Trans. mycol. Soc. Japan 24: 283–297, 1983

# Saprobic loculoascomycetous fungi from Japan
## 1. Hysteriaceous fungi*

Norihide AMANO

Department of Forestry, Faculty of Agriculture, University of Tokyo
1-1, Yayoi 1-chome, Bunkyo-ku, Tokyo 113, Japan**

(Accepted for publication 14 September 1983)

Key Word Index——Loculoascomycetous fungi; hysteriaceous fungi; new species; saprobic; Japan.

**Summary**

Five new species of the hysteriaceous fungi, i.e. *Glonium macrosporum, G. sasicola, Gloniopsis constricta, G. macrospora* and *Hysterographium minus*, are described and illustrated with reference to their cultural characteristics. In addition, cultural characteristics of a Japanese strain of *Glonium lineare* are described.

The family Hysteriaceae sensu Zogg (1962) consists of fungi characterized by carbonaceous, boat-shaped, black ascomata with thick ascomatal walls. Zogg recognized 33 species in seven genera mainly on the basis of central European material.

The hysteriaceous fungi of Japan have not been extensively studied. Until now, eight species in three genera have been described, i.e. *Glonium lineare* (Yasuda, 1900a), *G. interruptum* (Yasuda, 1920b), *Hysterographium decipiens* (Yasuda, 1922), *Hysterium citricolum* and *H. photiniae* (Naito, 1933), *H. pulcare* (Imazeki, 1939), *H. thujopsidis* (Sawada, 1952) and *Hysterographium fraxini* (Amano, 1979). Of these species, *Hysterium citricolum* and *H. photiniae* appear to belong to the genus *Rhytidhysteron*, judging from the original descriptions and figures given by Naito (1933), and my examination of the holotype specimen of *Hysterium thujopsidis* revealed that this species has unitunicate asci and may belong to phacidiaceous fungi. Hence, only five species in three genera of the Hysteriaceae are at present recognized in Japan.

In this paper I describe six species in three genera of the Hysteriaceae and discuss their cultural characteristics. Among them *Glonium macrosporum, G. sasicola, Gloniopsis constricta, G. macrospora* and *Hysterographium minus* are described as new.

* Based on part of a Dr. Agric. thesis presented by the present author to the University of Tokyo, June 1983.
** Present address: Institute of Applied Microbiology, University of Tokyo, 1–1, Yayoi 1-chome, Bunkyo-ku, Tokyo 113, Japan.

## Materials and Methods

Specimens were collected by me or Dr. Yoshimichi Doi, National Science Museum, Tokyo, from various localities in Japan. All specimens cited in this paper are deposited in TNS; some duplicate specimens will be sent to FH, K and UPS.

Cultures were made from single asci with aid of a micromanipulater (Carl Zeiss, Jena, DDR). Asci were isolated on to potato dextrose agar medium (potato, 250 g; dextrose, 20 g; agar, 18 g; and tap water, 1,000 ml; pH, unadjusted). Cultures were incubated at room temperature (18 C—28 C) under diffused light. Most cultures are deposited in the Culture Collection of Institute of Applied Microbiology, University of Tokyo (IAM). Unfortunately some cultures could not be maintained, but slide preparations of them are available.

## ***Glonium*** Mühlenberg: Fries emend. de Notaris

Mühlenberg, Cat. Am., p. 101, 1813; Syst. mycol. **2**: 594, 1823, emend., de Notaris, Giorn. bot. ital. II, **2**(7–8): (27), 1847.

Type species: *Glonium stellatum* Mühlenb.: Fr., Syst. mycol. **2**: 595, 1823.

Although ascomata of *Glonium stellatum*, the type species of the genus *Glonium*, are embedded in subicula, de Notaris (1847) extended the original generic concept to include species with ascomata not embedded in subicula; he placed more emphasis on characteristics of ascospores.

Von Höhnel (1918) considered the presence or abscence of subiculum to be taxonomically important. He subdivided the genus *Glonium* sensu de Notaris (1847) into subgenera *Glonium* and *Psiloglonium*, placing species with ascomata embedded in subicula in the former and those without subicula in the latter subgenus. Petrak (1923) raised the subgenus *Psiloglonium* to generic rank. Müller and von Arx (1962) accepted the genus *Psiloglonium* but later reduced it to a synonym of *Glonium* (von Arx and Müller, 1975).

Zogg (1962) regarded *Psiloglonium* as a synonym of *Glonium*, because both subiculate and non-subiculate ascomata were observed in the same species. I here follow Zogg's treatment of the genus.

According to von Arx and Müller (1975), *Glonium* contains about ten species.

1. ***Glonium lineare*** (Fr.) de Not., Giorn. bot. ital. II, **2**(7–8): (27), 1847. Figs. 1 & 7-A

Basionym: *Hysterium lineare* Fr., Syst. mycol. **2**: 583, 1823.

Ascomata elongated with apiculate ends, dispersed or aggregated, lying parallel, superficial with immersed base or almost completely embedded in the substrate, opening by a longitudinal slit, black, carbonaceous, 0.5–3 mm long, 0.2–0.4 mm wide, 0.2–0.3 mm high. In vertical sections ascomatal walls show a *textura angularis* of thick-walled, hyaline or dark-colored cells, 2–5 $\mu$m in diam. except for the outermost layer above the sub-

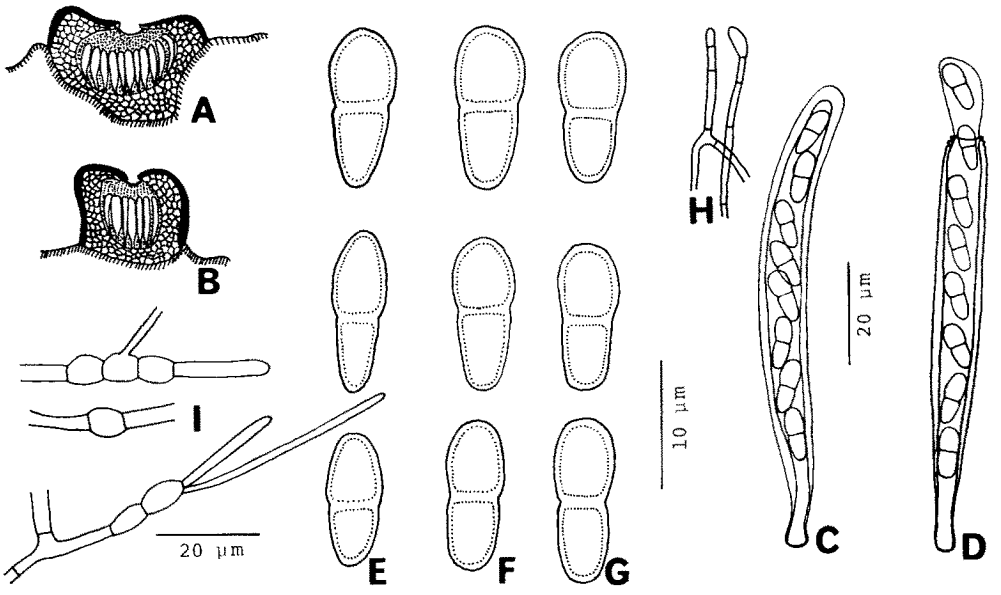


Fig. 1. *Glonium lineare*; A, C, D, F, H, and I from A-574=F-234582 (TNS), B and G from A-580=F-234580 (TNS), E from the type collection of *Hysterium lineare* (Scler. Suec., no. 90 in UPS).
A and B. Vertical section of ascocarp (schematic). C. Ascus. D. Ruptured ascus. E, F and G. Ascospores. H. Pseudoparaphyses. I. Hyphae in 10-day-old culture.

