

Under this organisation the association had expanded a concentration of forest-tree nurseries at Halstenbek, Hamburg, into the largest area of forest-tree nurseries in the world. Here some 850 separate businesses held some 3,000 acres of forest-tree nurseries. They grew and distributed trees for the whole of Germany and had a considerable export trade to surrounding countries. Many foresters disliked this system, maintaining that the trees grown by this large-scale method were not as good or as suitable as their own growing. The method of working the nurseries was certainly along large-scale commercial production and lacked the individual care and attention which a forester raising stock for his own purposes would give.

The examples given, control and distribution of the wood-cut and control of seed provenance will be sufficient to show the sweeping administrative changes introduced by the Nazi regime; the first undermining sound forest practice and the second likely to produce doubtful results. Further changes, sweeping and otherwise, were introduced for land tenure, price fixation of wood, etc. Forestry and timber offices, directed from Berlin, and for the most part not corresponding with existing State offices, were set up throughout Germany to handle this new administration. The system was of course activated by Nazi ideology introducing Mr. C. M. Smith's last phase of forest administration—modern sociological ideas and methods. Few or none of the changes took cognisance of the forest as a natural growing crop with species still in the process of undergoing domestication and requiring prescriptions of management built upon past experience.

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## ABSTRACTS AND TITLES.

### *T. F. Cheeseman and the Making of a Great Herbarium.*

By MISS BETTY E. G. MOLESWORTH, Museum, Auckland.

T. F. Cheeseman, who arrived in this country in 1853, became later one of the foremost New Zealand botanists of his time. He died in October, 1923. His herbarium, bequeathed to the Auckland Institute and Museum, includes a rich collection of New Zealand Phanerogams, Pteridophytes and Musci. In addition to this there is an almost complete set of New Zealand naturalised plants, and an extensive collection of exotic material, representing a wide range of families. The native plants are particularly important as the material foundation of the Cheeseman Manuals and of that fine publication, the *Illustrations of New Zealand Flora*.

His collection was made over a period of fifty years. As he was a careful and accurate observer, these collections, together with his note books, form valuable records; especially of the Auckland and North Auckland districts. Some of his more important collecting trips were to the Kermadec Islands, Three Kings Islands; the North Cape district and Mount Pirongia in the North Island; Nelson, Arthur's Pass and Mount Cook districts in the South Island; and to Rarotonga, Cook Islands.

*Some Ecological Aspects of Natural Hybridism in New Zealand Plants.*

By H. H. ALLAN, Botany Division, D.S.I.R., Wellington.

In the primitive vegetation hybrids are especially noticeable as ecotones and in relatively open communities. Man's occupation has not only greatly modified the primitive vegetation, but also brought into being new communities. Bare areas and intermediate habitats have greatly favoured the coming together of different species in a genus and given opportunity for the occurrence of large populations containing numerous hybrid forms. The subsequent history of such hybrid swarms needs continuous and close attention. Examples were given showing the varied forms the resultant hybridism had taken, including the occurrence of hybrids between naturalized and indigenous species. There is clear evidence that long isolation is not necessarily productive of sterility barriers. References were made to similar findings by workers in America and to the techniques developed by analyzing populations.

A more general account of recent work on wild hybrids is to be published in the *Botanical Review*.

*Some Preliminary Note of a Study on New Zealand Species of the Genus Sophora.*

By MARIE J. PEEBLES, Department of Botany, Victoria University College.

*The Bryophytes of Stewart Island.*

By WILLIAM MARTIN, Dunedin.

This paper will appear in the *Transactions of the Royal Society of New Zealand*.

*Botanical Aspects of Hay Fever in Wellington.*

By DORIS W. FILMER and W. F. HARRIS, Botany Division, D.S.I.R., Wellington.

During the hay-fever seasons 1945-6, 1946-7, investigations were made in Wellington of the occurrence, distribution and flowering seasons of known hay fever and anemophilous plants; and atmospheric pollens were studied by the examination of specially prepared microscope slides exposed at three stations. At two of these stations new devices were employed for the exposure of slides by both the gravity and impact methods. Pollen counts were consistently higher on the slides exposed by the impact method, so these gave a better idea of the species of pollen in the air and their relative abundance. The atmospheric surveys showed which species of plants shed large quantities of buoyant pollen, and the relative abundance of their pollens in the air; and also indicated, by the recorded duration of the pollen showers, the flowering seasons of the different species.

