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Studies on Hungarian Lepiota s. l. Species, IV.

By M. Babos, Budapest

Abstract – Author describes some rare *Lepiota* species (*L. rufipes, L. subincarnata, L. brunneo-incarnata, L. fulvella, L. oreadiformis, L. alba)* from the Great Hungarian Plain where the locust-tree forests on sandy soil are favourable habitats for these species. Two *Macrolepiota* taxons (*M. excoriata* forma *barlae* f. n. and *M. rhacodes* var. *hortensis*) grown on compost are also reported on. – 6 figures.

Lepiota rufipes Morgan (Fig. 1)

More than one European author (Kühner 1936, Pilát 1951, Kühner & Romagnesi 1953, Moser 1967, Bresinsky & Stangl 1971) has given a shorter or longer description of this rare species, and from among the American authors Kauffman (1924) and Smith (1954) have dealt with it. The occurrence of this species in France and Algeria was reported by Kühner & Maire (1937) as well as by Josserand (1955) on the basis of their own collections and with detailed description.

Herbarial data*: Törökfái, Com. Bács-Kiskun, in a locust-tree wood on sand, 4 Sept, 1969, leg. Babos – Véssey. – Szentendre Island, near Kisoroszi, in locust-tree woods on sand, 22 Sept. 1970, leg. Babos – Bohus – Kisszékelyi – Sunhede.

Small-spored *Lepiota* species (*L. parvannulata, L. seminuda,* etc.) of similar appearance but belonging to different sections are easy to differentiate from each other on the basis of the structure of the cuticle. Two of Morgan's species with hymenium-like cuticles first of all differentiated on the basis of the presence or absence of the ring. According to the literature cited in the introduction the stem of *L. rufipes* has no ring and only on the basis of the observations of Kühner & Maire (1937) is mention made about a whitish, weak, disappearing cortina. This has caused some problem in the identification of the samples collected in Hungary, because — as it is also apparent from the description — there was a ring visible in a considerable proportion of the collected specimens, moreover still seen on the herbarium specimens. *L. neophana* Morgan has hymenium-like cuticle and ring, and the disrupting cuticle on the pileus of our fungus as well as the white rhizoids more or less visible at the base of the stem may also conform to this species. Smith (1954) has studied both species and the measurements published by him show that *L. rufipes* is a fungus of smaller pileus (diameter of pileus: *L. rufipes* 0,8—1,0 cm; *L. neophana* 1,0—3,0 cm), and of somewhat stubbier spore (*L. rufipes* $4 \times 2{,}5$—$3\ \mu$; *L. neophana* $3{,}5$—$5{,}5 \times 2{,}2$—$2{,}8\ \mu$). A survey of the European litera-

*The material is deposited in the herbarium of the Botanical Department of the Hungarian Natural History Museum, Budapest.

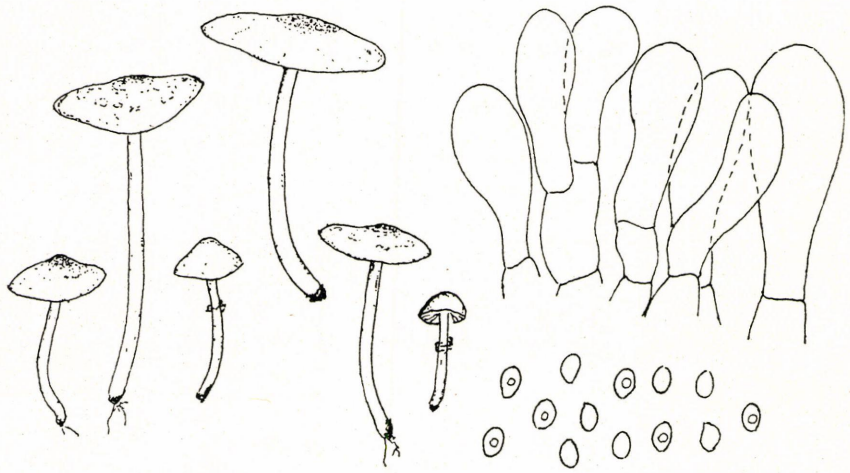

Fig. 1. *Lepiota rufipes* (natural size), cuticular elements and spores (1000 x)

ture, however, shows the measurements to be of no help in the differentiation. *L. rufipes* is not always so small, the diameter of its pileus may measure up to 2,0 cm and the measurements of the spores also vary between 2,7—5 × 2—3,2 μ. There is thus no sharp limit in the measurements between the two species.

