

EXPLANATION OF PLATES V.-VII.

PLATE V.

Fig. 1. *Carpophyllum angustifolium*, J. Ag. Bay of Islands; collected in January; R. M. L.

Fig. 2. *Carpophyllum phyllanthus*, Turn., Hist., iv. Both specimens are from the same plant, which was gathered at Lyall's Bay in the month of September.

PLATE VI.

Fig. 1. *Carpophyllum maschalocarpum*, Turn., Hist., iv. Collected at Lyttelton in the autumn; R. M. L.

Fig. 2. *Carpophyllum maschalocarpum*, var. *laxum*, R. M. L. Sugar-loaves, Taranaki; January; R. M. L.

Fig. 3. *Carpophyllum plumosum*, J. Ag. Bay of Islands; January; R. M. L. The winter form differs from this considerably (see Plate VII., fig. e).

PLATE VII.

a. *Carpophyllum maschalocarpum* (tip of frond).

b. *C. angustifolium* (tip of frond).

c. *C. maschalocarpum*, var. *laxum* (tip of frond).

d. *C. plumosum* (tip of frond; summer form).

e. The same, winter form.

f., g. Basal leaves of *C. phyllanthus*.

h. Leaf from upper portion of plant.

All natural size.

ART. XV.—On New Lichens from Australia and New Zealand.

By JAMES STIRTON, M.D., F.L.S., &c.

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Communicated by T. W. Naylor Beckett, F.L.S.

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Sticta rubella, Hook., presents obstacles to a complete determination, inasmuch as the original specimens are barren. Nylander in his Lich. N.Z. (1889) merely mentions two new stations for the plant, without giving a description of the apothecia or spores, leading to the inference that these are also barren.

In a parcel of lichens sent several years ago by the late Baron F. von Mueller there is a *Sticta* in fruit, whose characters are nearly identical with those given by Nylander in his Synopsis Meth., page 361. I am extremely sorry I can only discriminate two or three of the specimens in this parcel. The rest seem to have been soaked, almost macerated, in

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water for some time, and are accordingly nearly unavailable for diagnosis.

As the spores in Müller's specimen are almost unique (as regards the genus) in their internal organization, I prefer to describe this lichen apart, more especially as I have already described another (Trans. Roy. Soc. Victoria, 1880) from Queensland, sent by Mr. F. M. Bailey, under the name *Parmosticta rubrina*. The thallus of Mr. Bailey's lichen has also characters analogous to those of *St. rubella*, but has spores of quite a different construction from those of Baron Müller's specimen. There are short white hairs on the margin and neighbouring upper surface of the laciniaë, as described by Nylander, *l.c.*, and otherwise the characters are not dissimilar.

***Parmosticta purpurascens*, Strn.**

Apothecia rufa marginalia, elevata, cupuliformia, magna (latit. 4–8 mm.), receptaculum thallinum extus rubricosum, vix rugulosum, interdum læve, supra, late citrino-sorediosum, inflexum; sporæ 4–8næ, fuscæ vel fusco-rufæ, oblongo-ellipsoideæ vel obtuse fusiformes, 4-loculares (loculis subquadratis et inter se tubulo junctis), interdum etiam 3-septatæ, 0.028–0.03 × 0.01–0.013 mm.; paraphyses distinctæ. Iodo g.h. bene cærulescens.

The extremities of the spores are often nearly colourless and almost papilliform. There appear to be two kinds of gonidia; one kind uniformly small, 0.005–0.009 mm. diam.; the other large, 0.012–0.028 mm. diam., with yellow granular contents.

***Sticta lorifera*, Strn.**

Similis *St. impressæ*, Tayl., et similiter laciniata sed supra cephalodiis numerosis, pallidis, fere globosis adpersa; medulla alba vel pallida, K flavens; subtus nigricans, versus marginem pallidior, dense et breviter nigro-rhizinoso et pseudocyphellis parvis pallidis vel interdum albido-flavis; apothecia nigra primum marginata dein immarginata, plana, marginalia, receptaculo extus rugoso vel papilloso-aspero. Gonidia diam., 0.008–0.016 mm. New Zealand, prope Wellington (*J. Buchanan*).

