

FUNGI OF RECENT NEPAL EXPEDITIONS



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Pp. 97-141; 4 *Text-figures*

BULLETIN OF
THE BRITISH MUSEUM (NATURAL HISTORY)
BOTANY

Vol. 4 No. 3

LONDON: 1968

THE BULLETIN OF THE BRITISH MUSEUM (NATURAL HISTORY), instituted in 1949, is issued in five series corresponding to the Departments of the Museum, and an Historical series.

Parts will appear at irregular intervals as they become ready. Volumes will contain about three or four hundred pages, and will not necessarily be completed within one calendar year.

In 1965 a separate supplementary series of longer papers was instituted, numbered serially for each Department.

This paper is Vol. 4, No. 3 of the Botany series.

*World List abbreviation:
Bull. Br. Mus. nat. Hist. (Bot.).*

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TRUSTEES OF
THE BRITISH MUSEUM (NATURAL HISTORY)

Issued 24 June, 1968

Price Nineteen Shillings

FUNGI OF RECENT NEPAL EXPEDITIONS

By FRANCES L. BALFOUR-BROWNE

THE fungi recorded below were collected during four general botanical expeditions made in the Nepal highlands by (1) J. D. A. Stainton, W. R. Sykes and L. H. J. Williams in 1954, (2) J. D. A. Stainton in 1956, (3) A. H. Norkett in 1961-62 and (4) J. D. A. Stainton in 1962. Expeditions (1) and (4) were in Central Nepal while the other two were mainly in Eastern Nepal.

The collections were made at altitudes between 300 m. and 5,000 m. At the highest levels were Conifer and Rhododendron forests with Evergreen Oaks coming in from below, and the lower levels were characterized by rice terraces, bamboos, ferns and *Castanopsis* forest. Sheals & Inglis (1965) give details of the local geography and the nature of the terrain encountered in Expedition (3).

In this account references have been restricted to the authorities of the names used and to the more significant or well-known synonyms. For additional references to most of the species the revised (1960) edition of Butler & Bisby's indispensable *Fungi of India* by Vasudeva should be consulted.

In some groups the delimitation of genera is very controversial and consequently the classification and the names employed are very much a personal matter of opinion with very little agreement amongst workers. This is particularly so for the Polyporaceae. During the last twenty years new systems of classification for this group have been published by Pilát (1936-42, Europe), Cunningham (1947, 1947-50, 1965, New Zealand), Corner (1932, 1953, general), Overholts (1953, America), Imazeki (1943, Japan), Donk (1933, 1960, general), Singer (1962, general), Bondartzev (1953, Russia), Nobles (1958, Canada), Pinto-Lopez (1952, Portugal), Kotlaba & Pouzar (1957, Europe), Teixeira (1962, Brazil). These systems have been based on a variety of criteria: general anatomical and morphological structure, hymenial structure, hyphal structure, biosystematics, hyphal thickening and the presence or absence of clamps, and physiological characters. Significant as are these characters, nevertheless owing to the difference in emphasis placed upon them by different authors, considerable difficulty arises in attempting to derive a stable or consistent nomenclature. Here, therefore, the well-known, old or mainly Friesian subdivisions have been used for the Polyporaceae and the less conservative names included in the synonymy.

Recently suggested, but still tentative, relationships of certain agarics (so hitherto regarded) with polypores rather than with other agarics, or *vice versa*, are also not taken up here. The second edition of R. Singer's *The Agaricales in Modern Taxonomy* (1962) should be referred to for new ideas on the classification of this group.

As regards the Clavariaceae, these have been named by Dr. E. J. H. Corner of Cambridge, and each identification for which he is responsible is indicated by his initials in parentheses.

In mountainous countries such as Nepal with an annual rainfall in some areas of 500 cm., the difficulty is to get the plants dry. The tendency is therefore to press them too enthusiastically, with the consequence that some of the agarics and

Clavariae were tissue-paper thin and their hyphal structure indiscernible. To off-set this it would have been valuable to have had some of the soft and fleshy fungi preserved in fluid, and full notes as to colour, texture and shape when fresh are always much desired. For the rest, the material was in good condition and together represents the largest collection so far from this difficult and until recently almost inaccessible region: 160 species excluding some immature and over-ripe specimens which so far have resisted identification. Previous records consist of about two dozen species collected by Sir Joseph D. Hooker over a century ago and described by Berkeley (1850, 1851, 1852, 1854) and about 70 species collected by Polunin, Sykes and Williams in 1952 and reported in a previous number of this journal (Balfour-Browne, 1955).

All the specimens cited in this paper are in the herbarium of the British Museum (Natural History).

PHYCOMYCETES

ALBUGINACEAE

ALBUGO BLITI (Biv.) Kuntze, Revis. Gen. Pl. 2 : 658 (1891).—Best. Biga in Sydowia 9 : 347 (1955).

Uredo bliti Biv., Stirp. Rar. Sicil. 3 : 11 (1815).

Cystopus bliti (Biv.) De Bary in Ann. Sci. Nat., Sér. 4, Bot. 20 : 131, tab. 13 figs. 13-15 (1863).

Caecoma amaranthi Schwein. in Trans. Amer. Phil. Soc., New Ser., 4 : 292 (1832).

Cystopus amaranthi (Schwein.) Berk. in Grevillea 3 : 58 (1874).

NEPAL: Bhurungdi Khola, 1,600 m., on *Amaranthus lividus* L., 20th May, 1954, Stainton, Sykes & Williams 5342.

Distribution: Worldwide.

For a recent review of the genus *Albugo* consult Bestagno Biba (tom. cit. : 339-58).

PERONOSPORACEAE

SCLEROSPORA GRAMINICOLA (Sacc.) Schroet. in Cohn, Krypt.-Fl. Schles. 3 (1) : 236 (1886).

Protomyces graminicola Sacc. in Nuov. Giorn. Bot. Ital. 8 : 172 (1876).

NEPAL: Bongakhani, 2,130 m., on grass, 22 Aug. 1954, Stainton, Sykes & Williams 3943.

Distribution: America, Europe, Africa, India, Australia.

PYTHIACEAE

PHYTOPHTHORA INFESTANS (Mont.) De Bary in Journ. Roy. Agric. Soc., Ser. 2, 12 : 249 (1876).

Botrytis infestans Mont. in L'Institut, Sect. 1, 13 : 313 (1845).

NEPAL: Murigurja Gad, 2,500 m., on potato, 27 July 1954, Stainton, Sykes & Williams 3654.

Distribution: Worldwide.

ASCOMYCETES

MORCHELLACEAE

MORCHELLA ELATA Fries, Syst. Mycol. 2 : 8 (1822).

NEPAL: Siklis, north of Pokhara, 3,000 m., on rotten tree trunk, 21 Apr. 1954, *Stainton, Sykes & Williams 4956*.

Distribution: America, Europe, India, China, Japan, Australia.

HELVELLACEAE

HELVELLA CRISPA Fries, Syst. Mycol. 2 : 14 (1822).

NEPAL: Lete, 2,600 m., beneath conifers, 27 Aug. 1954, *Stainton, Sykes & Williams 7501*.

Distribution: Worldwide; previously recorded from Nepal in 1955.

HUMARIACEAE

ALEURIA AURANTIA (Fries) Fuckel in Jahrb. Nass. Ver. Naturk. 23-24 : 325 (1870).

Peziza aurantia Fries, Syst. Mycol. 2 : 49 (1822).

NEPAL: Ghar Khola, 2,130 m., 14 June 1954, *Stainton, Sykes & Williams 5759*.

Distribution: Worldwide.

GEOGLOSSACEAE

GEOGLOSSUM AFFINE (Durand) Sacc. & Trav. in Sacc., Syll. Fung. 19 : 756 (1910).—
Maas Geest. in Persoonia 4 : 23 (1965).

Gloeoglossum affine Durand in Ann. Mycol 6 : 420 (1908).

NEPAL: Annapurna Himal, Seti Khola, 3,830 m., on shady banks, 28 July 1954, *Stainton, Sykes & Williams 6540*. South of Gurjakhani, 4,000 m., among dwarf Rhododendron, 17 Aug. 1954, *Stainton, Sykes & Williams 3879*.

Distribution: United States, Himalayas.

These specimens were examined and identified by Dr. Maas Geesteranus.

MITRULA ROSEA Lloyd, Mycol. Not. 61 : 885, t. 129 fig. 1529 (1919).

NEPAL: Gosainkund, Malemchi, 2,800 m., on bare earth, 30 May 1962, *Stainton 3789*.

Distribution: India.

Pale rose coloured ascophores about 1 cm. tall with smooth or contorted caps.

SCLEROTINIACEAE

RUTSTROEMIA sp. cf. FIRMA (Fries) Karst. in Bidr. Känn. Finl. Natur & Folk 19 : 108 (1871).

Peziza firma Fries, Syst. Mycol. 2 : 117 (1822).

Ciboria firma (Fries) Fuckel, Symb. Mycol. : 312 (1869).

Phialea firma (Fries) Gill., Champ. Fr., Discom. : 101, t. 74 fig. 2 (1883).

NEPAL: Dhankuta Province, near Mahe, 1,300 m., on dead twig, 20 Sept. 1961, *Norkett 5175 B*.

Distribution (of *R. firma*): Worldwide.

The fungus agrees well with this species except that its spores are somewhat short, $9-11 \times 4-5 \mu$. The material, however, is barely ripe.

HYALOSCYPHACEAE

Perrotia malemchiensis Balfour-Browne, sp. nov. (Fig. 1.)

Apothecia sparsa, superficialia, sessilia, carnosa, uda pallide brunnea, sicca cinbarina, extus villosa, 500-1,000 μ diam.; setae cylindraceae ad basim \pm cohaerentes apice liberae et acutae, septatae, minute granulosae, pallide ochraceae; asci clavati, recti vel curvuli, octospori, $80-110 \times 9-10 \mu$; sporae clavatae vel fusoideae, hyalinae, 5-7 septatae, $20-30 \times 4-5 \mu$; paraphyses filiformes, septatae, hyalinae.

Ad ligna et cortices arborum frondosarum.

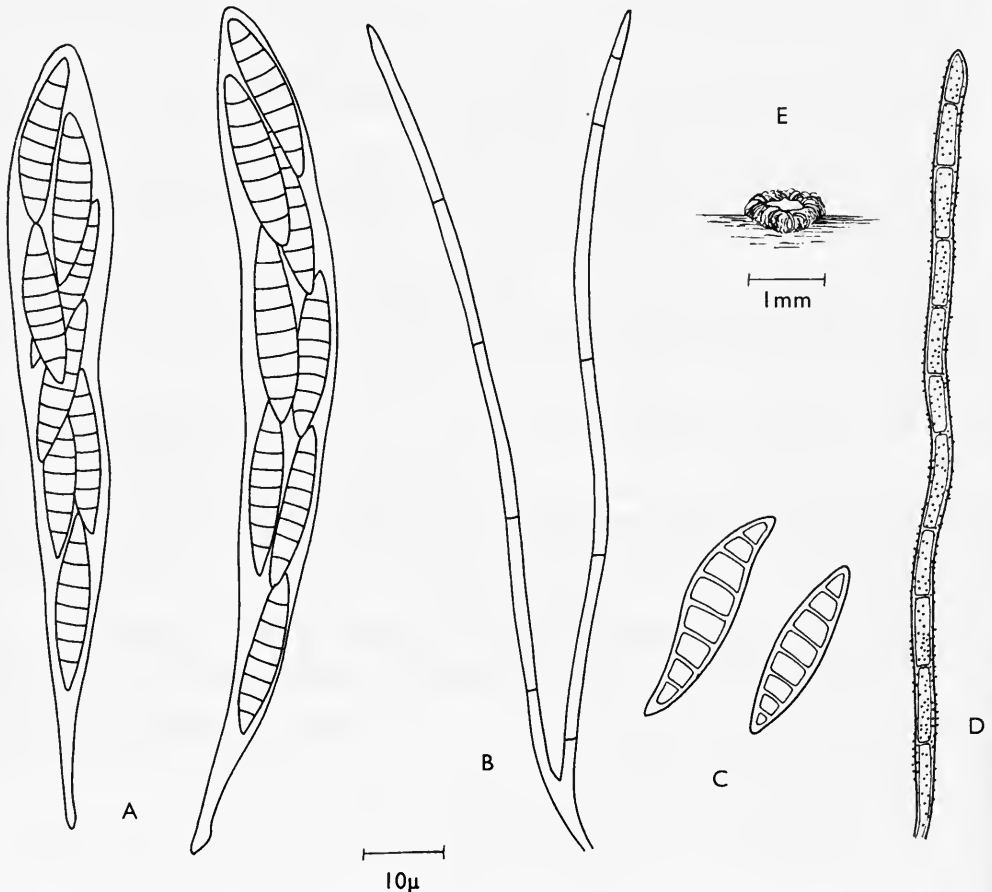


FIG. 1. *Perrotia malemchiensis* Balfour-Browne. A, asci containing ascospores; B, paraphyses; C, ascospores; D, external hair; E, apothecium. *Stainton 3768*.

NEPAL: Gosainkund, Malemchi, 2,400 on a dead tree, 29 May 1962, *Stainton*, 3768 (holotype).

This differs from related species not only in colour and measurements but in spore septation: *P. fusca* Müll. & Dennis, 1-septate; *P. lutea* (Phill.) Dennis, up to 31-septate; *P. himalayensis* Müll. & Dennis, 3-septate.

DERMATEACEAE

Mollisia dhankutae Balfour-Browne, sp. nov. (Fig. 2.)

Apothecia superficialia, sessilia, usque ad 1.5 mm. diam., disco sordide flavido-albo; excipulo fusco-brunneo, pseudoparenchymatico; asci cylindraceo-clavati, octospori, poro jodo tincto, $80-90 \times 9-10 \mu$; ascospores biseriatae, elongato-

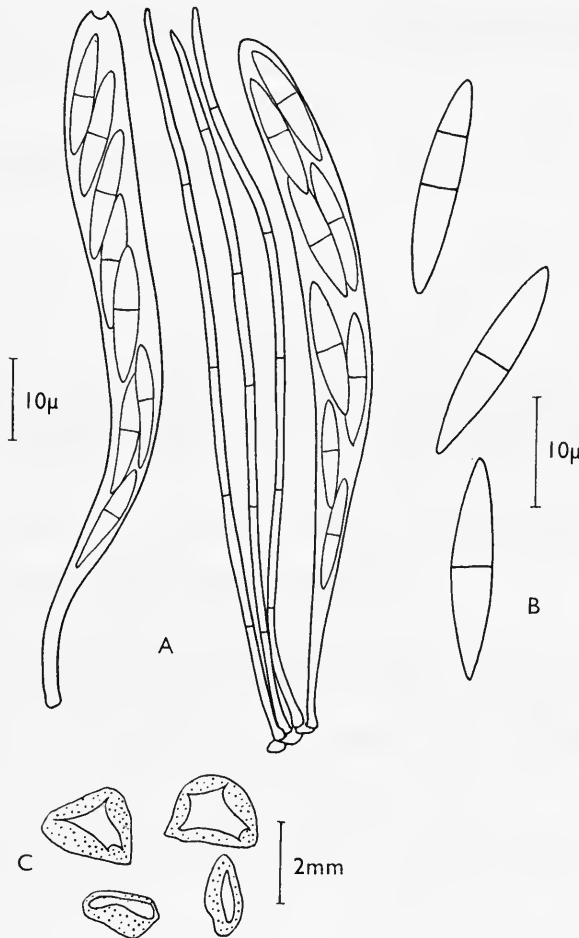


FIG. 2. *Mollisia dhankutae* Balfour-Browne. A, asci and paraphyses; B, ascospores; C, apothecia. *Norkett 7751 A.*

fusoideae, uniseptatae, hyalinae, $16-20 \times 3.5-4 \mu$; paraphyses filiformes, septatae, 2μ , supra usque 3.5μ .

