STUDIES ON THE GEOGLOSSACEAE OF JAPAN

BY

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(With Plate VII)

In the course of taxonomic studies on the Japanese Geoglossaceae during past several years, the writer has obtained a large number of species, in which two genera and eight species seem to be new to science. The writer proposes to report them in the present short paper.

1. ***Ascocorynium*** S. ITO et IMAI, gen. nov.

Proceed. Jap. Assoc. Adv. Sci. VII, 145, 1932, nom. nud.

Ascomata stipitata, carnosa, recta, plerumque clavata vel subcylindracea; clavula plerumque ellipsoidea, clavata vel subcylindracea, laete colorata (vitellina), determinata; asci cylindracei vel clavato-cylindracei, inoperculati, octospori; sporidia crasso-ellipsoidea vel brevi-fusiformia, hyalina, continua; paraphyses nullae. (Pl. VII, figs. 1–2)

Typus: *Geoglossum irregulare* PK.

(Etym. *ascos*+*coryne*+*ium*)

Considering the presence or absence of the paraphyses in the hymenium as an essential criterion in the classification of the genera, the new genus, *Ascocorynium*, is proposed, separating it from *Mitrula* proper.

The type species, *Geoglossum irregulare* PK. [=*Mitrula irregulare* (PK.) DURAND] has no paraphyses, as noticed by DURAND.

It has been recorded by some authors that *Mitrula vitellina* (BRES.) SACC. has filiform paraphyses in the hymenium, but DURAND denied it after a careful examination of BRESADOLA's and American specimens. The species also belongs clearly to the genus.

The species mentioned above were collected in our country and they were given the names *Ascocorynium irregurale* (PK.) S. ITO et IMAI and *A. vitellinum* (BRES.) S. ITO et IMAI respectively.

2. ***Geoglossum subpumilum*** IMAI, sp. nov.

Proceed. Jap. Assoc. Adv. Sc. VII, 148, 1932, nom. nud.

[Trans. Sapporo Nat. Hist. Soc., Vol. XIII, Pt. 3, 1934]

Ascomatibus solitariis, clavatis, atris, 1.5-5.5 cm. altis; clavulis lanceolatis, obtusis, compressis, 0.5-1.5 cm. longis, 2-4 mm. latis; stipite gracili, tereti, sursum squamuloso, 1.0-2.0 mm. crasso; ascis clavatis vel cylindraceo-clavatis, apice contractis, poro iodo caerulescente, 8-sporis, 150-210 × 20-27.5 μ; sporidiis fasciculatis, cylindraceo-clavatis vel clavatis, primo continuis multiguttulatisque, demum 7-12-septatis (rarissimo usque ad 14-15-septatis), 62.5-117.5 × 6-7.5 μ (plurima 80-100 μ), fuligineis; paraphysibus filiformibus, pallide brunneis, sursum rectis vel curvatis, apice abrupte ellipsoideis vel globosis, 7.5-10 μ crassis. (Pl. VII, figs.3-5)

Hab. in terra silvarum. Hokkaido: Ishikari. Oct.-Nov.

Nom. Jap.

The present fungus is allied to *Geoglossum paludosum* and *G. intermedium*, having 7 to 12-septate spores, but it is distinguished from the former species by the black ascophores and early colored spores, as well as by the darker colored longer spores, as well as by absence of epithecium.

Moreover, the fungus differs form *G. pygmaeum* by the shorter and less septate spores, and from *G. pumilum* by the form of the ascophores and spores.

3. ***Geoglossum proximum*** IMAI et MINAKATA, sp. nov.

Proceed. Jap. Assoc. Adv. Sc. VII, 148, 1932, nom. nud.

Ascomatibus solitariis, clavatis, nigris, 1.5-3 cm. altis; clavulis oblongis vel ovatis, obtusis, subcompressis, longitudinaliter canaliculatis rugosisque, nigris, 5-15 mm. longis; stipite gracili, tereti, subaequali, vix curvato, squamuloso, nigresco-brunneo vel fuliginoso-carneo; ascis cylindraceo-clavatis, apice contractis, poro iodo caerulescente, 8-sporis, 130-160 × 16-20 μ; sporidiis subdistichis vel fasciculatis, cylindraceo-clavatis, rectis vel curvatis, primo continuis demum 7-12-septatis, fuligineis, 70-115 × 4-6 μ (plurima 80-100 μ); paraphysibus filiformibus, sursum clavatis et fuligineis, apice abrupte ellipsoideis vel globosis, ca. 6 μ crassis, deorsum subhyalinis, apicibus cum ascis cohaerentibus epithecium brunneum formantibus. (Pl. VII, figs. 6-8)

Hab. ad terram. Honshu: Kii. Apr.

