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XX.—Monograph of the British Graphideæ

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Heliophoca Atlantica.

Fur short, adpressed, olive-gray, very obscurely grised at the tips of the hairs. Chin and under parts of the body rather paler.

Length 5 feet 5 inches.

Hab. Madeira. R. MacAndrew, F.R.S. &c.

While on the subject of Seals, I may draw the attention of naturalists on the coast of the Pacific to the account of the *Sea Horses* said to be found in abundance on the seaward part of the island of St. Lorenza near Callao, mentioned in M. Bonelli's Travels in Bolivia, i. 90 & 128.

I have never heard of that genus living out of the Arctic Ocean, and should have believed that the author had mistaken the *Sea Bear* (*Otaria Leonina*) for the *Sea Horse*, if he did not describe "the two great white tusks projecting from the mouth on either side," and further observe, that "the tusks are of great value and form an important article of commerce" (see i. 90), which cannot apply to the tusks of the Sea Bear.

It is to be observed that the Peruvian continuation of the Antarctic current runs up the shores of Chili and Peru (see Journ. Roy. Geog. Soc. 1853) and chills that coast. This may explain why seals are found so near the tropics in those seas. I fear that M. Bonelli is not to be relied on for his natural-history observations, for he states that the cedar, mahogany and banyan tree (i. 79), and the date-palm (i. 146) grow on the coast of Peru.

XX.—*Monograph of the British Graphidææ.*
By the Rev. W. A. LEIGHTON, B.A., F.B.S.E.

[Continued from p. 97.]

8. *Opegrapha Turneri*. Thallus very thin, pale dirty-yellow, bordered with black; lirellæ very prominent, sessile, mostly simple, slender and linear; disk very narrow, uniform; proper margins plump, rounded and incurved; sporidia in asci, eight, linear-obovate, 3-septate, pale yellow.

Opegrapha betulina, Sm. E. Bot. t. 2281. excl. syn. (1811) (good, the magnified figure excellent); Hook. Br. Fl. 2. 145. excl. syn.

On birch. Hurst Pierpoint, Sussex! Bradwell! Burgh! Suffolk! *Mr. Borrer*. New Forest, Hants! *Mr. Lyell in herb. Borrer*. Ireland! *Miss Hutchins in herb. Borrer*. Loppington! Shropshire.

Thallus very thin, membranous, pale dirty-yellow, more or less

shining, in small patches with a pale margin, or where in contact with other plants throwing up a narrow brown watery line or margin. *Lirellæ* scattered, more or less numerous, somewhat inclining to a parallel arrangement, but very irregular and variable in this respect, peculiarly prominent, lying on the surface of the thallus, often apparently without any visible connexion, variable in length, but never very long, simple, seldom branched, straightish, or slightly curved and waved, very slender and narrow, of the same width throughout though tapering at the extremities, which are obtuse or slightly pointed, of a full shining black, more or less sprinkled with dingy yellow powder, which is not unfrequently altogether absent. *Disk* a narrow chink, uniform in its width throughout, in older states expanding, particularly in the middle. *Proper margins* peculiarly plump, rounded and incurved, uniformly parallel, in an older state becoming more erect and narrower, and wavy or crisped around the flattened expanded disk.

The thin membrane of the thallus is sometimes very slightly raised here and there around the very base of the *lirellæ*, but scarcely to be noticed without a lens, certainly not in the decided manner so as to form a considerable thallodal margin as represented in Persoon's figure of his *betuligna* in Ust. Ann. Bot. st. 7. p. 31. t. 3. f. 5. A. a. Without the comparison of an authentic specimen we ought to hesitate to consider it identical. Our plant is a true *Opegrapha*, whilst the *Graphis betuligna* of Acharius is from his description as certainly a true *Graphis*. Moreover he questions whether his plant may not be regarded as a variety of *Graphis scripta*, with which ours has not one feature in common.

I greatly doubt whether this is anything more than a state of *Opegrapha rimalis*, Ach.

