

THE GENUS LASIOBELONIUM

A. Raitviir

In a preliminary treatment of the family Hyaloscyphaceae (Raitviir, 1970) the genus Belonidium Mont. et Dar. emend. Dennis (Dennis, 1962) (not Belonidium sensu De Not. et al.) was divided into two subgenera Belonidium and Phaeobelonidium. The latter was introduced for the species related to Peziza borealis Ell. et Holw. and P. corticilis Fr. This group of species is characterized by the pigmented hair walls in contrast to the species of subgenus Belonidium having pigment, if present, dissolved in the content of hair cells. The apothecial anatomy is also different in the species of these subgenera. To the ectal excipulum of isodiametric angular to rounded cells follows medullary excipulum consisting: of outer layer of loosely interwoven hyphae and a thin inner one of parallel hyphae (Fig.1) in the species of subgenus Belonidium, or consisting of a single layer of compactly packed parallel hyphae (Fig. 2) in the species of subgenus Phaeobelonidium. In the basis of these differences it seems to be justified to rise Phaeobelonidium into genus rank.

There is, however, an earlier name available

for this taxon in the genus rank. Korf (1978) has shown that Lasiobelonium Ell. et Ev. is an earlier synonym of Belonidium Mont. et Dur. subgenus Phaeobelonidium Raitv. I agree with his argumentation with the exception of two significant points. (1) Lasiobelonium subflavidum is not identical with Peziza boreale Ell. et Holw. as it will be discussed under this species and (2) the genus Dasyscyphus should be restricted to the limits proposed in my earlier study (Raitv. 1970). I think that any sound taxonomy of the Hyaloscyphaceae should accept the removing Albotricha, Dasyscyphella, Belonidium, Lasiobelonium, Trichopezizella and, after all, Dasyscyphus cerinus from the genus. Whether the name for the largest genus of the family will remain Dasyscyphus or be Lachnum is presently unclear and depends on the solution of Holm-Korf controversy (look for details the discussion of Belonidium cerinum under "Excluded species").

Lasiobelonium resembles, in fact, the genus Trichopezizella in its manner of hair pigmentation, but the thick-walled hairs of Trichopezizella are strictly different. The species of Trichopezizella also have no compact layer of parallel hyphae in medullary excipulum.

Lasiobelonium Ell. et Ev., Bull. Torrey Bot. Club. 24: 136 (1897).

Belonidium subgen. Phaeobelonidium Raitv., Scripta Mycol. 1: 48 (1970). non Lasiobelo-

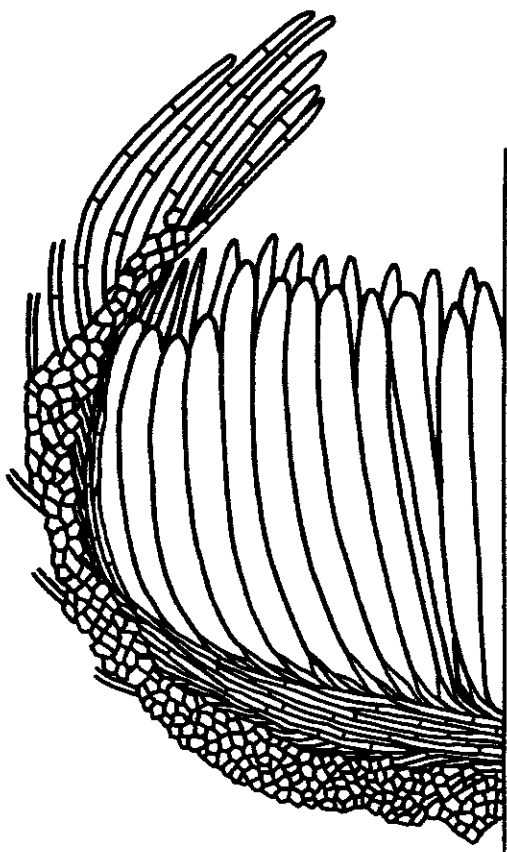


Fig. 1. Apothecial anatomy of Lasiobolus
corticatus. x900.

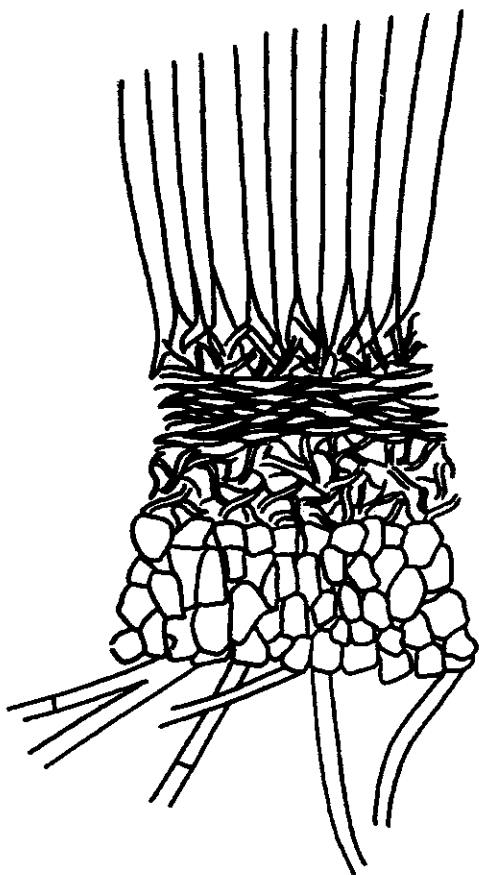


Fig. 2. Apothecial anatomy of Belonidium
leucophaeum. x900.

nium (Sacc.) Sacc. et Sydow Syll. Fung. 14:
: 789 (1899).

Erioscypha Kirscht., Ann. Mycol. 36: (1938).
vide Korf, Mycotaxon 7: 403 (1978).

Apothecia cup-shaped, with a short stipe, subsessile or sessile, generally 0,5 - 1,5 mm in diam., ectally light brown or grayish-brown, rarely white, densely covered by short hairs. Hairs cylindrical, slightly tapering with rounded tips, undulating, basally and in medium part with brownish walls, hyaline at tips, rarely totally hyaline, often incrustated by loosely attached colourless granules of amorphous matter, multiseptate with firm walls and septa. Ectal excipulum composed of isodiametric angular to globose cells, often with brownish firm walls. Medullary excipulum composed of thin layer of compactly packed parallel hyphae. Asci clavate to cylindrical-clavate. Spores ellipsoid, clavate or fusoid, from 3 to 8 times as long as wide, 0 - 3-septate. Paraphyses from pointed cylindrical to distinctly lanceolate exceeding the asci.