Plants which are abundant and produce large quantities of buoyant, allergenic pollens are the principal factors in the hay-fever season. The correlation of the results obtained by the field studies and the atmospheric surveys showed which are the most important causes of hay fever in Wellington. Of those listed below, the grasses are the most important.

TABLE I.—HAY FEVER PLANTS OF WELLINGTON.

	<i>Principal Factors.</i>	<i>Additional Factors.</i>	<i>Suspected.</i>
<b>TREES:</b>			
Exotic	Cupressineae	Oak Birch Beech Elm Alder Sycamore Privet	Eucalypts Acacias Brooms Gorse
Indigenous	<i>Coprosma</i> spp. Manuka		Beech Tutu Kawakawa <i>Metrosideros</i> spp.

## GRASSES:

Cocksfoot	Tall fescue
Ryegrass	<i>Poa pratensis</i>
Yorkshire fog	<i>Poa trivialis</i>
Sweet vernal	Tall oat grass
Brown-top	<i>Danthonia</i> spp.
	Haretail
	Marram grass

## HERBS:

Plantain	Fathen
Sorrel	Catsear
	Hawkweed
	Red Clover

The additional factors are generally either less abundant than, or not such potent causes of hay fever as, the principal factors. The plants listed as suspected are those which were found to be abundant producers of pollens which may ultimately become windborne.

More detailed results will be published in the *Transactions of the Royal Society of New Zealand*.

*Algal Communities at Stanmore Bay and Their Relation to Certain Environmental Factors.*

By V. J. CHAPMAN, Department of Botany, Auckland University College.

A brief description was given of the principal plant and animal zones on the rocks at Stanmore Bay. The methods used for calculating the number of annual submergences, annual exposures and non-tidal exposures were described, and the possible operation of these factors at certain critical levels was discussed.

*Some Observations on the Factors Determining the Zonation of Marine Algae at Piha.*

By A. E. BEVERIDGE, Department of Botany, Auckland University College.

There was a discussion of critical tide levels in relation to the main algal and animal communities, with special reference to the role of exposure in determining the position and extent of these communities. The effect of wave action on the critical tide levels was also considered.

*A Study of the Environmental Factors of Tide Pools on Narrow Neck Beach.*

By MARGARET P. AMBLER, Department of Botany, Auckland University College.

The paper dealt with a quantitative study of factors affecting tide pools, with special regard to levels and tidal phenomena.

*The Marine Algal Provinces of New Zealand.*

By Miss L. B. MOORE, Botany Division, D.S.I.R.

The records considered included Subantarctic Islands specimens from the "Cape Expedition" adding some 27 species to the 125 already known from the Rossian Province, Chatham Island specimens that add some 40 species to the 150 previously recorded from that area, and J. H. Sorensen's collection from Kermadec Islands which raises the number of species from 44 to 66, adds two warm-water genera, *Padina* and *Hydroclathrus*, to the flora of the New Zealand Region, and extends the range of the Juan Fernandez species *Distromium skottsbergii*. With these new records the Kermadec Province has 10 species not otherwise known in the New Zealand Region, the Chatham Province has also 10, and the Rossian 30.

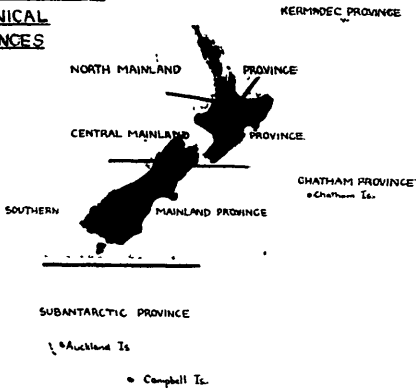
The provinces of the main islands were delimited mainly on species of rocky shores with the boundaries based not on total flora of each province, but on the range of conspicuous and ecologically important species.

A list showing the restricted range of some 200 selected species was tabled, and the following species were chosen for illustration. In each group the minimum number of species considered to have a similar distribution is given in brackets.

