

## The Flora of Higher Fungi in Mt. Jiri Areas (V)

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### 智異山 一帶의 高等菌類 (V)

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**ABSTRACT:** Higher fungi were collected in the National Park areas of Mt. Jiri from March, 1989 to October, 1990 and identified; *Collybia acervata*, *Hygrocybe calyptraefis*, *Tubaria furfuracea*, *Amanita hemibapha* subsp. *javanica*, *A. alboflavescens*, *A. neoovoidea*, *Leccinum holopus* var. *holopus*, *L. griseum*, *Tylopilus nigropurpureus*, *Lactarius zonarius* var. *zonarius*, *L. necator* and *Russula alboareolate*. All were newly recorded in Korea.

**KEYWORDS:** *Collybia acervata*, *Hygrocybe calyptraeformis*, *Tubaria furfuracea*, *Amanita hemibapha* subsp. *javanica*, *A. alboflavescens*, *A. neoovoidea*, *Leccinum holopus* var. *holopus*, *L. griseum*, *Tylopilus nigropurpureus*, *Lactarius zonarius* var. *zonarius*, *L. necator* and *Russula alboareolata*.

#### *Collybia acervata* (Fr.) Kümmer 단풍애기버섯 (신칭)

Kümmer, *Champ. Fr.* 329 c. ic. 1874. *Agaricus acervatus* Fr. *Syst. Mycol.* 1: 122. 1821. *Collybia erthropus* var. *acervata* Qu'el., *Enchir., Fung.* 31. 1866. *Marasmius acervatus*, *Krit. Oefv. Finl. Basidso.* 103. 1889. *Gymnopus acervatus* Murr., *N. Am. Fl.* 9: 362. 1916.

Descriptions: Pileus 2.5-5.0 cm broad, slightly bell-shaped to convex, becoming flat with broad knob, smooth, moist to dry, reddish-brown, or dark brownish pink, fading to pinkish in center. Margin incurved at first, slightly wave, whitish-pink tint. Context thin, white, taste none, odor mild. Lamellae adnexed to nearly free, close, narrow, white, often pinkish-tinged later. Stipe 3-6 cm long, 3-5 mm thick, dry, smooth, brittle, reddish-brown or dark brownish pink, attached white appressed mycelium at base, hollow.

Spores 5.2-6.7×3.0-3.5 μm, smooth, elliptical, spore print white, basidia 18.0-24.0×4.5-6.0 μm, clavate to ventricose.

Habitat: Clustered on coniferous logs and terre-

strial in mixed deciduous forests.

균모(갓)는 소형이며 종모양이나 차차 중앙이 볼록하고 편평한 모양이며, 어릴때는 적갈색 혹은 분홍갈색이나, 성숙하면 중앙만 엷은 분홍갈색이고 가장자리는 바랜 흰색이다. 올린 주름살이고 자루는 부서지기 쉽고 적갈색이며, 포자는 타원형이고 고목에 무리지어 발생한다.

Distribution: Mt. Jiri.

Specimens studied: No. 9020 collected from Hansin-Kegok areas of Mt. Jiri on 20th of September, 1990.

Discussions: This species is easily recognized by reddish-brown of the pileus and whitish to pinkish-brown of lamellae and habitat on coniferous logs and decayed wood.

#### *Hygrocybe calyptraeformis* (Berk. & Br.) Fayod 새벽빛꽃버섯 (신칭)

Fayod, *Ann. Sci. Nat.* VII, 9:309. 1889.

Descriptions: Pileus 4-7 cm broad, conical to bell-shaped, with distinct nipple-shaped knob, becoming broadly convex at times, radially or split at age, rose-red to pinkish at first, fading to pinkish-

white, shiny, smooth, often margin upturning. Context pinkish, unchanged, thin, odor and taste not distinctive. Lamellae adnexed, close, broad, white to slightly pinkish. Stipe 7-12 cm long, 5-8 mm thick, equal, rose-red to pinkish, hollow.

Spores  $6.0-7.5 \times 4.5-5.2 \mu\text{m}$ , oblong to ellipsoid, smooth, spore print white, basidia  $30.0-37.5 \times 7.5-9.0 \mu\text{m}$ , clavate, pleurocystidia  $52.5-84.0 \times 15.0-24.0 \mu\text{m}$ , clavate, thin-walled.

Habitat: Solitary or rarely scattered on humus in mixed forest of oak and pine trees.

균모(갓)는 중형이며 꼬갈 모양에서 차츰 중앙은 뽀쪽이 나오는 편평한 모양으로 분홍적색이고, 성숙한 후에는 표면이 찢어져 흰 육질이 보인다. 올린주름살이고 자루는 균모와 같은 색이다. 포자는 타원형이고 혼효림과 소나무 숲의 부식토에 단생한다.

Distribution: Mt. Jiri.

Specimens studied: No. 9008 collected from Pia-Gol areas of Mt. Jiri on 8th of August, 1990.

Discussion: The distinctive field characters are the conspicuous bright rose-red to pinkish pileus and stipe. This handsome fungus with its distinct nipple-shaped knob and radially or split on pileus.

***Tubaria* (W.G. Smith) Gill. 겨나팔버섯속 (신칭)**

Gill., *Champ.* 537, 1876. em. *Agaricus* Subgen. *Tubaria* W.G. Smith, *Clavia* Agar. 21, 1870.

Descriptions: Ophalioid to collybioid, pileus mostly distinctly hygrophanous, non-viscid, pinkish-buff, thin-walled hyphal elements, some of the hyphae with guttulate contents in some species. Lamellae adnexed to decurrent, rather narrow to more often broad. Stipe central and as long or more often longer than the diameter of the pileus, hyphae of the context with clamp connection.

Spores with non-ornamented wall which indistinctly double or simple, the smooth spores easily collapse after reaching maturity, reniform to almond-shaped, or ellipsoid to almost subcylindric, rather small to medium sized, brownish, basidia normal but sometimes two spored, cystidia none.

