

ART. XXVII.—*Studies in the Cyperaceæ*; by THEO. HOLM.
 XXI. New or little known species of *Carex*. (With figures
 in the text, drawn by the author.)

Carex neurochlæna sp. n. (figs. 1–2).

RHIZOME slender, ascending, stoloniferous, the leafsheaths persisting, light brown; leaves shorter than the culms, very narrow, carinate, scabrous; culms up till 24^{cm} in height, curved, almost capillary, trigonous, scabrous below the inflorescence, otherwise glabrous, phyllopodic; spikes two to four, gynæandrous or the lowest one sometimes purely pistillate (fig. 1), small and few-flowered, roundish, contiguous or the lowest one remote, reddish brown, the bracts inconspicuous or the lowest one with a filiform blade much shorter than the inflorescence; scales broadly ovate, those of the staminate flowers acute, the others obtuse, reddish brown with green midrib and hyaline margins; perigynium (fig. 2) longer, but narrower than the scale, sessile, slightly spreading, broadly elliptical, attenuated at both ends, plano-convex, wingless, prominently nerved, greenish, the beak short, slit on the convex face; stigmata two.

Collected above Rink rapids, Yukon River in Yukon, by Professor John Macoun (No. 53,879).

This species belongs to the *Neurochlænæ*.

Carex vagans sp. n.

Rhizome horizontally creeping, forming dense mats, the leaf-sheaths persisting, light brown; leaves glaucous, shorter than the culms, very narrow, carinate, scabrous; culms numerous, from 20 to 30^{cm} in height, very slender and weak, triangular, scabrous, phyllopodic; spikes three to five, androgynous or the lateral purely pistillate, small and few-flowered, sessile, forming an interrupted, spicate inflorescence about 2^{cm} in length, the bracts short and inconspicuous; scales ovate, acute, reddish brown with green, broad midrib and hyaline margins, shorter than the perigynium; perigynium sessile, somewhat spreading at maturity, ovoid, plano-convex, wingless, two-ribbed (the marginal), light brown, minutely scabrous along the very short beak, deeply slit on the convex face; stigmata two.

Collected in Oregon: Steins Mts., flat opposite Andrews, alt. 1950^m, by Mr. John B. Leiberger (No. 2558).

In aspect much like *C. occidentalis* Bail., but in this the spikes are more dense-flowered, the perigynium elliptical, stipitate, spongy at the base and the beak prominently bidentate.

Carex phæolepis sp. n.

Rhizome short, creeping, the leaf-sheaths persisting, light brown; leaves light green, a little shorter than the culms, narrow, but flat, scabrous; culms not numerous, from 25 to 35^{cm} in height, slender, but stiff, erect, triangular, scabrous, phyllopodic; spikes four to eight, androgynous and the staminate portion very prominent in all of these, ovate, rather small, sessile and contiguous or the lower ones remote, the bracts inconspicuous; scales ovate-lanceolate, mucronate, light brown with broad hyaline margins and greenish midvein, longer than the perigynium; perigynium almost sessile, erect, broadly elliptical, plano-convex, wingless, two-ribbed (the marginal), colorless, minutely scabrous along the short beak, which is slit on the convex face; stigmata two.

Collected in Eastern Oregon: Bear Butte, Crook County, alt. 1710^m, by Mr. John B. Leiberger (No. 335).

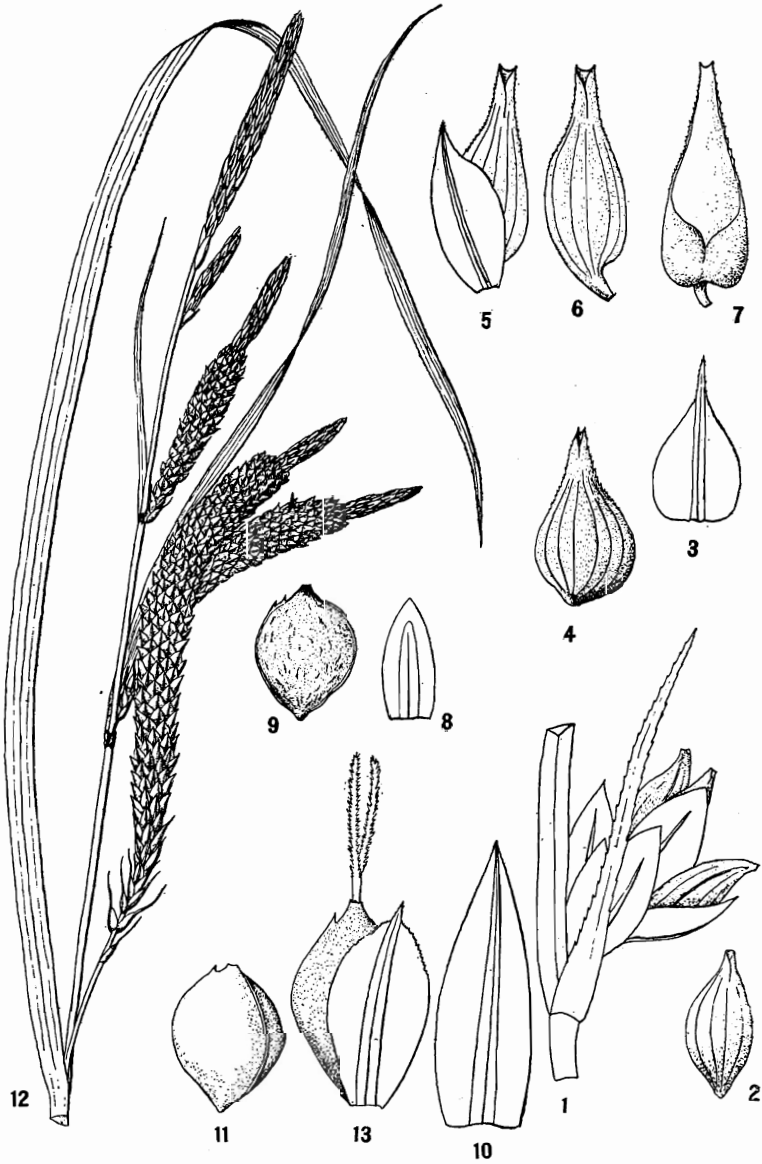
Carex chrysoleuca sp. n. (figs. 3-4).

