QUARTERLY NEWS LETTER

AUCKLAND BOTANICAL SOCIETY

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Many Thanks

We have great pleasure in announcing to the Society two welcome items of good news.

A member has generously donated a gift of duplicating paper and ink to keep down the costs of our News Letter. Another member has obtained for us a supply of note envelopes without cost to the Society. This should bring a most welcome reduction to a mounting stationery account.

On behalf of the Society we offer our hearty thanks to these most kind and co-operative members. Since both remain anonymous we cannot thank them in person.

One of our country members accompanied her annual subscription with a donation to the Society's funds of one pound. We greatly appreciate this generous gesture.

On Wednesday, May 2nd we all enjoyed a very able lecture by Miss Mollie Davis on "Soil". Her talk was followed with great interest and we all admired the way in which she handled this unweildy and demanding subject. As no justice could be done to the discourse in a brief summary we content ourselves with some significent quotations, kindly supplied by the lecturer.

A recent writer, Peter Farb, says, "We live on the roof tops of a hidden world. Beneath the soil surface lies a land of fascination. It is populated by strange creatures who have found ways to survive in a world without sunlight, an empire whose boundaries are fixed by earthen walls".

A Rothamsted experiment showed that 1 oz. of clay particles would have a total surface area of ½ million square feet (6 acres) while an ounce of silty clay loam, according to Coutts, has an area of 400 sq. ft. When you realise that each particle is surrounded by a film of water you understand why clay gets wet and drains badly.

More than half a tree's bulk is in the soil. A rye plant grown for only 4 months under laboratory conditions, developed an underground root system of 7,000 miles of root hairs and roots. An inch of root may contain 50,000 and more root hairs each of which wraps itself round a soild particle and take in O_2 and mineral salts. The water is replenished from below very like blotting paper and ink. A large tree may absorb 50 gallons a day - an oak in leaf as much as 150 gallons in a day, the amount varying according to external conditions but in any case a very considerable amount.

The living soil is very largely the product of bacterial activity. There is a very large soil population both plant and animal. The largest invertebrate animal is the earthwork, the smallest are single celled protozoans, and these in turn are gia nts alongside the viruses. This population varies from billions to the ounce to only a handful of some species to the acre. They weave their way through the soil particles, burrow and tunnel and make nests. They may live at the surface like millipedes and slaters or dig more than 100 feet down like some desert termites. There may be 5 billion bacteria, 20 million actinomycetes, one million protozoa and 200,000 algae and fungi in a teaspoonful of soil from temperate regions. These micro-organisms are all extremely active so that, as Peter Farb puts it, they expend "on each acre an amount of energy equal to that of 10,000 human beings living and working there.

Whether the soil beneath a tree is sweet and fertile, sour or impoverished, depends largely on the ability of the tree to return plant nutrients to the surface. With the passage of time a special type of soil is formed beneath each kind of tree. There is an old saying amongst gardeners that what is taken from the soil must be put back and this is, if anything, even more necessary in plant communities growing under natural conditions.

Earthworms as most people know are highly important and industrious cultivators of land. The classic work on them is Darwin's "Formation of Vegetable Mould through the Action of Worms." Darwin Says, "It is a marvellous reflection that the whole of the superficial mould over any expanse has

passed and will pass again every few years through the bodies of worms. The plough is one of the most ancient and most valuable of man's inventions, but long before he existed the land was in fact ploughed and still continues to be ploughed by earthworms. It may be doubted whether there are many other animals which have played so important a part in the history of the world as have these lowly organised creatures.

Darwin estimated that, on measured acres of land, worm casts amounted to 10 tons to the acre per year. Other estimates in similar areas have been given at 18 tons to the acre per year. This soil, if spread out evenly, would be some 2 inches per acre in ten years. Obviously the amount will vary according to the worm population and this in turn will be governed by soil conditions and the availability of food. In the Nile Valley, for example, the weight of castings is considerably greater. The important point is that much of the soil on the earth's surface has passed through the bodies of earthworms at least once and possibly many hundreds of times.

News of Members

Miss Joan Dingley has just left for a three months' visit to England via the United States. She intends to study type material in the interests of straightening out some knotty fungus problems. We wish her a satisfying trip.

Mr. and Mrs. T. Wood are now overseas and we expect that more will be heard of them in a later News Letter.

Mr. and Mrs. A. Coyle are also having a very extensive trip overseas. We shall be publishing an article by Mrs. Coyle in our next News Letter.