PLATE V. fig. 10. *a, a*, Vertical sections of thallus and *lirellæ*; *b*, sporidium: all magnified.

9. *Opegrapha atra*, Pers. Thallus very thin, forming smooth, pale yellow or whitish ocellate patches; *lirellæ* densely crowded towards the centre of the thallodal spot, sessile, depressed, lying in all directions or subparallel, linear, generally simple or confluent, flexuose; disk narrow, uniform; proper margins thick, elevated, wavy; sporidia in asci, eight? very minute, obovate, somewhat pointed at the extremities, 3-septate, pale yellow.

Lichen scriptus, Hoffm. Enum. p. 12. t. 3. f. 2. c (1784).

Opegrapha atra, Pers. in Ust. Ann. Bot. st. 7. p. 30. t. 1. f. 2. C. c. (1794); DeCand. Fl. Franç. 2. 310. n. 840; Chev. Hist. Graphid. p. 21. t. 3. f. 1, 2; Johnst. Fl. Berw. 2. 100; Hook. Br. Fl. 2. 145 (in part).

— *atra*, *α. denigrata*, Schær. Spicil. 48. 324 (1823-1836); Enum. 153; Exsicc. 461!

Opegrapha atra, *a. stenocarpa* (in part), Fries, L. Ref. 367 (1831); Summa Fl. Scand. 118.

— *atra*, β . *syngrapta*, Wallr. Crypt. Germ. 1. 326 (1831).

Lichen denigrata, Ach. Prodr. 24 (1798).

Opegrapha denigrata, Ach. Meth. 27 (1803); Sm. E. Bot. 1753. (The upper left-hand figure may perhaps belong to this, but the other figures are doubtful having a black marginal line, and one of the magnified sections having the structure of a *Graphis*, the other of an *Opegrapha*.) Mart. Fl. Erlang. 280; Wahl. Fl. Suec. 860; Fingerhuth, Fl. Eiffl. 23.

— *denigrata*, α . & β . *atra*, Ach. L. Univ. 259 (1810); Moug. & Nestl. Stirpes, 469!

— *stenocarpa*, β . *denigrata*, Ach. Syn. 75 (1814).

— *reticulata*, DeCand. Fl. Franc. 6. 170 (1815), fide Schær.; Chev. Hist. Graphid. 28. t. 5. f. 1, 2, 3, 4. *a*.

— *prominula*, Chev. Hist. Graphid. 31. t. 6. f. 2, 3, 4 (1824).

— *implexa*, Chev. Hist. Graphid. 34. t. 7. f. 1, 2 (1824).

Graphis macularis, Mart. Fl. Brasil. 1. 85 (1833), in part.

On ash, oak, ivy, hazel, currant. Sussex! *Mr. Borrer*. Netley Abbey, Hants! (on ivy and mortar!), *Mr. Lyell in herb. Borrer*. (On currant), Henfield! Sussex, *Mr. Borrer*. Knocknagoney!; Colin Glen! Belfast; Massareene Park, Co. Antrim! *Mr. Wm. Thompson*. Near Edinburgh! *Dr. R. K. Greville*. Gopsall Wood, Leicestershire! *Rev. A. Bloxam*. Chelmsford, Essex! *Mr. H. Piggot*. Yorkshire! *Mr. G. Dixon*. Castle Bernard Park, Bandon, Ireland! *Rev. Prof. Hincks*. Fermoy, Ireland! *Mr. T. Chandler*. Berwick-upon-Tweed! *Dr. G. Johnston*. Shropshire generally!