The specimens collected in Hungary may even outdo the highest limiting measurements of *L. neophana* as regards measurements of pileus and stem, their spores, however, conform to those of *L. rufipes*. KÜHNER & MAIRE (1937) write about this problem as follows: "Parmi les espèces nord-americaines, le *L. neophana* MORGAN, se distingue de notre plante par sa teille plus grande et par la présence d'un anneau". This remark is in complete harmony with our specimens, because relatively greater specimens also occurred among them, and ring was also observed. In spite of that, however, it would be erroneous to identify our fungi as *L. neophana*, or establish the identity of the two species without knowledge of MORGAN's description for SMITH's (1954) following remark concerning colour of the gills: the colour of the gills of *L. rufipes* is "white", and that of *L. neophana* "white at all times". Nevertheles, though the gills of our fungi are whitish or whitish with a shade of rosy, later they become dirty light ochre and in the herbarium light milkcoffeecoloured, and this colour of the gills is — according to the European literature — characteristic of the not white-spored *L. rufipes*. JOSSERAND has kindly examined our duplum material and also he takes it for *L. rufipes*.

D e s c r i p t i o n : Pileus 0,8—2,5—(3,4) cm in diameter; first nearly hemispherical-convex or gibbous, finally nearly flattened; margin white-whitish or else creamy-light carneous, its center ochreous-brownishcarneous or somewhat rusty; surface smooth, or only the center of the pileus is smooth and the cuticle of the pileus disrupts into small areolae towards the margin. Gills free, distant from the stem; fragile; in the juvenile specimens whitish or whitish with a rosy hue, later dirty light ochreous, and in the case of herbarium specimens light milkcoffee-coloured; 1,5—3—(4) mm wide. Stem 2—3,5—(5) × 0,1—0,3 cm; equal; sericeously shining; whitish but the colour of the flesh is rosily visible through it, with the older specimens wine-reddish to brownish; its under part more or less fibrous; occasionally with white rhizoids at the base. In a number of fungi the ring is not or

only in traces visible, in the case of numerous other specimen, however, there is a little erect ring left on the preparations. In the pileus the flesh whitish, in the stem pinkish-brownish turning slowly wine-red at the cut surface. Smell weak but agreable, slightly resembling the smell of Anthriscus cerefolius. The spores with a tint of yellow under the microscope; they are elliptic; mostly with a little drop in them; small, 3—4,5×2—3,2 μ. Basidia 4-spored, measuring 15—17×4—5 μ in general. Cheilocystidia club-shaped; measuring 23—25×7,8—10,9 μ. The cuticle is made up of hymeniform cells: 18—30—(38)×8,5—12,4—17 μ.

Lepiota subincarnata LANGE (Fig. 2)

MOSER (1967) considers the name *L. scobinella* (FR.) GILL. as valid for this species. According to the description of GILLET (1874), however, *L. scobinella* is a greater-sized fungus with a darkly squamous pileus, and it is such also according to the description published by REA (1922).

The rich Hungarian material well conforms to both the description and the figure published by LANGE (1935, Pl. 13/I), moreover, may even be rosy when young. According to the literature this species is rare in Europe (LANGE 1935, KÜHNER 1936, PILÁT 1951, BUCH 1952, KÜHNER & ROMAGNESI 1953) and in Michigan, North America (SMITH 1954). Our most frequent small-sized *Lepiota* species grows singly or in cohorts in our locust-tree woods and pine-plantations on sand.

Herbarial data: Budapest: Soroksár-Péterimajor, locust-tree-poplar woods on sand, 22 Sept. 1968, leg. BABOS—Mende, Com. Pest, in locust-tree woods on sand, 22 and 27 Oct. 1960, leg. BABOS—BOHUS—KONECSNI; id. 17 Sept. 1968, leg. BABOS—BOHUS—FERENCZ—VÉSSEY. — Üllő, Com. Pest, in locust-tree woods on sand, 4 Oct. 1966, leg. BABOS—VÉSSEY. — Csévharaszt, Com. Pest, in locust-tree woods on sand, 19 Sept. 1970, leg. BABOS—BOHUS—SUNHEDE. — Ócsa, Com. Pest, locust-tree-poplar woods on sand, 6 Sept. 1964, leg. FERENCZ—VÉSSEY. — Tatárszentgyörgy, Com. Pest, pineplantation on sand (*Pinus nigra, P. silvestris*), 23 Sept. 1964, leg. BABOS—BOHUS. — Törökfái, Com. Bács-Kiskun, in locust-tree woods on sand, 4 Sept. 1969, leg. BABOS—VÉSSEY.