This lichen is included under what Nylander calls "*St. physciospora*," but which I hold should be called "*St. impressa*, Tayl." The spores are fuscous, shortly polari-bilocular, rarely 4-locular, and 0.022–0.028 × 0.008–0.01 mm. The thallus is divided almost to the base into long, narrow, tapering laciniaë, which are scarcely transversely costate, and only show such ribs near the base. This lichen, so abundant in New Zealand, shows wonderful diversity of aspect, and the present is one of the most characteristic.

Sticta expansa, Strn.

Thallus amplus, interdum fere pedalis, cervinus vel cinereo-fuscescens, late laciniato-lobatus lobis sæpe imbricatis, scrobiculato-fossulatus vel reticulatim costatus, subtus ochraceus, centrum versus obscurior et ibi obscure vel nigricanti-tomentosus, pseudocyphellus parvis, citrinis creberriter adpersus, intus albus; apothecia sparsa nigra mediocria, margine integro vel fere integro cincta; sporæ 8næ, fuscæ, 2-loculares, sæpe breviter polari-biloculares, 0.02–0.027 × 0.007–0.0085 mm. Gonidia fere leptogonidia parva, diam. 0.005–0.008 mm. (raro 0.009 mm.) contentis non granulatis. Corticola prope Wellington (*J. Buchanan*).

This is closely allied to *St. glaucolorida*, Nyl., and may be its completely developed condition. If so, Nylander's lichen may be called a variety of it under the same name. There is no reaction by K on the medulla.

There is scattered over the upper surface of this *Sticta* a parasitic *Verrucaria*, which may be described.

Verrucaria simplicior, Strn.

Perithecium sessile, nigrum, minutum fere sphericum, prominulum; sporæ 8næ, incolores, simplices, oblongæ, 2-nucleatæ, 0.009–0.011 × 0.003–0.004 mm.; paraphyses nullæ. Iodo g.h. non tincta.

Sticta grandis, Strn.

Thallus firmus crassiusculus mediocris (latit. 5–9-pollicaris) rufescenti-cervinus vel rufescens, læviusculus vel versus marginem leviter corrugatulus, laciniato-lobatus lobis sinuoso-divisis, margine hinc inde, et paululum supra, albo-pilosus, subtus nigricans et versus marginem ochraceus vel ochraceo-pallidus, breviter nigricanti-tomentosus, pseudocyphellus parvis citrinis ornatus; medulla alba K–; apothecia sparsa, cæcio-pruinosa, detrita nigra (latit. 2–5 mm.) receptaculo thallino extus papilloso-aspero, margine primum inflexo et lacerato dein dentato, demum fere depresso; sporæ 8næ, fuscæ, fusiformes, 1-septatæ, sæpius breviter polaribiloculares, 0.025–0.034 × 0.007–0.01 mm. Gonidia flavescencia, diam. 0.007–0.015 mm. Oxford Bush, New Zealand (*T. W. N. Beckett*).

This curious lichen presents characteristics in common with *St. pubescens*, Mull. Arg., *St. granulata*, Bab., *St. glaucolorida*, Nyl., and *St. obvoluta*, Ach. How far we are warranted in retaining these lichens as distinct species is an open question. Meanwhile, in accordance with modern ideas of specific distinction, I have no alternative but to keep them apart. Certainly the present is the most perfectly developed of the group.

Sticta elatior, Strn.

Similis *St. fossulata* sed thalla, supra, pallido vel glaucescenti-pallido, subtus ochraceo, centro nigricante. Apothecia cæsio-pruinosa, detrita, nigra; sporæ 8næ fuscæ, obtuse fusiformes, 2-loculares, vix polaribiloculares, interdum tenuiter 1-septatæ, $0.022-0.027 \times 0.008-0.01$ mm.; medulla pallida vel pallido-albida, K sordide flavescens vel vix colorata. Gonidia flavescentia, $0.009-0.014$ mm. diam. Supra thallum cephalodia numerosa fere sphæroidea, intus fibrosa fibrillis fere rectus hinc inde constricta. New Zealand, prope Wellington (*J. Buchanan*).

The cephalodia are (in the specimen) very numerous, and of a pale flesh-colour.

Sticta orygmæa, Ach., var. *calvescens*, Strn.

Similis *St. orygmæa* sed subtus nuda. (New Zealand.)

Sticta parvula, Strn.