strate; tissues of the outermost layer are of *textura epidermoidea*; walls 40–80 µm thick. Pseudoparaphyses filiform, slightly enlarged at the apex, branched, anastomosed, hyaline, forming brownish epithecium above. Asci bitunicate, cylindrical or clavate, stipitate, 8-spored, 70–90 × 10–12 µm. Ascospores obliquely uniseriate, oblong or ovoid, 2-celled, the lower cell often narrower; slightly constricted at the septum, hyaline, smooth; both ends rounded, 10.0–12.4 × 4.0–5.0 µm.

Hab.: On old stump and dead branch of a broad-leaved tree.

Specimens examined: Japan: Tokyo University Forest in Hokkaido, Yamabe-cho, Furano-shi, Hokkaido, 17-IX-1980, N. Amano, A-574=F-234582 (TNS); Tomakomai Experimental Forest of Hokkaido University, Takaoka, Tomakomai-shi, Hokkaido, 23-IX-1980, N. Amano, A-580=F-234580 (TNS), IAM 12749 (culture); on *Morus* sp., Akakura, Mogami-cho, Mogami-gun, Yamagata Pref., 4-VIII-1982, N. Amano, A-796=F-237162 (TNS), IAM 12750 (culture).

Culture: Ascospores germinated within 24 hours. In 7-day-old cultures colonies flat, white, 1–2 mm in diam.; after 40 days raised into uneven mounds, grey or greyish green; reverse black. Hyphae in 10-day-old cultures thin-walled, subhyaline, 3–5 µm thick; sometimes ellipsoid or subglobose chlamydospore-like cells present. In old cultures hyphae aggregated into compactly interwoven masses. No conidia were observed.

Note: The morphological characteristics of the Japanese collections match those

of the type collection of *Hysterium lineare* Fr. (Scler. Suec., no. 90 in UPS).

*Glonium lineare* was recorded from Japan by Yasuda. I have examined Yasuda's specimen preserved in TNS (F-204877). I found neither asci nor ascospores, but other morphological characteristics are of *G. lineare*.

Lohman (1933) reported that American collections of *G. lineare* produced pycnidiospores in culture: they were elliptic-oblong to ovate-inequilateral and measured 2.5–3 × 1.5–2 μm. In addition, Hilitzer (1929) described the anamorph of *G. lineare* as *Hysteropycnisglobularis*. The cultures of the Japanese collections, however, remained sterile.

2. ***Glonium macrosporum*** N. Amano, sp. nov. Figs. 2 & 7-B

Ascomata ovalia, dispersa vel aggregata, recta vel curvata, superficialia, basi immersa, atra, carbonacea, 0.5–1.5 mm longa, 160–240 μm lata, 160–200 μm alta, rima in longitudinem dehiscenti instructa. Texturae parietum ascomatum epidermoideae. Pseudoparaphyses filiformes, hyalinae, 0.5–1.0 μm crassae, epitheciis brunneolis formantes. Asci bitunicati, cylindrici, octospori, 74–90 × 8–11 μm. Ascosporae oblique uniseriatae, ellipsoidales, rectae vel curvatae, 1-septatae, ad septum constrictae, hyalinae, 13.1–16.8 × 4.0–5.6 μm.

Habitat: In caudice vetere arboris frondosae.

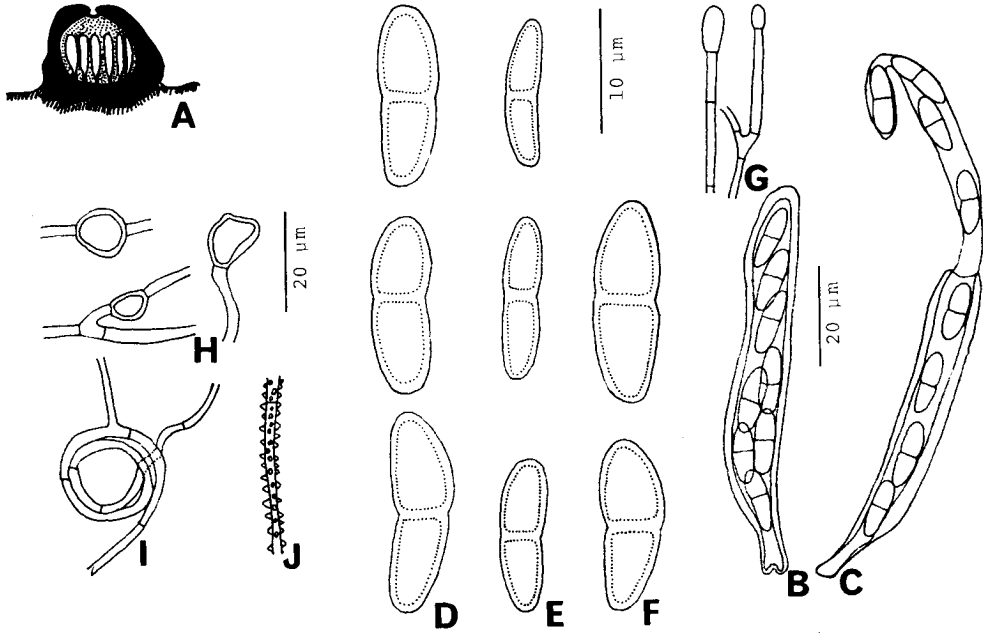


Fig. 2. *Glonium macrosporum*; A and H-J from A-581=F-234575 (TNS), B and F from A-561=F-234574 (TNS), C, D, and G from A-582=F-234576 (TNS), E from the type collection of *Glonium interruptum* (Herb. Saccardo in PAD).
A. Vertical section of ascocarp (schematic). B. Ascus. C. Ruptured ascus. D-F. Ascospores. G. Pseudoparaphyses. H. Chlamydospore-like cells. I. Coiled hyphae. J. Warted hyphae.