Rhizome wanting, but apparently caespitose, the leaf-sheaths fibrillose, light brown; leaves light green, about half as long as the culms, narrow, carinate, scabrous; culms from 40 to 55^{cm} in height, stiff, erect, trigonous, scabrous near the inflorescence, otherwise glabrous, phyllopodic; spikes about twenty, the lowest ones decomposed, androgynous and the staminate portion very prominent, ovate, small in comparison to the size of the plant, sessile and contiguous, the bracts inconspicuous or the lowest one sometimes elongated, setiform; scales of staminate flowers lanceolate, sharply pointed, hyaline to light yellowish brown, those of the pistillate flowers (fig. 3) ovate with the midvein extended into a conspicuous awn, hyaline to yellowish, shorter than the perigynium; perigynium (fig. 4) sessile, erect or slightly spreading, broadly ovate, plano-convex, wingless, prominently several-nerved on convex face, light brown or greenish, scabrous along the distinct beak, which is deeply slit on the convex face; stigmata two.

Collected near Mariposa, California, by Mr. J. W. Congdon.

Carex vitrea sp. n. (figs. 5-7).

Rhizome wanting, but apparently caespitose, the leaf-sheaths persisting, light brown; leaves glaucous, longer than the culms, narrow, flat, very scabrous; culms from 60 to 65^{cm} in height, slender, triangular, scabrous, phyllopodic; spikes numerous, decomposed, forming an interrupted spicate inflorescence, up till 8^{cm} in length, androgynous, the staminate portion very prominent, sessile, the lower bracts setiform, short; scales of



Carex neurochlamæ, figs. 1-2; *C. chrysoleuca*, figs. 3-4; *C. vitrea*, figs. 5-7; *C. dives*, figs. 8-9; *C. Schottii*, figs. 10-11; *C. lacunarum*, figs. 12-13. (Explanation in text.) The figures 1-11 and 13 are magnified; fig. 12 represents the natural size.

staminate flowers lanceolate, mucronate, hyaline with green midvein, those of the pistillate flowers (fig. 5) ovate, acuminate and mucronate, hyaline, much shorter than the perigynium; perigynium stipitate, nearly erect, ovate-lanceolate, plano-convex, spongy at the base, wingless, several-nerved on the convex (figs. 5-6), nerveless on the plane face (fig. 7), light green to almost hyaline, scabrous along the narrow beak, which is emarginate and deeply slit on the convex face; stigmata two.

Collected at Palm Springs (Agua Caliente), desert base of San Jacinto Mountain, at an elevation of 500-700 ft., in Southern California, by Mr. S. B. Parish (No. 4144).

The last three species: *C. phaeolepis*, *chrysoleuca* and *vitrea* are characteristic by the staminate portion of their spikes being very prominent, and by this character they are readily distinguished from all other members of the *Acanthophoræ*. However, there is a fourth species "*C. vallicola*" described by Dewey* which is said to exhibit the same peculiarity: "having the staminate part of the spikelet a short projecting column or cylinder at the apex, often longer than the pistillate part," and we thought at first that one of our species might be identical with this. But the perigynium of *C. vallicola* is described as "obovate, tapering below, rostrate and stiped, at the orifice oblique," besides "being nerveless," thus showing a marked distinction from the structure of the perigynia possessed by our species. Dewey's plant was collected in Jackson's Hole, on Snake River, at an elevation of 6000 ft., by Dr. F. V. Hayden, but the specimens which the writer has had the opportunity to examine, were so young and poorly represented, that they gave no illustration of the species whatever, and as we have learned from Mr. Clarke, there is no material of it in the Kew Herbarium. So far, *C. vallicola* stands as an imperfectly known species, but is evidently a near ally of those three, described above.

Carex venustula sp. n.