Description: Pileus 1,4—3,5—(4,5) cm in diameter; when young hemispherical, then obtuse gibbous-convex, finally expanded, margin occasionally curled up and thus the middle of the pileus is depressed; the young ones beautiful rosy or whitish-rosy, rosy isabel-coloured, brownish, later paler, and the middle rosy-brownish to brownish; its surface felted-granulose-floccose or finely squamulose. Gills free; white or cream-coloured; 1—3—(4) mm wide. Stem 1,8—5×0,15—0,3—(0,5) cm; equal; white to light rosy, later only in the upper part whitish,

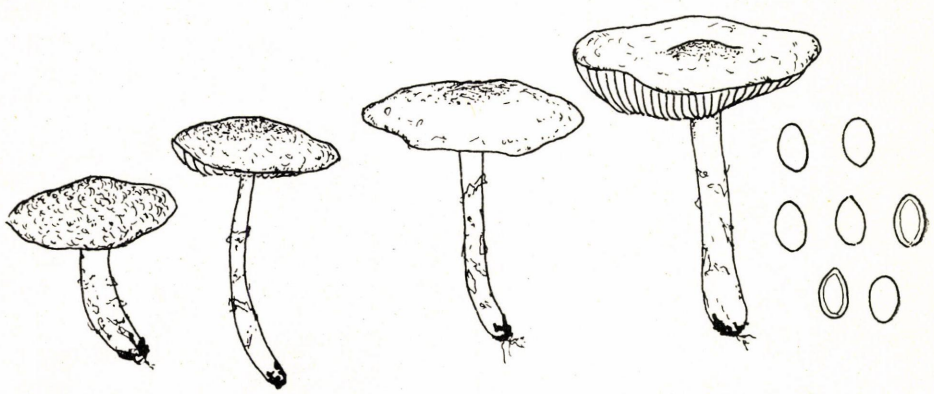

Fig. 2. *Lepiota subincarnata* (natural size) and spores (1000 x)

downwards light rosy to wine-reddish; covered or belt-like ornamented with white floccules; the ring is generally not visible, occasionally, however, a membranaceous ring occurs; the stem with white rhizoids at the base. In the pileus the flesh is white; in the crust of the stem light rosy to wine-reddish or brownish, inside the stem loosely fibrous, whitish. Taste and smell not characteristic. Spores elliptic, measuring (5,4)—6—7,5—(8)×3,2—4,2—(4,7) μ. Basidia 4-spored; measuring 18—25×6—7,8 μ. Cheilocystidia cylindrical to club-shaped, measuring 28—31×7—9,3 μ. The cells of the cuticle are pale brownish-yellow, elongately cylindrical, terminally rounded or slightly tapering, measuring up to 14 μ in thickness, with a clamp at the base.

Lepiota brunneo-incarnata CHOD. et MART. (Fig. 3)

This species grows in different habitats but usually on stirred up soil. It is easy to recognize. In Europe it is rather rare (LANGE 1935, PILÁT 1951 and 1969, KÜHNER & ROMAGNESI 1953, ROMAGNESI 1961, BRESINSKY & STANGL 1971, WASSER 1971, etc.). It is not frequent in Hungary data on its occurrence have not been published so far.

Herbarial data: Budapest: Buda Hills, Ságvári Park, on the skirts of deciduous forest, by the roadside, 15 and 27 Aug. 1951, leg. BOHUS. – Budapest: Zugló, on a grassy place, 19 Oct. 1958, leg. BABOS. – Budapest: Újpest-Megyer, in a fruit-garden, 4 Sept. 1968, 15 Sept. 1969, 10 Sept. 1970, leg. NAGY. – Buda Hills: Csúcshegy, on the skirts of mixed forest, by the roadside, 13 Oct. 1968, leg. BABOS – VÉSSEY. – Csepel Island: near Szigetújfalu, in the forest (*Querceto-Ulmetum hungaricum*), 21 June 1970, leg. BABOS – VÉSSEY. – Szentendre Island: near Horány, on the skirts of a locust-tree, wood, 12 July 1973, leg. BABOS. – Pécel, Com. Pest. Sept. 1963, leg. KATONA.

