

lemma with 1 mm long blade and about 2 mm long, geniculate hairy awn, 3-nerved; its palea hyaline. Grain ovoid, filling the upper lemma and tightly enclosed in it at maturity.

This species was collected from Antroli near Kumta in N. Kanara, Karnataka. It is one of the dominant components in open situations on rocky soil of hill slopes and grows in association with other grasses and forbs.

*Flowers and fruits*: August to October.

There appears little doubt in respect of the distribution of this species. Hooker reported it to be occurring in "the Deccan Peninsula from the Concan southward". Cooke, without seeing the specimen from Bombay, merely repeated Hooker's citation of Wight's collection from Concan. Fischer reported it from "Western ghats" as well as from other areas of the old Madras State. Bor gave its distribution as "Madras State, endemic".

It is clear from the above facts that although Hooker, Cooke and Fischer could not distinguish this species from *A. agrostoides* Trin. [now correctly named as *A. holcoides*

(Kunth) Trin.], they were correct in giving its distribution from Concan southward, Western ghats etc. Bor, who has distinguished this species from *A. holcoides* (Kunth) Trin., (for differences see Bor *loc. cit.*) probably did not have any authentic specimen collected from Western India.

Now it can be said that this grass is distributed from Madras State to West coast of India in North Kanara.

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#### REFERENCES

- BOR, N. L. Grasses of Burma, Ceylon, India and Pakistan (excluding Bambuseae). London, 1960.  
 COOKE, T. The Flora of the Presidency of Bombay, 1901-1908.  
 GAMBLE, J. S. AND C. E. G. FISCHER. The Flora of the Presidency of Madras, 1915-1936.  
 HOOKER, J. D. The Flora of British India, 1872-1897.

### UNRECORDED SPECIES OF LICHENS FROM INDIA

In year 1967 a tour was undertaken to Shillong and the neighbouring areas of Khasia hills for the collection of lichens. These lichens were identified by the author in the Cryptogamic Unit, Botanical Survey of India, Howrah. Out of these collections eleven species were found to be new records for India. Three of these, belong to Pyrenulaceae, two to Arthoniaceae, one to Lecideaceae and one to Lecanoraceae. The specimens cited here are deposited in the Cryptogamic herbarium of the Botanical Survey of India, Howrah and Cryptogamic division of Vermont University, Burlington, U.S.A.

#### PYRENULACEAE

**Pyrenula feracissima** Vain. in Botan. Tidskrift. 29: 145. 1909; Zahlbr. Cat. Lich. Univ. 1: 430. 1922.

Thallus pale yellow, forming a thin smooth crust upon the bark, devoid of differentiation into layers. Perithecia minute to small, more or less immersed, the superficial portion hemispherical to conical, the ostiole minute, rarely visible.

Paraphyses unbranched. Spores brown, 8 in each ascus, ellipsoid to oblong-ellipsoid, 20-22 × 8-12  $\mu$ , 4-locular, apical cells smaller than the middle, cells lenticular. (Figs. I-III).

*Habitat*: On the bark of a tree.

*Specimen examined*: ASSAM: Shillong, Mawsami, 1600 m, Sept. 1967, Dharne & Roychowdhury 1054.

**Pyrenula apporoximata** Vain. in Botan. Tidsskrift 29: 145. 1909; Zahlbr. Cat. Lich. Univ. 1: 423. 1922.

Thallus ashy-grey, forming a rough crust upon the bark. Perithecia small to middle-sized.

Paraphyses free. Spores  $10-14 \times 7-8 \mu$  brown, ellipsoid, 3-septate. (Fig. IV).

*Habitat*: On the bark of a tree.

*Specimen examined*: ASSAM: Shillong, Mawsmai, 1600 m., Sept. 1967, Dharne & Rowchowdhury 1043.

1909; Zahlbr. Cat. Lich. Univ. 1: 255. 1922.

Thallus pale-brownish, forming a thin smooth crust upon the bark. Perithecia minute to small, immersed.

Hypothecium brownish, hymenium hyaline but brownish above. Paraphyses branched and interwoven. Spores  $14-16 \times 6-8 \mu$ , 8 in each ascus, brown, oblong-ellipsoid, 1-septate, cells cylindrical. (Figs. V-VII).

*Habitat*: On the bark of tree.

