

## ON THE SPECIES OF *ANAPTYCHIA* AND *HETERODERMIA* FROM INDIA AND NEPAL

The lichen genus *Anaptychia*, from India and Nepal, had been dealt with in detail by AWASTHI (1960). In the monographic work on this genus, KUROKAWA (1962) revised several specimens cited by Awasthi, and also described a few new species. Some of these changes had been indicated by AWASTHI (1965) later. After the work of POELT (1965), the consensus of opinion in recent years has been to segregate the species of *Anaptychia* s.l. under *Anaptychia* Körb. em. Poelt (lacking atranorine and possessing *Physconia* type spores), and *Heterodermia* Trev. em. Poelt (possessing atranorine, and pachysporaria and polyblastidium type spores). To keep abreast with these taxonomic changes, new combinations for the species and varieties occurring in India and Nepal are proposed below. A key has also been provided for the determination of the *Heterodermia* species.

*Anaptychia ciliaris* (L.) Korb. f. *nigrescens* (Bory) Zahlbr. Kashmir, scarce.

*Anaptychia kaspica* Gyeln. Kashmir, common.

*Heterodermia albidiflava* (Kurok.) comb. nov.—*Anaptychia albidiflava* Kurok. *Beih. Nova Hedwigia*, **6**: 42, 1962. E. Himalayas, infrequent.

*Heterodermia angustiloba* (Müll. Arg.) comb. nov.—*Anaptychia speciosa* v. *angustiloba* Müll. Arg. *Flora*, **66**: 78, 1883. Nepal, scarce.

*Heterodermia awasthii* (Kurok.) comb. nov.—*Anaptychia awasthii* Kurok. *Beih. Nova Hedwigia*, **6**: 88, 1962. Temperate Himalayas, common.

*Heterodermia comosa* (Eschw.) comb. nov.—*Parmelia comosa* Eschw. in *Mart. Icon. Pl. Crypt.* **2**:26, 1828. Temperate Himalayas, infrequent.

*Heterodermia coronata* (Kurok.) comb. nov.—*Anaptychia coronata* Kurok. *Beih. Nova Hedwigia*, **6**:68, 1962. E. Himalayas, infrequent.

*Heterodermia dendritica* (Pers.) Poelt, *Nova Hedwigia*, **9**:31, 1965. E. Himalayas, infrequent.

*Heterodermia diademata* (Tayl.) comb. nov.—*Parmelia diademata* Tayl. *Hooker Lond. J. Bot.* **6**:165, 1847. Subtropical and temperate Himalayas and hills in S. India, widely distributed.

*Heterodermia diademata* f. *brachyloba* (Müll. Arg.) comb. nov.—*Physcia speciosa* v. *cinerascens* f. *brachyloba* Müll. Arg. *Flora*, **73**: 340, 1890. Subtropical to temperate Himalayas, widely distributed.

*Heterodermia dissecta* (Kurk.) comb. nov.—*Anaptychia dissecta* Kurok. *J. Jap. Bot.*, **34**:182, 1959. Subtropical to temperate Himalayas, widely distributed.

*Heterodermia dissecta* var. *koyana* (Kurok.) comb. nov.—*Anaptychia dissecta* var. *koyana* Kurok. *J. Jap. Bot.*, **34**: 183, 1959. E. Himalayas, infrequent.

*Heterodermia firmula* (Nyl.) Trev. *Atti Soc. Ital. Sci. Nat. Milano*, **11**: 615, 1868. E. Himalayas, common.

*Heterodermia flabellata* (Fée) comb. nov.—*Parmelia flabellata* Fée, *Suppl. Essai Crypt. Ecorc Officin.* **122**, 1837. Himalayas, common.

*Heterodermia himalayensis* (Awasthi) comb. nov.—*Anaptychia himalayensis* Awasthi, *Proc. Indian Acad. Sci.*, **45B**: 134, 1957. Temperate Himalayas, common.