Rhizome matted with short stolons, the scale-like leaves brown, becoming fibrillose; basal leaves as long as the culm, narrow and flat, slightly scabrous, the cauline much shorter, but with long sheaths; culm about 42^{cm} in height, slender and weak, triangular, scabrous, aphyllopodic; spikes three to four, the terminal staminate, clavate, the lateral pistillate or the uppermost sometimes androgynous, contiguous, all borne on filiform peduncles, drooping, short and dense-flowered, subtended by sheathing bracts, of which the lowest one has a blade about as long

* This Journal, II, vol. xxxii, 1861, p. 40.

as the inflorescence; scale of staminate flower oblong, obtuse, reddish brown with green, not excurrent, midvein; scale of pistillate flower spatulate oblong, obtuse to aristate, deep purplish to almost black with the midvein obsolete, narrower than the perigynium; perigynium stipitate, erect, elliptical oblong, minutely granular above, two-nerved, pale green with purplish spots above, the beak short, emarginate; stigmata three or, sometimes, two, the style not exerted.

Alaska: Chistachina River, lat. 63, between Cook inlet and the Tanana River, collected by Captain E. F. Glenn, and British Columbia: Glacier, alt. 4122 ft., by Zoë W. Palmer.

Carex venustula is a near ally of *C. Montanensis* Bail., although it would not seem so if we compare the diagnoses alone. For it is hard to understand how specimens of authentically determined *C. Montanensis* can be described as belonging "to the Rigidæ, being allied to *C. Tolmiei*, yet having the habit of *C. Magellanica*." The diagnosis* is very incomplete and in several points incorrect. However, the main distinction between the two depends especially upon the structure of the scales and the perigynium: the former being about as long as the very broadly elliptical perigynium in *C. Montanensis*, while in the other species the scales, obtuse to aristate, are much shorter than the elliptical oblong perigynium. Common to both are the long-peduncled drooping spikes of dark color, the short stem-leaves and aphyllopodic culms.

Carex microchaeta sp. n.

Rhizome stoloniferous with persisting, brownish scale-like leaves; leaves shorter than the culm, broad, flat and scabrous along the revolute margins; culm from 10 to 20^{cm} in height, erect, coarse and stiff, triangular, scabrous, phyllopodic; spikes three to four, the terminal and, sometimes, the uppermost lateral staminate, the others pistillate, contiguous, erect, sessile, or the lowest one shortly peduncled, all short, thick and dense-flowered, subtended by sheathing bracts with the blades shorter than the inflorescence; scales of staminate and pistillate flowers, elliptical oblong, acuminate, purplish black with pale midvein extended into a short, scabrous awn, longer but narrower than the perigynium; perigynium stipitate, erect, elliptical, granular, two-nerved, purplish spotted above, whitish below, the beak short, bifid; stigmata three, the style exerted.

Yukon: Klondike, Indian Divide, collected by Professor John Macoun (No. 53,877).

The affinity is with *C. Tolmiei* and *C. spectabilis* of the *Melananthæ*.

* Botanical Gazette, 1892, p. 152.

Carex spectabilis Dew.*

This species, although well defined by Dewey (l. c.), has been overlooked by several authors and has been described as new "*C. invisida* Bailey," or confounded with various other species, for instance, with *C. macrochaeta* Mey. var. *pseudopodocarpa* Kükthl., and *C. podocarpa* R. Br. We can add nothing to the diagnosis except that the culm is aphyllopodic, and that the scale-like leaves of the densely matted rhizome become fibrillose. It is said to have been originally collected in "the Arctic Region," but since then it has been found in several places in the mountains of British Columbia, Washington and California. In regard to *C. podocarpa* R. Br. we might state that Mr. C. B. Clarke has informed us that a careful examination of Robert Brown's specimen has convinced him that it is merely a young specimen of *C. rariflora* Sm.

Carex vulgaris Fr.

This plant offers an excellent example of a species distributed over a wide geographical area and possessed of great plasticity in respect to variation throughout the northern hemisphere. And so numerous are the varieties that Fries thought it would require a book to enumerate and describe them all; moreover, the variation is expressed in quite a distinct way wherever the plant occurs, in northern Europe or in the northwestern parts of this continent, where the species appears to be best represented. The species was already known to Tournefort and Ray as "*Cyperoides*" and "*Gramen*," while Linnæus was the first to describe it as a "*Carex*": *nigra verna vulgaris* (Flora Lapponica No. 330). Since then it has been described as *C. Goodenoughii* by Gay; a name, however, that only applies to the variety "*stolonifera*," while the typical form, as it occurs in Lapland, has received the name "*vulgaris*" by Elias Fries (Mant., III, p. 153). The plant is so well known and so well described that it is not necessary to reproduce the diagnosis *in toto* for the sake of illustrating the species as it occurs on this continent, but we might quote a few words about the structure of the perigynium. This organ is by Fries (l. c.) described as being sessile, persisting, roundish-elliptical, many-nerved and longer than the obtuse scales; that the perigynium, sometimes, is nerveless, is evident from the description in Hartman's Flora of Scandinavia (11th edit.). If we now examine some of the most characteristic European varieties, Danish, Norwegian, Swedish and German specimens for instance, the perigynium appears with an outline of from roundish to very narrow elliptical, with a short stipe or strictly

* This Journal, vol. xxix, p. 248, 1836.

