The genus Carex in North-West America.

By

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The present enumeration of *Carices* is based upon some very extensive collections from Alaska, Yukon, British Columbia, Washington, Idaho and Oregon, made by Messrs. Wm. C. Cusick, Walter H. Evans, L. F. Henderson, C. V. Piper and Wm. N. Suksdorf; the writer has, also, had access to the herbaria of the Canadian Geological Survey and of the U. S. National Museum. For the liberal loan of these collections and for the numerous specimens, that have been kindly donated to the writer, we wish to express our sincerest gratitude.

As stated in a previously published paper,[1]) it is our intention to discuss the geographical distribution of these species within the area given, and throughout the northern hemisphere: the arctic regions and the mountaineous districts farther South. While thus offering these data in regard to the geographical distribution, we have thought that the enumeration might be of some interest to students of plantgeography, as a record of all the species that have been found growing within this area, from which will be seen the predominance of certain „greges", the total absence of others, and finally the association of allied types with apparently local and somewhat isolated species.

By giving an account of the association of such isolated types, we hope that the establishment of these may be better understood than by the diagnoses alone. For instance in regard to several of the species, which have been described as new (l. c.), it appears as if their association with more or less related species to some extent justifies our views in considering them as distinct, at least so long as no intermediate forms are known to be in existence.

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[1]) The author: Studies in the *Cyperaceae* (Am. journ. of sc. Vol. XX. 1905. p. 301).

A. Synopsis of the species.[1])

	North-West America							
	Alaska	Yukon	British Columbia	Washington	Idaho	Oregon	Atlantic States	Rocky Mountains of Colorado
Vigneae.								
Brachystachyae nob.[2])								
tenuiflora Wahl.	†	†	.	.	.	.	†	.
loliacea Schk.	†	†	.	.	.	.	.	.
canescens L.	†	†	†	†	†	†	†	†
arcta Boott	.	.	†	†	†	†	†	.
vitilis Fr.	†	†	†	†	.	.	†	.
Bonanzaensis Britt.	.	†	.	.	.	.	.	.
tenella Schk.	†	†	†	†	†	†	†	†
Neurochlaenae nob.								
nardina Fr.	†	.	†	†	.	†	.	†
glareosa Wahl.	†	.	.	.	.	.	.	.
lagopina Wahl.	†	.	†	.	.	.	.	.
Pribylovensis Mac.	†	.	.	.	.	.	.	.
cryptantha nob.[3])	†	.	.	.	.	.	.	.
neurochlaena nob.	.	†	.	.	.	.	.	.
norvegica Willd.	†	.	.	.	.	.	†	.
Argyranthae nob.								
Deweyana Schw.	.	.	†	†	†	†	†	†
Bolanderi W. Boott	.	.	†	†	.	†	.	.
Astrostachyae nob.								
gynocrates Wormskj.	†	†	†	.	.	.	†	†
stellulata Good.	†	.	†	†	†	†	†	†
„ var. *excelsior* Bail.	.	.	.	†	.	.	†	.
interior Bail.	.	.	†	.	.	.	†	.
sterilis Willd.	.	.	†	.	†	.	†	.
laeviculmis Meinsh.	†	.	†	†	†	†	.	.
Acanthophorae nob.								
Hookeriana Dew.	.	.	.	†	.	†	.	†
occidentalis Bail.	.	.	.	†	.	.	.	†
vagans nob.	.	.	.	.	†	†	.	.
Hoodii Boott	†	.	†	†	†	†	.	†
conjuncta Boott	.	.	.	†	.	.	†	.
phaeolepis nob.	.	.	.	.	.	†	.	.
vicaria Bail.	.	.	.	†	†	†	.	.
„ var. *costata* Bail.	.	.	.	†	.	†	.	.

[1]) A cross (†) indicates the presence of the species, a dot (.) its absence.

[2]) The greges have been described by the author in Am. journ. of sc. Vol. XVI. 1903. p. 445.

[3]) The diagnosis of this species (Am. journ. of sc. Vol. X. 1900. p. 267) should read: „the terminal spike gynaecandrous, the lateral pistillate".

	North-West America							
	Alaska	Yukon	British Columbia	Washington	Idaho	Oregon	Atlantic States	Rocky Mountains of Colorado
Stenorhynchae nob.								
stipata Muehl.	.	.	†	†	†	†	†	.
Sychnocephalae nob.								
sychnocephala Carey	.	.	†	.	.	.	†	.
Xerochlaenae nob.								
marcida Boott	.	.	†	†	†	†	.	†
Sartwellii Dew.	†	.	.	.	.	.	†	†
Douglasii Boott	.	.	†	†	†	†	.	†
irrasa Bail.	.	.	.	†	†	.	.	.
macrocephala Willd.	†	.	.	†	.	†	.	.
„ var. *bracteata* nob.	†	.	.	.	.	.	.	.
Phaenocarpae nob.								
teretiuscula Good.	†	†	†	†	†	†	†	†
„ var. *ramosa* Boott	.	.	†	†	†	†	†	.
Athrostachyae nob.								
Crawfordii Fern.	.	.	†	†	.	.	†	.
scoparia Schk.	.	.	†	.	†	†	†	.
athrostachya Olney	†	.	†	†	†	†	.	†
festiva Dew.	†	.	†	†	†	†	.	†
„ var. *Haydeniana* (Oln.)	†	.	†	.	.	.	.	†
„ „ *pachystachya* Bail.	†	.	†	†	†	.	.	†
„ „ *decumbens* nob.	.	.	.	†	†	†	.	†
„ „ *stricta* Bail.	.	.	.	†	†	.	.	†
multimoda Bail.	.	.	.	†	†	†	.	.
petasata Dew.	†	.	†	†	†	†	.	†
siccata Dew.	.	†	†	.	†	†	†	†
pratensis Drej.	†	†	†	†	†	†	†	†
aenea Fern.	.	†	†	.	.	.	†	.
Liddonii Boott	.	.	†	†	†	†	†	†
Bonplandii Kth. var.	.	.	†	†	†	.	.	†
Pterocarpae nob.								
straminea Schk.	.	.	.	†	†	†	†	.
„ var. *brevior* Dew.	.	.	†	†	.	.	†	.
„ „ *congesta* Boott	.	.	.	†	.	†	.	.
„ „ *festucacea* Boott	.	.	†	†	†		†	.
straminiformis Bail.	.	.	.	†	.	†	.	†
Bebbii Olney	.	.	†	.	.	.	†	.
Microcephalae nob.								
capitata L.	†	†	.	.	.	.	†	.
Cephalostachyae nob.								
foetida All.	.	.	.	†	.	†	.	†
pansa Bail.	.	.	.	†	.	†	.	.

	North-West America							
	Alaska	Yukon	British Columbia	Washington	Idaho	Oregon	Atlantic States	Rocky Mountains of Colorado
Gayana Dew.	.	.	.	+	.	.	.	.
stenophylla Wahl.	.	+	.	.	.	.	.	+
Sphaerostachyae nob.								
incurva Lightf.	+	.	.	.	.	.	.	+
Carices genuinae.								
Melananthae Drej.								
alpina Sw.	+	+	+	.	.	.	.	+
atrata L.	.	+	+	.	+	.	.	+
chalciolepis nob.	.	.	.	+	.	.	.	+
Mertensii Presc.	+	.	+	+	+	+	.	.
Parryana Dew.	.	.	+	.	.	.	.	+
stylosa Mey.	+	+	.	.	.	.	.	.
accedens nob.	.	.	.	+	.	+	.	.
Raynoldsii Dew.	.	.	.	+	.	+	.	+
Buxbaumii Wahl.	+	.	+	+	+	+	+	+
Gmelini Hook.	+	.	.	.	.	.	.	.
ustulata Wahl.	+	.	.	.	.	.	.	.
venustula nob.	+	.	+	.	.	.	.	.
Montanensis Bail.	.	+	.	.	+	.	.	.
microchaeta nob.	.	+	.	.	.	.	.	.
spectabilis Dew.	.	.	+	+	.	+	.	.
Microrhynchae Drej.								
prionophylla nob.	.	.	.	.	+	.	.	.
lugens nob.	+	+	.	.	.	.	.	.
vulgaris Fr.	+	.	.	.	.	.	.	+
„ var. *hydrophila* nob.	.	+	.	.	.	.	.	.
„ „ *lipocarpa* nob.	+	.	+	+	+	+	.	.
„ *limnophila* nob.	+	.	.	.	.	.	.	.
limnaea nob.	.	.	.	.	.	+	.	.
gymnoclada nob.	.	.	.	+	.	+	.	.
brachypoda nob.	.	.	.	.	.	+	.	.
rigida Good.	+	+	.	.	.	.	+	+
„ var. *inferalpina* Laest.	+	.	.	+	.	.	.	.
aquatilis Wahl.	+	+	.	.	.	.	+	.
„ var. *epigejos* Laest.	+	.	.	.	.	.	+	.
sphacelata nob.	.	+	.	.	.	.	.	.
chionophila nob.	.	+	.	.	.	.	.	.
consimilis nob.	.	+	.	.	.	.	.	.
cyclocarpa nob.	.	+	.	.	.	.	.	.
interrupta Boecklr.	.	.	.	+	.	+	.	.
acutina Bail.	.	+	.	.	+	+	.	+

