mechanism of the ascus. The asci in *Ramgea* are broad with a short base. The outer ascal wall clearly stains with Congo red, except for the extreme apical part. In the inner layer of the wall a small central zone in the tip stains blue with Waterman's blue-black ink. Also a rather faint narrow ring can be observed at the inner side of the ascal wall with interference contrast optics (Fig. 3c, d). The ascus opens at the top with an irregular tear in the zone above the ring (Fig. 3d).

From the structure of the ascus it is clear that the relationship of *Ramgea* is with the Thelebolaceae as defined by Eckblad (1968).

In *Ascozonus* (Renny) Boud. a very prominent ascal ring is present and a less conspicuous one in species of *Thelebolus* Tode: Fr. (van Brummelen, 1978). For the still rather poorly understood genus *Caccobius* Kimbrough in Kimbrough & Korf (Kimbrough & Korf, 1967;

Fig. 3. *Ramgea annulispora* — a. Median section through small ripening fruit-body (stained with toluidine blue),  $\times 1250$ . — b–f. Asci (stained with Congo red),  $\times 1600$ . — b. Typical ascus and ends of paraphyses. — c. From left to right: a normal 4-spored ascus, an ascus with 4 ornamented spores and 4 smaller abortive spores, and an ascus with 12 very small spores and 2 larger ones. — c. With an ascus which discharged its contents. — d, e. With asci showing initial dehiscence at their tips.

Kimbrough, 1972; Korf, 1972) an apical ring is not reported, but in *Caccobius minusculus* Kimbrough in Kimbrough & Korf an ascus plug staining with Waterman's blue-black ink is considered characteristic.

Of the genera of Thelebolaceae mentioned, especially *Caccobius* shows affinities. But the presence of a well-developed, lasting spore ornamentation will keep *Ramgea* in a rather isolated position in this family.

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