sessile, with the surface granular to densely verrucose, with or without a few spinulose projections along the upper margins, with the orifice of the short beak wholly glabrous or minutely spinulose, and finally with many very prominent nerves, with only a few and quite faint or apparently with none at all, the two marginal nerves being usually obsolete. Accompanying these perigynial structures a pronounced variation in habit occurs: in respect to the rhizome, the relative position of the pistillate spikes, the length of the peduncles, the length of the spikes, of the bracts, etc., distinctions that have proved to be sufficiently valid for establishing a number of varieties, especially in Northern Europe. Among these are, for instance, "*tornata* Fr.," which is densely caespitose, with thick, rigid culms, broad leaves and heavy spikes, "*juncea* Fr.," a very slender form with convolute, filiform leaves and remote spikes, "*stolonifera* (Hoppe)" with long stolons and short, curved culms, "*longe pedunculata* Blytt" with the culms, tall, nodding at the apex and with long-peduncled, dark spikes of which the scales are acute and longer than the perigynia, "*rigida* Blytt" which grows in dense tufts and of which the culms and leaves are very stiff and scabrous, besides the pistillate spikes are very long, linear and often androgynous, "*atra* Blytt" with slender culms, and black, sessile spikes, mostly in a dense head, and "*anomala* Blytt" with the terminal spike gynæcandrous. By studying the species as it is represented in this country, we have seen the typical *C. vulgaris* from Alaska, Colorado, Cape Breton Island and Nantucket, Massachusetts, while the var. *stolonifera* has been collected in Labrador. It appears, however, as if the species is best represented in the northwestern parts of this continent — Alaska and Yukon, where certain varieties have been collected in large quantities and at several stations. Of these we propose as new

var. *limnophila* nob.

Rhizome densely caespitose; culms curved, only about 10^{cm} in length; spikes very short and thick, sessile and contiguous, almost capitate, the terminal mostly gynæcandrous; perigynium stipitate, elliptical, denticulate near the beak, purplish spotted above.

Collected on St. Paul Island, Bering Sea, growing in mud by marshes. Mr. James M. Macoun (No. 16,613); also on a nunatak in Columbia glacier, Prince William's Sound, by Messrs. Coville and Kearney (No. 1365).

This variety bears a strong resemblance to *C. rufina* Drej., from which it differs only in its more robust habit and the

structure of the perigynium. However, it is interesting to see that some Scandinavian authors are inclined to consider *C. rufina* as a reduced form of *C. vulgaris*.

var. *hydrophila* nob.

Rhizome very slender, stoloniferous, the scale-like leaves persisting, shining, purplish brown; leaves about as long as the very slender culms, narrow but flat; spikes cylindrical, dense-flowered, peduncled, erect or somewhat spreading; perigynium prominently stipitate, roundish-elliptical, wholly glabrous and nerveless.

Yukon: in water, Colorado Creek, collected by Professor John Macoun (No 53,843).

var. *lipocarpa* nob.

Rhizome densely cæspitose with persisting, light brown sheaths; leaves glaucous, narrow but flat as long as the culms; culms from 15 to 40^{cm} in height, slender, but erect; spikes long and very dense-flowered except towards the base, more or less peduncled, especially the lowest one, which is often developed from near the base of the culm and branched; bracts foliaceous and quite long; perigynium with a long stipe, elliptical, glabrous, many-nerved, the beak very distinct and proportionately long.

Collected in Alaska at several stations, on Vancouver Island, in the Selkirk Mountains, British Columbia, and in the Chilliwack Valley, by Mr. James M. Macoun and others.

The fact that the perigynium is early deciduous in this variety has led several authors to the belief that it is identical with the South American *C. decidua* Boott, but the terminal spike is, in this species, nearly always gynæcandrous and the perigynium is oblong-ovate, denticulate-serrate.

Some of the specimens from Alaska were sent to Mr. C. B. Clarke of Kew, who kindly informed the writer that these were identical with Scouler's Columbia River plant, which Boott first named *C. decidua*, but afterwards corrected to *C. vulgaris* Fr.

The so-called *C. interrupta* Bekl. var. *impressa* Bailey is, also, according to Mr. Clarke, a form of *C. vulgaris*, and almost like the typical plant.

var. *elatior* Lang.

Rhizome cæspitose; culms and leaves until 55^{cm} in length, very slender; spikes sessile, cylindrical and dense-flowered, some

what remote, subtended by short, filiform bracts; perigynium elliptical, stipitate, many-nerved, glabrous.

Nova Scotia: Halifax, collected by Professor John Macoun (No. 16,678). The specimens were identified as var. *strictæformis* Bail., but they do not differ in any way from our European material, although the nerves of the perigynium are not always as prominent as in the American plant.

In comparing these North American varieties of *Carex vulgaris* with the European, we notice as a prominent feature for distinguishing these the strong development of the stipe in the former, and sometimes to such an extent as making the perigynia early deciduous. In the European forms the stipe is often very distinct, but seldom as long and slender as in the American. In regard to the nervation, the perigynium shows, as already stated, several variations, and a prominently many-nerved perigynium seems to be the most frequent among the representatives in this country.

The beak is, as a rule, very short in all European specimens, also in the American with the exception of the var. *tipocarpa*, where it is quite prominent.