*Specimen examined*: ASSAM: Shillong, Dharne & Roychowdhury 1045.

*Geographical distribution*: The above three species were previously reported from Siam.

#### ARTHONIACEAE

**Arthonia cinnabarina** (DC.) Waller. var. **orbicella** Nyl. in Acta. Soc. Scient. Fenn 26 (10): 19. 1900.

Thallus greyish, attached to the bark. Apothecia sessile, minute to small, round to irregular, reddish-brown.

Hypothecium brownish, hymenium brown. Paraphyses branched. Spores  $23-24 \times 6-9 \mu$ , ovoid-oblong, 8 in each ascus, 3-septate but a few 4-septate and the septation is not distinct, cells cylindrical. (Figs. VIII-X).

*Habitat*: On the bark of a tree.

*Specimen examined*: ASSAM: Shillong, Woodlands, 1500 m., Sept. 1967, Dharne & Roychowdhury 972.

**A. astropica** Krmph. in Flora 56: 466. 1873 et in Hedwigia 13: 34. 1874; Zahlbr. Cat. Lich. Univ. 2: 13. 1924.

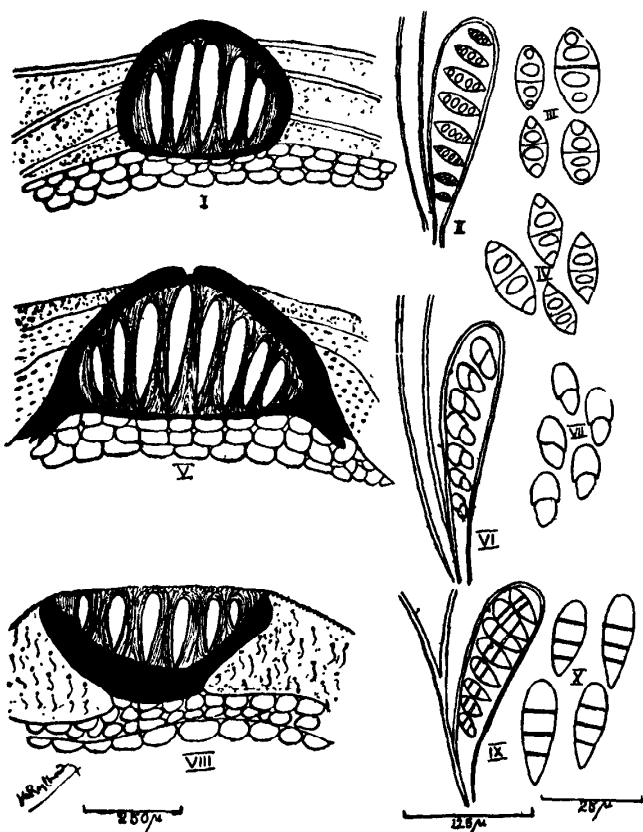
Thallus greenish, thin, attached to the bark and surrounded by brownish outline. Apothecia star-shaped, black.

Spores ovoid,  $19-22 \times 4-5 \mu$ , 4 in each ascus, hyaline; 3-septate. Paraphyses branched. (Figs. XI-XIII).

*Habitat*: On the bark of a tree.

*Specimen examined*: ASSAM: Shillong peak, Dharne & Roychowdhury 1187.

*Geographical distribution*: Previously reported from Ceylon and China.



Figs. I-III : *Pyrenula ferracissima* Vain. I. Vertical section of apothecia. II. Ascus with paraphyses. III. Spores. Fig. IV *Pyrenula apporoximata* Vain. IV. Spores. Figs. V-VII : *Microthelia asiatica* Vain. V. Vertical section of apothecia. VI. Ascus with paraphyses. VII. Spores. Figs. VIII-X : *Arthonia cinnabarina* (DC.) Waller. var. *orbicella* Nyl. VIII. Vertical section of apothecia. IX. Ascus with paraphyses. X. Spores.

