173. **Senecio lautus** Forst., M. 57.

I got a form of this on the beach near the Cascades.
Kermadecs, New Zealand, Australia.

174. **Sonchus oleraceus** L., M. 58.

Sow-thistle. Was recorded by Captain Cook, but was not listed until Maiden collected it. Phillip Island also (R. M. L.).
Everywhere except in the frigid zone.

175. **Bidens pilosa** L., M. 54.

Quite probably only naturalized, as it was not collected by Bauer or Cunningham.
Lord Howe, New Caledonia, Kermadecs, New Zealand, Australia, and widely in warm and temperate regions.

ART. II.—*Notes on* Aciphylla, *with Descriptions of New Species.*

By T. F. CHEESEMAN, F.L.S., F.Z.S., Curator of the Auckland Museum.

[*Read before the Auckland Institute, 16th December, 1914.*]

IT is somewhat singular that the genus *Aciphylla*, so readily identified from its remarkably distinct and conspicuous habit, and so full of interest in other respects, should not have received more attention from New Zealand botanists; but although it probably contains a greater number of species than any other genus of *Umbelliferae* in New Zealand our knowledge of the various forms has been of slow growth, and at present is far removed from completeness. The genus was established by the two Forsters in 1776, very shortly after Cook's second voyage, the single species collected by them being named *Aciphylla squarrosa*. In 1853, or seventy-seven years later, when Sir J. D. Hooker published his "Flora Novae-Zelandiae," *A. squarrosa* was still the only species admitted, although the plant now known as *A. Colensoi* was included in Hooker's variety *latifolia*. In the second volume of the Flora, issued two years later, *A. Monroi* was added In the first part of the Handbook, published in 1864, *A. Colensoi* was definitely separated from *A. squarrosa*, and *A. Lyallii* and *A. Dobsoni* were described, making (with *A. Monroi*) five species in all, to which a sixth was shortly afterwards added in the Chatham Islands *A. Traversii*. For many years no further additions were recorded, and attempts were even made to reduce those already published. Thus Mr. Hemsley informs me that at an early date Mr. Buchanan suggested to the Kew authorities that *A. Lyallii* should be treated as an alpine form of *A. Colensoi*, and *A. Monroi* of *A. squarrosa*. However, between 1882 and 1900 six additional species were described: two, *A. Hectori* and *A. Kirkii*, by Buchanan; three, *A. Traillii*, *A. polita*, and *A. Hookeri*, by Kirk; and one, *A. simplex*, by Petrie. In the "Manual of the New Zealand Flora," published in 1906, I have enumerated thirteen species; that is, excluding the Chatham Islands *A. Dieffenbachii*, which now constitutes the type of my genus *Coxella*, but including *A. Townsoni*, described in the appendix.

The examination of the material available during the preparation of the Manual showed quite clearly that some of the species, as understood by Hooker and others, contained more forms than one. But it was also evident that further information and more copious suites of specimens were required before reliable conclusions could be reached. Since then I have been able to settle some of the points then left undetermined, and I have also received much entirely new matter from friends. Pending the preparation of a revision of the whole of the New Zealand species, which I hope to complete before long, I have drawn up the following notes, which it seems advisable to publish at once, especially as they include descriptions of several new species and varieties.

A. Hookeri T. Kirk.

Some time subsequent to the publication of the Manual I was kindly furnished by Mr. Townson with an excellent series of specimens, which has enabled me to give a plate of the species in the recently issued "Illustrations of the New Zealand Flora." Mr. Townson has also supplied me with remarks on its distribution, from which it is evident that it has a wide range on the mountains of north-west Nelson. It probably exists on most of the higher peaks from the sources of the Heaphy and Karamea Rivers southwards along the Mount Rochfort chain, the Lyell and Brunner Mountains, and the Paparoa Range. Its altitudinal range is given as 2,500 ft. to nearly 5,000 ft.