There is, still, another plant which may belong here, but of which the writer has only studied a scant supply of material. This is *C. Kelloggii* W. Boott, which seems very near the typical *C. vulgaris*, by the very short beak and stipe of the perigynium.

Carex sphacelata sp. n.

Rhizome ascending, stoloniferous with persisting, deep reddish brown scale-like leaves; leaves about as long as the culm, rather broad and flat, glabrous; culm from 30 to 40^{cm} in height, erect, stiff, triangular, glabrous, phyllopodic; spikes three to five, the terminal and, sometimes, the uppermost lateral staminate, the others pistillate, contiguous or the lower ones remote, sessile or short-peduncled, erect, dense-flowered, subtended by foliaceous, sheathless bracts with the blades broad and longer than the inflorescence; scale of staminate flower linear-lanceolate, obtuse, deep brown with pale midrib; scale of pistillate flower ovate-lanceolate, almost black with the midvein obsolete, shorter and much narrower than the perigynium; perigynium stipitate, erect, broadly elliptical, granular, two-nerved, purplish-spotted above, whitish below, the beak short, entire; stigmata two, the style enclosed.

Collected in Yukon: Colorado Creek, by Professor John Macoun (No. 53,847).

This species may be placed near *C. aquatilis* Wahl.

Carex chionophila sp. n.

Rhizome caespitose with persisting, brown leaf-sheaths; leaves longer than the culm, narrow but flat, scabrous; culm from 30 to 40^{cm} in height, erect, slender, trigonous, scabrous, phyllopodic; spikes four to five, the terminal staminate, the lateral pistillate or with a few staminate flowers at the apex, contiguous, sessile or the lowest one peduncled, erect, dense-flowered, cylindrical and until 4^{cm} in length, subtended by sheathless bracts with blades about as long as the inflorescence; scale of staminate flower oblong, obtuse, purplish with pale midvein; scale of pistillate flower ovate-oblong, obtuse, black with pale midvein, shorter and much narrower than the perigynium; perigynium minutely stipitate, erect, pyriform, granular above, nerveless, light green above, whitish below, the beak very short, entire; stigmata two or three.

Collected in a brook, West Dawson, Yukon, by Professor John Macoun (No. 53,849).

Allied to *C. sphacelata* but is readily distinguished by the characters enumerated above; it is altogether a more graceful plant with slender culms and narrower leaves, besides of a much lighter color.

Carex consimilis sp. n.

Rhizome horizontal, stoloniferous with persisting light brown scale-like leaves; leaves about as long as the culm, narrow with revolute margins, scabrous; culm about 25^{cm} in height, erect, stiff, triangular and scabrous, phyllopodic; spikes four, the terminal staminate, the lateral pistillate or sometimes androgynous, contiguous, sessile or the lowest one short-peduncled, erect, subtended by very short, sheathless bracts; scale of staminate flower linear-lanceolate, light brown; scale of pistillate flower ovate-lanceolate, acute to obtuse, black with the midvein obsolete, longer, but narrower than the perigynium; perigynium minutely stipitate, erect, orbicular, granular above and sharply denticulate along the upper margins, two-nerved, purplish spotted above, light brownish green below, the beak short, entire; stigmata two, style short but exerted.

Collected near Klondike, Indian Divide, Yukon, by Professor John Macoun (No. 53,878).

In habit not unlike *C. hyperborea* Drej., but the perigynium is very different.

Carex cyclocarpa sp. n.

Rhizome stoloniferous with persisting, purplish scale-like leaves; leaves shorter than the culm, flat, but narrow; culms from 12 to 42^{cm} in height, slender, but erect, or slightly curved,

triangular, scabrous, phyllopodic; spikes three to four, the terminal staminate, the lateral pistillate or, sometimes, the upper one androgynous, contiguous, sessile or the lowest one peduncled, erect, dense-flowered, short, subtended by bracts, of which only the lowermost is foliaceous, shorter than the spike and with black auricles; scale of staminate flower linear-lanceolate, brown with pale midvein; scale of pistillate flower ovate, obtuse, black with the midvein obsolete, shorter and much narrower than the perigynium; perigynium shortly stipitate, erect, turgid, nearly globose, granular, two-nerved, brownish green with purplish spots above, the beak minute, entire; stigmata two or three, the style exerted.

Grows in tufts in woods and in boggy places: West Dawson, mountains back of Dawson, Hunker Creek, Yukon, collected by Professor John Macoun (Nos. 53,842, 53, 55, and 58). This together with the preceding, *C. consimilis*, are no doubt close allies, but they appear so distinct from the other *Microrhyncha*, that their place within the section seems uncertain. In some respects they resemble *C. vulgaris* and *C. rigida*, in others *C. caespitosa* and *C. lugens*, yet they may "ad interim" be placed with *C. nudata* between *C. aquatilis* and *C. interrupta*, as indicated in "Greges Caricum."

Carex limnocharis sp. n.