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	Alaska	Yukon	British Columbia	Washington	Idaho	Oregon	Atlantic States	Rocky Mountains of Colorado
limnocharis nob.	.	†	.	.	.	.	.	.
variabilis Bail.	.	.	†	†	†	†	.	†
pachystoma nob.	.	.	.	†	.	†	.	.
lenticularis Michx.	†	.	.	.	†	.	†	.
Sitchensis Presc.	†	.	.	†	.	†	.	.
dives nob.	.	.	†	†	.	†	.	.
Nebrascensis Dew.	.	.	†	†	†	†	.	†
eurycarpa nob.	.	.	.	†	.	.	.	.
oxycarpa nob.	.	.	.	†	.	.	.	.
pulchella nob.	.	.	.	.	.	†	.	.
laciniata Boott	.	.	.	.	.	†	.	.
scopulorum nob.	.	.	.	†	.	†	.	†
campylocarpa nob.	.	.	.	.	.	†	.	.
Aeorastachyae Drej.								
subspathacea Wormskj.	†	.	.	.	.	.	.	.
salina Wahl. var. *cuspidata*	†	.	.	.	.	.	.	.
cryptochlaena nob.	†	.	.	.	.	.	.	.
cryptocarpa Mey.	†	.	†	†	.	†	.	.
macrochaeta Mey.	†	†	.	†	.	†	.	.
„ var. *emarginata* nob.	†	.	.	.	.	.	.	.
„ „ *macrochlaena* nob.	†	.	.	.	.	.	.	.
nesophila nob.	†	.	.	.	.	.	.	.
aperta Boott	.	.	†	†	†	†	.	.
magnifica Dew.	†	.	†	†	.	†	.	.
Magellanica Lam.	†	†	†	†	.	.	†	.
limosa L.	.	†	†	†	†	†	†	.
rariflora Sm.	†	.	.	.	.	.	†	.
stygia Fr.	†	.	.	.	.	.	.	.
Cenchrocarpae nob.								
bicolor All.	†	†	†	.	.	.	.	.
aurea Nutt.	.	†	†	†	†	†	†	†
livida Willd.	†	.	†	.	.	.	†	.
Crawei Dew.	.	.	.	.	.	†	†	.
vaginata Tausch.	†	†	†	.	.	.	†	.
polymorpha Muehl.	.	.	.	†	.	.	†	.
Lejochlaenae nob.								
polytrichoides Muehl.	†	.	†	†	†	†	†	†
Geyeri Boott	.	.	†	†	†	†	.	†
multicaulis Bail.	.	.	.	.	.	†	.	.
Hendersonii Bail.	.	.	†	†	.	†	.	.
Dactylostachyae Drej.								
melanocarpa Cham.	†	.	.	.	.	.	.	.

	North-West America							
	Alaska	Yukon	British Columbia	Washington	Idaho	Oregon	Atlantic States	Rocky Mountains of Colorado
concinna R. Br.	.	†	†–†	.	.	.	.	.
Richardsonii R. Br.	.	.	†–†	.	.	.	.	.
Microcarpae Kuekthl.								
cinnamomea Oln.	.	.	.	.	.	†	.	.
Athrochlaenae nob.								
pyrenaica Wahl.	†–†	.	†–†	†–†	†–†	†–†		†–†
nigricans Mey.	†–†	.	†–†	†–†	†–†	†–†	.	†–†
Stenocarpae nob.								
lejocarpa Mey.	†–†	.	.	.	.	.	.	.
circinata Mey.	†–†	.	†–†	†–†	.	.	.	.
luzulaefolia W. Boott	.	.	.	.	.	†–†	.	.
ablata Bail.	.	.	†–†	†–†	†–†	†–†	.	.
„ var. *luzulaeformis* Bail.	.	.	.	†–†	.	.	.	.
misandra R. Br.	†–†	.	.	.	.	.	.	†–†
Lamprochlaenae Drej.								
rupestris All.	†–†	.			.	.	.	†–†
obtusata Liljebl.	.	†–†	†–†	.	†–†	.	.	†–†
pedata Wahl.	†–†	†–†	.	.	.	.	.	.
eburnea Boott	.	.	†–†	.	.	.	†–†	.
Elymanthae nob.								
filifolia Nutt.	.	†–†	.	†–†	†–†	†–†	.	†–†
Sphaeridiophorae Drej.								
scirpoidea Michx.	†–†	†–†	†–†	†–†	.	.	†–†	†–†
„ var. *stenochlaena* nob.	†–†	.	†–†	.	.	.	.	.
Rossii Boott	.	†–†	†–†	†–†	†–†	†–†	.	†–†
verecunda nob.	.	.	.	.	.	†–†	.	.
umbellata Schk.	.	.	†–†	†–†	.	†–†	†–†	.
„ var. *brevirostris*	.	.	†–†	†–†	.	.	†–†	†–†
globosa Boott	.	.	†–†	†–†	.	†–†	.	.
Whitneyi Oln.	.	.	.	.	.	†–†	.	.
Trichocarpae nob.								
Oregonensis Oln.	.	.	.	†–†	.	†–†	.	.
filiformis L.	.	.	†–†	†–†	†–†	†–†	†–†	.
lanuginosa Michx.	.	.	†–†	†–†	†–†	†–†	†–†	†–†
trichocarpa Muehl.	.	.	.	.	†–†	.	†–†	.
aristata R. Br.	.	†–†	.	†–†	.	†–†	†–†	†–†
Hymenochlaenae Drej.								
Backii Boott	.	.	†–†	.	.	†–†	†–†	
capillaris L.	†–†	†–†	†–†	.	†–†	.	†–†	
Krausei Boecklr.	†–†	.	.	.	.	.	.	.
Williamsii Britt.	.	†–†	.	.	.	.	.	.
amplifolia Boott	.	.	†–†	†–†	†–†	†–†	.	.

	North-West America							
	Alaska	Yukon	British Columbia	Washington	Idaho	Oregon	Atlantic States	Rocky Mountains of Colorado
Spirostachyae Drej.								
flava L.	.	.	†	.	†	.	†	.
„ var. *lepidocarpa* Tausch.	†	.	†	.	†	.	†	.
Oederi Ehrh.	†	.	†	†	†	†	.	.
Echinostachyae Drej.								
microglochin Wahl.	†	.	†	.		.	.	†
pauciflora Lightf.	†	.	†	†	.	.	†	.
comosa Boott	.	.	.	†	†	†	†	.
hystricina Muehl.	.	.	.	.	†	†	†	.
retrorsa Schw.	.	.	†	†	†	.	†	.
„ var. *Hartii* Gr.	.	†	.	.	.	.	†	.
Physocarpae Drej.								
ambusta Boott	†	.	.	.		.	.	.
ampullacea Good.	.	.	.	.	.	†	†	.
rotundata Wahl.	†	.	.	.	.	.	†	.
utriculata Boott	†	†	†	†	†	†	†	†
physocarpa Presl	†	†	†	.	†	.	.	.
physochlaena nob.	.	†	.	.	.	.	.	.
pulla Good.	†	†	.	.	.	.	†	†
mirata Dew.	.	.	†	†	†	†	.	.
compacta R. Br.	†	.	.	.	.	.	.	.
Physocephalae Bail. ex p.								
Breweri Boott	.	.	.	†	.	†	.	.
Rhynchophorae nob.								
monile Tuckm.	.	.	†	.	.	.	†	†
„ var. *pacifica* Bail.	.	.	.	†	.	.	.	.
„ „ *colorata* Bail.	.	.	.	†	.	†	.	†

Of these 195 species and varieties of *Carex* 67 are *Vigneae* and 128 *Carices genuinae.*[1]) The grex richest in species is *Microrhynchae* with 27, after which follow *Melananthae* with 15, *Aeorastachyae* with 14, *Athrostachyae* with 15, *Physocarpae* with 9, *Brachystachyae, Neurochlaenae, Acanthophorae* and *Sphaeridiophorae* each with 7.

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[1]) In Mr. Howell's Flora of Northwest America the following species are enumerated: *C. angustata* Boott (Wash.), *Barbarae* Dew. (Oregon), *brunnescens* Poir. (Oreg.), *deflexa* Hornem. (Oreg. Alaska), *frigida* All (Wash.), *heteroneura* W. Boott (Idaho), *nudata* Boott (Oreg.) *riparia* Curt. (Idaho), *Tolmiei* Boott (Oreg.) and *vallicola* Dew. (Idaho). We have seen no specimens of these, and have not ventured to add them to our list since the identification seems doubtful. — We have, furthermore, omitted *C. Idahoa* Bail., since the systematic position of this interesting species is uncertain; it may belong to the *Melananthae.*

The largest number of species has been collected in Washington namely 96 i. e. *Vigneae:* 42, *Carices genuinae:* 54. 90 species are reported from Oregon i. e. *Vigneae:* 34, *Car. genuinae:* 56. 82 from Alaska i. e. *Vigneae:* 27, *Car. genuinae:* 55. 87 from British Columbia i. e. *Vigneae:* 35, *Car. genuinae:* 52. 65 from Idaho i. e. *Vigneae:* 30, *Car. genuinae:* 35. 50 from Yukon i. e. *Vigneae:* 14, *Car. genuinae:* 36.

Of these districts Washington and Oregon are those that have been the most extensively explored, hence the large number of species reported; what is botanically known of Alaska is mainly the coast and adjacent islands; the interior is almost unknown; thus the number of 82 species is proportionally large in comparison with the small area explored. The same is undoubtedly the case with Yukon, the flora of which is very little known, but appears to be very rich in species, not only of *Cyperaceae,* but also of several other families.

In this table we have, also, given the distribution of these species in the Atlantic States and in the Rocky Mountains of Colorado, from which it is to be seen that North-West America has 62 species in common with the Atlantic States viz: *Vigneae* 29 and *Car. genuinae* 33, while 63 are represented in Colorado: *Vigneae* 29 and *Car. genuinae* 34.