Description: Pileus 2—5,5—(7,5) cm in diameter; when young hemispherical, then convex, expanded, finally even depressed, more or less gibbous; in the case of young specimens covered with wine-reddish-brown, purple-brown velvetiness, squamules and squamae on whitish-brownish ground, later the squamae disrupt and only the middle of the pileus remaines velvety (the pileus of the specimen collected in Ságvári Park was coarsely squamous); also the basic colour of the pileus may be spottily rosy to wine-reddish; occasionally with fragments of veils at the margin. Gills free; white, with a shade of creamy; 3—6—(14) mm wide. Stem 2,5—5,5—(6)×0,4—0,8—(1,2) cm; stout, mostly equal; the upper part white, sericeously shining, floccose; the under 1/2—2/3 part is rosy ornamented with

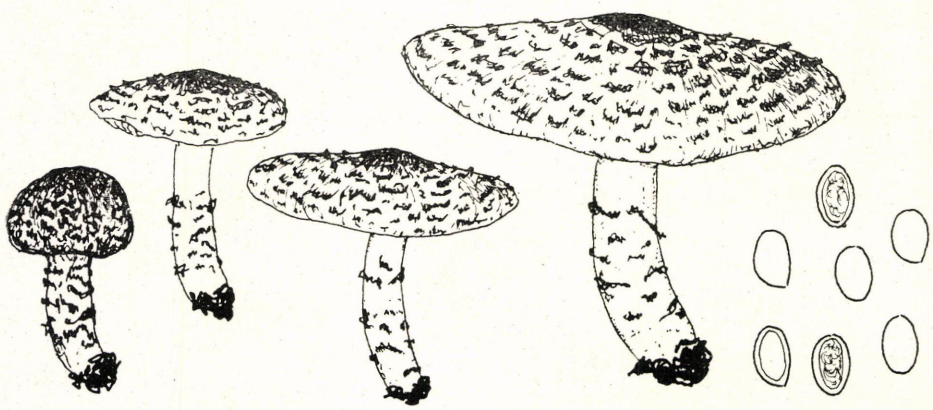

Fig. 3. *Lepiota brunneo-incarnata* (natural size) and spores (1000 x)

squamules-flocks the colour of which is similar to that of the pileus; only the young rings are contiguous, later only in traces visible; at the base of the stem occasionally with white rhizoids. Flesh white, it is rosy-brownish only in the crust of the stem of older specimens; inside the stem tubular-fibrous. Without smell or smelling a little of fruit. Spores elliptic or slightly almond-shaped, measuring 7-9,3-(10) x 4,5-5,4 μ. Cheilocystidia club-spindle-cylinder-shaped, 22-30-(35) x 7-10 μ. Basidia 4-spored, measuring 18-27 x 6-8,5 μ. The cells of the cuticle resemble those of *L. subincarnata*, light brownish-yellowish, elongately cylindriform, terminally rounded or slightly tapering, measuring up to 15 μ in thickness, are provided with clamp.

Lepiota fulvella REA (Fig. 4)

Following its first author this species was described and excellently illustrated by LANGE (1935, Pl. 12/D), then by KÜHNER (1936, 1937 Pl. 74. Fig. 1). Its rare occurrence has been reported from Finland by RAUTAVAARA (1947), from Czechoslovakia by PILÁT (1951, 1969) and WICHANSKY (1961b), and from Germany by EINHELLINGER (1973).

H e r b a r i a l d a t a: Gödöllő, Com. Pest, in a locust-tree wood on sand (in one place in cohorts), 26. Sept. 1972, leg. BABOS – Mende, Com. Pest, in a locust-tree wood, under *Sambucus nigra*, 17 Sept. 1968, leg. BABOS – BOHUS – FERENCZ – VÉSSEY. – Buda Hills: Csúcshegy, in mixed forest, 20 Sept, 1972, leg. BABOS.

