

thousands to be massed together before they are visible to the naked eye, and, though thousands of ships have for hundreds of years sailed the Arctic, unknown to the men who were most interested in its existence; illustrating in a remarkable degree how nature is in all her kingdoms dependent on all—and how great are little things!

ON THE PRESENT DOMESTIC USE OF LICHEN DYE-STUFFS IN THE SCOTTISH ISLANDS AND HIGHLANDS.

[Being portion of a paper "On the Present Use of Lichens as Dye-Stuffs," read before Section B. (Chemical Science) of the British Association at Dundee, in September last, by Dr. LAUDER LINDSAY, of Perth.]

Many years ago, Lichenologists ventured to assert, that if there lingered then in the more remote corners, or less accessible districts, of Scotland, any vestige of the domestic or home use of Lichens as dye-stuffs,—a practice which at one time largely prevailed,—such a rude procedure or custom would speedily disappear before the march of civilization; the penetration of the Highlands by railways—the establishment of regular steam communication between Edinburgh or Glasgow, and the western and northern islands and coasts: the cheapening and multiplication of coal-tar, or other dye-stuffs, and of the printed goods, woollen and cotton, of Glasgow and Manchester, Leeds and Bradford. The 'Synopsis of the Vegetable Products of Scotland' in the Museum of the Royal Botanic Garden of Kew, states that "*all the native vegetable dyes are . . . falling into disuse from the cheapness and facility with which those of foreign origin can be procured.*" And this statement was not made without due, though local, inquiry; for my friend Mr. Ravenscroft, of the firm of Messrs. Lawson, of Edinburgh, by whom the said collection was arranged, originally for the Exhibition of 1851, collected his information and specimens alike in the district around Fort Augustus in 1850.

The object of my present communication is to show that all such predictions and assertions are at least premature. Evidence of a contrary kind has presented itself to me, somewhat unexpectedly I confess, during a tour in the summer of 1866, through the Hebrides, Orkney, and Shetland: to which I have been enabled to add confirmatory evidence collected previously or subsequently in Caithness, Inverness, and

Perth-shires, and other parts of the Scottish mainland. The evidence in question proves that the domestic use of lichen-dyes is prevalent over whole districts in Scotland, even in and around large seaports, which have steam communication with Glasgow and Edinburgh, sometimes two or three times a week, and which may be presumed, therefore, to be well supplied with the cheapest and most abundant products of British manufacture.

During a visit to the Lewis (Outer Hebrides) in May, 1866, I made special inquiry as to the use of Lichens as dye-stuffs among the peasantry. The result was the discovery that "Crottle" is universally known and used throughout the Long Island, even in and around Stornoway, a large and much frequented seaport, which is one of the chief centres of the herring fishery in Scotland, is in regular and frequent steam communication with Glasgow and Edinburgh, and, moreover, is largely peopled by an immigrant population from the mainland of Scotland. The Crottle in common use in the Long Island was pointed out to me in its place of growth, by Mr. Macrae, of Uig (Myavik), whose wife is experienced in its tinctorial applications. I was enabled to identify it as the ordinary saxicolous form of *Parmelia saxatilis*; dark grey, but not furfuraceous, usually sterile. Young Crottle is preferentially collected by the peasantry,—that which adheres closely to the stones or rocks on which it grows, and has no attached soil or impurity, a preference which appears to be grounded, at least partly, on the circumstance that this young condition of the plant saves cleaning and picking. The plant is rare about Stornoway, but would appear to be abundant in the parish of Lochs, where, in the Lewis, it is chiefly collected. It is applied in dyeing with various shades of brown or reddish-brown—including claret, heather, and chestnut tints—home-spun yarns made from the wool of the sheep fed on the island. These yarns are either woven or knitted into various fabrics, which include chiefly—

1. "Kelt," a home-made cloth (woven), used for trousers, shirts, vests, jackets, and kilts; a material which, I believe, would outwear many tweeds, but which is manufactured only for home use, and is so scarce in the local markets, if it occur at all, that I could procure none to purchase. Kelt for coats or jackets is, however, usually dyed blue with indigo (imported); but trouserings and vest-pieces, on the other hand, are generally heather-coloured by Crottle.