Type species: Lasiobelonium subflavidum Ell. et Ev., Bull. Torrey Bot. Club 24: 136 (1897).

The best key character to the genus is the structure of medullary excipulum. The hairs with coloured walls in their lower parts are also very characteristic, but there exists a species with hyaline hairs, which is otherwise a typical Lasiobelonium.

KEY TO THE INCLUDED SPECIES

1. Apothecia pure white, hairs hyaline - L. park-sii f. album 9a.
 - Apothecia brownish, hairs brown with hyaline tips 2
2. Paraphyses lanceolate, over 25μ exceeding the asci 13
 - Paraphyses cylindrical to narrowly lanceolate up to 20μ exceeding the asci 3
3. Spores up to 13μ long 4
 - Spores over 14.5μ long 9
4. Spores narrowly fusoid, up to 2 wide . 5
 - Spores ellipsoid-fusoid to ellipsoid, over 2 wide 6
5. Apothecia broadly sessile, spores $10-13 \times 1.6\mu$ - L. nazarovae 13.
 - Apothecia with constricted basis to substipitate, spores $5-7 \times 1.5-2\mu$ - L. cazenoviae 5.
6. Spores broadly clavate-ellipsoid, 1-septate, $9-13 \times 4-4.5\mu$ - L. fuscum 10.
 - Spores ellipsoid-fusoid, up to 3.5μ wide. 7
7. Asci longer than 80μ - L. karatalicum 8.
 - Asci up to 75μ long 8
8. Asci longer than 60μ - L. variegatum 7.
 - Asci $50-56\mu$ long - L. lonicerae 6.
9. Spores maturely 3-septate 10
 - Spores maturely 0-1-septate 11

10. Spores $16-21\mu$ long, hairs with slender tapering tips - L. subflavidum 4.
- Spores $20-27\mu$ long, hair tips abruptly rounded - L. belanense 3.
11. Spores broadly fusoid to ellipsoid-fusoid, not curved - L. parksi 9.
- Spores clavate, slightly curved 12
12. Spores over 3.5μ wide - L. corticale 2.
- Spores up to 3.3μ wide - L. boreale 1.
13. Spores clavate, $15.3 \times 3.4\mu$ - L. diervilliae 12.
- Spores fusoid, $11.3-11.6 \times 2-2.3\mu$ L. lanceolatum 11.

1. LASIOBELONIUM BOREALE (Ell. et Holw.)

Raitv. comb. nova

Basionym: Peziza (Dasyscypha) borealis

Ell. et Holw. in Arthur et al., Bull.

Minnesota Geol. Hist. Survey 3: 36

(1887).

Syn.: Dasyscyphus borealis (Ell. et Holw.)

Sacc. Syll. Fung. 8: 457 (1889). Belonidium

boreale (Ell. et Holw.) Raitv., Scripta

Mycologica 1: 49 (1970).

Apothecia sessile to substipitate, cup-shaped, 0.5-1.5 mm in diam., externally light brown or grayish-brown, hairy, hymenium pale. Hairs cylindrical, smooth, multiseptate, with firm, light brown in lower part but hyaline at tips, walls, incrusted with loosely attached small granules of colourless amorphous matter, $100-166 \times 3-4\mu$. Ectal

excipulum of globose to isodiametric angular cells with thickened pale brown walls, $6.5-8.5\mu$ in diam. Medullary excipulum of compactly packed more or less parallel slender hyphae. Asci cylindrical-clavate, $85-108 \times 6.3-8.3\mu$ with amyloid pore. Spores clavate, slightly curved, tardily 1-septate, $18.5-24 \times 2.8-3.3\mu$. Paraphyses cylindrical with pointed tips to narrowly lanceolate, up to 8μ exceeding the asci, $1.7-3.3\mu$ in diam. Fig. 7, 9.

On dead wood and bark.

General distribution: North America, Asia.

Specimens examined: 20 specimens from Canada, U.S.A. and the Asian Regions of the U.S.S.R. including the type collection (Holway 264 in NY)

L. boreale is extremely close to L. corticale and Seaver (1951) has reduced it into the synonym of the latter. The examination of wide material has shown, however, that the North American and Asian collections have constantly more narrow spores than the European collections. The asci of L. boreale are also slightly longer and more slender than those of L. corticale. So L. boreale and L. corticale represent two closely related but, however, different taxa. The taxonomic rank of L. boreale might be discussed by the supporters of wide species concept, but I am inclined to keep it apart from L. corticale.

2. LASIOBLONIUM CORTICALE (Fr.) Raitv.
comb. nova

Basionymum: Peziza corticalis Fr. Syst.
Myc. 2: 96 (1822).

Apothecia subsessile to substipitate, cup-shaped, 0.5-1.5 mm in diam., externally light brown or grayish-brown, hairy, hymenium pale. Hairs cylindrical, smooth, multiseptate, with firm, light brown in lower part but hyaline at tips walls, incrustated with loosely attached small granules of colourless amorphous matter, $116-166 \times 3-4 \mu$. Ectal excipulum of globose to isodiametric angular cells with thickened pale brown walls, $6.5-8.5 \mu$ in diam. Medullary excipulum of compactly packed more or less parallel slender hyphae. Asci cylindrical-clavate, $83-102 \times 7.5-9.1 \mu$ with amyloid pores. Spores clavate, slightly curved, tardily 1-septate, $18-24 \times 3.5-4.1 \mu$. Paraphyses cylindrical with pointed tips to narrowly lanceolate, up to 17μ exceeding the asci, $1.7-3 \mu$ in diam. Fig. 8.

On dead wood and bark, or on dead bark of living deciduous trees, particularly on Populus.

General distribution: Europe, Middle Asia.

Specimens examined: 20 specimens from the U.S.S.R., Sweden, FRG, GDR, Austria and France, including neotype in Persoon's herbarium (L - 910. 261-227).

When I asked for Persoon's type of P. corticalis there were 3 specimens kindly sent me from the Rijksherbarium, Leiden, by Dr. R. A. Maas Geesteranus with a note: "These are all authentic specimens, but not one can be proved to have ser-

ved for Persoon's description. All you can do is indicate a neotype. "(Maas Geesteranus in lit.).