균모(갓)는 애기버섯속 또는 솔밭버섯속 형태이며 흡수성이고 황토갈색이다. 주름살은 올린주름살에서 내린주름살 형태이다. 대는 중심생이고 균모보다 길다. 포자는 타원형, 아몬드모양이다. 흙, 낙엽, 이끼,

고목에 군생한다.

Habitat: Clustered on soil leaves, mosses and wood-decay.

Type species: *T. furfuracea*.

***Tubaria furfuracea* (Fr.) Gill. 겨나팔버섯 (신칭)**

Gill., *Champ.* Fr. 538. 1874.

Descriptions: Pileus 1.5-4.5 cm broad, convex to broadly convex, becoming flat, hygrophanous, pinkish-buff to pinkish dark brown or cinnamon-brown, becoming pale tan and hoary when dry, margin sometimes faintly radially lined when moist, sometimes covered with whitish silky squamulose patches. Context brown, becoming paler when dry, fragile, thin, taste none, odor slightly mushroomy. Lamellae adnate or slightly decurrent, close, moderately broad, yellowish-brown or cinnamon-brown, more or less intervenose. Stipe 2.5-7.0 cm long, 3-6 mm thick, equal or sometimes slightly enlarged downward, concolorous with the pileus, sometimes pale when dry, somewhat fibrillose, white tomentose at base, hollow.

Spores  $7.5-9.0 (-10.5) \times 5.2-6.0 \mu\text{m}$ , elliptical, smooth, thin-walled, spore print ochre-brown, basidia  $24.0-33.0 \times 7.5-9.0 (-10.5) \mu\text{m}$ , 4-spored, clavate, cheilocystidia  $45.0-57.0 \times 6.0-10.5 \mu\text{m}$ , cylindrical filamentous, hyaline, thin-walled, pileus cuticle  $30.0-46.5 (-60.0) \times 7.5-9.0 (-13.5) \mu\text{m}$ , cylindrical-filamentous, hyaline, thin-walled, all hyphae with clamp connections.

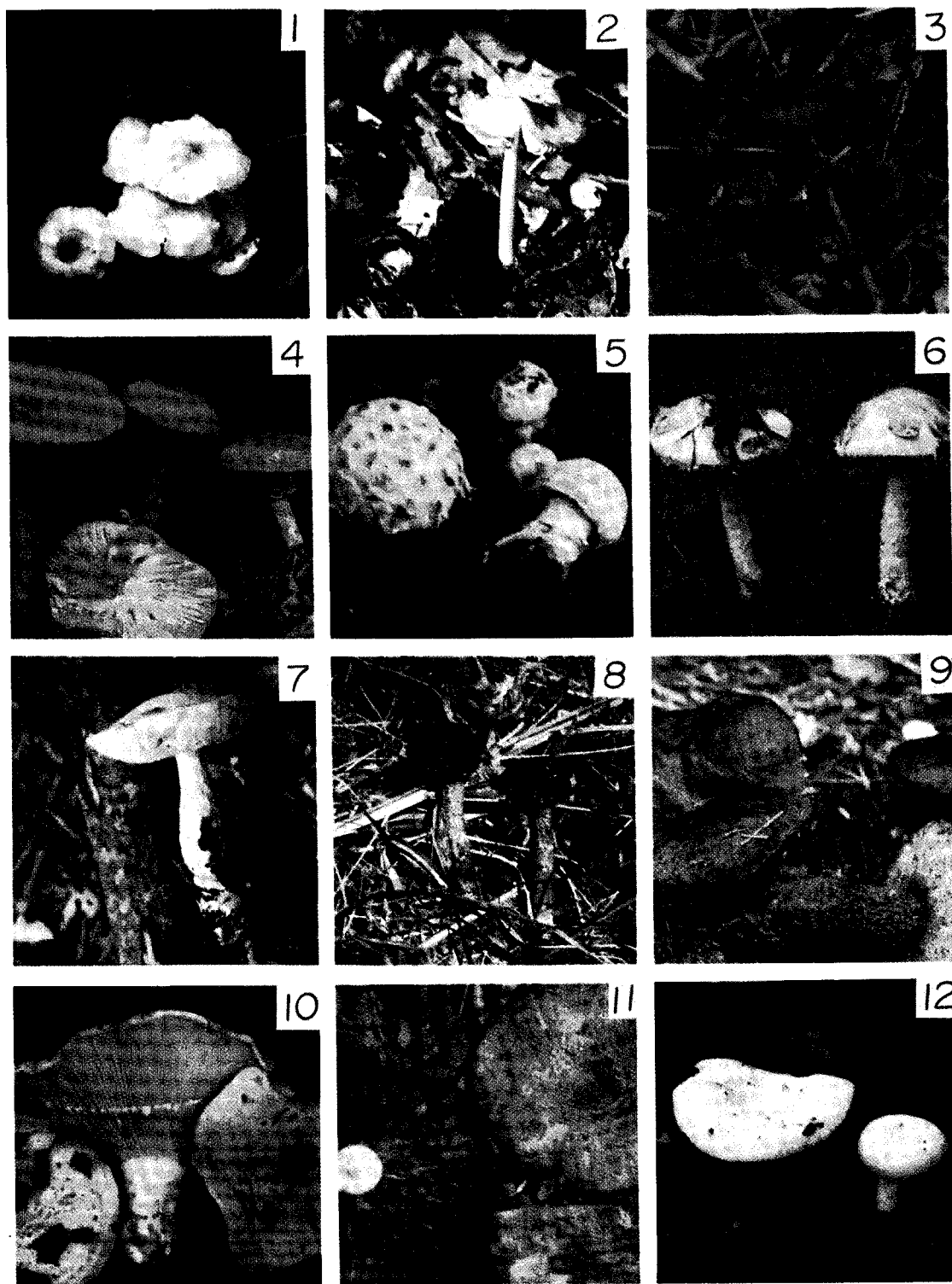
Habitat: Scattered to gregarious on the open woods.