In ramis siccis *Bambusae*.

NEPAL: Dhankuta Province, Taplejung district, Sanghu, 1,750 m., on dead bamboo stump, 19 Nov. 1961, *Norkett 7751 A* (holotype). Sanghu, 2,060 m., 9 Nov. 1961, *Norkett 7349*.

Although very close to *Mollisia caesia* var. *andina* Dennis (Kew Bull. 14 : 441 (1960)) from Venezuela, it differs in the absence of a whitish margin to the receptacle, in the slightly larger and more acutely pointed spores and in the different host. It differs also from *Cenangella bambusicola* Rick (Broteria 5 : 37 (1906)), which was described from living bamboo in South America, in that the paraphyses do not form an epithecium and the apothecia are not at first white, but externally very dark brown with an off-white disc.

OSTROPACEAE

VIBRISSEA TRUNCORUM Fries, Syst. Mycol. 2 : 31 (1822).

NEPAL: Rambrong, Lamjung Himal, 4,500 m., on dead roots of Rhododendron, 10 July 1954, *Stainton, Sykes & Williams 6269*.

Distribution: America, Europe. Apparently not previously recorded from Nepal or neighbouring countries, possibly because it is easily overlooked, being small and generally found on roots, frequently submerged in water, or on debris.

Apothecia scattered or in groups, with orange discs, 3-5 mm. diam., seated on pale stalks, blackish below, $15 \times 2-3$ mm. Asci $250-300 \times 6-8 \mu$; ascospores acicular, hyaline, multiseptate, $180-200 \times 1.5 \mu$. Paraphyses branched, filiform with spherical heads.

DIATRYPACEAE

DIATRYPE CHLOROSARCA Berk. & Broome in Journ. Linn. Soc. Lond., Bot. 14 : 123 (1873).

NEPAL: Tumlingtar, Arun ravine, on dead twigs, 23 Dec. 1961, *Norkett 9060*.

Distribution: Ceylon and India.

The Nepal collection agrees with the type material described from Ceylon: spores $7-9 \times 2-2.5 \mu$, hyaline to light brown.

HYPOCREACEAE

cf. BALANSIA ANDROPOGONIS Syd. apud H. & P. Syd. & Butl. in Ann. Mycol. 9 : 395 (1911).—Patel, Gokh. & Kulk. in Indian Phytopath. 4 : 65 (1951).

NEPAL: Mayangdi Khola, 1,000 m., on inflorescence of *Chrysopogon aciculatus*, 4 Sept. 1954, *Stainton, Sykes & Williams 4137*.

Distribution (of *B. andropogonis*): India, Philippines.

The inflorescence of the host is so deformed and shrouded by the fungus as to give the appearance of quite a different genus of grass. Only the *Ephelis* stage of the fungus is represented: conidia acicular, $20-24 \times 1.5 \mu$.

EPICHLÖE CINEREA Berk. & Broome in Journ. Linn. Soc. Lond., Bot. 14 : III (1873).

NEPAL: Taplejung district, Dhankuta Province, Sanghu, 2,000 m., on an indeterminate grass haulm, 17 Oct. 1961, *Norkett 5696 C*.

Distribution: Previously recorded from Ceylon. Sydow and Butler's record from Mysore (Ann. Mycol. 9 : 394 (1911)) appears to be a different species, as Petch (Ann. Roy. Bot. Gdns. Peradeniya 7 : 88 (1920)) has noted.

PHYLLACHORACEAE

CATACAUMA REPENS (Corda) Theiss. & Syd. in Ann. Mycol. 13 : 383 (1915).

Sphaeria repens Corda, Icones Fung. 4 : 42, tab. 9 fig. 123 (1840).

Phyllachora repens (Corda) Sacc., Syll. Fung. 2 : 597 (1883).

NEPAL: Pehwa Tal, 800 m., on fallen leaves of *Ficus religiosa*, 6 May 1954, *Stainton, Sykes & Williams 5254*.

Distribution: Cuba, Natal, India.

Several species of *Catacauma* have been described from *Ficus* spp. but this Nepal collection is quite typical of *C. repens*.

XYLARIACEAE

HYPOXYLON MULTIFORME (Fries) Fries, Summa Veg. Scand. : 384 (1849).

Sphaeria multiformis Fries, Syst. Mycol. 2 : 334 (1823).

NEPAL: Taplejung, Mewa Khola, 2,750 m., on moss-covered branch (? birch), 22 Jan. 1962, *Norkett 9300*. Ganesh Himal, Ankhu Khola, 2,130 m., on rotting log, 12 May 1962, *Stainton 3694*.

Distribution: Widespread in Northern hemisphere; previously recorded from Nepal.

HYPOXYLON TRUNCATUM (Schwein.) J. H. Mill. in Trans. Brit. Mycol. Soc. 17 : 130 (1932); Monogr. World Sp. Hypoxylon : 95 (1961).

Sphaeria truncata Schwein. in Schr. Naturf. Ges. Leipz. 1 : 44 (1822).—Fries, Syst. Mycol. 2 : 442 (1823).

NEPAL: Bakhri Kharka, north of Pokhara, 2,000 m., 25 Apr. 1954, *Stainton, Sykes & Williams 5065*.

Distribution: Tropical and semitropical; America, Africa, China, Japan.

Miller (loc. cit., 1961) should be consulted for an account of this species and its considerable synonymy.

XYLOSPHAERA HYPOXYLON subsp. *ADSCENDENS* (Fries) Dennis in Bull. Jard. Bot. Bruxelles 31 : 124 (1961).

Sphaeria adscendens Fries in Linnæa 5 : 537 (1830).

Xylospheera adscendens (Fries) Dennis in Kew Bull. 13 : 102 (1958).

Xylaria hypoxylon f. *tropica* H. & P. Syd. & Butl. in Ann. Mycol. 9 : 418 (1911).

Xylaria hypoxylon var. *tropica* (H. & P. Syd. & Butl.) Balf.-Browne in Bull. Brit. Mus. (Nat. Hist.), Bot. 1 : 216 (1955).

NEPAL: South of Gurjakhani, 3,500 m., 18 Aug. 1954, *Stainton, Sykes & Williams* 3897.

Distribution: South America, West Indies, Africa, India, Nepal, Indonesia.

This is the fungus previously recorded from Nepal as *Xylaria hypoxylon* var. *tropica* (Balfour-Browne, loc. cit.). Dennis (loc. cit., 1961) considers that it should be treated as a separate subspecies of *Xylospheera hypoxylon* Dumort. Dennis had not seen the type specimen of *Xylaria hypoxylon* forma *tropica* and left open the question of whether that name was a synonym of *Xylospheera hypoxylon* subsp. *adscendens*. I too have not seen the type, but I follow Dennis in considering that this is a separate subspecies.

XYLOSPHAERA MELLISSII (Berk.) Dennis in Kew Bull. 13 : 104 (1958); in Revista Biol. 1 : 186 (1958).

Hypoxylon mellissii Berk. in Melliss, St. Helena : 379 (1875).

Xylaria mellissii (Berk.) Cooke in Grevillea 11 : 85 (1883).

Xylaria arbuscula Sacc. in Michelia 1 : 249 (1878).—J. H. Mill. in Bothalia 4 : 265 (1942).

NEPAL: Dhankuta Province, Chainpur district, Tumlingtar, Sabhaya Khola, 600 m., "growing out of a niche in rock", 8 Dec. 1961, *Norkett 8471 A*.

Distribution: Generally common in the tropics and subtropics, but not previously reported from the Himalayan region.

The Nepal collection consists of branched stromata with long slender stalks and short cylindrical heads; ascospores are 14–16 × 4.5 μ .

XYLOSPHAERA POLYMORPHA (St. Amans) Dumort., Comment. Bot. : 92 (1822).—Dennis in Bull. Jard. Bot. Bruxelles 31 : 140 (1961).

Sphaeria polymorpha St. Amans, Fl. Agenaise : 520 (1821).

Xylaria polymorpha (St. Amans) Grev., Fl. Edinensis : 355 (1824).

NEPAL: Arun Valley, Sabhaya Khola, 2,300 m., on tree trunk in forest, 7 Sept. 1956, *Stainton 1607*.

Distribution: Worldwide.

For a recent account and complete synonymy see Dennis (loc. cit.).

XYLOSPHAERA TELFAIRII (Berk.) Dennis in Kew Bull. 13 : 106 (1958); in Bull. Jard. Bot. Bruxelles 31 : 119 (1961).

Sphaeria telfairii Berk. in Ann. Nat. Hist. 3 : 397 (1839).

Xylaria telfairii (Berk.) Fries in Nov. Acta Reg. Soc. Sci. Upsal., Ser. 3, 1 : 127 (1851).

NEPAL: Arun Valley, Kasuwa Khola, 2,800 m., on tree trunk in forest, 11 Sept. 1956, *Stainton 1619*. Arun Valley, Hatiar, 2,600 m., 21 Aug. 1956, *Stainton 1408*.

Distribution: Africa, Ceylon, India, Indonesia, Australia.

For a recent account of the species, Dennis (loc. cit.) should be consulted.

USTULINA DEUSTA (Fries) Petrak in Ann. Mycol. 19 : 279 (1921).

Sphaeria deusta Fries, Syst. Mycol. 2 : 345 (1823).

Ustulina vulgaris Tulasne frat., Sel. Fung. Carp. 2 : 23, tab. 3 figs. 1-6, (1863), *nom. superfl.*

NEPAL: Bakhri Kharka, north of Pokhara, 2,000 m., 25 April 1954, *Stainton, Sykes & Williams 5056*.

Distribution: Worldwide.

CORONOPHORACEAE

CORONOPHORA EPISTROMA Syd. apud. Syd., Mitter & Tand. in Ann Mycol. 35 : 231 (1937).

NEPAL: Sanghu, gully below camp, 2,000 m., on dead twig, 21 Dec. 1961, *Norkett 6390*.

Distribution: Originally recorded from Allahabad, and not reported since.

This species was originally described as parasitic in the stroma of *Haplosporella phyllanthina* and again in the present gathering it is growing within the remains of a fungal pycnidium, but the identity of the latter could not be determined, nor that of the host twigs.

PLEOSPORACEAE

FENESTELLA FENESTRATA (Berk. & Broome) Schroet. in Cohn, Krypt.-Fl. Schles. 3(2) : 435 (1897). (Fig. 3).

Valsa fenestrata Berk. & Broome in Ann. Mag. Nat. Hist., Ser. 3, 3 : 366, t. 10 fig. 14 (1859).

Fenestella princeps Tulasne frat., Sel. Fung. Carp. 2 : 207 (1863), *nom. superfl.*

NEPAL: Dhankuta district, Chitre, on dead twig, 2,000 m., 20 Sept. 1961, *Norkett 5159 A*.

Distribution: N. America, Europe.

The fungus occurs on an unidentified dicotyledonous twig. The pseudothecia are superficial, \pm stipitate, arising in small groups on an inconspicuous stroma. Asci cylindrical, $250 \times 20 \mu$ approx. Ascospores $30-50 \times 12-14 \mu$, broadly fusiform, dark brown, the end cells being \pm hyaline; there are 3 main and several lesser transverse septa and several longitudinal septa.

Petrak (Sydowia 8 : 165 (1954)) describes *Cucurbitaria pakistanica* from Choa Saïdan Shah, on *Acacia modesta*. This resembles the Nepal fungus in general structure but its spores are considerably smaller, the average size being $13-22 \times 8-10 \mu$.

VENTURIACEAE

REHMIDOTHIS OSBECKIAE (Berk. & Broome) Theiss. & Syd. in Ann. Mycol. 12 : 192 (1914).

Dothidea osbeckiae Berk. & Broome in Journ. Linn. Soc. Lond., Bot. 14 : 134 (1873).

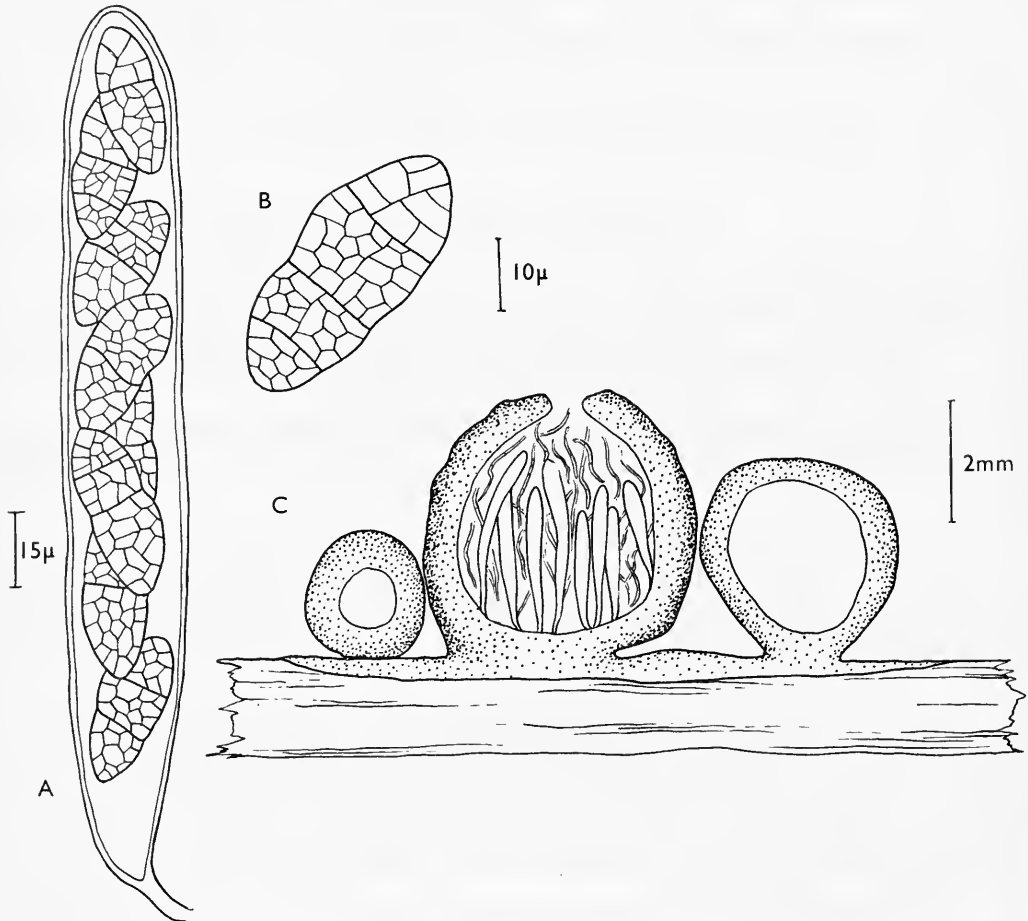


FIG. 3. *Fenestella fenestrata* (Berk. & Broome) Schroet. A, asci containing ascospores; B, ascospore; C, stroma with pseudothecia. Norkett 5159 A.

NEPAL: Dhankuta Province, Taplejung district, Sanghu, 2,000 m., on *Osbeckia* sp., 4 Oct. 1961, Norkett 5696 D.

Distribution: Previously recorded only from Ceylon.

POLYSTOMELLACEAE

SCHNEEPIA sp. cf. DISCOIDEA (Racib.) Racib. ex Theiss. & Syd. in Ann. Mycol. 13 : 203 (1915).

Parmularia discoidea Racib., Parasit. Algen & Pilze Java's 2 : 21 (1900).

NEPAL: Dhankuta Province, Taplejung district, Sanghu, 1,600 m., on fern, *Davallia* sp., 7 Jan. 1962, Norkett 8552.