One of these specimens, No.910.261-241, bears only old apothecia with destroyed hymenium and no diagnostic characters were seen. Specimens No.910.261-227 and 910.261-237 are in rather good condition bearing well - preserved apothecia of one and the same species with clavate spores measuring $18-24 \times 3.5-4 \mu$. The apothecia were more abundant in No. 910.261-227, so this collection was selected as the neotype.

Earlier (Raitviir, 1970) I have under this name described L. variegatum following the description by Dennis (Dennis 1949, p.39) suggesting the species with shorter asci and shorter symmetrical spores.

The distribution areas of L. boreale and L. corticale are not overlapping. L. boreale, common in North America, is also present in Asian continent where it extends westward up to Western Siberia. L. corticale is fairly common in Europe, but it has also been found from the Tien-Shan Mountains.

Svrček (1958: 227) has described a species Lachnum pseudocorticale with elongated-fusoid spores measuring $13-19(20) \times 3-3.5 \mu$ and rarely becoming 2-4-celled. The asci are said to be $80-110 \times 6.5-7.5 \mu$. It is probably a good species belonging to L. variegatum series, but without any material seen I can make no taxonomic judgement.

3. LASIOBELONIUM BELANENSE (Svrček) Raitv.

comb. nova.

Basionymum: Lachnum belanense Svrček,

Česka Mykologie 12:228 (1958).

Apothecia sessile to subsessile on brown subiculum, 0.4-1 mm in diam., infundibuliform, tubulose, subglobose or cup-shaped, externally light brown, hairy, hymenium pale. Ectal excipulum of globose to isodiametric angular cells with pale brown walls, becoming prismatic and hyaline in marginal parts of elongated apothecia. Medullary excipulum of compactly packed subparallel hyphae. Hairs cylindrical, slightly tapering, obtuse, smooth, multiseptate with firm, light brown in lower part but hyaline at tips walls, incrustated with loosely attached granules of colourless amorphous matter, $133-166 \times 3-4 \mu$. Asci cylindric-clavate, $96-111 \times 7.1-8.3 \mu$. Spores cylindric-fusoid, 3-septate, $20-27 \times 3-3.5 \mu$. Paraphyses cylindrical to cylindric-lanceolate, up to 8μ exceeding the asci, $1.7-3.3 \mu$ in diam. Fig. 10.

On dead wood.

General distribution: Europe, Asia, North America.

Specimens examined: 9 specimens from the U.S.S.R. and U.S.A.

A distinctive feature of L. belanense is the presence of more or less abundant brown subiculum so it may be easily keyed to Arachnopeziza. The

characters of hairs and apothecial anatomy in L. belanense are, however, so indistinguishable from those of other Lasiobelonium species that it should be without any doubt to be included into this genus. The development of subiculum and the shape of apothecium depend on the humidity conditions of the substrate. On wet and shaded substrate the subiculum is more abundant and apothecia tend to be elongated: infundibuliform or even tubular.

Svrček did not mention the subiculum in his original description of Lachnum belanense, but, as just noted, it may be lacking, and otherwise Svrček's description and illustration fit the North American and Asian material studied.

The species seems to be rare in Europe and northern Asia although its range extends to subarctic latitudes. More common it seems to be in Middle Asia, particularly in the Pamiro-Alai mountain area. In North America it has to be rather common, but mistaken for and labelled as L. corticale or L. boreale as several collections from Oregon, Utah and Colorado show (KD32, Davidson 338a, 630, 675, 726 in BPI, McKnight. P5221 in NY)

4. LASIOBELONIUM SUBFLAVIDUM Ell. et Ev.,

Bull. Torrey Bot. Club. 24:136 (1897)

Synonymum: Dasyascyphus triseptatus

Dennis, Kew Bull. 15: 300 (1961).

Apothecia sessile, cup-shaped, 1 mm in diam., externally light brown, hairy, hymenium pa-

le. Ectal excipulum of isodiametric angular to globose cells. Medullary excipulum of compactly packed subparallel hyphae. Hairs cylindrical, tapering to rather slender, sometimes subacute tips, multiseptate, smooth, incrusted with colourless granules of amorphous matter, walls brown in lower part, hyaline at tips, $170-240 \times 3-4 \mu$. Asci clavate $86-95 \times 9-10 \mu$. Spores elliptic-fusoid, 3-septate, $16-21 \times 3-3.5 \mu$. Paraphyses narrowly lanceolate, scarcely exceeding the asci, $2-3 \mu$ in diam. Fig. 11.

On dead bark and wood.

General distribution: North America, New Zealand.

Specimens examined: On dead Willow, Mt. Adams about 7000 ft., Washington, U.S.A., sept. 18, 1894, Wilhelm N. Suksdorf 489 (isotype WSP 27523). On the bark of *Schefflera digitata* (Araliaceae), Waiko, Westland, New Zealand, Feb. 5, 1954, Dingley 18985 (Holotype in K).

L. subflavidum is very close to L. belanense but differs from it in shorter spores and asci more slender hair tips and absence of subiculum. It seems to be the only species of the genus known from the Southern Hemisphere.

The isotype collection of this species was recently studied by Korf (1978), who said it to be identical with Peziza borealis Ell. et Holw. He mentioned, however, the "Fusoid, 1- to 3-septate ascospores". This character does not fit with the spore shape and septation in the type specimen

of Peziza borealis Ell. et Holw. and numerous additional collections studied. I restudied the Sukadorf's specimen loaned from WSP and I found that it represents a distinct species which clearly differs from Peziza borealis Ell. et Holw. in its spore shape. The spore size, shape and shape of hair tips make the species indistinguishable from Dasyscyphus triseptatus Dennis which becomes a later synonym.

This case illustrates how easily the Discomycete species might be confused. I agree that to a supporter of a very wide taxonomic species concept all the large-spored Lasiobelonium species might seem to be one and the same. They are indistinguishable macroscopically, there are no differences in their ectal excipulum and hairs, their asci and spores are approximately of the same size and all that results in labelling them as "Dasyscyphus corticale" or "Lachnum c." in course of routine identification procedure as the collections of several major American herbaria show. The "minor" differences, such as spore shape and septation are not usually carefully observed with sufficient precision. So their taxonomic significance is underestimated and they are disregarded in practical taxonomy. There are actually three distinct spore shapes in this group of five confused species. These shapes are very constant within the species in contrast to some other Hyaloscyphaceae showing fusoid, clavate and

slightly unilateral cylindric-fusoid spores in the single apothecium.

