

ABSTRACTS.

1. Cyperaceæ-Caricoideæ, by G. Kükenthal (Das Pflanzenreich, iv, 20, Leipzig, 1909, 824 pp., 128 figs.).

This important work is of great interest to New Zealand botanists, since it deals with the difficult genera *Uncinia* and *Carex*. The author had not only European herbarium specimens at his disposal, but, so far as New Zealand was concerned, many from the collections of Cheeseman, Petrie, and Cockayne, the actual herbarium numbers being cited in most instances.

The following summary of the work seeks to show the principal differences between the author's treatment of the New Zealand forms and that of Cheeseman in the "Manual of the New Zealand Flora." It should be borne in mind in estimating these differences that, as Cheeseman has very truly said (Manual, p. 798), "The New Zealand species [of *Uncinia*] are highly variable, and most difficult of discrimination. *U. purpurata*, *cæspitosa*, *riparia*, *rupestris*, and *filiformis* present an almost unbroken series of forms, and I doubt if any two observers would arrive at the same conclusions respecting them even if they worked on the same material."

Genus UNCINIA, Pers.

Uncinia is divided into two subgenera—*Bu-Uncinia*, Kükenth., and *Pseudocarex*, Kükenth.—the former being subdivided into the sections *Platyandra*, C. B. Clarke, and *Stenandra*, C. B. Clarke, to the latter of which all the New Zealand species belong, and which differs from the former in the membranous and often deciduous glumes, filiform filaments, and generally glabrous utricles. The species, and also those of *Carex*, are arranged below in the same consecutive order as given by Cheeseman. Where a species is not cited it is to be understood that no change of any moment has been made.

1. *Uncinia Sinclairii*, Boott.

This becomes *U. macrolepis*, Deene., which was previously considered synonymous with *U. Lechleriana*, Steud. Its distribution is Fuegia and South Island of New Zealand.

2. *U. tenella*, R. Br.

The type is found only in Tasmania and Victoria. The New Zealand plant is described as var. β *longifructus*, and differs from the type (as Cheeseman had also shown) in the utricles being nearly twice as long, and exceeding the 3-nerved glumes.

3. *U. nervosa*, Boott.

This is given as a synonym of *U. rupestris*, Raoul, which latter is the prior name, the *U. rupestris* of Cheeseman and others being referred to *U. Hookeri*, Boott, which the author reduces to a variety of *U. riparia*, R. Br. Two varieties of *U. rupestris*, Raoul, are described—viz.: var. β *capillacea*, Kükenth., var. nov., which is said to be *U. filiformis* of most New Zealand collectors, and has filiform culms and leaves, narrow spikes and paler glumes than the type, and utricle scarcely 4 mm. long; and var. γ *planifolia*, Kükenth., var. nov., with flat leaves 1-1.5 mm. broad, and spikes narrower than the type. Both varieties are endemic, but the type occurs also in Tasmania.

4. *U. compacta*, R. Br.

Besides the type, three varieties are described—var. β *divaricata* (Boott), Hook. f., which has culms often 20 cm. tall, spikes 7-9 mm. broad, and glumes paler and more acute than the type and many-nerved on the back; var. γ *Clarkei* (Petrie), Kükenth., which is the var. *Petriei*, C. B. Clarke, in Cheeseman's Manual; and var. δ *elongata*, C. B. Clarke, this latter being confined to Amsterdam Island.

The type is found in Tasmania, Kerguelenland, Amsterdam Island, and New Zealand; var. *divaricata* is endemic, and var. *Clarkei* extends to Victoria, and, besides the South Island of New Zealand, is found in Macquarie Island.

5. *U. purpurata*, Petrie.

The following two varieties are described: var. β *robusta*, Petrie in Trans. N.Z. Inst. xvii (1885) 272, and var. *subcæspitosa*, Kükenth., var. nov., with slender culms, narrow leaves exceeding the culms, and acute glumes paler than those of the type. (Habitat: Mount Cook, Cheeseman; Old Man Range, Otago, Petrie in Herb. Cockayne; No. 7821.)

6. *U. purpurata*, Petrie, var. *fusco-vagnata*.