Thallus sordide et pallide virescens vel demum fulvescenti-pallescens (latit. 1–2-pollicaris), lævis, fere omnino laciniatus laciniis (latit. 2–4 mm.) planis linearibus divaricato—et sinuoso—multifidis, apice retusis, subtus lutescens vel ochraceo-lutescens, nudus, lævis vel minute rugulosus. Gonidia flavescentia majuscula, diam. $0.012-0.02$ mm. Sterilis; Queensland (*C. de Burgh*): prope Lachlan River, Australiæ (*Hb. F. von Müller*).

There was seen only one immature fuscous apothecium with undeveloped spores. There are neither cyphellæ nor tomentum.

Stictina luridoviolacea, Strn.

Thallus pallescenti-luridus vel lurido-fuscescens vel etiam lurido-violaceus, mediocris (latit. 3–5-pollicaris), firmus vel rigescens, laciniato-lobatus lobis crenato-incisus, scrobiculato-foveolatis (fere sicut in *Sticta fossulata*), margine hinc inde minute citrino-sorediosus, intus medulla citrina vel pallide citrina, subtus nigricans, crasse et creberriter rhizinosus rhizinis validis, brevibus, rectis, nigricantibus, pseudocyphellis citrinis minutis præditus; apothecia nigra, mediocria, margine crenato-cincta; sporæ fuscæ biloculares, obtuse fusiformes, $0.025-0.03 \times 0.008-0.01$ mm. Gonimia cærulescentia, globosa vel oblonga, diam. $0.004-0.007$ mm. Snowy Creek, Ovens River, Australiæ (*Mrs. McCann*).

Here also a tendency is shown to the spores becoming shortly polari-bilocular, with nearly colourless pellucid apices. Allied to *St. gilvea*, Thunb., but with a citrine medulla, &c.

Stictina suberecta, Strn.

Thallus parvus stipitatus vel substipitatus, erectus vel suberectus (altit. 2–3 centimetrorum), lobato-incisus vel dis-

sectus (lobis rotundis, margine sæpe deflexis), obscure glaucescens vel plumbeo-cinereus, lævis, glomerulis isidioidis, majusculis, cinereo-nigris creberriter inspersus, isidiis stipitatis et dendroideo-ramosis, subtus ochraceus vel obscure ochraceus vel versus basin obscurior et ibi costatus, nudus vel fere nudus, cyphellis majusculis pallidis ornatus; apothecia biatorina marginalia et sparsa, badio-rufa, margine pallidiora. Sporæ non evolutæ. *Gonimia* in glomerulis majusculis contenta. Affinis *St. peltigerellæ*, Nyl. Queensland (*F. M. Bailey*).

***Stictina limbata*, Smith, var. *subflavida*, Bab.**

Dr. Nylander (p. 31, Lich. N.Z. 1889) expresses a doubt of this variety belonging to *St. limbata*, but, inasmuch as Babington speaks of it as having "cyphellas urceolatas," he inclines, on the other hand, to the belief that *subflavida* may belong to it. Professor J. Müller, of Geneva, in his "Lichenes Knightiani," page 6, asserts that this variety is nothing else than *Stictina intricata*, var. *thouarsii*, Del. I cannot accept Dr. Müller's decision. *St. limbata* and *St. thouarsii* are common lichens on the west coast of Scotland, and I am quite familiar with their forms. Babington's variety (of which I possess a specimen) differs in no particular from our Scottish forms, except in its yellow colour above and below. The cyphellæ are identical in both as to their irregular outline, although the New Zealand specimen has cyphellæ somewhat more farinose at the fundus than the Scottish form.

I possess another specimen from Mr. F. M. Bailey, of Brisbane, who gathered it somewhere in his neighbourhood. In this the cyphellæ are small and more farinose, and present, accordingly, more the appearance of pseudocyphellæ than otherwise, while the whole under-surface is of a beautiful yellow colour as well as the tomentum. This I shall meanwhile name *Stictina subcrocea*. Both the lichens are barren; indeed, I am not aware that fruit has ever been found on *St. limbata*, or on any of its forms.