D e s c r i p t i o n : Pileus 1,4—3 cm in diameter; when young hemispherical-convex, then gibbously expanded; first bright orange-rusty, with a dark brown velvety coating, later ornamented with rust-coloured squamae towards the margin, and only the middle portion remains brown and smooth; the older specimens may be more strongly decorated with matted squamae, may even become nude. In the herbarium material the bright orange-colour disappears. Gills free; whitish to dirty cream-coloured; 1,5—2 mm wide. Stem 2,5—4,5 × 0,2—0,4 cm; equal; in the upper part whitish or with a shade of wine-reddish colour, the under 1/2—2/3 part is decorated on brownish ground with orange-coloured fibrilles-flocks; at the base white rhizoids are visible. It has no ring, the cortina is white, it is ephemeral. In juvenile state the flesh in the pileus is white, in the crust of the stem orange, in the case of the older fruit-bodies it becomes wine-reddish to brownish in the pileus and in the crust of the stem; inside the stem it consists of loose whitish fibres. The fresh specimens have no smell, but smelling a little disagreable on the subse-

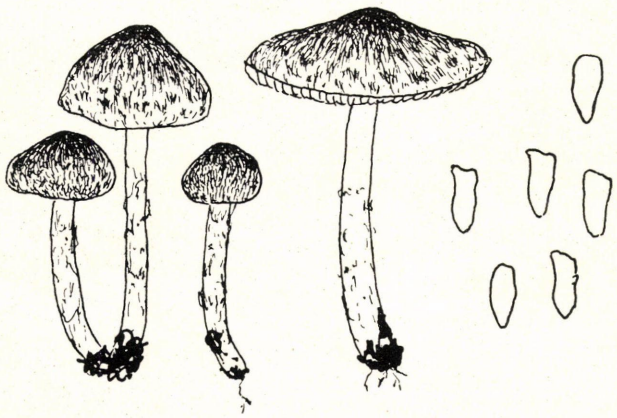

Fig. 4. *Lepiota fulvella* (natural size) and spores (1000 x)

quent day. Spores projectile-shaped, measuring 7—9,3—(10)×3,2—3,9 μ. Basidia club-shaped, measuring 20—30×6,5—8,5 μ. Cheilocystidia clavate, 18—31× 7,8—11—(14) μ. The hyphae of the cuticle of the pileus are elongately cylindriform, coloured yellowish-brown to brown by a vacuolar pigment, and discoloure from ammonia.

L. castanea QUÉL. is similar to *L. fulvella* and according to the literature more frequent (REID 1972). Both fungi occur at Mende and on Csúcshegy (Buda Hills), but *L. castanea* was also collected — besides above places — on Szarvashegy, Hársbokorhegy (Buda Hills) and on Murarátka. It grew in oak-forests, pine-plantations *(Pinus nigra)*, mixed forests, in locust-tree woods, however, it has not been found so far. It is easy to distinguish it from *L. fulvella*, because the hyphae of the cuticle on the pileus are coloured by membrane pigments which do not discolour from ammonia, and also the size of its spores is greater.

Lepiota oreadiformis VEL. (Fig. 5)

[syn. *L. laevigata* LANGE; *L. pratensis* (FR.) REA]

This is a Europe-wide occuring, yet rather rare fungus (REA 1922, LANGE 1935, KÜHNER 1936, LEBEGYEVA 1949, KÜHNER & ROMAGNESI 1953, PILÁT 1951 and 1969, WICHANSKY 1960, MICHAEL & HENNIG 1964, etc.).

Herbarial data: Hortobágy, Com. Hajdú-Bihar, on pasture, on the skirts of oak forest, 3 Sept. 1970, leg. BABOS – VÉSSEY. – Mátra Mountains: near Parád, in meadow, 2 Sept. 1969, leg. BABOS – BOHUS – VÉSSEY.

The coenological, ecological and climatic conditions in the two habitats differ completely. The two habitats have only one thing in common, that, namely, both are grasslands. The fact, however, that in spite of above differences *L. oreadiformis* occurs in both places, suggests that this species is more frequent in Hungary than has been experienced hitherto.

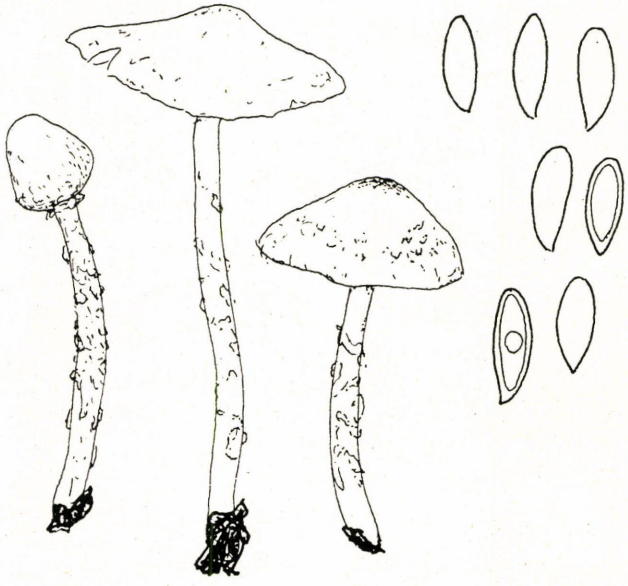

Fig. 5. *Lepiota oreadiformis* (natural size) and spores (1000 x)