The *Brachystachyae* are well represented in our region, especially *C. canescens, vitilis* and *tenella,* all of which extend eastward to the Atlantic coast. It is interesting to see that *C. tenuiflora* and *loliacea* have been found in Alaska and Yukon, the latter having not before been recorded from this continent. It was collected by Dr. Walter H. Evans in Alaska (Kussiloff 1898) and by Professor John Macoun in Yukon (Hunker Creek 1902). It seems strange that *C. arcta* has not yet been found in Alaska or Yukon, since it is quite frequent in Washington extending throughout the continent to the Atlantic States. The wide distribution of some of these species may, furthermore, be illustrated by the fact that *C. canescens* and *tenella* follow the Rocky Mountains as far South as Colorado. Among the *Neurochlaenae C. nardina* seems to be the most frequent even if it is confined to the higher mountains; in Washington it has been collected on Mt. Adams (Mt. Paddo), Mt. Rainier, Mt. Stuart and in the Wenatchee Mountains, besides in Oregon, the Cascade Mountains, „Brokentop Mountain". In Alaska it has been found at the Muir Glacier and in the Chilkat Region. It is not infrequent in the Rocky Mountains and follows these southward to Colorado, while eastward it extends through Alberta, Montana and Wyoming to Fort Conger, Grinnell Land, and to the Hudson Bay Region. The other species are mostly confined to the coast of Alaska, except *C. neurochlaena* which, so far, has only been collected in Yukon. *C. glareosa* extends eastward to Hudson Strait, *C. lagopina* to the maritime rocks of Labrador, but none of these have been found farther south; the latter has often been reported from the southern Rocky Mountains, but erroneously so, the specimens not belonging to this species but to Dewey's *C. petasata.* — *C. norvegica* has been found in Maine and is not uncommon in New Brunswick and Nova Scotia; the species has, also, been collected

in Alaska at Port Clarence, Sitka and on St. Paul. island. *C. Deweyana* and *Bolanderi* have both been found at several stations in Washington, but are otherwise rare within the region.

In passing to the *Astrostachyae C. stellulata* shows a very wide distribution often accompanied by *C. laeviculmis*. *C. gynocrates,* which is not rare in the northern United States and Canada, has only been found in Yukon, British Columbia and on Attu and Popoff islands, but not on the Alaskan mainland. With the exception of *C. Hoodii* the other members of the *Acanthophorae* are very unequally distributed in our region. *C. stipata,* a species characteristic of the eastern States, reaches our region south of Alaska and Yukon; it has been collected at various stations in Washington, but seems to be rare in Idaho and Oregon. The rare *C. sychnocephala* occurs in British Columbia, but extends from there to New York.

Only a few species of the *Xerochlaenae* are common in our region: *C. marcida* and *Douglasii,* but they have not been found in Alaska or in Yukon; they both are western species and extend southward to Colorado and California. *C. Sartwellii,* not uncommon in the eastern and central States, has been reported from Chilkat. The very singular *C. macrocephala* inhabits the sandy beaches along the coast of Alaska, Washington and Oregon. Among the *Phaenocarpae C. teretiuscula* is the only member represented in our region, but it shows an exceedingly wide distribution, and is often accompanied by the variety *ramosa.*

The grex of *Vigneae,* which is the most amply represented in our region, is that of the *Athrostachyae.* We meet here with the eastern *C. Crawfordii* and *scoparia*, which do not, however, reach Alaska or Yukon. But characteristic of this northwestern Flora are *C. athrostachya, festiva* with several varieties, *petasata, siccata, pratensis* and *Liddonii,* while *multimoda, aenea* and *Bongplandii* are less frequent. Of these *C. festiva* appears to be the most common. *C. petasata* is very frequent in the mountains of Washington, Oregon and Idaho, but is rare in Alaska having only been found on Egg island and near Hidden Glacier in Russell Fjord. The *Pterocarpae* are, on the other hand, poorly represented being mostly eastern species; however *C. straminea* has been found at a few stations with some of the varieties but they are very rare in this region. The rare *C. straminiformis* has been collected in Washington and Oregon, though only at a very few stations; it occurs, also, in California and Colorado. — A most scattered distribution is exhibited by *C. capitata,* which crosses the northern parts of the continent, but having so far only been detected at a very few stations in Alaska (Cape Nome), Yukon, the Hudson Bay Region and New Hampshire. The *Cephalostachyae* are, also, very rare, but it is interesting to notice among these *C. foetida* from Oregon (Mt. Hood) and Washington (Mt. Paddo), where Mr. Suksdorf collected it in wet, sandy soil at an elevation of about 2,200 Met., and on steep, stony slopes at same elevation. Another very interesting species is *C. Gayana,* which Mr. Suksdorf has sent the writer from Falcon Valley, growing in wet meadows and in water. *C. stenophylla* has been found in the

Yukon Valley only, but is otherwise not uncommon in the middle States extending southward to Colorado. The last of the *Vigneae* is *C. incurva,* within the region only known from Alaska: Port Clarence, St. Lawrence island, Muir Bay and the Chilkat Region. —

In passing to the *Melananthae C. alpina* has been found at a few stations in Alaska (Cape Nome, St. George island and Popof islands) besides in Yukon and British Columbia. It occurs furthermore in the Rocky Mountains of Colorado, Montana and Wyoming extending to the Hudson Bay Region; but, so far, it has not been found in the Atlantic States. Typical *C. atrata* does not occur in Alaska, and seems to be rare in Yukon, British Columbia and Idaho; it crosses the continent, but without reaching the Atlantic coast, where however *C. ovata* is quite widely distributed. A near ally of *C. atrata* is *C. chalciolepis,* which Mr. Suksdorf has found on Mt. Paddo (Adams) at an elevation of about 2,000 Met.; this species abounds in the Rocky Mountains of Montana, Wyoming, Utah and Colorado. *C. Mertensii* is frequent in our region and ascends from the sea-level to an altitude of until 2,000 Met. in the mountains. Very rare is, on the other hand, *C. Parryana,* known only from British Columbia; this species occurs furthermore in the prairie region of Canada from Portage la Prairie to near the Athabasca River; farther south it follows the Rocky Mountains to Colorado, through Montana, Wyoming and Nebraska. *C. stylosa,* which also occurs in South Greenland, does not seem to be rare in Alaska, and has, also, been collected in Yukon; a near ally of this is *C. accedens,* only known from Washington (Mt. Paddo and Mt. Rainier) and Oregon (Sauvie's island). The western limit of *C. Raynoldsii* is Mt. Paddo in Washington and Steins Mountains in Oregon; the species is otherwise quite widely distributed eastward to North Dakota and south to Colorado. A very wide distribution is, however, exhibited by *C. Buxbaumii,* which crosses the continent from the Pacific coast to the Atlantic, but is rather rare in our region, in contrast to *C. Gmelini,* which abounds on the Alaskan coast and islands. Among the *formae desciscentes* we meet with *C. ustulata,* very rare in our region, and on this continent, so far, only collected at Fort Conger in Grinnell Land and near Hudson Bay; but from there it extends to Greenland (the west-coast), northern Europe and Asia. Near allies of this species are *C. venustula* from British Columbia (Glacier) and Alaska (Chistachina River between Cook inlet and the Tanana River), and *C. Montanensis* from Yukon, Idaho and Montana. *C. microchaeta* is only known from Yukon, *C. spectabilis* from several stations in Washington, Oregon and British Columbia.

In passing to the *Microrhynchae* our region possesses a large number of species pertaining to various groups, and several of these are only known from North-West America. It appears altogether as if this region represents a most important center in regard to distribution and development of this grex, at least judging from the several more or less closely related species occurring together. We find here *C. vulgaris,* the type and some varieties, accompanied by *C. limnaea, brachypoda* and *gymnoclada* from Washington and Oregon. The widely distributed *C. rigida* occurs in Alaska

and Yukon extending from there to the Atlantic coast and following the Rocky Mountains south to Colorado. Typical *C. aquatilis* has been collected in Alaska (Port Clarence and Chilkat Region) and in Yukon, besides that it is known also from the northern Atlantic coast, sometimes accompanied by the variety *epigejos*. The rare *C. interrupta* from Washington and Oregon forms an interesting transition between the *aquatilis*- and *acutina*-group. *C. lenticularis*, more widely distributed in the east, has been found in Alaska (Nome City and the Chilkat Region) and Idaho (Priest Lake). *C. Sitchensis* has been rediscovered in Alaska at several stations near the coast, besides in a few places in Washington and Oregon. The range of *C. Nebrascensis*, a species of the Rocky Mountain region, has been extended to our region, but is not frequent. It is associated with two allies in Washington: *C. eurycarpa* and *oxycarpa*. The more southern *C. laciniata* has been collected in Oregon, Banks of Rouge River, Grants' Pass; another southern species *C. scopulorum* is known now from Washington and Oregon.

The *Aeorastachyae* are exceedingly well represented by characteristic and abundantly occurring species. We meet here with the arctic *C. subspathacea*, collected on the islands of St. Paul and St. Lawrence besides at Port Clarence; the species occurs, furthermore, in the Hudson Bay Region. *C. salina* var. *cuspidata* has been found on St. Paul island and at Kussiloff on the Alaskan coast, but is much more frequent farther eastward on the Atlantic coast and near Hudson Bay. Very common are *C. cryptocarpa* and *macrochaeta*, both of which are known also from the Asiatic coast of Bering Strait; equally abundant is *C. aperta*, though absent from Alaska; it extends eastward to Montana. It seems strange that *C. maritima*, known from New England and Hudson Bay, does not occur within our region. On the other hand *C. Magellanica, limosa* and *rariflora*, all known from the Atlantic coast, have been found at several stations, accompanied by the characteristic *C. stygia*, so very abundant in Alaska.