Thallus forming pale roundish or oblong irregular spots or patches of about half an inch or more in diameter, on the smooth bark of trees, not bounded by any brown or black line or margin, but fading away in a watery manner ("crusta determinata sed non limitata," Ach. L. Univ. 260), thin, membranous, continuous, smooth, very slightly tartareous; in colour generally pale dirty-yellow or olive, not unfrequently also of a pure white, and then decidedly pulverulent. *Lirellæ* very numerous and crowded, densely congregated towards the centre of the thallodal spot, so as to appear at a little distance almost one black mass, more scattered and often smaller in size towards the circumference, prominent but at the same time depressed so as to form a uniform level surface, sessile, immersed only and slightly at the base, somewhat shining, of a full black, lying in all directions and positions, curved and flexuose; on some barks however becoming more or less parallel to each other, moderate in length, linear, and of nearly the same width throughout, more or less obtuse at the extremities, though sometimes slightly tapered there, generally simple, but by confluence and lying over one another divided. *Disk* narrow, uniform, rimæform, in age more open and canaliculate, surrounded by the elevated, thick, uniform or wavy proper margins.

Owing to the great thickness of the substance of the lirella compared with the small lamina proligera, the sporidia have been seen with difficulty and with some uncertainty. They are very minute, and as represented in

PLATE V. fig. 11. *a*, Vertical section of thallus and lirellæ; *b*, sporidia.

10. *Opegrapha herpetica*, Ach. Thallus thin, subtartareous, more or less cracked or slightly rugged, dusky olive, limited; lirellæ small, innate, round, oval, oblong or linear-oblong, obtuse, simple and divided, straight or curved; disk rimæform, expanded in age; proper margins thick, rounded and inflexed; sporidia in asci, eight, fusiform, 3-septate, pale yellow.

α. vera. Thallus tuberculate, pulverulent; lirellæ imbedded, small, simple, naked.

Lichen herpeticus, Ach. Prodr. 20 (1798), sec. specim. ab Achario seipso in herb. Borrer!

Opegrapha herpetica, Ach. Meth. 23 (1803); Sm. E. Bot. t. 1789?; Cheval. Graph. 82. t. 19. fig. 1. *α. brunnea*, 2, and *ε. linearis*, 6 *b*; Heppé, Fl. Wurzburg. 73 (excellent); Fingerh. Tent. Fl. Lich. Eiff. 21; Fries, L. Ref. 368 (in part, excl. syn.); Tuckermann, Lich. N. Amer. 75 (in part).

— *herpetica α*, Ach. L. Univ. 248 (1810); Syn. 72.

— *herpetica, γ. fuscata*, Schær. Enum. 156 (1850).

— *rimalis, β. fuscata*, Ach. L. Univ. 261 (1810).

— *rubella*, Sm. E. Bot. t. 2347 (good), excl. syn. (1811); Hook. Br. Fl. 2. 144. excl. all the syn. (except E. Bot. 2347), which belong to our *δ. rubella*.

— *rufescens*, Hook. Br. Fl. 2. 144. in part (excl. syn.).

— *rufescens, γ. fuscata*, Schær. Spic. 327 (1836).

— *atra, β. siderella*, Fries, L. Ref. 368 (1831), apparently from the synonyms and specimen quoted, in part.

Graphis herpetica, Mart. Fl. Brasil. 1. 88 (1833).

On oak, ash, and beech. Bradwell, Suffolk! *Mr. Borrer*. Twycross, Leicestershire! *Rev. A. Bloxam*. Lasswade! and near Dundee! *Dr. Greville*. Oxfordshire! *Mr. Baxter in herb. Dr. Greville*. Orton Wood near Twycross, Leicestershire! *Rev. A. Bloxam*. Chelmsford, Essex! *Mr. H. Piggot*. Charnwood Forest! *Rev. A. Bloxam*. Haughmond Hill, Shropshire!