I have also from Mr. Bailey three or four specimens of another *Stictina*, all of which have the granulato-isidiose margin to the thallus so characteristic of *Stictina quercizans*, Ach. The thallus, in all, may be said to be much paler than is usual in *St. quercizans*—viz., "pallidus, pallide lutescens, pallide rufescens, rarius pallide fuscescens"—while its breadth is not more than from 2 in. to 4 in. Beneath the colour may be said to be ochraceous, with a darker tomentum, especially towards the centre. The other characteristics are those of *St. quercizans*. Unfortunately, all the specimens are barren. One peculiarity, almost unique, the specimens possess in common—viz., the medulla is pale in the upper half and

pale-yellow in the lower. This lower half is coloured a bright-yellow by K, which colour is permanent, and differs very little from citrine after drying. I give the name *Strictina diversa* to this form.

Parmelia brisbanensis, Strn. Roy. Soc. Vict., 1880.

Thallus tenuis, adpressulus glaucescenti-cinereus vel demum pallide cinereus, hinc inde dendritico-isidiosus, laciniatus (K flavens), laciniis margine sæpius dissecto-fimbriatis vel isidiatis, subtus niger rugulosus, nudus, sed hinc inde parce et brevissime rhizinosus, ambitu spadiceus; medulla citrina vel virescenti-citrina (K - C -); sterilis. Corticola prope Brisbane (*F. M. Bailey*). Affinis *P. sulphurata*, Flot.

Parmelia permutata, Strn. Scot. Nat., 1878.

Thallus pallidus vel pallide glaucescens, lævigatus, lobato-divisus, subtus niger, ambitu pallide spadiceus, parce rhizinosus; medullæ pars supera, alba (C leviter erythrinosa), pars infera leviter flavescens (K flavens). Apothecia ignota. Ad ramulos arborum prope Brisbane (*F. M. Bailey*).

Parmelia euplecta, Strn. Scot. Nat., 1878.

Thallus pallidus vel pallide virescens, adpressulus, sæpe sorediviferus, lobato-divisus, subtus niger, parce rhizinosus, ambitu fuscescens; medullæ stratum superius, album (K flavescens), inferius tenue, flavescens vel pallide flavescens (K rubens vel aurantiaco-rubens). Sterilis. Ad ramulos prope Brisbane (*F. M. Bailey*) et in Bahia (*Moseley*).

The specimen from Bahia has a paler thallus and is not sorediviferous, but it is very small and not in good condition.

Parmelia caperata, Ach., is fairly well represented in Australia, although less so in New Zealand. It does not, as a rule, assume the dimensions of European specimens, but is often detected in a diminutive form, to which Nylander has given the name *P. caperatulula*, without, however, appending any description otherwise than "minor, elegantula." Again, in Linn. Journ., 1879, p. 394, Nylander describes another form, from the Derwent River, of Australia, under the name *P. subcaperatulula*, differing mainly, as stated by himself, from *P. caperata* in having smaller spores. I have numerous specimens of what may be reckoned this form, but the size of the spores is very variable; accordingly scarcely any distinction can be founded on this item. The spermatia give a somewhat more definite result, inasmuch as he states them to be sub-bifusiform and $0.005-0.007 \times 0.0005$ mm.

The following has differently shaped spermatia, and seems tolerably common:—

Parmelia obversa, Strn.

Thallus flavescens vel ochroleucus, adpressus, parvus, rugosus vel potius corrugatulus, margine laciniatus et crenulatus, subtus niger vel nigricans, parce nigro-fibrillosus; apothecia fusco-rufa, parviuscula, margine thallino, integro, sæpe inflexo cincta; sporæ 8, variantes, oblongæ vel oblongo-ellipsoidæ, 0.013–0.02 × 0.006–0.008 mm. Spermogonia fere integre nigra, spermatia cylindrica vel exacte cylindrica, recta, 0.006–0.009 × circ. 0.0007 mm. Ad cortices et præsertim ad lignum decorticatum. Thallus supra K flavens; medulla alba K–C–.

In the various collections of lichens from Australia there are several *Parmelia* growing on charred wood, which have very curious and constant chemical reactions on the white medulla. Unfortunately, all the specimens are barren. I cannot, however, pass them over on this account.

Parmelia exoriens, Strn.

Thallus pallidus vel lutescenti-pallidus, rugulosus, membranaceus, laciniatus, laciniis margine crenatis et sorediosis, subtus pallidus vel hinc inde nigricans, parce radiculosus; medulla alba crassiuscula, K obsolete violaceus dein. C addito, leviter sed distincte rubro-purpurascens vel magenta. Sterilis. Ad lignum carbonizatum, prope Brisbane (*F. M. Bailey*) et in New South Wales (*Kirton*).