Holotypus: "Japan: Tokyo University Forest in Hokkaido, Yamabe-cho, Furano-shi, Hokkaido", 19-IX-1980, N. Amano, A-561=F-234574 (TNS), IAM 12751 (cultura ex holotypo).

Ascomata aggregated or dispersed, superficial with immersed base, oval with rounded ends, straight or curved, opening by a longitudinal slit, black, carbonaceous, 0.5–1.5 mm long, 160–240 μm wide, 160–200 μm high; finely longitudinally striate on the surface. Tissues of ascomatal walls of *textura epidermoidea*; walls brown or dark brown, 20–50 μm thick. Pseudoparaphyses filiform, slightly enlarged at the apex, branched, anastomosed, hyaline, forming brownish epithecium above, 0.5–1.0 μm thick. Asci bitunicate, cylindrical, stipitate, 8-spored, 74–90×8–11 μm. Ascospores obliquely uniseriate, ellipsoid with rounded ends, 2-celled, constricted at the septum, straight or curved, hyaline, smooth, 13.1–16.8×4.0–5.6 μm.

Hab.: On old stump of a broad-leaved tree.

Holotype: Japan: Tokyo University Forest in Hokkaido, Yamabe-cho, Furano-shi, Hokkaido, 19-IX-1980, N. Amano, A-561=F-234574 (TNS), IAM 12751 (culture); isotype in FH, K & UPS.

Other specimens examined: Japan: Tomakomai Experimental Forest in Hokkaido University, Takaoka, Tomakomai-shi, Hokkaido, 23-IX-1980, N. Amano, A-581=F-234575 (TNS), IAM 12752 (culture); A-582=F-234576 (TNS), IAM 12753 (culture).

Culture: Ascospores germinated within 24 hours. Colonies attaining a diameter of 2 mm in seven days, white at first, turning dark greyish green; after 23 days raised into mounds; aerial hyphae dense. In 23-day-old cultures reverse cream-yellow or pale yellow. Culture media turning purplish in 40 days. Hyphae in 7-day-old cultures thick-walled, sometimes coiled,tseptated, smooth or sometimes warted, hyaline, 2–4 μm thick. Chlamydospores produced in 4-month-old cultures, terminal or intercalary, subglobose or ellipsoid, 6–10×5–11 μm. No conidia were observed.

Note: *G. macrosporum* resembles *G. interruptum*, but differs in size and shape of the ascospores. Saccardo (1873) described the ascospores of *G. interruptum* Sacc. as measuring 14×4.5–5 μm. In addition, on the label of the type collection of *G. interruptum* sent from Herb. Saccardo in PAD, the size of the ascospores was noted (by Saccardo?) to be 15–17×5–6 μm. My examination of this collection, however, yielded ascospores acute at both ends and measuring 11.4–14.4×2.6–4.4 μm.

3. ***Glonium sasicola*** N. Amano, sp. nov. Figs. 3 & 7-C

Ascomata ovalia vel elongata, recta vel leviter curvata, non ramosa, superficialia, dispersa, atra, carbonacea, 0.5–1.5 mm longa, 180–240 μm lata, 130–150 μm alta, rima in longitudinem dehiscenti instructa. Texturae parietum ascomatum epidermoideae. Pseudoparaphyses filiformes, hyalinae, septatae, ramosae, anastomosantes, epitheciis brunneolis formantes. Asci bitunicati, clavati, octospori, 85–105×15–18 μm. Ascosporae irregulariter biseriatae, fusiformes, hyalinae, 1-septatae, ad septum constrictae,

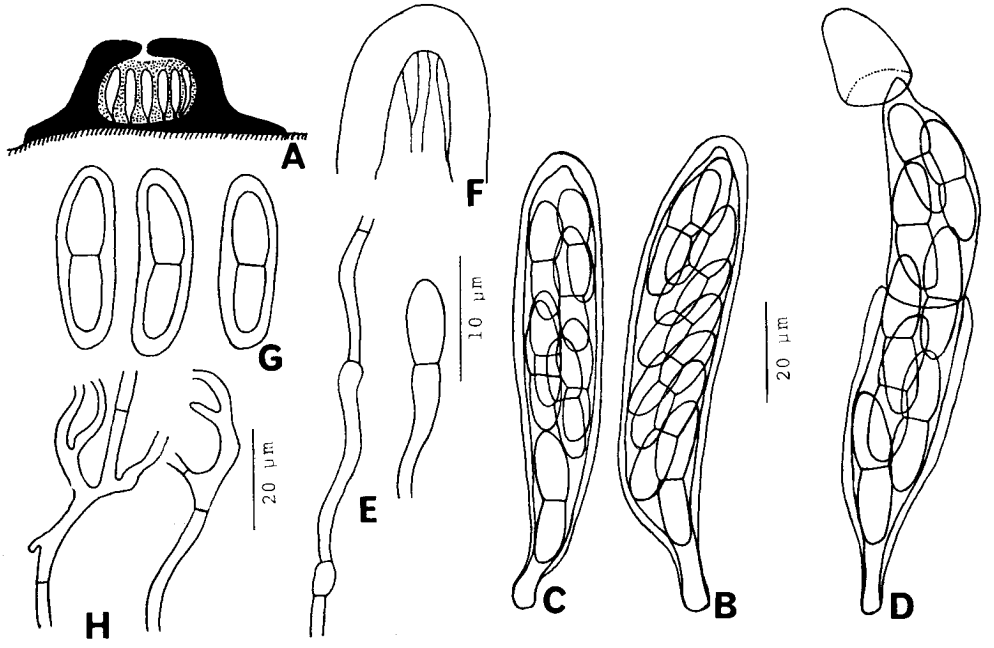


Fig. 3. *Glonium sasicola*; from A-464=F-237161 (TNS).
A. Vertical section of ascocarp (schematic). B and C. Ascus. D. Ruptured ascus. E. Pseudoparaphyses. F. "nasse". G. Ascospores. H. Hyphae in 43-day-old culture.

25–32×5–8 µm, circumdata vagina mucosa instructae.

Habitat: In culmis emortuis *Sasae* sp.

Holotypus: "Japan: Yabitsu-toge, Hatano-shi, Kanagawa Pref.", 12-XI-1979, N. Amano, A-464=F-237161 (TNS).

Ascomata oval or elongated with somewhat acute ends, dispersed, straight or slightly curved, not branched, sometimes faintly longitudinally striate, superficial or immersed at base, opening by a longitudinal slit, black, carbonaceous, 0.5–1.5 mm long, 180–240 µm wide, 130–150 µm high. Tissues of ascomatal walls of *textura epidermoidea*, brown or dark brown. Pseudoparaphyses filiform, septate, branched, anastomosed, forming brownish epithecium above. Asci bitunicate, clavate or cylindrical, short-stipitate, 8-spored, 85–105×15–18 µm. Ascospores irregularly biseriate, fusiform with hyaline gelatinous sheath, 1-septate, constricted at the septum, hyaline, with rounded ends, 25–32×5–8 µm.

