Four hundred and seventy-eighth meeting.

March 13, 1860.—Monthly Meeting.

The President in the chair.

The Corresponding Secretary read letters relating to the exchanges of the Academy. He also presented from the author the following paper, viz.:

Observations on North American and some other Lichenes. By Edward Tuckerman, A. M.


Parmelia chlorochroa, Tuckerm. in litt.: thallo substellato-multifido decumbente coriaceo levi nudo flavo-virescente (stramineo) laciniis discretis laxe intricatis repetito-dichotomis marginibus recurvis (conniventibus) sublatus fuseis (nigrescoentibus) fibrillis nigris subpannoso; apotheciis. . . . . . P. congruens, Herb. Floerk., non Ach. (Kamtschatka, Tilesius in herb. Floerk.) On the earth, in sterile spots, on the Upper Missouri, near Fort Clark, and near Cannon-ball River, Dr. F. V. Hayden. On sand, Inscription Rock (U. S. Pacif. R. R. Survey), Dr. Bigelow, Herb. Torr. At the Black Water of the Platte, and the head of the Platte, Rocky Mountains, Dr. H. Engelmann. Near to P. conspersa, of which it might be taken for a state, differenced by its peculiar habitat; but unmistakably related also to P. Camschadalis, Ach., which was founded on a specimen from Tilesius. Floerke appears to have been acquainted with the collections of the latter (as see Eschw. Bras. p. 202), but referred his specimen of the present Lichen to another species. The P. congruens, Ach. Lichenogr. p. 491, was founded on a specimen collected by Swartz, which the latter says (Lich. Amer. p. 5) inhabits trees in North America, and particularly New England. ("Incolit arbores Americæ borealis. In Nova Anglia observata." Sw. l. e.) Whatever this species may prove to be,—and it is now quite unknown to Lichenists,—it is enough to say that the
Lichen before us differs too much from the character of *P. congruens*, and the figure in Swartz's work, to be referred to it. Our plant has nothing of the look of a tree-lichen, and probably never inhabits trees; and there is little reason to suppose that it occurs in New England.

**Physcia, Nyl.**—This genus, as limited by Dr. Nylander, includes, beside the sharply defined section of Parmelia, of the same name, of Fries, and the nearly akin group of Lichens represented by *P. parietina* (*Physcia*, Koerb. pr. p.), also the more receding, everniiform, subpendulous group (*Evernice* sp., Fr.) represented here as yet only by *P. flavicans*. So far as this species is concerned, it appears far from difficult to connect it very closely with forms of *P. chrysophthalma*, and so with the genus. I propose here to review briefly all the North American Lichens known, referable to *Physcia*; and especially to consider what is probably the true rank of a number of species described by authors from North American specimens.

The genus, with us, falls into two great sections, separated by color, and also by the spores; and between these two, *P. euploca*, from Texas, appears to stand by itself. The first of these sections is made up of *P. parietina*, and the Lichens related to it, distinguished by the more or less yellow color of the thallus, and the colorless spores, in which the contained fluid matter, or protoplasm, separates finally into two opposite roundish masses, or sporoblasts, connected often by a narrow isthmus (spora polari-dylastis, Koerb. Syst. Lich. Germ. p. 90). From this group, *P. euploca* differs in its glaucous-fuscescent coloration, and simply once-septate spores, which are still colorless. And the large remaining section (*Physcia*, Fr.) is well defined by the glaucous-cinerascent (or at length fuscescent) thallus, and once-septate fuscescent spores.

§ I. *Species flavescentes sporis incoloribus polari-dylastis.*


smaller branches of trees, Texas, *Mr. Wright*. Monterey, California, *Dr. Gregg*. Delicately downy; the smallest states with the habit of the species, but more slender: the larger ones scarcely distinguishable from the next, which occurs pubescent according to Swartz (Wallr. l. c.) and Fries (Lichenogr. p. 28). Apothecia sparingly radiate-ciliate, or often entire.

Var. γ. *Flavicans*, Wallr. l. c.; Eschw. Bras. p. 224. *Parmelia* dein Borrera, Ach. *Physcia*, DC.; Nyl. Enum. Gen. l. c. On trees, South Carolina, *Mr. Ravenel*. Elongated, as the last, but smooth; pale yellow above; the branches compressed at the axils, and often channelled: apothecia with a thin, not ciliate, but obsolescently crenulate thalline margin, which at length disappears, when the disk (as in other species) appears to possess a thin, more or less evident proper margin. Louisiana, on trees, fertile, *Dr. Hale*. Wallroth (Naturgesch. der Flecht. 2, pp. 333–340) was perhaps the first to connect the above Lichens as forms of one species; but his view embraces plants removed even generically from the present type, and others of doubtful relation to it. Eschweller follows Wallroth as respects his own Brazilian specimens, and also adopts the general view of the former. The rich collections of *Mr. Wright*, in Texas, where at least two of the forms occur, sufficiently show that the elongated Southern Lichens are inseparable from *P. chrysophthalma*, except as varieties. *Physcia exilis*, Michx. Fl. Bor. Amer. 2, p. 327 (Borrera, Ach.; *Parm. chrysophthalma*, c, Fr. Lichenogr. p. 75; *Physcia flavicans*, var. *exilis*, Nyl. l. c.) from trees in Carolina, (Bosc, Michaux,) appears to be a smallish, slender, pubescent condition of the present variety. I have Louisiana specimens (*Dr. Hale*) which entirely resemble a South American Lichen referred to *P. exilis* in Herb. Berol. — *P. chrysophthalma* is perhaps (as suggested by Schærer, Spicil. p. 489, and by Eschweller, l. c.) only *P. parietina*, ascendent, and at length elongated, analogous to the ascendent and elongated states of *P. speciosa*; and further attention may well be given to this point on our sea-coast, where the typical forms of both species grow copiously, and often together.