균모(갓)는 소형이고 꼬갈형이나 차츰 편평하여진다. 암갈색에서 옅은 갈색으로 되며, 떨어진 주름살이고 자루는 균모와 같은 색이다. 포자는 타원형이고 균사에 격좌(고리)가있으며 숲속에 산생 또는 군생한다.)

Distribution: Changwon city and Mt. Jiri.

Specimens studied: No. 8925 collected from Changwon city areas on 25th of February, 1989 and No. 9012 collected from Dewon-Sa areas of Mt. Jiri on 12th of April, 1990.

Discussion: Easily recognized little brown mushrooms with scattered whitish fibers on pileus and mat of cottony white hairs about base. Very close to *Galerina pseudocamerina* Sing., but differs



The Explanation of Plate I

### The Explanation of Plate I

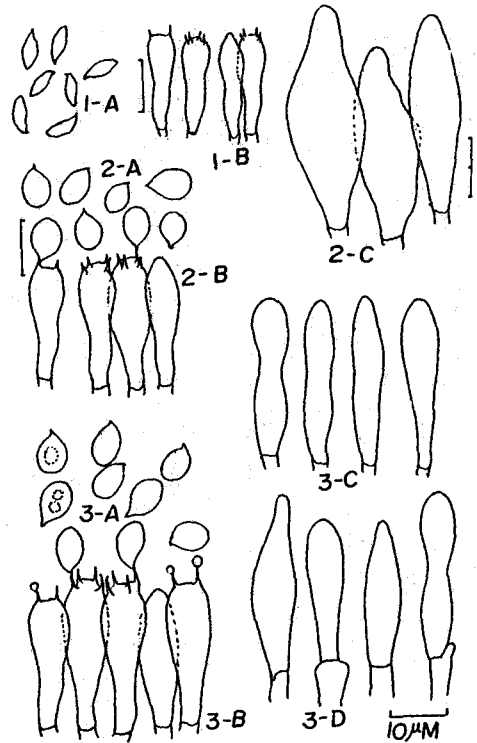
1. *Collybia acerbata* (Fr.) Kummer x  $\frac{1}{3}$
2. *Hygocybe calyptraeformis* (Berk. & Br.) Fayod x  $\frac{1}{3}$
3. *Tubaria furfuracea* (Fr.) Gill. x  $\frac{1}{3}$
4. *Amanita hemibapha* (Berk. & Br.) Sacc. subsp. *javanica* Corner & Bas x  $\frac{1}{3}$
5. *A. alboflavescens* Hongo x  $\frac{1}{3}$
6. *A. neoovoidea* Hongo x  $\frac{1}{3}$
7. *Leccinum holopus* (Watling) var. *holopus* Smith & Thiers x  $\frac{1}{3}$
8. *L. griseum* (Qu'el.) Sing. x  $\frac{1}{3}$
9. *Tylopilus nigropurpureus* (Corner) Hongo x  $\frac{1}{3}$
10. *Lactarius zonarius* (Fr.: Neuh.) var. *zonarius* Hesler & Smith x  $\frac{1}{3}$
11. *L. necator* (Fr.) Karst. x  $\frac{1}{3}$
12. *Russula alboareolata* Hongo x  $\frac{1}{3}$

in the bright brownish-ochre and basidia two-spored.

*Amanita hemibapha* (Berk. & Br.) Sacc. subsp. *javanica* Corner & Bas 노란띠자바광대버섯 (신칭) Corner & Bas, *Persoonia* 2(3): 294-297, 1961. *Amanita hemibapha* sensu Boedijn in *Sydowia* 5: 320, 1951.

Descriptions: Pileus 6-12 (-15) cm broad, cylindrical-campanulate at first, becoming plane to slightly convex and subumbonate, sulcate-striate from margin toward center, orange-yellow to ochre yellow, sometimes with reddish brown tinges, with yellow margin, glabrous, viscid at first. Lamellae free, crowded, obliquely truncate, pale yellow or yellowish white with deep yellow, edge micaceous-floccose. Stipe 8-15 cm long, 5-12 mm thick, enlarged at the base, extreme base slightly attenuate, firm, bright yellow to orange or concolorous with pileus, fibrillose to floccose-fibrillose zones below ring, bright orange or pale orange-yellow, fibrillose above ring, annulate, with sheathing volva, hollow. Flesh soft, pale yellow to yellowish white, deeper yellow near surface of pileus.

Spores 10.0-13.0 × 9.5-11.0 μm, broadly ellipsoid to ellipsoid, smooth, non-amyloid, spore print white, basidia 30-37 × 9-11 μm, clavate, volva with outer layer consisting of more or less longitudinal,



### The Explanation of Plate II

1. *Collybia acerbata* (Fr.) Kummer  
1-A, spores 1-B, basidia
2. *Hygocybe calyptraeformis* (Berk. & Br.) Fayod  
2-A, spores. 2-B, basidia. 2-C, pleurocystidia.
3. *Tubaria furfuracea* (Fr.) Gill.  
3-A, spores. 3-B, basidia. 3-C, cheilocystidia.  
3-D, pileus cuticle.

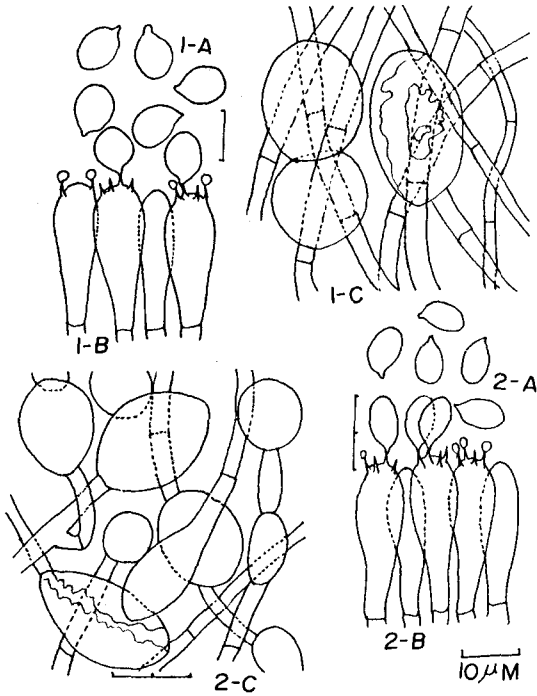
hyphae 2-6 μm wide, and inner layer composed of up to 80 μm wide inflated cells.