Distribution (of *S. discoidea*): Previously recorded on *Polypodium longissimum* from Java.

The Nepal material is not quite ripe, but appears to represent the above species. Its rounded black stromata occur on the underside of the fronds and are somewhat raised in the centre. The asci and the 1-septate brownish spores, which are not fully mature, measure approximately $35 \times 8 \mu$ and $10 \times 4 \mu$ respectively.

Several black stromatic Ascomycetes with 1-septate spores have been described on ferns. Careful comparison of type and authentic material is needed and would probably reveal that a number of names are synonyms.

BASIDIOMYCETES

USTILAGINACEAE

CINTRACTIA CARICIS (Pers.) Magnus in Verh. Bot. Ver. Prov. Brandenb. 37 : 79 (1896).

Uredo caricis Pers., Syn. Meth. Fung. : 225 (1801).

NEPAL: Lamjung Himal, 4,500 m., on inflorescence of Cyperaceae, 14 July 1954, *Stainton, Sykes & Williams* 6350. East of Chalike Pahar, 4,500 m., 4 Aug. 1954, *Stainton, Sykes & Williams* 3743.

Distribution: Worldwide.

FARYSIA OLIVACEA (DC.) H. & P. Syd. in Ann. Mycol. 17 : 41 (1919).

Uredo olivacea DC., Fl. Franç. 6 : 78 (1815).

NEPAL: Bhurungdi Khola, 1,600 m., smut balls in inflorescence of *Carex cruciata* Wahl., 20 May 1954, *Stainton, Sykes & Williams* 5336. Near Lumsum, 2,300 m., 24 Oct. 1954, *Stainton, Sykes & Williams* 9127.

Distribution: Worldwide.

SPHACELOTHECA HYDROPIPERIS (Schumach.) de Bary, Vergl. Morph. Biol. Pilze : 187 (1884).

Uredo hydro Piperis Schumach., Enum. Pl. Saell. 2 : 234 (1803).

NEPAL: Southwest of Gurjakhani, 3,300 m., in flower of *Polygonum campanulatum*, 20 Oct. 1954, *Stainton, Sykes & Williams* 9104. Dhankuta Province, Taplejung district, Sanghu, 2,000 m., 25 Nov. 1961, *Norkett* 7532 A.

Distribution: Worldwide on *Polygonum* sp. Previously recorded from Nepal in 1955.

SPHACELOTHECA REILIANA (Kühn) Clint. in Journ. Mycol. 8 : 141 (1902).

Ustilago reiliana Kühn in Rabenh., Fung. Eur. : No. 1998 (1875).

NEPAL: Murigurja Gad, 2,500 m., on *Zea mays*, 27 July 1954, *Stainton, Sykes & Williams* 3653.

Distribution: Recorded in most countries where maize is grown.

Ustilago bistortarum (DC.) Körn. in *Hedwigia* 16 : 38 (1877).

Uredo bistortarum DC., Fl. Franç. 6 : 76 (1815).

NEPAL: East of Chalike Pahar, 4,830 m., on leaves of *Polygonum affine*, 22 Sept. 1954, *Stainton, Sykes & Williams 454I*.

Distribution: Worldwide.

Forming in this material elongated pustules over the under surface of the leaf lamina, and not occurring on the margins. The spores are pale purple, angular to globose, 10–16 μ , minutely verrucose.

This species, common in most parts of the world, appears not to have been recorded previously from India or neighbouring countries.

Ustilago hordei (Pers.) Lagerh. in Mitt. Badischen Bot. Ver. [2](59) : 70 (1889), non *Ustilago hordei* Bref. (1888).

Uredo segetum var. *hordei* Pers., Syn. Meth. Fung. : 224 (1801).

NEPAL: Gurjakahni, 2,800 m., on barley inflorescence, 1 June 1954, *Stainton, Sykes & Williams 294I*. Tegar, north of Mustang, 6 Aug. 1954, *Stainton, Sykes & Williams 2252*.

Distribution: Worldwide.

The name used for this species is illegitimate, being a later homonym of *Ustilago hordei* Bref. (in Nachr. Klub Landwirthe Berl. 221 : 1593 (28 June 1888)), which was based on the loose smut of barley, as a name for which it antedated *U. nuda* (Jensen) Kellerm. & Swingle (see below). Before the correct names of these two species can be established, it is necessary to fix the application of the name *Uredo segetum* Pers. (Syn. Meth. Fung. : 224 (1801)), and also to investigate the status and application of the names *Uredo carbo-tritici* and *Uredo carbo-hordei* quoted by Kellerman & Swingle (in Annu. Rep. Exp. Stat. Kansas State Agric. Coll. 2 : 262, 269, 278 (1890)) from a work by Philippar not available to me. I therefore adopt for the present the names in current use.

USTILAGO MORINAE Padw. & Azmat. Khan in Mycol. Pap., Imp. Mycol. Inst. 10 : 1 (1944).

NEPAL: Above Seng Khola, 4,500 m., in flowers of *Morina*, 25 June 1954, *Stainton, Sykes & Williams 3254*.

Distribution: Recorded from Kashmir in 1944 on *Morina longifolia*.

Ustilago nuda (Jens.) Kellerm. & Swingle in Annu. Rep. Exp. Stat. Kansas State Agric. Coll. 2 : 277 (1890).

Ustilago segetum var. *nuda* Jens. in Journ. Roy. Agric. Soc., Ser. 2, 24 : 406 (1888).

Ustilago nuda Rostr. in Tidsskr. Landøkon 8 : 745 (1889), *nom. nud.*

NEPAL: Chimgoan, north of Tukucha, 3,000 m., on barley in field, 3 June 1954, *Stainton, Sykes & Williams 904*. Gurjakhani, 2,830 m., on wheat, 1 June 1954,

Stainton, Sykes & Williams 2940. Tamur valley, Mewa Khola, on wheat, 17 May 1956, *Stainton 343*.

Distribution: Worldwide.

For the status of this name, see under *Ustilago hordei* above.

USTILAGO PIPERI Clint. in Proc. Boston Soc. Nat. Hist. 31 : 382 (1904).—G. W. Fisch., Man. N. Amer. Smut Fungi : 291, fig. 123 D (1953).

NEPAL: Near Seng Khola, 4,600 m., on *Polygonum rumicifolium*, 9 Aug. 1954, *Stainton, Sykes & Williams 3809*.

Distribution: United States of America.

The Nepal collection agrees well with this species; it forms large pustules on the underside of the leaves; the spores are pinkish purple, spherical or subspherical, 7–9 μ diam., marked with striae. This species differs from *U. bistortarum* in the distinctly smaller spores.

TILLETIACEAE

MELANOTAENIUM SELAGINELLAE Henn. & Nyman in Warb., Monsunia 1 : 2 (1900).

NEPAL: Dhankuta Province, Taplejung district, Sanghu, on *Selaginella* sp., 27 Oct. 1961, *Norkett 6551 A*.

Distribution: Previously recorded from Tjibodas in Java.

In the present collection the smut occurs mostly on the basal portion of the leaves, but occasionally it covers the whole leaf surface. Spores dark brown, globose, coarsely verrucose, 15–18 μ diameter.

MELAMPSORACEAE

COLEOSPORIUM BARCLAYENSE Bagchee in Ind. Forest Rec., New Ser., Bot. 4 : 53 (1950).

NEPAL: Annapurna Himal, Mardi Khola, 4,160 m., on *Senecio alatus* Wall. ex DC., 20 Sept. 1954, *Stainton, Sykes & Williams 8528*.

Distribution: India.

The teleutospore stage is represented in this collection. Morphologically, the *Coleosporium* species on *Senecio* are difficult to separate, but, on the basis of inoculation experiments carried out by Bagchee (loc. cit.) on rusts on different species of *Senecio*, that on *S. alatus* would appear to be his *C. barclayense*.

COLEOSPORIUM CAMPANULAE (Pers.) Kickx, Fl. Crypt. Flandres 2 : 54 (1867).—Gaüm. in Beitr. Krypt.-Fl. Schweiz 12 : 113, fig. 99–100 (1959).

Uredo campanulae Pers., Syn. Meth. Fung. : 217 (1801).

NEPAL: Near Jagat, 2,800 m., on *Campanula* sp., 5 July 1954, *Stainton, Sykes & Williams 3376*. Above Lumsum, 3,700 m., on *Campanula* seedlings, 23 Oct. 1954, *Stainton, Sykes & Williams 9122*. Rambrong, Lamjung Himal, 3,000 m., on *Lobelia seguinii* var. *doniana* (Skotts.) Wimm., 27 Oct. 1954, *Stainton, Sykes & Williams*

8306. Annapurna Himal, Mardi Khola, 2,600 m., on *Lobelia* sp., 20 Sept. 1954, *Stainton, Sykes & Williams* 8531. Baglung, 1000 m., on *Wahlenbergia gracilis* DC., 20 Apr. 1954, *Stainton, Sykes & Williams* 548.

Distribution: Widely represented in the Northern hemisphere and previously recorded from Nepal.

The uredospores occurred on stems as well on both leaf surfaces. A greater proportion of the spores on *Wahlenbergia* were oblong and elongated compared with those on *Campanula*. Probably two biological forms are represented. Gäumann (loc. cit.) should be consulted for an account of at least six such forms which have been isolated from different genera and species of Campanulaceae.

COLEOSPORIUM INULAE Rabenh. in Bot. Zeit. 9 : 455 (1851).—P. & H. Syd., Monogr.

Ured. 3 : 609 (1915).—Vasud. in Butl. & Bisby, Fungi of India, Rev. Ed. : 85 (1960).

Uredo inulae Kunze in Klotzsch, Herb. Viv. Mycol., No. 589 (1844), *nom. nud.*

NEPAL: Pasgam, 1,500 m., on *Inula cappa* DC., 25 June 1954, *Stainton, Sykes & Williams* 5938.

Distribution: Europe, North Africa, Asia Minor, India.

The uredo stage is represented and this chiefly on the upper surface of the leaves, with very few pustules on the lower.

COLEOSPORIUM PEDICULARIDIS Tai in Farlowia 3 : 100 (1947).

NEPAL: Taglung, south of Tukucha, Kali Gandaki, 4,000 m., on leaves of *Pedicularis* sp., 22 Sept. 1954, *Stainton, Sykes & Williams* 7987. Panchasi, 2,300 m., on *Pedicularis* sp., 15 Oct. 1954, *Stainton, Sykes & Williams* 8944.

Distribution: China.

There is little doubt that the Nepal fungus represents this species. The uredosori are chiefly on the under surface of the leaves, light yellow and soon pulverulent. The uredospores are coarsely and densely echinulate, 18–30 × 12–20 μ , oblong to irregularly globose.

COLEOSPORIUM PLECTRANTHI Barcl. in Journ. Asiatic Soc. Bengal 59 (2): 89 (1890).

NEPAL: Sattewati, 2,000 m., on *Plectranthus* sp., 12 Oct. 1954, *Stainton, Sykes & Williams* 8950.

Distribution: India, Japan.

COLEOSPORIUM SENECONIS (Pers.) Fries, Summa Veg. Scand. : 512 (1849).

Uredo farinosa var. *senecionis* Pers., Syn. Meth. Fung. : 218 (1801).

NEPAL: Above Lumsum, 3,160 m., on *Senecio graciliflorus* DC., 10 Sept. 1954, *Stainton, Sykes & Williams* 4327. Dhankuta Province, Milke Danda, 3,160 m., on *Senecio graciliflorus* DC., 16 Nov. 1961, *Norkett* 7121 A.

Distribution: Worldwide.

Uredospore stage. See note under *Coleosporium barclayense*.

HYALOPSORA POLYPODII (Pers.) Magn. in Ber. Deutsch. Bot. Ges. 19 : 582 (1902).

Uredo linearis var. *polypodii* Pers., Syn. Meth. Fung. : 217 (1801).

NEPAL: Annapurna Himal, Seti Khola, 4,160 m., on *Polypodium malacodon*, 3 Aug. 1954, *Stainton, Sykes & Williams* 6603.

Distribution: North America, Europe, India, Japan.

MELAMPORA sp. cf. *HIRCULI* Lindr. in Acta. Soc. Fauna & Flora Fenn. 22 (3) : 19 (1902).

NEPAL: Annapurna Himal, 4,150 m., on *Saxifraga moorcroftiana* Wall., 2 Aug. 1954, *Stainton, Sykes & Williams* 6587.

Distribution (of *M. hirculi*): Europe (Finland, Russia, Switzerland).

Although this species so far has apparently only been recorded from Europe, the Nepal collection agrees very closely with the original description of *M. hirculi*, but the fungus occurs not only on the under surfaces, but more frequently on the upper leaf surfaces, which become considerably discoloured and blotchy. Uredospores are globose, ovate or ellipsoid, minutely verrucose, 16–25 × 14–18 μ; paraphyses are abundant and capitate or clavate, 35–60 × 10–20 μ with a thick wall. The teleutospores are brown, oblong, 35–55 × 8–12 μ.

MILESINA sp. cf. *EXIGUA* Faull in Journ. Arnold Arb. 12 : 218 (1931).

NEPAL: Dhankuta Province, Taplejung district, 1,950 m., on *Diplazium* sp., 9 Jan. 1962, *Norkett* 8642 A.

Distribution (of *M. exigua*): Poland, Japan and the Siberian coast.

Uredosori only are represented; they occur in brown discoloured areas on both sides of the fronds. Many of the spores are somewhat irregularly polygonal in shape. They measure 28 × 15 μ (average) and are quite smooth.

PUCCINIACEAE

FROMMEA DUCHESNEAE (Arth.) Arth. in Bull. Torrey Bot. Club 44 : 504 (1917); in N. Amer. Fl. 7 : 731 (1925).

Kuhneola duchesneae Arth. in N. Amer. Fl. 7 : 185 (1912).

Frommea obtusa [var.] *duchesneae* (Arth.) Arth., Man. Rusts U.S. & Canada : 93 (1934).—
Gäum. in Beitr. Krypt.-Fl. Schweiz 12 : 1177 (1959).

Frommea obtusa-duchesneae Vienn.-Bourg. in Rev. Path. Vég. Entom. Agric. Fr. 33 : 38 (1954), *nom. superfl.*

NEPAL: Ghar Khola, 1,600 m., on *Duchesnea indica*, 14 June 1954, *Stainton, Sykes & Williams* 5767.

Distribution: Nepal, and North America and France, where the host is naturalized.

It seems that Arthur in 1934 (loc. cit.) had second thoughts about treating the rust on *Duchesnea indica* as a full species and, describing it as a "less robust form" compared with *F. obtusa*, regarded it merely as a variety of the latter species.

In the Nepal collection the uredosori are abundant, the uredospores measure

9-14 \times 18-20 μ , distinctly small for *F. obtusa* (which occurs on *Potentilla* sp.) but in agreement with the spores described on *Duchesnea* from America by Arthur and from France by Viennot-Bourgin. No other spore form was present on the Nepal plants. In the absence of firm evidence to support synonymy with *F. obtusa* the name *F. duchesneae* is retained here. This is the first record of the rust in what is considered to be the host plant's centre of origin.

GYMNOSPORANGIUM PADMARENSE Balf.-Browne in Bull. Brit. Mus. (Nat. Hist.) 1 : 205, fig. 2 (1955).

NEPAL: Near Gurjakhani, 3,000 m., on *Juniperus wallichiana*, 3 June 1954, Stainton, Sykes & Williams 2969.

Distribution: Nepal.

The material under consideration is old, the sori are broken up and the teleuto-spores have lost their pedicels.

GYMNOSPORANGIUM CUNNINGHAMIANUM Barcl. in Sci. Mem. Med. Off. Army Ind. 5 : 78, t. 1-3 (1890).