Hab.: On dead culm of *Sasa* sp.

Holotype: Japan: Yabitsu-toge, Hatano-shi, Kanagawa Pref., 12-XI-1979, N. Amano, A-464=F-237161 (TNS), isotype in UPS.

Culture: Ascospores germinated within 24 hours. Colonies white, attaining a diameter of 1–3 mm in ten days; aerial hyphae sparse. In 1-month-old cultures colonies forming felted surface, raised into even mounds, greyish green, ca 5 mm in diam. Hyphae

of 43-day-old cultures light brown, somewhat constricted at the septa, 2–4 μm thick. No conidia were observed.

Note: *G. sasicola* is mainly characterized by 1-septate hyaline ascospores with hyaline gelatinous sheath. No species of *Glonium* has been reported to have ascospores with gelatinous sheath. The taxonomic significance of gelatinous sheath is not known at present.

Hino and Katumoto (1959) described *Hysteroglonium rokkoense* on *Sasa borealis* var. *purpurascens* from Japan. *G. sasicola* resembles *H. rokkoense* in having 1(-2)-septate, hyaline ascospores with gelatinous sheath, but differs in having smaller ascospores; Hino and Katumoto described the ascospores as measuring 31.9–40.7×6.5–8.1 μm.

I observed "nasse" at the apex of the ascus.

## ***Gloniopsis*** de Notaris

Giorn: bot. ital. II, 2(7–8): (23), 1847.

Type species: *Gloniopsis praelonga* (Schw.) Zogg, Beitr. Krypto. Flora Schweiz 2(3): 50, 1962., non Underwood & Earle, 1897.

This genus is mainly characterized by hyaline muriform ascospores. In some species the ascospores are provided with a gelatinous sheath (Zogg, 1962).

In his original description of *Gloniopsis* de Notaris (1847) listed two species, *G. decipiens* de Not. and *G. pulla* de Not., but he did not designate the type species. Clements & Shear (1931) selected *G. decipiens* as the lectotype species of the genus. However, Zogg (1962) selected *G. praelonga* as the neotype species of the genus, because: (1) Rehm (1886) could not find ascospores in the authentic material of *G. decipiens*; (2) His examination of *G. decipiens* (Rabh., Herb. mycol. no. 573 in ZT) revealed that this exsicatum is *Hysterographium mori*; (3) Judging from the original description of *G. decipiens* given by de Notaris (1847), *G. decipiens* is most close to *Hysterium praelonga* Schw.

Since 1847 about 40 species have been added to this genus but Zogg (1962) accepted only two, *G. praelonga* and *G. curvata*.

No species of *Gloniopsis* has previously been reported from Japan.

4. ***Gloniopsis constricta*** N. Amano, sp. nov. Figs. 4 & 7-D

Ascomata ovalia vel elongata, superficialia, basi immersa, aggregata, recta vel curvata, raro ramosa, carbonacea, atra, 0.5–2 mm longa, 240–320 μm lata, 200–320 μm alta, rima in longitudinem dehiscenti instructa. Textura parietum ascomatum epidermoidea. Pseudoparaphyses filiformes, hyalinae, ramosae, anastomosantes, 1.0–1.2 μm crassae. Asci bitunicati, clavati, octospori, stipitati, 74–112×8–10 μm. Ascosporae uniseriatae, ellipsoidales, hyalinae, 3–4-septatae, ad septum medianum constrictae, septo verticali in cellulis centralibus facientes, 10.4–13.2(–14.0)×4.4–5.8 μm.

Habitat: In ligno emortuo decorticato.

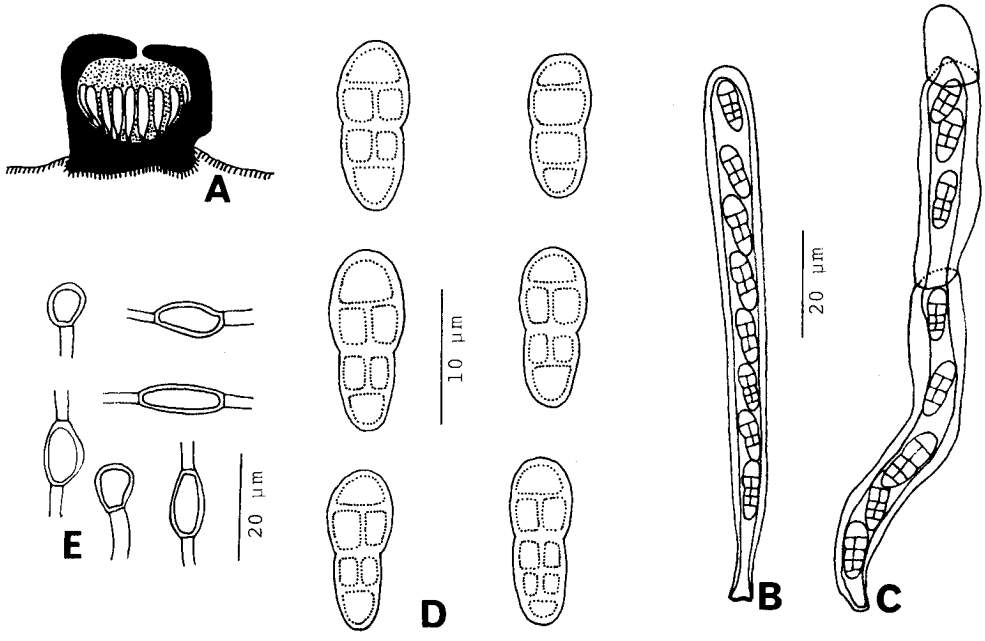


Fig. 4. *Gloniopsis constricta*; from A-802=F-237162 (TNS).
A. Vertical section of ascocarp (schematic). B. Ascus. C. Ruptured ascus. D. Ascospores. E. Chlamydospores.

Holotypus: "Japan: Yunohana Onsen, Tateiwa-mura, Minamiaizu-gun, Fukushima Pref.", Y. Doi, 18-IX-1982, A-802=F-237162 (TNS), IAM 12755 (cultura ex holotypo).

Ascomata oval or elongated with acute ends, superficial with immersed base, aggregated, straight or curved, rarely branched, opening by a longitudinal slit, carbonaceous, black, 0.5–2 mm long, 240–320 µm wide, 200–320 µm high. Tissues of ascomatal walls of *textura epidermoidea*. Pseudoparaphyses filiform, branched, anastomosed, hyaline, 1.0–1.2 µm thick. Asci bitunicate, cylindrical, stipitate, 8-spored, 74–112×8–10 µm. Ascospores uniseriate, ellipsoid, with 3–4 longitudinal septa and one vertical septum in the middle cells, constricted at the central longitudinal septum, hyaline, later becoming brown, 10.4–13.2×4.4–5.8 µm.