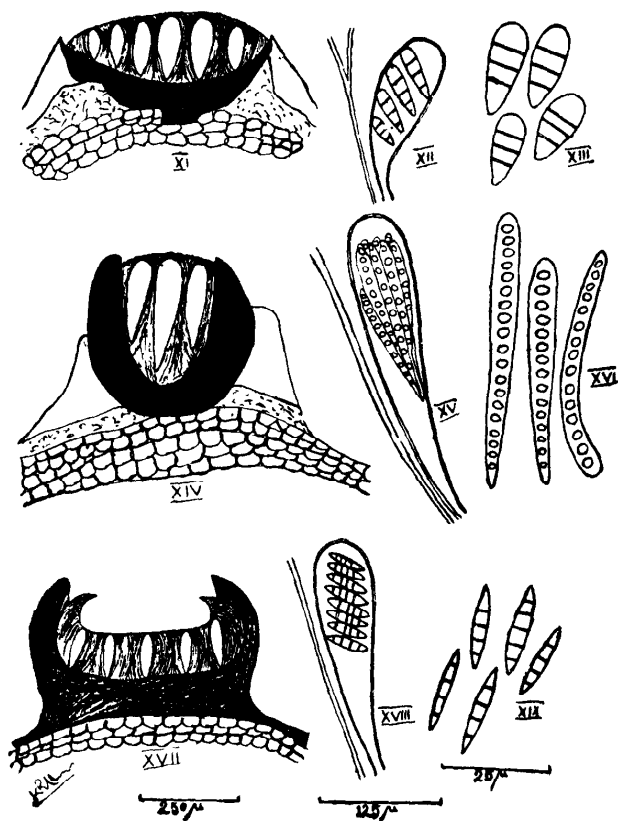
**Microthelia asiatica** Vain. in Hedwigia 66: 180. 1907. et in Botan. Tidsskrift. 29: 149.

## GRAPHIDACEAE

**Graphis tonkinensis** Mull.-Arg. in Hedwigia 30: 185. 1891; Zahlbr. Cat. Lich. Univ. 2: 359. 1924.

Thallus greyish-white, crustose, thin attached to the bark. Apothecia linear, curved. Disk open, black, the exciple coloured like that of the disk, surrounded by thick thalloid margin.

Hypothecium hyaline, paraphyses not branched. Spores  $100-120 \times 10-16 \mu$ , 13-19-septate, oblong ellipsoid, the cells lenticular. (Figs. XIV-XVI).



Figs. XI-XIII: *Arthonia astropica* Krmph. XI. Vertical section of apothecia. XII. Ascus with paraphyses. XIII. Spores. Figs. XIV-XVI: *Graphis tonkinensis* Muell.-Arg. XIV. Vertical section of apothecia. XV. Ascus with paraphyses. XVI. Spore. Figs. XVII-XIX: *Ocellularia microascida* (Vain.) Zahlbr. XVII. Vertical section of apothecia. XVIII. Ascus with paraphyses. XIX. Spores.

**Habitat:** On the bark of tree.

**Specimen examined:** ASSAM: Shillong, Mawsami, Sept. 1967, Dharne & Roychowdhury 1083.

**Geographical distribution:** Previously reported from Tonkin.

## THELOTREMACEAE

**Ocellularia microascida** (Vain.) Zahlbr. Cat. Lich. Univ. 2: 295. 1924. *Thelotrema microascida* Vain. in Hedwigia 46: 176. 1907 et in Botan. Tidsskrift. 29: 121. 1909. Thallus pale-brownish, minutely granulose, attached to the bark. Apothecia minute to small, more or less immersed. Disk concave to flat.

Hypothecium and hymenium hyaline, paraphyses free. Spores  $15-20 \times 5-7 \mu$ , 8 in each ascus, fusiform-oblong, 3-5-septate. (Figs. XVII-XIX).

**Habitat:** On the bark of a tree.

**Specimen examined:** ASSAM: Shillong, Mawsami, Sept. 1967, Dharne & Roychowdhury, 1109.

**Geographical distribution:** Previously reported from Siam.

## PELTIGERACEAE

**Peltigera oceanica** Gyeln. in Fedde. Repert. 29: 9. 1931; Zahlbr. Cat. Lich. Univ. 8: 323. 1921.

Thallus foliose, very small, upper side smooth, brownish, with crenulatus margin. Under surface with brown polydactylaeforme nerves in the peripheral parts while in the centre brownish-black rhizinae present. Apothecia irregular borne on the upper surface of the margin of the lobes. Disk brown.

