

ADDITIONS TO THE GENUS *HANSFORDIELLA*

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IN the course of taxonomic studies on hyphomycetes, I have come across two fungi which are now classified in *Brachysporium* but which, in my opinion, are congeneric with *Hansfordiella asterinearum* Hughes, the type species of the genus *Hansfordiella* Hughes. I am giving below descriptions of these two fungi, from type material.

1. *Brachysporium bakeri* Sydow

Brachysporium bakeri was described by Sydow (1914) as follows: "Cæspitulis hypophyllis, per totam folii superficiem sparsis v. sæpius plus minus aggregatis et intricato-confluentibus, obscure olivaceo-brunneis; hyphis conidiophoris erectis, rigidulis, remote septatis (articulis 35–55 μ long), obscure fuscis, simplicibus, 350–500 \times 5–7 μ ; conidiis breviter obclavatis, basi rotundatis, ad apicem obtuse attenuatis, 2-septatis, non-constrictis, dilute fuscis, levibus, guttulatis, rectis v. inæquilateria, 24–30 \times 9–11 μ . Hab. in foliis vivis *Macaranga* sp. (Euphorbiaceæ), Mt. Maquiling prope Los Banos, Ins. Philippin. (C. F. Baker) (Saccardo, 1931, p. 834).

I have examined type material of this fungus ex Herb. Mus. Bot. Stockholm (Herb. M.U.B.L. 1632-slide). The colonies are hypophyllous, superficial, irregular in outline, scattered or aggregated, olivaceous to brown. The repent hyphæ are subhyaline to pale brown, somewhat roughened, branched, septate and 1–3 μ wide. The conidiophores arise laterally from cells of the repent hyphæ singly or in groups of up to four, the cell from which they arise usually being swollen, of variable length, 5.6–8.4 μ wide and brown in colour. The conidiophores are erect, straight or bent, simple, cylindrical, dark brown, thick-walled, many-septate (septa being 18–54 μ apart), 4.2–8.4 μ wide at the base, 5.6–8.4 μ wide in the middle, about 7 μ wide at the tip, and 350–630 μ long. Usually, the apical part of the conidiophore up to a length of 100 μ may be sporiferous. The presence of many characteristic prominent elevated circular scars all round the sporiferous part is the chief feature of the fungus. The scars are 2.1–2.8 μ in diameter and indicate points of attachment of fallen conidia. Apart from the apical part of the conidiophore, conidia may sometimes be produced farther below

on the conidiophore and thus there may be one or more sporiferous regions on the conidiophore, other than the apical one. Sometimes, the conidiophore may proliferate at its tip through the scar of a fallen conidium, grow for a length and then produce conidia. This is one way in which more than one sporiferous region may be formed on one conidiophore. The conidia are produced singly and are acropleurogenous; they are short-obclavate, subhyaline to pale brown, 2-septate when mature, sometimes slightly constricted at the septa, broadest immediately above the base or else in the middle, tapering above, with a smoothly rounded apex, smooth-walled, $21.0\text{--}28.0\ \mu$ long, $7.7\text{--}9.8\ \mu$ wide where widest, $2.8\text{--}4.2\ \mu$ wide towards the tip, and each with a distinct basal scar $2.1\text{--}2.8\ \mu$ wide.