Nom. Jap.

The present species resembles *G. intermedium* and *G. paludosum*, but it is easily distinguished from the former by the early colored larger spores and from the latter by the early colored spores and presence of the amorphous brown epithecium. From *G. subpumilum* it differs also by the presence of epithecium.

4. ***Hemiglossum Itoanum*** IMAI, sp. nov.

Proceed. Jap. Assoc. Adv. Sc. VII, 148, 1932, nom. nud.

Ascomatibus gregariis vel solitariis, ramosis, 1.5-3.5 cm. altis; clavulis ramosis, supra incisis vel lobatis, margine revolutis, 1.5-3 mm. crassis; hymenio glabro, levi, ochraceo vel pallide aurantiaceo, unilaterale tecto; facie sterili pallidiori et furfuracei; stipite rigido, 5-15 mm. longo, 2-5 mm. crasso, sordido-brunneo vel castaneo, recto vel flexuoso; ascis clavatis, circa porum iodo caerulescentibus, inoperculatis, octosporis, 30-45 × 3-6 μ; sporidiis monostichis, longe oblongis vel ellipsoideis, hyalinis, continuis, utrinque leniter obtusis, 5.5-8.5 × 2-2.5 μ; paraphysibus filiformibus, simplicibus, hyalinis. (Pl. VII. figs. 9-12)

Hab. ad terram. Hokkaido: Iburi. Sept.

Nom. Jap. *Fukuro-sango-take.*

Hemiglossum Yunnanense PAT., from China, is probably an unique species of this genus. In comparison with this species, the present fungus quite differs from it in having the beautiful colored and more branched ascophores, while the ascophores of the Chinese fungus are tawny colored and simple or less branched. The present fungus is of interest, reminding some species of *Clavaria* in the macroscopic appearance. This is named in honour of Prof. SEIYA ITO.

5. ***Cudoniella rutilans*** IMAI et MINAKATA, sp. nov.

Ascomatibus gregariis, nonnumquam caespitosis, stipitatis, gelatinoso-ceraceis, 1-4 cm. altis; parte ascigerante pileata, convexa, irregulariter formante vel pulvinescente, uvida, minute papillosa, saepe fissa, rosea, deinde sanguinescente, margine obtusa, aliquantulum strigosa, 1-10 mm. lata; stipite subaequali vel basi attenuato, 1-3 cm. longo, 1-5 mm. crasso, uvido, subtranslucido, succineo, rufescente, crasse verrucoso; ascis cylindraceo-clavatis, apice rotundatis, iodo non caerulescentibus, 8-sporis, 100-125 × 7.5-12.5 μ; sporidiis monostichis vel bistichis, ellipsoideis vel subfusiformibus, rectis vel subventricosis, hyalinis, continuis, 15-22.5 × 5 μ; paraphysibus filiformibus, circa 2.5 μ crassis, ramosis, apice non vel vix incrassatis, curvatis vel leniter uncinatis, brunneolis. (Pl, VII, figs. 18-22)

Hab. ad terram in silvis. Honshu: Kii. Jul.-Aug.

Nom. Jap.

The fungus is easily distinguishable from other members of the genus by the color of fructification.

6. ***Cudoniella jezoensis*** IMAI, sp. nov.