This is considered a valid species under the name *U. fusco-vagnata*, Kükenth. Other synonyms are: *U. compacta*, var. *dvaricata*, Hook. f. in part; *U. compacta*, var. γ *viridis*, C. B. Clarke.

7. *U. cæspitosa*, Boott.

This is cited as *U. cæspitosa*, Colenso, ex Boott in Hook. f. Fl. Nov. Zeland

8. *U. australis*, Pers.

The name as above is changed by the rule of priority to *U. uncinata* (L. f.), Kükenth., the plant being originally described by the younger Linnæus as *Carex uncinata*: (Suppl., 1781, p. 413.)

9. *U. leptostachya*, Raoul.

U. distans, Boott, is treated as a variety of this species (var. *distans* (Boott), Kükenth.): spike flexuous, extremely lax flowered.

10. *U. riparia*, R. Br.

Besides the var. *Banksii* (Boott), C. B. Clarke, of Cheeseman's Manual, *U. Hookeri*, Boott, which is given as a synonym for *U. rupestris*, Raoul, by Cheeseman, is referred to this species as var. *Hookeri* (Boott), Kükenth. Cheeseman, however (Manual, p. 805), remarks of *U. rupestris* that it is "much too closely allied to *U. riparia*."

A var. γ *affinis*, Colenso (syn., *U. laxiflora*, Petrie) is also described.

Besides New Zealand, the type occurs in New Guinea, East Australia, Tasmania, and Lord Howe Island; var. *Hookeri* in New Guinea; while vars. *affinis* and *Banksii* are endemic

11. *U. rubra*, Boott.

The name of var. *rigida* (Petrie), Cheesem., is changed to var. β *strictissimâ*, Kükenth., the name *rigida* having been given to another valid species in 1885. A new var. *fallax*, Kükenth., is created which has more slender culms than the type, leaves exceeding the culms, flat, 2 mm. broad and not so rigid, and which is said to be a transitional stage towards *U. riparia*.

12. *U. rupestris*, Raoul.

As seen above (see No. 3), the author does not consider the plant thus designated by Cheeseman as the true *U. rupestris*, Raoul, but refers it to, *U. Hookeri*, Boott (see No. 10).

13. *U. filiformis*, Boott.

The author excludes *U. debilior*, F. Muell., of Lord Howe Island, from this species, including it in *U. riparia*, R. Br.

14. One new species, *Uncinia pedunculata*, Kükenth., is described as follows:—

"Rhizoma laxè cæpitosum. Culmus 35–50 cm. altus strictus gracilis triquetèr lævis. Folia culmo breviora 2–3 mm. lata plana rubra rigida. Spicula lineari-cylindrica 10–14 cm longa 3 mm. lata densiflora in partem δ 2 cm. longam sensim desinens sæpe bracteata. Squamæ φ oblongo-ovatae obtusiusculæ spadicæ clarius carinatae marginibus angustæ albæ. Utriculi squamas $\frac{1}{2}$ superantes suberecti: ellipsoidei fere 5 mm. longi brunnei glabri obsolètissime nervosi, basi spongiosa in stipitem longum attenuati, in rostrum medioere sensim abeuntes. Nux oblongo-ovata apice annulata. Styli basis incrassata. Rhacheola utriculorum duplo superans."

New Zealand: Forest on Ruapuke Island, in Foveaux Strait (Cockayne, No. 7867!). [This is the common species of the Stewart Island forest.]

Genus CAREX.

The greater part of the monograph is devoted to the genus *Carex*, of which 798 species and a considerable number of hybrids are recognised. The genus is subdivided into four subgenera, and these again into sixty-nine sections. A table shows the geographical distribution of the species according to the subgenera and sections. Regarding the New Zealand species the author writes, "The flora of New Zealand bears an alto-

gether primitive stamp, since it contains relatively a very high number of endemic types (twenty-six out of forty-one), and it may rightly be considered the original home of the subsection *Arenariae-Australiae* and the section *Echinochloa*. A remarkable character, and to be found nowhere else, is the wine-red colour of the leaves of many species, also of *Urcinia*. With the neighbouring parts of Australia an exchange of eleven species has taken place. *C. dissita* extends, with a certain alteration, to the Australian monsoon region. *Carex trifida* also occurs in the subantarctic region."