Var. γ. *LYCHNEA*, Scher.: microphyllina, suborbicularis, fulva, lobis planis laciniatis apice palmato-incisis crenatis margine adscendentibus pulverulentis granulosis; apotheciis majusculis aurantiacis. On trees, Cambridge. On trees and stones, Ipswich, *Mr. Oakes*. The specimens on stones are regularly orbicular, substellate, of the common pale-yellow color of a, and differing in the narrower, divided lobes, which considerably resemble those of var. *ectanea*, Ach., Scher. (Zw. Exs. n. 57), to which our plant might perhaps well be referred, notwithstanding that the margins are more ascendent, and much more granulate; but the latter passes into states which I cannot well distinguish from the present variety. This development is seen in the higher-colored tree-specimens, in which the erectish, densely-granulate margins of the pulvinate thallus give quite a crustaceous aspect to the Lichen, which resembles, often also in color, the var. *fulva*, Scher. Lich. Helv. n. 383, which is hardly other than a state of his var. *lychnea*, n. 549. A specimen from Bavaria (*Physcia controversa*, Massal., Koerb. Parerg. I. p. 38), which I owe to the kindness of Mr. Von Krempelhüber, is larger and better developed than my specimens of the Swiss Lichen; but the American surpasses even that as a well-marked form of *P. parietina*. The spores of our plant are entirely those of the species; varying in size, but often as large as in any form. The base of the apothecia is often fibrillose. On cedars, Inscription Rock (Pacif. R. R. Survey), *Dr. Bigelow*. Lobes flat, wide, but truncate, and irregularly heaped, the margins scarcely ascendent, and naked in the specimens. On charred wood, New Mexico, *Mr. Fendler*. With much the aspect of at least one of the specimens of Scher. Lich. Helv. n. 382 (*P. candelaris*), which I cannot but refer here; the learned author not distinguishing his var.
lychnea from his var. candelaris, at the date of the Spicilegium. Arctic America, Richardson (Herb. Hook.); approaching the next.


§ II. Species thallo glauco-fuscescente; sporis hyalinis uniseptatis.


§ III. Species thallo glaucescente (fuscescente); sporis fuscescentibus uniseptatis.

5. *P. Erinacea*, Ach. *Lichenogr.* p. 599; Syn. p. 222. On trees, California, Menzies. Sea-coast of California, Dr. Parry (Herb. Torr.). The entire thalline margin of the apothecia appears to distinguish this Lichen, which, in the thallus, resembles the next species, and also some forms of *P. speciosa*.

Borrera angustata, Bory in Herb. Berol.  B. Boryi, Willd. in Fée, Ess. p. 96, tab. 2, fig. 23, e Fr. Lichenogr. p. 76. Physcia solenaria, Dub. Bot. Gall. II. p. 612, non Borr. solenaria, Ach.  P. ciliaris, v. solenaria, Ancit. On the earth and upon rocks. Arctic America (B. ciliaris), Richardson (Frankl. Narr. p. 761). Newfoundland, Bory in Herb. Berol. Rocky Mountains, fertile, Herb. Hook. Shores of Lake Superior, fertile, Mr. C. G. Loring, jun. Shores of Willoughby Lake, Vermont, Mr. Frost. Does not appear to differ from a Corsican specimen of P. solenaria, Dub., from Von Krempellhüber, which is infertile, but with yellowish "cephalodia"; but the cited name, which was given to a different Lichen by Acharius, is hardly to be preferred to that of Bory. Apothecia similar to those of the species, but smaller; the disk black, with a white bloom; the erect margin torn, or at length radiate-fimbriate; spores (of the species) large, olivaceous-fuscous, obliquely ellipsoid, once-septate, about thrice longer than wide. The Lichen is among our rarest.


Var. β. granulifera: stellata, appressa; lacinii subplanis irregulater lobes often crenato-fimbriato. *Parmelia speciosa*, Ach., in the state with the margins of the lobes raised and powdery), but the two Lichens are distinguishable, and appear to represent different types; this presenting the strongly black-fibrillosed underside of *P. pulverulenta*.