NEPAL: Village south of Chakure Lekh, 6 Apr. 1952, Polunin, Sykes & Williams 1870.

Distribution: India, Nepal.

PHRAGMIDIUM INCOMPLETUM Barcl. in Journ. Asiatic Soc. Bengal 59 (2) : 83 (1890).

NEPAL: Siklis, north of Pokhara, 3,000 m., on *Rubus* sp., 21 Apr. 1954, Stainton, Sykes & Williams 4950.

Distribution: India.

The uredospore stage only is present, and it agrees well with the original account, except that it is chiefly epiphyllous. Uredospores have a thick, 3-4 μ , epispore, which is warted. There are no paraphyses.

PHRAGMIDIUM sp. cf. NEPALENSE Barcl. in Journ. Asiatic Soc. Bengal 60 (2) : 220 (1891).

NEPAL: Bhujji Khola, 2,800 m., on *Potentilla nepalensis*, 16 Oct. 1954, Stainton, Sykes & Williams 9058.

Distribution (of *P. nepalense*): India.

Uredosori only are represented. In the original description it was not stated whether the epispore is smooth or echinulate. Padwick & Azmatullah Khan (Mycol. Papers, Imp. Mycol. Inst. 10 : 4 (1944)) record this species and describe the uredospores as finely echinulate. This agrees with those on the present collection, and the measurements are similar.

PUCCINIA CARICIS var. HIMALAYENSIS (Barcl.) Padw. & Azmat. Khan in Mycol. Papers, Imp. Mycol. Inst. 10 : 9 (1944).

Aecidium urticae var. *himalayense* Barcl. in Sci. Mem. Med. Off. Army Ind. 2 : 29, t. 4, 5 figs. 8-17 (1887); in Journ. Asiatic Soc. Bengal 56 (2) : 368 (1887).

NEPAL: Jagat, 2,600 m., on *Urtica* sp., 5 July 1954, *Stainton, Sykes & Williams* 3364.

Distribution: India, Himalayas.

Cf. Padwick & Azmatullah Khan (loc. cit.) for an account of the somewhat confused synonymy.

Puccinia FAGOPYRI Barcl. in Journ. of Bot. 28 : 261 (1890).

NEPAL: Dhankuta Province, Taplejung district, Sanghu, 2,000 m., on *Fagopyrum*, 11 Nov. 1961, *Norkett 7173 A*.

Distribution: India.

Puccinia GENTIANAE (Strauss) Link in L., Sp. Pl., Ed. 4, 6 (2) : 73 (1825).

Uredo gentianae Strauss in Ann. Wetter. Ges. 2 : 102, t. 11 fig. 33 (1811).

NEPAL: South of Gurjakhani, 4,000 m., on *Gentiana* sp., 8 June 1954, *Stainton, Sykes & Williams* 3071.

Distribution: Widely distributed in the northern Hemisphere.

Only the aecidial stage is represented in the Nepal material.

Puccinia GLUMARUM (J. K. Schmidt) Erikss. & Henn. in Medd. K. Landtbr.-Akad. Exp. 38 : 141 (1896).

Uredo glumarum J. K. Schmidt in Allgem. Ökonom.-Tech. Flora 1 : 27 (1827).

NEPAL: Gurjakhani, 2,800 m., on *Triticum vulgare*, 1 June 1954, *Stainton, Sykes & Williams* 2939.

Distribution: Worldwide.

Puccinia GRAMINIS Pers., Syn. Meth. Fung. : 228 (1801).

NEPAL: Ghasa, Kali Gandaki Valley, 2,500 m., on *Berberis* sp., 31 May 1954, *Stainton, Sykes & Williams* 5499; same locality and host, 13 June 1954, *Stainton, Sykes & Williams* 5750.

Distribution: Worldwide.

Some of the pustules were a bright pink and considerably swollen.

Puccinia LANTANAE Farl. in Proc. Amer. Acad. Arts & Sci. 18 : 83 (1883).—G. Laund. in Mycol. Papers, Commonw. Mycol. Inst. 89 : 43 (1963).

NEPAL: Sanghu, Dhankuta Province, 2,000 m., on *Justicia diffusa*, 15 Oct. 1961, *Norkett 6124*.

Distribution: North and South America, India, Indonesia, Philippines, China, Japan.

Puccinia LEUCOPHAEA H. & P. Syd. & Butl. in Ann. Mycol 10 : 258 (1912).

NEPAL: Ghar Khola, 2,000 m., on *Colquhounia coccinea*, 14 June 1954, *Stainton, Sykes & Williams* 5758.

Distribution: India.

Aecidial stage only and chiefly epiphyllous; only a few isolated sori on the lower surface and on the petioles. In the original account the aecia were said to be hypophyllous.

Puccinia POLYGONI-AVICULARIAE Pers., Syn. Meth. Fung. : 227 (1801).

Puccinia polygoni Alb. & Schwein., Consp. Fung. : 132 (1805), *nom. superfl.*—Gäum. in Beitr. Krypt.-Fl. Schweiz 12 : 775 (1959).

NEPAL: Dhankuta Province, Taplejung district, Sanghu, 2,000 m., on *Polygonum nepalense*, 25 Nov. 1961, *Norkett 7530 A*.

Distribution: Worldwide.

The teleutospore stage is represented. This species and *P. polygoni-amphibii* are united by some mycologists but treated as separate by others. The two species are maintained here not only on biological grounds but also on account of definite small morphological distinctions, which apply not only to European plants, as generally stated, but also to American specimens as exemplified in the British Museum herbarium. In *P. polygoni-amphibii*, usually occurring on *Polygonum amphibium*, *P. lapathifolium* and related species, the teleutosori remain for long covered by the epidermis and form small pimply pustules, and the spores are frequently somewhat bent and easily lose their pedicels. On the other hand, in *P. polygoni-aviculariae*, usually on *Polygonum dumetorum* and *P. convolvulus*, the pustules rapidly burst through the epidermis of the host, leaving smooth black cushions of straight, stalked teleutospores.

In the present instance the host, *Polygonum nepalense*, resembles in general appearance and texture *Polygonum convolvulus*, and the teleutospores and sori of the fungus agree exactly with those described for *P. polygoni-aviculariae*.

Puccinia PULVERULENTA Grev., Fl. Edin. : 432 (1824).—Gäum. in Beitr. Krypt.-Fl. Schweiz 12 : 929 (1959).

NEPAL: Near Dogadi Khola, 4,300 m., on *Epilobium* sp., 23 June 1954, *Stainton, Sykes & Williams 3226*.

Distribution: Worldwide.

Puccinia USTALIS Berk. in Hook., Journ. Bot. 6 : 207 (1854).

Puccinia songarica Jacz. in Hedwigia 39 : (130), fig. 1 (1900).

NEPAL: Rambong, Lamjung Himal, 4,000 m., on *Ranunculus* sp., 29 June 1954, *Stainton, Sykes & Williams 6016*.

Distribution: India, Turkestan, Mongolia.

RAVENELIA EMBLICAЕ Syd. apud H. & P. Syd. & Butl. in Ann. Mycol. 4 : 438 (1906).—P. & H. Syd., Monogr. Ured. 3 : 293 (1914).

NEPAL: Chainpur path, Tumlingtar, 800 m., on *Phyllanthus emblica*, 21 Dec. 1961, *Norkett 8100*.

Distribution: Previously recorded from India and Burma.

Ravenelia phyllanthi Mundk. & Thirum. (Mycol. Papers, Imp. Mycol. Inst. 16 : 24, fig. 18 (1946)) seems to be synonymous. This was described on *Phyllanthus polyphyllus* from Mysore.

UREDINALES—Form Genera

AECIDIUM CRINI Kalchbr. in *Grevillea* 11 : 26 (1882).—Mundk. & Thirum. in Mycol. Papers, Imp. Mycol. Inst. 16 : 16 (1946).

Aecidium amaryllidis H. & P. Syd. & Butl. in Ann. Mycol. 10 : 274 (1912).

NEPAL: Dana, Kali Gandaki Valley, 1,600 m., on *Crinum amoenum* Roxb. ex Ker-Gawl., 13 June 1954, *Stainton, Sykes & Williams* 5738.

Distribution: India, South Africa.

AECIDIUM INFREQUENS Barcl. in Journ. Asiatic Soc. Bengal, 59 (2) : 105 (1890).

NEPAL: Nr. Dogadi Khola, 4,300 m., on *Geranium collinum* Steph. ex Willd., on open slopes, 23 June 1954, *Stainton, Sykes & Williams* 3227.

Distribution: India, Nepal, Japan.

The aecidia cover considerable areas of the lower side of the leaves, showing as light brown patches on the upper surface. Each aecidium is 250–300 μ diam. The size, ornamentation, colouring of the aecidia and aecidiospores correspond exactly with those originally described for *A. infrequens* by Barclay on a *Geranium* sp. (? *nepalensis*) from Simla. The present fungus agrees also with the details given for *A. sanguinolentum* on other *Geranium* spp. in Finland, Russia and America by Lindroth (Bot. Notiser 1900 : 241), and he suggested this might be a synonym of Barclay's rust.

Polunin, Sykes & Williams 4765, recorded in 1955 in this Journal (Balfour-Browne, 1955) as *A. infrequens* is microscopically similar to the fungus now reported, but differs in that the aecidia are grouped in orbicular patches with a small bare spot in the centre of each patch, i.e., as described by Lindroth for the less heavily infected specimens of his *A. sanguinolentum*. The host of this earlier collection, which has now been identified also as *G. collinum*, is more elegant and slender. Possibly the heavy rust infection is responsible for the coarser growth of the host specimen of *Stainton, Sykes & Williams* 3227.

A. sanguinolentum, in consequence of inoculation experiments from *Geranium* spp. of European origin (Lindroth, *loc. cit.*), has been described as a stage in life history of *Puccinia polygoni-amphibii* Pers. However, until experiments are made using specimens of the Nepal fungus, no certain conclusions can be drawn as to its relationships or alternative host plants.

In the meantime *A. infrequens* Barcl. is the name preferred on grounds of distribution and would be also on grounds of priority should this species prove to be identical with *A. sanguinolentum*.

AECIDIUM SCUTELLARIAE Syd. apud H. & P. Syd. & Butl. in Ann. Mycol. 5 : 504 (1907).

NEPAL: Ghar Khola, 1,800 m., on *Scutellaria scandens* D. Don., 14 June 1954, *Stainton, Sykes & Williams 5763*.

Distribution: Himalayas.

A similar fungus, *Aecidium scutellariae-indicae* Dietel, has been described from Japan on *Scutellaria indica* var. *japonica*. This may be identical with the above species (P. & H. Syd., Monogr. Ured. 4 : 115 (1923)).

PERIDERMIIUM ORIENTALE Cooke in Ind. Forester 3 : 91 (1877) "orientalis".

Aecidium complanatum Barcl. in Journ. Asiatic Soc. Bengal 59 (2) : 101 (1890).

NEPAL: Dhaibungkot, 1,600 m., on dead pine needles, 31 May 1949, *Polunin 041*. Near Beni, 1,300 m., on needles of *Pinus longifolia*, 23 May 1954, *Stainton, Sykes & Williams 2794*.

Distribution: India, Nepal, Bhutan.

UREDIO HYPERICI-MYSORENSIS Petch in Ann. R. Bot. Gdns. Peradeniya 6 : 213 (1917).

NEPAL: Sanghu, Dhankuta Province, 1,400 m., on *Hypericum* sp., 12 Nov. 1961, *Norkett 7088*.

Distribution: Ceylon, India.

AURICULARIACEAE

AURICULARIA DELICATA (Fries) Henn. apud Bresad., Henn. & Magn. in Engl., Bot. Jahrb. 17 : 492 (1893).

Laschia delicata Fries in Linnaea 5 : 533 (1830).

Laschia tremellosa Fries, Summa Veg. Scand. : 325 (1849).

NEPAL: Ranipauwa, north of Beni, Kali Gandaki, 1,000 m., 3 Sept. 1954, *Stainton, Sykes & Williams 7629*.

Distribution: mostly tropical; America, Africa, India, Australia, Pacific.

AURICULARIA MESENERICA Pers., Mycol. Eur. 1 : 97 (1822).

NEPAL: Arun Valley, Num, 1,500 m., on tree trunk, 30 Aug. 1956, *Stainton 1459*.

Distribution: America, Europe, India, Indonesia, Australia.

The fructifications are broadly attached, many more or less disciform, and they therefore superficially resemble *A. peltata* Lloyd. However the hairs are much longer, up to 500 μ .

AURICULARIA POLYTRICHA (Mont.) Sacc. in Atti R. Ist Veneto, Ser. 6, 3 : 722 (1885).

Exidia polytricha Mont. in Bélang., Voy. aux Indes-Or. 2 : 154 (1834).

Hirneola polytricha (Mont.) Fries in K. Vet.-Akad. Handl. 1848 (1) : 146 (1849).

NEPAL: Tamrang Khola, 2,300 m., on branch of tree, 21 Nov. 1961, *Norkett 7889*.

Distribution: Worldwide.

TREMELLACEAE

GUEPINIA HELVELLOIDES (Fries) Fries, Elenchus Fung. 2 : 31 (1828).

Tremella helvelloides Fries, Syst. Mycol. 2 : 211 (1822).

Phlogiotis helvelloides (Fries) Martin in Amer. Journ. Bot. 23 : 628 (1936).

Tremella rufa Pers., Mycol Eur. 1 (1) : 103 (1822).

Gyrocephalus rufus (Pers.) Bref. in Unters. Gesamtgeb. Mykol. 7 : 131 (1888).

NEPAL: Taglung, Kali Gandaki, 3,500 m., 22 Sept. 1954, *Stainton, Sykes & Williams* 7990.

Distribution: North America, Europe, China, India.

TREMELLA MESENERICA Fries, Syst. Mycol. 2 : 214 (1822).

NEPAL: Dhankuta Province, near Mahe, 1,300 m., on dead tree, 20 Sept. 1961, *Norkett* 5175 D.

Distribution: Worldwide.

EXOBASIDIACEAE

EXOBASIDIUM sp.

NEPAL: Lete, Kali Gandaki Valley, 3,800 m., on *Rhododendron campanulatum*, 4 June 1954, *Stainton, Sykes & Williams* 5607. Above Sauwala Khola, 3,800 m., on *Rhododendron lepidotum*, 15 Sept. 1954, *Stainton, Sykes & Williams* 4430. Near Lumsum, 2,300 m., on *Rhododendron* seedlings, 24 Oct. 1954, *Stainton, Sykes & Williams* 9132.

Specific identification could not be made as the collections in all cases were very over-ripe. Several species of *Exobasidium* have been described on *Rhododendron*. References to the literature on *Exobasidium* can be found in Sundström (Phytopath. Zeitschr. 40 : 213-17 (1960)) and in McNabb (Trans. R. Soc. N.Z., Bot. 1 : 267 (1962)).

AGARICACEAE

ARMILLARIA MELLEA (Fries) Kummer, Führ. Pilzk. : 134 (1871).

Agaricus melleus Fries, Syst. Mycol 1 : 30 (1821).

NEPAL: Arun Valley, Kasuwa Khola, on tree trunk in forest, 11 Sept. 1956, *Stainton* 1618.

Distribution: Worldwide.

CLITOCYBE TABESCENS (Fries) Bresad., Fung. Trident. 2 : 84, t. 197 (1900).

Agaricus tabescens Fries, Hymenomyc. Eur., Ed. 2 : 111 (1874).

NEPAL: Lete, Kali Gandaki Valley, 2,600 m., in leaf mould at base of *Pinus chylla*, 3 June 1954, *Stainton, Sykes & Williams* 5551.

Distribution: Worldwide.

COPRINUS COMATUS (Fries) Gray, Nat. Arrang. Brit. Pl. 1 : 633 (1821).