Hypothecium pale-brown. Hymenium brownish above. Paraphyses capitate. Spores colourless 3-many celled, 8 in each ascus, elongate, fusiform, one end narrower than the other.  $60-80 \times 4-5 \mu$ . (Figs. XX-XXII).

It has close resemblance with *P. dolichorhiza* Nyl. but differs from it in the smaller thallus.

**Habitat:** On the bark of a tree.

**Specimen examined:** ASSAM: Shillong, Elephant falls, 1600 m, Sept. 1967, Dharne & Roychowdhury, 1242.

**P. macra** Vain. in Philip. J. Sci. C 8: 114. 1913.

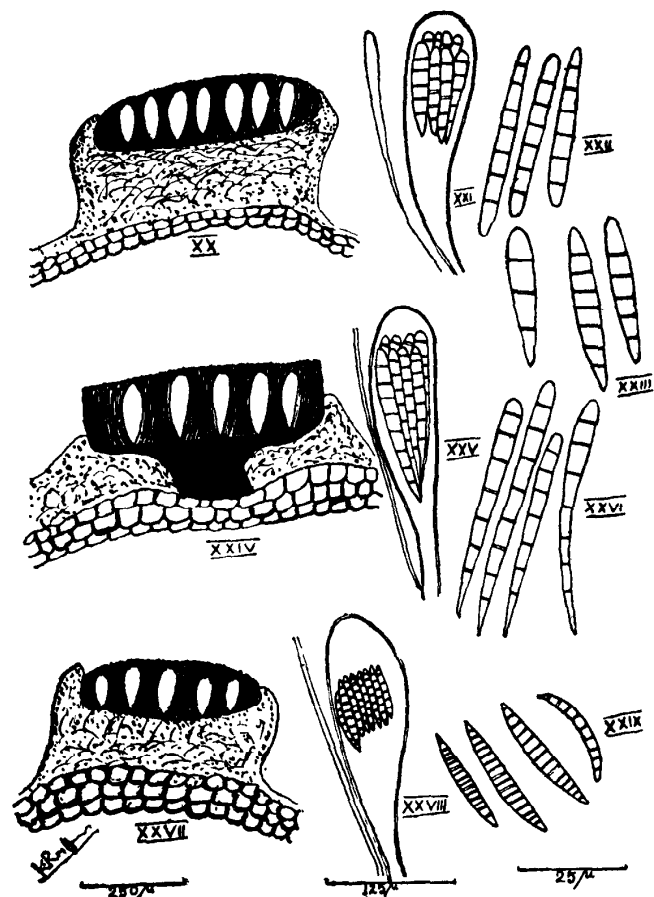
Thallus foliose, smooth, more or less lobed, pale olive coloured. Under surface reticulated with whitish nerves forming the shape of

the thallus has a few white strong nerves and a few white rhizinae.

*Habitat*: On the bark of a tree.

*Specimen examined*: ASSAM: Shillong, Sept. 1967, Dharne & Roychowdhury, 1344.

*Geographical distribution*: Previously reported from Philippine.



Figs. XX-XXII: *Peltigera oceanica* Gyein. XX. Vertical section of apothecia. XXI. Ascus with paraphyses. XXII. Spores. Fig. XXIII *Peltigera macra* Vain. XXIII. Spores. Figs. XXIV-XXVI: *Bacidia manilensis* Vain. var. *simenses* Vain. XXIV. Vertical section of apothecia. XXV. Ascus with paraphyses. XXVI. Spores. Figs. XXVII-XXIX: *Phlyctella himalayensis* Nyl. XXVII. Vertical section of apothecia. XXVIII. Ascus with paraphyses. XXIX. Spores.

cerebrum. Rhizinae somewhat pressed together forming the shape like that of cerebrum.

Apothecia borne on the upper surface of the margin of the lobes, adnate. Paraphyses unbranched, clavate. Spore  $70-80 \times 3-4 \mu$ , 8 arranged in many rows, fusiform, needle shaped 3-5-7-septate. (Figs. XXIII).

It has some similarity with *P. spuria*, but differs from it as follows:

In case of *P. spuria* the under surface of

#### LECIDEACEAE

***Bacidia manilensis* Vain. var. *simenses* Vain.** in Annal Soc. Zool. bot. Fennic 1: 3, 46. 1921; Zahlbr. Cat. Lich. Univ. 4: 221. 1924.

