chrysogenum also produced burning type of symptoms on leaves of adult plants and thus exhibited localised aerial infections and later caused wilting of the twig itself but never of the old plant.

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A TECHNIQUE FOR THE REVIVAL OF HERBARIUM SPECIMENS FOR FLORAL DISSECTIONS AND ANATOMICAL STUDIES

HERBARIUM specimens for floral dissections or anatomical studies are usually softened by boiling them in water or soaking in a detergent solution[1] or treating with 2·5–5·0% sodium hydroxide or sodium hypochlorite[2]. Aerosol OT solution, was sponsored as a softener for herbarium specimens[3,2]. Being a wetting agent, Aerosol functions like any similar chemical. No single technique is eqally suitable to revive all plant parts and/or species. In an attempt to devise an alternative softening agent, the present author tried for over five years, a solution of the following composition and found it to be very satisfactory in reviving herbarium specimens of various plant groups.

The mixture is made of glycerine 20 ml, glacial acetic acid 10 ml, EDTA (0·292% aqueous solution) 10 ml, sodium lauryl sulphate (5% aqueous solution) 10 ml and distilled water 50 ml. The duration of soaking the material in this solution depends on its hardness. No heating is required at any stage. The solution does not deteriorate on storage or repeated use. After the desired degree of softening the flowers can be dissected and retained in the same solution without the risk of their drying or rotting. The softened material can be returned to the herbarium sheet, after a brief washing and drying. The softened material can be sectioned free hand or on a microtome, after thoroughly washing it with distilled water. Conventional methods for microtoming and staining may be adopted. Refractory material already embedded in paraffin can be softened in this solution by slicing the wax away exposing the material at one end to imbibe the solution.

Mixtures without acetic acid and/or EDTA were very unsatisfactory. EDTA chelates with divalent metal ions from the middle lamella and the cell walls thus softening the wall material. Glycerine also acts as a softening agent while acetic acid functions as a preservative without making the material brittle like formaldehyde. Sodium lauryl sulphate serves as a wetting agent and brings down the surface rigidity of the material. The chelation of the divalent metal ions may reduce the intensity of staining to a little extent. The addition of a suitable mordant after sectioning, will restore the intensity of staining.

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SOME ADDITIONS TO THE LICHEN FLORA OF INDIA

V. Genera *Phaeographis* and *Phaeographina* (Family: Graphidaceae)

TAXONOMIC investigations on the lichen flora of Western Ghats, south-western India, carried out during 1973–77 have resulted in the additions of several taxa as new reports for the country and many new species. Some of these have already been reported earlier (Patwardhan and Kulkarni[2], Patwardhan and Prabhu[4]) and seven species of the genus *Phaeographis* and two species of the genus *Phaeographina* are being reported here in this note.

Chemical studies were carried out by thin layer chromatography (Culberson[1]). Specimens referred to in the text are deposited in the Lichen Unit of the Ajrekar Mycological Herbarium (AMH).

1. *Phaeographis angulosa* Muell. Arg. *Rev. Mycol.* 9 : 81, 1887. Thallus thick, epiphloeodal; apothecia lirelline, immersed, 0·5–3·0 mm long, ends subacute, angulose; disc wide open, slaty; exciple non-carbonized; ascospores 8/ascus, 5–8 loculate, brown, 6–10 × 30–40 μm in size. Chemistry: K + yellow to red P + orange, norstictic acid is present.

Specimens examined: Tamil Nadu, Nilgiris—73·303, 496, 871, 1253, 3116, Palni hills, Kodaikanal—73·1968.

Distribution: New Caledonia and now India.

2. *Phaeographis bicolor* Muell. Arg. *Flora* **65**: 383, 1882. Thallus thick, epiphloeodal; apothecia lirelline, immersed, short, 0·5–2·0 mm long, ends subobtuse; disc wide open, slaty; labia entire, divergent, exciple non-carbonized; ascospores 8/ascus, 5–7 loculate, brown, 6–9×25–40 μm in size. Chemistry: K + yellow, P + orange, stictic acid is present.

Specimens examined: Tamil Nadu, Nilgiris—73·595, 873, Palni hills, Kodaikanal—73·1985.

Distribution: Java and now India.

