

In the Physiology Laboratory were exhibits on the experimental aspect of botany. Complicated and intriguing pieces of apparatus measured the rates of respiration, water uptake and photosynthesis of plants. The most elaborate apparatus was that set up to determine the decomposition rates of seaweeds; the apparatus aerated, watered and inverted the samples at regular intervals by a siphon control. Other displays demonstrated the analysis of soils for their structure and fertility, and the analysis of plant tissues. Among all these exhibits was one purporting to analyse an apple by surrounding it in a maze of rubber piping, glass bottles with mysterious solutions, and a pump connection whose bark was worse than its bite. The exhibit surprised its owner by being a great success.

The hungry visitors, having finally looked at an ingenious sunshine recorder which is a variation of the familiar burning-glass, were welcomed to supper in the Senior Laboratory. We are grateful of Mr. MacBeth for staying to help with the supper arrangements, and to the Botanical Society for helping us with the expenses of supper.

- Alison Lush
- Vivien Dellow
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On Monday, Nov. 3rd, we heard a particularly interesting lecture by Dr. Godley on "Research on New Zealand Plants". Dr. Godley has kindly forwarded an abstract of the points he particularly wished to emphasize. The editor earnestly hopes that the eminently practical suggestions made by him regarding collection of data by members will not fall on deaf ears.

"In New Zealand the first step in the botanical research of the country is far from complete. This first step, in botany as in any other science, is the classification and recording of distribution of the units with which one is working. The units in our case are the species, first of the native flora and secondly of the introduced flora.

A glance at the history of N.Z. taxonomical research shows the invaluable work done by amateur botanists who collected for the central taxonomists. These people had an intimate knowledge of the

plants growing in their own district. They knew for example just where to find vegetable caterpillars, or the only clump of Dacrydium kirikii in the district. Such people are as important now, as ever they were. Knowledge like this is invaluable for compiling locality records, and for getting specimens quickly, and it is the type of knowledge that members of the Society could very easily develop about local areas of vegetation. One never knows when, or by whom, such information will be needed.

Members of the Society could also do interesting and valuable work by listing the introduced "weeds" about Auckland. Over a 1000 species are recorded by Dr. Allan in his publication of 1940, and new species are entering the country yearly in ship ballast, seed mixtures etc. Any new arrivals may be pests of the future and their early identification may prevent trouble.

Another fruitful field of investigation is to take one plant and find out all one can about it.

If we take a species - say a grass - what do we really know about its general biology. What is its flowering period from year to year? What kind of breeding system does it have? Is it self-fertilised, cross-fertilised or has it no sexual reproduction and is it apomictic (apomixis=parthenogenesis, i.e., the development of an ovule or germ cell without fertilisation. Ed.) How many seeds on the average does a plant produce, and how much is good seed? Are any special conditions needed for seed germination? Has the plant any particular soil preferences?

Now all these questions are very simply solved, and the answers to them are of great importance in the life of the plant.

What is needed is concentration of one person on one species (or group of species) for two or three years, as a holiday project or an exercise on field excursions.

Flowering times are a matter of accurate observation, and are most important, because if flowering times of adjacent species overlap natural hybrids are possible, and species are not completely isolated from each other.

Soil preferences and general distribution are again a matter of observation.

The determination of the breeding system of a plant is a matter of a simple experiment. Plants in pots have the inflorescence covered with a bag. No seed means cross-fertilised. Seed setting means either self-fertilised or apomictic. One can decide in general

between these **last two** possibilities by removing the anthers and then bagging an inflorescence. If seeds are set in the absence of pollen the plant is apomictic. These facts are of the greatest importance for consideration of evolution, and if we are dealing with native grasses from the point of view of possibly breeding. In a ~~cross-fertilisation~~ species variations between plants tend to be recombined at each generation, and there is a great shuffling of genetic material providing many combinations of characters and often causing very variable species. A self fertilised species is often more pure genetically and it is comparatively easy to isolate pure lines by selfing. An apomictic plant never crosses with its neighbours, and a natural population consists of a number of true breeding lines.

I do want to emphasise the great number of very important, and as yet unknown facts which can be obtained from simple commonsense experiments requiring the minimum of facilities and which can be carried out in one's own workroom or back yard.

Charles Darwin was a great exponent of these simple experiments. Remember him weighing the bones of the wing of a wild and a domesticated duck to find out the effect of disuse. Or immersing seeds and fruits in saltwater for a long period and then testing their germinating capacity, to see if they could be distributed by ocean currents. Or again by taking a piece of earth from the foot of a bird, watering it, and finding that 82 plants sprang from it.

Many statements about natural hybrids in our flora need to be verified. Most natural hybrids are considered to be such on circumstantial evidence (often very strong). But has anyone ever crossed Fuchsia excorticata with F. procumbens to synthesise the supposed hybrid F. colensoi? Why not try such an experiment as this?

Botanical research in N.Z. has been concerned mainly with the collection of empirical facts. There really hasn't been time to do anything more than this first essential step. Now I think we should begin to ask "why" more. We must not only know that a species is confined to the top of one mountain, but also know why it is so limited in distribution. We can only know why, if we know a good deal about the particular likes and dislikes of the species. These characteristics can only be found out by close observation and experiments with the plant, and I hope that some Society members will each choose some manageable herbaceous plant and make a detailed study of it. Get the information for

its own sake, and it may well turn out to be of great importance.

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THE PACIFIC CONGRESS

Members are reminded that the Seventh Pacific Science Congress will be held in New Zealand in February 1949, first at Auckland (Feb. 9th-15th) and later in Christchurch (Feb. 23rd-29th). The Congress takes the form of a week's Symposia and Discussions. A week's tour in the North and South Island respectively will follow the Sessions.

Distinguished authorities from many countries of the Pacific will be present, and New Zealanders will have an exceptional opportunity of learning of the results of researches dealing with the many problems concerning the Pacific Countries and peoples. With the growth in population and the increasing development of many Pacific areas, numbers of grave issues are being raised. Pacific problems will be discussed from the standpoint of the Physicist, the Geologist, the Oceanographer, the Botanist, the Zoologist, & the Anthropologist. Public Health, Nutrition and the Social Sciences generally will naturally be well to the fore.

Of particular interest to the Botanist as such are the Sections dealing with Botany, Agriculture and Forestry.

In Auckland, Marine Algae (seaweeds) will be discussed from the standpoint of their classification, distribution and use. The physical and chemical properties of Pacific waters, and the geographic provinces of the Pacific will also be considered. In addition there will be a discussion on major forest problems of the Pacific.

In Christchurch will be held the important symposium on the protection of nature both on land and sea and the conservation problems of the Pacific, while the very practical problem of the improvement of food and forest crops will be a matter for earnest consideration.

These examples by no means exhaust the subjects of Botanical interest which will receive attention, but enough has been said to show that the matters to be discussed will touch us very nearly.

Those wishing to attend lectures and discussions may enrol as members on payment of the subscription of one pound. Enrolment