D e s c r i p t i o n : Pileus 1,3—4 cm in diameter; convex, more or less gibbous, then expanded, however, with a small gibbosity on its center; circular or irregularily shaped; whitish to isabel-coloured, ochreous or light orange, the middle part with a little darker shade; the margin may be undulate-lacerated, occasionally splitted, in juvenile state markedly floccose; occasionally finely costate; the cuticle of the pileus smooth or finely granulose-floccose, in places disrupting into fine small squamules. Gills free; whitish or with a shade of pale isabel-colour or light ochre. Stem 2,5—5—(7) × 0,2—0,4 cm; equal; above whitish, down isabel-coloured; covered with cotton-wool-like flocks. Flesh is very thin towards the margin of the pileus; becoming tubular in the stem; its colour in the crust of the stem with a shade of pale rusty-orange. Smell agreable. Spores elliptical to spindle-shaped, measuring 11,7—14,7—(15,6) × 4,7—5,4 μ.

Lepiota alba (BRES.) SACC.

In the Lepiota section this is the most frequent species after *L. clypeolaria* (BULL. ex FR.) KUMMER. It is not, however, regarded common but rather fairly rare by a number of European authors.

Its habitats may be diverse. It occurs primarily on grasslands, meadows, pastures, occasionally in forests too. It was collected by KÜHNER (1936) in the subalpine, alpine region, and was described by PILÁT (1969) as one growing on calcareous steppe. LEBEGYEVA (1949), on the other hand, describes it as a fungus growing in kitchen-gardens and on dunghills. Most data on its occurrence in Hungary originate from the Hungarian Plain (at 108 – 168 m height above sea level) i.e. pastures, locust-tree woods, oak-forests, was, however, also found in the meadows and grassy forests of both the Transdanubian and Northern Central Chain of Mountains.

H e r b a r i a l d a t a : Mende, Com. Pest, in oak-wood on sand, 22 Oct. 1960 leg. BABOS – BOHUS – KONECSNI. – Csévharaszt, Com. Pest, in locust-tree woods on sand, 25 Sept. 1967, leg. BABOS – BOHUS – VÉSSEY. – Nagydorog, Com. Tolna, near Bikács, in pasture (Festucetum vaginatae danubiale), 1 Aug. 1966, leg. BABOS – BOHUS – IMREH – VÉSSEY; id., in locust-tree woods, 20 Aug. 1968, leg. FERENCZ – VÉSSEY; id., in a locust-tree wood and in pasture, 30 Aug. 1969, leg. BABOS – BOHUS – IMREH. – Kölesd, Com. Tolna, in pasture, 2 Oct. 1972, leg. BABOS – BOHUS- – IMREH. – Mts. Velencei: near Nadap, in meadow, 3 July 1966, leg. BABOS – VÉSSEY. – Mts. Vértes: Fáni-valley, 21 Oct. 1955, leg. LACZA – BAKSAY. – Buda Hills: Kamaraerdő, 9 July 1941, leg. BOHUS. – Buda Hills: Csúcshegy, in a shrubby site of mixed woods, 27 May 1954, leg. BABOS – BOHUS. – id. 13 Aug. 1955, leg. BABOS – BOHUS; id., 27 June 1963, leg. BABOS – BOHUS. id., 27 Aug. 1963, leg. BABOS – BOHUS. – Mts. Pilis: Nagykevély, 12 Oct. 1949, leg. BOHUS. – Mts. Pilis: near Budakalász, in meadow, 15 Nov. 1964, leg. BABOS. – Mts. Bükk: Heregrét, in meadow, 5 Oct. 1955, leg. BABOS – BOHUS.

Lit.: MOESZ (1942): *L. clypeolaria* (BULL.) FR. var. *alba* BRES., near Budapest, leg. SZEMERE – FILARSZKY.