Rhizome stoloniferous with persisting, purplish scale-like leaves; leaves as long as the culm, rather narrow, flat, scabrous; culm 30^{cm} in height, erect, but curved at the apex, triangular, glabrous, phyllopodic; spikes five, the terminal staminate, the lateral pistillate or the uppermost androgynous, contiguous, peduncled, spreading, not very dense-flowered, about 5^{cm} in length, but thin, subtended by sheathless, foliaceous bracts, much longer than the inflorescence; scale of staminate flower linear-lanceolate, acute, light brown; scale of pistillate flower ovate acuminate, reddish brown with green, not excurrent midrib, narrower but longer than the perigynium; perigynium stipitate, erect, broadly elliptical, granular above, nerveless, pale green, the beak short, entire; stigmata two, style enclosed.

In muddy places, Klondike River, Yukon, collected by Professor John Macoun (53,846).

Allied to *C. acutina*, but more robust; a beautiful species with long, slender spikes of reddish brown color, in habit much like the European *C. proliza* Fr.

Carex millegrana sp. n.

Rhizome wanting, but apparently caespitose with persisting reddish-brown leaf-sheaths: leaves shorter than the culm, nar-

row, but flat, scabrous; culms until 60^{cm} in height, slender, triangular, scabrous, phyllopodic; spikes five to six, the terminal staminate, the lateral pistillate or the uppermost androgynous, contiguous, nearly sessile, spreading to almost drooping, from 4 to 8^{cm} in length, slender, but very dense-flowered except towards the base, subtended by sheathless bracts with very short blades, the lowest barely half as long as the inflorescence; scale of staminate flower elliptical oblong, pale reddish-brown with green midvein; scale of pistillate flower elliptical, a little darker, spreading and somewhat shorter than the perigynium; perigynium sessile, elliptical, granular, compressed, prominently two-nerved (the lateral), pale greenish brown, the beak short, emarginate: stigmata two.

South Dakota; Rosebud Creek, collected by Mr. E. J. Wallace.

In general habit much like *C. angustata*, but we prefer, nevertheless, to place it near *C. lenticularis*.

Carex dives sp. n. (figs. 8–9).

Rhizome wanting, apparently caespitose, lower leaf-sheaths light-brown, not fibrillose; leaves as long as the culm, quite broad and flat, scabrous along the margins; culms up till 60^{cm} in height, erect, stiff, triangular, very scabrous, phyllopodic; spikes from six to seven, the terminal and uppermost one or two lateral staminate, the others pistillate, more or less remote and peduncled, especially the lowest one, nodding, very dense-flowered, from 4 to 10^{cm} in length, subtended by sheathless, foliaceous bracts of which the lower ones reach high above the inflorescence; scale of staminate flower linear-oblong, mucronate, pale brown with green midvein; scale of pistillate flower (fig. 8) lanceolate oblong, acute, purplish with green midvein, much narrower, but about as long as the perigynium; perigynium (fig. 9) minutely stipitate to sessile, erect, roundish, compressed, granular, two-nerved, sparingly denticulate along the upper margins, pale green with scattered purplish spots and streaks, the beak very short, entire; stigmata two.

Collected in Oregon by Mr. L. F. Henderson; in California: "in open swamps with *C. utriculata*, 12 mile house San Jose R. R." collected by H. N. Bolander, and in Chilliwack Valley, British Columbia, by Mr. James M. Macoun.

The affinity is with *C. Sitchensis* Prescott.

Carex salina Wahl.

The statement that "this species does not occur on the western side of this continent"* is a mistake, since it has been

* Memoirs Torrey Bot. Club, i, 45, 1889.

collected at several stations on the Alaskan coast, sometimes associated with its near ally, *C. subspathacea* Wormskj.

Carex hæmatolepis Drej.

Described by Drejer* as follows: "Spica mascula 1, femin. 3-5 elongatis cylindræis laxifloris in pedunculo lævi valido erectiusculis v. demum nutantibus, squamis ovatis acutis serrulato-mucronulatis perigynia ovali-ovata substipitata subsuperantibus, stigmatibus 2-3". "Squamæ ♂ atro-sanguineæ tenuissime punctulatæ nervo tenuissimo discolore, ovatæ, acutæ serrulato-aristatæ v. muticæ, perigynia fere tegentes et superantes. Perigynia obsolete nervata decolora stramineo-viridia, rostro brevissimo integro." Only known from Greenland, but may be found on the northeastern coasts of this continent. It shows some resemblance to *C. cryptocarpa*, but differs from this by the nearly erect pistillate spikes, the mucronate scales and the much narrower perigynia.

Carex cryptocarpa C. A. Mey.

To American botanists this species is so well known and well understood that it should hardly be necessary to make any further mention of it as a little known species. However in a recently published paper dealing with Arctic *Carices*,† the species is enumerated as identical with *C. Lyngbyei* Hornem., with *C. filipendula* Drej. and with *C. capillipes* Drej. and has received the new name *C. Lyngbyei* Hornem., this being older than the name of Meyer. If now the diagnosis of these four formerly recognized species had been drawn up so as to demonstrate their identity, we should have no objection to make, but it seems to us that a comparison of the plants themselves and the original diagnoses makes it rather unnatural to combine them as only one, a fact that becomes more evident when we examine the renewed description of *C. Lyngbyei* (l. c.).

