Senecio rufiglandulosus. Aickens, Otira Valley S59/095475.
Also on Canterbury side of Arthurs Pass.
National Park.

Senecio hectori. 12 Apostles, Cobden. S44/753902.

Chionochloa australis. Mt Te Kinga S52/001624. SL.
(Also occurs in the Otehake R., Taramakau Catchment, which is further South).

Collospermum hastatum. 1 km S. of Barrytown S37/838122. SL.

Gahnia pauciflora. Otira Gorge S59/050357.

Tetraria capillaris. Near Goldsborough S50 & 51/714605. ? SL.

Blechnum filiforme. Paturau S2/862069. ? SL.

Lycopodium cernuum. 12 Mile Bluff S44/031795. ? SL.
(Andrew Dobson record).

L. laterale. 12 Mile Bluff S44/031795. SL.

THE CASTLE HILL RANUNCULUS RESERVE AND THE PROPOSED ADDITION

by Lance W. McCaskill

1. THE STORY OF THE BUTTERCUP

(Allan's Flora of New Zealand Vol. 1 1961 lists the plant as Ranunculus paucifolius Kirk. Stud. Fl. 1899. Sir J.D. Hooker included the plant in his circumscription of R. chordorhizos in his Handbook of the N.Z. Flora in 1867. Thomas Kirk described it in 1899. The type specimen, collected by J.D. Enys, is in the herbarium of the Dominion Museum. In the Alpine Ranunculi of New Zealand, F.J.F. Fisher, Bull. 165 D.S.I.R. 1965, Dr. Fisher includes it as one of two sub-species making up the species R. crithmifolius. If this is accepted, the correct name is Ranunculus crithmifolius subsp. paucifolius. In Scenic Reserves of Canterbury Report 2 of Biological Survey of Reserves, D.S.I.R. 1972, G.C. Kelly says - "For general purposes the full name is cumbersome; the plant can be quite adequately and accurately called the Castle Hill buttercup, Ranunculus paucifolius.).

The plant occurs at an altitude of 700 m in a small basin between two ridges of limestone outcrops immediately west of the homestead of the Castle Hill run in the Broken River Basin. Until 1948 the buttercup was confined to patches of limestone debris with a total area of 1.4 ha. The basin has an exit by a saddle immediately above the

homestead. Until 1948, for a period of 90 years, sheep grazed the area and sometimes in mobs of several thousand travelled over the loose debris during mustering and shearing.

The first detailed description of the site and its plants was given by Professor A. Wall in Trans. N.Z. Inst. Vol 52, 1919/20. (Other accounts are by W.B. Brockie in Bull. 2 Christchurch Domains Board, 1946, and G.C. Kelly in Report No. 2 mentioned above). Wall described the mini-dune system moving with the wind. He found by digging where the plants grow close together that the debris was 45 cm deep, the material uniform, fine and incoherent. All plants (he counted 70 and thought there might be 100), were within an area of 250m by 50m but were mainly confined to two areas each about 50m by 35m. Most of the plants were found on ground sloping 6° - 8°, few were on level spots, none on very steep places. In only one place were they among tussocks; there were 12 plants among "very scanty tussocks". Wall summarises the conditions:

1. If the surface is kept bare and the debris is blown away, the buttercup has nowhere to live.
2. If the debris piles up, the plant is buried.
3. If the material becomes stabilised then a closed association develops and the plant goes out.

With minor modification Wall's description still applies. He listed the associations as follows: (Kelly's additions are included). All had the buttercup growing, with the largest numbers in A.

A: Barest areas, lime debris deepest, loosest and driest - Myosotis colensoi, Lepidium sisymbrioides, Oreomyrrhis rigida, Nothothlaspi rosulatum, and the introduced Arenaria serpyllifolia.

B: Open formation. This has the plants in A and also - Pimelea prostrata, Poa acicularifolia, Cardamine heterophylla, Carmichaelia monroi, C. corrugata, Wahlenbergia brockiei, W. gracilis, Anisotome enysii, A. aromatica, Ranunculus monroi, Senecio haastii, Raoulia hookeri, R. subsericea, Epilobium alsinoides.

C: Nearly closed formation. (Some of the above may occur) Plantago spathulata, Festuca novae-zelandiae, Poa colensoi, P. laevis, Hydrocotyle novae-zelandiae, Viola cunninghamii, Ranunculus insignis, Acaena inermis, Agropyron scabrum, Celmisia gracilenta, Geranium sessiliflorum, Crepis novae-zelandiae.

The commonest introduced plants are Arenaria serpyllifolia (Sandwort), Cerastium glomeratum (mouse eared chickweed), Verbascum thapsus (mullein), Chrysanthemum leucanthemum (ox-eye daisy), Poa pratensis (Kentucky blue-grass); In addition to Ranunculus paucifolius the following, found in the reserve, are not found outside the Broken River Basin: Carex inopinata, Wahlenbergia brockiei, Myosotis colensoi, M. traversii var. cinerescens.