Ascomatibus dense gregariis, stipitatis, gelatinoso-carnosis vel ceraceo-carnosis, albidulis, avellaneis vel brunneolis, 1-4 cm. altis; parte ascigerante pileata, convexa, albidula, avellanea vel brunneola, glabra, sulcato-rugosa, margine involuta, undulata, 3-10 mm. lata; stipite tereti vel compresso, subaequali vel apice leniter attenuato, raro flexuoso, glabro, non levi, concolori, translucido, 2-3 mm.

crasso; ascis cylindraceo-clavatis; apice leniter attenuatis rotundatisque, iodo non caerulescentibus, octosporis, 55–80 × 5–7 μ; sporidiis ellipsoideis, utrinque obtusis, continuis, hyalinis, levibus, monostichis, 5–6 × 2.5–3 μ; paraphysibus filiformibus, hyalinis, apice leniter incrassatis. (Pl. VII, figs. 13–17)

Hab. in lignis putridis in silvis. Hokkaido: Ishikari. Oct.

Nom. Jap.

The present species has small spores by which it is allied to *Cudoniella javanica* var. *microspora* PENZ. et SACC. But it is easily distinguishable from the latter by the larger fructification.

7. ***Sarcoleotia*** S. ITO et IMAI, gen. nov.

Leotia S. ITO et IMAI (non HILL nec FR.) Proceed. Jap. Assoc. Adv. Sc. VII, 147, 1932, pro min. parte.

Ascomata carnosa, stipitata, recta; pars ascigerens pileata, convexa; stipes gracilis brevisque; asci clavati, inoperculati, octospori; sporidia in cumulo rosea, hyalina, subcylindracea vel subclavato-cylindracea, longe continua, demum bicellulata; paraphyses praesentes.

Typus: *Sarcoleotia nigra* S. ITO et IMAI.

(Etym. *sarx* + *Leotia*)

The type species of the present new genus was classified as *Leotia* in our previous paper published in 1932. After careful comparison with many of the other species of *Leotia*, we are inclined to found a new genus, laying stress on the fleshy nature of the ascophores and the subcylindrical spores which are pink colored in mass, while the members of *Leotia* have gelatinous ascophores and hyaline oblong-fusiform spores.

8. ***Sarcoleotia nigra*** S. ITO et IMAI, sp. nov.

Leotia nigra S. ITO et IMAI, Proceed. Jap. Assoc. Adv. Sc. VII, 148, 1932, nom. nud.

Ascomatibus gregariis, pileatis, stipitatis, carnosis, atris, 8–20 mm. altis; parte ascigerante pileata, convexa, hemisphaerica, 6–12 mm. crassa, atra, margine valide incurvata, libera, rugosa vel nodulosa, atro-purpurea; hymenio levi vel rugoso, glabro; inferne avellaneo, furfuraceo; stipite aequali vel deorsum leniter attenuato, 6–16 mm. longo, 1–3.5 mm. crasso, umbrino vel fuligineo, basi subalbido, vix furfuraceo; ascis clavatis, apice contractis, poro iodo non caerulescente, 115–155 × 10 μ, octosporis; sporidiis bistichis, in cumulo roseis, hyalinis, subcylindraceis vel subclavato-cylindraceis, obtusis vel vix acutis, longe continuis, demum uniseptatis, 22.5–35 × 5 μ; paraphysibus filiformibus, ramosis, apice non crassis, brunneolis. (Pl. VII, figs. 23–27)

Hab. ad terram in silvis. Hokkaido: Kushiro. Sept.

Nom. Jap. *Kuro-zukin-take.*

The present fungus somewhat resembles *Leotia atra* FR. (ex WEINM.), but it is distinguished by a larger and glabrous pileus.

9. ***Cudonia constrictospora*** S. ITO et IMAI, sp. nov.

Ascomatibus gregariis vel caespitosis, 1.5–5 cm. altis, carnosis; parte ascigerante pileata, subglobosa vel hemiglobosa, usque ad 1.2 cm. lata, margine acuto, incurvato, undulato vel plano, plerumque ad stipitem adhaerente sed non cohaerente; hymenio convexo, leniter depresso, ruguloso, flavidulo, pallide isabellino vel subochroleuco; stipite 1.5–4.5 cm. alto, sursum attenuato, basi saepe admosum incrassato, apice 1.5–4 mm. crasso, basi ultra 10 mm. crasso, subconcolori; ascis clavatis, basi admosum longe attenuatis, apice contractis, iodo non caerulescentibus, 60–110 × 5–7.5 μ, octosporis; sporidiis leniter clavato-filiformibus sed medio constrictis, fasciculatis, hyalinis, 20–27.5 × 2 μ; paraphysibus filiformibus, tenuissimis, hyalinis, ramosis, apice non incrassatis, curvatis vel circinatis. (Pl. VII, figs. 28–31)

Hab. ad terram in silvis. Hokkaido: Ishikari. Honshu: Rikuzen. Sept.–Oct.

