fasciculatim fusco-radiculosus, irregulariter subpinnateque ramosus, ramis infra 1 cm longis, sublaxe et subcomplanate foliosis. Folia madida patula, caulina subreflexa, e basi late ovate, haud decurrentia, anguste triangulata, subacuta, holodonta; cellulis anguste elongatis, levissimis, alaribus laxioribus vel subquadratis; costa crassa ad $\frac{4}{5}$ folii evanida, apice in dorso serrata. Caetera ignota.

Kiushiu: Prov. Higo, Konose (Leg. H. KANEDA Typus in Herb. K. SAKURAI Nr. 9266 3 Januar 1937).

N.B. Über die Blattstruktur finde ich nichts Besonders, gerade wie die Blätter von *O. Swartzii* (TURN) WARNST. Doch sein Habitus ist ganz anders, gerade wie eine *Floribundaria*, besser wie eine gelblich-grünliche Spinnengewebe.

Cratoneurum decipiens (DE NOT) LOESKE. (in RABENH. Kryptogamenflora IV, Ergänzungsband S. 710).

Honshiu: Prov. Kawachi, Berg Amanoyama, auf nassen Erdboden (Leg. N. UI in Herb. K. SAKURAI Nr. 8006 18 Aug. 1935).

Distributio: Europa, Kaukasas, Kanada.

N.B. Neu für japanische Flora!

Hygroamblystegium irrigum (WILS) LOESKE.

Syn. *Amblystegium irrigum* Br. eur.

Honshiu: Prov. Settsu, Toyonaka, an Baumurzeln beim Bächlein (Leg. N. UI in Herb. K. SAKURAI Nr. 8007 26 April 1935).

Distributio: Europa, Nord America.

N.B. Neu für japanische Flora!

(Fortsetzung folgt.)

Fungi Austro-Japoniae et Micronesiae. II.

By

Yosio Kobayasi.

With 1 Plate & 3 Text-figures.

Received June 27, 1937.

Rhizopogon luteolus FRIES et NORDHOLM (Hymenogastraceae).

in FR. Symb. Gast. p. 5 (1817–18) emend. TUL. Fungi Hyp. p. 87, pl. I, fig. 5 et pl. XI, fig. 5 (1851); WINTER in RABENH. Krypt. Fl. I, p. 880 (1884); SACC. Syll. Fung. VII, p. 161 (1888); MASSEE, Brit. Gastr. in Ann.

Bot. IV, p. 41 (1889); LLOYD, Myc. Writ. VII, p. 1171, pl. CCXXVI, fig. 2316–2318 (1923) et p. 1304, pl. CCXCVIII, fig. 2912 (1924); COKER et COUCH, Gasteromycetes, p. 33 (1928).

Syn. *Splanchnomyces luteolus* CORDA, Icon. Fung. VI, pl. VII, fig. 69 (1854).

Nom. Jap. *Syôro-modoki* (nov.).

Hab. Growing partly buried in sandy soils under the afforestation of *Pinus liukiuensis* MASTERS.

Bonin:

Isl. Titizima; Kiyose (M. OKABE, March 23 & 27, 1936).

Distr. Almost cosmopolitan; Europe, Africa, Asia, North America, Australia, New Zealand.

The present species seems close to *R. rubescens* TUL. The distinguishing characters between them are as follows:

Fig. 1. *Rhizopogon luteolus* FR. et NORDHOLM.

A. Part of hymenium. $\times 550$.

B. Spores and basidium. $\times 1300$.

Rh. rubescens

Gleba white when young, later growing pale ochraceous to ochraceous, fleshy through all stages.

Spores pale brown, without pedicels.

Rh. luteolus

Gleba pale olivaceous brown, later growing darker, gelatinous.

Spores brown, commonly pedicellate.

***Geastrum fimbriatum* (FR.) FISCHER (Lycoperdaceae).**

in ENGL. Pflanzenfam. 2 ed. VII a, p. 73 (1933); IMAI in Bot. Mag. Tokyo, L. p. 221 (1936).

Syn. *Geaster fimbriatus* FR. Syst. Myc. III, p. 16 (1829); BERKELEY, Outl.

Brit. Fung. p. 300, pl. XX, fig. 4 (1860); SACCARDO, Syll. Fung.