Hab: On dead decorticated wood.

Holotype: Japan: Yunohana Onsen, Tateiwa-mura, Minamiaizu-gun, Fukushima Pref., Y. Doi, 18-IX-1982, A-802=F-237162 (TNS), IAM 12755 (culture); isotype in FH, K & UPS.

Culture: Ascospores germinated within 24 hours. Colonies greenish grey; aerial hyphae dense; reverse greenish grey. Chlamydospores produced in old cultures, globose or elongated ellipsoid, slightly roughened, yellowish, intercalary or terminal, 8–14×6–9 µm. No conidia were observed.

Note: *G. constricta* resembles *G. curgata* but differs in having smaller ascospores with remarkable constriction at the central longitudinal septum; Zogg (1962) described the ascospores as "an den Querwänden nicht oder leicht eingeschnürt, besonders an der mittleren Querwand" and measuring (12)14–18(24)×(4)6–8(10) μm.

5. ***Gloniopsis macrospora*** N. Amano, sp. nov. Figs. 5 & 7-E

Ascomata elongata, superficialia, basi immersa, recta vel curvata, interdum ramosa, aggregata, carbonacea, atra, 0.8–4.0mm longa, 0.3–0.5 mm lata, 0.2–0.3 mm alta, rima in longitudinem dehiscenti instructa. Pseudoparaphyses filiformes, hyalinae, ramosae, anastomosantes, 1.0–1.6(–2.8) μm crassae. Asc bitunicati, clavati, tetraspori vel octospori, 120–210×28–40 μm. Ascosporae irregulariter biseriatae, hyalinae, ellipsoidales, 7–13-septatae ad septum medianum constrictae, verticaliter 1–3-septatae 25–49×8–17 μm.

Habitat: In ramo emortuo arboris frondosae.

Holotypus: "Japan: Hirakura, Mie University Forest, Mie Pref.", 19-X-1978, N. Amano, A-279=F-230376 (TNS).

Ascomata elongated or oval with obtuse ends, dispersed or aggregated, superficial with immersed base, straight or curved, sometimes branched, slightly rounded or flattened above, sometimes finely longitudinally striate, opening by a longitudinal slit, carbonaceous, black, 0.8–4.0 mm long, 0.3–0.5 mm wide, 0.2–0.3 mm high. In cross section tissues of basal walls composed of thick-walled, polygonal, hyaline or brown cells forming *textura angularis*; cells 2–5 μm in diam., thick-walled at the both margins, elongated, lying almost parallel, 5–11×3–5 μm; tissues of lateral walls of *textura epidermoidea*; lateral walls 40–80 μm thick. Pseudoparaphyses filiform, branched, anastomosed; intercalary cells sometimes becoming oblong-ellipsoid or subglobose, hyaline, 1.0–1.6(–2.8) μm thick, enlarged to 2.0 μm in diam. at the apex. Asci bitunicate, clavate, stipitate, 4- or 8-spored, 120–210×28–40 μm. Ascospores irregularly biseriate, ellipsoid, hyaline, becoming brown later, with the upper half generally wider than the lower half, sometimes surrounded by gelatinous sheath, with 7–13 transverse septa and 1–3 longitudinal septa, constricted at the median transverse septum, 25–49×8–17 μm.

Hab.: On dead branches of broad-leaved trees.

Holotype: Japan: Hirakura, Mie University Forest, Mie Pref., 19-X-1978, N. Amano, A-279=F-230376 (TNS), isotype in FH, K & UPS.

Other specimens examined. Japan: Hirakura, Mie University Forest, tMie Pref., 19-X-1978, N. Amano, A-284=F-230378 (TNS), 20-X-1978, N. Amano, A-283=F-230377 (TNS); Mt. Amagi-san, Takata-gun, Amagi-Yugashima-cho, Shizuoka Pref., 10-X-1981, Y. Doi, A-754=F-234579 (TNS), IAM 12757 (culture), A-755=F-234581 (TNS), IAM 12758 (culture), A-771=F-234577 (TNS), IAM 12759 (culture); Toukai Shizen Hodou, Aokigahara, Kamikushiki-mura, Nishiyatsushiro-gun, Yamanashi Pref., 24-X-1980, N. Amano, A-615=F-234578 (TNS), IAM 12756 (culture).