We notice the occurrence of *C. bicolor* in Alaska (Muir inlet, Glacier Bay) and Yukon, and the species is known from nowhere else in America. Very frequent is, on the other hand, *C. aurea*, even if it has not yet been found in Alaska; it is distributed throughout the continent and reaches the Atlantic coast, besides that it follows the Rocky Mountains south to Colorado. The more northern *C. livida* has been collected at several stations in Alaska and British Columbia, besides Alberta, but is absent from the other States, although it appears again on the Atlantic coast in Maine, Vermont etc. The very local *C. Crawei* has been detected at Fort Colville in Oregon, but this is the only place from where it is known within our region. *C. vaginata* is in Alaska only known from Port Clarence, and from Yukon, but from there it extends through British Columbia and Alberta to the northern Atlantic States. Very interesting is the discovery by Mr. Suksdorf, of *C. polymorpha* in the mountains of Skamania, Washington, a species that is otherwise only known from the Atlantic coast, from Massachussetts to North Carolina.

The *Lejochlaenae* so profusely dispersed on the Atlantic coast are rare in Northwest America, and *C. polytrichoides* is the only species that crosses the continent, besides that it occurs, also, in the Rocky Mountains of Colorado. *C. Geyeri* shows a more western distribution, while *C. multicaulis* is much rarer, being only known from Oregon and California. *C. Hendersonii,* the only member of the *laxiflora*-group, is confined to our region: damp woods and wooded canyons in Washington, Oregon, British Columbia and Vancouver island. In passing to the *Dactylostachyae* we meet here with the very rare *C. melanocarpa* from Alaska: St. Lawrence island; it is, also, reported from a few places in northern Siberia. — *C. concinna* is only recorded from Yukon and British Columbia, from where it extends to Alberta, Montana and Wyoming; a like distribution is exhibited by *C. Richardsonii.* The *Microcarpae* are only represented by the very rare *C. cinnamomea* from Oregon, where it has been found in upland marshes and springs near Kerbyville and south of Waldo in Oregon; it is, also, known from California. Of the *Athrochlaenae C. pyrenaica* shows a remarkable wide distribution throughout the region extending southward to Colorado, besides that it occurs, also, in Colorado, in New Zealand, Caucasus and the Pyrenees, a distribution which shows the danger in applying geographical names to species. The other species *C. nigricans* does not occur outside this continent, but is quite frequent in the mountains of Alaska, Washington, Oregon and British Columbia, extending to Alberta, Wyoming, Utah and Colorado. The *Stenocarpae* so highly developed in the European Alps and the Himalayas are quite well represented in America. We have here the very rare *C. lejocarpa,* collected at several stations in Alaska; also the equally rare *C. circinata* from Alaska, the Olympic Mountains in Washington and Queen Charlotte island, British Columbia. *C. luzulaefolia,* a very rare species, has been collected in mountain-swamps in Oregon, besides that it occurs, also, in California, in the Sierra Nevada at high allitudes, and in Utah. *C. ablata* is, on the other hand, not infrequent in Washington, Oregon and Idaho, extending to British Columbia, Vancouver island, Utah and Wyoming; the variety *luzulaeformis* has been reported from Mt. Paddo, Washington. It is interesting to notice the presence of *C. misandra* in Alaska (St. Lawrence island, St. Matthew island, Kotzebue and Norton Sounds, Cape Nome and Port Clarence), but otherwise it has only been found in the Hudson Bay region and in Colorado. None of the *Lamprochlaenae* are frequent in this region, and *C. rupestris* has only been found in the Chilkat Region and at Port Clarence; it is altogether very rare in North America, having only been reported from Colorado and the northern Canadian provinces. *C. obtusata,* rare in Yukon and Idaho, and known only from a few stations in Colorado and Montana, is, on the other hand, abundant in the prairie region and amongst the foothills throughout Canada. Another very rare plant is *C. pedata* of which only a very few specimens have been collected in Yukon and the Chilkat Region, but nowhere else on this continent; the species occurs, however, in Greenland. Although *C. eburnea* is not infrequent

in most of the Canadian provinces and in the Eastern and some of the central United States, it occurs within our region only in British Columbia. It is interesting to see that *C. filifolia* extends as far North as Yukon, besides that we have seen several specimens from Washington, Oregon and Idaho; the species is more characteristic of the Southern States, Colorado, California etc.

Among the *Sphaeridiophorae C. scirpoidea* has been found at several stations in Alaska: Chilkat Region, Juneau, Cape Nome, St. Lawrence island, Yes Bay and Port Clarence, besides in Yukon and British Columbia, sometimes accompanied by the var. *stenochlaena*. The species is not infrequent in the mountains of Canada, besides that it occurs, also, in the Rocky Mountains of Colorado, extending North to Montana and Wyoming, East to New England, the Hudson Bay Region etc. In Washington it follows the Olympic and Cascade Mountains at high elevations. *C. Rossii* has not yet been found in Alaska, but it is common in Washington and British Columbia; it is rather infrequent in Oregon, Yukon and Idaho, extending from there to Montana, Wyoming, Colorado and Utah, and has often been mistaken for *C. deflexa*, a species of Vermont and the coast of Greenland. *C. umbellata* so characteristic of the Eastern States occurs, also, in our region, but is very rare, however; it is accompanied by the variety *brevirostris*. A near ally of this is *C. globosa*, only known from our region and California, and the very rare *C. Whitneyi* formerly only collected at a few stations in California (Mt. Shasta, Yosemite Valley and Lassen County) has lately been discovered in Oregon: near Lake of the woods in Klamath County. The grex is, thus, sparingly represented in North-West America, but is, as we know, very characteristic of the Eastern States extending as far south as subtropical Florida. In examining the *Trichocarpae* me meet here with the common *C. filiformis* and the equally abundant *C. lanuginosa*. Of *C. trichocarpa*, so very frequent in the East, we have only seen a few specimens from Idaho, while its near ally *C. aristata* has been collected in Washington and Oregon, but seems to be very rare; otherwise this species is quite abundant through Montana, Wyoming, Nebraska and the Dakotas extending to the Atlantic coast, New England. *C. Oregonensis*, first collected in Oregon, is known now from Washington: Mt. Adams, dry meadows, Skamania County. The large grex *Hymenochlaenae* is very poorly represented. *C. Backii*, which is not uncommon in the eastern and central portion of this continent is, on the other hand, exceedingly rare in our region, so far only known from the valley of the Fraser River (British Columbia) and from the Blue Mountains and banks of Snake River (Oregon). *C. capillaris* is, also, rare and has only been collected at a very few stations in Alaska, Yukon, British Columbia and Idaho, while it is widely distributed along the Rocky Mountains through Colorado, Montana and Wyoming eastward to Newfoundland and the White Mountains. In Alaska it is accompanied by *C. Krausei*, in Yukon by *C. Williamsii*; of these the former has been found at Muir Glacier and in the Chilkat Region, the latter at Dawson. *C. Williamsii* has, furthermore, been collected on the shore of James' Bay in the region of Hudson Bay, besides

on Arakamtscetschen islands in Eastern Asia. *C. amplifolia,* very rare in California, has been found at several stations in Washington, in swamps and along mountain-streams, but is less frequent in Idaho and Oregon. *C. flava* and *Oederi* are the only species of *Spirostachyae* that have, so far, been observed in our region, but it is quite interesting to notice that the former is accompanied by the variety *lepidocarpa*. *C. Oederi* is the most frequent of these, at least in Washington, and seems altogether to be more widely distributed in the western States, than in the eastern. In passing to the *Echinostachyae* we meet here with *C. microglochin* recently discovered in Alaska at Port Clarence, besides that it has, also, been found in British Columbia; we might state at the same time that the species has, also, been observed in Colorado and in the Hudson Bay region, but nowhere else on this continent, although it has been collected on the west-coast of Greenland. *C. pauciflora* is, also, rare in our region, known only from Yes Bay, Virgin Bay, Sitka and Vancouver island, besides a few stations in Washington; it occurs, however, throughout Canada and the northern United States. None of the other members of the grex have been found in Alaska, but in some of the other western States, though only at a very few stations.

The *Physocarpae*, on the other hand, are exceedingly well represented in our region, and especially on the Alaskan coast. *C. ambusta* has been found at Sitka, Kukak Bay and on St. Lawrence island; *C. rotundata* occurs near Nome City; *C. utriculata* abounds throughout the region, and *C. physocarpa* is very common in Alaska and British Columbia. *C. physochlaena,* a very characteristic species, is only known from Yukon; the high northern *C. pulla* has been collected at Norton and Kotzebue Sounds, in the Chilkat region and Yukon, while *C. mirata* seems to be frequent in Washington, Idaho and Oregon, but has not, so far, been observed either in Yukon or in Alaska. The very rare *C. compacta* has been recorded from Alaska: Cape Nome, Norton Sound, Port Clarence and St. Michael island from where it extends eastward to the Hudson Bay Region. The monostachyous *C. Breweri* of the *Physocephalae* has been found in the mountains of Washington and Oregon, on alpine slopes near the snow; the species occurs, also, in California. The *Rhynchophorae* are in our region only represented by *C. monile,* which seems to be very rare, especially the typical plant.

B. Types characteristic of North-West America.

Carices brachystachyae.

Of these *C. Bonanzaensis* is the only type of this region; it is an ally of *C. canescens* but quite distinct from this by the shining brown color of the scales which are much shorter than the perigynium; the latter is plano-convex, broadly elliptical, several-nerved on both faces and the minute beak is slit on the convex face. *C. arcta* is an American species, but is not confined to the northwestern parts of the continent. In regard to the systematic position of this species within the grex, it may be placed between *C. canescens* and *vitilis*. Judging from the ample representation

of the grex in North America, we might presume that this continent, and quite especially the northwestern corner, constitutes a very important center as to the development and distribution of the *Brachystachyae.*

Carices neurochlaenae.