The reaction by C, especially after the application of K, is constant, and may be called a faint but decided reddish-purple, or of the colour of magenta. These reactions resemble those on the medulla of *P. caperata*, but there is, in addition, the reaction by K, which on *caperata* is negative, while the after reaction by C on the same is a faint pink colour.

Parmelia redacta, Strn.

Similis præcedenti sed thallo magis adpresso, pallido vel albido et cæσιο-soredioso. Illawarra, New South Wales (*Kirton*).

Parmelia hypoxantha, Strn.

Thallus pallide ochroleucus vel etiam pallidus (K flavens) sæpe orbicularis, mediocris, rugosus, laciniatus laciniis parvis, imbricatis, margine crenulatis et sinuoso-lobatis, subtus niger, parce et breviter nigro-radiculosus; medulla alba (K–C–); apothecia fusca (latit. 2–5 mm.), plana, margine sæpius crenulato; sporæ 8, incolores, simplices, late ellipsoideæ, 0.009–0.012 × 0.007–0.009 mm.; hypothecium incolor. Corticola, prope Warwick, Queensland (*C. J. Gwyther*).

The lower surface of the medulla (exposed after the black hypothallus is peeled off) is almost always seen yellow or

orange-yellow, and K gives on this surface a yellow thin red reaction.

This *Parmelia* is certainly closely allied to *P. subtiliacea*, Nyl. (Lich. N.Z., 1889, p. 26), but the spores, in five different examples examined, are as given above, while those of *P. subtiliacea* are 0.014–0.017 × 0.007–0.008 mm., and the “thallus albidus.” Krempelhuber describes (“Novara” Exp., p. 114) a *Parmelia* under the name *P. jelinekii*, which is also allied to the present. Its thallus is “ochroleucus,” and the submedullary stratum is “late aureum”; but the spores are exactly as given above under *P. subtiliacea*, perhaps a little longer.

I have another small barren specimen, from the Grampian Mountains of Victoria, gathered by Mr. Sullivan, which is remarkable for the peculiar reaction by C on the medulla.

***Parmelia violascens*, Strn.**

Similis *P. conspersæ*, var. *stenophyllæ* sed minor, adpressa et thallo sæpe isidiato; medulla alba K flavens C intense violacea vel coloris magentæ. Color thalli virescenti-lutescens vel lutescens.

***Parmelia platycarpa*, Strn.**

Corticola prope Brisbane (*F. M. Bailey*). This lichen is described in the “Scottish Naturalist” for April, 1878, and, as stated there, is allied to *P. latissima*, Fée. Dr. Nylander, in Lich. Granatæ, vol. i., p. 24, merely mentions a form of *P. latissima*—“thallo flavescenti.” Nothing can be founded on this statement. I am still in ignorance of the shape and size of the spermatia of *P. latissima*. Those of *P. platycarpa* are straight, cylindrical, and about 0.006 × 0.0006 mm.

***Parmelia cyathina*, Strn.**

Corticola prope Brisbane (*F. M. Bailey*). Described in the same number of Scot. Nat. This also, as stated, is closely allied to *P. neilgherrensensis*, Nyl., and more especially to *P. subrugata*, Nyl. (Exot. Flechten, p. 320); but I can get no information concerning their spermatia. Those of *P. cyathina* are cylindrical, very often curved, and 0.005–0.006 × 0.0009–0.0011 mm.

I have another *Parmelia* from Queensland, gathered by Mr. F. M. Bailey on Darling Downs, whose characters are almost identical with those of another from Sikhim, Himalayas, by Dr. George Watt.

***Parmelia confertula*, Strn.**

Thallus adpressus, substramineus vel flavescens, laciniatus laciniis sæpe imbricatis et margine lobatis et crenatis, subtus niger et densissime nigro-radiculosus (speciminibus Bris-

banensibus parcius radiculosus). Apothecia conferta, rufusca, plana margine integro vel crenulato, et receptaculo thallino subtus rugoso vel foveolato et versus centrum nigro; sporæ 8, incolores, ellipsoideæ, simplices, $0.013-0.017 \times 0.008-0.01$ mm. Spermatia fere cylindrica, recta, 0.009×0.0007 mm.