Nom. Jap. *Ô-hoteitake.*

The present species is closely allied to *Cudonia circinans* in macroscopic features. It is distinguished by the shorter spores constricted at the middle portion, as well as by the smaller and long tailed asci.

The microscopic features of this fungus somewhat resemble *Cudonia ochroleuca* (CKE. et HARKN.) DURAND, a Californian species, but the stipe of the latter quite differs from this fungus in being slender, flexuous and white in color.

10. ***Cudonia helvelloides*** S. ITO et IMAI, sp. nov.

Cudonia japonica S. ITO et IMAI (non YASUDA) Proceed. Jap. Assoc. Adv. Sc. VII, 148, 1932, pro parte.

Ascomatibus caespitosis vel gregariis, 2.5–7 cm. altis; parte ascigerante pileata, tenuissima, primo convexa, deinde helvelloidea, 1–2 cm. lata, hymenio primo pallide flavidulo, deinde pallide isabellino, leniter sulcato, centro leniter depresso, subtus ruguloso, primo albido breviterque tomentoso, deinde pallide avellaneo minusque tomentoso, margine acuto, libero; stipite tereti vel compresso, basi leniter incrassato, subconcolori, primo albo-flocculoso; ascis clavatis, apice leniter contractis, iodo non caerulescentibus, octosporis, 95–140 × 7.5–10 μ; sporidiis clavato-filiformibus, hyalinis, levibus, 48–60 × 1.5–2 μ; paraphysibus filiformibus, ramosis, apice curvatis vel circinatis. (Pl. VII, figs. 32–35)

Hab. ad terram in silvis. Hokkaido: Ishikari. Sept.–Oct.

Nom. Jap.

From the description and figures given by YASUDA, we considered the fungus in question to be identical to his *Cudonia japonica* but when the actual type specimen was examined, it became apparent that they are two distinct species, differing in respect to the more thin, delicate and lighter colored ascophores, as well as in respect to the slender and smaller asci and spores occurring in our specimen.

The present fungus seems to be related to *Cudonia orientalis* YASUDA, but the relation between them cannot be determined at the present time, because no specimen of the latter species is preserved in the YASUDA Herbarium and the description given by LLOYD is too brief and incomplete.

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Explanation of Plate

Figs. 1–2. *Ascocorynium irregulare*: 1. Asci, ×ca. 600. 2. Ascus and spores, ×ca. 600.

Figs. 3–5. *Geoglossum subpumilum*: 3. Asci, ×ca. 375. 4. Spores, ×ca. 650. 5. Apices of paraphyses, ×ca. 650.

Figs. 6–8. *Geoglossum proximum*: 6. Ascus, ×ca. 375. 7. Spores, ×ca. 650. 8. Apices of paraphyses, ×ca. 500.

Figs. 9–12. *Hemiglossum Itoanum*: 9. Ascophores, ×ca. 1. 10. Asci, ×ca. 800. 11. Spores, ×ca. 800. 12. Paraphysis, ×ca. 800.