Other plants found in the vicinity of the reserve (and of importance because of the proposed additions include: Aristotelia fruticosa, Asplenium anomalum, Carex brevifolia, Clematis australis, Coprosma petriei, C. propinqua, Corokia cotoneaster,

Discaria toumatou, Hebe glaucophylla, Helichrysum bellidioides, Hymenanthera alpina, Kirkianella novae-zelandiae, Muehlenbeckia complexa, Myrsine divaricata, Olearia avicenniaefolia, Raoulia australis, Vittadinia australis.

In January 1940 W.B. Brockie counted 75 plants noting the number of leaves on each, finding an average of about $3\frac{1}{2}$. As he had noted that two plants transferred to the homestead garden in 1925, had 200 and 60 leaves respectively he wondered how much the stock trampling had to do with the small number of leaves on the wild plants. He fenced in a small area with four plants with 4, 4, 2 and 2 leaves. Four years later the number of leaves was 17, 18, 18, and 24. Brockie urged the authorities to try to reserve and fence the whole area but it was not until 1948 that this was achieved. The owners of the freehold gave 5.5 ha and agreed to relinquish 8903 m^2 of the Crown leasehold, The area was fenced by Lincoln College students in March, 1948 and this provided immediate protection. But it was not until 22nd July, 1954 that it was gazetted a Reserve for the Protection of Fauna and Flora with access only by permit from the Commissioner of Crown Lands.

Immediately prior to fencing a count showed only 32 plants, probably an underestimate because there had recently been major stock movements. In December 1949 a detailed count found 135 plants. The dramatic increase consisted largely of young and very small plants. At intervals between 1949 and 1959 seed was collected and sown in suitable sites adjoining the original areas. (Depredations of hares were fairly well contained by netting on the boundary fence). From 1961 onwards young plants and rooted pieces were planted in new sites and seed was also sown. This process continues. By 1960 it was obvious that with protection from stock Poa acicularifolia, Hieracium and ox-eye daisy were stabilising much of the loose debris and the competition was reducing the flowering and seed production of the Ranunculus, even causing death. Since 1961 an area round each plant has been kept free of weeds and to ensure that helpers and other visitors do not trample seedlings most plants have been surrounded by rocks.

In November 1972 the Department of Lands and Survey produced an accurate survey map showing the position of 167 clumps of plants marked by numbered pegs. These clumps sometimes consist of several plants and a count in October 1976 showed there to be at least 320 plants. It is believed that all suitable sites have been colonised but seed sowing and transplanting will continue where populations are rather thin.

2. THE PROPOSED ADDITION

By arrangement with the owners of the freehold and in exchange for Crown Land on the terrace of the Thomas River, an area of nearly 80 ha including much of the two limestone ridges above the Ranunculus Reserve will become Crown property. It is most desirable, and very likely, that this area will be gazetted as scenic reserve. If so it could provide an interesting experiment of combining a scientific reserve to which access is only by permit with a scenic reserve to which the public have access as of right. The first requirement will be the fencing of the reserve from the run and the provision of car access to a car park on the flat by the stream. It is most important that no "improvements" beloved of planners are made. This is a case, if ever there is one, where the existing landscape be preserved for all time.

To reduce the desire of the public to enter the scientific reserve I advocate suitable information signs and the planting of some clumps of Ranunculus and some of the other unusual plants inside the fence but close enough to be studied and photographed from outside.

From the car park only foot access should be permitted. I realise that allowing the public to roam over the ridges and limestone tors may incur the ire of the botanists and archaeologists who fear damage to the plants listed above and to the Maori Rock drawings. I doubt if any possible advantages to the natural scene by excluding the public from the "outer" reserve would warrant the deprivation of the public of the opportunity of enjoying the scenery, geology and plant life and of understanding something of the scientific heritage of one of our most remarkable natural regions.

FRONTICEPIECE

The fronticepiece, provided by Mr.C. Dunn, is a drawing of Carex trifida. Cav. This is a handsome, very robust, Carex with culms up to 90cm high. The stout stems are trigonous with angles rounded and usually support 6 to 9, sometimes more, very sturdy spikes up to 11 cm long. The narrower upper spikes are male.

It is to be found on Stephens Island, off D'Urville Island, in Akaroa Harbour and in scattered localities south of lat. 45 30, on Stewart, Snares, Antipodes, Auckland, Campbell, Macquarie Islands usually on coastal cliffs. The specimen drawn was found at Oyster Bay, Papatowai.

This bay lies close to the camp in the Catlins area which the Society hopes to use as its base for a future Summer's activities. In Oyster Bay one can also see plants of the not so common Blechnum durum and Blechnum banksii which are almost always found close to the sea. Here too, grows the lovely Myosotis rakiura.