Thallus thin, subtartareous, somewhat pulverulent, coarsely cracked, of a dark dusky olive, forming irregular patches limited by a thickened brown wavy line or margin. *Lirellæ* numerous, congregated close together but distinct, not crowded, immersed, and imbedded in the thallus, and only slightly raised, small but very variable in size and shape, roundish, oval, oblong, linear-oblong, obtuse at the extremities, simple, straight, sometimes slightly curved. *Proper margins* thick, rounded and inflexed, encompassing a narrow rimæform disk, which however varies in

its expansion, apparently according to age. *Sporidia* the same in all the varieties, eight in asci, fusiform, 3-septate, pale yellow, easily separable from the ascus, straight when seen on their back or front, curved when lying on their sides. Fries's remark (*l. c.*) respecting the thallus is admirably characteristic: "Crusta vera sub epidermide latens albissima, mox vero in verrucis granulosis albis erumpentibus collecta, unde crusta extus albo-guttata. In minus evolutis speciminibus tamen lævigata est." According to the specimens in herb. Borrer!!! "*Op. rubella* and *rufescens*, Brit. Fl." are confounded together, and are distributed into this and the following varieties. The sporidia in Schærer's *Opeg. herpetica*, *α. rubella*, Enum. 155, Exs. 95! and *δ. subocellata*, Exs. 281! are identical with those of our plants; but his *var. β. siderella*, Exs. 96! is a distinct species having sporidia elongato-fusiform, 13-septate.

PLATE V. fig. 12. *a*, Vertical section of thallus and lirella; *b*, sporidia—all magnified.

β. subocellata, Ach. Thallus tuberculate, pulverulent; lirellæ imbedded, ocellate.

Opegrapha siderella, *β. ænea*, Ach. Meth. 26 (1803), sec. specim. ab Achario seipso in herb. Borrer!

— *rubella*, *δ. ænea*, Ach. L. Univ. 250 (1810).

— *rubella*, *ε. subocellata*, Ach. L. Univ. 250 (1810).

— *herpetica*, *γ. subocellata*, Ach. Syn. 73 (1814).

— *subocellata*, Heppé, Fl. Wurzburg. 73 (1814) (excellent); Fingerh. Tent. Fl. Lich. Eiffl. 22 (1829).

— *herpetica*, Fries, L. Reform. 368. in part (1831); Tuckermann, N. Amer. Lich. 75 (in part).

a. simplex. Lirellæ small, simple. *Opegrapha subocellata*, *γ. ænea*, Cheval. Hist. Graphid. 82. t. 19. f. 4, as to colour and general appearance; *α. brunnea*, fig. 1 *a*, as to detail.

On ash and willow trees. Hurst, Cuckfield and Ardingley, Sussex! *Mr. Borrer*. Bovingar, Essex! *Mr. Lyell* in herb. *Borrer*. Near Thirsk, Yorkshire! *Mr. J. G. Baker*.

Thallus thin, subtartareous, somewhat pulverulent, continuous, scarcely if at all cracked, rough or rugose, with innumerable minute raised irregularly-shaped pale-coloured or whitish elevations or projections, pale dirty tawny olive, raised around the lirellæ into a sort of spurious thallodal margin, narrow, whitish and pulverulent, forming extensive patches either limited by a brown wavy margin, or diffuse and without such being visible. *Lirellæ* simple, of the same size, shape and number, and immersed, as in the last.

b. divisa. Lirellæ larger, substellate. *Opegrapha subocellata*, *β. grisea*, Cheval. Hist. Graphid. 82. t. 19. f. 3.

On ash trees. Hurst, Sussex! *Mr. Borrer*.

Similar to the last, but the immersed lirellæ are larger and longer, confluent into irregular substellate figures, with simple ones interspersed, all surrounded with the peculiar whitish spurious thallocal margin.

γ. *elegans*, Borrer MSS. Thallus pulverulent; lirellæ larger, simple and divided, prominent, wavy.

On ash trees. Ardingley, Sussex! Mr. Borrer.

Thallus subtartareous, pulverulent, cracked, uneven but not so rugged as in the preceding varieties, of a pale tawny hue, spreading in extensive patches. *Lirellæ* very numerous, more prominent, without the ocellate border, which however is occasionally seen imperfectly at the very base, longer and larger, linear, variable in size and length, simple or branched, elegantly curved and wavy. *Disk* variable in expansion, but generally broader, the proper margin, though still thick and rounded, frequently more erect and visible.