The reactions of this lichen on the medulla are K - C -, or nearly the same as those of *P. caperata*, which are K - C faintly red.

Parmelia testacea, Strn. Scot. Nat., 1878.

Thallus firmus, adpressulus, pallescens, rufescenti-cinereus vel pallide cervinus, centro squamulosus vel interdum crustaceo-squamulosus, radiato-laciniatus, laciniis sæpe imbricatis, rugulosus, oblongis et lobato-divisis, subtus niger, breviter nigro-rhizinosus; medulla alba K flavens dein intense rubens; apothecia primum concoloria, testacea, demum hepatica, sessilia, plana, majuscula (latit. 4-20 mm.), rotundata, plerumque lobato-incisa (præsertim seniores), receptaculo extus rugoso; sporæ 8, ellipsoideæ, $0.013-0.018 \times 0.008-0.01$ mm. Ad saxa (?), prope Wellington, New Zealand (*J. Buchanan*).

This lichen seems allied to *P. saxatilis*, but the thallus is not reticulated, but merely shows here and there very minute depressed soredioid points, &c. The spermatia are bifusiform, $0.006-0.007 \times 0.0007-0.0008$ mm.

Parmelia erubescens, Strn. Scot. Nat., 1878.

Thallus pallide rufescens vel rufescenti-cervinus, laciniato-lobatus, laciniis rotundatis, margine crenatis vel crenato-incisis et nigro-ciliatis, subtus totus rufo-fuscescens vel etiam cupreus, breviter sed creberriter nigro-rhizinosus; medulla pallida (K flavens dein rubens); apothecia ignota; spermogonia innata extus nigra spermatiiis exacte cylindricis, rectis, $0.008-0.01 \times$ circ. 0.0005 mm. Prope Brisbane supra alias *Parmelias* (*F. M. Bailey*).

Although allied to *P. perforata*, the differences indicated above are quite sufficient to warrant a separation. The colour of the thallus seems normal, and not induced, as we see occasionally in *P. perforata*, by extraneous influences. The marginal cilia are much thicker and longer than the rhizinae, which are finer than usual.

Parmelia conspersa, var. **nigro-marginata**, Strn.

Similis varietati *Stenophylla* sed laciniis nigro-marginatis. Thallus subtus niger et fere omnino nudus. Medulla alba K f. dein rubens et thallus, supra K-. Prope Gippsland, Australiæ (*Lucas*).

Although there is no colouration of the upper thallus by K, yet the red colour produced on the medulla by the same reagent soon shows through.

Parmelia austro-africana, Strn. Trans. Glasgow Field Naturalists, 1877.

Similis *P. conspersa*, var. *hypochlysta*, Nyl., sed medulla (K—C leviter erythrina; C, seorsum—). Thallus pallidus vel pallide flavescens-virescens, subtus totus pallidus vel versus ambitum obscurior vel etiam interdum nigricans, parvissime albido-rhizinosus et hinc inde rugulosus; apothecia ampla fusco-nigra, elevato-sessilia; sporæ 8, incolores, ellipsoideæ simplices, 0.008–0.01 × 0.005–0.007 mm. Supra Montes Grampianos Victoriae (*Sullivan*).

This is evidently distinct from *P. mutabilis*, Tayl., in the colour of the thallus, &c.

Parmelia amplexula, Strn. Proc. Roy. Soc., Victoria, 1880.

Similis *P. austro-africana* sed minor et arete adpressa. Thallus flavescens vel obscure virescenti-flavescens, margine laciniatulus et sæpe isidiosus, subtus nigricans (quantum visus); medulla alba (K—C erythrina); sporæ 8, incolores, ellipsoideæ, simplices, 0.008–0.01 × 0.005–0.006 mm.; paraphyses crassæ, breves et quasi interruptæ. Saxicola (*F. M. Bailey*).

That section of the *Parmelia* of which *P. pertusa* is the type is well represented in New Zealand and Australia; indeed, better than in any others from which I have obtained lichens. *P. physodes*, L., which may be included in this section, and *P. pertusa* have been already frequently described by different authors. Another I described in the "Transactions of the Glasgow Field Naturalists," 1877, under the name *P. pertransita*. This is allied to *P. pertusa*, but it has smaller spores, and 8 in each theca in place of 2, &c. Mr. Buchanan sent another in 1882, which may be described here.