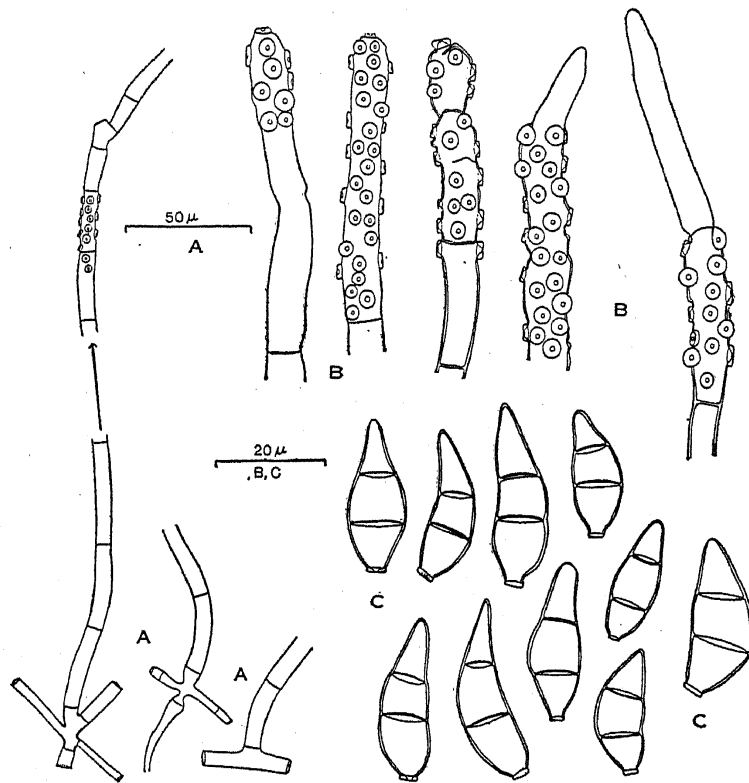


FIG. 1. *Hansfordiella bakeri* from type specimen (Herb. M.U.B.L. 1632): A, Conidiophores and their mode of origin; B, Apical sporiferous parts of conidiophore; C, Conidia.

The fungus is clearly not a *Brachysporium*; it is not congeneric with *B. obovatum* (Berk.) Sacc., the lectotype species of the generic name *Brachysporium* (see Hughes, 1951 a), in which the conidia develop singly at the apices of successively produced growing points and are attached to the conidiophore by a narrow, usually bent or twisted separating cell. On the other hand, the presence of many distinct and prominent circular, elevated conidial scars on the conidiophores, and the production of phaeo-

phragmospores singly and acropleurogenously on the conidiophores indicate its close similarity to *Hansfordiella asterinearum* Hughes, the type species of the genus *Hansfordiella* Hughes (Hughes, 1951 *b*). Hughes characterised his genus as "in plagulis Asterinearum et Meliolæ hyperparasitantes" (Hughes 1951 *b*, p. 10), but I do not consider that *Brachysporium bakeri* should be excluded from *Hansfordiella* merely because it is not a hyperparasite on another fungus. Indeed, it has a very close resemblance to *Hansfordiella cupulifera*, as figured by Hughes (1951 *b*, p. 13). I, therefore, consider *Brachysporium bakeri* to be a good *Hansfordiella*; it is, however, specifically distinct from the three species of *Hansfordiella* so far known [viz., *H. asterinearum* Hughes, *H. cupulifera* (Hansf.) Hughes and *H. meliolæ* (Hansf.) Hughes] and may, therefore, be placed in *Hansfordiella* as a separate species:

***Hansfordiella bakeri* (Sydow) Subramanian comb. nov.**

Basonym: *Brachysporium bakeri* Sydow, 1914, *Ann. mycol.*, **12**: 201; Saccardo, 1931, *Sylloge Fungorum*, **25**: 834.

Type specimen: on *Macaranga* sp., Mount Makiling, near Los Banos, Philippine Islands, Dec. 18, 1913, C. F. Baker, 2798, ex Herb. Mus. Botan. Stockholm (Herb. M.U.B.L. 1632-slide).

2. *Brachysporium harunganae* Hansford

Brachysporium harunganae was described by Hansford (1946, pp. 211-12) as follows: "*Plagula* tenuissimæ griseæ hypophyllæ effusæ. *Mycelium* superficiale, ex hyphis subhyalinis 2-3 μ cr., indistincte remote septatis ramosis compositum, inter squamas folii repens. *Conidiophora* erecta, dispersa, simplicia, septata, atrobrunnea, subrecta, 300-500 \times 6-7 μ , sursum cicatricibus atris prominulis rotundis 3-4 μ diam. laxè prædita. *Conidia* singula, acro-pleurogena, obclavata, olivacea, apice breviter attenuato-rotundata pallidiora, basi truncata, hilo plano atro, levia, 2-septata, haud constricta 30-45 \times 8-11 μ . Hab. in foliis *Harunganae madagascariensis*, Kawanda, Uganda, Hansford 3347." After the diagnosis, Hansford added: "Though the mycelial hyphæ ramify closely among the cuticular scales, no penetration of the leaf was observed, and it appears to be saprophytic in habit."