Habitat: Solitary or gregarious, terrestrial in forest.

균모(갓)는 중형 또는 대형이며 종모양이나 차츰 편평하여진다. 전체가 노랑색이고 가장자리에 홈이 있다. 떨어진주름살이고 자루에 턱받이가 있고 노랑색 띠모양의 비늘이 있으며 대주머니는 흰색이고 둥글다. 포자는 타원형이며 비아미로이드이고 숲속에 단생 또는 군생한다.

Distribution: Mt. Jiri and Fauchong-Sa.

Specimens studied: No. 8927 collected from Gure-Kegok areas of Mt. Jiri on 27th of July, 1989 and No 9035 were collected from Fauchong-Sa

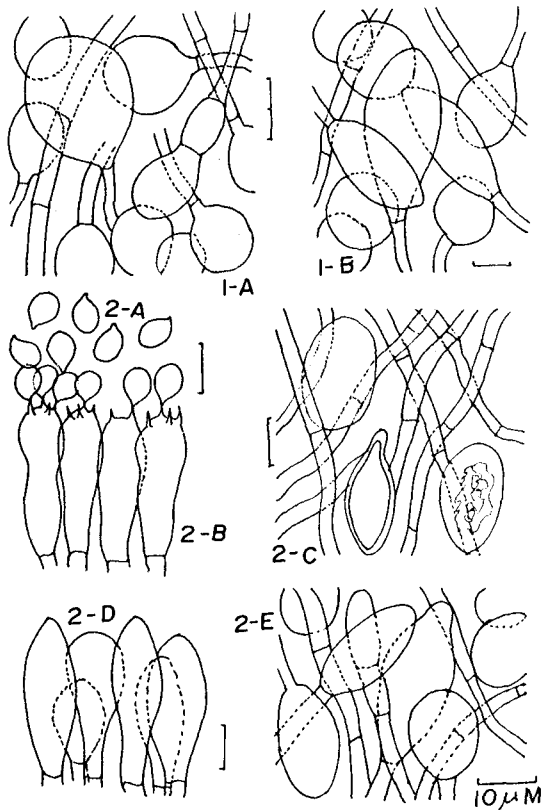


**The Explanation of Plate III**

1. *Amanita hemibapha* (Berk. & Br.) Sacc. subsp. *javanica* Corner & Bas  
1-A, spores. 1-B, basidia. 1-C, remnants of volva on base of stipe
2. *A. alboflavescens* Hongo  
2-A, spores. 2-B, basidia. 2-C, remnants of volva on pileus

areas on 12th of August, 1990.

Discussions: *A. hemibapha* varies much in coloration, and Corner and Bas (1970) divided it into three subspecies; *ssp. hemibapha*, *ssp. javanica*, *ssp. similis*. *Subsp. hemibapha*: Pileus crimson red, with yellow margin. Stipe yellow with reddish scales. Ring yellow. *Subsp. javanica*: pileus orange-yellow to ochre yellow, sometimes with reddish brown tinge, with yellow margin. Stipe yellow with orange scales. Ring orange-buff. *Subsp. similis*: pileus fuliginous-bistre to brownish olivaceous, with pinkish, yellowish or melleous margin. Stipe bright yellow to pale dingy yellow, with pinkish orange to concolorous scales or fibrils. Ring pinkish orange to greyish.



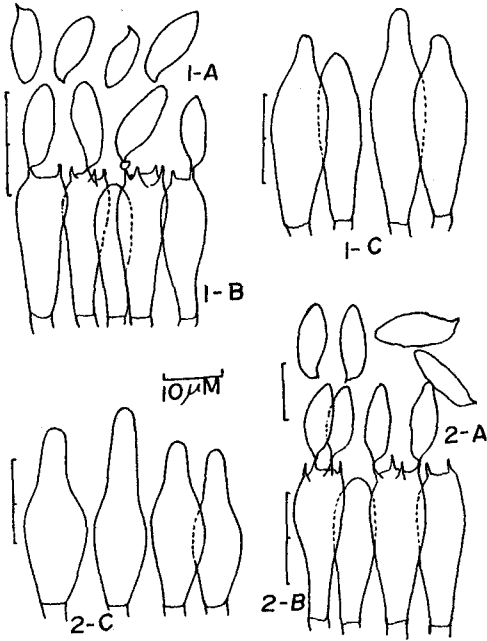
**The Explanation of Plate IV**

1. *Amanita alboflavescens* Hongo  
1-A, remnants of ring. 1-B, remnants of volva on base of stipe
2. *A. neoovoidea* Hongo  
2-A, spores. 2-B, basidia. 2-C, remnants of annulus and appendiculate patch  
2-D, terminal cell. 2-E, remnants of volva on pileus

***Amanita alboflavescens* Hongo 백황색광대버섯 (신칭)**

Hongo, *Mem. Shiga Univ.* 20: 50-51, 1970.