δ. *rubella*. Thallus smooth; lirellæ prominent, immersed only at the base.

“*Opegrapha rubella*, Pers. Ust. Ann. Bot. st. 7. t. 1. f. 2. A. a.” (fide Ach.); Schrader, Spicil. 77; Hepp, Fl. Wurzburg. 73 (excellent); Fingerh. Fl. Eiffl. 22.

— *rubella* α, Ach. Meth. 21 (1803); L. Univ. 249.

Lichen rubellus, Ach. Prodr. 22 (1798).

Opegrapha herpetica, β. *disparata*, Ach. Syn. 73 (1814), sec. specim. a Schærero in herb. Borrer!

— *rufescens*, α. *rubella*, Schær. Spicil. 50. 327 (1836); Exs. 95!

— *atra*, β. *siderella*, Fries, L. Reform. 368. in part, according to the synonyms and Schær. Spec. Exs. 95. quoted (1831).

— *herpetica*, α. *rubella*, Schær. Enum. 155 (1850).

“— *rufescens*, Pers.,” Bohler’s Lich. Brit. no. 74.

a. *simplex*. Lirellæ simple. *Opegrapha rubella*, Cheval. Hist. Graphid. p. 74. t. 17. fig. 1 a; β. *decorticata*, 74. t. 17. f. 2; δ. *albicans*, 75. t. 17. f. 4.

On ash trees. St. Leonard’s Forest and Charlton Forest, Sussex! Mr. Borrer. Berrow, south end of Malvern Hills, Worcestershire! Mr. E. Lees. Yorkshire! Mr. G. Dixon.

b. *divisa*. Lirellæ substellate. *Opegrapha rubida*, Cheval. Hist. Graphid. 80. t. 18. f. 1 a, f. 2 b. *Opegrapha crucianella*, 80. t. 18. f. 3 c.

On ash and birch trees. Sussex! Mr. Borrer. Gopsall Wood, Leicestershire! Rev. A. Bloxam.

Thallus thin, membranous, smooth, continuous, somewhat shining, of a dark dingy olive, forming irregular patches bounded by a thickened wavy brown margin. *Lirellæ* scattered, prominent, immersed only at the very base, linear, moderately long,

variable in size and shape, simple or branched in an irregular substellate manner. *Proper margins* rounded, thickened and inflexed, enclosing the *disk*, which is variable in its expansion, either rimæform or broader and canaliculate.

11. *Opegrapha vulgata*, Ach. Thallus effuse, cartilagineo-membranaceous, cracked and scaly, greenish white; lirellæ prominent and sessile, variable in size, shorter ones roundish or oblong, longer ones slender and linear, simple, wavy and shining or greasy; disk rimæform, uniform; proper margins thick, very round and inflexed; sporidia in asci, eight, fusiform, 5-septate, pale yellow.

α. vulgata. Lirellæ small, numerous, but regularly scattered; disk rimæform, more or less expanded.

Lichen vulgatus, Ach. Prodr. 21 (excl. syn.) (1798).

Opegrapha vulgata, Ach. Meth. 20 (1803); L. Univ. 255; Syn. 73 (secundum specimina Cel. Swartzii "cum Achario seipso collecta" in herb. Borrer!; Sm. E. Bot. t. 1811; Mart. Fl. Erlang. 279; Hook. Fl. Scot. 2. 43, Brit. Fl. 2. 145; Grev. Fl. Edin. 352; Chevallier, Graphid. 32. t. 6. f. 5 c; Wahl. Fl. Suec. 860; Fingerh. Fl. Eiffel. 22; Tayl. Fl. Hib. 2. 106; Bohler, Lich. Brit. no. 127!

Graphis atra (in part), Meyer in Spreng. Syst. Veg. 4. 1. 251 (1827).

Opegrapha notha, Johnst. ! Fl. Berw. 2. 100 (1831).