The following are the chief changes made by Kükenthal :—

1. *C. pyrenaica*, Wahl.

The type is found on high mountains in the four quarters of the globe and in the alpine region in both Islands of New Zealand.

A var. β *cephalotes* (F. Muell.), Kükenth., is described, which is smaller than the type, has ovate or subglobose spikelets 6–8 mm. long, invariably 2 styles and utricles very shortly stipitate and broader than in the type. This variety, which was considered a species by Von Mueller, is confined to New Zealand and Australia.

2. *C. teretiusecula*, Good.

This is given as a synonym of *C. dandra*. Schrank, on the score of priority. The type alone occurs in New Zealand.

3. *C. appressa*, R. Br.

Carex virgata, Sol., and *C. secta*, Boott, maintained by Cheeseman as species, are reduced to varieties of the above, and a new variety γ *sectoides*, Kükenth., is described which includes only the Chatham Island plant, also considered possibly distinct by Cheeseman. But for this latter variety the author would have considered *C. secta*, Boott, a valid species, but he holds that the var. *sectoides* is a connecting-link between it and *C. appressa*.

In addition to Australia and Tasmania, New Caledonia is given as an additional habitat for the type. The var. *virgata* is also Australian and Tasmanian, but the remaining two varieties are endemic.

4. *C. inversa*, Br.

Two forms of the type—*parvula*, Kükenth. (Whangaroa, Petrie in Herb. Cookayne No. 1642, and also in New South Wales), with weak culms 4–6 cm. tall and very small few-flowered spikelets; and *major*, Boott (confined to Australia)—are described. A new variety, β *costata*, Kükenth. (South Island, near Lake Wanaka, Petrie!), is described, and is characterized by the slender culms, flaccid leaves, and intensely green utricles, marked on both sides by strong brownish nerves. A var. γ *Leichhardtii*, Boeck, the var. *major*, Benth. non Boott, is described which appears to be common in Australia, but only one New Zealand specimen is noted. It has culms taller than the type, and the utricles conspicuously winged and abruptly contracted into a moderately long incurved beak.

5. *C. echinata*, Murr.

According to the author, on the authority of C. B. Clarke, this species, which is confined to the Northern Hemisphere, has been confused by most authors with *C. stellulata*, Good., the two species belonging to different sections of the subgenus *Vigna*.

C. stellulata, Good., is divided into six varieties, the type and var. *australis*, Kükenth., alone occurring in New Zealand, the latter being endemic. It is characterized by its flaccid culms and leaves and utricles with smooth or sparingly scabrid margins.

6. *C. lagopina*, Wahl.

The type alone occurs in New Zealand. Four non-New-Zealand varieties are described.

7. *C. Gaudichaudiana*, Kunth.

Three varieties are given. The type and var. β *humilior*, Kükenth., occur both in New Zealand and Australia; var. γ *contracta* (F. Muell.), Kükenth., is peculiar to Australia, and var. δ *Thunbergii* (Steud.), Kükenth., is confined to East Asia, including Japan. The var. *humilior* has short frequently curved culms, spikelets close together, short oblong-ovate, and utricles ovate and broader than the type.

8. *Carex ternaria*, Forst. f.

This, *C. Darwinii*, Boott, and *C. subdola*, Boott, are placed by the author in a different section of the subgenus to *C. Gaudichaudiana*, Kunth.

The treatment of *C. ternaria* is much the same as that of Cheeseman, except that the var. *pallida*, Cheesem., is made a form merely of var. *minor*, Boott, another form of which (*nigrescens*, Kükenth.) is described. The variety *minor* has fewer and shorter spikelets than the type, and its form *nigrescens* has the glumes darker in colour and the dorsal nerves and awn reddish.

9. *C. Sinclairii*, Boott.

This species is not admitted, the author in a note saying it appears to differ from *C. ternaria* in unimportant characters merely. At the same time, it must be pointed out that Kükenthal evidently had no material of the form in question, whereas Cheeseman had abundance (Manual, p. 821).

10. *C. Raouli*, Boott.

Here belongs *C. Haasteana*, Boeck., a plant hitherto unknown to New Zealand botanists, but treated by the author merely as a form *Haasteana* (Boeck.), Kükenth., differing from the type in its much shorter culms; its precise habitat is unknown, but it was collected by Haast. It has culms only 5-7 cm. tall.