2. Hearthrugs.

3. Polkas and scarfs for women (knitted) *e.g.* those specially made for the women of Ness.

4. Stockings and socks of all kinds and sizes (knitted).

Extreme variety of practice exists as to the precise process of dyeing, especially in reference to the use or non-use of mordants (such as Sumac, alum, and copperas); the employment of Crottle alone, or in combination with other native dyes (such as Heather, Alder-bark, Water-lily, or Soot); the selection of white or grey yarns; and the determination of the pattern (striped or plain). But the essentials of the process of preparation and application appear to be that—

1. The Lichen is crushed into a coarse powder between stones.

2. It is steeped or not in water, to cleanse apparently from impurities.

3. Alternate layers of yarn and powdered Crottle are laid in an iron pot; and,—

4. The whole is boiled in water, generally without addition of any kind.

It is noteworthy here, that no form of ammoniacal maceration is resorted to; the former use of putrid urine, and the Graith pig appears to be unknown. The result of the discontinuance of this custom is, however, a less variety of colours, and an inferior beauty of shade, especially as regards its character of Orchill, *i.e.* the possession of a red or purple hue.

The yarn is thus dyed, and the articles of clothing above enumerated are woven or knitted, for the most part, by the female part of the population, and of all grades, from the minister's wife to the poorest cotter, chiefly during the long dreary season of winter; and I may note here, that in respect of their industry in worsted work, the Long Islanders resemble the inhabitants of the more northern islands of Iceland, Faroe, and Shetland. Harris is the great centre of the native woollen manufactures I refer to. The goods in question are made, in the first place, for home use, and the finest qualities are invariably reserved for this end, and so are not to be met with in the market. But the surplus is brought or sent for sale, or rather for exchange, to the annual fair at Stornoway, in July, from all parts of the Long Island, and even from remote St. Kilda. The dealings of the peasantry are mainly with a few old-established native merchants, with whom they

barter their handiwork for tea, sugar, tobacco, hardware, and crockery. Money payments are scarcely known. I visited Stornoway towards the close of the season, in May, when the produce of the preceding annual fair may be supposed to have been dispersed and disposed of. Nevertheless I had no difficulty in meeting with abundant specimens of stockings (specimens of which were shown in the Exhibition of Art and Industry in connection with the British Association at Dundee in September last) in the shops of a few of the older-established merchants. The cost of the longer stockings was about 1s. 2d. a pair, and of the socks 5d. to 7d. per pair; they are coarse and inferior in this respect to the produce of Shetland; but it must be remembered that they are the remnants of the season, and as such the most unfavourable specimens I could exhibit of the handiwork of the Long Island peasantry. Whether it is that a sensitive nationality or provinciality inspires me with the feeling, I am not prepared to confess; but the coarse Lewis stockings referred to have, in my eyes and nostrils, a peculiar interest, in so far as they exhale a delightful fragrance of the "Peat-reeke" of old Scotland, and exhibit the warm colours of its native heather!

Harris and Lewis stockings are also largely sold in Glasgow.

While indigenous Lichen-dyes are so widely used in the Long Island, it is of interest to record that Orchill is unknown in Stornoway, as are also the modern aniline and allied dyes. But Cudbear is kept by every grocer in that seaport, apparently of one shade and quality supplied from Glasgow, but manufactured necessarily in some of the English towns (*e.g.* London); there being now no manufactory of either Cudbear or Orchill, so far as I am aware, in Scotland. Cudbear is used for dyeing blankets and shawls a crimson-red, and for mixing with Crottle, or other native dye-stuffs.

In some parts of the Long Island, *Ramalina scopulorum*, under a Gaelic name, which signifies "Goat's Beard," is also used to dye yarn yellow without a mordant. Its use, however, is greatly restricted and very local as compared with Crottle. My informant, Mr. Macrae, did not know of its use in the Uig district, which is one pre-eminently characterized by the primitiveness of the customs of its inhabitants. I subsequently found that the same species, under the name "Old Man," was at one time used in Shetland to yield a yellow dye.

I found Sutherland and Caithness a duplicate, on a minor scale, of

the Long Island, in respect of the customs of the peasantry as regards the domestic manufacture of clothing, and the application of Crottle, and other native dye-stuffs. In the neighbourhood of Strathy, for instance, the cloth called "home-scourings"—the equivalent of the Lewis "kelt"—whereof the shepherds' coats are fashioned, is commonly woven, and the stockings worn by all classes of the community are constantly being knitted; the yarn used being usually dyed with Crottle, Heather, or other native dyes, similar to, or identical with those of Lewis and Harris. Some of the Thurso merchants barter with the peasantry for their surplus woollen produce, just as in Stornoway; and, as around that seaport also, Crottle is rare, and is collected on the hills and moors of the interior of Sutherland, where it would appear to abound.