— *atra*, *ζ. vulgata*, Schaer. Spicil. 325 (1836); Enum. 154; Exsic. 516!

— *atra*, *a. stenocarpa* (in part), Fries, L. Ref. 367 (1831); Summa V. S. 118; Tuckermann, N. Amer. Lich. 75.

Graphis vulgata, *β. periblastetica*, Wallr. Crypt. Germ. 327 (1831).

On fir, ash, beech, apple, holly. Hurst and St. Leonard's Forest, Sussex! *Mr. Borrer.* Lasswade! and near Edinburgh! *Dr. Greville.* Malvern Hills, Worcestershire! *Mr. E. Lees.* Portslade, Sussex! *Mr. Borrer.* Berwick-on-Tweed! *Dr. G. Johnston.* Haughmond Hill, Shropshire! near Shrewsbury! Pen Maen Mawr, Caernarvonshire!

Thallus effuse, thin, membranous, cracked and scaly, subpulverulent and scurfy, of a pale dirty white tinged slightly with green, sometimes quite smooth and continuous; and in other specimens white, canescent, entirely pulverulent. *Lirellæ* numerous but regularly scattered, sessile and prominent, variable in size, though chiefly small and short, roundish, oblong and linear, of a plump turgid appearance, black and shining, straight or curved. Not unfrequently there are longer lirellæ intermixed and approaching in size and flexuosity to those of *stenocarpa*, so that it is difficult to say to which variety such specimens should be correctly referred. On these specimens, and more especially in the variety *stenocarpa*, the lirellæ are exceed-

ingly similar in appearance to those of *Opeg. Chevallieri*. *Disk* in a perfect state a mere chink, uniform in width throughout, in an older state becoming wider, more open and expanded. *Proper margins* very round, thick, plump and inflexed.

PLATE V. fig. 13. *a*, Vertical section of thallus and lirellæ; *b*, sporidia.

β. stenocarpa. Lirellæ long, slender and wavy, densely crowded; disk rimæform, very narrow, closed.

Opegrapha stenocarpa α, Ach. L. Univ. 257 (1810); Syn. 75; Chevallier, Graphid. 37. t. 7. f. 5 c; Hepp, Fl. Wurzburg. 74; Fingerh. Fl. Eiffl. 23.

— *atra*, *β. stenocarpa*, Schær. Spicil. 48. 324 (1823-1836); Enum. 153; Exsicc. 93! (in part); Fries, L. Ref. 367; Summa V. S. 118; Tuckermann, North. Lich. 75.

— *atra*, γ, *gyrograpta*, Wallr. Crypt. Germ. 326 (1831).

— *rimicola*, Cheval. Graphid. 41. t. 9. f. 1 (1824).

Graphis stenocarpa, Meyer in Spreng. Syst. Veg. 4. 1. 250 (1827).

On oak, beech, elm. Sussex! *Mr. Borrer*. New Forest, Hants! *Mr. Lyell in herb. Borrer*. Lasswade! *Dr. Greville*. Twycross, Leicestershire! *Rev. A. Bloxam*. Near Cork, Ireland! *Mr. I. Carroll*. Near Shrewsbury! Gloddaeth, Caernarvonshire!

Thallus effuse, thin, membranous, somewhat scaly or scurfy, continuous, pale dirty yellow, scarcely if at all cracked, though in old specimens very considerably cracked, and of a scurfy pulverulent appearance. *Lirellæ* very numerous and crowded, nevertheless quite distinct, forming a sort of black netlike work over the thallus, sessile, prominent, variable in size, the smaller ones short and oblong, the larger ones more considerable in number and frequently no others are present, very long and slender, narrow, linear, curved, flexuose, and wavy in all degrees and directions, of nearly the same width throughout but narrower at the extremities, of a full black, more or less shining, often with a greasy aspect. *Disk* a very narrow chink of the same uniform width throughout, even in old age when it becomes a little more open. *Proper margins* very thick in proportion to the disk, rounded, prominent, and inflexed.