I have examined type material of this fungus ex National Fungus Collections, U.S.D.A. (Herb. M.U.B.L. 1696-slide). The colonies are hypophyllous, thin and effuse. The repent hyphæ are 2-3 μ wide, septate, branched and subhyaline to pale brown. The conidiophores arise laterally from cells of the repent hyphæ or more usually from a cell of a germinated phragmospore whose wall becomes thickened and darkened. The conidiophores are erect,

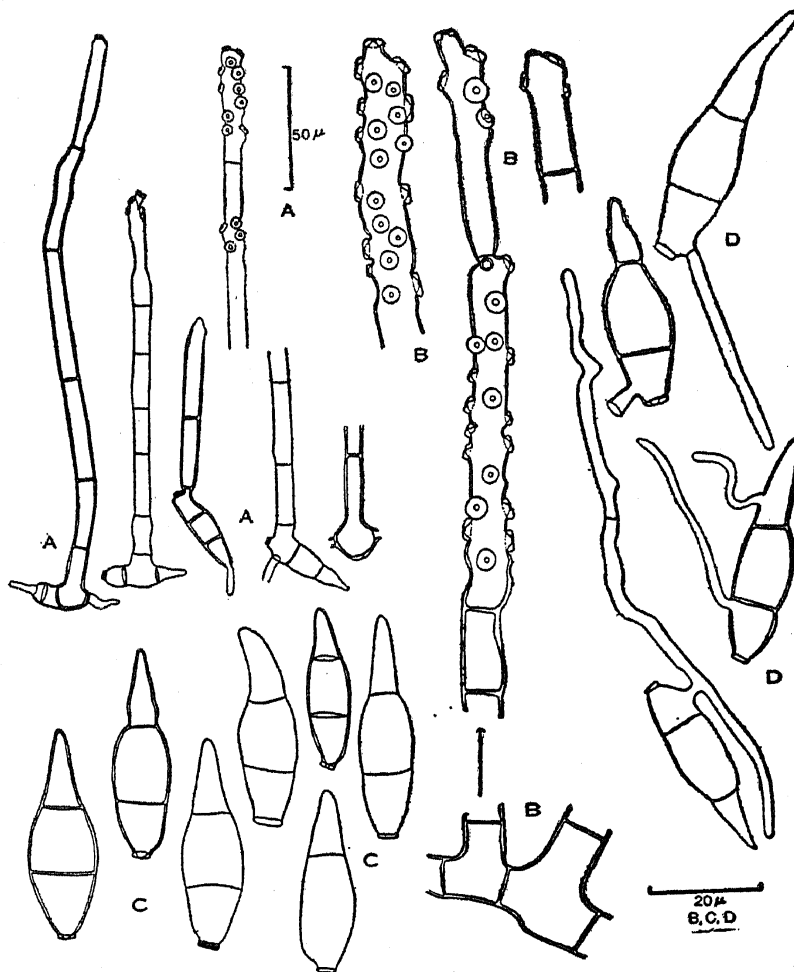


FIG. 2. *Hansfordiella harunganae* from type specimen (Herb. M.U.B.L. 1696): A, Conidiophores and their mode of origin; B, magnified views of conidiophores and sporiferous parts; C, conidia; D, germination of conidia.

straight or bent, simple, cylindrical, sometimes with swellings, many-septate (septa $14.4\text{--}43.2\ \mu$ apart), dark brown, paler towards the tip, $322\text{--}462\ \mu$ long, $7.0\text{--}9.1\ \mu$ wide at the base, $5.6\text{--}7.0\ \mu$ wide in the middle and $6.3\text{--}9.8\ \mu$ wide towards the tip. Usually the apical part of the conidiophore up to a length of $(44.8\text{--})126.0\ \mu$ may be sporiferous. Like *Brachysporium bakeri*, the presence of many characteristic prominent elevated circular scars on the sporiferous part of the conidiophore is the striking feature of the fungus. The scars are $3.5\text{--}5.6\ \mu$ in diameter and about $1\text{--}2\ \mu$ tall and indicate points of attachment of fallen conidia. Apart from the apical fertile part of the conidiophore, conidia may sometimes be borne farther below on the conidiophore and thus a conidiophore may have more than one sporiferous region other than the apical one. It is not unusual for a conidiophore to proliferate at its tip through the scar of a fallen conidium, grow for a length and