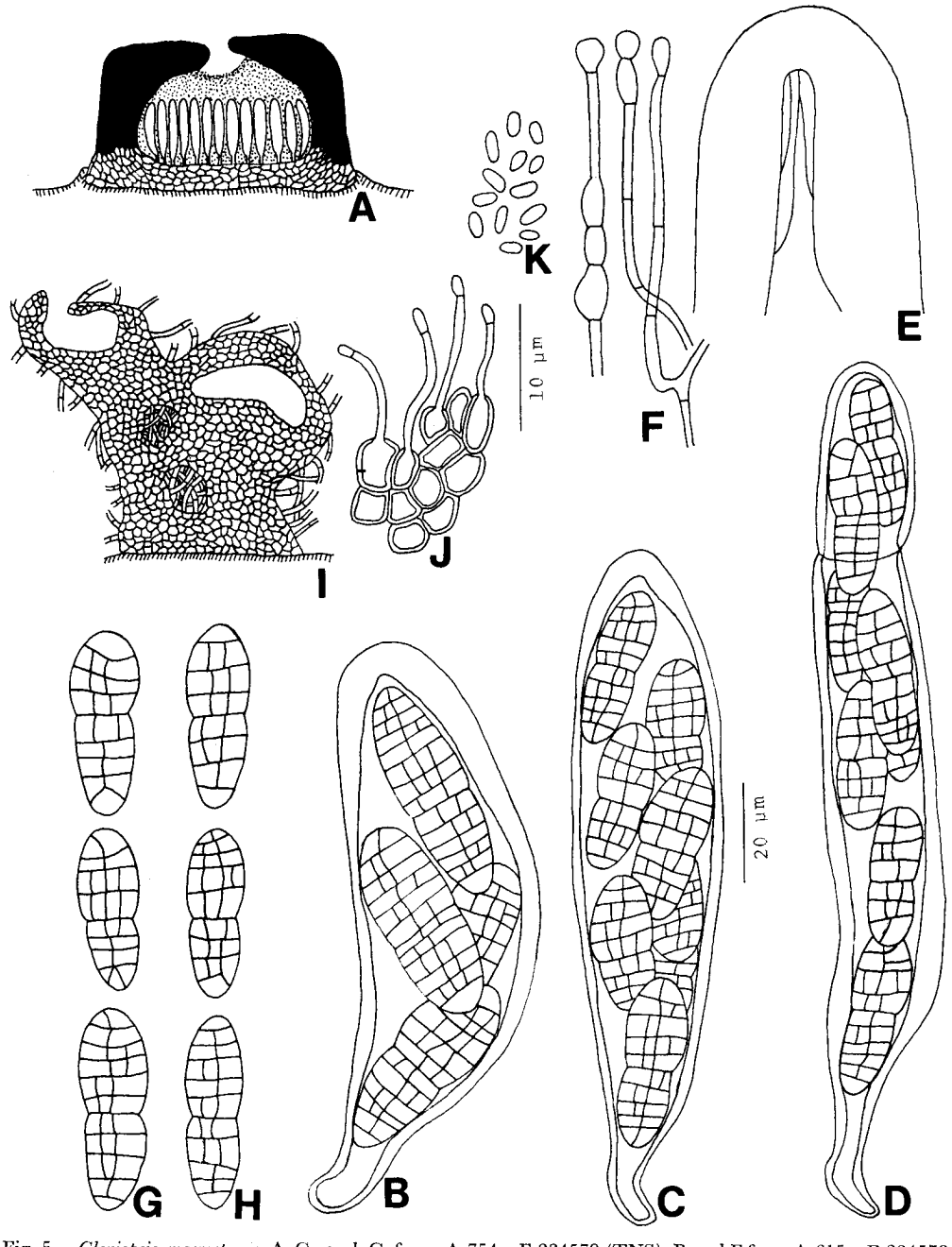


Fig. 5. *Gloniopsis macrospora*; A, C, and G from A-754=F-234579 (TNS), B and F from A-615=F-234578 (TNS), D from A-283=F-230377 (TNS), E from A-284=F-230378 (TNS), H from A-279=F-230376 (TNS), I–K form A-771=F-234577 (TNS).
A. Vertical section of ascocarp (schematic). B and C. Ascus. D. Ruptured ascus. E. "nasse". F. Pseudoparaphyses. G and H. Ascospores. I. Vertical section of conidioma (schematic). J. Conidiogenous cells and conidia. K. Conidia.

Culture: Ascospores germinated within 24 hours. In 8-day-old cultures colonies 3–4 mm in diam,. black at the center, white at the margin, with dense aerial hyphae. In 15-day-old cultures colonies 4–9 mm in diam., greenish grey, becoming raised into uneven mounds; reverse black. Conidiomata produced after three months.

Conidiomata stroma-like, superfcial on stroma-like layer on agar media, bearing pycnidium-like fruitbodies at or near the apex; pycnidium-like fruitbody produced singly ostiolated cavity.

Pycnidia globose or subglobose, superfcial on stroma-like layer or the surface of agar media, ostiolate, black, 0.2–0.4 mm in diam., immersed or half-immersed in the subicula; subicula composed of thick-walled, septate, brown or hyaline hyphae, 2–3 $\mu$m thick. Conidiogenous cells cylindrical, holoblastic, originating from the inner cells of the cavity wall. Conidia produced at the apices of conidiogenous cells, ellipsoid, hyaline, 2.0–2.8$\times$0.6–1.2 $\mu$m.

Note: *G. macrospora* resembles *G. praelonga*, but differs in ascospore and ascus size; Zogg (1962) described the ascospores and asci as measuring (16)20–32(34)$\times$(6)9–15 $\mu$m and 70–120$\times$15–24 $\mu$m, respectively.

In my earlier paper (Amano, 1979), I misidentified this species as *Hysterographium fraxini*.

I do not feel that the anamorph of *G. macrospora* can be accomodated in any known genus of the Coelomycetes. Further studies are necessary to determine its generic disposition.

I observed "nasse" at the apex of the ascus.

### ***Hysterographium*** Corda emend. de Notaris

Icon. Fung. **5**: 34, 1842, emend., de Notaris, Giorn. bot. ital. II, **2**(7–8): (21), 1847.
Type species: *Hysterographium fraxini* (Pers.) de Not., Giorn. bot. ital. II **2**(7–8): (21), 1847.

Corda (1842) included two species in *Hysterographium*: *H. pulicare* (Pers.) Corda with phragmosporous ascospores and *H. elongatum* (Wahlenb.: Fr.) Corda with muriform ascospores. Five years later, de Notaris (1847) restricted the genus to species with muriform ascospores, namely *H. fraxini* (Pers.) de Not. and *H. elongatum* (Wahlenb.: Fr.) Corda. The former species was selected as the type of the genus by Clements & Shear (1931). Since de Notaris' emendation of the genus, more than 70 epithets have been assigned to this genus. Zogg (1962) accepted only four species.

Only *H. decipiens* was recorded by Yasuda (1922) from Japan.

6. ***Hysterographium minus*** N. Amano, sp. nov. Figs. 6 & 7-F

Ascomata elongata, superficialia, basi immersa, aggregata vel dispersa, raro ramosa, carbonacea, atra, 0.5–1.0 mm longa, 130–180 $\mu$m lata, 180–230 $\mu$m alta, rima in longitudi-