There are specimens in which the transition between the varieties *vulgata* and *stenocarpa* are clearly traceable.

PLATE V. fig. 13. *a* 1, Vertical section of thallus and lirellæ; *b*, sporidia.

12. *Opegrapha siderella*, Ach. ? Thallus thin, subtartareous, cracked, pale dusky yellow, limited; lirellæ small, innate, various in size, rounded, oblong or linear, straight or curved, chiefly simple; disk rimæform, uniform; proper margins rounded and

inflexed ; sporidia in asci, eight, elongato-fusiform or aciculate, 13-septate, pale yellow.

Lichen siderellus, Ach. Prod. 24? excl. syn. (1798).

Opegrapha siderella, Ach. Meth. 25? (1803); Syn. 79?

— *siderella* α . & β , Ach. L. Univ. 256?

— *rubella*, Moug. & Nestl. Stirpes, 648! (1820).

— *rufescens*, β . *siderella*, Schærer, Spicil. 50. 327 (1823–1836); Enum. 155; Exsicc. 96!

— *rufescens*, Hook. Br. Fl. 2. 144 (excl. syn. *O. phæa* and *O. herpetica*, and E. Bot.) in part (1833).

— *atra*, β . *siderella*, Fries, L. Reform. 368. in part (1836).

On beech in New Forest, Hants! *Mr. Lyell in herb. Borrer* (a single specimen).

Thallus thin, subtartareous, cracked, somewhat pulverulent and leprose, forming irregular patches of greater or smaller extent, with a wavy margin but not bounded by any line, of a pale dusky dirty yellow. *Lirellæ* numerous, pretty regularly scattered over the whole thallus, minute, innate or immersed at the base, the upper half only prominent, very various in size, punctiform, rounded, subtriquetrous, oblong or linear, straight or crowded, simple or sometimes with a short branch, very plump in general appearance and obtuse at the extremities, dull black, somewhat greasy-looking. *Proper margins* rounded and inflexed. *Disk* a mere chink, uniform in width throughout or more open in age.

Our plant and Schærer's are identical, but I doubt whether they be the same as Acharius's plant, judging from the description, which states the *lirellæ* to be stellate, and also from his reference to Persoon's figure, and it is almost impossible to decide without comparison with an authentic Acharian specimen. If it should prove to be really different from the *siderella* of Acharius, then it is a "nova species," and will appropriately be named *Opegrapha Schæreri*.

The appearance of this plant at first sight is a good deal like that of *O. herpetica*, but the sporidia keep them distinct.

PLATE VI. fig. 14. *a*, Vertical section of thallus and *lirella*; *b*, sporidium.

13. *Opegrapha taxicola*. *Thallus* very thin, tartareous, pulverulent, cracked, pale yellowish gray, effuse; *lirellæ* large, excessively prominent and sessile, oblong, linear or linear-elongate, straight or curved, chiefly simple; disk broadly rimæform; proper margins rounded and inflexed, rugged; sporidia in asci, eight, elongato-fusiform or acicular, 13-septate, pale yellow.

On yew. Funtington churchyard! Hunston churchyard! and Aldingbourne churchyard! Sussex, *Mr. Borrer*.

Thallus effuse, very thin, tartareous, somewhat pulverulent,

partially cracked where it is thicker in substance amidst the groups of lirellæ, where and around the very bases of the lirellæ it is chiefly to be distinguished; in other and opener portions being only a pulverulent film, of a very pale yellowish gray. *Lirellæ* numerous, scattered and diffuse, or closely congregated in larger or smaller groups, excessively prominent and sessile, of a dull black colour, more or less sprinkled with the powder of the thallus, lying in all directions, straight or variously curved, chiefly simple, but here and there with a simple branch, variable in size, oblong or linear, or linear-elongate, of the same width throughout, obtuse at the extremities, very plump in appearance from the rounded inflexed *proper margins*, which are rugged and broken. *Disk* of the same width throughout, distinctly and broadly rimæform.