11. *C. Buchanani*, Bergg.

This is constituted var. β of *C. lucida*, Boott, the author considering there are numerous transitional forms connecting it with the type, and citing *C. flagellifera*, Col., as an example.

12. *C. rubicunda*, Petrie.

This is reduced to var. β *rubicunda* (Petrie), Kükenth., of *C. Petriei*, Cheesem. *C. Traversii*, Kirk, and *C. Dallii*, Kirk, which latter is maintained by Cheeseman, are referred to *C. Petriei*, *C. Traversii* coming midway between var. β and the type. The author, however, had only immature specimens of *C. Dallii*.

13. *C. unciifolia*, Cheesem.

A new var. β *libera*, Kükenth., is described which has longer culms not altogether sheathed by the leaves, longer spikelets and female glumes with truncate apices.

14. *C. comans*, Bergg.

C. Cheesemannii, Petrie, is made var. β , and var. *stricta*, Cheesem., is considered a form of this and not a valid variety. *C. pulchella*, Bergg., is, as by Cheeseman, considered a variety.

15. *C. plesnostachys*, C. B. Clarke.

This is unknown to the author.

16. *C. dissita*, Sol.

C. Neesiana, Endl., and *C. Solanderi*, Boott, are treated as vars. δ and ϵ respectively of this species, the former being also considered synonymous with var. *ochrosacous*, Cheesem. On the other hand, Cheeseman admits *C. Solanderi* as valid, and rejects the Norfolk Island *C. Neesiana*, Endl., from the New Zealand flora.

17. *C. ventosa*, C. B. Clarke.

Unknown to the author.

18. *C. breviculmis*, R. Br.

The type is confined to New Zealand, Lord Howe Island, and Australia. Two varieties are described, one confined to Lord Howe Island and the other to New Guinea. The subspecies *Royleana*, Nees, occurs in various cited forms in South and East Asia, Japan, and Formosa.

19. *C. flava*, L.

The New Zealand plant referred as above by Cheeseman is described by the author as *C. Oederi*, Retz, var. γ *cataractæ* (R. Br.), Kükenth. It is confined to the Southern Hemisphere (South Africa, Tasmania, New Zealand, Chile, and Patagonia). Cheeseman had also pointed out the close relationship of the plant to *C. Oederi*, which he considers merely a variety of *C. flava*.

20. *C. Cockayneana*, Kükenth.

This is reduced to var. β of *C. Forsteri*, Wahlenb.

21. *C. semi-Forsteri*, C. B. Clarke.

This is considered synonymous with *C. Forsteri*, Wahlenb.

22. *C. pseudo-cyperus*, L.

Four varieties are described, but only the type and var. γ *fascicularis* (Soland.), Boott, occur in New Zealand.

C. novæ selandicæ, Boeck., is referred here as forma *novæ selandicæ* (Boeck.), Kükenth., of var. γ , and distinguished by its shorter culms, narrower leaves, and smaller spikelets and utricles. The latter is endemic.

SYSTEMATIC ARRANGEMENT OF THE NEW ZEALAND SPECIES OF UNCINIA AND CAREX
ACCORDING TO KÜKENHAL.

UNCINIA, Pers.

Subgenus I. *Eu-Uncinia*, Kükenth.

Section 1. *Platyandra*, C. B. Clarke.

(No New Zealand species.)

Section 2. *Stenandra*, C. B. Clarke.

- U. fusco-vaginata*, Kükenth.
U. purpurata, Petrie.
 Var. β *robusta*, Petrie.
 Var. γ *subcæspitosa*, Kükenth.
U. cæspitosa, Colenso.
 Var. β *minor*, Kükenth.
U. pedicellata, Kükenth.
U. uncinata (L. f.), Kükenth.
 Var. β *clavata*, Kükenth.
 Var. γ *ferruginea* (Boott), Kükenth.
U. leptostachya, Raoul.
 Var. β *dustans* (Boott), Hook. f.
U. riparia, R. Br.
 Var. β *Hookeri* (Boott), Kükenth.
 Var. γ *affinis*, Colenso.
 Var. δ *Banksii* (Boott), C. B. Clarke.
U. rubra, Boott.
 Var. β *strictissima*, Kükenth.
 Var. γ *fallax*, Kükenth.
U. rupestris, Raoul.
 Var. β *capillacea*, Kükenth.
 Var. γ *planifolia*, Kükenth.
U. compacta, R. Br.
 Var. β *divaricata* (Boott), Hook. f.
 Var. γ *Clarkei* (Petrie), Kükenth.
U. tenella, R. Br., var. β *longifructus*, Kükenth.
U. filiformis, Boott.