The only other illustration I consider it of interest to bring under your notice is that of the hosiery of Fair Isle, one of the Shetland group, which is unique in Scotland on account of the peculiarity alike of the colours, which are extremely bright and gaudy, and of the patterns, which differ remarkably from those that are the common characteristics of hosiery, not only in Shetland, but in all other parts of Britain. These Fair Isle goods are apparently in great demand in the southern markets, such as Edinburgh and Glasgow, and even London. The long stockings, the nightcaps and caps for men, of which they chiefly consist, are largely sold in Lerwick and Kirkwall; and I have seen a similar exhibition of Fair Isle produce in the Shetland warehouses of Edinburgh. Local tradition, both in Orkney and Shetland, points to the Spanish Armada as the source of the teaching of the weaving of the peculiar patterns, if not of the application also of the parti-coloured dyes; and my friend the Rev. Biot Edmonstone, of Blair-Drummond, who is a Shetlander, and has travelled moreover in Spain, tells me that the gaudy variegations of yellow, red, and blue, in Fair Isle stockings are exactly the characteristic of the long stockings still worn by the Spanish peasantry. I see no good ground for doubting that these unique patterns originated in the wreck of the Spanish Armada in 1588; and if this origin is accepted, the peculiar character of the Fair Isle hosiery is a most interesting example of an exotic manufacture holding ground in a most limited area, and apparently most unlikely field, for an unusually long period.

I have collected a considerable mass of materials relating to the pre-

sent use of Lichens as domestic dye-stuffs in other parts of the Scottish Highlands and Islands, in Wales, in India and Ceylon, and in South America; but I must content myself at present with this mere reference thereto.

DIAGNOSES OF TWO NEW CHINESE CYPERACEÆ.

BY H. F. HANCE, PH.D.

11278 *Carex Sampsoni*, n. sp.; radicibus fibrosis, culmis subpedalibus basi foliatis compressis sulcatis scaberulis, foliis atro-viridibus linearibus circ. 12-nerviis 2 lineas latis margine denticulato-scabris culmis dimidio brevioribus inferioribus ad vaginas scariosas reductis infimis denique in fibras solutis, spicis plerumque 3- circ. 7-10-linealibus terminali mascula cylindrica pallida reliquis fœmineis crassioribus incluse v. leviter exserte pedunculatis, bracteis foliaceis culmo brevioribus, perigyniis lanceolatis longe rostratis ore alte bicuspidato crebre striato-nervosis pubescentibus fuscis, squama oblonga obtusa v. emarginata alba nervo viridi percursa in acumen hirsutum sæpius excurrente perigynio angustiore basin rostri attingente, achænio castaneo stipitato obovoideo trigono angulis medio exsculptis basi persistente styli conspicue apiculato, stigmatibus 3 tomentosis.

Ad bases rupium, insula Ku-lang-sú, d. 10 Maii 1866, coll. cl. T. Sampson. (Exsicc. n. 13059.)

Allied to *C. Harlandi*, Boott, *C. tenebrosa*, Boott, and especially *C. manca*, Boott, but differs from all in its short leaves; from the first-named also by its tomentose perigynia and narrow leaves; it resembles *C. tenebrosa*, chiefly in colour, but is in other respects different; from *C. manca*, which has very similar squamæ, achænia, and perigynia, it may be at once distinguished by its short leaves and dark tint.

9502 *Fimbristylis* (*Eufimbristylis*) *gracilentæ*, n. sp.; radice tenui fibrosa, culmis basi foliatis setaceis sulcatis inferne glaberrimis superne tomentellis foliis angustissimis sæpe involutis tomentellis apice acutis basin umbellæ attingentibus, vaginis late albo-membranaceo-marginatis, umbellæ radiis 6-8 dense et breviter patulo-pilosis nunc bifidis inæqualibus, involucri phyllis 5-6 valde inæqualibus, spicis lanceolato-linearibus acutis 1-3 in radiis alteraque centrali sessili, squamis undique imbricatis pallide brunneis lanceolatis nervo carinali excurrente,



Lindsay, W. Lauder. 1868. "On the present domestic use of lichen dyestuffs in the Scottish Islands and Highlands." *Journal of botany, British and foreign* 6, 84–89.

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