Agaricus comatus Fries, Syst. Mycol. 1 : 307 (1821).

NEPAL: Chimgaon (north of Tukucha), Kali Gandaki, 4,500 m., 17 July 1954, *Stainton, Sykes & Williams 1846*.

Distribution: Worldwide.

COPRINUS DISSEMINATUS (Fries) Gray, Nat. Arrang. Brit. Pl. 1 : 634 (1821).

Agaricus disseminatus Fries, Syst. Mycol. 1 : 305 (1821).

Psathyrella disseminata (Fries) Quéf. in Mém. Soc. Émul. Montbéliard, Ser. 2, 5 : 153 (1872) (reimpr. quam Champ. Jura Vosg. : 123 (1872)).

NEPAL: Arun Valley, Hatiar, 2,300 m., on fallen tree in forest, 20 Aug. 1956, *Stainton 1394*.

Distribution: Worldwide.

CREPIDOTUS MOLLIS (Fries) Staude in Festg. Mitgl. XIX Versamml. deutsch. Land- und Forstwirthe Coburg : 71 (1857) (reimpr. quam Schwämme Mitteldeutschl. : 71 (1858)).

Agaricus mollis Fries, Syst. Mycol. 1 : 274 (1821).

NEPAL: Arun Valley, Kasuwa Khola, 2,800 m., on tree trunk in forest, 11 Sept. 1956, *Stainton 1617*.

Distribution: America, Europe, China, Japan, Australia.

Very badly crushed in pressing but the layers of parallel and gelatinous hyphae were readily observed; spores $9 \times 5 \mu$, smooth.

GOMPHUS FLOCCOSUS (Schwein.) Sing. in Lloydia 8 : 140 (1945).

Cantharellus floccosus Schwein. in Trans. Amer. Phil. Soc., New Ser. 4 : 153 (1832).

NEPAL: Above Sauwala Khola, 3,300 m., on earth bank in *Quercus* forest, 13 Sept. 1954, *Stainton, Sykes & Williams 4375*.

Distribution: Recorded from North America, China, Japan, as well as from Nepal (1955).

LACCARIA LACCATA (Fries) Cooke in Grevillea 12 : 70 (1884).

Agaricus laccatus Fries, Syst. Mycol. 1 : 106 (1821).

NEPAL: Arun Valley, Barun Khola, 4,000 m., in short grass, pinkish brown, 15 Sept. 1956, *Stainton 1662*.

Distribution: Worldwide.

LACTARIUS PUBESCENS (Krombh.) Fries, Epicrisis Syst. Mycol. : 335 (1838).

Agaricus pubescens Krombh., Naturg. Abbild. & Beschreib. Essb., Schädli. & Verdächt. Schwämme 2 : 24, t. 13 figs. 1-14 (1832).

NEPAL: Arun Valley, Barun Khola, 4,000 m., in short grass, 15 Sept. 1956, *Stainton 1660*.

Distribution: Apparently worldwide, but it is uncertain how many records under the name of the coarser *L. torminosus* (Fries) Gray, from which many mycologists have not separated this species, refer to it. Very few species of *Lactarius* have as yet been recorded from India or any of the neighbouring countries.

LEPIOTA ERMINEA (Fries) Gill., Hyménomycètes : 59 (1874).

Agaricus ermineus Fries, Syst. Mycol. 1 : 22 (1821).

NEPAL: Mathand, near Pokhara, 1,120 m., on shady bank, "white except top of cap which is brown", 22 June 1954, *Stainton, Sykes & Williams 5852*.

Distribution: Europe, India, Australia.

MARASMIUS CRINIS-EQUI F. von Muell. ex Kalchbr. in Grevillea 8 : 153 (1880).

Marasmius equicrinis F. von Muell. ex Berk. in Journ. Linn. Soc. Lond., Bot. 18 : 383 (1881), *nom. superfl.*

NEPAL: Murigurja Gad, 2,500 m., on dead vegetation near ravine track, 27 July 1954, *Stainton, Sykes & Williams 3647*.

Distribution: America, India, Ceylon, Philippines, Australia.

Panus polychrous (Lév.) Singer ex Balfour-Browne, comb. nov.

Lentinus polychrous Lév. in Ann. Sci. Nat., Ser. 3, Bot. 2 : 175 (1844).

Lentinus vellereus Berk. & Curt. in Journ. Linn. Soc. Lond., Bot. 10 : 301 (1868).

Lentinus kurzianus Currey in Trans. Linn. Soc. Lond., Ser. 2, Bot. 1 : 120, t. 20 fig. 11 (1876).

Panus polychrous Sing., Agaricales in Modern Taxonomy, Ed. 2 : 172 (1962), *nom. invalid.*

NEPAL: Tumlingtar, Sabhaya Khola, 600 m., on dead tree, 20 Dec. 1961, *Norkett 8108*.

Distribution: Cuba, India, Nepal, Ceylon, Philippines, Australia.

A few additional synonyms are given by Singer (*loc. cit.*).

PANUS TIGRINUS (Fries) Sing. in Lilloa 22 : 275 (1951).

Agaricus tigrinus Fries, Syst. Mycol. 1 : 176 (1821).

Lentinus tigrinus (Fries) Fries, Epicrisis Syst. Mycol. : 389 (1838).

NEPAL: Midam Khola, Chisankhu, 650 m., on dead tree trunk, 4 May 1954, *Stainton, Sykes & Williams 5214*.

Distribution: Worldwide.

PHOLIOTA SQUARROSA (Fries) Kummer, Führ. Pilzk. : 84 (1871).

Agaricus squarrosus Fries, Syst. Mycol. 1 : 243 (1821).

NEPAL: Chimgaon (north of Tukucha), Kali Gandaki, 3,500 m., in forest, at base of conifer, 14 Sept. 1954, *Stainton, Sykes & Williams 7830*.

Distribution: North America, Europe, Japan.

SCHIZOPHYLLUM COMMUNE Fries, Syst. Mycol 1 : 330 (1821).

NEPAL: Ranipauwa (north of Beni), Kali Gandaki, 1,000 m., on tree, 12 Sept. 1954, *Stainton, Sykes & Williams* 7818. Tumlingtar, Sabhaya River, Chainpur district, 600 m., 12 Dec. 1961, *Norkett* 8480. Hinwan Khola, Chainpur, 660 m., on dead stick, 21 Dec. 1961, *Norkett* 9024.

Distribution: Worldwide.

HYDNACEAE

HERICIUM ERINACEUS (Fries) Pers., Mycol. Eur. 2 : 153 (1825).

Hydnum erinaceus Fries, Syst. Mycol. 1 : 407 (1821).

NEPAL: Above Sauwala Khola, 3,300 m., on *Quercus* in thick forest, 15 Sept. 1954, *Stainton, Sykes & Williams* 4415. Chimgaon, Kali Gandaki, 3,300 m., 14 Sept. 1954, *Stainton, Sykes & Williams* 7821.

Distribution: America, Europe, India, Japan, China.

HYDNELLUM ZONATUM forma VESPERTILIO (Berk.) Coker & Beers, Stipitate Hydnums of Eastern U.S. : 80 (1951).

Hydnum vesperitilio Berk. in Hook., Journ. Bot. 6 : 167 (1854).

NEPAL: Taglung, Kali Gandaki, 3,500 m., 22 Sept. 1954, *Stainton, Sykes & Williams* 7991.

Distribution: America, Europe, India.

POLYPORACEAE

AMAURODERMA RUGOSUM (Blume & Nees) Torrend in Broteria, Ser. Bot. 18 : 127 (1920).

Polyporus rugosus Blume & Nees in Nov. Act. Phys.-Med. Acad. Caes. Leop.-Car. 13 : 21, t. 7 (1826).

NEPAL: Dhankuta Province, below Sanghu, on roots of bamboo, 1,800 m., 27 Feb. 1962, *Norkett* 10233.

Distribution: Mostly tropical; Madagascar, India, Ceylon, Java, Philippines.

GANODERMA APPLANATUM (Pers.) Patouill. in Bull. Soc. Mycol Fr. 5 : 67 (1889).—
Humphr. & Lewis in Philipp. Journ. Sci. 45 : 514 (1931).

Polyporus fomentarius var. *applanatus* Pers., Mycol. Eur. 2 : 80 (1825).

Polyporus applanatus (Pers.) Wallr., Fl. Crypt. Germ. 2 : 591 (1833).

NEPAL: Bakhri Kharka, north of Pokhara, 1,800 m., on rotten tree trunk, 24 April 1954, *Stainton, Sykes & Williams* 5060. Taglung, Kali Gandaki, 3,300 m., 19 Oct. 1954, *Stainton, Sykes & Williams* 8198. Dharan Bazar, Terai forest, south of Gopa Gurkha Camp, 250 m., on old tree, 27 Feb. 1962, *Norkett* 10234.

Distribution: Worldwide.

GANODERMA LUCIDUM (Fries) Karst. in Rev. Mycol. 3 (9) : 17 (1881).

Polyporus lucidus Fries, Syst. Mycol. 1 : 353 (1821).

NEPAL: Bakhri Kharka, north of Pokhara, 2,000 m., on rotten tree trunk, 25 April 1954, *Stainton, Sykes & Williams 5075*.

Distribution: Worldwide

FOMES PECTINATUS (Klotzsch) Gill., Hyménomycètes : 686 (1874).

Polyporus pectinatus Klotzsch in Linnaea 8 : 485 (1833).

NEPAL: Between Bakhri Kharka and Rambrong, 2,300 m., on rotten tree trunk, 26 Apr. 1954, *Stainton, Sykes & Williams 5081*.

Distribution: America, Europe, India, Australia, Philippines.

FOMES MARGINATUS (Fries) Gill., Hyménomycètes : 683 (1874).

Polyporus marginatus Fries, Syst. Mycol. 1 : 372 (1821).

NEPAL: Taglung, Kali Gandaki, 3,300 m., on forest tree, 11 July 1954, *Stainton, Sykes & Williams 1751*. Also at 3,500 m., 22 Sept. 1954, *Stainton, Sykes & Williams 7992*.

Distribution: America, Europe, India, Nepal, China, Japan.

POLYPORUS ARCULARIUS Fries, Syst. Mycol. 1 : 342 (1821).

Polyporellus arcularius (Fries) Pilát in Kav. & Pilát, Atlas Champ. 3 : 75, t. 30-31, fig. 18 (1936).

var. ARCULARIUS.

NEPAL: Midam Khola, Chisankhu, 660 m., 4 May 1954, *Stainton, Sykes & Williams 5210*. Kabre, Kali Gandaki, 2,000 m., 13 June 1954, *Stainton, Sykes & Williams 5742*. Dhankuta Province, Chainpur district, Tumlingtar, 600 m., on dead trunk, 13 Dec. 1961, *Norkett 8109 B; 8815 A*; and on 14 Dec. 1961, *Norkett 8107 B*.

Distribution: Worldwide; previously recorded from Nepal.

var. STRIGOSUS Bourd. & Galz., Hymenomyc. Fr. : 532 (1928).

NEPAL: Chipli, North of Pokhara, 2,600 m., on rotten tree trunk, 18 Apr. 1954, *Stainton, Sykes & Williams 4882*.

Distribution: Worldwide.

Distinguished by its marginal hairs.

POLYPORUS PARGAMENUS Fries, Epicrisis Syst. Mycol. : 480 (1838).—Overh., Polyp. U.S., Alaska & Canada : 336 (1953).

NEPAL: Sanghu, Milke Danda Forest, 2,900 m., on old dead tree, 16 Nov. 1961, *Norkett 7129*.

Distribution: Widespread in temperate and tropical regions.

The material is in good condition but not sporing. There is much confusion over the use of this name, *P. biformis* Klotsch and *P. cervinus* Fries. It is hoped to make a more critical study of the problem shortly. Meanwhile Overholt's interpretation of *P. pargamenus* is adopted.

POLYPORUS CORRUGATUS Pers. apud Gaud. in Freyc., Voy. aut. Monde Uranie & Physicienne, Bot. : 172 (1826).

Earliella corrugata (Pers.) Murrill in Bull. Torrey Bot. Cl. 34 : 468 (1907).

Polystictus persoonii Cooke in Grevillea 14 : 85 (1886).

Daedalea sanguinea Klotsch in Linnaea 8 : 481 (1833).

NEPAL: Chainpur district, Tumlingtar, Dhankuta Province, 600 m., on dead tree, 13 Dec. 1961, *Norkett 8109 E*.

Distribution: West Indies, India, Nepal, East Indies and throughout most of the tropics.

POLYPORUS PICIPES Fries, Epicrisis Syst. Mycol. : 440 (1838).—Overh., Polyp. U.S., Alaska & Canada : 262 (1953).

Polyporellus picipes (Fries) Karst. in Bidr. Känn. Finl. Natur. & Folk 37 : 31 (1882).—Pilát in Kav. & Pilát, Atlas Champ. 3 : 99, t. 44 fig. 1-3, t. 46 fig. b, fig. 24, p. 105 fig. B (1937).

NEPAL: Ghar Khola, 3,100 m., on dead trunk, 15 June 1954, *Stainton, Sykes & Williams 5769*. Arun Valley, Kasuwa Khola, 2,800 m., 11 Sept. 1956, *Stainton 1624*.

Distribution: Worldwide.

POLYPORUS SQUAMOSUS Fries, Syst. Mycol. 1 : 343 (1821).

NEPAL: Rambrong ridge, north of Pokhara, 3,300 m., on rotten tree trunk, 27 Apr. 1954, *Stainton, Sykes & Williams 5103*.

Distribution: Worldwide.

POLYPORUS SULPHUREUS Fries, Syst. Mycol. 1 : 357 (1821).

Grifola sulphurea (Fries) Pilát in Beih. Bot. Centralbl. 52 (B) : 39 (1934).

Laetiporus sulphureus (Fries) Bondartz. & Sing. in Ann. Mycol. 39 : 51 (1941).

NEPAL: Chimgaon, Kali Gandaki, 3,500 m., 14 Sept. 1954, *Stainton, Sykes & Williams 7828*. Arun Valley, Kasuwa Khola, 2,800 m., on tree in forest, 11 Sept. 1956, *Stainton 1621*.

Distribution: Worldwide; previously recorded from Nepal.

POLYPORUS ZONALIS Berk. in Ann. & Mag. Nat. Hist. 10 : 375, t. 10 fig. 5 (1843).

NEPAL: Karelung, Madi Khola, 660 m., on rotten branch, 23 June 1954, *Stainton, Sykes & Williams 5911*.

Distribution: tropical and semi-tropical; Central and South America, Cuba, India, Indonesia, China, Australia.

Resembles the type but is a little thicker. Spores globose and no cystidia.

POLYSTICTUS AFFINIS (Blume & Nees) Fries in Nov. Act. Soc. Sci. Upsal., ser. 3, 1 : 75 (1851).

Polyporus affinis Blume & Nees in Nov. Act. Phys.-Med. Acad. Caes. Leop.-Car. 13 : 18, t. 4 (1826).

Microporus affinis (Nees) Kuntze, Revis. Gen. Pl. 3 (2) : 495 (1898).

NEPAL: Arun Valley, Sashaya Khola, 660 m., on tree trunk in forest, 4 Sept. 1956, *Stainton 1578*. Dharan Bazar, Terai Forest, south of Gopa Gurkha Camp, 250 m., 27 Feb. 1962, *Norkett 10224*.

Distribution: widespread in tropical and subtropical regions; previously recorded from Nepal.

POLYSTICTUS CINNAMOMEUS (Gray) Sacc., Syll. Fung. 6 : 210 (1888).

Strelia cinnamomea Gray, Nat. Arrang. Brit. Pl. 1 : 645 (1821).