Subgenus II. *Pseudocarex*, Kükenth.

(Not in New Zealand.)

CAREX, L.

Subgenus *Primocarex*, Kükenth.

Section *Unciniæformes*, Kükenth.

Subsection *Aciculares*, Kükenth.

C. acicularis, Boott.

Subsection *Callistachys* (Heuff.), Aschers. et Gräbner.

C. pyrenaica, Wahlenb.

Subgenus *Vigneæ* (P. Beauv.), Nees.

Section *Arenariæ*, Kunth.

Subsection *Australes*, Kükenth.

C. pterocarpa, Petrie.

C. Kirkii, Petrie.

Var. β *elatior*, Kükenth.

Var. γ *membranacea*, Kükenth.

C. Muelleri, Petrie.

C. kaloides, Petrie.

Section *Bracteosæ*, Kunth.

C. trachycarpa, Cheesem.

Section *Paniculatæ*, Kunth.

C. diandra, Schrank.

C. appressa, R. Br.

Var. β *virgata* (Soland.), Kükenth.

Var. γ *sectoides*, Kükenth.

Var. δ *secta* (Boott), Kükenth.

- Section *Inversa*, Kükenth.
- C. resectans*, Cheesem.
C. inversa, R. Br.
 Forma 1. *parvula*, Kükenth.
 Forma 2. *major*, Boott.
 Var. β *costata*, Kükenth.
 Var. γ *Leichhardtii*, Boeck.
C. Colensoi, Boott.
- Section *Ovales*, Kunth.
- C. leporina*, L.
- Section *Canescentes*, Fries.
- C. lagopina*, Wahlenb.
- Section *Elongatae*, Kunth.
- C. stellulata*, Good.
- Subgenus *Eucarea*, Coss. et Germ.
 Section *Acutae*, Fries.
 Subsection *Vulgares*, Aschers.
- C. Gaudichaudiana*, Kunth.
 Var. β *humilior*, Kükenth.
 Subsection *Cryptocarpae*, Tuckerm.
- C. subdola*, Boott.
C. Darwinii, Boott, var. γ *urolepis* (Franch), Kükenth.
C. ternaria, Forst. f.
 Var. β *minor*, Boott.
 Forma 1. *pallida*, Cheesem.
 Forma 2. *nigrescens*, Kükenth.
 Var. γ *gracilis*, Cheesem.
- Section *Mitratae*, Kükenth.
 Subsection *Eumitratae*, Kükenth.
- C. breviculmis*, R. Br.
- Section *Tumidae*, Kükenth.
- C. Brownii*, Tuckerm.
- Section *Spirostachyae*, Drejer.
- C. Oederi*, Retz, var. γ *cataractae* (R. Br.), Kükenth.
- Section *Echinoclænæ*, Th. Holm.
- C. cirrhosa*, Berggren.
 Var. β *lutescens*, Kükenth.
C. Berggreni, Petrie.
C. Hectorsi, Petrie.
C. unciifolia, Cheesem.
 Var. β *libera*, Kükenth.
C. decurtata, Cheesem.
C. lucida, Boott.
 Var. β *Buchanani* (Berggr.), Kükenth.
C. devia, Cheesem.
C. dipsacea, Berggren.
C. testacea, Soland.
C. wakatipu, Petrie.
C. Raoulii, Boott.
 Forma *Haasteana* (Boeck.), Kükenth.
C. comans, Berggren.
 Var. β *Cheesemannii* (Petrie), Kükenth.
 Var. γ *pulchella* (Berggr.), Kükenth.
C. Petriei, Cheesem.
 Var. β *rubicunda* (Petrie), Kükenth.
C. litorosa, L. H. Bailey.
C. dissita, Soland.
 Var. β *monticola*, Kükenth.
 Var. γ *Lambertiana* (Boott), Cheesem.
 Var. δ *Neesiana* (Endl.), Kükenth.
 Var. ϵ *Solanderi* (Boott), Kükenth.
C. longiculmis, Petrie.