then produce conidia and this is one way in which more than one sporiferous region may be formed on a conidiophore. The conidia are produced singly and are acropleurogenous. They are obclavate, subhyaline to pale brown, smooth-walled, 2-septate when mature, sometimes constricted at one or both septa, usually widest in the middle, tapering above into a narrow-conical apical cell with blunt or rounded apex and $2.8-3.5 \mu$ wide where it is widest, with the basal cell somewhat crucible-shaped and with a distinct flat, dark, basal scar $3.5-5.6 \mu$ wide; they are $26.6-46.2 \mu$ long and $7.7-9.8 \mu$ wide where they are widest. They usually germinate by producing one or more germ tubes laterally from any of the three cells and at least one of them elongates, becomes thick-walled and septate and is transformed into a simple, erect conidiophore producing conidia.

It may be seen that the fungus has little similarity to *Brachysporium obovatum* since the conidia in the former are not attached to the conidiophore by separating cells; it cannot, therefore, be retained in *Brachysporium*. On the other hand, it is clear that in having prominent elevated circular scars on the sporiferous part of the conidiophore and in producing phæophragmospores acropleurogenously, the fungus has the features of a *Hansfordiella* and is similar to *Brachysporium bakeri*. Accordingly, I propose the combination:

***Hansfordiella harunganae* (Hansf.) Subramanian comb. nov.**

Basonym: *Brachysporium harunganae* Hansford, 1946, *Proc. Linn. Soc. Lond.*, **157**: 211-12.

Type specimen: on *Harungana madagascariensis*, Kawanda, 3, 1944. coll. and identified by C. G. Hansford, ex Herb. Mycologist, Dept. Agric. Uganda no. 3347 ex National Fungus Collections, U.S.D.A. (Herb. M.U.B.L. 1696-slide).

3. *Helminthosporium*? *Puttemansii* Arnaud, 1953, in *Bull. Soc. mycol. Fr.*, **69**: 288.

The conidiophore, as figured by Arnaud (1953, Fig. 9 J), has prominent circular elevated scars similar to those of *Hansfordiella* spp., and Arnaud's fungus is stated to be a hyperparasite on Microthyriaceæ. I have not seen a specimen. In any case, the name *Helminthosporium Puttemansii* is a *nomen nudum* and has yet to be validated by a diagnosis.

In conclusion, I am giving below a key to the five species of *Hansfordiella* so far known and, for this purpose, details about *H. asterinearum* Hughes, *H. cupulifera* (Hansf.) Hughes and *H. meliolæ* (Hansf.) Hughes have been gathered from Hughes (1951 b). Of these, the first two produce phragmospores; but *H. meliolæ* produces dictyospores, but is nevertheless

classified by Hughes in this genus because of its similarity to *H. asterinearum* in other features, especially the manner of production of conidia.

KEY TO SPECIES OF *Hansfordiella*

Conidia phragmospores

Conidiophore terminating in a single scar;

conidia acrogenous *H. asterinearum*

Conidiophore with many scars; conidia acro-
pleurogenous

Conidia 3 (-4)-septate, $34-50 \times 7.5-9 \mu$.. *H. cupulifera*

Conidia 2-septate

Conidia $21-28 \times 7.7-9.8 \mu$ *H. bakeri*

Conidia $26.6-46.2 \times 7.7-9.8 \mu$ *H. harunganae*

Conidia dictyospores *H. meliolae*

SUMMARY

On the basis of a study of type material, *Brachysporium bakeri* Sydow and *B. harunganae* Hansford are excluded from the genus *Brachysporium* Sacc., as typified by its lectotype species, *B. obovatum* (Berk.) Sacc. *B. bakeri* and *B. harunganae* are considered to be congeneric with *Hansfordiella asterinearum* Hughes, the type species of the genus *Hansfordiella* and are transferred to that genus as *H. bakeri* (Sydow) Subram. and *H. harunganae* (Hansf.) Subram., respectively. It is suggested that *Helminthosporium? Puttemansii* Arnaud (*nomen nudum*) may be a *Hansfordiella*. A key to the five species of *Hansfordiella* is appended.

ACKNOWLEDGEMENTS

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