Parmelia bullata, Strn.

Thallus pallidus vel pallide ochroleucus (K fl. dein rubens), bullato-inæqualis, hinc inde minute terebratus, subtus niger, rugosus, nudus, versus marginem pallidus; medulla tenuis alba (K flavens dein interdum rubens); apothecia elevato-sessilia, cupuliformia, margine thalino extus ruguloso (præsertim maturatarum), epithecio fusco vel fusco-nigro. Sporæ 8, oblongæ, incolores, simplices, episporio crasso hyalino contentis granulosis sæpius lutescentibus, 0.022–0.032 × 0.015–0.018 mm. Iodo g.h. thecarum cærulescens, caeteroquin vix

tincta. Ad ramos prope Wellington, New Zealand (*J. Buchanan*).

Rarely are there fewer spores in each theca than 8. At times 2 to 4 are seen when the dimensions are somewhat larger.

***Parmelia retipora*, Strn.**

Thallus albidus vel pallide lutescens, arcte adpressus (K flavens), reticulato-terebstratus (fere ut in *Cladonia retipora*), latit. divisionum, 0.4 mm.; latit. foraminum circ. 1.6 mm.; subtus nudus et fusco-niger (?); medulla alba K fl.; sporæ 1, raro 2, incolores, ellipsoideæ, simplices parietibus crassis, 0.05–0.065 × 0.025–0.03 mm., paraphyses fere diffluentes. Corticola in Tasmania a *Mrs. Heywood McEwen* lecta.

***Parmelia subbrunnea*, Strn.**

Thallus brunneo-nigricans (C flavens), adpressus, bullato-inæqualis, bullis sæpissime perforatis, subtus niger, rugulosus, nudus margine albidus. Apothecia fusca margine integro pallidiora cincta; sporæ non evolutæ. Saxicola in Montibus Grampianis Australiæ (*Sullivan*).

The hyphæ are at first colourless; those next the hypothallus are much more numerous and fuscous, and slightly branching, diameter from 0.004 mm. to 0.006 mm. Gonidia 0.008–0.016 mm. in diameter. I cannot detect anything morbid in the plant, while the reaction by C on the thallus is constant and peculiar.

***Parmelia nigrescens*, Strn. Scot. Nat., 1878.**

Sat similis *P. pertusæ* sed apotheciis nigris vel cæsiis nigris et sporis 1–2nis incoloribus dein fusciscentibus, ellipsoideis, simplicibus, episporio incrassato, 0.04–0.054 × 0.024–0.038 mm. Iodo g.h. cærulescens dein vinose fulvescens. Supra lignum prope Wellington, New Zealand (*J. Buchanan*).

The epithecium shows as a rufo-fuscous almost continuous layer composed of compacted cells. This may be a state of *P. pertusæ*, and, if so, is very peculiar. Even the young apothecia are black. The thallus is pertused, and the white medulla is rendered yellow by K. The thecæ and spores seem to be ultimately tinged rufo-fuscous together, &c.

***Parmelia angustata*, Pers.**, seems a common lichen throughout Australia, and extends even pretty far south in New Zealand. Like all common plants, it assumes various appearances, but the size and shape of the spores are constant—viz., 0.005–0.007 × 0.004–0.005 mm.—as well as the dark-brown, often nearly black, spongy hypothallus, so characteristic of this section of the *Parmelia*.

The variety *moniliformis*, Bab., is a well-marked one, inasmuch as the yellow branches as well as the stems are moniliform-constricted throughout. From Beecherof, Victoria (*Falck*), 1881.

Another rather common form is that where the whole plant is nearly isidiose. This may be called var. *isidiella*.

A third was sent to me by the late Baron F. von Müller from Tasmania. In this the whole plant is pale-brown or cervine in place of a light or pale colour; the stems and branches are flat and narrower than usual (latit. about 1 mm.), and not constricted here and there, and the radicles beneath nearly black, coarser and stronger and not so densely interwoven; apothecia larger in proportion to the stems (latit. 2-6 mm.), usually split all round in a radiating manner. This may be called var. *falckii*.

Lastly, Mr. Beckett sent me from North Canterbury a pale variety, where the yellow colour is scarcely perceptible. This form grew closely intermingled with *P. physodes*.