The pilei of the collected fungi are white-coloured, the centers are slightly creamy-yellowish to pale ochreous, the stem is w ite, whith cotton-wool-like coating, becoming bared. At the margin of its floccose-membranaceous ring occasionally a yellow-ochreous pattern is seen. The measurements and morphological features of the fruit-bodies conform to the data in the literature but for differences in the limits of measurements of spores. This is illustrated by the following brief composition:

REA (1922)	11—14 × 6—7 μ
KAUFFMAN (1924)	12—14 × 6—7 μ
BRESADOLA (1927)	12—14 × 6—7 μ
LANGE (1935)	10,5—14 × 5,5—6 μ

KÜHNER (1936)	11,5—15×5,5—6,5—(7,2) μ
LEBEGYEVA (1949)	11—15×6—7 μ
KÜHNER & ROMAGNESI (1953)	10,5—15×5,5—6,7 μ
MICHAEL & HENNIG (1964)	12—14×5,5—6,5 μ
MOSER (1967)	12—14×5,5—6,5 μ

Hungarian material 9,3—10,9—14,8—(17)×4,7—5,4—7—(7,8) μ, which shows that the limits of measurements are wider than those found in the literature, and besides certain differences in measurements were also observed between fungi from the Great Hungarian Plain [11,7—15—(17)×5,4—7—(7,8) μ] and those from the Central Chain of Mountains (9,3—14,8×4,7—7 μ), out of which the fruit-bodies originating from the Csúcshegy had the smallest spores.

Macrolepiota excoriata (SCHFF. ex Fr.) MOSER
forma **barlae** f. n. (Fig. 6)

BARLA' s (1889, Pl. 10. Figs. 5–8) fungus which has a brown and squamously disrupting pileus strongly differs from the light, whitish-ochreous (BRESADOLA 1927, Pl. 22; LANGE 1935, Pl. 8/A; PILÁT & USÁK 1961, Pl. 146; ROMAGNESI 1961, Pl. 194) or light brownish (COOKE 1881–1884, Pl. 23; MAUBLANC 1946, Pl. 17) *excoriata*. BARLA's fungus has been only questionably regarded as *M. excoriata* by LOCQUIN (1952). In the literature there are no comments on the fungus with a brown, squamous pileus described by WAKEFIELD and DENNIS (1950, Pl. 5, Fig, 2).

Not only the colour of the pileus varies between white and brown, buth the grade of disruption of the cuticle may also be different, the cuticle splits generally — often radially — only at the margin of the pileus, whereas with other specimens the pileus is decorated, apart from the central part, with squamules or squamae (KÜHNER 1936, Fig. 3C, 4C; MICHAEL & HENNIG 1964, Fig. 13). MAIRE (1928), on the other hand, separated specimens with erect squamae under the name *Lepiota excoriata* var. *squarrosa*.

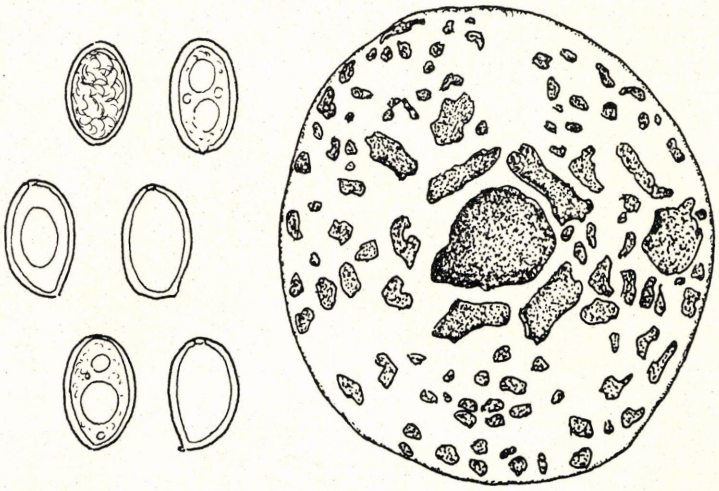

Fig. 6. *Marcolepiota excoriata* f. *barlae* cap surface (natural size) and spores (1000 x)

In November 1969 a form having brownly squamous disrupting cuticle of this species was collected in Budapest. The pileus was so coloured that the specimen may be considered as one of the extreme forms of *M. excoriata*. The colour of the brownest specimens was the same as that of *Lepiota excoriata* illustrated by BARLA (1889, Tab 10. Fig. 5—8) an this offered grounds for separating them under the name, forma *barlae* from the light-coloured frequent *M. excoriata*.