The clavate spores of Peziza borealis Ell. et Holw. and cylindric-fusoid spores of Lasiobelonium subflavidum Ell. et Ev. drawn from the type specimens are comparatively shown in Fig. 3 and 4. The difference should be obvious. Both of these species has in its order a very closely related if not to say sibling species. For me Lasiobelonium belanense differs clearly from L. subflavidum in its larger ascospores, asci and obtuse hairs but it might be true that their identification needs alightly more effort than the norm in routine taxonomic practice. But maybe we are used to a norm too low.

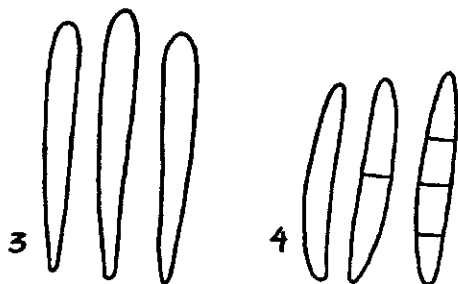


Fig. 3. Spores of L. boreale. Fig. 4. Spores of L. subflavidum.

The broadly fusoid spores of L. parksii represent the third type of spore shape in the large-spored species of Lasiobelonium (Fig. 17).

1-septate spores symmetrical toward their longer axis show that the species is more closely related to the species of L. variegatum group than to the discussed large-spored species.

5. LASIOBELONIUM CAZENOVIAE (Ell. et Ev.)

Raitv. comb. nova.

Basionymum: Peziza cazenoviae Ell. et Ev.
Journ. Mycol. 5: 180 (1889).

Syn.: Peziza(Dasyscyphus)soleniiformis
Ell. et Ev., Journ. Mycol. 4: 55 (1888),
non P. soleniiformis Berk. et Curt., Grevillea 3: 160 (1875). Belonidium soleniiformis (Ell. et Ev.) Raitv., Scripta Mycologica 1: 50 (1970).

Apothecia shortly stipitate, cup-shaped, up to 1 mm in diam., externally light brown, hairy, hymenium pale. Ectal excipulum of isodiametric angular cells, 6-8 μ in diam., Medullary excipulum of compactly packed subparallel hyphae. Hairs typical for the genus, 80-130x3-4 μ . Asci cylindric-clavate, 40-50x4-5 μ . Spores clavate, 5-7x1.5 μ . Paraphyses narrowly lanceolate, scarcely exceeding the asci, 1.5-2.5 μ in diam. Fig. 13.

On decaying wood.

General distribution: North America.

Specimen examined: On decaying wood, Cazenovia, New York, U.S.A. Oct. 1887, O.F. Cook 438 (Holotype in NY).

This species belongs to one and the same se-

ries with L. lonicerae, L. variegatum, L. karatalicum and L. parksii differing from the others in the shortest spores and asci. It is known only from the type locality.

6. LASIOHELONIUM LONICERAE (Fr.) Raitv.

comb. nova.

Basionymum: Peziza lonicerae Fr., Syst.

Myc. 2: 115 (1822).

Apothecia subsessile to shortly stipitate, cup-shaped, externally light brown, hairy, hymenium pale. Apothecial anatomy and hairs typical for the genus, ectal excipulum cells $6-7\mu$ in diam. hairs $116-150 \times 3-4\mu$. Asci cylindric-clavate, $50-60 \times 5-6.6\mu$. Spores elliptic-fusoid, slightly inequilateral, 2-septate, $8.8-10.3 \times 2.2-3.0\mu$. Paraphyses cylindrical, pointed to narrowly lanceolate, up to 7μ exceeding the asci, $2-2.3\mu$ in diam. Fig. 14.

On dead wood and bark.

General distribution: Europe, Asia, North America.

Specimens examined: 4 specimens from the U.S.S.R., U.S.A. and Canada.

This species occupies an intermediate position between L. cazenoviae and L. variegatum in its ascus and spore size. It has a wide holarctic distribution but it is evidently much rarer than L. variegatum.

7. LASIOBELONIUM VARIEGATUM (Fuckel) Raitv.

comb. nova.

Basionymum: Dasysoypha variegata Fuckel, Jahrb. Nass. Ver. Nat. 27/28: 61 (1873).

Syn.: Lachnella canescens (Cooke apud Phill.) Phill. Brit. Discom. 259 (1887).

Echinella crosslandii Massee Brit. Fung. Flora 4: 306 (1895). Dasysoypha corticallis (Fr.) Massee Brit. Fung. Flora 4: 360 (1895) sensu auct. pro parte.

Apothecia subsessile to shortly stipitate, cup-shaped, 0.5-1 mm in diam., externally light brown, hairy, hymenium pale. Apothecial anatomy and hairs typical for the genus, ectal excipulum cells 6.5-8 μ in diam., hairs 116-183x3-4 μ . Asci cylindric-clavate, 60-73x5.8-7.5 μ . Spores ellipsoid to elliptic-fusoid, 1-septate, slightly inequilateral, 10.8-13x2.3-3.5 μ . Paraphyses cylindric, pointed to narrowly lanceolate, up to 12.5 μ exceeding the asci, 2-3.3 μ in diam. Fig. 15.

On dead wood and bark.

General distribution: Europe, Asia, North America.

Specimens examined: 11 specimens from the U.S.S.R. and U.S.A.

8. LASIOBELONIUM KARATALICUM (Raitv) Raitv.

comb. nova.

Basionymum: Belonidium karatalicum Raitv. Scripta Mycologica 1: 49 (1970).

Apothecia subsessile, cup-shaped, 0.5 mm in diam., externally light brown, hairy, hymenium pale. Apothecial anatomy and hairs typical for the genus, hairs $83-116 \times 3-4 \mu$. Asci cylindric-clavate, $80-88 \times 5-6.6 \mu$. Spores fusoid, cylindric-fusoid or ellipsoid, slightly inequilateral, 1-septate, $12-12.6 \times 2.5-3 \mu$. Paraphyses cylindrical, pointed to narrowly lanceolate, up to 17μ exceeding the asci, $1.7-2 \mu$ in diam. Fig. 16.

On dead wood and bark of Picea schrenkiana.

General distribution: Middle Asia.

Specimens examined: 6 specimens from the U.S.S.R., the Tien-Shan Mountains.

L. karatalicum is very close to L. variegatum and differs from it in considerably longer asci. It has also somewhat longer and more slender paraphyses than L. variegatum. L. karatalicum seems to be endemic of the Tien-Shan spruce forests.