Descriptions: Pileus 5-12 cm broad, plano-convex, white, pale yellow-cream in later, dry, deeply rimose-areolate, volva remnants as thin crusts or patches on top of each areola, relatively firmly attached, irregularly shaped, dull yellowish-ochre, margin nonstriate, appendiculate. Lamellae free, crowded, fairly broad, white, cream to yellow. Stipe 6-12 cm long, 6-15 mm thick, tapering slight-



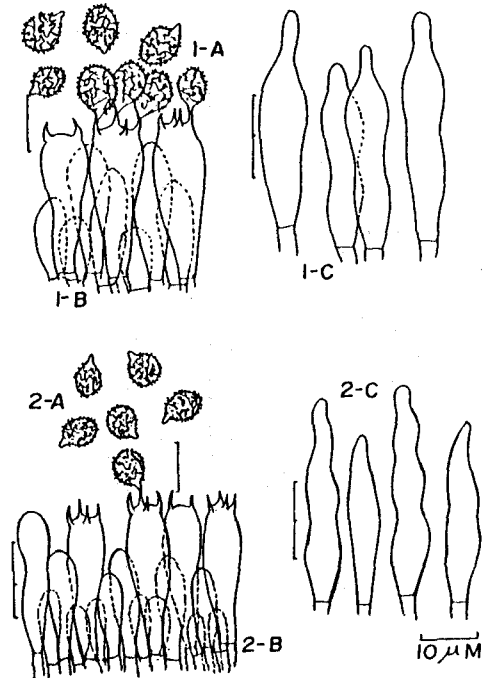
**The Explanation of Plate V**

1. *Leccinum holopus* (Watling) var. *holopus* Smith & Thiers  
 1-A, spores. 1-B, basidia. 1-C, pleurocystidia
2. *L. griseum* (Qu'el.) Sing.  
 2-A, spores. 2-B, basidia. 2-C, cheilocystidia

tly toward apex, solid, abundant white fibrils, surface staining a yellow upon handling, basal bulb subglobose to ovoid (10-30 cm diameter), white, annulus superior, white, thin, very delicate, volva remnants attached as a few irregular patches, randomly distributed on upper part of bulb. Context white, turning yellow when injured.

Spores 7.5-9.0 (-10.5) × 4.5-5.2 μm, elliptic to elongate, thin-walled, hyaline, amyloid, spore print white, basidia 33-42 × 9.0-10.5 μm, clavate. Remnants of volva on pileus consisting of globose, ellipsoid, clavate or citriform, terminal globose cells 30-51 × 22.5-30.0 μm. Remnants of ring consisting of globose or ellipsoid, 27.0-52.5 × 22.5-37.5 (-48) μm, cells of volva remnants on base inflated, more or less ellipsoid, 25.5-67.5 (-82.5) × 21.0-35.0 (-42.0) μm.

Habitat: Terrestrial in mixed coniferous and deciduous forests. Edibility unknown.



**The Explanation of Plate VI**

1. *Lactarius zonarius* (Fr.: Neuh) var. *zonarius* Hesler & Smith  
 1-A, spores. 1-B, basidia. 1-C, cystidia
2. *L. necator* (Fr.) Karst.  
 2-A, spores. 2-B, basidia. 2-C, pleurocystidia

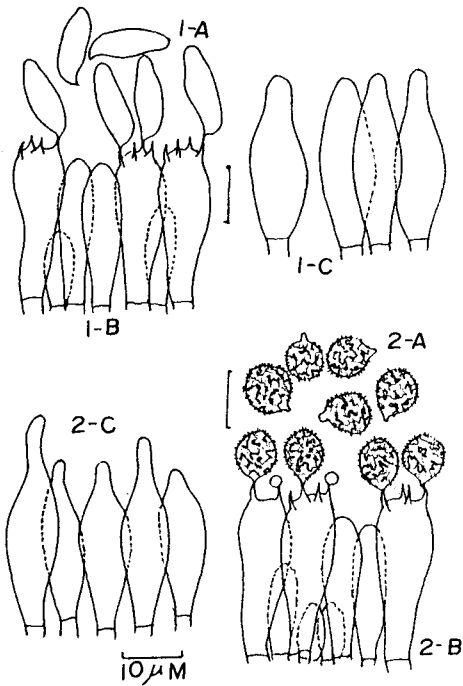
균모(갓)는 중형 또는 대형이며 등근형에서 차츰 편평하여 진다. 갓은 황토색이고, 표면의 막질은 크게 갈라져 있으며, 육질은 흰색에서 황색으로 된다. 떨어진주름살이고 대주머니가 없고 흰색에서 황색으로 된다. 포자는 타원형이고 혼효립의 흠에 발생한다.

Distribution: Mt. Jiri and Mt. Muhack.

Specimens studied: No.9009 collected from Pia-Gol areas of Mt. Jiri on 8th of August, 1990 and No. 9021 collected from Changwon city areas on 21th of August, 1990.

Discussions: This species is turned rapidly yellowish discoloration of all parts of the carpophore. The volval patches on the pileus consisted of ellipsoid, piriform or broadly clavate cells.

*Amanita neoovoidea* Hongo 신알광대버섯 (신칭)



**The Explanation of Plate VII**

1. *Tylopilus nigropurpureus* (Corner) Hongo  
1-A, spores. 1-B, basidia. 1-C, cheilocystidia
2. *Russula alboareolata* Hongo  
2-A, spoes. 2-B, basidia. 2-C, cheilocystidia

Hongo, *Mem. Shiga Univ.* 25:57-58, 1975.

Descriptions: Pileus 8-14 cm broad, convex to plano-convex then plane, without umbo, not striate at margin, appendiculate, shiny white, subviscid when moist, densely cottony hairy or powdery, glabrous in later, volva remnants attached usually as one large, yellowish orange or bright yellow, membranous patches on disc, breaking into two or five patches, which soon fall. Context white, taste mild, odor agreeable. Lamellae free, whitish to pale cream, close, fairly broad. Stipe 10-25 (-30) cm long(excluding rooting part), 10-20 mm thick, slightly enlarged to the base, firm, white, densely cottony powdery, bulbous base tapering into a stout, 30-45 mm long, 15-28 mm thick, solid, firm, dull orangish-brown or concolorous in volva remnants on pileus, annulus superior, membranous, pendant, thin, white.

