

De Herbario Berolinense Notulae No. 21
H.J.M. SIPMAN

Lichenotheca Latinoamericana a museo botanico berolinensi edita, fasciculum primum

Abstract

Sipman, H.J.M.: Lichenotheca Latinoamericana a museo botanico berolinensi edita, fasciculum primum [Lichenotheca Latinoamericana edited by the Botanical Museum Berlin-Dahlem, first fascicle]. - Willdenowia 19: 543-551. 1990. - ISSN 0511-9618.

Label information is presented on 50 lichen specimens from Brazil, Colombia, Costa Rica, French Guyana, Guyana, Mexico and Surinam, which form the first fascicle of this series of exsiccata. Substantial range extensions documented by these specimens include the first finding in the Neotropis of *Chroodiscus mirificus* and the first record from Colombia of *Cystocoleus ebeneus*. *Heterodermia flavosquamosa* from Guyana is described as a species new to science.

This new series of exsiccata intends to contribute to the investigation of the lichenized fungi occurring in Latin America. It will be issued in 25 sets, which are distributed to the following herbaria: B, C, CBG, COL, COLO, GZU, LD, M, NY, PRE, TNS, U, UPS, US, VEN. The remaining sets will preferentially be distributed to latinamerican herbaria.

The first fascicle contains material of an unpublished species of *Heterodermia*, as well as records of several major range extensions. Therefore a list with label information, together with a description of the new species, is published in a recognized botanical journal rather than as a special leaflet.

With Lichenotheca Latinoamericana a tradition of the lichen herbarium of the Botanical Museum Berlin-Dahlem is resumed, which was started by G. Follmann in 1968 when issuing "Lichenes Exsiccati Selecti a Museo Botanico Berolinensi Editi". From this series four fascicles were issued: fasc. I, II and III in 1968 and fasc. IV in 1970 (see Willdenowia 4: 383-390, 4: 391-397, 5: 15-21 and 6: 17-23). From Fasc. V onward the series was issued under the title "Lichenes Exsiccati Selecti a Museo Historiae Naturalis Casselensi Editi" (see Philippia 2: 13-21) from the Naturkundemuseum Kassel, where Follmann had accepted a position.

1. *Biatorella conspersa* (Fée) Vainio

det. H. Sipman, 1989. First record for the Guianas.

GUYANA, Upper Mazaruni District, along trail from Kamarang river to Pwipwi Mountain, c. 10 km N of Waramadan, 60°45' W, 5°57' N, in rocky savannah, c. 800 m.

leg. H. Sipman & A. Aptroot 19470. d.d. 28 February 1985

2. *Buellia efflorescens* Müller Arg.

det. A. Aptroot, 1985. Material cited in Fl. Guianas E1: 12 (1988 ("1987")).

GUYANA, East Demerara District, along western dike at mouth of Mahaica river, cultivated coastal area, 57°55' W, 6°41-43' N, on trunk of *Cocos nucifera*, 0 m.

leg. H. Sipman & A. Aptroot 19509. d.d. 5 March 1985

3. *Chroodiscus mirificus* (Kremp.) R. Sant.

det. H. Sipman, 1988. First record for the Neotropis.

GUYANA, Upper Mazaruni District, Kamarang, in the village, 60°37' W, 5°52' N, on leaves of *Mangifera* tree in garden, c. 500 m.

leg. H. Sipman & A. Aptroot 18149. d.d. 26 February 1985

4. *Cladina confusa* (Sant.) Follm. & Ahti

det. H. Sipman, 1977. TLC: usnic and perlatolic acids.

COLOMBIA, Depart. Boyacá, along road Ráquira - La Candelaria, km 4.5, terrestrial on rocky NE-facing slope with *Andropogon* spp., 2450 m.

leg. A. M. Cleef, H. García-B. & R. Jaramillo-M. 3473. d.d. 6 May 1972

5. *Cladina densissima* Ahti

det. Teuvo Ahti, 1987. TLC: usnic and fumarprotocetraric acids.

