

inversely proportional to its degree of refrangibility. Therefore, if we employ in the construction of a prism a substance less active than common glass, the loss will be weakened in greater proportion for the less refrangible rays; the latter will gain then upon the more refrangible rays and the maximum will advance in a direction opposite to the preceding, that is, from the violet to the red. This is precisely what Herschel, Davy, and Seebeck ascertained in operating with prisms of flint glass.

Let us compare these effects with the numbers which represent calorific transmissions: we shall find that the maximum of heat, in leaving the yellow where it is found to be in the water prism, always advances in the same direction, just as the prism is constructed of substances more and more diathermous. It lies a little beyond the spectrum when flint is substituted for crown glass. Admitting then the exactitude of this theory, the line of the greatest heat must be disengaged entirely from color and be found in the dark space much beyond the red, when rock salt is used, a substance which is as much more diathermous than flint, as flint is than crown glass.

This important verification was made by the author on spectra formed by five prisms of rock salt from different localities. It was completely successful. In every case the maximum was found in the dark space at a distance from the last luminous band equal to that which exists on the opposite side between the greenish blue and the limits of the red.

Melloni has proved also that crystallized bodies act upon rays of heat in the same manner in all directions. He has assured himself of this by making the calorific radiation pass through prisms and plates of the same thickness cut out of the same crystals in different directions relative to the axes of crystallization.—*Bib. Univ. Oct.* 1833.

#### ART. VI.—*Caricography*; by Prof. C. DEWEY.

Appendix, continued from Vol. xxvi. p. 378.

No. 137. *Carex saxatilis*, L.

Willd. Sp. Pl. 4. page 272, and Pursh, No. 23.

Schk. Tab. I and Tt. fig. 40. Wahl. No. 140.

Spicis distinctis, staminifera solitaria, fructiferis *distigmaticis* subternis oblongis obtusis sessilibus, inferiore pedunculata cum bractea

*auriculata* ; fructibus ellipticis convexo-planis obtusis brevi-rostratis, squamam oblongam obtusam subæquantibus.

Culm six to ten inches high, triquetrous, scabrous above, with leaves sheathing towards the base, and nearly as long as the culm and flat ; staminate spike single, oblong, cylindric, with ovate and obtuse scales ; stigmas two ; pistillate spikes two to four, sometimes staminate above, sub-approximate, oblong, obtuse, sometimes loose-flowered, the lowest with a leafy bract having so large auricles as to be clasping the stem ; fruit elliptic, convex on the upper and flat on the under side, obtuse, with a short beak, and light colored ; pistillate scale oblong, obtuse, black, and long as the fruit ; plant is of light green color.

Found by Dr. Richardson near Fort Franklin on McKenzie's river, and at Bear Lake, and on the sea coast of arctic America. As Pursh's description of this species is taken from Willd., I have quoted him as authority, although it may be doubtful whether he ever saw the species in our country.

No. 138. *C. compacta*, R. Br.

R. Brown's appendix to Ross's Voyage.

Torrey and Schw. No. 54.

Tab. U, fig. 63.

Spicis distinctis ; staminifera solitaria, raro binis, erecta oblonga ; pistilliferis *distigmaticis* subbinis, pedunculatis erectis oblongis subdensifloris ; fructibus ovatis convexis brevi-rostratis ore bilobis, squama ovata nigra acutiuscula longioribus.

Culm six inches high, erect, triquetrous, smooth, leafy ; leaves flat, long as culm, and sheathing the base ; bracts long, leafy, with short sheaths ; staminate spike one, rarely two, erect, cylindric, with oblong and obtusish black scales ; stigmas two ; pistillate spikes about two, erect, cylindric, half an inch long, pedunculate ; fruit ovate, acutish, short-beaked, orifice two-lobed, brownish at the apex ; pistillate scale ovate acutish, black, and shorter than the fruit. Found on the Rocky Mountains. Resembles *C. saxatilis*, but differs in fruit, and scale, and general appearance.

No. 139. *C. stenophylla*, Wahl.

Schk. Tab. G. fig. 32.

Wahl. No. 21.

Spiculis in caput subglobosum aggregatis, distigmaticis, superne staminiferis ; fructibus subrotundis ventricosis convexo-planiusculis

nervosis in margine serrulatis ore bidendatis, squamæ ovatæ acutæ subæqualibus.

Culm three to six inches high, smooth leafy; leaves sheathing towards the base, narrow, longer than the culm; spikelets androgynous, staminate above, several, aggregated into a roundish head; stigmas two; fruit ovate, roundish-ventricose, flattish, nerved, scabrous on the margin, and with a two-toothed mouth, about equal to the ovate, acute, and tawny scale.

Inhabits the Tyrol: it was found also by Dr. Richardson near Carlton House and on the Rocky Mountains. It closely resembles the figure of the European plant.

No. 140. *C. Schkuhrii*, Willd.

Schk. Tab. Qqq, fig. 158.

Willd. Sp. Pl. Tom. IV. p. 264.

Spicis distinctis, staminifera solitaria, pistilliferis subbinis *tristigmaticis*, sessilibus approximatis subrotundis parvifloris; fructibus obovatis brevirostratis subtriquetris-globosis ore bilobis, squamæ ovatæ acutæ vix æquantibus.

Culm six to eight inches high, triquetrous, scabrous, stiff; leaves sheathing, longer than the culm, but lower ones abbreviated, channeled, nearly flat, and scabrous on the edge; one staminate spike oblong and cylindric, with oblong and acutish scales brown, and white on the edge; stigmas three; pistillate spikes one to three, sessile, nearly ovate-globose, few flowered, with an ovate and cuspidate bract and sometimes leafy under the lowest spike; fruit obovate, globose, slightly triquetrous, short-rostrate, orifice two-lobed, scale ovate, acutish, brown, white on the edge, a little shorter than the fruit; color a bright green.