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cantibus; apothecii subsessilibus disco subnudo margine thallino crenulato mox pulverulento. Sporae speciei. Parmelia granulifera, Ach. Syn. p. 212. On trunks and rocks. Pennsylvania, fertile, Muhlenberg. Frederick County, Maryland, infertile. South Carolina, in the low country, abundantly fertile, Mr. Ravenel. Louisiana, fertile, Dr. Hale. Texas, fertile, Mr. Wright. I have specimens compared by me with one from Muhlenberg (from whom Acharius had the Lichen) in Herb. Willd. It is a Southern form, and occurs, covered with apothecia, on the low islands of the coast of South Carolina, while the typical form prefers the mountains, southward, and is rarely fertile. The original plant of Acharius is distinguished by its flatter, less divided lobules, the margins of which are not raised, powdery, or ciliate. A state of this evidently recedes towards P. stellaris, with which species it also agrees in its nearly entire, glaucous-pruinose apothecia. But the Lichen varies into a form (exactly P. granulifera, Meissn., from Brazil, in Herb. Kunz.) well represented by the Carolina Lichen, which only differs from the type in its shorter, wider, less discrete, and less divided lobes, with margins somewhat minutely notched and powdery; and in its entirely smooth, and at length nigrescent underside. A similar Lichen, also blackish beneath, occurs in Venezuela (Mr. Fendeler), in which the raised margins of the lobes and the whole centre of the specimen is densely isidioid-eflorescent. And Mr. Wright found specimens, growing with P. appplanata, on maritime rocks in Japan (U. S. N. Pacif. Expl. Exp.), which are colored similarly to the last, and appear fully to belong here, but are besprinkled with regular and rounded soredia.

with us, and always distinguishable by its entirely smooth, scarcely notched, often subconnate lobules, which are more or less powdery-tomentose beneath. The Lichen also recedes towards \textit{P. stellaris}, but approaches it less nearly than a similar state of the last variety. The Java Lichen, for which I am indebted to Dr. Van den Bosch, does not appear to differ from ours.


Carolina, Rev. Dr. Curtis. South Carolina, Mr. Ravenel. Alabama, Mr. Peters. Mississippi, Dr. Veitch. Louisiana, Dr. Hale. Texas, Mr. Wright. At first sub-stellate, and scarcely dilated, when the fertile specimens only differ from the last variety so far as the apothecia are less strikingly pedicellate; and the infertile ones from substellate less canaliculate specimens of the next, in nothing but the elongation which is so characteristic a tendency in the latter: — but the short, dilated, erectish lobes of the fully developed and fertile Lichen, and its peculiarly conspicuous, milk-white under-side (which furnishes a more constant distinction than that indicated by the name adopted by Eschweiler), are sufficiently striking. Cuban specimens of the present variety are often more or less suffused, especially at the tips of the lobes, and the margins of the apothecia, with a (sometimes intense) brick-red color; this occurs equally in the preceding variety, and according to Montagne and Van den Bosch (Lich. Jav. p. 22), who consider it adventitious, was regarded as characteristic of his P. podocarpa by Belanger. I observe the same in Cuban specimens of the typical form.

marked, are inseparable from states of the last, we appear to have in the Lichen now under consideration — which passes, without any break in the connection, from the substellate and nearly horizontal form of the middle of Europe (Moug. & Nestl. Cr. Vog. n. 941, with which the Ohio, and most of the other North American specimens accord) to the much elongated, almost filamentous, loosely decumbent states of the tropics (P. levecomela, var. angustifolia, Mey. & Flot.) — the extremest atypical development of our species in a centrifugal direction, as, in the nearly erect variety galactophylla, in a centripetal. Professor Fries first observed that this species passed into several varieties ("vario modo mutatur," Lichenogr. t. c.) in America; and did not hesitate also to refer here the P. levecomela of Middle and Western Europe, though he retained, as specifically distinct, the narrower, subtropical form. And I owe to him the suggestion that P. comosa, Eschw., should be placed here, rather than under P. ciliaris. But this last-named species appears itself almost too near to states of P. speciosa already cited; — differing, however, to a degree in color, and receding rather towards P. aquila.

10. P. Leana, Tuckerm. in litt. Parmelia (Physcia) Leana, Tuck. in Lea, Catal. Pl. Cincinn. p. 45. On trees. Ohio, Mr. Lea. Thallus thin and brittle, naked and smooth on both sides; the somewhat ascendent, loosely imbricated lobes multifid, much as in common states of the last species, with flat, nearly entire lobules, which are glaucous-fuscescent above (reminding in this respect of pale states of P. obscura) and pale beneath, where occur a few scattered fibres at the margins of the same color. The apothecia are smallish (compared with those of the last species), subsessile, and entire. The spores are smaller, narrower, and more acute. The Lichen appears to partake at once of the characters of P. speciosa and P. obscura, but I cannot refer it to either. Rocks and trees, Burlington, Vermont, with marginate soredia, Mr. Russell; who compares the Lichen with P. speciosa; to which Professor Fries considered the Ohio Lichen as approaching nearest. Rocks in the White Mountains, Mr. Oakes; similar to the last. Trees, Texas, Mr. Wright, a smaller-lobed state, like the last two, growing with P. obscura; which is distinguishable at once, by its black and densely black-fibrillose under-side. These latter states, which generally agree with the described plant, appear to approach P. obscura, much as that does P. speciosa.
11. P. stellaris (L.): thallo subcartilagineo glaucescente epruinoso subitus glabro e pallido nigricante fibrilloso; laciniiis multifidis; apotheciis sessilibus, margine tumidulo subintegro, disco fusco-atro subpruinoso. Fr. Lichenogr. p. 82, paucis mutatis. Sporae octonaev, ellipsoidae, fuscacentes, uniseptatas.