GUYANA, Upper Mazaruni District, along trail from Kamarang river to Pui-Pui Mountain, c. 10 km N of Waramadan, 60°45' W, 5°57' N, in rocky savannah, c. 800 m.

leg. H. Sipman & A. Aptroot 19334. d.d. 28 February 1985

6. *Cladina sprucei* (Ahti) Ahti

det. Teuvo Ahti, 1987. TLC: atranorin and fumarprotocetraric acid.

GUYANA, Upper Mazaruni District, mount Latipu, c. 8 km N of Kamarang, 60°38' W, 5°57' N, on white sand on open place in scrub on the summit plateau, c. 800 m.

leg. H. Sipman & A. Aptroot 19129. d.d. 25 February 1985

7. *Cladonia ceratophylla* (Sw.) Sprengel

det. H. Sipman, 1986. TLC: fumarprotocetraric acid.

SURINAM, Wilhelmina mountains, in tall forest on slope near camp Km 14 on line to Lucie River, at c. 2 m heigth on treetrunk, c. 400 m.

leg. J.P. Schulz 10453. d.d. 25 July 1963

8. *Cladonia corallifera* (Kunze) Nyl.

det. Teuvo Ahti, 1987. TLC: usnic, didymic and thamnolic acids.

GUYANA, East Demerara District, Timehri, Dakara Creek, Thomson's farm, 58°15' W, 6°29' N, terrestrial in savannah-forest remnant on white sand, c. 10 m.

leg. H. Sipman & A. Aptroot 19500. d.d. 2 February 1985

9. *Cladonia didyma* (Fée) Vainio var. ***vulcanica*** (Zoll. & Mor.) Vainio

det. Teuvo Ahti, 1987. TLC: didymic, barbatic and thamnolic acids.

GUYANA, Upper Mazaruni District, along trail from Kamarang river to Pui-Pui Mountain, c. 10 km N of Waramadan, 60°45' W, 5°57' N, in rocky savannah, c. 800 m.

leg. H. Sipman & A. Aptroot 19497. d.d. 28 February 1985

10. *Cladonia furcata* (Hudson) Schrader

det. H. Sipman, 1979. TLC: fumarprotocetraric acid.

COLOMBIA, Depart. Meta, Cerro Nevado del Sumapaz, Páramo de Sumapaz, on humid rocks in paramo on NW-slope, near limestone cave where the river disappears, 3550 m.

leg. A.M. Cleef 7619. d.d. 10 January 1973

11. *Cladonia signata* (Eschw.) Vainio

det. Teuvo Ahti, 1987. TLC: fumarprotocetraric acid.

GUYANA, Upper Mazaruni District, along trail from Kamarang river to Pui-Pui Mountain, c. 10 km N of Waramadan, 60°45' W, 5°57' N, in rocky savannah, c. 800 m.

leg. H. Sipman & A. Aptroot 19327. d.d. 28 February 1985

12. *Cladonia signata* (Eschw.) Vainio

det. Teuvo Ahti, 1987. TLC: atranorin and fumarprotocetraric acid.

GUYANA, Upper Mazaruni District. along trail from Kamarang river to Pui-Pui Mountain, c. 10 km N of Waramadan, 60°45' W, 5°57' N, in rocky savannah, c. 800 m.

leg. H. Sipman & A. Aptroot 19331. d.d. 28 February 1985

13. *Cladonia squamosa* (Scop.) Hoffm. var. ***squamosa***

det. H. Sipman, 1986. TLC: squamatic acid.

COSTA RICA, prov. San José, Cordillera de Talamanca, Cerro de la Muerte, along Carretera Interamericana, on decaying log in open place in humid subparamo scrub, 3325 m.

leg. A.M. Cleef & L.A. Fournier 10215. d.d. 21. August 1973

14. *Coccocarpia palmicola* (Sprengel) Arvidsson & D. Galloway c. apoth.

det. A. Aptroot, 1985.