This species was found originally at the Caspian Sea. It was found also by Dr. Richardson at Lake Winipeg. According to Willd., the spikes have *three or six fruit, sometimes two or three*. Its resemblance to *C. supina*, described in Vol. XXVI of this Journal, is remarked by Willd., and Schk. Both the plants are unlike others in our country, and so near these descriptions, that there can be no doubt of their identity.

No. 141. *C. Carltonia*, Dewey.

Tab. U. fig. 64.

Spicis ternis ovatis sessilibus approximatis *tristigmaticis*, superi-ore androgyna inferne staminifera; fructibus ovatis acutiusculis plano-

convexis lævibus ore integris, squamam ovatam acutiusculam æquantibus.

Culm a foot or more high, triquetrous, striate, scabrous, stiff, erect; leaves sheathing towards the base and shorter than the culm; spikes three, sessile, ovate, near, upper one staminate below, and the others pistillate; stigmas three; fruit ovate, acutish, smooth, slightly nerved, flat below and convex above, tapering; scale ovate, acute, equal to the fruit.

Northern regions near Carlton House. This is a beautiful and distinct species, and belongs in the same subdivision as *C. virescens*, &c.

No. 142. *C. Parryana*, Dewey.

Tab. U. fig. 65.

Spicis distinctis, staminifera solitaria erecta cylindræa, pistilliferis binis vel ternis *tristigmaticis* oblongis cylindræis densifloris erectis; inferiore pedunculata bracteata; fructibus obovatis convexo-planis obtusis lævibus vix rostratis ore integris, squama ovata acuta vel submucronata paulo longioribus.

Culm eighteen inches high, erect, stiff, triquetrous, rough, striate, with leaves sheathing and shorter than the culm; staminate spike single, erect, cylindric, or rather tapering towards either end, with oblong scales, obtuse and white on the edge; pistillate spikes two or three, erect, cylindric, close fruited, highest sessile, lower pedunculate and with a leafy and nearly sheathless bract; stigmas three; fruit obovate, obtuse, convex above, flat beneath, subtriquetrous, nerved, orifice entire, and scarcely rostrate; pistillate scale ovate, acutish or sub-mucronate, dark brown, white on the edge, and a little shorter than the fruit; plant a light green. The fruit is compact and small.

This is a beautiful species, found by Dr. Richardson at Hudson's Bay. It seems to be wholly distinct from any heretofore described.

No. 143. *C. arctica*, Dewey.

Tab. V. fig. 66.

Spicis subternis *tristigmaticis* ovato-cylindræis sessilibus, infima pedunculata bracteata, suprema inferne staminifera; fructibus ovatis plano-convexis obtusis brevissimè-rostratis ore integris, squama ovata obtusa paulo longioribus.

Culm eight inches high, erect, stiff, triquetrous, slightly scabrous; leaves at the base short and flat; spikes three to four, ovate-oblong, round, sessile except the lowest which has also a leafy bract; the



highest is staminate below, with an obovate and brownish scale ; stigmas three ; fruit ovate, convex above, flat beneath, smooth, obtuse, very short-rostrate, dark brown ; pistillate scales ovate, obtuse, dark brown, white on the edge, a little shorter than the fruit.

Belongs in the subdivision with *C. virescens*, &c. and is a distinct and beautiful species, found by Dr. Richardson near Carlton House in the Northern regions.

*Note.*—The following species was described in Vol. XI. p. 161. The following more full description is taken from specimens from the arctic regions.

*C. aristata*, R. Br.

Schw. and Torrey, No. 104.

Tab. V. fig. 67.

Spicis distinctis, staminiferis binis vel pluribus erectis sessilibus, fructiferis *tristigmaticis* subternis cylindraceis distantibus subdensifloris, inferiore pedunculata, cæteris subsessilibus ; fructibus ovato-lanceolatis longo-rostratis alto-bifidis nervosis glabris, squama ovata aristata longioribus.

Culm one or two feet high, erect, triquetrous, scabrous above, leafy, with long leafy sheathing bracts ; leaves flat, long, linear-lanceolate, striate, rough on the edge, and villose under side and on the sheaths ; staminate spikes two to four, erect, cylindric, sessile, sometimes with a few scattered fruit, and with lanceolate and curved scales rough at the point ; stigmas three ; pistillate spikes two to four, oblong, cylindric, rather distant, upper subsessile, and lower pedunculate, bracted, rather densely flowered ; fruit ovate, long-rostrate, glabrous, nerved, smooth, little ventricose, deeply bifid ; scale ovate, awned, and the whole shorter than the fruit.

Found near Cumberland House by Dr. Richardson, and seems to be between *C. bullata* and *C. ampullacea*. It is a large and handsome species.

No. 144. *C. ursina*, Dewey.

Tab. V. fig. 68.

Spica unica, inferne staminifera, globosa, densiflora, *tristigmatica* ; fructibus ovatis compressis lentiformibus lævibus ; squama ovata suborbiculata paulo longioribus.

Culm two to three inches high, striate, triquetrous ; leaves narrow, involute, filiform, sheathing at the base ; spike single, round, globose, small, densely flowered, pistillate above, three or four staminate flowers at the base ; stigmas three ; fruit ovate, flattish, roundish, ob-





Fig. 63.

*C. Parryana.*  
Dewey