Habitually these four species are somewhat like each other, but *C. cryptocarpa* is readily distinguished by being very robust with broad leaves and heavy spikes, while the others, especially *C. Lyngbyei*, is exceedingly slender in all its parts. The specific characters are, however, to be drawn from the structure of the scales of the pistillate spike and of the perigynium, and we have noticed the following distinctions: The scale is in *C. cryptocarpa*: oblong to oblong-lanceolate, acute with a broad midvein; in *C. Lyngbyei*: lanceolate with the midvein extended into a very long, serrulate awn; in *C. fili-*

* Revisio critica Caricum borealium (Naturhist. Tidsskr. Kjöbenhavn 1841).

† Ostenfeld, C. H., Flora Arctica, Copenhagen, 1902, p. 75.

pendula: ovate, acute to aristulate; in *C. capillipes*: ovate-lanceolate, mucronate. The perigynium is in *C. cryptocarpa*: broadly elliptical, minutely scabrous along the upper margins, and with the veins hardly visible; in *C. Lyngbyei*: obovate, glabrous, prominently veined; in *C. filipendula*: oval to obovate, glabrous, obsolete veined; in *C. capillipes*: subovate, scabrous along the upper margins, obsolete veined. In Flora Arctica the description of these four species "*C. Lyngbyei*" reads thus: "scales three-nerved, acuminate with elongated midvein longer than the faintly nerved utricles." In the hundreds of specimens which we have examined of the Alaskan *C. cryptocarpa*, we have invariably found the scales simply acute, and we failed to observe any deviation from the description of the perigynium. In regard to *C. filipendula*, of which we have examined material from Greenland and Iceland, we cannot but express our doubt as to the identity of this with *C. cryptocarpa*, and we are indeed much more inclined to consider it as a nearer ally of *C. salina*, an opinion that has already been pronounced by such critical students of the genus as Blytt and Boott. *C. Lyngbyei* is too characteristic a species to be confounded with any of the others and appears, thus, to be the only endemic species of the Færø islands; and finally in regard to *C. capillipes* this is yet imperfectly known, but as long as some distinctive characters have been noted, especially in the perigynium, it would be safer to keep it as a distinct species until it is again studied and better known.*

Carex macrochaeta C. A. Mey.

Although being exceedingly frequent on the Alaskan coast and the islands, the species shows but slight variation. The terminal spike is usually wholly staminate, but we found, however, a few specimens from Unalaska in which this was either androgynous or gynæcandrous or even entirely pistillate. Two quite striking varieties were noticed, viz:

var. *emarginata* nob.

Taller and more slender than the typical plant; spikes very long, loose-flowered, remote; scales of pistillate spike prominently emarginate with a seta four times as long as the body of the scale.

Alaska: Kukak Bay, collected by Messrs. Coville and Kearney.

* To give the reader some further idea of the treatment of the *Carices* in Flora Arctica, we might quote, for instance, the synonymy given of *Carex rotundata*: "*ambusta*," "*compacta*," "*membranacea*" and "*vesicaria* γ *alpigena*." Such errors are the inevitable result of compilation without access to authentic material and to the most important literature, the works of Boott for instance. It is, indeed, a pity to see the interesting Arctic plants submitted to so poor a treatment.

var. *macrochlæna* nob.

Very robust with four short and heavy pistillate spikes; perigynium very large and longer than the simply mucronate scale.

St. Paul Island, Bering Sea, collected by Mr. James M. Macoun.

Carex nesophila sp. n.

Rhizome stoloniferous with light brown, fibrillose, scale-like leaves; leaves shorter than the culm, relatively broad and flat, glabrous; culm very variable in height from 12 to 38^{cm}, erect, slightly bent near the apex, glabrous, phyllopodic; spikes from two to four,* the terminal staminate, the lateral pistillate or very seldom androgynous, contiguous, sessile and erect or the lowermost borne on exserted peduncles and, sometimes, nodding, all subtended by sheathless bracts with blades about as long as the inflorescence or shorter; scale of staminate flower elliptical, acute, deep purplish with three green midveins; scale of pistillate flower broadly elliptical, acute, purplish to almost black with faintly visible midrib of three veins; perigynium a little longer, but narrower than the scale, sessile, erect, from oval to elliptical oblong, few-nerved, pale green, the beak purplish, very short, entire or obliquely cut; stigmata three or, sometimes, two, the style not exserted.

St. Paul Island, Bering Sea: abundant on uplands with *Sieversia Rossii*, *Artemisia globularis* and *Potentilla villosa*, but not associated with any species of *Carex*, collected by Mr. James M. Macoun (Nos. 16,614 and 16); also on Popoff Island, Shumagin Islands, by Mr. T. Kincaid.

Carex nesophila resembles sometimes certain forms of *C. salina*, but the structure of the perigynium is always more like that of *C. macrochæta*, besides the spikes being contiguous. Although being a rather inconspicuous plant it has been collected in great numbers and only on the islands in Bering Sea, hence the name "*nesophila*."

Carex Schottii Dew. (figs. 10-11).