C. nardina from our region differs often from the typical plant by its more slender culm and spike, but it is mostly distigmatic; it will be remembered that the plant which we found in Colorado was tristigmatic, besides a number of examples received from the headwaters of Fraser River in British Columbia. *C. glareosa* is quite variable, but we have not been able to detect any forms distinct from the European. In *C. lagopina*, on the other hand, the spikes of the northwestern plant shows a tendency to become more slender and of a lighter color. The very robust *C. Pribylovensis* is a type of our region, but has not so far been properly described; the spikes are ovoid, densely crowded, and the perigynium is broadly elliptical to almost globose, many nerved and abruptly pointed into a very short beak, slit on the outer, convex face. In *C. lagopina* and *glareosa* the width of the perigynium varies somewhat from oval to elliptic-lanceolate, but the beak is, as a rule, very distinct and slender. *C. cryptantha,* another Alaskan type, is characteristic by the prominent development of the scales and the very small inflorescence in proportion to the long, very slender culms. A species typical of Yukon is *C. neurochlaena* with filiform culms and prominently nerved perigynia. *C. norvegica,* the most evolute species of the grex, has also been found in Alaska, thus the *Neurochlaenae* are well represented in our region, and more so than farther east.

Carices astrostachyae.

Among these *C. laeviculmis* is a very distinct type of our region, and it is not a rare plant; the other species with the only exception of *C. stellulata* are, on the other hand, rather rare. The grex appears to be much better represented nearer the Atlantic coast and in Europe.

Carices acanthophorae.

The grex shows decidedly a prevalent eastern distribution with such types as *C. rosea, sparganioides, Muhlenbergii* etc. being very abundant along the Atlantic coast. However, some other species seem to be characteristic of the western States, of California and Colorado for instance, while again others appear to have developed farther north, but on the Pacific slope only. Types of North-West America are, thus, *C. occidentalis, vagans* and *phaeolepis*, besides the variety *costata* of *C. vicaria.* Of these the two former are near allies of *C. Hookeriana,* while *C. phaeolepis* is closely related to the Californian *C. vitrea* and *chrysoleuca.* These western members of the grex are, altogether, very distinct from the eastern, the spikes of the former being either dark brown or whitish, those of the latter mostly light green.

Carices xerochlaenae.

Although both *C. marcida* and *Douglasii* are quite frequent within our region their very wide distribution towards South and

North prevents us from counting them among our northwestern types. *C. macrocephala* is not confined to our region either, since it has been reported from Eastern Asia: Siberia, Japan and China. The only northwestern type is an ally of *C. Douglasii,* namely *C. irrasa,* so far only known from Idaho and Washington, besides the variety *bracteata* of *C. macrocephala,* collected in Alaska.

Carices athrostachyae.

As mentioned above several of these occur in our region and are by no means infrequent, nevertheless none of these may be considered as types. In regard to *C. festiva,* which is here accompanied by several and very well marked varieties, we feel inclined to believe that the center of the geographical distribution as well as of the development of the species must be sought on this continent, and especially in the Rocky Mountains, rather than in Greenland or in northern Europe. *C. festiva* is here associated with some more or less aberrant forms, which we have enumerated as varieties, and some of these exhibit a very distinct habit for instance *Haydeniana* and *decumbens* yet with the characters of the species well retained, and besides these we meet with closely allied species as for instance *C. athrostachya, multimoda* and *petasata.* Some others, but of a more distant relationship, occur also as associates, prominent among which are *C. pratensis, aenea* and *Liddonii,* thus the grex is well represented in our region even if it does not contain any types that are limited to North-West-America alone.

Carices pterocarpae.

With the exception of *C. straminiformis* all the other species that are represented in our region are eastern; none of these are frequent and none have been observed in Alaska or in Yukon.

Carices cephalostachyae.

C. pansa is a northwestern type; it shows the same habit as *C. arenaria,* but the spikes are almost black and the scale-like leaves of the creeping rhizome very dark. The occurrence of *C. foetida* in this region so very remote from its European stations is difficult to explain; it seems, also, very strange that *C. Gayana,* a South-American species, has reached our region.

Carices melananthae.

Of the *Vignea*-like *„formae hebetatae“ C. alpina* is the only one that inhabits our region, and it is rare. Among the higher developed species *C. atrata* and *chalciolepis* have been found at a few stations, but are more frequent farther east and south, especially in the Rocky Mountains. A species that is very characteristic and peculiar to the region is, on the other hand, *C. Mertensii,* known from many places in Alaska, Oregon and Washington, besides from Idaho, British Columbia and Vancouver island, extending as far east as Montana. It represents the most evolute type of the grex, and is readily distinguished by its numerous gynaecandrous, heavy, drooping spikes and pale, very thin perigynia. *C. stylosa* with its nearest ally *C. accedens* are, also,

characteristic of the region, but the former occurs, furthermore, in South-Greenland. While *C. Buxbaumii*, otherwise so widely distributed throughout the northern hemisphere, is rare in our region, its near ally *C. Gmelini* seems to be confined to Alaska and the coasts of North-East Asia, including Japan.

Among the *„formae desciscentes“* it is interesting to notice the presence of *C. ustulata* in Alaska (Port Clarence and St. Mathew island) accompanied by *C. venustula* and *C. Montanensis*. In *C. microchaeta* Yukon possesses a very peculiar type with the habit of *C. rigida*, but with the perigynia and scales of the *Melananthae*. *C. spectabilis*, not yet collected in Alaska, has its geographical center in the mountains of Washington, Oregon and British Columbia, and extends from there to California and Alberta. The typical plant is very characteristic by its graceful habit, the more or less long-peduncled, but erect or spreading, pistillate spikes, which are relatively short and dense-flowered; the scales are purplish, mucronate from the excurrent midvein and are longer than the perigynia. The perigynia are deep green, when immature, ovate, more or less distinctly nerved, and the short beak is two-lobed or merely emarginate. Among the copious material, which Mr. Suksdorf has kindly sent us from Mount Paddo (Washington), several and well marked varieties were noticeable. In some specimens the spikes were very short, ovate to almost globose, and the perigynium much broader than in the type. In others the spikes were very long and cylindric, densely crowded, but the perigynium of normal shape and almost black at maturity. Or the spikes showed the typical shape and position, but were of a lighter color, brown to yellowish, as to scales and perigynia. In depauperate specimens the number of the pistillate spikes may be reduced to one or two, very short and almost sessile.

The surface of the perigynium is in this species granular, but in some specimens from Mount Paddo the margins, near the beak, were observed to be spinulose in some of the spikes, but not in all. The color of the perigynium, normally deep green, is often more or less purplish.

Some perigynia of Dewey's own specimens, kindly presented by Mr. C. B. Clarke, showed the development of the racheola into a processus, either naked or bearing a scale with a staminate flower. Such spikelets with the racheola extended and bearing staminate flowers are rare in *Carex*, in contrast to the cases where these secondary ramifications bear pistillate flowers, so well known from numerous species of *Carices genuinae*.

In looking over the members of the grex that have been found within the region, *C. Mertensii* must be considered as one of its types, being besides the most evolute of the section. *C. Gmelini* is, also, a very interesting type, accompanied by *C. Buxbaumii*. In *C. ustulata* we meet with a species of wide geographical distribution and which occurs here with two allies. *C. Montanensis* and *venustula*, the latter being a western type.

C. microchaeta and *spectabilis* occupy the most extreme limits of the grex and are, also, to be counted among the types of our region.

Carices microrhynchae.

The grex is well represented and consists of several peculiar and apparently distinct species, some of which are near allies of *C. vulgaris,* others of *C. aquatilis* or of *C. acutina.* Of these *C. prionophylla* is peculiar to Idaho, where it occurs on the banks of Yankee Fork, above Custer, at an elevation of 2,000 m., and in the region of Coeur d'Alene Mountains, near mountain streams (c. 1,500 m.). The culms are aphyllopodic thus resembling those of *C. stricta, angustata* and *caespitosa,* but the very short spikes, the acuminate, sharply pointed scales, the purplish spotted perigynia and very scabrous scale-like leaves at the base of the culms make the species distinct from these. In *C. lugens* from Alaska and Yukon we meet with a species which in regard to the spikes reminds of *C. caespitosa,* but the culms are phyllopodic. Typical *C. vulgaris* has been collected in a few places in Alaska (Dall River trail, Wrangell and Unalaska), but the variety *lipocarpa* is exceedingly common, especially in Washington; it has, furthermore been recorded from some few stations in Montana, Wyoming and Colorado, but seems to be most widely distributed in our region. The two other varieties: *limnophila* and *hydrophila* are known from Alaska and Yukon.

As indicated by the name „*lipocarpa*" the perigynia are early deciduous; they are prominently stipitate, elliptical, many-nerved and extended into a relatively long beak. This variety was formerly considered identical with the South-American *C. decidua.* The variety *limnophila* is a plant of low stature with the terminal spike mostly gynaecandrous, and with the perigynium nerved, denticulate near the beak and purplish spotted; it bears a strong resemblance to Drejer's *C. rufina,* which some Scandinavian authors are inclined to refer to *C. vulgaris* as a reduced form. While habitally distinct from these American varieties of *C. vulgaris* the European exhibit the same structure of the perigynium in regard to the presence or absence of nerves, but the beak and the stipe are usually much shorter in these, and the body of the perigynium much broader.

As near allies of *C. vulgaris* may be enumerated *C. limnaea, gymnoclada* and *brachypoda.* The first of these is a slender, very graceful species and much more so than any specimen of *vulgaris* examined; the perigynia are slightly spreading, stipitate, prominently many-nerved, and the scales are black with hyaline apex. The species is known from the mountains of Oregon. *C. gymnoclada* is, also, a somewhat slender plant with a long, naked culm, and with the perigynia rhombic-oval, obscurely two-nerved and denticulate near the beak; the species has been collected in the mountains of Oregon and Washington, in bogs, meadows and along streams in the subalpine regions. The third species, *C. brachypoda,* is only known from Oregon, and differs from *C. gymnoclada* by the habit and by the structure of the perigynium, being almost orbicular, sessile and nerveless. When compared with the other *Microrhynchae* of our region, these three species naturally stand between *C. vulgaris* and *rigida,* while their old-

world homologues may be sought among *C. tricostata, turfosa* and *limula*.