of *P. astroidea*, and in others which pass imperceptibly into *P. stellaris*. These conclusions are results of much, oft-repeated study of large collections of specimens, in numerous states of development and degeneration. The smooth, normal Lichen, as it occurs in Texas and Cuba, may be referred, with equal right, to *P. astroidea* or *P. stellaris*. And the more northern, sorediate form (*P. obsessa*, Ach.) only differs from sorediate European states in the greater size and regularity both of the thallus and the soredia. But in tropical America, our plant departs much farther from its type, acquiring not merely a greater smoothness and elegance, but becoming entirely black beneath (*P. obsessa*, Montag. Cuba, l. c.), a condition which now resembles, in general habit, the present variety; is now larger, on rocks, with the aspect of *P. stellaris*; and finally, occurs on trees, with all the characters, except the color of the under side, of *P. Domingensis*, Montag. Acharius describes his *P. obsessa* as black beneath, while I have always found the northern form, here referred to his species, pale on the under side; but there is no reliance to be placed upon this character in the specimens from Cuba and Nicaragua, which occur, entirely similar above, but now black and now pale-fuscous beneath, and varying in the same manner in the color of the little ring of fibres which often surrounds the base of the thalline exciple.

Var. γ. **Domingensis**: stellata, nuda, platyphylla; laciniis planis margine sepius pulverulentis subitus pallidiis. *Parmelia (Physcia) Domingensis*, Montag. Cuba, p. 225; Nyl. Enum. Gen. l. c. p. 106. On trees. Seaboard of South Carolina, Mr. Ravenel. Key West, Florida, Dr. Blodgett. Louisiana, Dr. Hale. Bottoms of the Blanco, Texas, Mr. Wright. Passes into the last variety, in Cuba; and an entirely smooth state, from the Bonin Islands, near Japan (U. S. N. Pacif. Expl. Exp. Mr. Wright), exhibits at once the larger and wider lobes of the present, and the smaller and more divided ones of var. *astroidea*. But the American Lichen is almost always and elegantly characterized by its powdery margins. The plant also approaches *P. speciosa*, var. *granulifera* (*P. granulifera*, Ach. Syn.), especially that state with powdery margins (*P. granulifera*, Meissn. in Hb. Kunz.), but is always, so far as my specimens go, distinguishable from that, by a certain divergence of habit, resulting in part from a different lobation; the wider and always flat divisions of *P. Domingensis*, Montag., with their regular palmate summits and slightly notched lobules, contrasting with
the more irregular laciniation, and the rather convex and strongly toothed lobes, of *P. granulifera*; which, in the state here referred to, may be *P. Domingensis*, Ach.; a distinct Lichen, according to Dr. Nylander (I. c.) from that so named by Montagne.


northern Lichen, near to the last species, but occurring here in the same distinctness as in Europe; nor have I observed any intermediate states. It is, however, by no means as common with us as the last. There are some respects in which one might consider it as bearing possibly the same relation to P. stellaris that P. ciliaris bears to P. speciosa sensu latori.

13. P. APPLANATA (Fée), Nyl. Enum. Gen. l. c. p. 107. Parmelia applanata, Fée Ess. p. 126, tab. 32, fig. 2, & Suppl. p. 123, tab. 42, n. 18; Montag. Cuba, p. 223, tab. 8, fig. 1. P. plumosa, Tayl. in Hook. Lond. Journ. Bot. 6, p. 173, e descr. On trees. Seaboard of South Carolina, Mr. Ravenel; of Florida, Herb. Gray; and of Alabama, Herb. Sartwell. Louisiana, Dr. Hale. Texas, in the valleys of the Blanco, and the Rio Grande, Mr. Wright. Thallus thickish, softish, stuppeous-membranaceous, closely agglutinate-appressed, from greenish at length white-glaucescent; beneath scarcely fibrillose, becoming black; lobes confluent, crustaceous-concrete at the centre, radiant and somewhat pinnate-plicate at the circumference; besprinkled at length with rounded soredia; apothecia scattered, a thin, entire thalline margin bordering an at length convex, violet, naked disk, which becomes black, and rests on a black hypothecium. Spores narrow-ellipsoid, scarcely a little curved, fuscosecent, the length about thrice exceeding the width. I possess the same Lichen, a strongly marked and distinct type, but connected with Northern types through the next, from many parts of the warmer regions of the earth, and also from Japan (U. S. N. Pacif. Expl. Exp.), Mr. Wright.