A. indurata Cheesem. n. sp.

Affinis *A. Hookeri* T. Kirk, a qua differt caule valde majore et robustiore, foliorum segmentis multo longioribus et latioribus, non conspicue squarrosis.

Caulis robustus, erectus, 3·5–6 dm. altus, 0·75–1·5 cm. diam. Folia radicalia numerosa, 3–4 dm. longa, bipinnata; pinnis 4–6-jugis, 7–14 cm. longis, trifoliolatis; ultimis segmentis 5–12 cm. longis, 0·5–0·75 cm. latis, linearibus, planis aut leviter concavis, rigidis, coriaceis, acuminatis, apice pungentibus; marginibus valde incrassatis, serrulatis. Petioli folio aequilongi aut breviores, basi latissime vaginantes, superne rigidi, facie concavi. Bracteae numerosae, basi late vaginantes, apice pinnatae, pinnis anguste linearibus, rigidis, squarrosis, pungentibus. Umbellae numerosae, compositae, in paniculam densum angustum aggregatae. Fructus linearioblongus.

Hab.—South Island: Buller Valley—Mount Lyell and the Brunner Range, 3,000–5,000 ft.; Paparoa Range—Mount Bovis, alt. 3,000–4,000 ft.; *W. Townson!*

Root long, stout, tapering, often as thick as the thumb at the top. Stem stout, erect, 1¼–2 ft. high, ¼–⅓ in. diameter or more at the base. Radical leaves numerous, 1–1½ ft. long, pinnate with most of the pinnae trifoliolate or rarely the lowest again pinnate, the uppermost usually simple; pinnae 4–6 pairs, 3–6 in. long; ultimate segments 2–5 in. long, ⅙–⅓ in. broad, linear, occasionally squarrose but not conspicuously so, flat or slightly concave, very rigid and coriaceous, gradually narrowed into long rigid and pungent points; midrib very stout, scaberulous above; margins much thickened, cartilaginous, rough with minute serrulations. Petiole equalling or shorter than the blade, upper portion rigid and concave, below broader and sheathing and less coriaceous. Bracts very numerous, rigid, squarrose and spreading; the lower ones with a sheathing-base ¼–⅓ in. broad, tipped with a pinnate leaflet 1–2 in. long; upper

gradually becoming smaller with narrower and more pungent segments, uppermost tipped with a trifid leaflet 1–1½ in. long, the segments very narrow-linear and spinous. Inflorescence compact, narrow-linear-oblong, 8–12 in. long, female slightly narrower than the male. Umbels very numerous, compound, more or less concealed within the sheathing-bracts. Fruit linear-oblong, not seen in a perfectly mature state.

This was first collected by Mr. Townson in 1904, but, unfortunately, that portion of the Manual dealing with the *Umbelliferae* had then passed through the printer's hands, so that I was unable to include it in the work. It is clearly allied to *A. Hookeri*, but is a much larger and more rigid and coriaceous plant, with the ultimate segments many times longer and considerably broader, and not conspicuously squarrose. The inflorescence is also much larger and broader, and altogether the aspect of the plant is very dissimilar. Mr. Townson's specimens from Mount Bovis are smaller, and the ultimate segments of the leaves are shorter, showing a slight approach to *A. Hookeri*.

A. oreophila Petrie. (*A. intermedia* Petrie.)

This was also gathered by Mr. Townson, on Mount Holdsworth, Tararua Range, in January, 1908, specimens of both sexes being obtained. The male inflorescence, which was not described by Petrie, is apparently not much more lax than the female. Mr. Townson remarks that it is a somewhat rare and local plant, not many examples being observed.