FRENCH GUYANA, Cayenne, Montagne du Mahury, c. 10 km SE of Cayenne, forest relict on volcanic soil, 52°17' W, 4°53' N, on tree exposed to seawind, 100 m.

leg. A. Aptroot 15464. d.d. March 1985

15. *Coenogonium linkii* Ehrenb.

det. A. Aptroot, 1985. Apothecia on lower surface.

FRENCH GUYANA, Saül, primary forest near Roche Bateau, 53°10' W, 3°38' N, on sapling, 200-300 m.

leg. A. Aptroot 15386. d.d. March 1985

16. *Collema callibotrys* Tuck. var. *coccophyllizum* (Zahlbr.) Degel.

det. H. Sipman, 1986.

COSTA RICA, prov. Cartago, area Recreativa Prusia, c. 3 km N of Tierra Blanca, near Mirador, 84°53' W, 9°57' N, epiphyte in disturbed, shrubby, montane forest, 2700 m.

leg. H. Sipman 20495. d.d. 15 March 1985

17. *Cystocoleus ebeneus* (Dillw.) Thwaites

det. H. Sipman, 1985. First record for Colombia.

COLOMBIA, Depart. Cundinamarca, Municipio Supatá, Alto El Tablazo, along trail from radar station to Supatá, in subparamo scrub, on perpendicular sandstone rockface, 3400 m.

leg. J. Aguirre C. & H. Sipman 5228. d.d. 11 September 1984

18. *Dictyonema glabratum* (Sprengel) D. Hawksw.

det. H. Sipman, 1987.

GUYANA, Upper Mazaruni District, along trail from Kamarang River to Pui-Pui Mountain, c. 5 km N of Waramadan, 60°46' W, 5°54' N, in savannah bush, c. 650 m.

leg. H. Sipman & A. Aptroot 19245. d.d. 27 February - 1 March 1985

19. *Erioderma chilense* Mont.

det. H. Sipman, 1986.

COSTA RICA, prov. San José, Cerro de la Muerte, along Interamerican Highway, c. 2 m tall scrub with rock outcrops, E of Cerro Buenavista, 83°46' W, 9°33' N, epiphyte, 3400 m.

leg. H. Sipman 20958. d.d. 23 March 1985

20. *Erioderma solediatum* D. Galloway & Jørgensen

det. H. Sipman, 1986.

COSTA RICA, Prov. San José, Cerro de la Muerte, along Interamerican Highway, c. 2 m tall scrub with rock outcrops, E of Cerro Buenavista, 83°46' W, 9°33' N, epiphyte, 3400 m.

leg. H. Sipman 20959. d.d. 23 March 1985

21. *Erioderma verruculosum* Vainio

det. H. Sipman, 1986.

COSTA RICA, prov. San José, Cerro de la Muerte, along Interamerican Highway, c. 2 m tall scrub with rock outcrops, E of Cerro Buenavista, 83°46' W, 9°33' N, epiphyte, 3400 m.

leg. H. Sipman 20957. d.d. 23 March 1985

22. *Everniastrum vexans* (Zahlbr.) Hale ex Sipman

det. H. Sipman, 1986. TLC: atranorin, protolichesterinic and salazinic acids.

COSTA RICA, prov. Cartago, SW-slope of Volcán Turrialba, N of Santa Cruz, Fila Bonilla, along Camino El Trazado, 83°43' W, 10°01' N, pastureland with relic trees of cloud forest, 2100 m.

leg. H. Sipman 20423. d.d. 14 March 1985

23. *Heterodermia erinacea* (Ach.) W.A.Weber

det. H. Sipman, 1989. TLC: atranorin and zeorin.

MEXICO, Baja California, along route 1, near km 131 from Ensenada to San Quintin, 2 km S of Colonet, 116°13' W, 31°04' N, on shrub branchlets in c. 1 m tall desert scrub on hill with volcanic rock outcrops, coastal scrub community with e.g. *Agave shawii*, *Ambrosia chenopodifolia*, *Machaerocereus gummosus*, 100 m.

leg. H. Sipman 24768. d.d. 3 January 1989

24. *Heterodermia flavosquamosa* Aptroot & Sipman - ISOTYPUS

det. A. Aptroot & H. Sipman.