*Heterodermia hypocaustia* (Yasuda) comb. nov.—*Anaptychia hypocaustia* Yasuda in Räs. *J. Jap. Bot.*, **16**:139, 1940. Himalayas, common.



- Heterodermia incana* (Stirt.) comb. nov.—*Physcia incana* Stirt. *Proc. Phil. Soc. Glasgow*, **11**:322, 1879. E. Himalayas, common; hills of S. India infrequent.
- Heterodermia indica* (H. Magn.) comb. nov.—*Anaptychia indica* H. Magn. in Awasthi, *J. Indian bot. Soc.*, **39**: 439, 1960. E. Himalayas, common.
- Heterodermia isidiophora* (Nyl.) comb. nov.—*Physcia speciosa* f. *isidiophora* Nyl. *Syn. Lich.* **1**: 417, 1860. E. Himalayas, hills of S. India, occasional.
- Heterodermia leucomela* (L.) Poelt, *Nova Hedwigia*, **9**: 31, 1965. Hills of S. India, infrequent.
- Heterodermia leucomela* f. *albociliata* (Nyl.) comb. nov.—*Physcia leucomela* f. *albociliata* Nyl. *Ann. Sci. Nat.*, Ser. 4, **19**: 309, 1863. Mysore, scarce.
- Heterodermia neoleucomelaena* (Kurok.) comb. nov.—*Anaptychia neoleucomelaena* Kurok. *J. Jap. Bot.*, **36**: 51, 1961. Temperate Himalayas, hills of S. India, widely distributed.
- Heterodermia neoleucomelaena* f. *sorediosa* (Jatta) comb. nov.—*Parmelia leucomela* var. *sorediosa* Jatta, *Ann. di Bot.*, **6**: 407, 1908. Hills of S. India, scarce.
- Heterodermia neoleucomelaena* f. *soredobullata* (Awas.) comb. nov.—*Anaptychia leucomelaena* var. *soredobullata* Awas. *J. Indian bot. Soc.*, **39**: 432, 1960. Himalayas and hills of S. India, infrequent.
- Heterodermia neoleucomelaena* f. *squarrosa* (Vain.) comb. nov.—*Anaptychia leucomelaena* f. *squarrosa* Vain. *Cat. Welw. Afric. Pl.*, **2**: 408, 1901. Himalayas and Palni hills, infrequent.
- Heterodermia obscurata* (Nyl.) Trev. *Nuova Giorn. Bot. Ital.*, **1**: 114, 1869. Himalayas, common.
- Heterodermia pellucida* (Awasthi) comb. nov.—*Anaptychia pellucida* Awasthi, *Proc. Indian Acad. Sci.*, **45 B**: 136, 1957. Temperate to alpine E. Himalayas, common.
- Heterodermia podocarpa* (Bél.) comb. nov.—*Parmelia podocarpa* Bél. *Voyag. Ind. Orient. Bot.* II, Crypt. 122, pl. e, fig. 1., 1840. W. India, infrequent.
- Heterodermia pseudospeciosa* (Kurok.) W. Culb. *Bryologist*, **69**: 484, 1966. Subtropical and temperate Himalayas, common.
- Heterodermia punctifera* (Kurok.) comb. nov.—*Anaptychia punctifera* Kurok. *Beih. Nova Hedwigia*, **6**: 45, 1962. The Himalayas, infrequent.
- Heterodermia rubescens* (Räs.) comb. nov.—*Anaptychia hypoleuca* f. *rubescens* Räs. *Arch. Soc. Zool. Bot. 'Vanamo'*, **5**(1): 27, 1950. The Himalayas, common.
- Heterodermia togashii* (Kurok.) comb. nov. *Anaptychia togashii* Kurok. *Beih. Nova Hedwigia*, **6**: 68, 1962, Sikkim and Nepal Himalayas, scarce.
- Heterodermia tremulans* (Müll. Arg.) W. Culb. *Bryologist*, **69**: 485, 1966. Himalayas, frequent.