A. pinnatifida Petrie.

I am indebted to Mr. J. Speden, of Gore, for excellent specimens of this distinct species. He informs me that it is not uncommon at high altitudes on the mountains of south-west Otago, usually along the margins of streams or in alpine bogs. It evidently attains a greater size than given by Mr. Petrie, some of Mr. Speden's specimens being nearly a foot in height, with leaves 6–8 in. long. The female inflorescence, which is not described by Mr. Petrie, is much contracted, the umbels being almost concealed in the sheaths of the bracts. In the males the inflorescence is more open, and the sheaths of the bracts less developed. Its nearest ally is probably *A. Lyallii*.

A. Monroi Hook. f.

The original description of this species, published in the second volume of the "Flora Novae-Zelandiae" (p. 330), is much more correct than the later one given in the Handbook, which, I am informed by Mr. Hemsley, included several plants not really belonging to the species. Munro's type was discovered in 1853 in the Awatere Valley, Marlborough, on the "summit of Macrae's Run, alt. 4,500 ft." With the assistance of Mr. Hemsley, I have figured it in the recently issued "Illustrations of the New Zealand Flora" (t. 63). It will be noticed that the leaves are sparingly bipinnate at the base, which I find to be characteristic of the great majority of the specimens gathered by myself in various localities in Nelson and Canterbury, although sometimes depauperated states from high altitudes are simply pinnate. In several localities in Cant rbury, however, at moderate altitudes, I have gathered a larger and more robust plant, with the leaves uniformly pinnate, never bipinnate at the base, and with the leaflets broader and flatter. In the

Manual I included this in the circumscription of *A. Monroi*, as stated in the footnote to the description, but further study has satisfied me of its distinctness, and it is described in this paper under the name of *A. similis*.

In the Mount Cook district I have collected another allied plant which differs from the typical form of *A. Monroi* in the larger size, stouter habit, and in the leaves being more profusely bipinnate, and consequently with more numerous segments, which are rather broader and more coriaceous. Mr. Hemsley considers that it is "specifically different from the original on which the species was founded," but for the present I prefer to treat it as a variety only. It may be briefly characterized as follows:—

A. Monroi Hook. f. var. **divisa** Cheesem.

Caule robusto, foliis majoribus profuse bipinnatis, segmentis latioribus magis coriaceis.

Hab.—South Island: Mount Cook district, not uncommon in open grassy places, alt. 4,000–6,000 ft.; *T. F. C.* Mr. Hemsley informs me that there are specimens in the Kew Herbarium from other localities in the Southern Alps.

A. **similis** Cheesem. n. sp.

A. Monroi Hook. f. affinis, sed differt caule valido, foliis pinnatis nunquam bipinnatis, segmentis planis latioribus.

Herba glaberrima, 15–35 cm. alta, radice crassa. Folia radicalia 10–20, 7–25 cm. longa, regulariter pinnata, nunquam bipinnata; pinnis 4–10-jugis, 2·5–7·5 cm. longis, 2–3 mm. latis, planis, rigidis, anguste linearibus, aculeato-acuminatis, apice pungentibus. Caulis aut pedunculus validus, erectus, foliis multo longior. Umbellae compositae, in paniculam latam dispositae; bracteis late vaginantibus. Flores albi. Fructus 3 mm. longus, lineari-oblongus.

Hab.—South Island: Peaty bogs on Arthur's Pass, Canterbury Alps, alt. 3,000–4,000 ft.; also near the Waimakariri Glacier; *T. F. C.* Upper Rakaia Valley; *J. D. Enys!*

Rather stout, smooth, simple, 6–15 in. high. Leaves 10–20, outer spreading, inner suberect, 3–10 in. long, regularly pinnate, never bipinnate at the base; leaflets 4–10 pairs, 1–3 in. long, $\frac{1}{6}$–$\frac{1}{4}$ in. broad, narrow-linear, rigid, flat, striate, narrowed at the apex into a short pungent point; midrib usually evident; margins thickened and cartilaginous; sheaths smooth, flattened, furnished at the top with a rigid spine on each side $\frac{1}{2}$–1 in. long. Peduncle or flowering-stem considerably exceeding the leaves, rather stout. Male inflorescence of numerous compound umbels forming an open panicle, 2–5 in. long; bracts with broad sheathing-bases tipped with a small pinnate leaf. Rays of the primary umbels 8–15, $\frac{1}{4}$–$\frac{1}{2}$ in. long; of the secondary umbels about the same number. Flowers white. Fruit about $\frac{1}{5}$ in. long, linear-oblong. Carpels 3–5-winged.

