

A HYDNUM FROM KASHMIR

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(With ten Text-figures)

Mycoleptodonoides Nikol. is compared with other genera, *Hydnum aitchisonii* Berk. is redescribed, and for it the new combination *Mycoleptodonoides aitchisonii* (Berk.) Maas G. is proposed.

Among the type specimens of *Hydnum* borrowed from the Kew Herbarium, a report on the greater part of which was included in an earlier paper (Maas Geesteranus, 1960), was that of *Hydnum aitchisonii*. This was found to possess several characters that agreed with those of *Mycoleptodonoides vassiljevae* which had been described by Nikolajeva as the type species of a new genus. The striking resemblance led to the conclusion that *Hydnum aitchisonii*, if not conspecific, belonged to the same genus. Since Nikolajeva's generic description contains but little information and, what is more, since her genus comprises two wholly unrelated species, *Mycoleptodonoides* is here redescribed.

MYCOLEPTODONOIDES Nikol.

Mycoleptodonoides Nikol. in Bot. Mater. (Not. syst. Sect. cryptog. Inst. bot. Acad. Sci. U.S.S.R.) 8: 117. 1952. — Type species *Mycoleptodonoides vassiljevae* Nikol., l.c. 117.

Carpophore arboricolous (?), consisting of pileus and stipe, fleshy. Pileus complicated, consisting of imbricated fan-shaped lobes, azonate, glabrous. Stipe (probably) more or less eccentric, glabrous. Hymenium covering spines on underside of pileus. Spines discrete, subulate. Context monomitic, homogeneous, not zonate. Basidia tetrasporous. Spores ellipsoid, tapering towards the base, somewhat curved, smooth, colourless, with oblique apiculus, non-amyloid. Cystidia and gloeocystidia lacking.

In the original description of *Hydnum aitchisonii* the habitat was not stated, but particles of micaceous dust on what is left of the stipe, and pieces of bark attached to other fragments of the type material suggest that the fungus was collected from a log lying on the ground.

There are several other stipitate and/or fleshy hydneous genera known to occur on wood, branches or trees and these are compared with the present genus in the following text.

Beenakia Reid in Kew Bull. 1955: 635. 1956. — This genus differs from *Mycoleptodonoides* in its spores which are brown and minutely asperate.

Boninohydnum S. Ito & Imai in Trans. Sapporo nat. Hist. Soc. **16**: 127. 1940. — In this genus, too, the spores are brown. Moreover, the pileus is stated to be sessile.

Climacodon P. Karst. in Rev. mycol. **3**/No. 9: 20. Jan. 1, 1881 & in Medd. Soc. F. Fl. fenn. **6**: 15. 1881. — A characteristic feature which both *Climacodon* and *Mycoleptodonoides* have in common is the flabelliform imbricate pileus, but in the former it is sessile, with the surface roughened for the greater part, and floccose-pubescent towards the margin. Further differences which separate *Climacodon* from *Mycoleptodonoides* are in the context, which is zonate, and in the presence of thick-walled cystidia in the hymenium.

Creolophus P. Karst. in Medd. Soc. F. Fl. fenn. **5**: 41. 1879. — This genus is typified by *Hydnum corrugatum* Fr. ex Fr., a species of which, unfortunately, little is known beyond the descriptions of its author (Fries, Obs. mycol. **2**: 269. 1818; Syst. mycol. **1**: 414. 1821; Epicr. Syst. mycol. 512. 1838; Sverig. ätl. gift. Svamp. 14. 1861). These descriptions agree in that the imbricate 'caps' are stated to have a tomentose surface, ranging from subtomentose (1818) to villose (1838). Also, the fruit-body is said to be tuberculose (1818 and 1821; which is capable of two ways of interpretation), or tuberculiform (1838; which is unmistakable), and to be deficient in its development of a stipe and a distinct pileus (1861: "Sakna fot och tydlig hatt"). Characterized in this way, *Creolophus* is clearly distinct from *Mycoleptodonoides*.

Donkia Pilát in Bull. Soc. mycol. France **52**: 328. 1936. — The sessile habit, strigose surface of the pileus, and the dimitic context (a character which is rarely found in *Hydniums*, and to which I intend to revert at some later date) are all features which readily separate *Donkia* from *Mycoleptodonoides*.

Since the presence of pieces of bark mentioned above may be accidental, the possibility that *Mycoleptodonoides* may be a terrestrial genus should not be overlooked. It is therefore necessary to consider the following genera of stipitate *Hydniums* with fleshy context and colourless spores.

Bankera Coker & Beers ex Pouz. in Česká Mykol. **9**: 95. 1955. — This genus is quite distinct from *Mycoleptodonoides* on account of the tomentose surface of the pileus, the subglobose and finely tuberculate spores, the odour of fenugreek when dried, and the lack of clamp connections.