trees, dead wood, and rocks. Pennsylvania, Muhlenberg. Arctic America (P. cycloselis), Richardson (Hook. in Frankl. Narr. p. 761). New York, Halsey. New England to Virginia, common. Ohio, Mr. Lea. Wisconsin, Mr. Lapham. North Carolina, Rev. Dr. Curtis. South Carolina, Mr. Ravenel. Mississippi, Dr. Veitch. Louisiana, Dr. Hale. Texas, Mr. Wright. Very variable. P. ulothrix, Ach. is perhaps the most perfect condition of the Lichen, which hardly occurs here without more or less ciliate apothecia, while the ciliation of the lobes appears to be unreliable as a distinction. The present variety includes all our most perfect states of the species, and I have equally fine specimens of the same variety, from Sweden (Mr. Torssell), and the finest possible, in all respects, from Japan (U. S. N. Pacific. Expl. Exp.), Mr. Wright: but in the South of Europe the Lichen appears to degenerate, and Schärer distinguishes (Spicil. l. c.) the present from P. cycloselis, Ach., “omnium partium minutie.” I have collected in New England and New York a large, glaucescent state of this (as I confidently consider it), with proportionately wider lobes, densely pannose-fibrillose beneath, and the black, tomentose hairs showing also at the margins,—which may well be Parmelia setosa, Ach. Syn. p. 203. There is also, in our mountains, a greenish-glaucescent state, with largish, bright-chestnut apothecia (commonly ciliate at the base) which might be passed by for Parmelia tiliaeae. The following varieties are still more remarkable.


Appears to be inseparable from the species, and equally so from the European variety (the Louisiana specimens being quite as depauperate as most of my foreign ones), but generally a finer plant than the latter, and when perfect, scarcely differing from states of *P. appplanata*, except in color, and in the colorless hypothecium. *Parmelia viridis*, Montag. Crypt. Guyan., & Syll. p. 329, (*Parm. picta*, Montag. Cuba, p. 221, tab. 9, fig. 3, non Ach.), appears to be scarcely separable from the North American Lichen; and these varying conditions are perhaps comparable with the American forms of the European *P. astroidea*.

**Pyxine Meissneri**, Tucker, in litt.; thallo orbiculare cartilagineo radiatim laciniato glabro glanceoscente intus sulphureo; laciniis subplanis appressis pinmatiifidis imbricatis subitus nigrits ambitu fibrillosis; apotheciis primitus thallo color coloribus excipulo thallino subintegró turbidulo discum planum nigrum cingente mox supernae nigricantibus margine demum teneuement nititito disco convexo subexcluso. Sporae suboctonae, oblongo-ellipsoideae, uni-septatae, mox fuscescentes, diam. plusquam 3-plo longiores. On trees in Cuba, and also in Nicaragua, *Mr. Wright*. And I possess a fine Brazilian specimen, referred to *Physcia* by Dr. Meissner of Halle, from my kind friend, the late Professor Kunze of Leipzig. Thallus differing from that of the next species in its entire smoothness, and its light-yellow medullary layer. The apothecia are at first exceedingly like those of *Physcia appplanata*, but the exciple soon blackens above, and presents finally a convex disk enclosed by a shining margin of the same color, thinner than the original thalline border, and often looking, but not really, distinct from it. Professor Fries, in establishing this genus (Pl. Homon. p. 266), indicated its relations to *Umbilicaria*, but did not regard either as Parmeliaceous. In venturing, some years since, to take this view with respect to *Pyxine* (Synops. Lich. N. E. p. 24, and 35) the writer had before him only the more northern Lichen (*Pyxine sorediata*, Fr.), the "at first closed, palish" apothecia of which, "becoming patelliform, and, with the altered thalline margin, black," he considered as indicating "a modification of *Parmelia*, near to" the section "Amphiloma, Fr."; a conclusion which the foliaceous thallus, with its compact, crust-like centre, and often dense hypothallus, served to strengthen. But the present species is as clearly inseparable from *Parmelia*, in the sense of Fries, as it is from *Pyxine*; and its position as respects the new tribe *Parmeliæ*, as acutely limited,
in the light of our present knowledge of the spores and spermogones, by Dr. Nylander, may still perhaps be regarded as between Physcia (Parmelia $\S$ Physcia, Fr.) and Pannaria (Parmelia $\S$ Amphiloma und Psoroma, Fr.); and Schweiler, it is observable, places his Lecidea albo-virens (Lich. Bras. in Mart. Fl. Bras. 1, p. 256), which is clearly Pyxine sorediata, as first observed by Montagne (Pl. Cell. Cub. in Sagra's Hist. Cub. p. 188), in the near neighborhood of his Lecidea (now Pannaria) microphylla, in which, moreover, he only followed Acharius. There are several points in Dr. Montagne's description and illustration of his *P. sorediata* (Cuba, l. c. p. 188), and especially his figure b, seemingly indicating our present species, which is finally very like smoothish states of the next, and may well occur without any trace of its originally Physciaeaceus fructification; in which case it should hardly be separable from *P. Cocoes* (*P. sorediata*, Fr.), unless by the color of its medullary layer, to be considered farther on. And thus the remarkable development of the apothecia of *P. Meissneri* might be taken as of value rather as enabling us to determine the true structure and natural position of the genus, than as a specific distinction; but, however the final state of the new species may approach the old, I have examined many hundreds of specimens of the latter, in its best condition (*P. Cocoes* $\beta$. *sorediata*), without finding the least trace or indication of the originally Lecanorine fructification of the former. Spores of *P. Meissneri*, linear-oblong, and more than thrice as long as wide, at first colorless and simple, an elongated sporoblast occupying the centre, but soon becoming fuscescent, and the sporoblast separating into two roundish ones, which are connected by a narrow isthmus, remaining at least until the central dissepiment appears: these sporoblasts finally increasing in size till they meet the walls of the spore, when the well-marked limit of each, and the empty ends of the spore beyond it look like other dissepiments and sporoblasts, and the spore might be called 3-septate (comp. Montag. Cuba, l. c., but the description, as I understand it, is not illustrated by the figure given; and also Schweiler, l. c., p. 246), which I think it is not.