In passing to *C. rigida,* the typical plant has been collected at Port Clarence, on St. Paul island and in Yukon, while the var. *inferalpina* seems to be more frequent and has been collected at several stations in Alaska and Washington.

In regard to the occurrence of *C. aquatilis* in our region, the type seems to be rare in Alaska and Yukon, while the var. *epigejos* is quite frequent (Port Clarence, Point Barrow, Popoff islands etc.). In *C. sphacelata* and *chionophila* Yukon possesses two types, which approach *C. aquatilis,* yet the color of the spikes and the structure of the perigynium is somewhat different, hence we prefer to consider them distinct from this, at least at present. The stoloniferous and very leafy *C. consimilis* is another species characteristic of Yukon, which according to habit also reminds of *C. rigida* and *hyperborea,* and the writer feels indeed uncertain as to where it may be properly placed in the grex, especially on account of the orbicular, purplish-spotted perigynium with the prominently denticulate margins and very short, entire beak, characters that seldom go together among these species.

A near ally is *C. cyclocarpa,* also from Yukon, of which the perigynium is turgid, nearly globose, brownish with purplish spots above, but glabrous. *C. interrupta,* a rare species, so far only known from river-beds, river-banks and bottom-lands in Oregon and Washington, is another type, readily distinguished from all the others by the very long and slender pistillate spikes, and by the perigynia which are two-nerved, sparingly denticulate, with the short, obliquely cut beak.

It is now interesting to see that to these members of the *Microrhynchae* may be added *C. acutina,* which has been found at some stations in Yukon, Idaho and Oregon, but which is much more frequent in the mountains of Wyoming, Montana and Colorado and to where it more properly belongs. Like *C. vulgaris* and *aquatilis* this species represents really a central type of a group of species, not so very unlike the European *acuta*[1]) and its allies. As a matter of fact *C. limnocharis* from Yukon resembles very much *C. prolixa* and seems allied to *C. acutina* to the same extent as *prolixa* to *acuta*. *C. variabilis,* which shows much the same distribution as *acutina,* has also been observed in our region, but is evidently rare.

A species that appears intermediate between *C. variabilis* and *lenticularis* is *C. pachystoma* from Oregon and Washington, the perigynium of which shows a peculiar thick beak with the orifice narrow and slightly emarginate on the outer face. To this same group belongs *C. Sitchensis,* which for many years has been

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[1]) The statement by Mr. Ostenfeld in Flora Arctica (p. 73) that *C. acuta* occurs in „Northern North America" is uncorrect, since it has, so far, never been observed on this continent. This same writer has, furthermore, credited *C. caespitosa* L. and *C. stricta* Good. to North America, where they have never been found. The geographical distribution as given in Flora Arctica is altogether very faulty in regard to many of the species treated, and we regret to say that the synonyms and diagnoses fare no better.

entirely misunderstood, the name erroneously applied to Dewey's unpublished species: *magnifica*. The species *(Sitchensis)* shows the same habit as *C. acuta*, but with the spikes constantly very slender, long, peduncled and drooping; it has been collected at several stations in Alaska, but is rare in Oregon and Washington. An inland type from the mountains of British Columbia, Oregon and Washington and which comes very near the former *(Sitchensis)* is *C. dives;* the spikes, however, are of a lighter color and the perigynium is pale green with scattered purplish spots and streaks, roundish in outline, denticulate along the upper margins and with a short, entire beak; it has, also, been found in California.

While frequent in Montana, Dakota, Nebraska, Wyoming, Colorado and Utah *C. Nebrascensis* seems to be rare in our region and is absent from Alaska and Yukon; in Washington it is accompanied by *C. eurycarpa* and *oxycarpa,* both of which possess strongly ribbed perigynia with the beak emarginate and, in the latter, with the margins denticulate. An ally of these is the more evolute *C. laciniata,* a Californian type, which extends to Oregon; in this species the perigynium is bidentate and the scales very often aristate.

Among the *„formae desciscentes“ C. scopulorum,* so very frequent in the Rocky Mountains, has also been found in Washington and Oregon, while the singular *C. campylocarpa* is only known from Oregon.

As represented in North-West America the *Microrhynchae* contain several interesting types, some of which are characteristic of the region. And some of these correspond well with old world, especially European, types and are like these accompanied by allies of habital resemblance, but with the squamae and perigynia of different color and structure, We have seen that the old world *C. caespitosa* has a homologue in our *C. prionophylla,* that *C. vulgaris* occupies the center of a group surrounded by such types as *C. limnaea, gymnoclada* etc.; the *aquatilis*-group with *C. sphacelata* and *chionophila,* the *acutina*-group with *C. interrupta* and *limnocharis,* while the *Nebrascensis*-group with *C. eurycarpa* and *oxycarpa* and the still more evolute *C. laciniata* occupy the extreme limits of the grex and have no homologues in Europe.

Carices aeorastachyae.

The *salina*-group is represented by *C. subspathacea* and *salina* var. *cuspidata,* which have been collected on the Alaskan coast and adjacent islands; they are, however rare in this region. A type intermediate between these and the *cryptocarpa*-group is the Alaskan *C. cryptochlaena* from Seldovia and Kussiloff; it is a peculiar species which resembles *C. cryptocarpa* so far as concerns the color and shape of squamae and perigynia, but lacks its graceful habit, the spikes being erect, nearly sessile and the leaves very broad. — Very abundant is, on the other hand, *C. cryptocarpa* on the Alaskan coast and islands extending to Washington, Oregon and British Columbia, and is very variable. Another frequent and truly north-western type is *C. macrochaeta*, which, also, abounds

on the coast and islands, besides that it has been found at a few stations in Yukon, Washington and Oregon. In several respects this species is suggestive of *C. spectabilis,* from which it differs by its generally larger size, taller culms and longer leaves, by the aristate scales and many-nerved perigynia with the orifice entire; furthermore the spikes are darker and drooping. The species is very variable in regard to the number of the spikes, the shape of the scales and the relative size of the perigynia; the variety *emarginata* is thus characteristic by its emarginate scales with the awn four times as long as the body, while in the var. *macrochlaena* the perigynia have attained a considerable size, being much longer than the scales.

A very characteristic, phyllopodic species has been found on St. Paul island and the Popoff islands, which we have called *C. nesophila.* This plant resembles habitally certain forms of *C. salina,* but the structure of the perigynium is more like that of *C. macrochaeta:* the squamae are broadly elliptic and acute, purplish to almost black, but neither mucronate or aristate. The perigynium is pale green with a purplish, entire or obliquely cut beak. On account of the structure of the perigynium we have placed the species next to *C. macrochaeta,* but habitally these two species are very different, different to the same extent as the phyllopodic *C. microchaeta* from the aphyllopodic *C. spectabilis.* Another very distinct north-western type is *C. aperta,* one of the most abundant *Carices* along the Columbia River in Washington; it has, furthermore been collected in British Columbia, Idaho and Oregon, but not in Alaska. The species is somewhat anomalous within the grex since the beak of the perigynium is bidentate, but otherwise we have not been able to detect other characters by which to separate it from the *Aeorastachyae.*

Rare in Alaska and British Columbia, but scattered throughout the mountains of Washington, Oregon and California, we find Dewey's unpublished *C. magnifica,* which, as stated above, was formerly mistaken for *C. Sitchensis.* The very long and dark, almost sessile and contiguous spikes give it a very peculiar aspect; it has two allies in California: *C. Schottii* and *lacunarum.* Among the last members of the grex, which we have enumerated from this region, *C. stygia* shows a wide distribution along the Alaskan coast and on the islands, where it seems to be much more frequent than in arctic Europe. The common, arctic species *C. rariflora* is, on the other hand, rare in our region, being confined to Port Clarence and St. Lawrence island. *C. limosa* does not occur in Alaska, but in some few places in the other States; *C. Magellanica,* on the other hand, we have seen from Yes Bay (Alaska) besides from a few stations in Yukon, British Columbia and Washington. In regard to *C. stygia* we have examined a very large number of specimens, which showed constantly the specific characters by which it is distinguished from the other members of this group, hence we prefer to enumerate it as a species instead of as a variety of *rariflora.* The geographical distribution of *C. stygia* seems, also, to speak in favor of this supposition, when we remember for instance the abundant occurrence of *C. rariflora* throughout the

Northern hemisphere, though so very seldom accompanied by *C. stygia.*

Types of this grex peculiar to our region are, thus, *C. cryptochlaena, macrochaeta, nesophila, aperta* and partly also *stygia* and *cryptocarpa;* characteristic of these are the very dark-colored spikes, a feature common to boreal species.

Carices cenchrocarpae.

None of the members of this grex can be looked upon as types of our region. It is, however interesting to notice the occurrence of the two *„formae hebetatae“ C. bicolor* and *aurea,* besides the representatives of the various groups including *C. livida, Crawei* and *polymorpha.* Totally absent is, however, the *tetanica*-group and the *„formae desciscentes“.*

Carices lejochlaenae.

Three *„formae hebetatae“* and only one *„forma centralis“* represent the grex in this region. Of these *C. Hendersonii* is the only northwestern type, and it is closely related to *C. laxiflora,* especially to the var. *patulifolia*, but distinct from this by its larger perigynium, which is more prominently nerved and more gradually contracted at both ends; the spikes are more densely flowered and borne on shorter peduncles.

Carices dactylostachyae.