Section *Pseudo-cyperæ*, Tuokerm.

- C. vacillans*, Soland.
C. Forsteri, Wahlenb.
 Var. β *Cockayneana*, Kükenth.
C. pseudo-cyperus, L.
 Var. γ *fascicularis* (Soland.), Boott.

Section *Paludosæ*, Fries.

- C. trifida*, Cav.
C. pumila, Thunb.

L. C.

2. Osteology of Antarctic Seals, by Robert B. Thomson (Trans. Roy. Soc. Edinburgh, vol. xlvii, 1909).

Four seals are endemic to the shores of the Antarctic Continent, of which one, the sea-leopard (*Stenorhynchus leptonyx*) occasionally visits the shores of New Zealand. In this contribution, however, Mr. Thomson deals only with Ross's seal (*Ommatophoca rossi*), the osteology of which is given in detail, so that it is impossible to summarise the paper. Two points, however, may be referred to: he was able to examine a considerable number of specimens of each of these four species in order to establish their dentition, with the result that he finds these antarctic seals to have the formula 2, 1, 5 above and below, which contrasts with the typical *Phoca* of the Northern Hemisphere, in which there are three incisors on each side of each jaw. Again, the vertebral formula of the *Phocidae*, as a whole, appears to be constantly C. 7, T. 14, L. 5, S. 3, C. 10-12.

The paper is illustrated with photographs of the skull of Ross's seal.

W. B. B.

3. Note on a Species of *Hydra* new to New Zealand, by Professor W. B. Benham, D.Sc., F.R.S., Otago University.

During a recent visit to Shag Valley Station, near Palmerston, my host, Mr. A. D. Bell, mentioned that he had frequently found a species of *Hydra* in a pool in his grounds.

On examining the tips of the roots of trees and other plants which push their way into the water round the sides of the pool I found specimens of this little animal, which differ in several respects from the small pale-brown species which is to be met with in the pond in Woodhaugh Garden, and in some streams round Dunedin.

The present species is of a rich reddish-brown, almost mahogany colour, though some are rather of a sienna tint—the colour, of course, being in the endoderm.

In size they greatly exceed the common species, one individual measuring about $\frac{3}{4}$ in. (15 mm. in alcohol), excluding the tentacles. The tentacles are few in number, 5-7 in the individuals examined.

The specimens were budding freely, one having as many as three buds of different ages.

Till they have been examined microscopically, and till I have searched the recent literature, it is impossible to say whether this species is new to science, though it is certainly new to New Zealand.

The only records of the occurrence of *Hydra* in the Dominion are by the late Dr. Coughtrey. In the Transactions for 1875* he writes (p. 299), "I have seen two *Hydræ* in New Zealand—one nearly like *H. viridis*, of Britain, and the other I have not been able to identify with the British members of the *Gymnochroa*."

In the version of the same paper published in the "Annals and Magazine of Natural History" for 1876† he writes (p. 24), "I discovered a pretty fresh-water *Hydra* in some pond-water, attached to one of the leaves of the plant *Natella ucra*" [sic, probably *Nitella Hookeri*]. This *Hydræ* in general form is like *H. viridis*, Linn., in colour pale brown, and has 7 tentacles, which are peculiar in this respect, that they are distinctly annulated, and each ring is fringed."

It is clear, I think, that this refers to the first of the species mentioned in his former article; and probably it is the one that I have found round Dunedin. The "annulation" of the tentacles is due to the arrangement of the batteries of nematocysts, and is not peculiar to the species. What he means by the "fringing" I do not know, and will not hazard a guess.

* Coughtrey: "Critical Notes on New Zealand *Hydrozoa*." Trans. N.Z. Inst., 1875, vol. viii, p. 298.
 † Coughtrey: "Critical Notes on New Zealand *Hydrozoa*, Suborder *Thecophora*." Ann. Mag. Nat. Hist. (4), xvii, p. 22.