9. LASIOHELONIUM PARKSII Raitv., species nova.

Apothecia subsessilia, cupulata, 0.6-0.8 mm in diam., extus pallide brunnea vel griseo-brunnea pilosa, hymenio pallido. Excipulum ectale cellulis globosis vel angularis, excipulum medullosum hyphis subparallelis compactis. Pili cylindranei, angustati, obtusi, basaliter parietibus brunneis, apicibus hyalinis, glabrae, multicellulares, $106-216 \times 3-4 \mu$. Asci cylindraneo-clavati, $76-96 \times 8-8.3 \mu$.

Spores ellipsoideo-fusoides, uniseptatae, $14.5-17.5 \times 3.7-4.1 \mu$. Paraphyses cylindraceae acutae, ascos breviter superantes, $1.5-1.8 \mu$ in diam.

Ad lignum et corticem emortuum crescit.

Holotypus: U.S.A., Spruce Cove, Trinidad, Humboldt Co, California, IV 1946, ad corticem emortuum *Baccharis pilularis*, No. 6890 H. E. Parks legit sub *Lachnum corticale* (Holotypus in BPI, isotypus in NY).

Species ab aliis generis sporis latis uniseptatis differt.

Apothecia sessile, cup-shaped, 0.6-0.8 mm in diam., externally pale brown or grayish-brown, hairy, hymenium pale. Ectal excipulum of globose or isodiametric angular cells with thickened subhyaline to pale brown walls, $6.6-7.5 \mu$ in diam. Medullary excipulum of compactly packed subparallel hyphae. Hairs cylindrical, tapering, obtuse, smooth, multiseptate, with firm light brown in lower part walls becoming hyaline at tips, $106-216 \times 3-4 \mu$. Asci cylindrical-clavate, $76-96 \times 8-8.3 \mu$. Spores broadly ellipsoid-fusoid, 1-septate, $14.5-17.4 \times 3.7-4.1 \mu$. Paraphyses cylindrical, pointed, scarcely exceeding the asci, $1.5-1.8 \mu$ in diam. Fig. 5, 17.

On dead wood and bark.

General distribution: North America, Asia.

Specimens examined: 10 specimens from U.S.A. and India.

L. parksi is related to *L. variegatum* from

which it differs in considerably larger spores and asci. In U.S.A. it is probably rather common in California and Washington as the numerous collections by H.E. Parks and other collector (Nos. 5382, 5794, 6321, 6890, 7252 = Californian Fungi 1041) labelled as Lachnum corticale in BPI and NY show. From India I have seen a single collection sent me by M.P. Sharma (Panjab University, Chandigarh) : on Viburnum stems, Kalatope, Dalhousie H.P., aug. 8, 1972, No 3974).

9a. LASIOBELONIUM PARKSII VAR. ALBUM Raitv.
var. nova

Varietatis typicae similis, apotheciis albis et pilis hyalinis differt.

Holotypus: Pakistan, Murree, ad ramum defec-tum, 13.VII 1950, S.Ahmad legit (No.2675 in BPI).

The fungus from Pakistan differs from L.parksii only in the absence of brown pigment, in the hymenial features they are indistinguishable.

10. LASIOBELONIUM FUSCUM (Müller et Dennis)
Raitv. comb. nova

Basionymum: Perrotia fusca Müller et Dennis, Sydowia 13: 46 (1959).

Apothecia shortly stipitate, cup-shaped, 0.5-0.8 mm in diam., externally brown, hairy, hymenium pale. Ectal excipulum cells 7-9 μ in diam. Hairs cylindrical, undulating, smooth, multiseptate, with walls brown in lower part but hyaline at tips, 250-300x3-4 μ . Asci cylindric-clavate, 70-85

$x7-9\mu$. Spores broadly clavate-ellipsoid, 1-septate $9-13 \times 4-4.5\mu$. Paraphyses narrowly lanceolate, slightly exceeding the asci, $2-4\mu$ in diam. Fig. 12.

On dead branches of *Lonicera*.

General distribution: Asia, known only from the type locality.

Specimen examined: On dead branches of *Lonicera quinquelocularidis*, India, Kumaon, Chaubattia (Almora) 21. VI 1957 (K).

L. fuscum differs from all other *Lasiobelonium* species in its spore shape. It has rather dark-coloured hairs resembling somewhat those of *Trichopezizella*. This fact supports the idea of relationship between these two genera.

11. LASIOBELONIUM LANCEOLATUM Raitv.

species nova

Apothecia subsessilia vel substipitata, cupulata, 0.5-1 mm in diam., extus pallide brunnea, longe pilosa, hymenio pallido. Excipulum ectale cellulis globosis vel angularis, excipulum medullosum hyphis compactis subparallelis. Pili cylindracei, angustati, obtusi, basaliter parietibus brunneis, apicibus hyalinis, glabrae, multicellulares, $230-270 \times 3.5-3.8\mu$. Asci cylindracei vel cylindraceo-clavati, $78-90 \times 4.6-5.1\mu$. Sporae fusoidae, aseptatae, biguttulae, $11.5-11.8 \times 2-2.3\mu$. Paraphyses lanceolatae, $33-37\mu$ ascos superantes, $4.1-5\mu$ in diam.

Ad lignum putridum crescit.

Holotypus: U.R.P.S.S., R.P.S.S. Kirghiziae, Tianschan interior, Montes Tereskei Alatau, Ak-su, ad ramis emortuis Berberis sp., 5. VI 1968, A. Raitviir legit. (TAA-60304).

L. variegati similis, paraphysibus longis lanceolatis et pilis longis differt.

Apothecia sessile to substipitate, cup-shaped, 0.5-1 mm in diam., externally pale brown, covered by long hairs, hymenium pale. Ectal excipulum of globose to isodiametric angular cells. Medullary excipulum of compactly packed subparallel hyphae. Hairs cylindrical, tapering, obtuse, smooth, multiseptate, with firm light brown in lower part walls becoming hyaline at tips, $230-270 \times 3.5-3.8 \mu$. Asci cylindric-clavate or cylindrical, $78-90 \times 4.6-5.1 \mu$. Spores fusoid, aseptate containing 2 oil drops, $11.5-11.8 \times 2-2.3 \mu$. Paraphyses lanceolate, $33-37 \mu$ exceeding the asci $4.1-5 \mu$ in diam. Fig. 18.