Hydnum L. ex Fr., Syst. mycol. **1**: lvi, 397. 1821. — The characters which distinguish this genus from *Mycoleptodonoides* are the tomentose surface of the pileus, the frequent occurrence of more than four sterigmata per basidium, and the subglobose to obovoid spores.

While it is easy to show that *Mycoleptodonoides* differs from the genera enumerated above (and it differs still more from all other hydneous genera not mentioned here), it is quite a problem to indicate its systematic position. On account of the fleshy

substance of its context, and the smooth, colourless spores I am inclined to place *Mycoleptodonoides* in the neighbourhood of *Hydnum*. I have been unable, however, to confirm whether, as in that genus, its basidia are stichic, or whether the hymenium is a thickening hymenium.

Mycoleptodonoides aitchisonii* (Berk.) Maas G., *comb. n.

Hydnum aitchisonii Berk. in Grevillea 4: 137. 1876 ("*Aitchesoni*") (basionym).

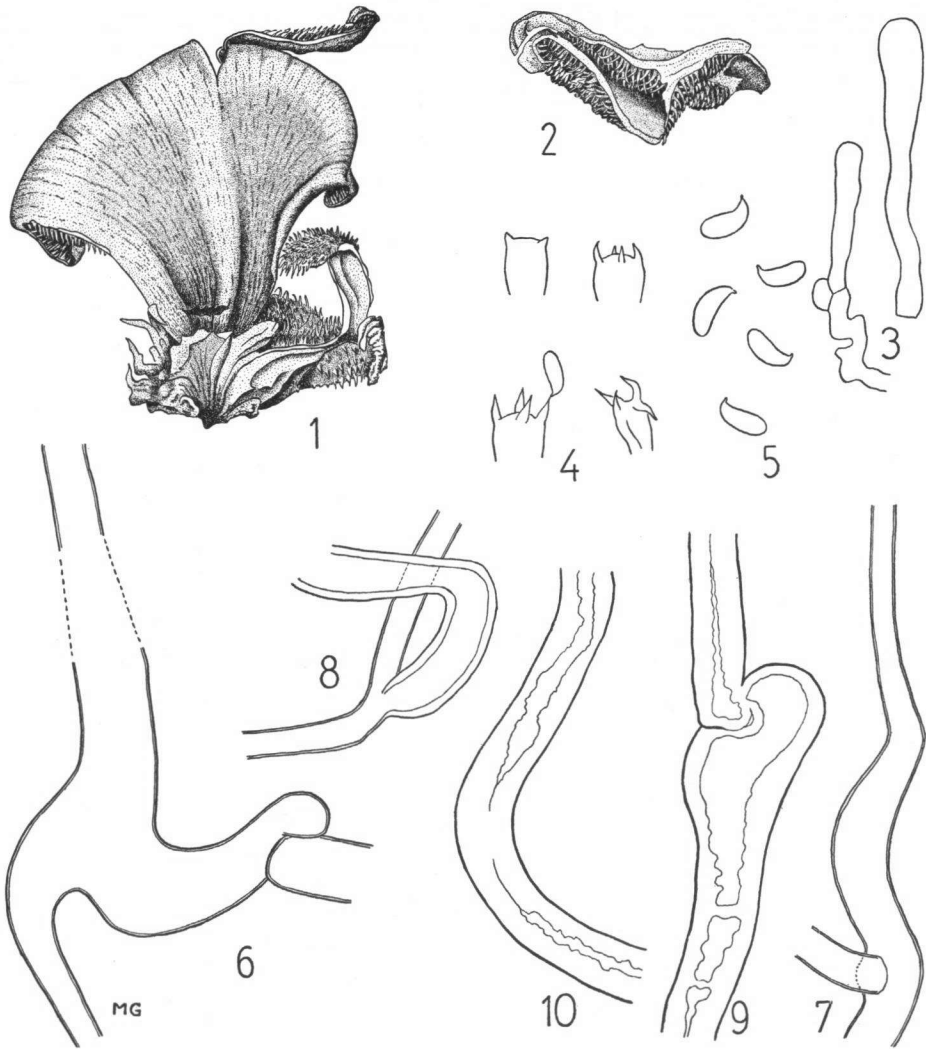
Redescription of the type, "*Hydnum Aitchisoni* Berk." (K). — Carpophore consisting of pileus and stipe, fleshy. Pileus badly broken, but obviously complicated, consisting of imbricated fan-shaped pileoli, 40–50 mm long from base to margin, 4 mm thick at the junction of pileus and stipe, thinning to 0.3 mm near the involute margin. The surface is azonate, glabrous, finely innate-fibrillose and radiately rugulose, fissured near the margin, faintly shining, ochraceous yellow-brown (between Yellow Ocher and Buckthorn Brown of Ridgway), here and there streaked with deeper colours and becoming reddish brown towards the margin (Ochraceous-Tawny or nearly Cinnamon-Brown). Stipe (probably) more or less eccentric, about 18 mm broad at the top, torn off from its base, glabrous, concolorous with pileus. Spines decurrent, crowded, subulate, up to 7 mm long, some of them pale yellowish, the majority much darkened, reddish brown, and horny and shrivelled. Context friable in pileus, firmer in stipe, homogeneous throughout, azonate, pale yellow-brown, not staining in a solution of KOH, non-amyloid. Odour and taste none.