GUYANA, Upper Mazaruni District, along trail from Kamarang River to Pui-Pui Mountain, c. 5 km N of Waramadang, 60°46' W, 5°54' N, on exposed rock in savannah bush, c. 650 m.

leg. H. Sipman & A. Aptroot 19233. d.d. 27-28 February 1985

Heterodermia flavosquamosa Aptroot & Sipman, **sp. nov.**

Typus: *Sipman & Aptroot 19233* (Holo- B; iso- distributed in Lichenotheca Latinoamericana 1: 24).

Thallus appressus vel apicibus ascendentibus, laciniis linearibus, pagina inferiore decorticata arachnoidea flavescens sed centrum versus denudata obscurascente, margine thalli et apotheciorum squamulis ecorticatis albis fragilibus applanatis vel teretibus proviso.

Thallus appressed, yellowish grey, up to 10 cm diam. Lobes flat, 0.4-0.6 mm wide, with 0.7-1.4 mm long internodes, at tips flat or ascending. Soredia and isidia absent. Squamules numerous, mostly ecorticate, flattened or more or less terete, mainly marginal on flabellate lobe tips or on small lateral lobes, sometimes also on low superficial warts, fragile, white or slightly bluegrey, often with yellow pigmentation on underside, 0.2-0.4 mm high, c. 0.1 mm thick, often resembling sorediose isidia because they are easily fragmented. Upper surface corticate, shiny. Medulla white. Lower surface ecorticate, near the lobe tips with arachnoid yellow-pigmented cover, in older parts denudated and darkening or violet grey. Rhizinae absent on lower side but present as cilia on the margins of the lobes and sometimes on the squamules, simple or with a few thin perpendicular branchlets, black, 2-4 mm long, c. 0.1 mm thick.

Chemistry: atranorin, an unidentified anthraquinone, zeorin and several unknown terpenoids present. Reactions: cortex K+ y, C-, P-, UV-; medulla K+ y, C-, P-, UV-; yellow pigment K+ red, C+ red, P+ red, also in tap water + red, UV-.

Apothecia sessile, becoming substipitate, 2-5 mm diam. Disc darkbrown, concave to flat. Margin squamulose, the squamules with yellow side directed towards disc, incurved over the disc. Hymenium 100-130 µm thick. Spores of Polyblastidium-type, 25-30 x 10-15 µm, 8 per ascus.

The new species is known from the Guianas and Venezuela. It seems to be restricted to the hinterland and has been found on mossy rock in savannas and mountain areas.

The type has been cited in Aptroot, Fl. Guianas E1: 27 (1988 ("1987")) as *H. corallophora* (Taylor) Skorepa. Examination of the holotype (FH-Taylor) and an isotype (BM) proved, however, that *H. Corallophora* differs by the presence of genuine isidia and the absence of yellow pigment on the lower side.

Heterodermia flavosquamosa looks much like a squamulose counterpart of *H. flabellata* (Fée) Awasthi (primary species) and *H. obscurata* (Nyl.) Trevisan (sorediate). However, the pigment shows different colour reactions.

Additional material examined: SURINAM: Wilhelmin Gebergte, near Julian Top, *Irwin et al. 55182a* (NY); Voltzberg, summit area, *J. & P.A. Florschütz 4566* (U). VENEZUELA: Estado Bolivar, distrito Cedeño, vicinity of Panare village, *Boom 6459 & Grillo* (NY).

25. *Heterodermia leucomelos* (L.) Poelt subsp. ***leucomelos***

det. A. Aptroot, 1985. Material cited in Fl. Guianas E1: 30 (1988 ("1987")); only record for the Guianas. TLC: atranorin, terpenoids and salazinic acid.