### Key to the species of *Heterodermia*

- 1a. Thallus adpressed, ±suborbicular, underside corticated or ecorticated.
  - 2a. Thallus corticated on underside, spores pachysporaria type
    - 3a. Thallus isidiate or with subsidial squamules
      - 4a. Thallus isidiate, isidia laminal and marginal, norstictic and salacinic acid absent .. .. . *H. isidiophora*
      - 4b. Thallus with subsidial marginal branchlets, somewhat becoming sorediose, salacinic acid present .. .. . *H. dissecta*
    - 3b. Thallus without isidia or squamules.
      - 5a. Thallus sorediate, soredia subterminal.
      - 6a. Norstictic and salacinic acid present .. .. . *H. pseudospeciosa*

- 6b. Norstictic and salacinic acid absent .. .. *H. tremulans*
- 5b. Thallus not sorediate
- 7a. Medulla yellow or yellowish, K + red or purple .. .. *H. albidiflava*
- 8a. Medulla P + deep yellow .. .. *H. firmula*
- 8b. Medulla P - .. .. *H. firmula*
- 7b. Medulla white
- 9a. Medulla P + yellow, norstictic and salacinic acid present.
- 10a. Laciniae 1-2 mm wide .. .. *H. rubescens*
- 10b. Laciniae narrow (0.5-1 mm wide) .. .. *H. angustiloba*
- 9b. Medulla P - or + pale yellow, norstictic and salacinic acid absent .. .. *H. diademata*
- 2b. Thallus not corticated on underside
- 11a. Spores without polyblastidia, margin of Apothecia white punctate .. .. *H. punctifera*
- 11b. Spores with polyblastidia
- 12a. Thallus sorediate
- 13a. Underside K + purple, medulla K + yellow, spores 29-35  $\mu$  long .. .. *H. obscurata*
- 13b. Underside K + yellow to red, spores 35-46  $\mu$  long .. .. *H. hypocaustia*
- 12b. Thallus not sorediate
- 14a. Underside pigmented
- 15a. Medulla K + yellow to reddish, Norstictic and salacinic acid present .. .. *H. dendritica*
- 15b. Medulla K + yellow, norstictic and salacinic acid absent .. .. *H. flabellata*
- 14b. Underside not pigmented
- 16a. Medulla K + yellow to red, salacinic acid present .. .. *H. coronata*
- 16b. Medulla K + yellow, salacinic acid absent .. .. *H. togashii*
- 1b. Thallus suberect to erect rosulate, not corticated on underside, spores with polyblastidia
- 17a. Laciniae elongate, narrow, ascending at apices
- 18a. Medulla K + yellow to red, salacinic acid present .. .. *H. leucomela*
- 18b. Medulla K + yellow, salacinic acid absent .. .. *H. neoleucomelaena*
- 17b. Thallus rosulate, generally centrally affixed
- 19a. Thallus with whitish cilia all over the lamina .. .. *H. comosa*
- 19b. Thallus without such cilia on the lamina
- 20a. Receptacle of apothecia not lobulate marginally, but with dense black cilia or spinules .. .. *H. indica*
- 20b. Receptacle of apothecia lobulate at margin, rarely  $\pm$  entire, without black cilia (occasionally minute cilia on lobules)



- 21a. Medulla P+yellow to deep yellow,  
norstictic and salacinic acid present
- 22a. Cortex of receptacle I + violet purple
- 23a. Laciniae broad, sublinear, ±flat .. *H. awasthii*
- 23b. Laciniae narrow, short imbricate,  
±convex .. .. . *H. himalayensis*
- 22b. Cortex of receptacle I - .. *H. podocarpa*
- 21b. Medulla P - or + pale yellow, norstictic  
and salacinic acid absent.
- 24a. Medulla I+blue, spores 50-70 μ  
long, with numerous polyblastidia *H. pellucida*
- 24b. Medulla I -, spores 32-48 μ with  
2-3 polyblastidia .. .. *H. incana*

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