Polyporus cinnamomeus (Gray) Fries, Epicrisis Syst. Mycol. : 468 (1838).—Overh., Polyp. U.S., Alaska & Canada : 386 (1953).

Coltricia cinnamomea (Gray) Murrill in Bull. Torrey Bot. Cl. 31 : 343 (1904).

NEPAL: Taglung, Kali Gandaki, 3,500 m., in wood, 22 Sept. 1954, *Stainton, Sykes & Williams 7991*.

Distribution: Worldwide; previously recorded from Nepal.

Very close to *P. perennis* but distinguished by its more uniform and silkier cap.

POLYSTICTUS HIRSUTUS (Fries) Fries in Nov. Act. Soc. Sci. Upsal., ser. 3, 1 : 86 (1851).

Polyporus hirsutus Fries, Syst. Mycol. 1 : 367 (1821).

Coriolus hirsutus (Fries) Quél., Enchir. Fung. : 175 (1886).—Bourd. & Galz., Hyménomyc. Fr. : 561 (1928).

NEPAL: Dhankuta Province, Milke Danda Forest, 260 m., 29 Nov. 1961, *Norkett 8307 A*.

Distribution: Worldwide.

POLYSTICTUS PERULA (Fries) Fries in Nov. Act. Soc. Sci. Upsal., ser. 3, 1 : 73 (1851).

Polyporus perula Fries, Syst. Mycol. 1 : 349 (1821).

Polyporus xanthopus Fries, Syst. Mycol. 1 : 350 (1821).

Polystictus xanthopus (Fries) Fries in Nov. Act. Soc. Sci. Upsal., ser. 3, 1 : 74 (1851).

Microporus perula (Fries) Hariot in Bull. Soc. Mycol. Fr. 7 : 206 (1891).

NEPAL: Rupakot Tal, 800 m., on rotten branch, 5 May 1954, *Stainton, Sykes & Williams 5233*. Arun Valley, Hinwan Khola, 800 m., on rotten log, 4 Sept. 1956,

Stainton 1533. Sanghu, 3,000 m., on tree stump, 2 Oct. 1961, *Norkett 5540*. Chainpur district, Tumlingtar, 600 m., 13 Dec. 1961, *Norkett 8109 C*.

Distribution: Widespread in tropical and sub-tropical areas; previously recorded from Nepal.

POLYSTICTUS SANGUINEUS (Fries) Fries in Nov. Act. Soc. Sci. Upsal., ser. 3, 1 : 75 (1851).

Polyporus sanguineus Fries, Syst. Mycol. 1 : 371 (1821).

Pycnoporus sanguineus (Fries) Murrill in Bull. Torrey Bot. Cl. 31 : 421 (1904).

NEPAL: Midam Khola, Chisankhu, 660 m., 4 May 1954, *Stainton, Sykes & Williams 5218*. Midam Khola, Karelung, 600 m., 23 June 1954, *Stainton, Sykes & Williams 5910*. Kusma, 660 m., 2 Nov. 1954, *Stainton, Sykes & Williams 9270*. Sanghu, 3,000 m., 6 Oct. 1961, *Norkett 5709*.

Distribution: Mostly tropical and sub-tropical.

The Nepal material is thin and smooth and conforms with *P. sanguineus*. *P. cinnabarinus* Fries, at one time considered to be a synonym, has been shown to be distinct on the basis of cultural interfertility tests (McKay in Mycologia, 51 : 465-73 (1959)).

POLYSTICTUS SUBAFFINIS Lloyd, Mycol. Not. 40 : 550, fig. 755 (1916).

NEPAL: Surauti Khola, 660 m., on dead bamboo, 12 Aug. 1954, *Stainton, Sykes & Williams 6869*.

Distribution: Japan, Java, Madagascar.

The present collection appears to agree completely with Lloyd's species as he figured it from Umemura's Japanese specimen, but it is doubtful whether this species is distinct from *Polystictus affinis* (Fries) Fries.

POLYSTICTUS TABACINUS (Mont.) Sacc., Syll. Fung 6 : 280 (1888).

Polyporus tabacinus Mont. in Ann. Sci. Nat., Ser. 2, Bot. 3 : 349 (1835).

NEPAL: Siklis, north of Pokhara, 2,100 m., on rotten tree trunk, 22 Apr. 1954, *Stainton, Sykes & Williams 4974*. Gurjagaon, 3,000 m., on dead tree, 25 Sept. 1961, *Norkett 5481*. Milke Danda Forest, 3,000 m., on old dead tree, 16 Nov. 1961, *Norkett 7127*.

Distribution: South America, Africa, India, East Indies, China, Australasia.

9-10 pores per mm., setae subulate, dark brown. This species differs from *P. iodinus* in having smaller pores.

POLYSTICTUS TEPHROLEUCUS (Berk.) Sacc., Syll. Fung. 6 : 275 (1888).

Trametes tephroleuca Berk. in Hook., Journ. Bot. 6 : 165 (1854).

Coriolus tephroleucus (Berk.) Bondartz., Trutov. Ghrib. Evr. Chasti S.S.S.R. & Kavk. : 492, fig. 126 (1953).

Coriolus favoliporus Pilát in Bull. Soc. Mycol. Fr. 52 : 313, t. 3 figs. 3-4 (1937).

Trametes favolipora (Pilát) Pilát in Kav. & Pilát, Atlas Champ. 3 : 267, t. 182, fig. 105 (1939).

NEPAL: Lulo Khola, 16 Sept. 1952, *Polunin, Sykes & Williams 3448*. Near Lumsum, 2,300 m., on dead tree stump, 24 Oct. 1954, *Stainton, Sykes & Williams 9137*.

Distribution: Asia: Kazakstan, India and East Nepal.

Fine specimens but the pores in *Stainton, Sykes & Williams 9137* are mostly discoloured owing to a mycelial growth over the hymenium.

POLYSTICTUS VERSATILIS (Berk.) Fries in Nov. Act. Soc. Sci. Upsal., Ser. 3, 1 : 92 (1851).

Trametes versatilis Berk. in Lond. Journ. Bot. 1 : 150 (1842).

Polyporus versatilis (Berk.) Romell in Bih. K. Svensk. Vet. -Akad. Handl. 26, (3, 16) : 35 (1901).—Lloyd, Mycol. Not. 50 : 703, figs. 1049-50 (1917).—Overh., Polyp. U.S., Alaska & Canada : 325 (1953).

NEPAL: Ghar Khola, 2,600 m., 3 May 1954, *Stainton, Sykes & Williams 5444*. Maikot, 2,600 m., on stump, 4 July 1954, *Stainton, Sykes & Williams 3363*. Tumlingtar, Chainpur, 600 m., on old tree in ravine, 9 Dec. 1961, *Norkett 8693*. Dharan Bazar, Terai forest, south of Gopa Gurkha Camp, 230 m., 27 Feb. 1962, *Norkett 10232*.

Distribution: America, Madagascar, India, Malaya, Indonesia, Japan, China.

POLYSTICTUS VERSICOLOR (Fries) Fries in Nov. Act. Soc. Sci. Upsal., Ser. 3, 1 : 86 (1851).

Polyporus versicolor Fries, Syst. Mycol. 1 : 368 (1821).

Coriolus versicolor (Fries) Quél., Enchir. Fung. : 175 (1886).

NEPAL: Ranipauwa, Kali Gandaki, 1,000 m., 3 Sept. 1954, *Stainton, Sykes & Williams 7637*. Lete, Kali Gandaki, 2,800 m., 17 Sept. 1954, *Stainton, Sykes & Williams 7893*. Bakhri Kharka, Pokhara, 2,000 m., 25 Apr. 1954, *Stainton, Sykes & Williams 5073*. Arun Valley, Hatiar, 2,600 m., 21 Aug. 1956, *Stainton 1412*. Taplejung, above Sanghu, Milke Danda Forest, 3,000 m., 16 Nov. 1961, *Norkett 7124 A*. Mewa Khola, 2,700 m., 23 Jan. 1962, *Norkett 9345* and *9345 A*.

Distribution: Worldwide; previously reported from Nepal.

DAEDALEA UNICOLOR Fries, Syst. Mycol. 1 : 336 (1821).—Overh., Polyp. U.S., Alaska & Canada : 125 (1953).

Coriolus unicolor (Fries) Patouill., Ess. Tax. Fam. & Genr. Hyménomyc. : 94 (1900).

NEPAL: Sanghu, 3,000 m., 1 Nov. 1961, *Norkett 6728*.

Distribution: America, Europe, North Africa, China, Australia.

TRAMETES CERVINA (Schwein.) Bresad. in Ann. Mycol. 1 : 81 (1903).

Boletus cervinus Schwein. in Schrift. Naturf. Ges. Leipz. 1 : 96 (1822).

Coriolus cervinus (Schwein.) Bondartz., Trutov. Ghrib. Evr. Chasti S.S.S.R. & Kavk. : 493, fig. 127 (1953).

Polyporus bififormis sensu Berk. in Ann. & Mag. Nat. Hist. 3 : 392 (1839), non Klotzsch.

NEPAL: Ulleri, north of Kusma, Kali Gandaki, 2,600 m., on tree in wood, 1 Nov. 1954, *Stainton, Sykes & Williams* 8275.

Distribution: Europe, Russia, India, Ceylon, China, Australia.

For nomenclature of this fungus see note under *Polyporus pargamenus* (p. 123).

TRAMETES GIBBOSA (Fries) Fries, *Epicrisis* Syst. Mycol. : 492 (1838).

Daedalea gibbosa Fries, Syst. Mycol. 1 : 338 (1821).

Pseudotrametes gibbosa (Fries) Bondartz. & Sing. in Ann. Mycol. 39 : 60 (1941).

NEPAL: Siklis, north of Pokhara, 21 Apr. 1954, *Stainton, Sykes & Williams* 4957.

Distribution: Europe, Africa, India, China.

LENZITES BETULINA (Fries) Fries, *Epicrisis* Syst. Mycol. : 405 (1838).

Daedalea betulina Fries, Syst. Mycol. 1 : 333 (1821).

Trametes betulina (Fries) Pilát in Kav. & Pilát, Atlas Champ. Eur. 3 : 327, t. 220, fig. 142 (1940).

NEPAL: Arun Valley, Hatiar, 2,600 m., on tree trunk, 21 Aug. 1956, *Stainton* 1412. Siklis, north of Pokhara, 2,500 m., on rotten tree trunk, 19 Apr. 1954, *Stainton, Sykes & Williams* 4926.

Distribution: Worldwide.

LENZITES PALISOTII (Fries) Fries, *Epicrisis* Syst. Mycol. : 404 (1838).

Daedalea palisotii Fries, Syst. Mycol. 1 : 335 (1821) "*Palisoti*".

Daedalea applanata Klotzsch in Linnaea 8 : 481 (1833).

Lenzites repanda Fries, *Epicrisis* Syst. Mycol. : 404 (1838).

Lenzites applanata (Klotzsch) Fries, *Epicrisis* Syst. Mycol. : 404 (1838).

NEPAL: Arun Valley, Sabhaya Khola, 800 m., on tree trunk, 3 Sept. 1956, *Stainton* 1576. Dhankuta Province, Chainpur district, Tumlingtar, 600 m., on dead branch, 13 Dec. 1961, *Norkett* 8109 A.

Distribution: Widespread, especially in the southern hemisphere.

LENZITES SUBFERRUGINEA Berk. in Hook., Journ. Bot. 6 : 134 (1854).

Gloeophyllum subferrugineum (Berk.) Bondartz., Trutov. Ghrib. Evr. Chasti S.S.S.R. & Kavk. : 50 (1953).

NEPAL: Lete, Kali Gandaki Valley, 2,600 m., on rotten tree trunk, 12 June 1954, *Stainton, Sykes & Williams* 5730; same locality, 8 July 1954, *Stainton, Sykes & Williams* 1639. Taglung, Kali Gandaki, 27 Aug. 1954, *Stainton, Sykes & Williams* 7494.

Distribution: India, Nepal, Philippines, Japan.

No spores were found in any of the gatherings. *Stainton, Sykes & Williams* 5730 has a grey cap, 1639 has grey cap with wide brown margin, and in 7494 the cap is entirely brown.

THELEPHORACEAE

CORTICIUM CAERULEUM (Pers.) Fries, *Epicrisis* Syst. Mycol. : 562 (1838).

Thelephora caerulea Pers., Mycol. Eur. 1 : 147 (1822).—Fries, *Elench. Fung.* 1 : 202 (1828).

NEPAL: Ganesh Himal, Ankhu Khola, 2,800 m., on bark in broad-leaved forest, 17 May 1962, *Stainton 3731*.

Distribution: America, Europe, India, Australia, Japan.

HYMENOCHAETE MOUGEOTII (Fries) Cooke in *Grevillea* 8 : 147 (1880).

Thelephora mougeotii Fries, *Elench. Fung.* 1 : 188 (1828).

NEPAL: Annapurna Himal, on branches of *Rhododendron campanulatum*, 30 Aug. 1954, *Stainton, Sykes & Williams 6641*. Rambrong, Lamjung Himal, on branch of *Betula utilis*, 7 July 1954, *Stainton, Sykes & Williams 6202*. Mewa Khola, 1,300 m., on dead wood, 1 Feb. 1962, *Norkett 9182*. Ganesh Himal, Ankhu Khola, 2,800 m., on bark in broad-leaved forest, 17 May 1962, *Stainton 3732*. Ganesh Himal, Mailung Khola, 4,000 m., 20 May 1962, *Stainton 3744*.

Distribution: Europe, India, Nepal, Australia, New Zealand, China.

HYMENOCHAETE RHEICOLOR (Mont.) Lév. in *Ann. Sci. Nat., Ser. 3, Bot.* 5 : 151 (1846).

Stereum rheicolor Mont. in *Ann. Sci. Nat., Ser. 2, Bot.* 18 : 23 (1842).

Stereum tenuissimum Berk. in *Hook., Lond. Journ. Bot.* 6 : 510 (1847).

Hymenochaete sallei Berk. & Curt. in *Journ. Linn. Soc. Lond., Bot.* 10 : 333 (1868).

Hymenochaete tenuissima Berk. apud Berk. & Curt. in *Journ. Linn. Soc. Lond., Bot.* 10 : 333 (1868) *nom. nud.*

Hymenochaete tenuissima (Berk.) Berk. & Broome in *Journ. Linn. Soc. Lond., Bot.* 14 : 67 (1873).

Stereum elegantissimum Spegazz. in *An. Soc. Cient. Argent.* 17 : 78 (1884).

NEPAL: Dhankuta Province, Taplejung district, Sanghu, 2,000 m., 17 Oct. 1961, *Norkett 5696 B*; same locality, 15 Nov. 1961, *Norkett 7112 C*.

Distribution: North and South America, Africa, West Indies, India.

HYMENOCHAETE RUBIGINOSA (Fries) Lév. in *Ann. Sci. Nat., Ser. 3, Bot.* 5 : 151 (1846).

Thelephora rubiginosa Fries, *Syst. Mycol.* 1 : 436 (1821).

NEPAL: Chainpur district, Tumlingtar, 600 m., on dead tree, 13 Dec. 1961, *Norkett 8109 D*; same locality, 16 Dec. 1961, *Norkett 8567*.

Distribution: Worldwide.

HYMENOCHAETE TABACINA (Fries) Lév. in Ann. Sci. Nat., Ser. 3, Bot. 5 : 152 (1846).

Thelephora tabacina Fries, Syst. Mycol. 1 : 437 (1821).

Stereum tabacinum (Fries) Fries, Epicrisis Syst. Mycol. : 550 (1838).

NEPAL: Annapurna Himal, on branches of *Rhododendron campanulatum*, 3 Aug. 1954, *Stainton, Sykes & Williams 6642*. Near Dogadi Khola, 4,300 m., on dead shrubs, 11 Aug. 1954, *Stainton, Sykes & Williams 3818*.