VII, p. 82 (1888); MASSEE in Ann. Bot. IV, p. 81 (1889); LLOYD, Myc. Writ. I, Geast. p. 36, fig. 74 (1902); HOLLÖS, Gasteromyceten Ungar. p. 68 et 156, pl. X, fig. 17–18 (1904); PETRI in Flora Ital. Crypt. Gaster. p. 80, fig. 42 (1909); REA in Trans. Brit. Myc. Soc. III, p. 353, pl. XIX (1912) et Brit. Basid. p. 42 (1922); CUNNINGHAM in Proc. Linn. Soc. New South Wales, LI, p. 89, pl. VI, fig. 36 (1926).

Geaster tunicatus VITTADINI, Monogr. Lycoperd. in Mem. Accad. Torino V, p. 18, pl. III, fig. 3 (1843).

Nom. Jap. *Siro-tutiguri*.

Hab. Growing singly among fallen leaves in woods.

Bonin:

Isl. Titizima; Takeda-bokuzyô (Y. KOBAYASI, Nov. 24, 1936).

Distr. Europe, North America, Australia, Japan.

The spores of the Bonin species are densely asperulated and 4–5 μ in diameter, which agree with the description by C. REA. The species has no distinctly formed peristome, but in Japan Proper, the writer collected several specimens with peristome. The latter form is called *G. capensis* THÜM.

***Geastrum mirabile* (MONT.) FISCHER.**

in ENGL. Pflanzenfam. 2 ed. VII a, p. 73 (1933) et in Ann. Mycol. XXXI, p. 121 (1933).

Syn. *Geaster mirabilis* MONT. Crypt. Guyan. in Ann. Sci. Nat. Sér. IV, T. 3, p. 139 (1855).

Geaster papyraceus BERK. et CURT. in Proc. Amer. Acad. Art. Sci. IV, p. 124 (1860).

Nom. Jap. *Hina-tutigaki*.

Hab. Solitary or caespitose on a mycelial subiculum spreading on fallen leaves and other vegetable matter in woods.

Bonin:

Isl. Titizima; Kiyose (Y. KOBAYASI, Nov. 22, 1936); Takeda-bokuzyô (Y. KOBAYASI, Nov. 24, 1936); Mt. Asahiyama (M. OKABE, Nov. 19, 1936).

Micronesia:

Isl. Ponape, Caroline Islands; Kity (Y. KOBAYASI, Sept. 3, 1936).

Distr. North America, Jamaica, Cuba, Guiana (type locality), Brazil, Japan, Africa (Uganda).

***Geastrum pectinatum* PERSOON.**

Synopsis Fung. p. 132 (1801) et Journ. Bot. II, p. 26, pl. II, fig. 4 (1809); FISCHER in ENGL. Pflanzenfam. 2 ed. VII a, p. 73 (1933); IMAI in

Bot. Mag. Tokyo L, p. 217 (1936).

Syn. *Geaster pectinatus* HOLLÓS, Gasteromycet. vonatk. helyesbit. Természetr. Füzet. XXV, p. 121 (1901) et Gasteromyceten Ungar. p. 55 et 152, pl. VIII, fig. 1-7 et pl. XXIX, fig. 16 (1904); LLOYD, Myc. Writ. III, Geastrae, p. 15, fig. 19-22 (1902) et Lycop. Austr. p. 18, fig. 14 (1905); PETRI in Fl. Ital. Crypt. Gaster. p. 77, fig. 40 (1909); CUNNINGHAM in Proc. Linn. Soc. New South Wales LI, p. 76, pl. III, fig. 7 et 8 (1926) et in Trans. Proc. New Zeal. Inst. LVII, p. 210, fig. 27 (1927); COKER et COUCH, Gasteromycetes. p. 132, pl. LXXIV et LXXV, fig. super. (1928).

Geaster biplicatus BERK. et CURT. in Proc. Amer. Acad. Art. Sci. IV, p. 124 (1860).

Nom. Jap. *Kohuki-kuro-tutigaki*, *Kikuza-tutiguri*, *Ogasawara-tutiguri*.

Hab. Gregarious on the ground among fallen leaves of *Casuarina*.

Bonin:

Isl. Titizima; Mt. Huriwakeyama (M. OKABE, Jan. 8, 1937).

Distr. Europe, North America, Australia, New Zealand, Japan.