The size, appearance and habit of the denuded lirellæ induce me to present this as a new species, though doubtfully, for the sporidia would lead me to regard it as a variety of *siderella*. The denuded state of the thallus may arise from local circumstances connected with the nature of the matrix, and the otherwise immersed lirellæ be thus rendered accidentally prominent. Nor is the difference in size of the lirellæ between this and the preceding greater than prevails in other species, *e. gr.* *O. rupestris* and *O. varia*.

PLATE VI. fig. 15. *c*, Plant, nat. size; *a*, vertical section of thallus and lirella; *b*, sporidium.

14. *Opegrapha lentiginosa*, Lyell MS. Thallus thin, tartareous, smooth, cream-coloured, limited; lirellæ excessively prominent and sessile, very minute, punctiform, oblong or linear, straight, simple; disk a mere chink; proper margins tumid and incurved; sporidia in asci, eight, irregularly obovate, uniseptate, pale brown.

On beech and holly in New Forest, Hants! *Mr. Lyell in herb. Borrer*. On beech in St. Leonard's Forest, Sussex, sparingly! *Mr. Borrer*.

Thallus thin, tartareous, continuous, even and smooth, here and there slightly and delicately cracked, cream-coloured, forming irregularly rounded or oblong or more extended patches, one or two inches in size, bounded by a tolerably broad, irregular, wavy, brownish-black margin. *Lirellæ* numerous and very minute, appearing to the naked eye as mere black specks, under a lens like a multitude of minute black grains of wheat scattered over the thallus and lying in all directions, either singly or confluent and crowded, variable in size, the smaller or younger ones punctiform and more or less imbedded in the thallus, the larger and perfect ones of a narrow linear-oblong form, slightly

tapered towards each extremity, which is rounded, very prominent and sessile and plump in appearance. *Proper margins* full, rounded and incurved. *Disk* a mere chink. The sporidia are very singular and different from any other known British species.

PLATE VI. fig. 16. *c*, Plant, nat. size; *d*, vertical section of thallus and lirella; *b*, sporidia.

Opegrapha macularis, Ach., and *O. epiphega*, Ach. & E. Bot., seem to be merely states of the same plant. Their structure will be seen from our Plate VIII. fig. 34, which consists of a black carbonaceous perithecium (*a*) which bursts at intervals through the epidermis of the bark, and finally when the whole epidermis is thrown off by it is found to be continuous. It is raised and elevated here and there over the nucleus, and at those points has frequently a longitudinal depression like the rimæform disk of an *Opegrapha* or *Hysterium*. The base of the nucleus is quite naked or destitute of perithecium. The nucleus consists of pale hyaline oblong sporidia (*b*) of considerable size, margined and elevated on simple pedicels, with others of various sizes in different stages of maturity. This structure clearly distinguishes it from *Opegrapha*, and refers it to the genus *Hysterium*, subgenus *Dichena* of the Fungi.

[To be continued.]

XXI.—*Notes on the Ornithology of Ceylon, collected during an eight years' residence in the Island.* By EDGAR LEOPOLD LAYARD, F.Z.S., C.M.E.S.

[Continued from p. 131.]

146. *Zoothera* (n. s.?) *imbricata*, Layard.

Among the birds received from Mr. Thwaites is one which I cannot identify with any Indian species, and which may perhaps prove new. I have therefore provisionally named it *imbricata* from its scaled appearance.

Length about 9 inches; of closed wing $4\frac{3}{4}$ in.; tail 3 in.; bill to end of gape $1\frac{1}{4}$ in.; tarsi $1\frac{1}{2}$ in.

General colour of back and upper tail-coverts darkish olive-brown, darker on the head; each feather pales off to the edge, where a black border one line in breadth succeeds. Tail-feathers wholly brown, shafts black. Shafts of wing-feathers dark brown, outer webs reddish brown, inner webs dark brown. On the breast the same style of marking prevails, the colours being pale