Differences from the species: Pileus white-whitish-creamy-brownish, but covered with finer or coarser brown squamae, middle smooth, brown.

Species typica differt: Pileus albus-albidus-cremeus-brunneolus, sed leniter vel asperius brunneo-squamosus, in medio levis, brunneus. Similis figurae Lepiotae excoriatae *a* BARLA *depictae* (Les champignons des Alpes-Maritimes. Gen. II. Lepiota, 1889, Tab. 10. Fig. 5—8), *pileum squamis brunneis ornatum habenti.*

Typus: Nr. 49.140, in Herbario Musei Historico-Naturalis Hungarici, Budapest.
Habitatio: Budapest, in horto, in acervo sterquilino 17. Nov. 1969, leg.?

Notes — Perhaps to a habitat rich in organic compounds is related the phenomenon, that a number of the fungi was definitely fleshy, further that also the shape of the pileus differed from that of *M. excoriata*, and, on the whole, from that shape which is characteristic of the *Macrolepiota* species. The shapes of most specimens were reminiscent of *Agaricus*, the middle was not gibbous, moreover, specimens with depressed centers also occurred. The collector thought them to be white-gilled *Agaricus*. Gibbous fruit-bodies were, however, also found in the material, and therefore the difference in the shape of pileus is not a constant, not a diagnostic character.

Macrolepiota rhacodes (VITT.) SING. var. *hortensis* PILÁT

There are more than one data on the Czechoslovakian occurrence of this fungus growing on compost. It was excellently illustrated by PILÁT (1951, photo 601 – 606, 608), PILÁT & USÁK (without date of year, Pl. 111) and DERMEK (1970). Its occurrence in Germany was reported by MICHAEL & HENNIG(1964, Fig. 16). It is very likely that the fungus published by SAVONIUS (1973) from the U. S. A. may also be taken for var. *hortensis*. He published a coloured photo taken in a pine wood, illustrating its mass occurrence on heaped up fragments of wood gnawn asunder by ants.

Herbarial data: Budapest: Soroksár-Péterimajor, on a heap of compost in th Botanic Garden of the University of Horticulture, 11 Sept. 1972, leg. BABOS – RIMÓCZI (it used to grow on this spot during 1971 – 1973 and was collected there by RIMÓCZI on more than one occasion) – Budapest, Pestlőrinc, in garden, on compost, 10 Sept. 1970, leg. VELCZEI – Szarvas, Com. Békés, on heaps of pine-needles under *Taxus baccata* in the Arboretum of Pepi Garden, 18 Oct. 1970, leg. GALAMBOS.

The *Lepiota bohemica* described by WICHANSKY (1961a) is identical to *M. rhacodes* var. *hortensis*, yet according to WICHANSKY (1972) it is right to retain the *L. bohemica* species. He cannot, namely, regard this species as a variety of *M. rhacodes* because of: 1. the unusual shape of the fruit-bodies, 2. the size of the spores, 3. the wide, funnel-shaped ring.

In connection with that the following observation is made on the basis of the Hungarian collection:

1. On Sept. 11. also the typical *M. rhacodes* were collected on a heap of compost in Péterimajor, besides large-bulbed, wide-ringed typical *M. rhacodes* var.

hortensis specimens. The form of the fruit-body as well as width and thickness of the ring vary.

2. There seems to be not so great difference in the measurements of spores between *M. rhacodes* and *L. bohemica* as it appears from the description (*rhacodes:* 8,5—11 x 6 μ, *bohemica* 11—13 x 7,5—9,5 μ) by Wichansky (1961a). The measurements of the spores (8,5—12,4 x 6,2—8 μ) of Hungarian specimens of *M. rhacodes* var. *hortensis* well fit within the limit measurements of spores of *M. rhacodes* found in the literature: (8)—9—12—(15) $\times$ (5)—6—7—(8) μ, but, at the same time, may even come up to the measurements of the spores of *L. bohemica* (except for the 9,5 μ width).

It appears from Wichansky's (1961a) description that there is only one — yet essential difference — between the two taxons recognized otherwise also by him as synonyms. He writes the following: "Cystidia non observata". On our fungi — and obviously also on Pilát's samples — great numbers of bladderlike to club-shaped, flesh-coloured to brownish-reddish cheilocystidia characteristic of *M. rhacodes* are visible at the edges of the gills (Smith 1949).

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