Lecidea sorediata, mainly by the lighter color and thinner texture of its smoother lobes, and their smoothish under-side; and Mr. Wright's Cuban collections appear fully to confirm Dr. Nylander's opinion (Lich. Exot. in Ann. Sci. 4, 11, p. 239), that neither of these differences, nor that of size, which extends even to the spores, is sufficient to separate specifically the tropical form from the more northern one. The present, so far as my specimens go, appears to be a smaller and less imbricated Lichen than P. Meissneri, from which it also differs in its white medullary layer, and especially in its apothecia, which are exactly those of the genus, as described by Fries, and, more at large, by Eschweiler. There is also in P. Cocoes a tendency to sorediate efflorescence, which becomes marked and characteristic in the northern Lichen, which, I cannot but think, deserves still a separate, if a subordinate place.

Var. ß. sorediata: thallo cartilagineo glanco-cinerascente intus fusco-sulphureo (pallescente), laciniiis rugoso-plicatis; sorediis rotundatis cæsiis marginalibus exasperatis subitus subspongioso-fibrillosis; apotheciis cæsio-ruinisosis (nudis). Lecidea sorediata, Ach. Syn. p. 54. Pyxine, Fr. Pl. Homan. p. 267. Lecidea (§ Pyxine), Eschw. Bras. l. c. p. 245. Parmelia (§ Pyxine), Tuckerm. Synops. Lich. N. E. p. 35, & Lich. Exs. n. 19. Lecidea albo-virens, Eschw. Bras. l. c. p. 256. On trees and rocks, Pennsylvania, Muhlenberg (Ach. Syn. l. c. 1814). New England to Virginia, not rare, especially on mountains. Westward to the Rocky Mountains, Herb. Hook. North Carolina, Rec. Dr. Curtis. South Carolina and Georgia, Mr. Ravenel. Alabama, Mr. Peters. Mississippi, Dr. Veitch. Louisiana, Dr. Hale. Texas, where occur also small forms like ß, Mr. Wright. The same unwearied botanist has collected the Lichen also in Cuba, and in Japan. And I am indebted to Dr. Hooker for an infertile, but otherwise undistinguishable specimen from the Himalaya, and to Dr. Van den Bosch for satisfactory ones from Java. It was upon this Lichen, first observed by Muhlenberg, that Fries constituted his genus. The plant differs from the earlier P. Cocoes (Sw.), Nyl., in being every way larger; in its darker, finally ashy color; its regular soredia; and densely spongy-fibrillose under-side: but approaches P. Meissneri (to which P. sorediata, Montag., Cuba, l. c., should perhaps be referred, in part at least) in its dark-yellow (sometimes fuscous, and often pallescens) medullary layer; which is observable (as indicated by Eschweiler in his Lecidea albo-virens), if nowhere else, immediately beneath
the hypothecium. *P. soreadiata*, var. *endochrysa*, M. & V. d. Bosch, in Montag. Syll. p. 345, "thalli strato medullari fulvescente (chamois)," described from specimens of Junghuhn, is an indication of the last-mentioned feature, which appears to me to show itself (though doubtless finally disappearing, and unknown in a) with more or less distinctness, in most of my specimens. In *P. coecineae*, M. & V. d. Bosch, Lich. Jav. p. 40, the same layer is described as blood-red. As already remarked under our first species, the present differs from that in possessing the pseudo-Lecideine apothecia of the genus, as defined by its illustrious author, and others; only varying from their descriptions in the fructification, being at first pale (as indicated by the present writer, l. c.) and also, in the variety now before us, bespread at length with a gray bloom (comp. Eschweiler's "apothecia . . . vix canescenta" in his *Lecidea albo-virens*, l. c.), which is very often wanting. The spores of the present form do not differ appreciably from those of other species, unless in proportional dimensions. They are often ellipsoid, slightly constricted at the middle, once-septate, and fuscous; about two and a half times longer than wide: but occur perhaps more commonly in a rather elongated, oblong, less colored and less simple state, in which the protoplasm develops at first (as in many spores) into a square, or oblong sporoblast, which then divides into two, which are connected by a narrow isthmus (like the neck of an hour-glass, or, more often, of dumb-bells) through the middle of which passes the dissepiment of the spore; which reaches, in this state, to nearly the length of the spores of *P. Meissneri*. The ends of the sporoblasts towards the (empty) tips of the spore are so well defined that it is difficult not to describe these sporoblasts as becoming at length larger, oval, and once-septate, and the spore as thus thrice-septate (and this view has been taken by eminent writers), but I venture to propose the above as perhaps the true one; and to regard the genus as possessing spores typically once-septate; and as approaching, therefore, species of *Physcia* as closely in this respect, as it does also, according to Dr. Nylander (in his observations on *P. Meissneri*, in Lich. Exot. l. c., p. 255) in its spermogones.

