in a bow-like curve and bend sharply at their ends so that they nearly meet the apices of the upper pair. The anthers are joined in the unopened flower into a cruciform or more or less horseshoe-shaped disc. When the flower opens the anther disc lies at the mouth of the tube almost touching its upper border and it is so placed that the front of the pollen sacs faces the axis of the flower. As soon as the flower opens the pollen sacs dehisce and expose the pollen. At that stage the style is only about half the length of the corolla and ends in a blunt point.

During the course of a few days the filaments gradually shirvel, and the shrivelling causes the anther disc to move down across the centre of the flower so that it finally rests against the middle lobe of the lower lip of the corolla. While the anther disc is moving in to position the style grows longer but keeps close to the upper part of the corolla tube. The top of the style then bends sharply towards the axis of the flower and expands into a rather broad rounded stigmatic surface. When ready for pollination the style is longer than the corolla tube with the stigma standing a little above the centre of the flower. At that stage the anther disc is appressed to the surface of the bottom lip and in that position cannot be touched by the stigma. While those changes are in progress copious quantities of nectar are being secreted at the bottom of the corolla tube.

From the foregoing it can be seen that the flower cannot be pollinated with its own pollen and that cross-pollination must occur. Petrie deduced that the flowers must be pollinated by birds and although he spent some time watching for the pollinating agent he never saw a single flower being pollinated. From the structure of the flower and its mechanism, Petrie supposed that birds visiting the newly opened flowers would have pollen dusted on their foreheads from the ripe anther disc and then on visiting the older flowers this pollen would come into contact with the large stigma which would at that stage occupy the position previously held by the anther disc. Strangely enough, no other person appears to have placed on record whether birds have been observed pollinating the flowers.

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"Bringing thee chosen plants and blossoms blown among
the distant mountains."

William Wordsworth.

PLANTS IN ABUNDANCE IN THE MAGDALENE VALLEY

by Yvonne H. Elder

Magdalene Valley.- up the Boyle River, holds masses of rather hard to find plants, Stackhousia minima and Botrychium australe. Perhaps some people have seen plenty of both growing, but to members

of our group, it was a great joy and pleasure to find such large quantities. I recall one Easter, down south, a well known botanist and an artist crawling round on hands and knees for twenty minutes trying to find just one little ripe fruit of Stackhousia to paint. In this wide open valley, we had walked about two chain from the cottage to find the fruits of Stackhousia giving the ground a golden tinge, so dense were they. This was so, over a vast area of the valley, mostly on dry parts and on the mounds of long fallen trees. Even up the north face of the steep hill behind the cottage it grew in abundance. To any one who knows the flower and scent of this inch high, mat forming herb, it is a must to see in bloom. It was satisfactory to know that within a few days of my sending specimens to Botany Dept. D.S.I.R., it was able to fulfil a request from Australia.

Botrychium australe was just as plentiful, growing on more varied places-dry, not so dry, in damp areas, and up the face of the hill. Every few yards, as we walked around, we could see two or three fertile fronds of this delightful fern. I am sure we could have counted up to a thousand plants in this sheep and cattle grazed country. I have seen other places where Botrychium is growing; Tourist Spur, Lake Rubicon, Upper Kowai River, Mt Peel, but only one or two plants at most.

Another thrill was to find a shaded bank, about twelve by six yards, of Celmisia traversii, - hundreds of plants or so it looked. There were very few seed heads, but one can imagine the beauty in a good celmisia flowering year.

"....let Autumn bold With universal tinge of sober gold
Be all about me...."

John Keats

ORCHIDS GALORE

by John Thompson

Last summer, quite by chance, we came across a host of orchids, Thelymitra pauciflorus we are told. Thousands of these were growing happily on the floor of a pine plantation only 15 miles away from Cathedral Square.

If you too would like to see these orchids travel along the old, shingle surfaced, West Coast Road that runs parallel to the Waimakariri River until you come to a cross roads at which a sign is erected informing you that you are 13½ miles from Christchurch.

Follow the rough right hand road which heads in the direction of the River. This road leads to an extensive pine plantation. After driving half a mile from a right angled bend in this road you may step out of your car and see the orchids growing under the pine trees on both sides of the road. You can walk quite a distance along this road with the orchids still to be found adjacent to it.

They cannot be seen, however, in that part of the plantation where poplars have been established.

In the few places tested the soil consisted of a mixture of sand and decaying pine needles from 1½ inches to 2 inches deep on top of tightly packed river stones. It is in this thin bed of loam