Spores 7.5-9.0×5.2-6.7 μm, broadly ellipsoid, so-

metimes subglobose, smooth, amyloid, spore print white, basidia 34.5-40.0×9.0-12.0 μm, clavate, trama of gills seemed to be composed of hardly inflated, 3.0-7.5 μm wide. Remnants of volva on pileus made up of a mixture of various cells shaped, globose to ellipsoid, often in short chains and upto 30-60×18-27 μm. Remnants of volva on base of stipe filamentous hyphae, very sparse. Annulus and appendiculate patches filamentous hyphae, inflated cells, very sparse, mostly broadly elliptic, pyriform to elliptic, upto 18-35 μm.

Habitat: Terrestrial in mixed coniferous and deciduous forests. Edibility unknown.

균모(갓)는 대형이며 꼬깔모양이고 담황색의 큰 막질이 덮고 있다가 탈락된다. 균모는 백색이며 분말 또는 가는 털이 밀생하며 끈적기를 가진다. 떨어진 주름살이고 자루의 길이는 길고 흰색의 턱받이가 있으며, 밑에는 황색의 막질이 붙어 있다. 포자는 광타원형이고 아미로이드이고 혼효림의 흠에 발생한다.

Distribution: Mt. Jiri and Mt. Muhack.

Specimens studied: No.9018 collected from De-won-Sa areas of Mt. Jiri on 18th of November, 1990 and No. 9027 collected from Changwon city areas of Mt. Muhack on 27th of August, 1990.

Discussion: This species is a remarkable white fungus and characterized by the pale ochraceous, large volval fragments on the pileus and the evanescent, floccose membranous ring. *A. ovoidea* (Fr.) Qu'el. is a similar white, but differs in its sac-like volva and larger spores.

***Leccinum holopus* (Watling) var. *holopus* Smith & Thiers 으뜸겉겉이 그물버섯아재비 (신칭)**

Smith & Thiers, *Trans. Brit. Mycol. Soc.* 43:692, 1960. Smith and Thiers, *The Boletes of Michigan*, 182, 1971.

Descriptions: Pileus 5-8 cm broad, convex, broadly convex or nearly flat, margin often exceeding, surface soft, somewhat sticky, typically glabrous and unpolished but slightly areolate at times over the disc, dull white or slightly smoke grayish, disc often tinged buff to vinaceous-buff. Context thick, white, odor and taste not distinctive. Tubes 0.8-1.2 cm deep, adnate but soon deeply depressed around the stipe, pores whitish becoming brow-

nish, staining yellow when bruised.

Stipe 6-12 cm long, 0.6-1.3 cm thick, often enlarged at the base or spindle shaped, surface pallid, ornamented with squamules becoming brownish, apex merely scurfy, the base of stipe greenish to bluish when mature.

Spores 13.5-19.5×4.5-6.0 μm, smooth, subfusoid, in profile narrowly inequilateral, pseudoamyloid, spore print cinnamon-brown, basidia 27.0-34.5×9.0-12.0 μm, clavate, pleurocystidia 30-39×9-12 μm, fusoid-ventricose.

Habitat: Solitary to scattered in mixed coniferous and deciduous forests. Edibility unknown.

균모(갓)는 중형이고 꼬깔형에서 차츰 편평하게 된다. 흰색이나 점차 바랜 흰색 또는 회흑색으로 되고 육질은 흰색이다. 관공은 각이지고 작으며 흰색에서 갈색으로 되며, 상처시 노랑색으로 변한다. 자루는 흰색이고, 검은점 또는 사마귀가 나 있어 회흑색으로 보인다. 육질은 흰색이나 점차 푸른색을 나타낸다. 포자는 방추형이며 숲속의 흙에 단생 또는 산생한다.

Distribution: Mt. Jiri.

Specimens studied: No. 9015 collected from Hansin-Kegok areas of Mt. Jiri on 15th August, 1990.

Discussions: This fungus is characterized by its whitish pileus and the base of the stipe changes greenish to bluish when mature. This species is very similar to *L. subradicatum* Hongo. Difference from *L. subradicatum* Hongo is a staining of the flesh to vinaceous gray and the somewhat rooted stipe.

***Leccinum griseum* (Qu'el.) Sing. 회색겉겉이그물 버섯 (신칭)**

Sing., Rohrling II, In. *Pilze Mitteleuropas* 89, 1967. *Gyroporus griseus* Qu'el. *Assoc. Fr. Avanc. Sci* (1901): 496, 1902. Smith & Thiers, *The Boletes of Michigan*, 214, 1971.

Descriptions: Pileus 3-7 cm broad, obtuse convex to convex, becoming broadly convex or with a low broad umbo, at times nearly plane, glabrous at first and often conspicuously rugulose-pitted, often areolate-rimose, areolate appearing subtomentose, dingy yellowish-brown or dingy blackish brown, often tawny-olive brown or brownish black in age. Context thick, soft, pallid but gradually

avellaneous when cut, odor and taste not distinctive. Tubes 6-13 mm long, free or nearly so at maturity, pores pallid-avellaneous but changing greenish when bruised. Stipe 6-10 cm long, 5-12 mm thick, equal, solid, pallid to avellaneous or dingy brownish-gray, densely furfuraceous to scabrous, the ornamentation wood-brown to smoky brownish, often darker, base of stipe white appressed mycelium, frequently stained greenish, often slowly staining grayish-brown.

Spores 12.0-18.0 (-19.5)×4.5-6.0 μm, smooth, fusiform or subfusiform, in profile inequilateral, nonamyloid, spore print cinnamon-brown, basidia 27-36×9-12 μm, clavate, pleurocystidia 30-45×9-15 μm, fusoid or fusoidventricose, with obtuse apex, thin-walled.

Habitat: Solitary to scattered in thin grassy under oak woods or hardwoods. Edibility unknown.