The grex is but poorly represented within our region, and although the species belong to the western Flora, none of these are characteristic of the region, at least not in the stricter sense of the word.

Carices microcarpae.

C. cinnamomea is the only species of the grex, that has been found in the region; the cinnamon-colored spikes make it readily distinguished from the light green *C. strigosa* and *gracillima.*

Carices athrochlaenae.

Although the geographical center of *C. nigricans* may be looked for in this region, its present wide distribution in the east and south prevents us from considering it as a northwestern type. As described by C. A. Meyer the species has an androgynous spike, in which the pistillate flowers are very numerous and conspicuous, often more so than the staminate. Nevertheless purely pistillate spikes do occur, and such specimens were collected in the Chilliwack valley and in the Selkirk Mountains (British Columbia). In other specimens from the Kootanie Pass in the Rocky Mountains (B. C.) the majority of the flowers were staminate, and the pistillate very few in number. The plant thus varies from monoecious to dioecious, of which, however, the former is the most frequent and represents, no doubt, the typical stage of the species.

Carices stenocarpae.

Two of the *formae hebetatae C. lejocarpa* and *circinata* are types of this region, accompanied by *C. misandra,* while *C. luzulaefolia* and *ablata* occur in some of the other western States. It

would, thus, appear as if our region represents on old geographical center for some of the *Stenocarpae* with the fundamental types still in existence. Besides these species four others occur, also, in America viz: *C. petricosa* (Alberta), *C. gynodynama* and *luzulina* (California) and *C. juncea* (North Carolina).

Carices lamprochlaenae and *elymanthae* contain no species which may be considered as type of our region.

Carices sphaeridiophorae.

Only a few species are represented in our region, but nevertheless we meet here with the monostachyous *C. scirpoidea* of which the var. *stenochlaena* is only known from here; furthermore the *formae centrales* with *C. verecunda* and the more evolute *C. globosa*, besides the peculiar *C. Whitneyi* of the *desciscentes*. Of these *C. verecunda* (*C. inops* Bail. non. Kze.) is a north-western type, while *C. globosa* and *Whitneyi* have, also, been observed farther South, in California.

Carices trichocarpae.

Of these *C. Oregonensis* is the only type peculiar to our region. The grex is altogether very scattered throughout the continent, some of the members being characteristic of California *(C. hirtissima* and *Yosemitana)*, others of the Atlantic States *(C. vestita, striata* etc.*)* or of Mexico *(C. psilocarpa)*. Whether *C. lanuginosa* be a species distinct from *C. filiformis* or merely a variety *(latifolia* Bcklr.*)* it is strange to see the wide distribution on this continent and its absence from the old world, where *C. filiformis* is not uncommon. Considering the fact that *C. filiformis* on this continent is accompanied by several near allies *(C. Houghtonii, trichocarpa* etc.*)* and especially by *C. lanuginosa* it seems as if North America has been a very important center in regard to the distribution and development of this particular group of species.

Carices hymenochlaenae.

Only one of these may be looked upon as a type of our region: *C. Krausei,* which in several respects seems very closely allied to *C. capillaris*. Another near ally is *C. Williamsii,* but very characteristic by its androgynous terminal spike and filiform leaves. The very peculiar *C. amplifolia* is a western type, of which the geographical center evidently lies within our region since it seems to be so very rare in California.

Carices spirostachyae.

The grex is altogether poorly represented in North America and contains no species peculiar to our region. The Californian *C. aequa* Clarke does not reach Washington or Oregon, and the *formae desciscentes: C. squarrosa, typhina* and *stenolepis,* so very characteristic of the eastern and southern States, do not occur here.

Carices echinostachyae.

The species that occur in North-West America are, with the exception of *C. microglochin*, more frequent in the eastern States, and both *C. microglochin* and *pauciflora* occur in the old world.

Carices physocarpae.

Of these *C. physochlaena* from Yukon and *C. ambusta* from Alaska are actually the only northwestern types of this grex, which is otherwise so very highly developed in this region. Nevertheless we have, no doubt, a most important center of distribution in Alaska and Yukon where these species are accompanied by the very characteristic *C. physocarpa, rotundata, utriculata, pulla* and *compacta,* an assemblage of species of striking and very singular aspect. *C. physocarpa* extends to Alberta, Montana and Wyoming, but is nowhere so abundant as on the Alaskan coast and adjacent islands, from where it evidently originated.

Carices physocephalae.

C. Breweri is a western type and confined to the Pacific coast: Washington, Oregon and California, but is only known from a few stations, and belongs more properly to the Californian Flora.

Carices rhynchophorae.

The eastern species *C. monile* occurs here with the variety *pacifica,* which may be considered as a type of this region, while the var. *colorata* is distributed throughout Montana, Wyoming and Colorado.

The number of types characteristic of North-West America aggregates 50 species including a very few varieties, and we have recorded in all 195 species and varieties. The region which we have treated extends from the 42$\frac{nd}{=}$ to the 70$\frac{th}{=}$ northern latitude, and from the 114$\frac{th}{=}$ to the 170$\frac{th}{=}$ western longitude.

Let us now examine and compare the *Carices* that occur on the Atlantic coast between the 42$\frac{nd}{=}$ n. l. (Cape Cod) and the 70$\frac{th}{=}$ (Baffins' Land and west-coast of Greenland). From this region 180 species are known besides about 70 varieties; however only 13 of these species appear to be characteristic of North-East America, and 6 of these are Greenland types. When compared, these figures show the prevalence of types on the Pacific coast, which becomes still more conspicuous, if we include California. The number of species so far known from this State is about 90, 25 of which are peculiar to the State, thus the Pacific coast possesses altogether 75 types. Among these Californian species are several which are remarkably distinct from the northern, and we might mention for instance: *C. vitrea, chrysolepis, senta, serratodens, lacunarum, Mendocinensis, gynodynama, luzulina, aequa* etc.

This number of Californian types is relatively large, when we remember that only a very few species are characteristic of the Southern Atlantic States, from Virginia to Florida incl.: *C. Elliottii. juncea, turgescens, Caroliniana, Baltzelli, Chapmani, dasycarpa* and *Fraseri.*

We might, furthermore, compare the greges as represented on both coasts, and from this will be seen that the *Leucocephalae (C. Fraseri)* are confined to the Atlantic, the *Physocephalae (C. Breweri)* to the Pacific. While certain greges are equally well represented on both coasts, there are others which show a less uniform distribution, for instance: *Pterocarpae. Cenchrocarpae, Lejochlaenae, Microcarpae, Hymenochlaenae* and *Rhynchophorae.*

these are much better represented on the Atlantic than on the Pacific coast, yet by distinctly American types. — On the other hand the *Melananthae, Microrhynchae, Athrochlaenae, Stenocarpae* and, partly also, the *Aeorastachyae* are most amply represented on the Pacific coast.

If the question be asked, how many old-world species are among these Pacific- and Atlantic-coast *Carices,* the answer will be: 60 on each coast and these are mainly the same and more or less northern species.

It would thus appear as if the vegetation of *Carex* on the Pacific and Atlantic coast represents a commingling of species, most of which are strictly American types, while others are, also, distributed in the old world, in other words throughout the northern hemisphere. The concentration of so many species on this continent, as are known, also, from the old world, may be explained as a result of migration during or after the Glacial epoch, unless we admit, also, the possibility of several centers of development in connection with the several centers of geographical distribution. When we consider the extremely rich representation of certain greges, or at least groups of these, on the Pacific coast and the comparatively large number of types i. e. species peculiar to these regions, we must admit that the genus shows here an enormous vitality and power to produce species of characteristic habit. The natural conditions of the Pacific coast seem especially favorable to the development of peculiar types. The extreme dryness that prevails in the Highland in contrast to the slope, besides the almost uinterrupted mountain-ranges traversing the coast from north to south. These same factors, and perhaps especially the considerable height of the mountains may be the cause, why the Atlantic element of American *Carices* is so very sparingly represented within our region, although many of the Atlantic species have found their way west to the central States, in the north as well as in the south.

An immigration from the east seems thus largely impeded by the direction and height of these mountains, while, as will be shown in the following pages, immigration from the north seems probable and not very difficult; we remember for instance the presence of 13 circumpolar species and many others from the northern parts of the old world. To some extent our region in North-West America occupies a somewhat secluded position, and has hardly been influenced much by immigration from eastern Asia, as far as concerns „types“ in the stricter sense of the word. As a matter of fact none of the very few species which North-West America has in common with Eastern Asia may be looked upon as Asiatic rather than American types; they seem to be most abundant in Alaska.

North-West America represents, no doubt, a most important center of geographical distribution and of development of certain species „North-Western types“. Besides this region there are, however, several others in which the genus is equally well or even better represented. We think especially of Japan, Himalaya and New Zealand. Franchet has enumerated 111 species peculiar to

Japan, and 62 to China; a still larger number is peculiar to Himalaya. In Mr. Cheeseman's revision of the New Zealand *Carices* 26 species are said to be peculiar to these islands, where the total number of species aggregates only 42.

C. The geographical distribution of the Carices of North-West America.

In this chapter we have endeavoured to illustrate the distribution of these species throughout the Northern hemisphere, and especially in the arctic regions. We have extended the range to Iceland, Faeroe islands and Great Britain in order to show the presence of some of these species on islands, which, to some extent, may be brought in connection with their occurrence on the mainland of Europe, thus demonstrating their probable roads of migration during or after the glacial epoch. Furthermore when including the South European Mountains, Caucasus, Altaj and Bajkal Mountains, besides the Himalayas, we desired to show the occurrence of these same species at higher elevations in the mountaineous districts farther South so as to indicate the probability of more than one geographical center of distribution.