*Pyxine retirugella*, Nyl. Lich. Exot. l. c., p. 240, is the only remaining species known, not above noticed. In this, which was collected in Nukahwā, growing on stones and rocks, by Mr. Jardin, the thallus is described as reticulate-rugulose, like that of *Parmelia saxatilis*; and the apothecia as resembling those of the last species. Very
elegant specimens, collected by Mr. Wright, from stems of *Pandanus*, in the Bonin Islands (Herb. U. S. N. Pacif. Expl. Exp.), with linear, elongated, *discrete* lobes, which are brought into relief by the black hypothallus, have just the marking above described, and the regular soredia, and whole asyct of *Pyxine*; but are without fructification.

**Pannaria leucosticta**, Tuckerm. in litt.: thallo e ¦ squamulis cartilagineo-membranaceis glauco-fuscescentibus ambitu expansis sub-elongatis pinnato-incisibus centro asdescendentibus imbricatis dissecitis dentato-crenatis, crenis albo-pulverulentis, hypothallo caeruleo-nigro marginante; apothecis appressis convexis rufis margine thallino persistente subincurvo crenulato demum mox pulverulento. Sporae ovoideae, simplices, incolores, diam. 1½ - 2-plo longiores. — *Parmelia (Psoroma) leucosticta*, Tuckerm. in Darlingt. Fl. Cest. p. 441. On trees and rocks. New England to Virginia, not uncommon. Pennsylvania, Dr. Michener. North Carolina, Rev. Dr. Curtis. South Carolina and Georgia, Mr. Ravenel. Alabama, Mr. Beaumont. Louisiana, Dr. Hale. Approaching *P. microphylla*, from which it differs in the colors, in its larger, dissected thallus, and also in the apothecia and spores. And it also approaches (but is always, so far as I have observed, distinguishable from) subsquamulose states of *P. rubiginosa*. *P. craspedia*, Koerb. Parerg. I, p. 45 (1859) from Istria, appears to have some (possibly unessential) features of agreement with our Lichen. But it is interesting, in this connection, that one or two other Lichens, first observed in North America, as *Cetraria Oakesiana* (C. Bavarica, Krempelh., and now published also, though I know not from what locality, in Massalongo's Italian Herbarium Exsicc), and possibly *Physcia obscura*, var. *erythrocardia* (Parm. *stuppea*, Tayl., which can hardly be distinct from *P. endoccina*, Koerb. I. c. p. 36, from Tyrol), are, with more or less certainty, inhabitants of the South of Europe.

**Pannaria crossophylla**, sp. nov.: thallo minusculo membranaceo glauco-cinerascente e squamulis subelongatis expansis plumoso-multi-fidis, lobulis linearibus teretiusculis subbus subconcoloribus; hypothallo nigro obsolescente; apothecis appressis convexis rufo-fuscis biatorinis vel excipulo thallino (spurio) tenui crenato demum subcinetis. Spore ellipsoidae, limbatæ, subincolores, diam. mox 4-plo longiores. — On slaty rocks, Brattleborough, Vermont, Mr. Russell. This Lichen, of which I have also received fine specimens from Mr. Frost, appears to differ from all described species in the narrow, teretish divisions of its
elegantly branch-lobed thallus, the longer portions of which closely resemble a delicate feather, or (as implied in the Latin terms *plumarius* and *plumatilis*) fine embroidered work, or *lace*. Of the species nearest related, which are all flat-lobed, *P. tryptophylla* differs in the colors, in the lobation of its very flat and thin divisions, and in its apothecia; *P. microphylla* in its closely imbricated crust of small, notched (but “never laciniate-dissected,” Fr.) true squamules, and its smaller, *oblong-ellipsoid* spores; and *P. Stauinettii* (Montag.), Nyl., a tree-lichen, of which I have been kindly favored with a specimen by the generous author, in the colors, the distinct configuration of the scarcely lobate, larger, and flatter scales, and, like the last, to which it is much nearer than is the present, in its oblong spores. Beneath, our plant is much of the same color as above, but traces of a blackish hypothallus are more or less discernible at the centre. Apothecia somewhat immersed, bright brownish-red, convex, and the thin, bia-torine exciple (which has sometimes an apparent, more or less perfect, crenate, but spurious thalline border) scarcely discernible. Spores ellipsoid, rather sharp at the tips, which are often somewhat elongated; more or less tinged with a hue like that of the gomimon granules; lim-bate, and the protoplasm commonly separating into irregular, more or less rounded sporoblasts, which are often in polar opposition; from twice to four times longer than wide.

**Lecidea microps** (Fr. Herb. sub *Parmelia*), sp. nov.: thallo minusculo granuloso-subsquamaecco imbricato glaucescente; apotheciiis minimis bia-torinis rufescentibus concavis vel excipulo thallino tenui integro receptis. Spore octona, ovoideae, incoiores, simplices, diam. 2–2½-plo longiores. *Lecidea pezizoidea*, Schwein. Herb., non Ach. *Parmelia microps*, Fr. Herb. On the earth, Salem, North Carolina, Schweinitz. I possess only a fragment, given to me by Professor Fries, who had it from Schweinitz. The Lichen has points of resemblance to *Lecanora amniocola*, but differs in the spores. It may also be compared with *Lecidea coarctata*, but appears certainly distinct from it. The whole is so small, that an ordinary lens is hardly sufficient to examine its characters; and I offer it here only for further investigation.