Growing on dead wood, particularly on small branches of deciduous trees and shrubs.

General distribution: Europe, Asia.

Specimens examined: 7 specimens from the Tien-Shan Mountains and the Ural Mountains.

This species is externally very similar to L. variegatum, but differs from it in several microscopic characters. L. lanceolatum has much longer hairs than the species closely related to L. variegatum and its paraphyses are distinctly lanceolate. Its spores are also of different sha-

pe, aseptate and have two prominent oil drops.

12. LASIOBELONIUM DIERVILLAE Raitv. species nova.

Apothecia subsessilia vel subtipitata, cupulata, 0.5-1 mm in diam., extus pallide brunnea, longe pilosa, hymenio pallido. Excipulum ectale cellulis globosis vel angularis, excipulum medullosum hyphis compactis subparallelis. Pili cylindracei, angustati, obtusi, basaliter parietibus brunneis, apicibus hyalinis, glabrae, multicellulares, $280 \times 3.5 \mu$. Asci cylindraceo-clavati, $95-100 \times 5 \mu$. Spores fusoides-clavatae, aseptatae, quadriguttulatae, $13.3-16.6 \times 3.3-4.1 \mu$. Paraphyses lanceolatae, $33-41 \mu$ ascos superantes, 5 in diam.

Ad lignum putridum crescit.

Holotypus: U.R.P.S.S. Oriens Extremis, Regio Sacchalina, Mons Chehov, ad ramis emortuis Diervillae sp., 25. VII 1960, M. Nazarova legit (TAA-67536).

L. lanceolati similis sporis magnis clavatis differt.

Apothecia subsessile to subtipitate, cup-shaped, 0.5-1 mm in diam., externally pale brown, covered by long hairs, hymenium pale. Excipulum and hairs as in the preceding species, hairs $280 \times 3.5 \mu$. Asci cylindric-clavate, $95-100 \times 5 \mu$. Spores fusoid-clavate, aseptate, containing 4 oil drops, $13.3-16.6 \times 3.4-4.1 \mu$. Paraphyses lanceolate, $33-41 \mu$ exceeding the asci, 5μ in diam. Fig. 19.

Growing on dead wood.

General distribution: Asia, known only from the type locality.

13. LASIOBELONIUM NAZAROVAE Raitv. species nova.

Apothecia sessilis, cupulata, 0.5-1 mm in diam., extus pallide brunnea, pilosa, hymenio pallido. Exoipulum ectale cellulis globosis vel angularis, exoipulum medullosum hyphis compactis subparallelis. Pili cylindranei, angustati, obtusi, basaliter parietibus brunneis, apicibus hyalinis, glabrae, multicellulares, $140-180 \times 3.5 \mu$. Asci cylindraneo-clavatae, $56-66 \times 5 \mu$. Spores fusoides, aseptatae, $8-15 \times 1.7 \mu$. Paraphyses anguste lanceolatae 18μ ascos superantes, 3.3μ in diam., Fig. 20.

Ad caules herbarum crescit.

Holotypus: U.R.P.S.S., Oriens Extremis, Regio Primorsk, Mons Bogataya Griva apud Vladivostok, ad caules herbarum, 19. VII 1970, A. Raitv. legit (TAA-61016).

Species ab aliis generis apotheciis sessilibus differt.

Apothecia broadly sessile, cup-shaped, 0.5-1 mm in diam. externally pale brown, hairy, hymenium pale. Exoipulum and hairs typical for the genus, hairs $140-180 \times 3.5-4 \mu$. Asci cylindric-clavate, $56-66 \times 5 \mu$. Spores fusoid, aseptate, $8-15 \times 1.7 \mu$. Paraphyses narrowly lanceolate, up to 18μ exceeding the asci, 3.3μ in diam.

Growing on dead herbaceous stems.

General distribution: Asia, known only from the type locality.

This species differs from all other species of Lasiobelonium in its broadly sessile apothecia and on its habitat on herbaceous stems.

EXCLUDED SPECIES

Belonidium cerinum (Fr.) Raitv., Scripta Mycologica 1: 49 (1970).

This species was formally assigned to Belonidium, but it evidently deserves a genus of its own since its hairs and ectal excipulum are of different structure than those in the species of Lasiobelonium.

This species is involved into Holm-Korf nomenclatural controversy concerning the generic name Dasyscyphus. (Holm, 1976, 1978, Korf, 1977). In my opinion this species is surely congeneric neither with Dasyscyphus virgineus Gray nor with Belonidium aeruginascens Mont. et Dur. nor with Lasiobelonium subflavidum Ell. et Ev. The best solution for the nomenclatural controversy is to conserve Dasyscyphus Gray for the type species D. virgineus and treat Peziza cerina Fr. in a genus of its own. If the Clements and Shear typification is followed and the name Dasyscyphus tied to P. cerina, there will be a lot of transfers into Lachnum Karst.

Belonidium flavo-fuliginosum (Fr.) Raitv., Scripta Mycologica 1: 49 (1970). No authentic material of this species seems to be available. As represented by Fuckel, Fungi rhen. No. 2385 it is a Cenangiopsis.

Belonidium himalayensis (Müller et Dennis) Raitv., Scripta Mycologica 1: 49 (1970) is a Trichopezizella.

Belonidium solenia (Peck) Raitv., Scripta Mycologica 1: 50 (1970) has already been removed to a genus of its own (Raitviir, 1973).

ACKNOWLEDGEMENTS

Author is greatly indebted to Dr. R.W.G. Dennis and to the Director, Royal Botanic Gardens, Kew; to Dr. R.A. Maas Geesteranus (L), to Dr. C.T. Rogerson (NY), to Dr. R. Chacko (WSP) and to Dr. C. R. Benjamin (BPI) for the loan of several valuable specimens.

REFERENCES

- Blackith R.E., R.A. Reyment. Multivariate Morphometrics. London. 1971.
- Dennis R.W.G. A revision of the British Hyaloscyphaceae with notes on related European species. Commonw. Myc. Inst. Myc. Papers 32: 1-97. 1949.
- Dennis R.W.G. A reassessment of Belonidium Mont & Dur. Persoonia 2: 171-191. 1962.