GUYANA, Upper Mazaruni District, along trail from Kamarang River to Pui-Pui Mountain, c. 10 km N of Waramadang, 60°45' W, 5°57' N, on branchlets in rocky savannah, c. 800 m.

leg. H. Sipman & A. Aptroot 19284. d.d. 28 February 1985

26. *Hyperphyscia adglutinata* (Flörke) Mayrh. & Poelt

det. A. Aptroot, 1985. Material cited in Fl. Guianas E1: 34 (1988 ("1987")).

GUYANA, West Berbice district, Onverwach, cultivated coastal area, c. 57°35' W, 6°25' N, epiphyte on *Avicennia* treetrunk in grazed remnants of old mangrove, 0 m.

leg. H. Sipman & A. Aptroot 19609. d.d. 9 March 1985

27. *Leptogium laceroides* Bouly de Lesdain

det. H. Sipman, 1986.

COSTA RICA, prov. San José, Cerro de la Muerte, along Interamerican Highway, c. 2 m tall scrub with rock outcrops, E of Cerro Buenavista, 83°46' W, 9°33' N, epiphyte, 3400 m.

leg. H. Sipman 20956. d.d. 23 March 1985

28. *Leptogium phyllocarpum* (Pers.) Mont.

det. H. Sipman, 1980.

COSTA RICA, prov. Limón, road along the Caribbean coast from Limón to Cahuita, between Rio Estrella and R. Margarita, on shrubs on sand along the beach, in closed, c. 6 m tall bush, 0 m.

leg. H. Sipman 12306. d.d. 9 January 1979

29. *Microtheliopsis uleana* Müller Arg.

det. H. Sipman, 1988. First record for the Guianas.

GUYANA, Upper Mazaruni District, along trail from Kamarang River to Pui-Pui Mountain, at landing site, c. 5 km NW of Waramadang, 60°47' W, 5°48' N, foliicolous in undergrowth of c. 25 m tall forest, c. 600 m.

leg. H. Sipman & A. Aptroot 19225c. d.d. 27-28 February 1985

30. *Parmotrema dilatatum* (Vainio) Hale

det. R. van Aubel, 1985. First record for the Guianas. TLC: atranorin, usnic, echinocarpic and protocetraric acids.

GUYANA, Upper Mazaruni District, Kamarang, in the village, 60°37' W, 5°52' N, on free-standing tree on river bank, c. 500 m.

leg. H. Sipman & A. Aptroot 18194. d.d. 26 February 1985

31. *Peltigera vainioi* Gyelnik

det. O. Vitikainen, 1987. First record for Colombia.

COLOMBIA, Depart. Risaralda, Municipio Santa Rosa de Cabal, W-slope of Cordillera Central, along track from Termales de Santa Rosa to Termales Antiguos, on humid, loamy bank, 2000 m.

leg. J. Aguirre C. & H. Sipman 5570. d.d. 19 September 1984

32. *Pertusaria acroscyphoides* Sipman in Willdenowia 16: 281 (1987) - ISOTYPUS

det. H. Sipman. TLC: protocetraric acid.

COLOMBIA, Depart. Boyacá, Paramos NW of Belén, between Laguna Grande and El Pulpito, common lichen in vegetation with *Plantago monticola*, *Draba*, *Racomitrium*, *Thamnia* and *Bidens* sp., 3830 m.

leg. A.M. Cleef 9781. d.d. 6 May 1973

33. *Phylloporis phyllogena* (Müller Arg.) Clements

det. A. Vezda, 1985.

BRAZIL, Estado São Paulo, between Mogi das Cruzes and Bertioga, Serra do Garrãozinho, S of Manuel Ferreira along road SP-39, on leaf in undergrowth in c. 15 m tall forest on slope, c. 850 m.

leg. H. Sipman 12706. d.d. 30 July 1979

34. *Physma byrsaeum* (Ach.) Tuck.

det. A. Aptroot, 1985.

FRENCH GUYANA, Montagne du Mahury, forest relict on volcanic soil c. 10 km SE of Cayenne, 52°17' W, 4°53' N, on tree exposed to seawind, 100 m.

leg. A. Aptroot 15461. d.d. March 1985

35. *Porina epiphylla* (Fée) Fée

det. A. Vezda, 1985.