***Aspidelia beckettii*, Strn. Gen. nov.**

Thallus pallidus vel glaucescenti-pallidus, nitidus, lobato-lacinia tus, lobis sinuato-divisis, sorediis albis, innatis, minutis vel punctiformibus vel tenuiter oblongis, creberriter adspersus, subtus fusco-niger vel niger, parce nigro-rhizinosus; apothecia fusco-rufa, sæpe lobulata et medio perforata (latit. 4-11 mm.); sporæ 4-8næ in thecis arthonioideæ, i.e., parietibus crassis hyalinis, incolores, ellipsoideæ, simplices episporio duplici, 0.013-0.018 × 0.008-0.011 mm., paraphyses valde indistinctæ. Iodo g.h. thecarum cærulescens dein sordida, cæteroquin vix tincta nisi lutescens; medulla alba K fl. dein intense rubens. Spermogonia in tuberculis elevatis, irregularibus, rugulosis vel cerebriformibus, discoloribus (lutescentibus vel pallide carneis), hinc inde nigris, interdum majusculis (latit. 0.5-2 mm.) sita, extus nigra minuta, numerosa, 4-25 in quavis verruca; spermatia cylindrica vel apicibus obsolete incrassatulis, 0.006-0.008 × circ. 0.0005 mm. Corticola, New Zealand (*T. W. Naylor Beckett*).

At first sight this lichen has somewhat the appearance of *P. perforata*.

As I have not seen spermogonia clustered in raised tubercles of a diverse colour from the rest of the thallus, and having spores contained in thecæ with thick pellucid walls, I have been constrained to separate this lichen from the *Parmeliæ*.

I possess a second species of this genus from the Himalayas, gathered by Dr. George Watt at an elevation of 12,000 ft., where the clusters of spermogonia are on a larger

scale and in better-defined bullæ. There are besides large cephalodia of a light colour on the upper surface.

Aspidelia wattii, Strn.

Thallus late expansus, pallidus vel pallide lutescens, laciniatus laciniis hinc inde imbricatis, margine sæpe fimbriato-dissectis, subtus niger, fere nudus; medulla alba K—C, erythrina et C, seorsum, erythrina; sterilis.

In the two examples examined I failed to detect spermatia.

Physcia incavata, Strn.

Thallus orbicularis flavus adpressus, late lobatus lobis crenatis, intus albidis, arachnoideis et interdum cavis (K purpurascens); apothecia rufo-aurantiaca, mediocria, plana dein convexula, margine tenui pallidiore, demum depresso cincta; sporæ 8næ, incolores, polari-biloculares, ellipsoideæ, 0.013–0.02 × 0.0075–0.009 mm., paraphyses distinctæ, filiformes, supra 2–3-articulatæ et amplo-clavatæ. Gonidia flavescens, diam. 0.009–0.02 mm. Corticola, Canterbury, New Zealand (*T. W. N. Beckett*).

Physcia laciniatula, Strn.

Thallus albidus vel pallido-albidus (K flavens), lacinosus laciniis sæpe margine adscendentibus, crenatis et sorediosis, subtus pallidus, nigro-fibrillosus; medulla alba (K fl. C fl.); apothecia fusca vel fusco-nigra, plana, majuscula, leviter elevata, margine elevato folioso-coronato vel laciniato vel coralloideo-diviso cincta; sporæ 4–8næ fuscæ, 1-septatæ, sæpissime 2-nucleatæ, 0.03–0.042 × 0.014–0.02 mm. Supra muscos prope Illawarra, New South Wales (*Kirton*).

I cannot associate this with any other.

Physcia sublurida, Strn. Proc. Roy. Soc. Vict., 1880.

Thallus parvus pallidus vel virescenti-pallidus, demum pallide cervinus, adpressus, laciniatulus laciniis imbricatis multifidis, subtus pallidus et rhizinis pallidis munitus; medulla rufescens vel rubescens, K—C—; apothecia cæsio-pruinosa, margine pallido vel carneo, fere integro cincta; sporæ 8, ellipsoideæ, fuscæ, 1-septatæ, 0.014–0.018 × 0.0065–0.008 mm. hypothecium incolor. Ad ramulos prope Brisbane (*F. M. Bailey*).