Distribution: Worldwide.

LOPHARIA CRASSA (Lév.) Boidin in Bull. Soc. Mycol. Fr. 74 : 479 (1958).

Thelephora crassa Lév. in Ann. Sci. Nat., Ser. 3, Bot. 2 : 209 (1844).

Stereum umbrinum Berk. & Curt. apud Berk. in Grevillea 1 : 164 (1873).

Hymenochaete vinosa Cooke in Grevillea 8 : 149 (1880).

Laxitextum crassum (Lév.) Lentz in U.S. Dept. Agric., Agric. Monogr. 24 : 20 (1955).

NEPAL: Dhankuta Province, Dhankuta, near Mahe, 1,300 m., 20 Sept. 1961, *Norkett 5157 C*. Sombu, 1,600 m., 23 Sept. 1961, *Norkett 5289*. Dhankuta Province, Taplejung district, Sanghu, 3,000 m., 3 Oct. 1961, *Norkett 5639 A*; same locality, 2,000 m., 15 Nov. 1961, *Norkett 7112 C*.

Distribution: America, Europe, Africa, India, Australia, New Zealand.

STEREUM OSTREA (Fries) Fries, Epicrisis Syst. Mycol. : 547 (1838).

Thelephora fasciata Schwein. in Schrift. Naturf. Ges. Leipz. 1 : 106 (1822).

Thelephora ostrea Fries, Elench. Fung. 1 : 175 (1828).

Thelephora versicolor var. *fasciata* (Schwein.) Fries, loc. cit.

Stereum fasciatum (Schwein.) Fries, Epicrisis Syst. Mycol. : 546 (1838).

NEPAL: Arun Valley, Khandbari, 2,300 m., on rotting log, 31 Aug. 1956, *Stainton 1472*.

Distribution: widespread; previously recorded from the Himalayas.

Since Fries did not treat *Thelephora fasciata* Schwein. as a separate species in his *Elenchus*, which is part of the starting-point for the *Fungi caeteri*, the epithet of his *T. ostrea* must be adopted when the two names are regarded as synonyms.

STEREUM HIRSUTUM (Fries) Gray, Nat. Arrang. Brit. Pl. 1 : 653 (1821).

Thelephora hirsuta Fries, Syst. Mycol. 1 : 439 (1821).

NEPAL: Chipli, north of Pokhara, 3,600 m., 18 Apr. 1954, *Stainton, Sykes & Williams 4885*. Arun Valley, Hattiar, 2,600 m., on rotting log, 21 Aug. 1956, *Stainton 1410*. Arun Valley, Sibrung, 27 Aug. 1956, *Stainton 1447*. Kasuwa Khola, 3,300 m., 12 Sept. 1956, *Stainton 1637*. Milke Danda Forest, 3,000 m., 16 Nov. 1961, *Norkett 7125*. Sanghu, 2,300 m., 23 Nov. 1961, *Norkett 8196*.

Distribution: Worldwide.

STEREUM ROSEO-CARNEUM (Schwein.) Fries, Acta Soc. Sci. Upsala, Ser. 3, 1 : 112 (1851).

Thelephora roseo-carnea Schwein. in Schrift. Naturf. Ges. Leipz. 1 : 107 (1822).

Laxitextum roseo-carneum (Schwein.) Lentz in U.S. Dept. Agric., Agric. Monogr. 24 : 22 (1955).

NEPAL: Dhankuta Province, Taplejung district, Sanghu 2,060 m., 15 Nov. 1961, *Norkett 7112 B*.

Distribution: North and South America, Japan, China.

The fructifications are pinkish buff, resupinate on twigs; the paraphyses have branching tips; spores $8 \times 4.5 \mu$.

STEREUM SANGUINOLENTUM (Fries) Fries, Epicrisis Syst. Mycol. : 549 (1838).

Thelephora sanguinolenta Fries, Syst. Mycol. 1 : 440 (1821).

NEPAL: Gurjakhani, 3,160 m. on small branches, 30 July 1954, *Stainton, Sykes & Williams 3678*.

Distribution: North America, Europe, South Africa, Australia, New Zealand.

STEREUM SUBPILEATUM Berk. & Curt. apud Berk. in Hook., Journ. Bot. 1 : 238 (1849).—Lentz in U.S. Dept. Agric., Agric. Monogr. 24 : 36 (1955).

Stereum insigne Bresad. in Nuovo Giorn. Bot. Ital. 23 : 158 (1891).

Xylobolus subpileatus (Berk. & Curt.) Boidin in Rev. de Mycol. 23 : 336 (1958).—Lentz in Sydowia 14 : 118 (1960).

NEPAL: Bakhri Kharka, north of Pokhara, on rotten tree trunk, 24 Apr. 1954, *Stainton, Sykes & Williams 5059*. Milke Danda Forest, Dhankuta Province, 2,800 m., 2 Nov. 1961, *Norkett 6806 A*; same area, 3,000 m., 16 Nov. 1961, *Norkett 7124*.

Distribution: America, Europe, India, Indonesia, China, Japan.

Lentz and Boidin should be consulted for modern interpretations of this aggregate species.

STEREUM sp. cf. SULCATUM Burt apud Peck in New York State Mus. Annu. Rep. 54, 1, App. 1 : 154 (1901).

NEPAL: South of Gurjakhani, 3,600 m., on tree in *Abies* forest, 16 Aug. 1954, *Stainton, Sykes & Williams 3868*.

Large robust sporophores superficially like those of a large *S. princeps* (Jungh.) Lév. but having a tomentose sulcate pileus, coarse, more or less parallel skeletal hyphae intermingled with generative hyphae, and no acanthophyses as such, but merely some slightly granular cystidial hyphae. The spores, irregularly globose, smooth or very faintly punctate and amyloid, $4.5-6 \mu$ diameter, resemble those of *S. sulcatum* Burt and those of *S. taxodii* Lentz & McKay (Mycologia 52 : 262 (1960)), two species recently transferred by H. L. Gross to his genus *Echinodontium* (Mycopath. & Mycol. Appl. 24 : 8, 11 (1964)). The Nepal fungus however differs in the

absence of large encrusted cystidia and in the possession of large flabelliform reflexed pilei. In view of the large and conspicuous fructifications it would seem unlikely that this fungus has not been recorded previously. I therefore defer describing it as new to science.

THELEPHORA CARYOPHYLLAEA Fries, Syst. Mycol. 1 : 430 (1821).

Phylacteria caryophyllea Patouill., Hym. Eur. : 154 (1887), *nom. nud.*

Phylacteria caryophyllea (Fries) Patouill. ex Bourd. & Maire in Bull. Soc. Mycol. Fr. 36 : 76 (1920).

NEPAL: Taplejung district, above Sanghu, 2,000 m., amongst moss on earth, 12 Oct. 1961, *Norkett 5927 A*.

Distribution: Worldwide.

VARARIA RHODOSPORA (Wakef.) G. H. Cunn. in Proc. Linn. Soc. N.S.W. 77 : 291 (1953); in N.Z. Dept. Sci. Industr. Res. Bull. 145 : 100 (1963).

Stereum duriusculum sensu Bresad. in Ann. Mycol. 6 : 43 (1908), non Berk. & Broome.

Asterostromella rhodospora Wakef. in Kew Bull. 1915 : 372 (1915).—Banergee in Journ. Ind. Bot. Soc. 14 : 45 (1935).

Asterostromella dura Bourd. & Galz. apud Bourd. & Maire in Bull. Soc. Mycol. Fr. 36 : 74 (1920).

Dichostereum durum (Bourd. & Galz.) Pilát in Ann. Mycol. 24 : 223 (1926).

NEPAL: Sanghu, 820 m., 9 Nov. 1961, *Norkett 7324*.

Distribution: America, Europe, Africa, India, Japan, Australia, New Zealand.

The species was recorded from India by Banergee. The Nepal collection consists of tough, resupinate thalli covering earth beneath tree roots, about 2–3 mm. thick, mid-brown, of stratosed context. Only a few basidia were observed embedded in the dichophysoid paraphyses; spores globose, straw-coloured, echinulate, 5–6 μ diameter; context hyphae brown, dendroidly and dichotomously branched, most markedly and densely in the hymenial layer, where they form the brown dendrophyses and dichophysyses; intermingled with them are finer, readily stained hyphae. Rogers & Jackson (*Farlowia* 1 : 309 (1943)), treat *Dichostereum durum* as a synonym of *Vararia pallescens* (Schwein.) Rog. & Jacks. Type material of *Thelephora pallescens* Schwein. in the B.M. Herbarium differs in several particulars, notably its finer context, and would appear to be not merely a different growth-form, as these authors suggested, but a distinct species.

CLAVARIACEAE

CLAVULINA MUSSOORIENSIS Corner, Thind & Dev in Trans. Brit. Mycol. Soc. 41 : 204 t. 8 fig. 3, text-fig. 1 (1958).

NEPAL: Near Gurjakhani, 2,800 m., among grass on open slope, 28 July 1954, *Stainton, Sykes & Williams 3670*.

Distribution: India.

(E.J.H.C.)

Clavulina alta Corner, sp. nov.

Receptacula ad 11 cm. alta, alba, sicco luride flava; stipite 2-6 cm. \times 3-8 mm., bene evoluto; ramulis inferioribus polychotomis v. applanato-multifidis, superioribus 1 mm. latis dichotomis v. cristatis, axillis inferioribus 3-6 mm. latis. Sporae 9.5-14 \times 7.5-9 μ , subglobosae, lacrymiformes v. pyriformes, apiculo 1 μ longo. Basidia 6.5-7.5 μ lata, bispora. Hymenium incrassatum; cystidiis nullis; hyphis subhymenialibus 6-17 μ latis, fere pseudoparenchymaticis. Hyphae 3-12 μ latae, fibulatae, tenue tunicatae, cellulis potius brevibus.

NEPAL: Chinggaon, north of Tukucha, Kali Gandaki, 3,500 m., on ground beneath conifers, 14 Sept. 1954, *Stainton, Sykes & Williams 7825*. (Herb. Mus. Brit. holotype).

This resembles *C. rugosa* (Fries) Schroet. in the large spores and wide subhymenial hyphae, and *C. cristata* var. *coralloides* Corner in the form of the fruit-body. I have not seen such a distinct form before, and the spores are constantly rather narrow for their length.

(E.J.H.C.)

Lentaria macrospora Corner, sp. nov.

Receptacula ad 10 cm. alta, gregaria v. caespitosa, carneoflava; stipite ad 25 \times 2-4 mm., axillas inferiores polychotomas versus plus minus dilatato; ramulis superioribus teretibus dichotomis strictis ascendentibus, 1-2 mm. latis. Sporae 20-30 \times 3.7-5.5 μ , hyalinae, cylindricae, v. subclavatae, saepe curvatae v. sigmoideae, et allantiformes, tenue tunicatae, haud amyloideae. Basidia ad 45 \times 9-10.5 μ ; sterigmatibus 2-4, 7-8 μ longis. Hymenium incrassatum; cystidiis nullis. Hyphae 2.5-7 μ latae, fibulatae, tunicis ad 0.5 μ vix incrassatis; in mycelio 2.5-4 μ latae, fibulatae, monomiticae, tunicis tenacibus sed vix incrassatis, passim partibus ampulliformibus ad 15 μ latis inflatae, crystallis sphaeroideis 2-7 μ latis inter hyphas numerosis.

NEPAL: Tamur Valley, Ghunsa, east of Walungchung Gola, 4,300 m., on ground under conifers, 27 July 1956, *Stainton 1145*. (Herb. Mus. Brit. holotype).

This resembles in shape and colour the common tropical *L. surculus* (Berk.) Corner but the spores are much longer, the hyphal walls are scarcely thickened, and the habitat seems to be humicolous. Many basidia had 1-3 long spiculiform sterigmata, but they may have been abnormal and formed after collection.

(E.J.H.C.)

RAMARIA aff. BOTRYTOIDES (Peck) Corner, Monogr. Clavaria, Ann. of Bot., Mem. 1: 562 (1950).

Clavaria botrytoides Peck in N.Y. State Mus., Mus. Bull. 94: 49, t. 93 figs. 5-7 (1905).

NEPAL: Taglung, south of Tukucha, Kali Gandaki, 3,300 m., on ground beneath trees, 11 July 1954, *Stainton, Sykes & Williams 1691*.

Distribution (of *Ramaria botrytoides*): America, southern parts of Australia and Tasmania, Japan; when the species is interpreted in a wide sense.

(E.J.H.C.)

RAMARIA SUECICA (Fries) Donk in Med. Bot. Mus. Herb. Rijks Univ. Utrecht 9 : 105 (1933).—Corner, Monogr. Clavaria, Ann. of Bot., Mem. 1 : 629 (1950).

Clavaria suecica Fries, Syst. Mycol. 1 : 469 (1821).

Clavariella suecica (Fries) Karst. in Bidr. Känn. Finl. Natur. & Folk 37 : 187 (1882).

NEPAL: South of Gurjakhani, 3,300 m., on damp shady forest bank, 18 Aug. 1954, *Stainton, Sykes & Williams 3902*.

Distribution: Europe, China, Canada, Northern U.S.A.

(E.J.H.C.)

RAMARIA FLACCIDA (Fries) Ricken, Vadem. Pilzfr. : 254 (1918).

Clavaria flaccida Fries, Syst. Mycol. 1 : 471 (1821).

NEPAL: Taglung, south of Tukucha, Kali Gandaki, 3,300 m., in pine wood, 22 Sept. 1954, *Stainton, Sykes & Williams 7971*.

Distribution: America, Europe, South Africa, Australia, China, Japan.

(E.J.H.C.)

RAMARIA OBTUSISSIMA (Peck) Corner, Monogr. Clavaria, Ann. of Bot., Mem. 1 : 609 (1950).

Clavaria obtusissima Peck in N.Y. State Mus., Mus. Bull. 167 : 39 (1913).

NEPAL: Taglung, south of Tukucha, Kali Gandkai, 3,000 m., beneath conifers, 12 July 1954, *Stainton, Sykes & Williams 1790*.

Distribution: U.S.A. and Canada.

The pink form is represented.

(E.J.H.C.)

RAMARIA SUBAURANTIACA Corner apud Balf.-Browne in Bull. Brit. Mus. (Nat. Hist.), Bot. 1 : 200 (1955).

NEPAL: North of Barse, 4,000 m., on *Abies* stump, 14 Aug. 1954, *Stainton, Sykes & Williams 3851*.

Distribution: Tibet.

Spores 10.5–15 × 5–6 μ , rather coarsely subverrucose. No clamps.

(E.J.H.C.)

CYPHELLACEAE

Chromocyphella bryophyticola Balfour-Browne, sp. nov.

Fungus cupulatus, cupulis sessilis, levis, griseo-albis, 0.5 mm. diam.; contextis tenuis, mollis, 15 μ latis ex hyphis elongatis efformatis; hymenio levo, brunneo; basidiis cylindricis, 15–16 × 4–5 μ ; sporis globosis, 5–7 μ diam., brunneis, punctatis.

NEPAL: Sanghu, 1,800 m., on moss, *Pterobryopsis*, and on an intermingled liverwort, on shady rock, 8 Nov. 1961, *Norkett 7292*. (Herb. Mus. Brit. holotype).

This fungus is not unlike *Cyphella chromospora* Patouill. (Tab. Anal. Fung. 1 : 19, fig. 32 (1883)), but the spores are larger. It differs from *Chromocyphella burtii* Bridge Cooke (Sydowia, Beiheft 4 : 137 (1961)), in its smaller basidia and its definitely punctate spores.

This appears to be the first record of a "Cyphella" in the Himalayan region.

SCLERODERMATEACEAE

SCLERODERMA AURANTIUM Pers., Syn. Meth. Fung. : 153 (1801).