The species was originally founded on immature specimens from Santa Barbara, California, some of which are in the herbarium at Kew; Mr. Clarke has examined these and informed us that Bolander's specimens No. 1570, collected in swamps at Oakland and in salt-marshes near Fort Point, San Francisco, are identical with these; also identical with Bolander's plant

* As to the number of spikes we find in twenty-two specimens:

15	specimens with 3 lateral spikes.
5	" " " 1 " "
2	" " " 2 " "

is the so-called *C. obnupta* Bail., of which Mr. J. W. Congdon has sent us very fine material collected in swamps, Mendocino County, and they all answer the diagnosis of *C. Schottii* very well, but seem distinct from the little that we know of Dewey's *C. Barbaræ*. (Fig. 10 = scale of pistillate spike; fig. 11 = perigynium, both of *C. Schottii*.)

Carex magnifica Dew.

Through the kindness of Mr. Clarke we have learned that most of the specimens of so-called *C. Sitchensis* belong to this unpublished species of Dewey, who sent it to Boott. The real *C. Sitchensis* is a very different plant with slender and remote pistillate spikes, of which we have studied authentic material in the herbarium of Bischoff, which is now in the possession of the St. Louis botanical garden. This species, *C. Sitchensis* Prescott, is known from the coasts of Alaska and Oregon, and has been described as *C. Howellii* Bail.

Mr. Clarke, furthermore, states that Boott's plate 594 (*C. laciniata*), as to the plant depicted, represents *C. Sitchensis* Presc. vera, while the details are taken from the old, true *C. laciniata*. Identical with *C. Sitchensis* Presc. are, also, *C. cryptocarpa* Franch. and *C. atrata* Hook et Arn.

Carex lacunarum sp. n. (figs. 12–13).

Roots thick, very hairy; rhizome cæspitose with persisting, reddish brown leaf-sheaths; leaves as long as the culm, relatively narrow, carinate, glaucous and very scabrous; culm about 60^{cm} in height, coarse, triangular, scabrous, phyllopodic; spikes three to five,* the terminal and uppermost lateral staminate, the others pistillate or androgynous, more or less contiguous, sessile or the lower ones peduncled, nodding, cylindric, very dense-flowered, from 2 to 8^{cm} in length, subtended by bracts with blades longer than the inflorescence (fig. 12), sheathless or the lowest one with a short sheath; scale of staminate flower lanceolate, erosely denticulate above, three-nerved, pale purplish with hyaline margins and base: scale of pistillate flower (fig. 13) broadly ovate, acuminate, mucronate to aristate, erosely denticulate above, three-nerved, purplish brown with hyaline margins; perigynium (fig. 13) longer than the body of the scale, sessile or nearly so, erect, rhombic-oval, biconvex, coriaceous, two-nerved, slightly denticulate along the upper margins, otherwise glabrous, pale brown, the beak short, entire; stigmata two.

* As to the number of spikes, staminate and pistillate, we notice in:

7 specimens	2 staminate spikes.
2	1 " "
4	" 3 pistillate "
5	" 2 " "

California: Lagoon at Sebastopol, Sonoma County, collected by Mr. A. A. Heller (No. 5797), and in a marsh at Berkeley, collected by Mr. J. Burr Davy. The species is nearest related to *C. magnifica* Dew., but is readily distinguished by the lighter color of the spikes and the very dense and regular arrangement of the pistillate flowers.

Carex siderosticta Hance.

We have placed this as a member of the *Lejochlœnae*, and it is interesting to see that in addition to the shape of the perigynium, the species agrees, also, by its monopodial rhizome and long-sheathed bracts, with the central forms: *C. laxiflora*, *Careyana*, etc. Otherwise the lateral spikes are all androgynous, a character which we do not think is sufficient for the segregation of the species from the *Carices genuinæ*.

It is somewhat remarkable that the rhizome is rather slender, creeping and stoloniferous, while most of the monopodial *Carices* have a short, cæspitose rhizome.

Carex cryptostachys Brongt.

As already stated by Boott, this must be referred to the *Dactylostachya*, and it possesses the same monopodial rhizome as is observable in *C. digitata* for instance; the structure of the perigynium is much the same, but the ramified culms with quite numerous, androgynous spikes, makes the species appear as the most evolute type of the section.

Carex physochlœna sp. n.

Rhizome loosely cæspitose with persisting purplish leaf-sheaths; leaves much shorter than the culm, very narrow, but flat, scabrous; culms from 30 to 42^{cm} in height, erect, slender, but stiff, trigonous, scabrous, only leafy at the base, phyllopodic; spikes two to three, the terminal staminate, the lateral pistillate, mostly contiguous, sessile, erect, very thick and dense-flowered, subtended by short, filiform, sheathless bracts, the lowest one spreading and about as long as the spike; scale of staminate flower obovate-oblong, obtuse, purplish with green midvein and pale margins; scale of pistillate flower ovate, obtuse, deep purplish to almost black with the midvein obsolete, shorter than the perigynium; perigynium sessile, spreading, oval to oblong, inflated, glabrous, faintly nerved, purplish above, yellowish below, the beak short, bidentate; stigmata three, the style flexuose within the perigynium.

Collected on Coal Creek hill, near the Yukon River, by Mr. Fr. Funston (No. 139).

Very distinct by the heavy, dark spikes contrasting the slender culm and narrow leaves: its nearest ally is *C. physocarpa*.

Brookland, D. C., October, 1903.

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