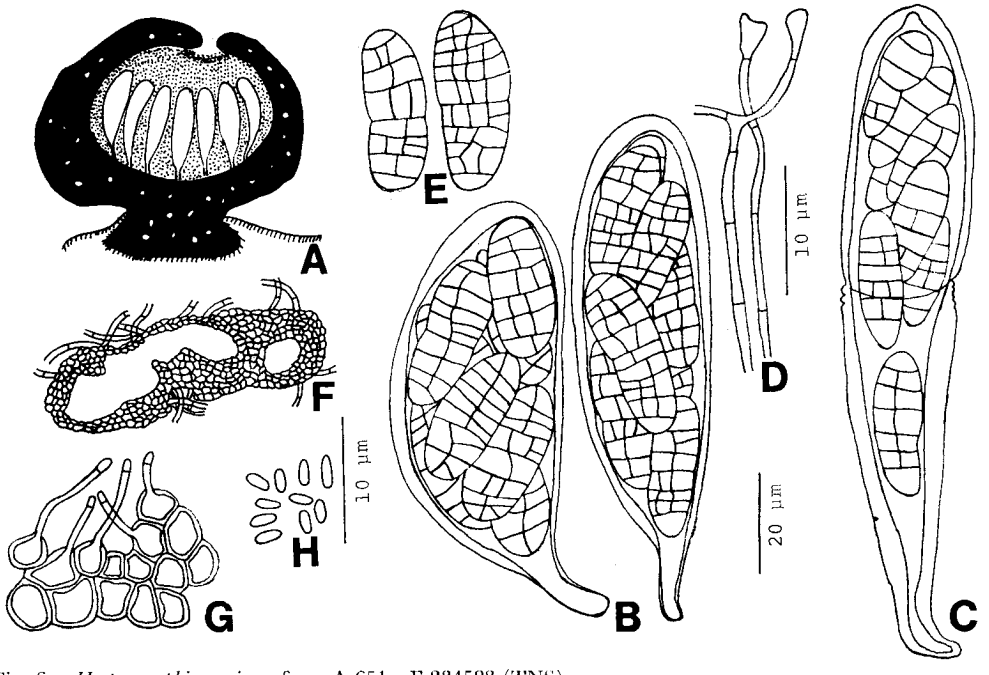


Fig. 6. *Hysterographium minus*; from A-651=F-234583 (TNS).
A. Verticla section of ascocarp (schematic). B. Asci. C. Ruptured ascus containing immatured ascospores. D. Pseudoparaphyses. E. Ascospores. F. Vertical section of pycnidial cavity (schematic). G. Conidiogenous cells and conidia. H. Conidia.

nem dehiscenti instructa. Pseudoparaphyses filiformes, hyalinae, ramosae, anastomosantes, 1.0–1.5 µm crassae, epitheciis brunneis formantes, cum usu 2% KOH viridi-albescentes. Asci bitunicati, late clavati, stipitati, octospori, 80–105×24–34 µm,tcum usu 2% KOH pallide viridescentes vel viridi-albescentes. Ascosporae irregulariter biseriatae, cllipsoidales, 6–11-setpatae, ad septa constrictae, verticaliter 1–3-septatae, brunneae, rectae vel curvatae, 26–38×10–15 µm.

Habitat: In ramo decorticato emortuo arboris frondosae.

Holotypus: "Japan: Kiyosumi, Tokyo University Forest in Chiba, Awa-kominato-cho, Awa-gun, Chiba Pref.", 16-XI-1980, N. Amano, A-651=F-234583 (TNS), IAM 12760 (cultura ex holotypo).

Ascomata aggregated or dispersed, superficial with immersed base, elongated with acute ends, straight or curved, rarely branched, opening by a narrow longitudinal slit, black, carbonaceous 0.5–1.0 mm long, 130–180 µm wide, 180–230 µm high. Tissues of ascomatal walls of *textura angularis* close to *textura epidermoidea*, 20–50 µm thick, composed of thick-walled, brown cells, 3–5 µm in diam. Pseudoparaphyses filiform, branched, anastomosed, hyaline, 1.0–1.5 µm thick, enlarged to 2.0–2.4 µm in diam. at the apex, in 2% KOH staining greenish white. Asci bitunicate, broadly clavate, stipitate, 8-spored,

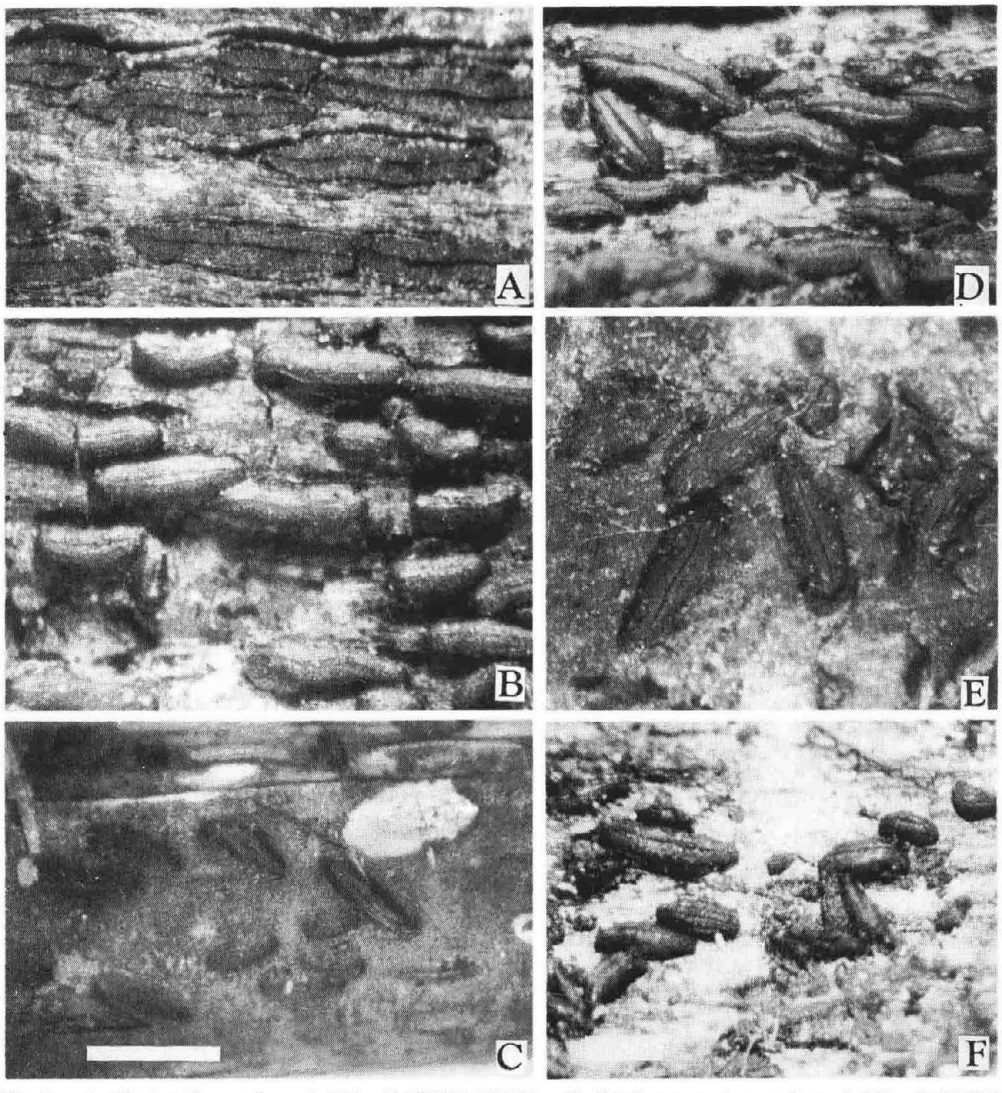


Fig. 7. A. *Glonium lineare*; from A-574=F-234582 (TNS). B. *Glonium macrosporum*; from A-561=F-234574 (TNS). C. *Glonium sasicola*; from A-464=F-237161 (TNS). D. *Gloniopsis constricta*; from A-802=F-237162 (TNS). E. *Gloniopsis macrospora*; from A-754=F-234579 (TNS). F. *Hysterographium minus*; from A-651=F-234583 (TNS). Scales: A, B, D, and F, 0.5 mm; C and E, 1 mm.

in 2% KOH staining pale green or greenish white, staining more intensely above, 80–105×23–34 μm. Ascospores irregularly biseriate, ellipsoid, with 6–13 transverse septa and 1–3 longitudinal septa, slightly constricted at the transverse septa, straight or curved, 26–38×10–15 μm.

