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cracking thunder in the middle of January while Alexandra, eleven or twelve miles away on the plain was basking in hot sunshine. But seeing six different species of *Celmisia* at our feet, with a profusion of flowers and seed heads, and innumerable other fascinating native plants, we made no complaints, but stepped into our waiting taxi at the foothills the happiest of mortals, our eyes not even seeing the high-handed colourful exotics lining the roadway.

All over this county a feature that never ceased to seem unusual was the presence of ferns! One time we counted seven different species of hard ferns fresh and green on the shady side of a rock that was hot to touch. On shelves, in crevices, and at the foot of rocks these ferns thrived. *Cheilanthes tenuifolia*, frail looking but really very tough, abounded everywhere, brown and curled up in the heat, unfurled, jauntily and green in the slightest vestige of shade.

On the hot hillsides, in company usually with four or five species of native grasses, we often found *Pimelina aridula*, looking silvery-green and fresh, a *Carmichaelia*, which one farmer called 'five-finger broom', always chewed off and sorry-looking, and *Hymenanthera alpina*, tough, scrambling, yet compact.

The floor of one small valley was dense with a *Coriaria*, waist-high and heavy with fruit and dozens of feasting birds. These hot brown hillsides never seemed to lack bird life and coveys of quail were continually being disturbed. The rabbit! well we would have tripped over him all day long if he hadn't been so nimble. Goats we did not see, except a pathetic Billie and Nannie standing alone in one of the sheep-pens awaiting their doom. The station-owner told us that fifty had been mustered with the sheep from the high hills.

The soil on these barren hills appeared to be quite good. Surely a rich land that could be richer yet.

M. P. SAMSON.

KOWHAI.

For some years Dr. L.H. Briggs and his students in the Chemistry Department, Auckland University College, have been investigating some compounds in the seeds of the genus *Sophora*. The following summary shows how interesting their results are to the botanist.

S. microphylla and *S. tetraptera* both contain as the major alkaloids in the seeds, Matrine and methylcytisine, but in greatly differing proportions. *S. chathamica* (?) (done on a small scale) also contains the same two alkaloids, and there is insufficient chemical evidence to distinguish it clearly from *S. microphylla*. *S. microphylla* from Hawaii, which has also been examined in Auckland, contains a different series of alkaloids, mostly cytisine and anagyriane. There are others from the U.S.S.R. which have been examined elsewhere and are different again. The next one to be investigated is a compact-leaved form hitherto included under *S. microphylla*. It will be interesting to see whether chemical analysis confirms the botanist's suspicion that this is specifically distinct. In Australia Baker and Smith found chemical differences in Eucalypts which on morphological grounds were regarded as belonging to one species.

In order to complete his studies on the alkaloids of New Zealand kowhais Dr. Briggs needs seeds of species that are not obtainable near Auckland, and he would greatly appreciate contributions from members of our Society forwarded direct or through the Editor. In order to get about an ounce of the alkaloid to test, he requires about 2 lbs. of seed of each species. As is well known, the seed keeps almost indefinitely, so that supplies may be built up from year to year, and even the smallest contribution, authentically identified, is welcome. The two species most required are *S. prostrata*, and Treadwell's kowhai, recently described as *S. longi-carinata*.

The following summary shows the main distinguishing characters of the five named species:

- S. tetraptera. Not divaricating in young stages: pinnae large, $2/3$ to $1''$ long: flowers about $2''$ with standard $\frac{1}{2}$ shorter than the wings. East Cape to Ruahine Range.
- S. microphylla. Divaricating when young: pinnae $\frac{1}{2}$ to $1/3''$ long: flowers with standard as long as wings, about $1\frac{1}{2}''$. Throughout North and South Islands.
- S. chathamica. Not divaricating in young stages: described by Dr. Cockayne as "almost of adult 'microphylla' form from its commencement" and recorded by him for North Auckland as well as for the Chatham Islands.
- S. prostrata. Permanently divaricating: pinnae few, $\frac{1}{2}$ to $1/6''$ long: flowers $\frac{1}{2}$ to $\frac{3}{4}''$ with standard brownish yellow and as long as the wings: seeds small, brown, a few in a short pod. Marlborough to South Canterbury.
- S. longicarinata. Not divaricating in young stages: pinnae many, small $1/12$ to $1/8''$ long: flowers about $2''$ long, with standard shorter than wings and keel: pods $2-5''$ long with a few pale brown seeds. Nelson.

PAEKAKARIKI HILL.

April the First played an unkind prank on members of the Botanical Society, when heavy rain on that morning falsely foreboded bad weather for their outing to Paekakariki. Those who made the trip met, by arrangement, five members of the N.Z. Native Flora Club, of Levin. As several of the Levin party are country members of the Botanical Society, they, in particular, welcomed the opportunity to take part in such an outing.

Under the leadership of Miss L.B. Moore, the party spent the first part of the day walking up the old hill road. The cliff cuttings had native rock plants wherever a crack gave roothold: Wahlenbergia gracilis, both the blue and the white flowered varieties, with the flowers not open till the afternoon, when the sun was bright: Senecio lautus, the small groundsel whose flowers were gaily golden whether the ray florets were present or absent: Vittadinia australis, its small bushes showing both the white daisy-flowers and the ripe seed-heads: neat little tufts of the greivish Ceranium microphyllum, its flowering time finished. Another Geranium found by the roadside was the bronze leaved G. sessiliflorum. The Levin visitors were particularly interested to have pointed out to them tufts of mosslike Scleranthus biflorus, and were surprised to learn that it is really a flowering plant of the carnation family. Of shrubs noticed, several specimens of Olearia paniculata, (Akiraho "Golden akeake") are worthy of mention, as the inflorescences were distinctly pink instead of the usual cream colour.

Motorists of the "Good Old Days", whose engines boiled on the hill road, will remember a useful trickle of clear water several chain from the turning point near the summit. The party used this to provide water for tea at lunch time, after which they returned to Paekakariki over the hills, starting up a sloping valley behind the road. Kohekohe occurs in large numbers, and was observed to have very prolific bud clusters, great bunches of green fruits from last season, and even some of the waxy cream flowers which are usually expected about June. A mahoe tree with grooved and knotted trunk measuring about three feet through aroused comment, also a sunlit clump of large leaved nettle with Red Admiral butterflies fluttering round; this being largely their food. The Levin visitors are more familiar with the smaller species of nettle which grows in the neighbourhood of Levin. Worthy of special mention was a veteran Shining Broadleaf, Criselinia lucida. The root which runs down to the ground had attained gigantic proportions, the upper portion, for a distance of about ten feet, being about ten or twelve inches in diameter, and having numerous horizontal rootlets clasping the supporting tree. The lower portion of the Broadleaf's spurious trunk divided into two, at a distance of about ten feet above the ground: and either of these divisions was large enough by itself, to be notable. It would appear that the region was once covered with heavy bush, as apart from the "giants" mentioned, large rata and matai stumps were seen.

F. C. DUGUID.