3. *Phaeographis dendroides* (Leight.) Muell. Arg. *Flora*, **65**: 208, 1882. Thallus smooth, epiphloeodal; apothecia lirelline, emergent, 0·5–2·0 mm long; disc wide open; exciple non-carbonized; ascospores 8/ascus, 4–7 loculate, brown, 7–10 × 20–25 μm in size. Chemistry; K+yellow, P + orange, stictic and constictic acids are present. Specimen examined: Kerala, Cardamom hills, Devicolam—76·772.

Distribution: Japan, Philippines, Sunda Islands, Sri Lanka (Ceylon) and now India.

4. *Phaeographis inconspicua* (Fee) Muell. Arg. *Memoir Soc Phys. et Hist. Nat. Geneva*, **29**: (8): 25, 1887. Thallus smooth, hypophloeodal; apothecia lirelline, semi-emergent, flexuous, 1·0–3·0 mm long; disc wide open, concave; labia cream coloured, convergent; exciple non-carbonized; ascospores 8/ascus, 4–6 loculate, brown, 5–8×15–22 μm in size. Chemistry: K + yellow to red, P + orange, norstictic acid is present.

Specimen examined: Kerala, Wynad forest—73·2800.

Distribution: South America and now India.

5. *Phaeographis subdividens* (Leight) Muell. Arg. *Flora*, **65**: 383, 1882. Thallus epiphloeodal; apothecia lirelline, immersed, flexuous, 0·5–4·0 mm long, ends obtuse; disc moderately open; labia entire, convergent; exciple non-carbonized; ascospores 8/ascus, 5–6 loculate, brown, 4–7 × 14–16 (22) μm in size. Chemistry: K —, P —; No lichen substances are present.

Specimen examined: Karnataka, South Canara, Tirthahalli—74·2883.

Distribution: Sri Lanka (Ceylon) and now India.

6. *Phaeographis submaculata* Zahlbr. *Ann. Mycol.* 30: 433, 1932. Thallus thick, epiphloeodal; apothecia lirelline, semi-emergent to distinctly emergent, 2·0–4·0 mm long, ends subacute; disc wide open, ashy white pruinose; labia entire, convergent; exciple non-carbonized; ascospores 8/ascus, 6-8 loculate, 5–7 × 20-30 μm in size. Chemistry: K + yellow to red, P + deep yellow, norstrictic acid is present.

Specimens examined: Karnataka, Coorg, Bigmandala—74·3370; Tamil Nadu, Palni hills, Kodaikanal—73·1981, 1986; Kerala, Munnar—76·472.

Distribution: China and now India.

7. *Phaeographis subtigrina* (Vain.) Zahlbr. *Cat. Lich. Univ.* **2**: 387, 1923. Thallus smooth, thick, epiphloeodal; apothecia lirelline, immersed; disc wide open, ashy white pruinose, labia entire, convergent, exciple non-carbonized; ascospores 8/ascus, 4 loculate, brown, 5–8 × 14–18 μm in size. Chemistry: K+yellow to red, P + deep yellow, norstictic acid is present.

Specimens examined: Tamil Nadu, Palni hills, Kodaikanal —73·1969, 1984, Kerala, Munnar to Kodai Road, near Yellapatti—76·622.

Distribution: Siam and now India.

8. *Phaeographina commutabilis* (Krempelh.) Zahlbr. *Cat. Lich. Univ.*, **2**: 437, 1923. Thallus thick, epiphloeoedal; apothecia lirelline, black, emergent; thalline margin raised; disc narrow slit like; labia entire; black; exciple non-carbonized; ascospores 4–8 ascus, brown, muriform, 21–30 × 75–120 μm in size. Chemistry: K —, P —; No lichen substances are present.

Specimen examined: Maharashtra, Mahabaleshwar —73·2931.

Distribution: Borneo and now India.

9. *Phaeographina limbata* Muell. Arg. *Journ. Linn. Soc. Bot.*, 30: 461, 1895. Thallus smooth, hypophloedoedal; apothecia lirelline, semi-emergent to emergent, black 4·0–7·0 mm long; disc moderately open; labia thick, convergent, entire to indistinctly sulcate exciple; totally carbonized; ascospores 8/ascus, muriform, brown, 10–13 × 20–35 μm in size. Chemistry: K —, P —; No lichen substances are present.

Specimens examined: Kerala, Wynad forest—74·3518, 3519.

Distribution: Africa and now India.

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