Hab.: On decorticated branch of a broad-leaved tree.

Holotype: Japan: Kiyosumi, Tokyo University Forest in Chiba, Awa-kominato-cho,

Awa-gun, Chiba Pref., 16-XI-1980, N. Amano, A-651=F-234583 (TNS), IAM 12760 (culture), isotype in FH, K & UPS.

Culture: Ascospores germinated within 24 hours. Colonies black with white margin, growing very slowly to attain a diameter of 1–4 mm in 27-day-old cultures; raised into uneven mounds in about two months. Pycnidial cavities formed within the stroma-like crust on the surface of agar media after about six months. Tissues of stroma-like crust generally of *textura angularis* composed of subglobose or globose, thick-walled, dark-brown cells, 4–10 $\mu$m in diam., sometimes showing *textura intricata* of thick-walled, hyaline hyphae, 3–5 $\mu$m thick. Conidiogenous cells cylindrical, holoblastic, formed from the inner cells of the cavity wall, producing conidia at the apex. Conidia ellipsoid, hyaline, 1.6–2.4$\times$0.8–1.6 $\mu$m.

Note: *H. minus* resembles *H. fraxini* but differs in the size of ascospores; Zogg (1962) described them as measuring 30–51$\times$12–22 $\mu$m.

The taxonomic significance of the color reaction of asci and pseudoparaphyses in 2% KOH is not known at present. This phenomenon has not been previously reported in the hysteriaceous fungi.

It should be noted that in morphological characteristics of the conidiogenous cells and conidium ontogeny, this new species resembles *Gloniopsis macrospora* mentioned above.

I would like to express my sincere thanks to Dr. Yoshimichi Doi, Department of Botany, National Science Museum, Tokyo, for his stimulating guidance and encouragement throughout the course of this study and for his critical reading of the manuscript, and to Dr. K. A. Pirozynski, Paleobiology Division (NMNS), National Museums of Canada, for correcting the English of the text as well as many helpful comments.

I also would like to express my cordial thanks to the Directors and Curators of the following herbaria for the loan of important specimens: Istituto di Botanica e Fisiologia Vegetale, Università di Padova (PAD) and Institute of Systematic Botany, University of Uppsala (UPS).

Particular thanks are due to Dr. Takao Kobayashi, Forestry and Forest Products Research Institute, for the loan of the holotype specimen of *Hysterium thujopsidis*.

## Literature cited

Amano, N. 1979. Studies on the Japanese Loculoascomycetes. I. Bull. Natn. Sci. Mus., Ser. B **5**: 73–80.

Arx, J. A. von, and E. Müller. 1975. A re-evaluation of the bitunicate Ascomycetes with keys to families and genera. Stud. Mycol. Baarn. **9**: 1–159.

Clements, F. E., and C. L. Shear. 1931. "The genera of fungi," H. Wilson, New York, iv+466 p., pl. 1–10.

Corda, A. C. J. 1842. "Icones fungorum husque cognitorum," Vol. V., Fridericum Ehrlich, Prague, 92 p., pl. 1–58.

Hilitzer, A. 1929. Monografická studie o českých druzích řádu Hysteriales a o sypavkách jimi působených. Vědecké Spisy vydávané Československou Akademií Zemědělskou **3**: 1–162. (Cited from Lohman, 1953)

Hino, I., and K. Katumoto. 1959. Illustrationes fungorum bambusicolorum VII. Bull. Fac. Agr. Yamaguti Univ. **10**: 1175–1194.

Höhnel, F. von. 1918. Mycologische Fragmente. 272. Über die Hysteriaceen. Ann. Mycol. **16**: 145–154.

Imazeki, R. 1939. The Hysteriaceae. *In* "Nippon Inkwasyokubutu Dukan," (Y. Asahina, ed.), pp. 286–289, Sanseido, Tokyo. (in Japanese)

Lohman, M. L. 1953. Hysteriaceae: Life-histories of certain species. Pap. Mich. Acad. Sci. Arts and Letters **17**: 229–288, pl. XXXIV–XXXV.
Müller, E., and J. A. von Arx. 1962. Die Gattungen der didymosporen Pyrenomyceten. Beitr. Krypto. Flora Schweiz **11**(2): 1–922.
Naito, T. 1933. The mycoflora of southern Kiusiu II. Trans. Nat. Histo. Soc. Kagoshima imp. Coll. Agric. For. **3**:(11-12): 3–5.
Notaris, C. G. de. 1947. Prime linee di una nuova disposizione de'Pirenomiceti Isterini. Giorn. bot. ital. II, **2**(7–8): (5)–(52).
Petrak, F. 1923. Mykologische Notizen VI. No. 226 Über die Gattung *Glonium* Müh. Ann. Mycol. **21**: 225–227.
Rehm, H. 1886. Revision der Hysterineen im Herbarium Duby. Hedwigia **25**: 137–155.
Saccardo, P. A. 1873. Mycologia venetae specimen. Atti Soc. Venet. Trent. Sc. Nat. Padova. **2**: 155–160.
Sawada, K. 1952. Researches on fungi in Tōhoku district of Japan (II). Ascomycetes and Protomycetes. Bull. Gov. For. Exp. Sta. **53**: 135–194. (in Japanese)
Yasuda, A. 1920a. Notes on fungi 104. Bot. Mag. Tokyo **34**: (294)–(295). (in Japanese)
Yasuda, A. 1920b. Notes on fungi 105. Bot. Mag. Tokyo **34**: (321)–(322). (in Japanese)
Yasuda, A. 1922. Notes on fungi 124. Bot. Mag. Tokyo **36**: (127)–(129). (in Japanese)
Zogg, H. 1962. Die Hysteriaceae s. str. und Lophiaceae unter besonderer Berücksichtigung der mitteleuropäischen Formen. Beitr. Kryopto Flora Schweiz **11**(3): 1–190.

## 摘　　要

### 日本産腐生小房子のう菌類
### 1. ヒステリウム科

天　野　典　英

東京大学農学部林学科，〒113 東京都文京区弥生1-1-1.*

ヒステリウム科の菌類5種 *Glonium macrosporum, G. sasicola, Gloniopsis constricta, G. macrospora, Hysterographium minus* を新種として，それらの培養的性質と共に記載・図示した．さらに，日本産 *Glonium lineare* の培養的性質を記載した．

* 現住所：東京大学応用微生物研究所，〒113 東京都文京区弥生1-1-1.