***Geastrum triplex* (JUNGH.) FISCHER.**

in ENGL. Pflanzenfam. 2 ed. VII a, p. 73 (1933) (excl. syn.).

Syn. *Geaster triplex* JUNGHUHN, Nova Gen. et Sp. Plant. Florae Javanicae in Tijdschr. voor Nat. Gesch. VII, p. 287, pl. VIII, fig. 1-3 (1840); DE TONI, Revis. gen. Geast. p. 8, pl. 1, fig. C (1887); SACC. Syll. Fung. VII, p. 74 (1888); LLOYD, Myc. Writ. I, Gastero. p. 20, fig. 39 et Geast. p. 25, fig. 47-49 (1902) et II, p. 309, fig. 144, pl. 94, fig. 1-5 (1907); HOLLÓS, Gasteromyceten Ungar. p. 73 et 158, pl. XI, fig. 1-6, XXIX, fig. 17 (1904); PETRI in Fl. Ital. Crypt. Gaster. p. 72, fig. 38 (1909); REA, Brit. Basid. p. 43 (1922); CUNNINGHAM in Proc. Linn. Soc. New South Wales LI, pl. II, fig. 3 et pl. V, fig. 29-31 et pl. VII, fig. 45 (1926) et in Trans. Proc. New Zeal. Inst. LVII, pl. XI, fig. 36-37 (1927); KAWAMURA, Nippon Kinrui-dusetu, no. 65 et 242 (1929).

Nom. Jap. *Erimaki-tutiguri*.

Hab. In small groups on the ground in woods.

Bonin:

Isl. Titizima; Takeda-bokuzyô & Mt. Asahiyama (Y. KOBAYASI, Nov. 24, 1936); Kiyose (Y. KOBAYASI, Nov. 22, 1936).

Distr. Java (type locality), Samoa, New Zealand, Australia, Japan, North America, Europe.

The present species and *G. lageniforme* are closely related to each

other. These may be separated by the following characters, although the size of fruitbodies, longitudinal striations of exterior surface of exoperidia, numbers and forms of lays, recurvation of exoperidia, forms of columellae, and size and echinulations of spores are not available for taxonomy.

G. triplex

Collenchymatous and fleshy layer of exoperidium thick, about 1.5 mm. or more in unexpanded stage; basal portion persisting as a small collar around the base of endoperidium.

Mouth area surrounding peristome comparatively smooth.

G. lageniforme

Collenchymatous and fleshy layer of exoperidium thin, less than 1 mm. in unexpanded stage, basal portion does not form a collar.

Mouth area surrounding peristome rough and fibrillose.

Lycoperdon Henningsii SACC. et SYD. (Lycoperdaceae).

in SACC. Syll. Fung. XVI, p. 242 (1902).

Syn. *Lycoperdon pisiforme* HENN. in WARBURG, Monsunia, p. 158 (1900) (non HENN. in Engl. Bot. Jahrb. XXIII, p. 556 (1897)); LLOYD, Myc. Writ. V, p. 795, fig. 1198 (1918).

Nom. Jap. *Kometubu-hokoritake* (nov.).

Hab. Growing singly on the bark of *Eurya boninensis* KOIDZUMI, about 1–2 meters above the ground.

Bonin:

Isl. Titizima; Takeda-bokuzyô (M. OKABE, Nov. 19, 1936).

Distr. Java (type locality), Africa ?.

The Bonin specimens agree well with HENNINGS' description which was made on the materials collected among the mosses on wood in Java, although the peridial characters are somewhat vaguely described.

Fructification very small, globose, sessile, 2.5–4.5 mm. in diam., covered with minute warts or tomentum, canescens, at maturity becoming ochraceous; apical pore minute with recurved margin. Outer peridium 250–300 μ thick, composed of loosely and irregularly woven, hyaline, thick-walled, 3–12 μ thick, frequently septate hyphae. Inner peridium 100–130 μ thick, composed of densely woven, pale ochraceous hyphae. Spores globose, olivaceous brown, 3.2–3.5 μ in diam., smooth, with an oil drop and a short pedicel. Capillitium threads sparingly branched, up to 140 μ long, 2.8–4.2 μ in diam., pale brown; wall smooth or obscurely pitted.