균모(갓)는 소형 또는 중형이며 꼬깔형에서 차츰 편평하여 지며, 표면은 굴곡이 있으며 흑회갈색 또는 회갈색을 나타낸다. 관공은 각이 지며 얇은 회색이고, 상처를 받으면 푸른색으로 변한다. 자루는 회흑색으로 검은 반점이 있다. 포자는 방추형이고 숲속에 단생 또는 산생한다.

Distribution: Mt. Jiri.

Specimens studied: No. 9016 collected from Hansin-Kegok areas of Mt. Jiri on 16th of August, 1990.

Discussions: This fungus is characterized by its dark brown pileus and often conspicuously rugulose-pitted. *L. intusrubens* (Corner) Hongo is clearly distinguished by the intense reddening of the flesh and small spores 9.5-15 (-16.5)×4.5-5.5 μm.

***Tylopilus nigropurpureus* (Corner) Hongo 흑자색 쓴맛그물버섯 (신칭)**

Hongo, *Mem Shiga Univ.* 23:40-41, 1973. *Boletus nigropurpureus* Corner, *Boletus in Malaysia* 14(1): 178, 1872.

Descriptions: Pileus 5-12 cm broad, convex to nearly plane or slightly depressed, subtomentose or nearly glabrous, rugulose, margin slightly extended beyond the tubes, surface dry, blackish brown, deep grayish black, dark pinkish black, turning black when bruised. Context thick, firm, pallid to grayish white, turning grayish red or brow-



nish orange when exposure, and finally blackish, taste mild, odor not distinctive. Tubes 6-10 mm deep, adnate, pale grayish then dingy gray, turning rapidly reddish when bruised, finally blackish, pore small, subangular, discoloring like the tubes. Stipe 3.5-6.0 cm long, 1.2-2.0 cm thick, tapering down-ward, or subequal, slightly pruinose or finely furfuraceous, usually reticulate in the upper half, deep blackish gray or concolorous in pileus, solid.

Spores 9.0-13.5×4.0-5.2 μm, subcylindric to somewhat fusoid, smooth, spore print pale purpurish brown, basidia 25.0-32.0×7.5-9.0 (-10.2) μm, clavate, cheilocystidia 23.0-50.0×6.0-12.0 μm, fusoid-ventricose or somewhat flask-shaped, thin-walled, clamp connection absent.

Habitat: Solitary or gregarious on decaying conifer wood or broad-leaved woods.

균모(갓)는 중형이고 꼬깔모양으로 중앙이 옅고 하며 흑색 또는 흑자색을 나타내고, 육질은 회색에서 분홍 또는 적분 홍색으로 되었다가 흑색으로 된다. 관공은 흰색에서 회흑색으로 되며 자루는 짧고 큰 그물눈이 있으며 균모와 같은 색이다. 포자는 원주 모양이고 숲속에 단생 또는 군생한다.

Distribution: Mt. Jiri.

Specimens studied: No. 8916 collected from De-won-Sa areas of Mt. Jiri on 16th of August, 1989.

Discussions: This species is easily recognized by the blackish pileus, stipe the flesh which becomes first reddish then blackish on exposure to the air. *Tylophilus nigerimus* (Heim) Hongo, *T. alboater* Sing, & *T. griseocarneus* Wolfe and Halling were reported similarities to *T. nigropurpureus*. The colors of the hymenium in *T. nigerimus* are subolivaceous to pallid violaceous. *T. griseocarneus* is pallid gray in context, and violaceous gray-black in pileus.

***Lactarius zonarius* (Fr.: Neuh.) var. *zonarius* Hesler & Smith 당귀젓버섯아재비 (신칭)**

Hesler & Smith, *Epicr. Syst. Mycol.* 336, 1838. *Agaricus zonarius* St. Fl. Agen. Descr. Method, 563, 1821. *Lactarius evosmus* Kuhner & Romagnesi, *Bull. Soc. Mycol. France*, 69:361, 1954.

Descriptions: Pileus 4-7 cm broad, convex, depressed at the center, in age shallowly infundibuli

form, somewhat slime when wet, yellowish-buff or cream color to straw-yellow at first, dingy orange-tawny or ochre-buff to slightly dull apricot in later, zonations not always present, harding discoloring when bruised, margin arched and finally uplifted, very minutely downy at first and soon becoming naked. Context hard and firm, white, context of the stipe more or less ochraceous to ochraceous-tawny in age. Latex white, not changing, immediately on tip of tongue and in throat burning-acrid. Lamellae decurrent, narrow, crowded, frequently forked near the stipe, at first milk-white then cream-yellow, finally bright ochre-yellow, tawny-brown to olive grayish-brown spotted when bruised. Stipe 2-4 cm long, 0.8-2.0 cm thick, equal, unpolished, with small spots, ochre-yellow or concolorous with pileus, more tawny when bruised, solid, becoming hollow.

Spores 7.5-9.5×6.0-7.5 μm broadly ellipsoid, with fine lines, sparsely netted, scarcely with any isolated warts, spore print bright ochre, amyloid, basidia 38.0-52.0×7.5-11.2 μm, cystidia 35.0-52.0×5.2-6.0 (-7.5) μm, narrowly fusoid.

Habitat: Scattered in mixed coniferous and deciduous forests.

균모(갓)는 중형으로 깔대기 모양이고, 가장자리가 안으로 말리며, 황노랑에 짙은 황색의 무늬가 동심원처럼 된 것도 있다. 주름살은 흰색에서 황색으로 되며 내린주름살이다. 유액은 흰색이고 매운 맛이 있다. 자루는 짧고 황색반점이 있으며 성숙하면 전체가 황색으로 된다. 포자는 팽타원형이고 아미로이드이며 혼효립에 산생한다.

Distribution: Mt. Jiri and Mt. Kaya.

Specimens studied: No. 8928 collected from De-won-Sa areas of Mt. Jiri on 27th of November, 1989 and No. 9010 collected from Haein-Sa areas of Mt. Kaya on 8th of November, 1990.

Discussions: The characteristic ochre-buff zonate combined, and with the white latex are typical of this fungus. *L. chrysorheus* Fr. looks very similar, but has white latex which turns yellow on exposure to air.