This is one of the plants that have been confused with *A. Monroi*. But it differs from Monro's original plant, which, through the kindness of the authorities of Kew, I have been enabled to figure in the recently issued "Illustrations of the New Zealand Flora" (t. 63), in the leaves never being bipinnate, which they usually are in *A. Monroi;* in the leaflets being longer and broader and flatter, and spreading in one plane, and also in being

placed more at right angles to the primary rhachis of the leaf; in the stouter peduncle or flowering-stem; and in the more highly developed and broader sheathing-bases of the bracts. I have been acquainted with it for many years, my first specimens having been gathered on Arthur's Pass as far back as 1880. In subsequent visits I have again observed it in the same locality, and also in the vicinity of the Waimakariri Glacier.

A. multisecta Cheesem. n. sp.

A. Monroi Hook. f. affinis, sed differt caule multo robustiore, foliis numerosioribus tripinnatisectis, segmentis anguste linearibus.

Planta dense caespitosa, rigida, robusta, 20–30 cm. alta. Folia numerosa, 20–40, dense conferta, suberecta, 15–22 cm. longa; laminae 6·5–10 cm. longae, obovato-cuneatae, rigidae, coriaceae, tripinnatisectae; ultimis segmentis anguste linearibus, 2·5–3·75 cm. longis, 1 mm. latis, apice acuminatis et pungentibus. Petioli robusti, rigidi, dorso convexi, facie concavi, marginibus valde incrassatis. Vaginae 3·75–5 cm. longae, 1·75–2·5 cm. latae, superne in duas spinas laterales productae. Pedunculi robusti, foliis longiores. Umbellae compositae, in paniculam latam congestae, 8–10 cm. diam.

Hab.—South Island: Rocky places on the lower slopes of Mount Balloon, between Lake Te Anau and Milford Sound, alt. 3,500–4,500 ft.; *F. G. Gibbs!*[3]

Densely tufted, stout and rigid, forming clumps 9 in. diameter and 9–14 in. high. Rootstock stout, sometimes divided above, clothed at the top with the remains of the old leaves. Leaves very numerous, 20–40 or even more, densely crowded, suberect, 5–9 in. in total length; lamina $2\frac{1}{2}$–4 in. long, obovate-cuneate when spread out, rigid and coriaceous, tripinnatisect; primary divisions 4–6 pairs, suberect, closely placed and partly overlapping; secondary similar but smaller and fewer; ultimate divisions very narrow-linear, 1–$1\frac{1}{2}$ in. long, $\frac{1}{30}$ in. broad, coriaceous, striate, narrowed into a short pungent point. Petiole as long or longer than the lamina, very stout and rigid, smooth and convex on the back, deeply concave in front, with the margins much thickened and rounded. Sheaths $1\frac{1}{2}$–2 in. long, $\frac{3}{4}$–1 in. broad at the base, $\frac{1}{3}$ in. broad at the top, rigid and coriaceous above, gradually becoming thin and membranous towards the base, on each side at the top produced into a stiff and rigid pungent-pointed spine 1–$1\frac{3}{4}$ in. long. Female inflorescence alone seen. Peduncle exceeding the leaves, very thick and stout, $\frac{1}{3}$–$\frac{1}{2}$ in. diameter, grooved, bearing towards the top numerous compound umbels forming a dense globose panicle 3–$3\frac{1}{2}$ in. diameter. Lower bracts 2–$2\frac{1}{4}$ in. long, composed of a broad and thin membranous sheath $\frac{1}{2}$ in. across tipped with a pinnatisect leaflet 1 in. long or more. Primary umbels 6–8, peduncles 1–$1\frac{1}{2}$ in. long; secondary umbels 6–10, bracteoles linear, undivided. Fruit $\frac{1}{5}$–$\frac{1}{6}$ in. long, linear-oblong; carpels equally 5-winged or one 4-winged and the other 5-winged.