In the genus *Lycoperdon*, there are two other species with minute fructifications, viz. *L. pisiforme* P. HENN. (in ENGL. Bot. Jahrb. XXIII, p. 556 (1897)) and *L. acuminatum* Bosc. The former has papery and

Fig. 2.
Lycoperdon
Henningsii
SACC. et SYD.
Spores. $\times 3000$.

half-lustrous cortex, and mycelial layer covering the substratum. The latter has its fructification pyriform or fusiform and 3–9 mm. in diam.

***Lycoperdon perlatum* PERSOON.**

Syn. Meth. Fung. I, p. 148 (1801).

Syn. *Lycoperdon gemmatum* [BATSCH, Elench. Fung. I, p. 147 (1783)]

FR. Syst. Myc. III, p. 36 (1829).

Nom. Jap. *Kitune-no-tyabukuro*.

Hab. Growing solitarily or caespitose on the ground.

Bonin:

Isl. Titizima; Mt. Asahiyama (M. OKABE, Nov. 19, 1936).

Distr. Cosmopolitan.

***Lycoperdon subincarnatum* PECK.**

N. Y. Nat. Hist. Mus. Bot. 24th Rept. No. 82 (1872); MORGAN in Journ. Cincinnati Soc. Nat. Hist. XIV, pl. I, fig. 6 (1891); LLOYD, Myc. Writ. II, p. 233, pl. 63, fig. 5–9 (1905) et IV, Let. 60, p. 15 (1915); CUNNINGHAM in Proc. Linn. Soc. New South Wales, LI, p. 631, pl. XLVI, fig. 4–5 (1926); COKER et COUCH, Gasteromycetes, p. 80, pl. LI, LVII et CXIII (1928).

Nom. Jap. *Abata-tyabukuro* (nov.).

Hab. Growing scattered among the mosses on the bark of rotten wood.

Micronesia:

Isl. Ponape, Caroline Islands; Nepitch (Y. KOBAYASHI, Aug. 31, 1936).

Distr. North America (type locality), Samoa, Australia.

Fructification globose or sub-pyriform, almost sessile; surface, in young stage, covered with minute pale brown warts, which slowly fall away and are finally marked with numerous shallow depressions that look like thimbles. Gleba olivaceous brown (Light Brownish Olive). Spores globose, 3.5–3.7 μ (except the spines), with short pedicel, brown, minutely spiny (almost smooth under low magnification), with an oil drop. Capillitium threads almost simple, hyaline, septate, 2.8–7.7 μ in diam., smooth or somewhat verrucose.

This is an unique species in the genus *Lycoperdon*, with its peculiar habitat and pitted peridium. The writer also collected in the same locality other specimens, differing from this species only in its spores, which are subglobose or oval, 3.4–3.6 $\times$ 3.9–4.6 μ .

***Calvatia craniiformis* (SCHWEIN.) FR. (Lycoperdaceae).**

Summa Veget. Scand. p. 442 (1849); SACC. Syll. Fung. VII, p. 106 (1888); LLOYD, Myc. Writ. V, Let. 68, p. 10 (1918); COKER et COUCH,

Gasteromycetes p. 67 (1928).

Syn. *Bovista craniiformis* SCHWEIN. Synop. Fung. Amer. boreal. p. 256 (1834).

var. **Gardneri** (BERK.) Y. KOBAYASI var. nov.

Syn. *Lycoperdon Gardneri* BERK. Ceylon Fungi no. 716 in Journ. Linn. Soc. XIV, p. 79 (1875).

Calvatia Gardneri (BERK.) LLOYD, Myc. Writ. I, Let 2, p. 2 (1904) et V, Let. 67, p. 16 (1918).

Nom. Jap. *Ô-nôtake* (nov.).

Hab. Growing on grounds in woods.

Bonin:

Isl. Titizima; Asahi-yama (M. OKABE, Nov. 19, 1936); Takeda-bokuzyô (Y. KOBAYASI, Nov. 24, 1936).

Distr. Ceylon, Japan.

