

PRESIDENTIAL ADDRESS: MY GARDEN. 21.8.41.

The theme stressed in Dr. Cone's talk was that a garden, even a small suburban one, is an excellent place for botanical studies "to learn about plants". Vegetables are particularly instructive because they grow quickly and the whole life of many kinds can be followed through in one year.

**SOIL STERILIZATION:** Most vegetables are grown from seed, and some show very clearly the benefits gained by sterilizing soil. This practice began in commercial glasshouses, like the one we saw at Epuni Nurseries, principally for killing disease fungi like *Fusarium* spp. Steaming soil is the commonest method, and this also kills most of the weed seeds and root-eating grubs. The soil is altered chemically and nitrogen is made more easily available. This stimulates the growth of the little plants and gets them quickly through the vulnerable early stages -- an important point where seed is precious.

**WEEDS:** Modern work tends to show that weeds have been much maligned. Certainly some have vicious methods of propagation by bulbs and perennating rhizomes, but the softer annual ones may do more good than harm. Allowing a vigorous growth of weeds may be advantageous in a wet season or for protection from frost. In tropical plantations of tea and coffee the weeds used to be carefully removed. This was found to cause loss of valuable top soil, and clearing weeds to leave bare earth is now discouraged. Leguminous weeds are of distinct value to enrich soil.

**PLANT NUTRITION:** Much can be learned in any garden about the effect of various manures, and in New Zealand nitrogenous and phosphatic manures give striking results. Root systems of garden plants are easily investigated, and the placing of the fine feeding roots is of especial interest. This reminds us how little is known about the root habits of native plants. Root nodule can be seen in any member of the large and successful family of legumes. Here the root is stimulated to form small lumps that can accommodate many bacteria. But some non-leguminous plants have root nodules also, e.g. the common tutu. This may account for the vigorous growth and luxuriant leafy shoots of tutu on stony slopes with very little soil -- a good example can be seen on the Hutt Road.

**MYCORRHIZA:** Here the root has an accompanying fungus, but it is a much less robust association than that in the bacterial nodule. It does not concern the vegetable garden much, but lots of flowering shrubs depend on mycorrhiza for successful growth, and these are usually particularly hard to grow. Gentians, heaths, pines, all orchids, ourisias, are examples of mycorrhizic plants. Whereas nodule bacteria are favoured by alkaline conditions and enjoy the lime usually given to vegetable gardens, fungi require acid conditions such as are often found in forest soils.

**FLOWERS AND FRUITS:** In vegetable gardens leaf growth is rapid, and this is often the only part that is used. But whenever flowers mature, much can be learned by observation about their fundamental structure and an idea of family relationships can be gained. Inside the flower an egg is fertilized, and from it grows the embryo of the seed. Other parts of the flower also grow rapidly after fertilization and these form the fruit. Possibly it is the secretion of chemical substances in dilute solution (growth substances) that stimulates adjacent parts to increased growth. The process can be compared to effect of certain advertized compounds that promote root development in cuttings. An entertaining use of some growth substances is to spray them on to unpollinated tomato flowers in glass houses to initiate fruit formation -- result, seedless tomatoes.

**POLYPLOIDY AND THE PRODUCTION OF GARDEN VARIETIES:** Most vegetable varieties are in a sense artificial. One of the few vegetables little altered from the wild state is the New Zealand spinach, which is grown widely in market gardens in the south of England and on the Continent. Our succulent varieties have developed by selection over centuries. In modern times much deliberate crossing has been done to get stable true-breeding varieties with specified desirable characters.

Each cell in a plant has particles that carry hereditary characters. If the cells do not divide properly at one stage, subsequent cells carry a multiplicity of these particles, and when a whole plant is composed of these cells it is said to be polyploid. They often show gigantism, and when they arise as sports they may be desirable for cultivation. Polyploids are probably common among garden plants, though they have not yet been exhaustively studied. These may account for the extraordinary range of form sometimes seen within one species, e.g. that containing both Brussels sprouts and spring cabbage.

Dr. Cone showed a series of slides of well-known gardens, both in New Zealand and abroad. The lively discussion covered several of the many topics the lecturer had touched upon, the question of weeds being perhaps the one most commented upon.

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AROUND THE SHORE TO SEATOUN.

On Saturday afternoon, September 2nd., about a dozen members, after meeting at Miramar Junction, walked round the coast from Lyall Bay to Seatoun. Two visitors from Hawkes Bay were particularly welcome additions to the party. The day was fine, after a spell of rain, but there was a cold wind.

On the stony beach at the eastern end of Lyall Bay, the introduced horned poppy, Glaucium flavum with its rough bluish-green leaves, was found to be extremely common. It is interesting to note that this plant is abundant on the northern coast-line of Cook Strait, but rather rare elsewhere in New Zealand. Other common plants here were the parsley-like Anium prostratum, the fleshy Senecio laetus, and the introduced Senecio elegans with gaudy magenta-coloured flowers. Mats of Raoulia australis were conspicuous on the stones.

While some members were inspecting a cave in a large rock and trying to identify the young ferns growing there, others collected plants of Waltonbergia gracilis, Scleranthus biflorus, Colobanthus sp. (probably C. melleus) and Spergularia media from the side of the rock. One side was almost covered with the iceplant Mesembryanthemum australe.

The presence of rimu twigs in the water was an insoluble mystery to some until it was explained that they were really fronds of the remarkably similar Caulerpa brownii, a green alga growing quite commonly about low tide level.

Between the road and the tidal rocks there was a salt marsh with its characteristic plants, the glassy Salicornia australis, yellow buttons of Cotula coronopifolia, and a carpet of Selliera radicans and Samolus repens.

Nearer to Seatoun, the effect of wind on the habit of plants was clearly seen. Alongside the road dense cushions of Hymenanthera crassifolia sometimes interlaced with Muehlenbeckia complexa formed an almost continuous wall. Below the road Olearia solandri and Placiantinus divaricatus typified the divaricating habit and formed low shrubs. In sheltered spots the shape of the latter was quite different, the leaves much bigger, and a few sprigs with dainty star-like flowers could be found. The polyorphic Fimbrilia prostrata appeared in several different forms. Cassinia leptophylla, Malopogon erecta and low-growing Coprosma propinqua were also found in this area.

Among the ferns noted were the rough Polystichum richardi, Cyclophorus serpens, Polypodium diversifolium and a number of divergent forms, all apparently included under Asplenium flaccidum. The true New Zealand flax Linum monogynum was abundant, and leaves, but no open flowers, of the orchid Thelymitra longifolia were seen.

Lobelia anceps was found growing by a small stream.

On the hillside several plants of the remarkable Aciphylla squarrosa stood out like sentinels.

The last few members to reach Seatoun finished a very pleasant afternoon with a brief visit to Mrs. Samson's garden.

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G. S. Aitken.