BRAZIL, Estado São Paulo, between Mogi das Cruzes and Bertioga, Serra do Garrãozinho, S of Manuel Ferreira along road SP-39, on leaf in undergrowth in c. 15 m tall forest on slope, c. 850 m.

leg. H. Sipman 12707c. d.d. 30 July 1979

36. *Pyxine cocoes* (Sw.) Nyl.

det. A. Aptroot, 1985. Material cited in Fl. Guianas E1: 45 (1988 ("1987")). TLC: lichexanthone.

GUYANA, West Berbice District, Onverwacht, cultivated coastal plain, c. 57°35' W, 6°25' N, epiphyte on *Avicennia* tree trunk in grazed remnants of old mangrove, 0 m.
leg. H. Sipman & A. Aptroot 19604. d.d. 9 March 1985

37. *Ramalina ceruchis* Ach.

det. H. Sipman, 1989. TLC: traces of div. terpenoids, bourgeanic acid?
MEXICO, Baja California, Cabo San Quintin, along Pacific Ocean front NW of Bahía Falsa, 116°02' W, 30°28' N, on shrub branches in c. 1 m tall desert scrub at the seashore, on W-side of low volcano with basalt rocks, coastal scrub community with e.g. *Euphorbia*, *Jatropha*, c. 10 m.
leg. H. Sipman 24865. d.d. 4 January 1989

38. *Ramalina crinita* Tuck.

det. H. Sipman, 1989. TLC: traces of terpenoids.
MEXICO, Baja California, near km 45 on road from San Quintin to Parador Punta Prieta, c. 10 km N of El Rosaria, in Cañon del Rosario, 115°46' W, 30°08' N, on branch of shrub in c. 1 m tall desert scrub on hill of post-batholithic marine sedimentary (Cretaceous) rocks, coastal scrub community with e.g. *Aesculus*, *Jatropha*, *Lycium*, 90 m.
leg. H. Sipman 24903. d.d. 5 January 1989

39. *Ramalina josecuervoi* Rundell & Bowler

det. H. Sipman, 1989. TLC: salazinic acid.
MEXICO, Baja California, at seashore 25 km N of Guerrero Negro, between Laguna Manuela and Punta Santo Domingo, 114°06' W, 28°14' N, on rock in gravelly plain with post-batholithic basalt outcrops and sand with scattered desert scrub of *Euphorbia misera* above rocky seashore (Southern Viscaíno Region of the Sonoran Desert (*Fouquieria diguetii*, *Jatropha*, *Yucca*, etc.)), c. 10 m.
leg. H. Sipman 24989. d.d. 7 January 1989

40. *Ramalina leptocarpha* Tuck.

det. H. Sipman, 1989. TLC: traces of terpenoids, bourgeanic acid?
MEXICO, Baja California, along route 1, near km 131 from Ensenada to San Quintin, 2 km S of Colonet, 116°13' W, 31°04' N, on shrub branchlets in c. 1 m tall desert scrub on hill with volcanic rock outcrops, coastal scrub community with e.g. *Agave shawii*, *Ambrosia chenopodifolia*, *Machaerocereus gummosus*, 100 m.
leg. H. Sipman 24757. d.d. 3 January 1989

41. *Ramalina subleptocarpha* Rundell & Bowler

det. H. Sipman, 1989. TLC: usnic acid, traces of terpenoids, bourgeanic acid?
MEXICO, Baja California, near km 170 on road from Santa Rosalia to Guerrero Negro, c. 3 km on sideroad to Punta Eugenia, W of Vizcaíno junction, 113°25' W, 27°39' N, on branches of shrubs in desert scrub on sandy plain (Southern Viscaíno Region of the Sonoran Desert (*Fouquieria diguetii*, *Jatropha*, *Pachycereus pringlei*, etc.)), 60 m.
leg. H. Sipman 25094. d.d. 9 January 1989