This falls naturally into the neighbourhood of *A. Monroi*, but is easily separated from the typical form of that plant by its stouter and more rigid and coriaceous habit, by the much more finely divided leaves, with stouter rigid petioles, by the stouter peduncle and much more compact panicle. But my variety *divisa* of *A. Monroi*, described above, approaches it to some extent, although it is much less robust, and the leaves not nearly so finely divided.

A. congesta Cheesem. n. sp.

Species ad *A. Spedeni* arcte accedit, sed differt caule majore, foliis latioribus et evidenter pinnatis non flabellatis.

Robusta, 15–32 cm. diam. Folia numerosissima, 40–50, omnia radicalia, dense conferta, 9–18 cm. longa; laminis 5–10 cm. longis, breviter pinnatis; pinnis 2–4-jugis, 1 cm. latis, linearibus, rigidis et coriaceis, aculeato-acuminatis; vaginae laminis longiores, ad basi 2–5 cm. latae, supernae in duas spinas productae. Pedunculi robusti, foliis multo longiores. Umbellae compositae in paniculam globosum 9–12 cm. diam. congestae. Fructus 3 mm. longus, lineari-oblongus.

Hab.—South Island: Rocky places on the lower slopes of Mount Balloon, between Lake Te Anau and Milford Sound, alt. 3,500–4,500 ft.; *F. G. Gibbs!*

Forming large hemispherical simple or branched masses 6–12 in. diameter; rootstock often as thick as the thumb, branched at the top. Leaves very numerous, 40–50 or more, all radical and crowded round the base of the flowering-stem, the inner erect, the outer spreading, 4–8 in. in total length; lamina 2–4 in. long, pinnately divided into 2–4 pairs of leaflets with a terminal one, internodes short but evident; leaflets $\frac{1}{6}$–$\frac{1}{4}$ in. broad, linear, straight or curved, rigid and coriaceous, narrowed at the apex into a short rigid and pungent point; midrib stout; margins thick and cartilaginous; veins parallel with the midrib, but connected by transverse veinlets. Petiole or sheath usually longer than the blade, very thick and coriaceous at the top, and there $\frac{1}{2}$ in. diameter, gradually becoming membranous and broader at the base, where it is often 1–1$\frac{1}{4}$ in. across; stipules sometimes nearly as long as the leaf but usually much shorter, adnate with the petiole to the top, and so placed as to be close together on the inner face of the petiole. Peduncle or flowering-stem stout, $\frac{1}{2}$–$\frac{2}{3}$ in. diameter, about 6–12 in. high, bearing at the top a globose head 4–5 in. across of closely placed compound umbels. Lower bracts 1$\frac{1}{2}$–2 in. long; sheathing portion broad and membranous, tipped by a short pinnate leaflet. Primary umbels 6–12, secondary very numerous. Fruit linear-oblong, $\frac{1}{6}$–1 in. long; carpels 4–5-winged.

So nearly allied to *A. Spedeni* that I almost hesitate to distinguish it as a species. It differs, however, in being more robust, and in the leaves being pinnate with evident internodes between the pairs of leaflets, not flabellate with the segments spreading from one level as in *A. Spedeni*. The plant was first observed by Mr. Gibbs in 1909, but at that time barren specimens were alone seen. In January, 1914, however, Mr. Gibbs succeeded in obtaining both male and female inflorescence and mature fruit, and has furnished me with an ample series, from which the above description has been prepared.