- Holm L. Some notes on discomycete nomenclature.
Trans. Brit. Mycol. Soc. 67: 333-334. 1976.
- Holm L. Two controversial discomycete names.
Mycotaxon 7: 139-140. 1978.
- Korf R. P. Nomenclatural notes. IX. Mycotaxon 5:
515-516.
- Korf R. P. Nomenclatural and taxonomic notes on
Lasiobelonium, Erioscypha and Erioscyphella.
Mycotaxon 7: 399-406. 1978.
- Raitviir A. Synopsis of the Hyaloscyphaceae,
Scripta Mycologica 1: 1-115. Tartu. 1970.
- Raitviir A. The genus Solenopezia. Fol. Crypt.
Est. 3: 22-24. 1973.
- Seaver F.J. The North American Cup-fungi (In-
operculates). New York. 1951.
- Svrček M. Nové druhy diskomycetu z Belanských
Tater. Česka Mykologie 12(4): 219-231. 1958.

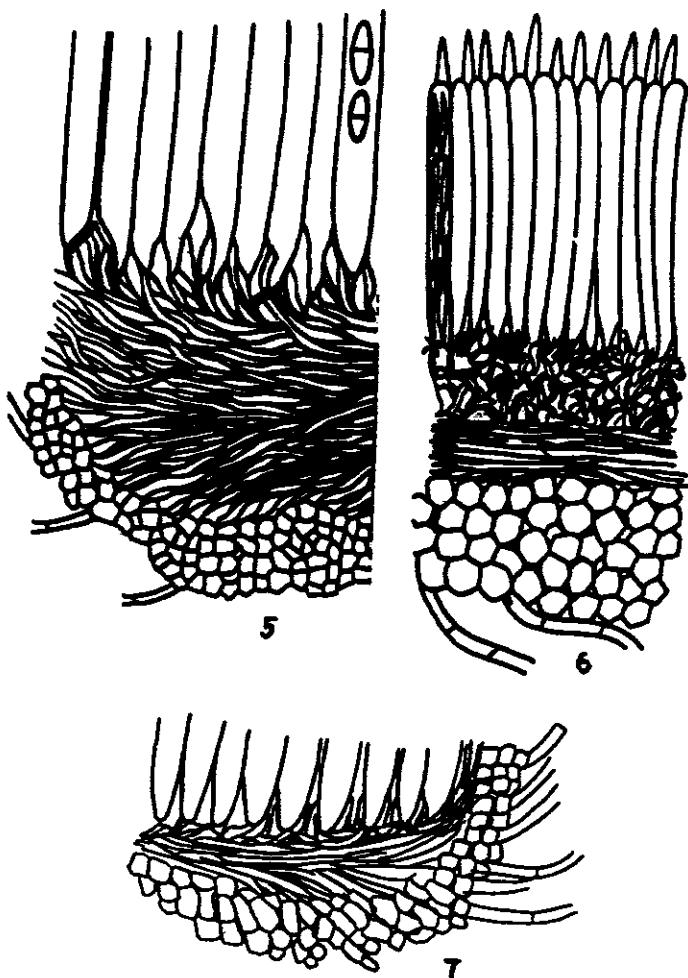


Fig. 5. Apothecial anatomy of *L. parksi*.
 Fig. 6. Apothecial anatomy of *L. nasarovae*.
 Fig. 7. Apothecial anatomy of *L. boreale*. x900.

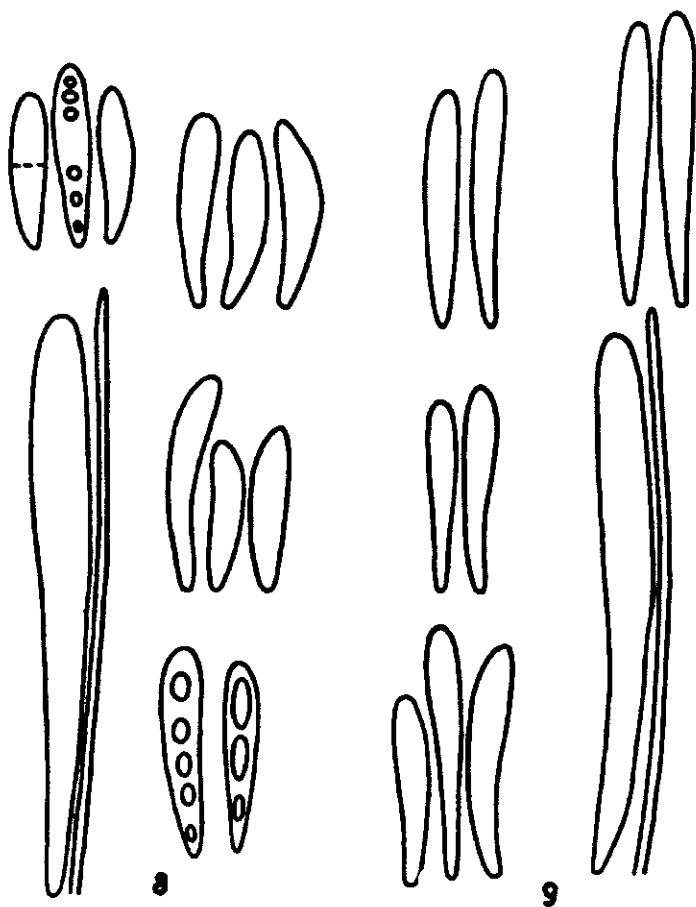


Fig. 8. *Ph. corticale*. Fig. 9. *L. boreale*.
x1000.