**Lecidea oidalaea**, sp. nov.: thallo crastaceo tenui subcartilagineo demum contiguo lavigato rimoso verrucoso-areolato flavo-viridi-glaucescente; hypothallo nigro sublimitato; apotheciiis (mediocribus) cupu-
laribus sessilibus nigris disco nudo opaco subscabrido intus albo hypothecio fusco-nigro imposito mox convexo-protuberrante marginemque tenuem subobscurum excludente. Sporae majusculae, oblongae, atro-fuscescentes, murali-divisae, diam. 3-plo longiores. On trunks of Oaks, Alcatraz, California, Mr. Wright (U. S. N. Pacif. Expl. Exp.). And I possess a fragment of the same Lichen, from trees on the banks of the Columbia, in Oregon Territory, Dr. Newberry. Crust with much of the habit of states of L. disciformis, from similar habitats, but greenish; and the margins of the protuberant apothecia perhaps more obscure than in that species. The spores are quite different. These are always without dissepiment, showing at first a grumous protoplasm, which, as the spore attains to its maturity and very dark color, assumes a cellular configuration resembling mason-work, as in L. atro-alba, and other species of the same group (Rhizocarpon, Koerb.).

Lecidea Africana, sp. nov.: thallo crustaceo adnato radioso-lobato mox squamuloso-areolato, areolis plananatis crenulato-oblatis ambitu rimoso-multifidis levigatis luteis subitus nigris; apothecis areolis immatossessilibus cupularibus nigris, margine tenui crenulato-rugosulo flexuoso, disco opaco nudo intus albo demum convexiusculo subexcluso. Sporae ellipsoidae, apicibus acutae, 1-3-septatae, atro-fuscescentes, diam. 1½-2½-plo longiores. On rocks (friable sandstone) on hills near Simontown, Cape of Good Hope, Mr. Wright. Thallus in young plants crustaceous-foliaceous, radiate-lobate; but the centre passing into mostly flattish, areolate, crenulate squamules, which are somewhat palmate-multifid at the circumference, and black beneath; bright-yellow, becoming whitish in some specimens. Apothecia always black; the slightly turbid or obtusish, wrinkled-crenulate margin at length almost excluded by the convex, naked disk, which is white within and rests upon a black hypotecium. Spores smallish, ellipsoid, with rather acute tips, the at first simple protoplasm dividing into two round sporoblasts, and crossed by a central dissepiment; the sporoblasts then divided, and the spore appearing twice or thrice septate, according as the central dissepiment is more or less apparent; finally blackish-brown, and the dissepiments more or less obscure. The Lichen has, at first sight, a good deal of resemblance to L. geographica, (as Moug. & Nestl. Cr. Vog. n. 640, a & β) but differs in its at first lobulate, at length squamulose and effigurate thallus, and scarcely less in its apothecia and spores, which last are never many-septate. Specimens with
more convex lobules occur, and these have something (in miniature) of the plicate aspect of *L. Wahlenbergii*, but the latter is entirely distinct, both in thallus and in its very short and obtuse ellipsoid once-septate spores.

Professor Sophocles read the following communication, —

*On the Difficulty of Identifying Plants and Animals mentioned by Ancient Greek Authors.*

Few things connected with Greek philology present more perplexity to the scholar than the identification of plants and animals whose names occur in ancient Greek authors. With regard to the Greek naturalists, as a common rule, they were content to mention only some of the most striking peculiarities of plants and animals. Minuteness of observation and accuracy of description were apparently undervalued by most of them. Consequently they had no *technical language*, properly so called; the popular language of the day being deemed sufficiently definite for their purpose. And as each Greek city had its local peculiarities, it was natural that more names than one should be employed to designate a given species. Thus, the ὄρια (*Quercus Ilex*) of most of the Greeks was called φιλαθρόεις (literally *cork-oak*) by the Arcadians.

The definitions of classical names of plants and animals found in later and Byzantine glossarists are to be received with caution; for in many instances they are nothing more than childish conjectures. Thus, according to one of Homer's commentators, φιλαία is a kind of olive; according to another, a wild olive. A third tells us that it is a kind of fig-tree; and a fourth, a kind of oak. Apion supposes it to be a species of tree. Ammonius regards it as identical with the mastic-tree (*σχίνος*). Lastly, a scholiast gravely affirms, that the φυλία is a kind of olive called φιλια! Again, the χορογράφων of the Septuagint corresponds to the Hebrew *shaphan* (*חפר*). It was one of the animals whose flesh the children of Israel were forbidden to eat. The Jewish doctors of later times imagined it to be the same as the *rabbit* (the *cony* of the English version of the Old Testament). St. Jerome, who lived many years in Palestine, where this animal abounded, describes it in such a manner as to leave very little doubt that it was the *Hyrax Syriacus* of zoologists. His Italian readers, however, finding that his description of it applied equally well to the *Alpine marmot*,

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