42. *Rinodina sipmanii* Aptroot in Proc. Kon. Ned. Akad. Wetensch. C 90: 241 (1987) - ISOTYPE

det. A. Aptroot. Material cited in Fl. Guianas E1: 53 (1988 ("1987")).
GUYANA, East Demerara District, along western dike at mouth of Mahaica river, cultivated coastal plain, 57°55' W, 6°41-43' N, on tree in village, 0 m.
leg. H. Sipman & A. Aptroot 19505. d.d. 5 March 1985

43. *Sphaerophorus melanocarpus* (Sw.) DC.

det. H. Sipman, 1975. TLC: perlatolic and stictic acids.
COLOMBIA, Depart. Arauca, Sierra Nevada del Cocuy, plain of San José in valley of El Playón, terrestrial lichen on *Chusquea* cushions in humid paramo dominated by *Chusquea*, with *Oritrophium limnophilum* subsp. *mutisianum*, *Alchemilla paludicola* and *Breutelia*, 3680 m.
leg. A. M. Cleef 10095. d.d. 9 July 1973

44. *Stereocaulon atlanticum* (Lamb) Lamb

det. H. Sipman, 1985. TLC: atranorin, perlatolic (trace) and protocetraric acids.

COLOMBIA, Depart. Risaralda, Municipio Santa Rosa de Cabal, W-slope of Cordillera Central, c. 500 m S of Finca La Sierra, on vertical rockface of escarpment in clearings in subparamo woodland, 3750 m.

leg. J. Aguirre C. & H. Sipman 5419. d.d. 16 September 1984

45. *Stereocaulon strictum* Th. Fr. var. *strictum*

det. H. Sipman, 1985. TLC: atranorin, porphyritic acid.

COLOMBIA, Depart. Cauca, Municipio, Puracé, E-side of Cordillera Central, along road La Plata - Puracé, 2 km E of Termales de San Juan, on bank of road in humid high-andean woodland, 3000 m.

leg. J. Aguirre C. & H. Sipman 5871. d.d. 4 October 1984

46. *Stereocaulon vesuvianum* Pers. var. *nodulosum* (Wallr.) Lamb

det. T. Boekhout, 1978. TLC: atranorin, norstictic, stictic, cryptostictic and menegazziaic acids.

COLOMBIA, Depart. Caldas, Nevado del Ruíz, superparamo zone, 3 km NW of Refugio, terrestrial lichen forming cushions on black sand on NW-facing slope, 4300 m.

leg. A. M. Cleef & H. 't Hart 2555. d.d. 19 March 1972

47. *Sticta humboldtii* J.D. Hooker

det. H. Sipman, 1985.

COLOMBIA, Depart. Risaralda, Municipio Santa Rosa de Cabal, W-slope of Cordillera Central, c. 500 m S of Finca La Sierra, epiphyte in remnant of subparamo woodland, 3750 m.

leg. J. Aguirre C. & H. Sipman 5458. d.d. 16 September 1984

48. *Sticta weigeli* (Isert) Ach.

det. A. Aptroot, 1987.

FRENCH GUYANA, Saül, primary forest near Boeuf Mort, 53°12' W, 3°38' N, on buttresses of *Ceiba pentandra*, 200-300 m.

leg. A. Aptroot 15342. d.d. March 1985

49. *Strigula nemathora* Mont.

det. H. Sipman, 1988.

GUYANA, Upper Mazaruni District, along trail from Kamarang River to Pui-Pui Mountain, at landing site, c. 5 km NW of Waramadan, 60°47' W, 5°48' N, foliicolous in undergrowth in c. 25 m tall forest, c. 600 m.

leg. H. Sipman & A. Aptroot 19229b. d.d. 27-28 February 1985

50. *Thamnolia vermicularis* (Sw.) Schaerer

det. H. Sipman, 1975. TLC: thamnolic acid.

COLOMBIA, Depart. Boyacá, Páramo de la Sarna between Sogamoso and Vado Hondo, 5 km NE of Laguna de Tota, terrestrial lichen associated with *Lorenzochloa erectifolia* in very wind-exposed paramo, 3550 m.

leg. A.M. Cleef 9203. d.d. 29 March 1973

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