Hymenium made up of basidia, without cystidia or gloeocystidia. Basidia cylindrical-clavate, with clamp connection at the base when immature, 4-spored, $20\text{--}24 \times 4.5\text{--}6 \mu$, with the sterigmata up to 3μ long. Spores ellipsoid, tapering towards the base, more or less curved, smooth, colourless, with oblique apiculus, non-amyloid, $5.4\text{--}6.3 \times 1.9\text{--}2.5 \mu$. Hyphae of the context with clamp connections, sparingly branched, more or less flexuous but side-branches often straight for some distance, gradually or abruptly inflated in places, thin-walled but giving rise to thick-walled side-branches, the latter becoming increasingly frequent going from margin to base of pileus, with increasing thickening of the cell-walls; hyphae in the stipe almost exclusively thick-walled or with their lumen entirely obliterated.

The "e" in the epithet "*aitchesoni*" as published by Berkeley must be considered a printer's error. The name of the person who sent the fungus reads Aitchison, and Berkeley himself wrote "*Hydnum Aitchisoni*" on the label of the material.

Some points in the original diagnosis need comment since they differ from the description given above. Berkeley stated that the pileus was tomentose (in the description repeated as follows: "at first minutely tomentose . . ."), and that the spines were fuscous. Actually, there is no trace of a tomentum, although it is true that a semblance of it is brought about by the erect ends of ruptured superficial fibers. Seen under the microscope, the hyphae appear gelatinized and firmly agglutinated even close to the margin of the pileus, which is certainly not the case where there is a true tomentose surface. With regard to the spines, these have not darkened because of the ripening of the spores, but as a result of the way they were dried.

In view of the fact that the species is said to be edible, it is remarkable that



Figs. 1-10. *Mycoleptodonoides aitchisonii* (Berk.) Maas G.: 1—pileus shown from above, with torn remnants of other pilei; 2—two imbricate pilei in radial section; 3—two immature basidia, one shown with basal clamp connection; 4—four basidia in various stages of development, the last one with its sterigmata collapsed; 5—spores; 6—hypha of the context, showing (i) the gradual inflation to twice its width, (ii) a much narrower side-branch, and (iii) a clamp connection; 7—a straight and narrow hypha, widening abruptly and becoming flexuous; 8—thin-walled hypha giving rise to a thick-walled side-branch; 9—thick-walled hypha with clamp connection; 10—thick-walled hypha with part of its lumen obliterated (Figs. 1-2: $\times 1$; Figs. 3-10: $\times 1300$).

nothing is known about its distribution, for no information is to be found in either Ahmad, Fungi of West Pakistan (1956) or Butler & Bisby, The Fungi of India (1931). Further, Mr. D. A. Reid informed me that there are no additional collections of the species at Kew.

By an unfortunate coincidence, Nikolajeva's work was only consulted after the first proof of the present paper had come off the press. Although the most urgent alterations, including the change of the generic name, could be inserted, the time appeared too short for a request for an examination of the type material of Nikolajeva's species to be answered.

As far as can be judged from the description, *Mycoleptodonoides vassiljevae* has much in common with *M. aitchisonii*, but differs in that (1) the margin is stated to terminate in spines, (2) the spores are somewhat smaller, measuring $4-5 \times 1.5-2 \mu$, and (3) the hyphae are said to be rarely thin-walled. It is hard to say whether these differences are of any consequence, or whether perhaps they are coupled with others as yet not apparent from the description. One of the features, for instance, about which information is badly needed, is the presence or absence of clamp connections on the hyphae of the flesh and at the base of the basidia. Pending the comparison of *Mycoleptodonoides aitchisonii* and *M. vassiljevae*, identification of both species seems premature.

I am very much obliged to Mr. D. A. Reid, The Herbarium, Royal Botanic Gardens, Kew, for correction of the English text.

REFERENCE

MAAS GEESTERANUS, R. A. 1960. Notes on Hydnums. *In Persoonia* 1: 341-384.