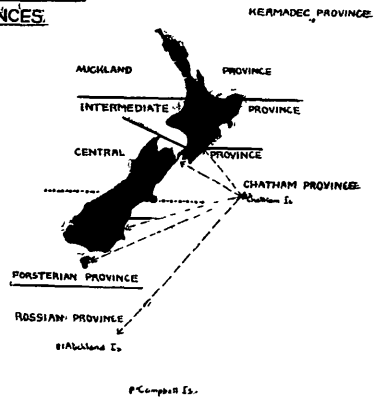
- A. Not found south of East Cape, or of Albatross Point on the west coast (39 spp.), e.g.:—
  - a. East coast only: *Carpophyllum elongatum*, *Halopteris nordacea* (*sensu stricto*), *Perithalia capillaris*.
  - b. East coast and north of Kaipara Harbour: *Xiphophora chondrophylla* var. *minus*.
  - c. Both coasts: *Eigartina alveata*, *Pachymenia limantophora* (cf. also mangrove).

*Vidalia colensoi* extends from Albatross Point to Mahia Peninsula.  
*Carpophyllum plumosum*, chiefly, if not entirely, east coast, reaches Castle Point.
- B. Northern, but reaching to or just beyond Cook Strait (15 spp.), e.g.: *Pterocladia lucida*, *Apophloea stclairii*, *Caulerpa sedoides*, *C. hypnoides*, *C. articulata*, *Melanthalia abscissa* (*sensu lato*).
- C. Southern, but extending as far north as Albatross Point and East Cape (9 spp.), e.g.: *Halopteris congesta*, *H. funicularis*, *Chaetomorpha darwinii*.

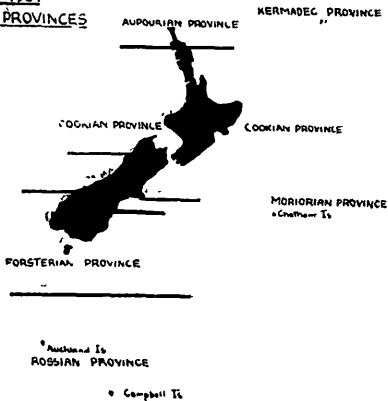
COCKAYNE 1928  
BOTANICAL PROVINCES



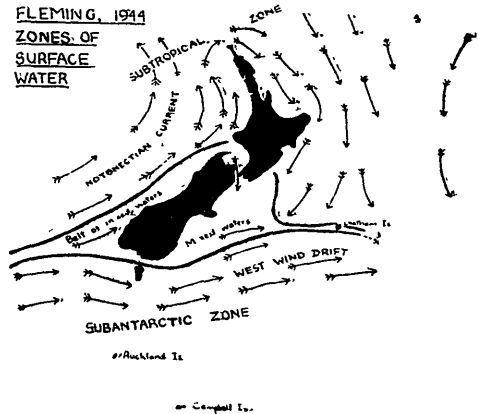
MARINE ALGAL PROVINCES



POWELL, 1937  
FAUNAL PROVINCES



FLEMING, 1944  
ZONES OF SURFACE WATER



- D. Southern, but extending as far north as Castle Point (5 spp.), e.g.: *Caulerpa brownii*, *Adenocystis utricularis*, *Macrocystis pyrifera*.
- E. Southern, but extending as far north as Wellington (27 spp.); e.g.: *Marginariella urvilleana*, *M. boryana*, *Desmarestia firma* (?), *Xiphophora chondrophylla* var. *maxima*.
- F. Not extending north of Timaru and Milford Sound (10 spp.), e.g.: *Apophlops hyalii*, *Pachymenia usoria*, *Delesseria crassinervia*, *Myriogramme crispata*, *Brongniartella australis*, *Oladophora pellucida*.

The figure indicates where significant changes in the marine algal vegetation occur, and compares the provinces so determined with the Botanical Provinces of Cockayne, the Faunal Provinces of Powell, and the zones of surface water as figured by Fleming. Chatham Island shows a mixture of northern and southern algae, as would be expected from its position at the convergence of warm and cold waters.

It is not yet clear whether the equivalent of Powell's Auporian Province can be recognized for the marine algae, but if so it would extend at least as far as Bay of Islands and Poor Knights, and would then include some 14 species not otherwise known on the New Zealand mainland.

### *An Ecological Study of Some Fresh Water Algae.*

By ELIZABETH FLINT, Department of Botany, Victoria University College, Wellington.