Fructification large, up to 14 cm. in diam. ovoid or top-shaped; sterile base broadly obconic, low, up to 13 cm. in diam. Peridium very thin, almost smooth, around sterile base rugose or areolated, dark purplish brown, collapses and falls off in age, exposing ochraceous inner peridium. Gleba dark purplish brown. Subgleba quite spongy, separated from the gleba by well-defined diaphragm, obscurely cellular, ochraceous with purplish shade (Snuff Brown-Bister). Capillitium threads very long, sparingly septate, inconspicuously branched, 1.5–3.8 μ (rarely up to 4.5 μ) thick, moderately thick-walled, smooth, sometimes minutely pitted. Spores ellipsoid or ovoid, with numerous short spines (under low magnification almost smooth), 4.2–5.3 $\times$ 3.0–3.9 μ (except spines), commonly 4.6 $\times$ 3.2 μ .

This variety, which is considered to be a tropical form of *C. craniiformis*, is distinguished from the type by its ellipsoidal spores and broadly obconic and low sterile base.

Fig. 3.

Calvatia craniiformis
(SCHW.) FR.
var. *Gardneri*
(BERK.) Y. KOBAYASI
Spores. $\times 2500$.

Hirneola auricula-Judae [BULL.] BERK. (Auriculariaceae)

Outl. p. 289 (1860).

Nom. Jap. *Kikurage*.

Hab.

Micronesia:

Isl. Saipan, Marianne Islands (Y. KOBAYASI, Aug. 21, 1936).

Distr. Cosmopolitan, more frequent in temperate regions.

Hirneola polytricha MONT. in BÉLANGER, Voy. Ind. Or. II, p. 154 (1846).

Nom. Jap. *Arage-kikurage*.

Hab. On trunks, branches, and stumps of various trees.

Isl. Hatidyô; Mt. Nisiyama (Y. KOBAYASI, March 24, 1936).

Bonin:

Isl. Titizima; Renzyu-dani (Y. KOBAYASI Nov. 23, 1936); Kiyose (Y. KOBAYASI, March 28, 1936); Takeda-bokuzyô (Y. KOBAYASI, Nov. 24, 1936).

Isl. Hahazima; Mt. Sekimonyama (Y. KOBAYASI, April 1936).

Isl. Nakaiwôtô (Y. KOBAYASI, April 2, 1936).

Micronesia:

Isl. Saipan, Marianne Islands; Mt. Tappochô (Y. KOBAYASI, Aug. 20, 1936).

Isl. Truk, Caroline Islands; Natuzima (Y. KOBAYASI, Aug. 24, 1936).

Isl. Ponape, Caroline Islands; Colonia (Y. KOBAYASI, Sept. 6, 1936).

Distr. Almost cosmopolitan, more common in tropical and subtropical regions.

***Hirneola albida* ROMELL.**

Hymen. Austro-Amer. I, p. 45, pl. III, fig. 49 (1901); SACC. Syll. Fung. XVI, p. 216 (1902).

Nom. Jap. *Usugi-kikurage* (nov.).

Hab. Gregarious on trunks of *Hibiscus glaber* MATSUMURA.

Bonin:

Isl. Hahazima; Mt. Kuwanokiyama (M. OKABE, Nov. 1936).

Distr. Paraguay (type locality).

Fructification cup-shaped, 2–5 cm. in diam., 1–2.5 cm. high, cartilaginous when dried, creamy white, half-transparent. Margin thin, straight, incurved. Outer surface velutinous with short hairs; hairs fasciculate, fimbriiform, unicellular, hyaline, up to 900 μ long, 6–7 μ in diam. Hymenium smooth or somewhat costate.

In the genus *Hirneola*, including *Auricularia*, there is one species, having yellowish fructifications, viz., *Auricularia flava* LLOYD, which is distinguished from the present species by its reticulate hymenium.

(To be continued.)

Explanation of Plate XVII.

- A. *Geastrum pectinatum* PERS. Habit, in nat. size.
- B. *Geastrum mirabile* (MONT.) FISCHER. Habit, in nat. size. (phot. from fungi found in Isl. Ponape)
- C. *Lycoperdon Henningsii* SACC. et SYD. Habit, in nat. size.
- D. *Lycoperdon subincarnatum* PECK. Habit, in nat. size.
- E. *Hirneola albida* ROMELL. Habit, in nat. size.
- F. *Calvatia craniiformis* (SCHW.) FR. var. *Gardneri* (BERK.) Y. KOBAYASI. Habit. $\times 1/2$.

Y. KOBAYASI—Fungi Austro-Japoniae et Micronesiae. II.