Thallus rough and crustose, pale-brown, attached to the bark. Apothecia flesh coloured to deep brown, adnate, convex.

Hypothecium brown, hymenium brownish, paraphyses unbranched. Spores  $50-80 \times 4 \mu$ , 8 in each ascus. Acicular, 12-16-septate. (Figs. XXIV-XXVI).

*Habitat*: On the bark of a tree.

*Specimen examined*: ASSAM: Shillong, Mawphlong, 1500 m, Sept. 1967, Dharne & Roychowdhury, 1286.

*Geographical distribution*: Previously reported from Siam and Philippine.

#### LECANORACEAE

***Phlyctella himalayensis* Nyl.** Lich. Nova Zealand. 73. 1888.

Thallus crustose, ash grey with yellowish tinge. Apothecia minute to small, adnate. Disk concave to flat, the exciple coloured like the thallus.

Hypothecium brownish, hymenium hyaline but brownish above. Paraphyses unbranched and free. Spores  $60-80 \times 3-8 \mu$ , 8 in each ascus, fusiform, several septate. (Figs. XXVII-XXIX).

*Habitat*: On the bark of a tree.

*Specimen examined*: ASSAM: Shillong, Mawphlong, 1500 m, Sept. 1967, Dharne & Roychowdhury, 1258.

*Geographical distribution*: Previously reported from Himalaya.

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Botanical Survey of India, Howrah

## NEW PLANT RECORDS FOR THE PUNJAB PLAINS

Eversince July 1963, the author has been making plant collections from Punjab. During the exploration, some species previously not recorded from the Punjab plains have been gathered. Seven of these, belonging to *Polypetalae*, are listed below along with some pertinent notes. Specimens cited have been deposited in the Herbaria of Panjab University, Chandigarh (PAN), Punjab Agricultural University, Ludhiana (Ludhiana) and Punjabi University, Patiala (PUN).

## RANUNCULACEAE

**Ranunculus arvensis** Linn. Sp. Pl. 555. 1753; Collett, Fl. Simlensis 10. 1902; Bamber, Pl. Punjab 350. 1916.

Collett and Bamber (loc. cit.) recorded the occurrence of this plant from W. Himalaya at an altitude of 1200-2300 m. This has been collected by me at an altitude of 300-330 m, as a weed of cultivation in wheat and clover fields.

*Specimens examined*: Banur, Sharma 2703; Zirkapur, Sharma 3480 (PUN).

*Flowers and fruits*: March-April.

## CARYOPHYLLACEAE

**Sagina apetala** Arduino, Animadvers. Bot. Spec. Alt. 2: 22. 1764.

This is an introduction from Europe. The plant is a slender, wiry, tufted annual with greenish flowers. It usually occurs in flowerbeds or under moist conditions in shady places. Its wiry habit and absence of petals immediately separate it from the rest of the wild members of the family occurring in the Punjab plains.

*Specimens examined*: Nursery Sector 23, Chandigarh, Sharma 1694 (PAN); Government College for boys, Ludhiana, Sharma 848; Baradari Gardens, Patiala, Sharma 1766; Bassi Pathanan, Sharma 2673 (PUN).

*Flowers and fruits*: February-April.

## PORTULACACEAE

**Portulaca parvula** A. Gray in Proc. Am. Acad. 22: 274. 1887.

This is an introduction from tropical America and is found in variety of habitats: under the shade of bushes and trees growing in waste places, or spreading and growing in the crevices of the exposed brick-floors or in meadows. The plant has a preference for exposed, sandy, waste places.

*Specimens examined*: Kauli, Sharma 899; Mahendra College, Patiala, Sharma 1566; Rakhra, Sharma 2154; Patiala, Sharma 2278; Samana, Sharma 2882, 3259 (PUN).

*Flowers and fruits*: March-October.

## OXALIDACEAE

**Oxalis latifolia** H. B. & K. Nov. Gen. & Sp. 5: 237, t. 467. 1821.

Native of Mexico; naturalized in moist and shaded places in gardens, nurseries, well irrigated fruit orchards and in pots along with other ornamentals.

*Specimens examined*: Government College for boys, Ludhiana, Sharma 379 Baradari Gardens, Patiala, Sharma 925 Punjabi University, Patiala, Sharma 3784 (PUN).

*Flowers*: July-September.