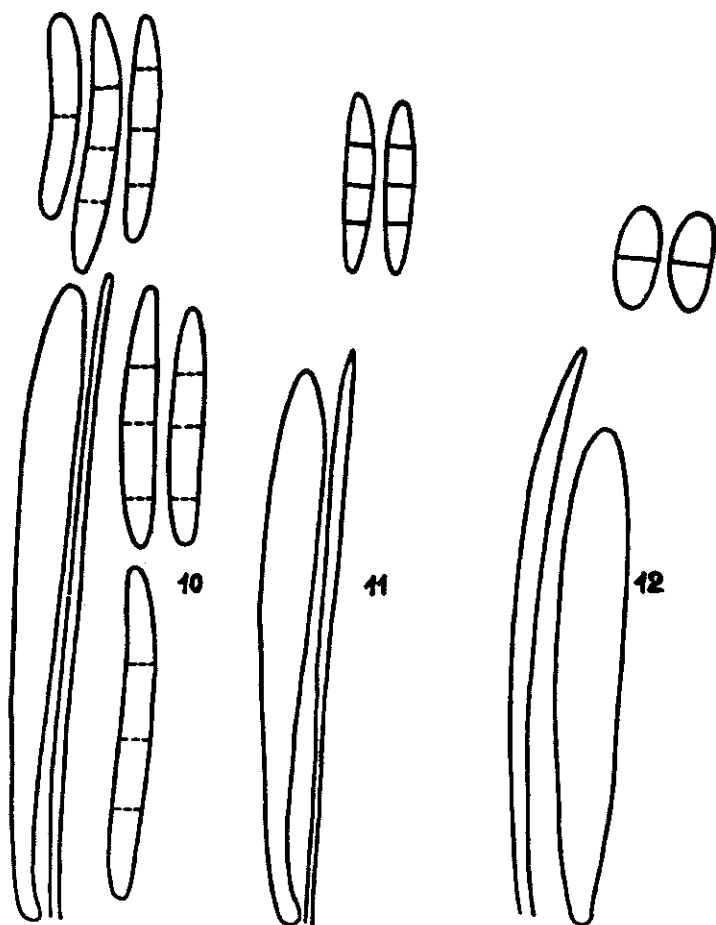


Fig. 10. L. belanense. Fig. 11. L. triseptatum. Fig. 12. L. fuscum. $\times 1000$.

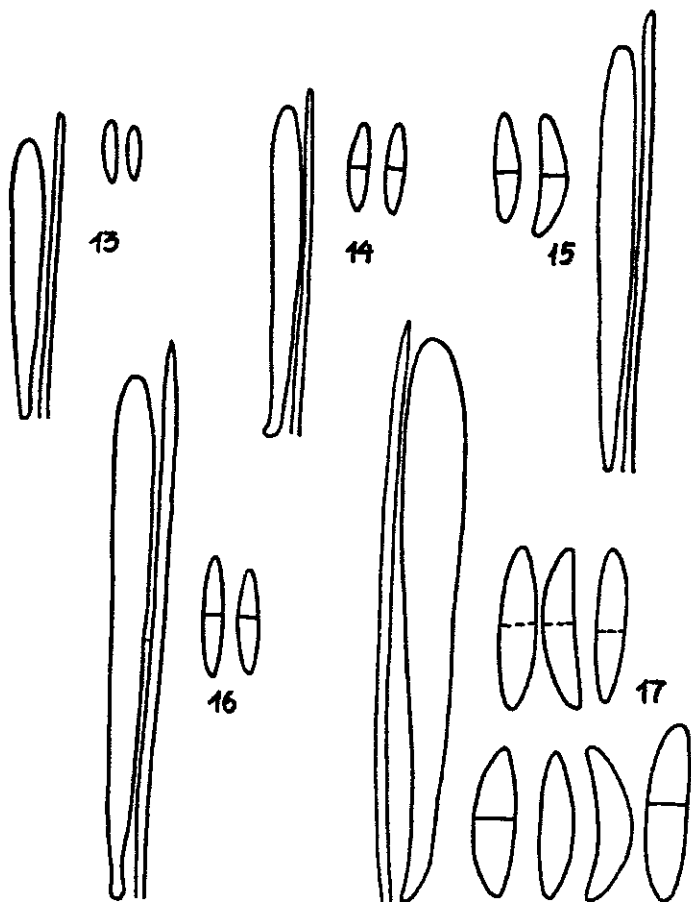


Fig. 13. *L. casenovias*. Fig. 14. *L. lonicer*.
 Fig. 15. *L. variegatum*. Fig. 16. *L. karatalicum*.
 Fig. 17. *L. parksii*. x1000.

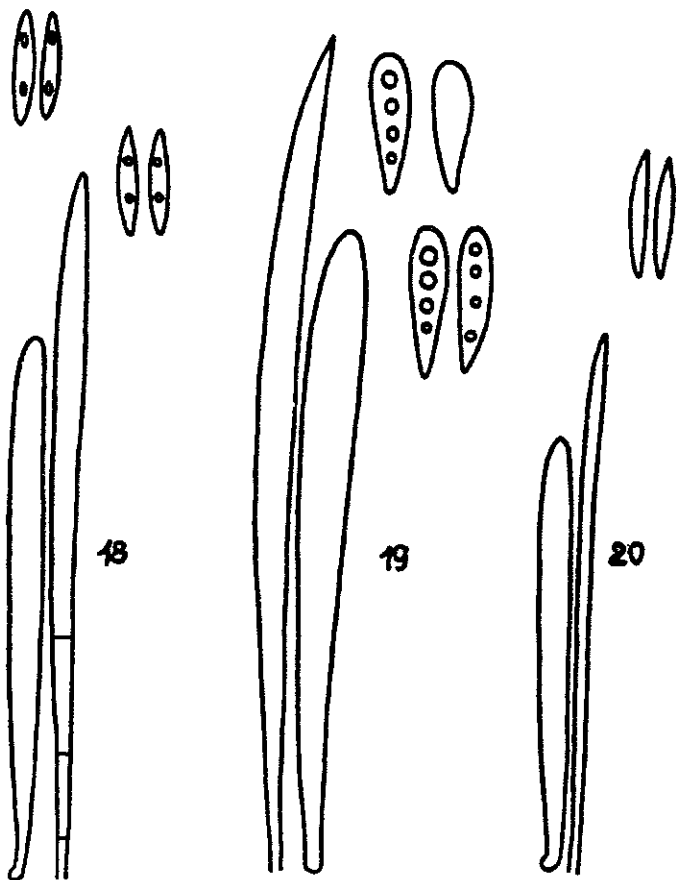


Fig. 18. L. lanceolatum. Fig. 19. L. dier-
villae. Fig. 20. L. nasarovae. $\times 1200$.

Род *Lasiobelonium*

А. Райтвийр

Р е з ю м е

Род *Lasiobelonium* был впервые описан автором (Raitviir, 1970) как подрод *Phaeobelonidium* рода *Belonidium*. В настоящей работе он выделяется в самостоятельный род на основе особенностей анатомического строения плодовых тел его видов (рис. 1 и 2). Им характерно наличие компактного слоя и тонких параллельных гиф в экципуле, который отсутствует в плодовых телах видов рода *Belonidium* в узком смысле. Волоски представителей рода *Lasiobelonium* также существенно отличаются от волосков представителей рода *Belonidium*, так как пигмент в них расположен в стенках, а не растворен в протоплазме клеток.

Из 13 видов, включенных в настоящую работу, 4 вида и одна разновидность описываются как новые для науки.