***Lactarius necator* (Fr.) Karst. 독젓버섯 (신칭)**

Karst, *Bidrag Kannendom Finlands, Natur Folk* 32: 179, 1877. *Agaricus necator* Fr. *Syst. Mycol.* 1:

64, 1821. *Agaricus turpis* Weinm. *Syll. Pl. Nov.* 2: 85, 1828. *Lactarius turpis* (Weinm.) Fr. *Epicr. Syst. Mycol.* 335, 1838.

Descriptions: Pileus 5-8 cm broad, broadly convex to convex-depressed, umbilicate or centrally depressed, hairy from center to margin, olive-umber, darkening in age and blackish olive as dry, zonate to azonate, sticky to viscid. Context firm, dull white to pallid. Latex dull white, rather promptly acrid, at times slowly changing to grayish but usually unchanging. Lamellae adnate to slightly decurrent, close, narrow, dull whitish to yellowish, bruising grayish or black, darker overall in age. Stipe 3-5 cm long, 7-12 mm thick, equal, surface glabrous and viscid, pale olive to grayish olive or olive brown, solid, sometimes hollow.

Spores 7.0-9.0 X 5.5-7.0  $\mu\text{m}$ , ellipsoid, with reticulate, with the bands of numerous free-ending branches, with some isolated ridges, spore print cream color to buff, amyloid, basidia 30-40 X 7.5-9.0  $\mu\text{m}$ , pleurocystidia 40-60 X 6.5-9.0  $\mu\text{m}$ , fusoid to fusoid-ventricose, acute, cheilocystidia similar to pleurocystidia.

Habitat: Scattered in mixed coniferous and pine woods.

균모(갓)는 중형 또는 대형이며 중앙이 오목한 꼬깔형이다. 표면은 담홍갈색이며 비늘이 있고 중심부의 무늬가 있는 것도 있다. 바른주름살이고 흰색에서 회색으로 되며, 상처가 난 곳은 회흑색으로 된다. 유액은 매운 맛이 난다. 자루는 균모와 같은 색이며 포자는 타원형으로 그물눈을 가지고 있으며 (혼효립과) 침엽수림에 산생한다.

Distribution: Mt. Jiri.

Specimens studied: No. 8911 collected from Hamsin-Kegok areas of Mt. Jiri on 11th of August, 1989.

Discussions: This species is characterized by the olive-umber color of the pileus and spotted in stipe. Also called *L. turpis* (Weinm.) Fr., the spotted olive-brown stipe, olive-brown pileus, and unchanging white latex are the noteworthy characteristics.

***Russula alboareolata* Hongo 흰둘레무당버섯 (신칭)**

Hongo, *Mem. Shiga Univ.* 29: 102, 1979.

Descriptions: Pileus 4-6 cm broad, broadly convex, becoming flat with sunken center or infundibuliform, slightly viscid when wet, minutely pruinose, white, sometimes dull yellowish or pearly ivory in age, yellowish in the center, margin distinctively furrowed, sometimes slightly cracked. Context white, thin, fragile, taste mild, odor none. Lamellae free or slightly adnate, white, close, moderately broad, often forked. Stipe 2.5-5 cm long, 6-10 mm thick, equal, sometimes enlarging or tapering toward base, longitudinally wrinkled, white, stuffed, partly becoming hollow.

Spores 7.5-9.0 X 6.0-6.7  $\mu\text{m}$ , broadly oval or subglobose, isolated or minutely warted with fine connecting lines, spore print whitish to pale cream, basidia 32.0-48.0 X 9.0-12.0  $\mu\text{m}$ , clavate, cheilocystidia 37.5-64.5 X 7.5-12.0  $\mu\text{m}$ , fusoid-ventricose, the apex acute, hyaline, thin-walled, pleurocystidia similar to cheilocystidia.

Habitat: Clustered on the ground in mixed woods and coniferous.

균모(갓)는 소형 또는 중형이며 꼬깔형에서 중앙이 오목한 편평형으로 된다. 균모는 흰색이고 황색의 반점을 가진 것도 있으며, 가장자리는 줄무늬가 있다. 떨어진주름살이고 자루는 짧고 흰색이다. 포자는 광난형이고 사마귀점을 가지고 있으며 혼효립에 발생한다.

Distribution: Mt. Jiri and Mt. Muhack.

Specimens studied: No. 8922 collected from Changwon-city areas of Mt. Muhack on 22th of August, 1989 and No. 9027 collected from Chungsan-Ri areas of Mt. Jiri on 27th November, 1990.

Discussions: This species is characterized by the white color and sulcate-striate margin. It appears to be closely related to the *R. castanopsidis* Hongo, which has on ivory-colored pileus and a somewhat hard flesh. *R. castanopsidis* Hongo differs from the cuticle of the pileus becoming broken up into areolate squamules.

## 摘 要

1989년 3월부터 1990년 10월까지 지리산 국립공원 일대에서 한국산 고등균류를 약 70여종 채집하여 동정한 결과 미기록 1속과 미기록 12종을 확인 하였으며 이들에 대하여 한국 보통명을 신칭하였다.

*Tubaria* (겨나팔버섯속), *Collybia acervata* (단풍애기버섯), *Hygrocybe calyptraeformis* (새벽벚꽃버섯), *Tubaria furfuracea* (겨나팔버섯), *Amanita hemibapha* subsp. *javanica* (노란띠자바버섯), *A. alboflabescens* (백황색광대버섯), *A. neoovoidea* (신알광대버섯), *Leccinum holopus* var. *holopus* (으뜸겉겉이그물버섯아재비), *L. griseum* (회색겉겉이그물버섯), *Tylopilus nigropurpureus* (흑자색쓴맛그물버섯), *Lactarius zonarius* var. *zonarius* (당귀젖버섯아재비), *L. necator* (독젖버섯), *Russula alboareolata* (흰둘레무당버섯).

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