Our comparison with the Flora of the Himalayas is mainly based upon Mr. C. B. Clarke's treatment of the *Cyperaceae* in Sir Joseph Hooker's Flora of British India; in the column containing species from Eastern Asia we have consulted Franchet's work „Le *Carex* de l'Asie orientale" and Professor Kjellman's „Asiatiska Beringssunds-Kystens Fanerogamflora".

	Arctic regions																
	N.-W. America	N.-E. America	Greenland	Finmark	Spitzbergen	Russia	Novaja Zemlja	Siberia	Iceland	Faeroe islands	Great Britain	Alps and Pyrenees	Caucasus	Altaj and Bajkal Mts.	Himalaya	Eastern Asia
tenuiflora Wahl.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	+
loliacea Schk.	.	.	.	+	.	+	.	.	+	.	.	.	.	+	.	+
canescens L.	.	+	+	+	.	+	.	+	+	.	+	.	+	+	+	+
vitilis Fr.	.	.	+	+	.	+	.	.	+	.	+	.	.	.	.	.
tenella Schk.	.	.	+	+	+	+	.	.	.	.	.	.	.	.	.	.
nardina Fr.	.	.	+	+	+	+	.	.	.	.	.	.	.	.	.	.
glareosa Wahl.	+	+	+	+	+	+	+	+	+	.	.	.	.	.	.	.
lagopina Wahl.	+	.	+	+	+	+	+	+	+	.	.	.	.	.	.	.
norvegica Willd.	+	.	+	+	.	+	.	.	+	.	.	.	.	.	.	.
gynocrates Wormskj.	.	+	+	.	.	+	.	.	+	.	+	.	+	+	.	.
stellulata Good.	.	+	.	.	.	+	.	.	+	.	+	.	+	+	.	.
macrocephala Willd.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	+	.
teretiuscula Good.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	+	.
festiva Dew.	.	+	+	+	.	.	.	.	+	.	.	.	.	.	.	.
siccata Dew.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+
pratensis Drej.	.	+	+	.	.	.	.	.	.	.	.	.	.	.	.	.

	Arctic regions																
	N.-W. America	N.-E. America	Greenland	Finmark	Spitzbergen	Russia	Novaja Zemlja	Siberia	Iceland	Faeroe islands	Great Britain	Alps and Pyrenees	Caucasus	Altaj and Bajkal Mts.	Himalaya	Eastern Asia
capitata L.	.	+	+	+	.	.	.	.	+	.	.	.	.	+	.	.
foetida All.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.
stenophylla Wahl.	.	+	+	+	.	+	+	.	+	+	.	.	.	.	.	.
incurva Lightf.	.	.	+	+	.	+	.	.	+	+	+	+	.	.	+	+
alpina Sw.	.	.	+	+	.	+	.	.	+	+	+	+	+	+	+	+
atrata L.	.	.	+	+	.	+	.	.	+	+	+	+	+	+	+	+
Mertensii Presc.	.	.	+	+	.	+	.	.	+	+	+	+	+	+	+	+
stylosa Mey.	.	.	+	+	.	+	.	+	+	.	+	+	.	.	.	.
Buxbaumii Wahl.	.	.	.	.	.	.	.	+	+	.	+	+	.	+	.	.
Gmelini Hook.	.	.	.	.	.	.	.	.	+	.	+	+	.	+	.	.
ustulata Wahl.	.	+	+	+	.	+	+	+	+	.	+	+	.	+	.	.
vulgaris Fr.	.	+	+	+	.	+	+	+	+	.	+	+	.	+	.	.
rigida Good.	.	+	+	+	.	+	+	+	+	.	+	+	.	+	.	.
aquatilis Wahl.	.	+	+	+	.	+	+	+	+	.	+	+	.	+	.	.
Sitchensis Presc.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+
subspathacea Wormskj.	+	+	+	+	.	+	.	+	.	.	.	.	.	.	.	.
salina Wahl. var. *cuspidata*	.	+	.	+	.	+	.	.	+	.	.	.	.	.	.	.
macrochaeta Mey.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	+
Magellanica Lam.	.	+	.	+	.	+	.	.	+	.	+	+	.	.	.	.
limosa L.	.	+	.	+	.	+	.	+	+	.	+	+	.	+	.	+
rariflora Sm.	+	+	+	+	.	+	+	+	+	.	+	.	.	.	.	+
stygia Fr.	+	.	.	+	.	+	.	.	.	.	.	.	.	.	.	.
bicolor All.	.	+	+	.	.	+	.	.	.	.	.	+	.	.	.	.
livida Willd.	.	+	.	+	.	+	.	.	.	.	.	.	.	.	.	.
vaginata Tausch.	+	+	.	+	.	+	.	+	+	.	+	+	.	.	.	+
melanocarpa Cham.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	+
pyrenaica Wahl.	.	.	.	.	.	.	.	.	.	.	.	+	+	.	.	+
misandra R. Br.	+	+	+	+	+	+	+	+	.	.	.	+	+	.	.	+
rupestris All.	+	.	+	+	+	+	+	+	+	.	+	+	.	.	.	+
obtusata Liljebl.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.
pedata Wahl.	.	.	+	+	.	+	.	.	+	.	.	.	.	+	.	.
scirpoidea Michx.	+	+	+	+	.	.	.	+	+	.	.	.	.	.	.	+
filiformis L.	.	.	.	+	.	+	.	+	+	.	+	+	.	.	.	+
capillaris L.	.	.	+	+	.	+	.	+	+	.	+	+	+	+	.	+
Williamsii Britt.	.	+		.	.	.	.	.	.	.	.	.	.	.	.	+
flava L.	.	.	.	+	.	.	.	.	.	+	+	+	.	.	+	.
Oederi Ehrh.	.	.	+	+	.	.	.	.	.	.	+	+	.	.	.	.
microglochin Wahl.	+	+	+	+	.	+	.	.	+	.	.	+	+	+	+	+
pauciflora Lightf.	.	+	.	+	.	+	.	.	.	.	+	+	.	.	.	+
ampullacea Good.	.	.	+	.	.	+	.	..	+	.	+	+	+	+	+	.
rotundata Wahl.	+	+	+	+	.	+	+	.	.	.	.	.	.	.	.	.
pulla Good.	+	+	+	+	+	+	+	+	+	+	+	.	.	.	.	+

The number of species of our North-West American *Carices*, that occur in the old world, aggregates about 58, 20 of which are *Vigneae* and 38 *Carices genuinae*. — 13 of these are circumpolar: *C. canescens, glareosa, lagopina, incurva, ustulata, rigida, aquatilis, subspathacea, rariflora, rupestris, misandra, vaginata* and *pulla*. By comparing the Scandinavian element we find 44 species represented in this region, 15 *Vigneae* and 29 *Car. genuinae*, and we have only recorded the species from Arctic Scandinavia, excluding the southern portions of Norway and Sweden from where several of the other species are known, for instance *C. tenella, tenuiflora, teretiuscula* etc.

It is, on the other hand, remarkable to note that only 30 species extend to Greenland, and that these are really Scandinavian types whith the exception of: *C. gynocrates, pratensis, festiva, stylosa* and *scirpoidea*. Of the 27 species which our region has in common with Iceland, *C. festiva* and *scirpoidea* are the only ones, which are of American origin, even though they both have been recorded from a few stations in Arctic Scandinavia. In other words the American element which is represented in Greenland, Iceland and Scandinavia is very small and none of these species have found their way South to the Faeroe islands, Great Britain or the Alps of Switzerland. — The number of American *Carices* which have become distributed over the coast of Eastern Asia is, also, very small, and the following species may be mentioned: *C. macrocephala, Gmelini, macrochaeta, Mertensii, Sitchensis, melanocarpa, scirpoidea* and *Williamsii*.

If we now examine the *Carex*-vegetation of the British Isles, we notice that these have 25 species in common with North-West America, and 9 of these are circumpolar, but we do not meet with any species here, which may be considered as American. In the Alps and Pyrenees there are 27 species which, also, inhabit our region, and 7 of these are circumpolar. It is an interesting fact that with the only exception of *C. foetida* and *pyrenaica*, all the species from Great Britain and the Alps, which occur in North-West America, are Scandinavian, and several are arctic.

Let us at the same time extend our comparison to the Rocky Mountains of Colorado, which we have treated in a previously published paper [1]), From this we will see that Colorado has 63 species in common with our region, 6 are circumpolar, while 21 are Scandinavian. Of the 12 species which our region has in common with Himalaya, *C. canescens, incurva, ustulata* and *rigida* are circumpolar; the others are mostly lowland species and widely dispersed throughout the northern hemisphere.

Characteristic of the *Carex*-vegetation in North-West America is thus: the development of a relatively large number of types, the presence of certain American species but more properly pertaining to other regions of our continent, and finally the presence of species known from the old world, prominent among which are circumpolar, arctic and northern forms.

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[1]) Am. journ. of sc. Vol. 16. 1903. p. 38.

As far as concerns the representation of the greges, we meet here with *„formae hebetatae“*, *„centrales“* and *„desciscentes“*, thus several of the greges seem to be well developed within the region. Of these the interesting *„formae hebetatae“*, which evidently indicate the habit of ancestral types, these exhibit the same characters as observed in other regions viz. a lesser development of the inflorescence besides the tendency to become dioecious. But otherwise they show invariably the same morphological structure of the perigynium, in no ways to be distinguished from that of the more evolute types, though readily recognized as that of a *Vignea* or of one of the *Carices genuinae*.

The study of the geographical distribution of a large genus, as for instance *Carex*, may throw some light upon the great problem as to the place of origin of certain species, and we believe that the abundance of a species and its association with allies must be of some weight in regard to this particular question: the geographical center. A tabulation of all the flowering plants of the region, treated in the present paper, will no doubt show that North-West America constitutes a most important center as to distribution and development of a number of species, and perhaps the most important in North America.