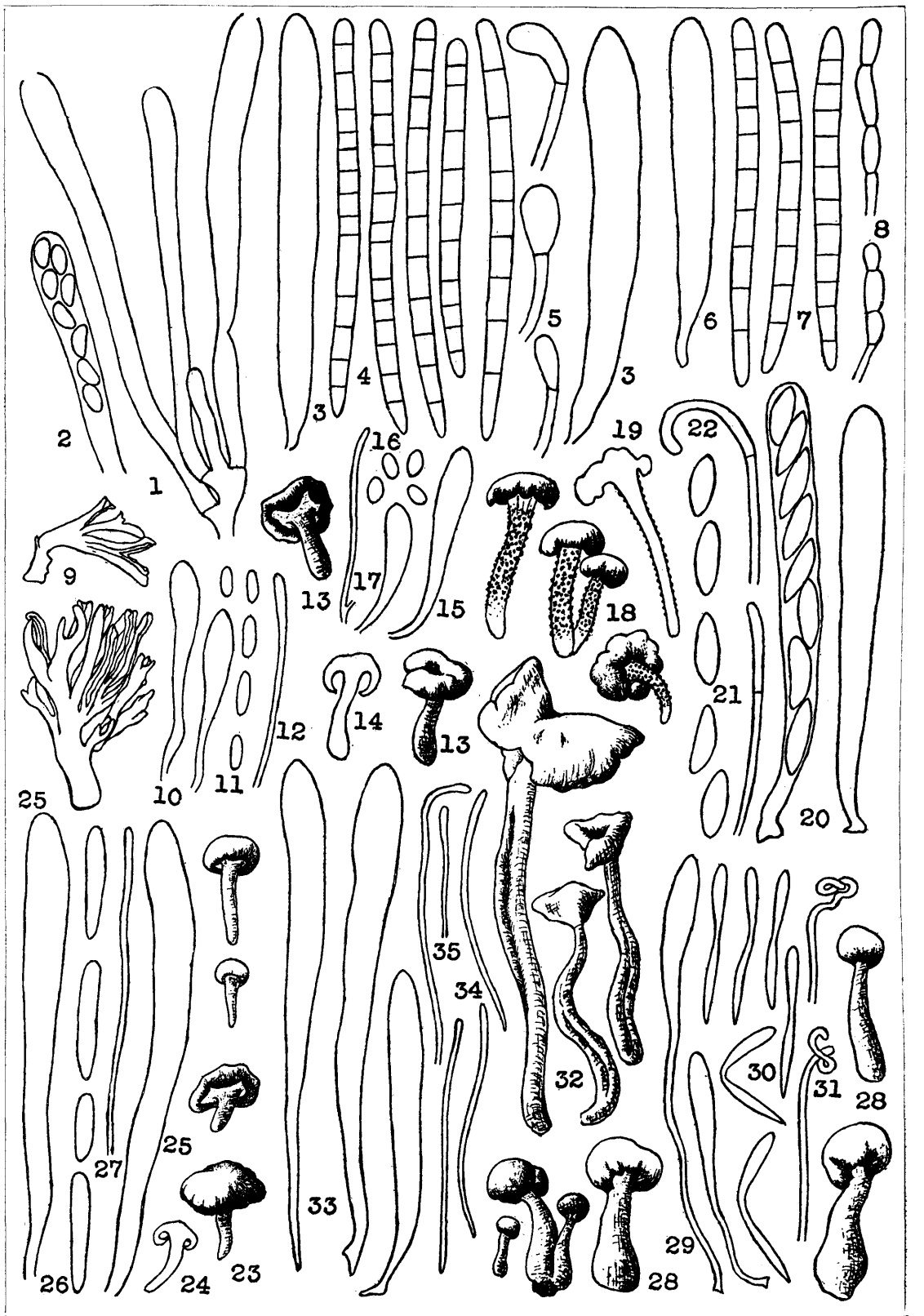
Figs. 13–17. *Cudoniella jezoensis*: 13. Ascophores, ×ca. 1. 14. Section of ascophore, ×ca. 1. 15. Asci, ×ca. 700. 16. Spores, ×ca. 700. 17. Paraphysis, ×ca. 700.

Figs. 18–22. *Cudoniella rutilans*: 18. Ascophores, ×ca. 1. 19. Section of ascophore, ×ca. 1. 20. Asci, ×ca. 600. 21. Spores, ×ca. 600. 22. Paraphyses, ×ca. 600.

Figs. 23–27. *Sarcoleotia nigra*: 23. Ascophores, ×ca. 1. 24. Section of ascophore, ×ca. 1. 25. Asci, ×ca. 700. 26. Spores, ×ca. 600. 27. Paraphysis, ×ca. 600.

Figs. 28–31. *Cudonia constrictospora*: 28. Ascophores, ×ca. 1. 29. Asci, ×ca. 650. 30. Spores, ×ca. 1000. 31. Paraphyses, ×ca. 1000.

Figs. 32–35. *Cudonia helvelloides*: 32. Ascophores, ×ca. 1. 33. Asci, ×ca. 650. 34. Spores, ×ca. 700. 35. Paraphpses, ×ca. 700.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