A brief account was given of the relation between planktonic and littoral algae, the degree of persistence of the planktonic forms, and the possible source of those individuals which, by repeated divisions, give rise to a population that represents the maximum development of that species. Reference was also made to algal periodicity, and to correlating it with the variations in the physical and chemical nature of the water.

It is hoped that the full text of the paper will be submitted to the *Journal of Ecology*.

### *A Case of Multiple Mutation in Wheat and Its Genetic and Evolutionary Significance.*

By O. H. FRANKEL, Wheat Research Institute, D.S.I.R.

In an  $F_2$ -family from the cross Tuscan  $\times$  White Fife, chlorophyll-defective plants were found which gave tri-factional segregations with both parents. In these mutant plants a large inverted duplication occurs which does not, however, itself carry any of the mutated genes. The mode of origin of this duplication was discussed. The normally low frequency of the mutation renders improbable a coincidence of three normal spontaneous mutations. The nature of the duplicated segment, and the possibility of it having acted as a "mutator" is discussed, together with the high degree of specificity of its action.

It is expected that this paper will be published in the journal, *Heredity*, Oliver and Boyd, London and Edinburgh, probably in 1948.

### *Experiments on Hybridisation.*

By W. A. THOMSON, 237 Taieri Road, Kaikorai, Dunedin.

The progeny of *Celmisia glandulosa* and *Celmisia holosericea*, both of the Fiord Botanical District, in the third generation, produced plants showing the tomentum both on the upper and lower surfaces, with musk-scented leaves and viscid qualities. Another plant is a facsimile of *Celmisia coriacea*. In the fourth generation, a plant appears a facsimile of *Celmisia discolor* in one of its forms. Most types of tomentum found in the southern half of the South Island have been produced in this cross. As there are several species of *Celmisia coriacea* and many musk-scented *Celmisiae* in the southern half of the South Island, this experiment is significant. There is much experimental evidence that *Celmisia dallii* and the northern *Celmisia glandulosa* have produced those *Celmisiae* in the northern half of the South Island and North Island.

*Relative Dominance of Grain Weight in Wheat.*

By MRS. S. BOYCE and R. W. BOYCE, Botany Division, D.S.I.R.

Inheritance of grain weight in four *Triticum* crosses was discussed. In one case there is evidence of segregation for a simple recessive gene for high grain weight. In the remaining crosses high grain weight is either completely or partially dominant, number of genes segregating being indefinite.

This paper will probably be published in a genetical journal.

*Plant Diseases Caused by Fungi.*

By R. M. BRIEN, Plant Diseases Division, Auckland.

Brief history of plant pathology in New Zealand. Economic importance of fungi causing plant diseases. Methods of dissemination of fungi. Records of new diseases, transmission from other countries, difficulty in excluding infected plants or plant products.

*Control of Plant Diseases.*

By G. G. TAYLOR, Plant Diseases Division, Auckland.

The use of chemical treatments for control of plant diseases was discussed. The attributes of therapeutants, their dosage response, phytotoxicity, coverage, and field application were reviewed.

*Bacterial Problems in Cheese Manufacture.*

By G. J. E. HUNTER and H. R. WHITEHEAD, Dairy Res. Inst., Palmerston North.

All pure cultures of lactic streptococci used for cheese manufacture are liable to attack by bacteriophages present in the surroundings of commercial dairy factories. Satisfactory methods have been devised for protecting the sensitive organisms from phage contamination and thus maintaining them in a state of constant activity for long periods.

Preliminary trials with "phage-carrying" strains of streptococci show that the symbiotic phage gives a measure of protection from attack by other phage races.

*Forest Administration Down the Ages.*

By C. M. SMITH, State Forest Service, Wellington.

The full text of the paper will be published in the *New Zealand Journal of Forestry*.

*Recent Ecological Studies in Silver Beech Forests.*

By J. T. HOLLOWAY, State Forest Service.

The full text of the paper will be published in the *New Zealand Journal of Forestry*.

*Results of a Preliminary Survey of the Pathology of Nothofagus menziesii in Woodlaw State Forest, Southland.*

By G. B. RAWLINGS, State Forest Service.

The full text of the paper will be published in the *New Zealand Journal of Forestry*.

*Use and Interpretation of Aerial Photographs in Forestry.*

By A. P. THOMSON, State Forest Service.

The full text of the paper will be published in the *New Zealand Journal of Forestry*.