NEPAL: Mathand, near Pokhara, 1,160 m., on shady bank, 22 June 1954, *Stainton, Sykes & Williams 5851*.

Distribution: Worldwide.

Spores 8-10 μ , reticulated.

LYCOPERDACEAE

BOVISTA sp. cf. BOVISTOIDES (Cooke & Masee) Ahmad, Gasteromycetes W. Pakistan, Publ. Dept. Bot. Univ. Panjab 11 : 16 (1952).

Mycenastrum bovistoides Cooke & Masee in Grevillea 16 : 26 (1887).

NEPAL: Above Dogadi Khola, amongst short grass on exposed slope, 21 June 1954, *Stainton, Sykes & Williams 3211*.

Distribution (of *Bovista bovistoides*): India.

The Nepal collection appears to be very close to this species but has very slightly warty spores, whereas Ahmad described them as smooth. The capillitium threads agree in being chestnut brown and unpitted.

BOVISTA ECHINELLA Patouill. in Bull. Soc. Mycol. Fr. 7 : 165 (1891).

Bovistella echinella (Patouill.) Lloyd, Mycol. Notes 23 : 286, t. 89 figs. 1-2 (1906).

Lycoperdon echinella (Patouill.) Ahmad in Journ. Ind. Bot. Soc. 20 : 138 (1941).

NEPAL: Chainpur district, Tumlingtar, 600 m., on earth near base of cliff of Sabhaya River, 9 Dec. 1961, *Norkett 8682 A*.

Distribution: North and South America, Jamaica, Europe, Pakistan.

The spores are smooth, not echinulate as described by Patouillard, but show "lines" beneath the outer membrane which at a certain focus appear like spines; the pedicels are mostly 6 μ long.

GEASTRUM FIMBRIATUM (Fries) E. Fisch. in Engl. & Prantl, Nat. Pflanzenfam., 2 Aufl., 7a : 73 (1933).

Geaster fimbriatus Fries, Syst. Mycol. 3 : 16 (1829).

NEPAL: Tukucha, Kali Gandaki, 3,600 m., 12 Oct. 1954, *Stainton, Sykes & Williams 8212*.

Distribution: America, Europe, Africa, India, Australia.

GEASTRUM HARIOTII (Lloyd) E. Fisch. in Engl. & Prantl, Nat. Pflanzenfam., 2 Aufl., 7a : 73 (1933).

Geaster hariotii Lloyd, Mycol. Not. 25 : 311, t. 99 figs. 7-9 (1907).

NEPAL: Tumlingtar, Sabhaya Khola, 600 m., on earth beneath bamboo, 20 Dec. 1961, *Norkett 9002*.

Distribution: South America, West Indies, Europe, Ceylon, Australia (according to Cunningham, v. below).

The eight specimens from Nepal resemble the descriptions of *Geastrum hariotii* very closely in being non-hygroscopic, in having a sessile endoperidium, dark, sulcate peristome and small, 3-3.5 μ diam., minutely verrucose spores. But the surface of the endoperidium is furfuraceous or granular rather than pitted as described by some authors (Cunningham, *Gasteromycetes Austral. and N.Z.* : 165 (1942)).

LYCOPERDON PYRIFORME Pers., Syn. Meth. Fung. : 148 (1801).

NEPAL: Tukucha, Kali Gandaki, 3,500 m., 12 Sept. 1954, *Stainton, Sykes & Williams 7806*.

Distribution: Worldwide.

FUNGI IMPERFECTI

SPHAEROPSIDACEAE

CONIOTHYRINA AGAVES (Durieu & Mont.) Petr. & Syd. in Beih. Rep. Spec. Nov. Regn. Veg. 42 : 322 (1927).

Phoma agaves Durieu & Mont. in Mont., Syll. Pl. Crypt. : 271 (1856).

Coniothyrium agaves (Durieu & Mont.) Sacc., Syll. Fung. 3 : 318 (1884).

NEPAL: Sanghu, 2,000 m., on Agave, 17 Nov. 1961, *Norkett 7154*; Sombu, 1,600 m., on *Agave*, 23 Sept. 1961, *Norkett 5313*.

Distribution: America, South Europe, Africa, India.

NECTRIOIDACEAE

ASCHERSONIA sp. cf. VIRIDANS (Berk. & Curt.) Patouill. in Bull. Soc. Mycol. Fr. 7 : 48 (1891).

Hypocrea viridans Berk. & Curt. in Journ. Linn. Soc. Lond., Bot. 10 : 376 (1868).

Aschersonia disciformis Patouill. in Bull. Soc. Mycol. Fr. 8 : 136 (1892).

Aschersonia viridula Sacc. in Ann. Mycol. 11 : 547 (1913).

NEPAL: Phewa Tal, 800 m., on leaves of *Castanopsis* sp., 8 May 1954, *Stainton, Sykes & Williams 5272 (a)*.

Distribution (of *A. viridans*): Central America (Trinidad, Vera Cruz, Cuba, Ecuador), Brazil, Mexico.

The Nepal fungus was growing on white fly. It differs from previous accounts in the greater number of pycnidia to each stromatic cushion, which is completely dotted over with the greenish ostioles; conidia 12-16 \times 1.5-2 μ .

Another *Aschersonia* also was collected on *Castanopsis* leaves; this appears to be close to *A. caespiticia* Syd. (in Engl., Bot. Jahrb. 54 : 260 (1916)), but differs in the rough surface of the tubercles and its small basal cushions. Tilhar, 3 Nov. 1954, *Stainton, Sykes & Williams 9251 (a)*.

LEPTOSTROMATACEAE

MELASMIA SALICINA Tulasne frat., Sel. Fung. Carp. 3 : 119, t. 15 figs. 15-17 (1865).

NEPAL: East of Chalike Pahar, 4,160 m., on *Salix* sp., 25 Sept. 1954, *Stainton, Sykes & Williams 4587*.

Distribution: not previously collected in this part of the world but its perfect state, *Rhytisma salicinum* Fries, has been recorded from the Punjab.

MELANCONIACEAE

Mastigonetron americanum (Mont.) Balfour-Browne, comb. nov.

Pestalotia americana Mont. in Gay, Hist. Chile, Bot. 7 : 481 (1850).—Guba, Monogr. Monochaetia & Pestalotia : 268 (1961).

Seiridium liquidambaris Berk. & Curt. apud Berk. in Grevillea 2 : 154 (1874).

Mastigonetron fuscum Klebahn in Myc. Centralbl. 4 : 18, fig. 37-38 (1914).

Monochaetia liquidambaris (Berk. & Curt.) Guba, loc. cit. (1961), *nom. synonym.*

NEPAL: Taplejung district, Sanghu, Tamrang Khola, 2,000 m., on dead twigs, 19 Oct. 1961, *Norkett 6319 A*.

Distribution: North and South America.

The acervuli, about 0.5 mm. in diameter, are scattered over the twigs and resemble lenticels in appearance. The conidia, $20-27 \times 9-10.5 \mu$, are dark brown, unicellular, ovoid or ellipsoid, each with a hyaline apical appendage $30-40 \times 2 \mu$, and a pedicel $12 \times 2 \mu$, approximately.

The fungus agrees exactly with Klebahn's species and apparently also with the type of *P. americana* (in spite of Montagne's description of the conidia as biseptate) since Guba, loc. cit., states that "Montagne's drawings of the fungus and my study show dark colored 1-celled ellipsoid conidia". The drawing mentioned is apparently unpublished.

In view of its unicellular conidia the species cannot be included in either *Monochaetia* or *Pestalotia*. As for *Seiridium* Nees & Henry, (Syst. Pilze : 18, t. 3 (1837)), arguments can be brought forward for retaining it as an earlier name for *Mastigonetron* if one regards as accurate the elder Nees's (Syst. Pilze & Schwämme : 22 (1816), t. 1 fig. 19 (1817)) description and drawing of unicellular appendaged conidia. This non-septate condition of the conidia was accepted by Berkeley & Curtis when they selected this genus for the fungus on *Liquidambar*. Alternatively, *Seiridium* can be regarded as an older name for *Monochaetia* if Fries's (Syst. Mycol. 3 : 473 (1832)) statement that his examination of Nees's material showed multiseptate conidia is taken as correct. The original collection appears to be lost but other collections since then and reputed to be the same species, i.e. *S. marginatum*, are invariably

described as having a brown septate conidium with a transparent apical seta. The probable explanation for this discrepancy is that Nees chanced to examine and illustrate the unripe fungus, i.e. before the conidia became septate, while they were still unicellular, spindle-shaped and contained grey granular protoplasm. Fries, on the other hand, and all subsequent workers have described the mature fungus, which represents what is now generally regarded as typical *Monochaetia*. Taking this latter view, or better still treating *Seiridium* as a *nomen confusum*, this generic name cannot be used in place of *Mastigonetron* and therefore the correct name for the Nepal fungus becomes *Mastigonetron americanum*, as cited above.

STILBACEAE

ARTHOBOTRYUM NILGIRENSE Subram. in Proc. Ind. Acad. Sci., Sect. B, 46 : 324, fig. 1 (1957).

NEPAL: Chainpur, Tumlingtar, 660 m., on old bamboos, 15 Dec. 1961, *Norkett 8868*.

Distribution: Previous record and original description from bamboo, Sim's Park, Coonoor, Madras, 1956.

Podosporium himalensis Balfour-Browne, sp. nov. (Fig. 4).

Synnemata atrobrunnea numerosa et effusa ex hyphis parallelibus juxtapositis efformata. Conidia atrobrunnea, 1-12 septata, obclavata, leniter curvata et irregulariter disposita, 9-15 × 16-100 μ .

NEPAL: Lamjung Himal, 4,500 m., black woolly growth on branches of *Rhododendron campanulatum*, 14 July 1954, *Stainton, Sykes & Williams 6341*. (Herb. Mus. Brit., holotype).

The general form of the synnemata is similar to that described by Subramanian (Journ. Ind. Bot. Soc. 35 : 73 (1956)) for his *Prathoda saparva*; the conidia however are different and the conidiophores hardly distinct from the hyphae and not geniculate. The Nepal material resembles an extremely luxuriant form of *Podosporium rigidum* Schwein., originally described from Carolina. The hyphae are hormiscium-like and very probably any portion breaking away can regenerate fresh growth, independently of conidial reproduction.

STILBUM CINNABARRINUM Mont. in Ann. Sci. Nat., Ser. 2, Bot. 8 : 360 (1837).

Stilbum lateritium Berk. in Ann. Nat. Hist. 4 : 291, pl. 8 fig. 2 (1840).

NEPAL: Tumlingtar, by shore of Sabhaya Khola, 600 m., 11 Dec. 1961, *Norkett 8107 C*.

Distribution: North and South America, Cuba, Dominica, Africa, Nepal, India, Ceylon, Australia.

Pleonectria pseudotrichia (Schwein.) Wollenw. is its perfect form. The present collection occurs on unnamed bark and is very sparing.

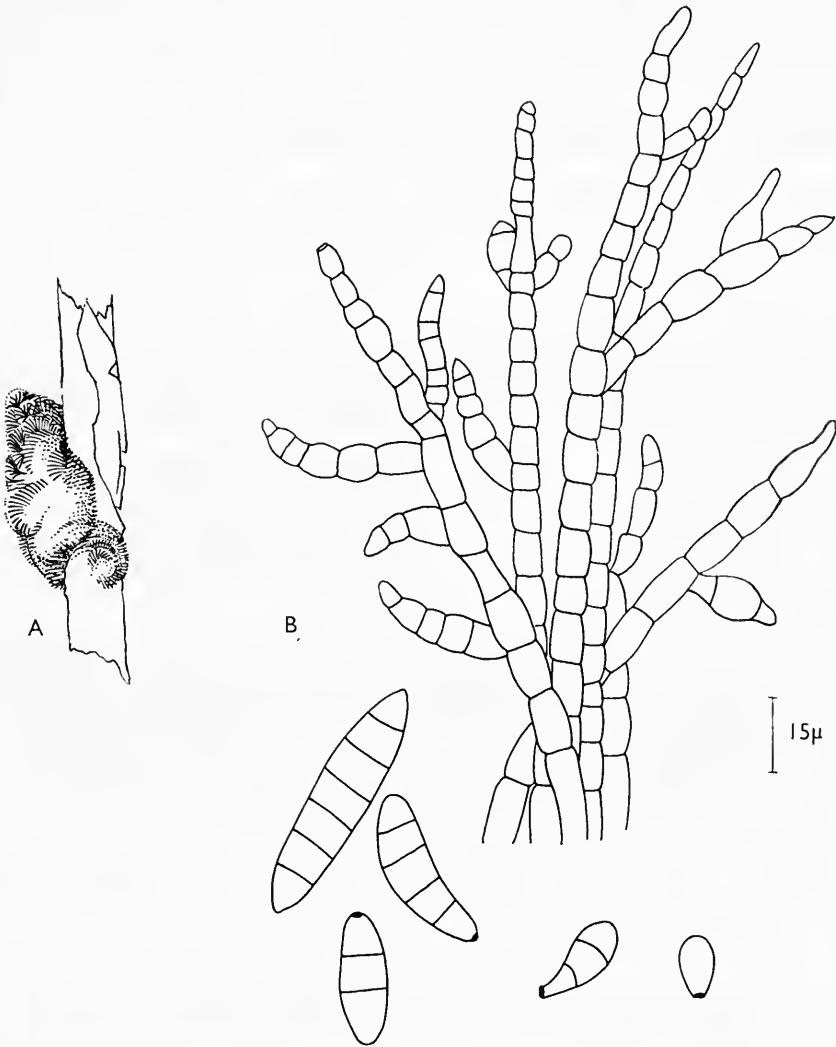


FIG. 4. *Podosporium himalensis* Balfour-Browne. A, general aspect; B, conidia and conidiophorous hyphae. *Stainton, Sykes & Williams 6341*.

STILBUM INCONSPICUUM Currey in *Trans. Linn. Soc. Lond., Ser. 2, Bot. 1 : 129* (1876).

Stilbum kurzianum Cooke in *Grevillea 16 : 71* (1888).

NEPAL: Sanghu, 2,000 m., 17 Nov. 1961, *Norkett 7153*.

Distribution: India.

On dead twigs of *Rosa* sp. Synnemata 3-4 mm. tall, pale orange soon becoming cinereous; conidia rod-shaped $7-9 \times 3 \mu$.

TUBERCULARIACEAE

EPICOCCUM ANDROPOGONIS (Rabenh.) Schol-Schwarz in Trans. Brit. Mycol. Soc. 42 : 171, t. 9 fig. II (1959).

Cerebella andropogonis Rabenh. in Bot. Zeit. 9 : 669 (1851).

NEPAL: Bhadauri, near Pokhara, 2,000 m., on inflorescence of a grass, 1 Nov. 1954, *Stainton, Sykes & Williams 8326*.

Distribution: Worldwide but chiefly in the tropics and subtropics.

This genus has been revised recently by Langdon (Mycol. Commonw. Mycol. Inst. Papers, 61 : 1-18 (1955) under the name *Cerebella*), and by Schol-Schwarz (tom. cit. : 149-173).

EPICOCCUM PURPURASCENS Schlechtend., Fl. Berol. 2 : 136 (1824).—Link in L., Sp. Pl., Ed. 4, 6 (2) : 108 (1825).

Epicoccum nigrum Link, loc. cit.—Schol-Schwarz in Trans. Brit. Mycol. Soc. 42 : 170 (1959).

NEPAL: Argam, near Pokhara, 830 m., on leaves and stems of *Acrocephalus indicus* (Burm.) O. Kuntze, 10 Sept. 1954, *Stainton, Sykes & Williams 7146*.

Distribution: Worldwide.

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