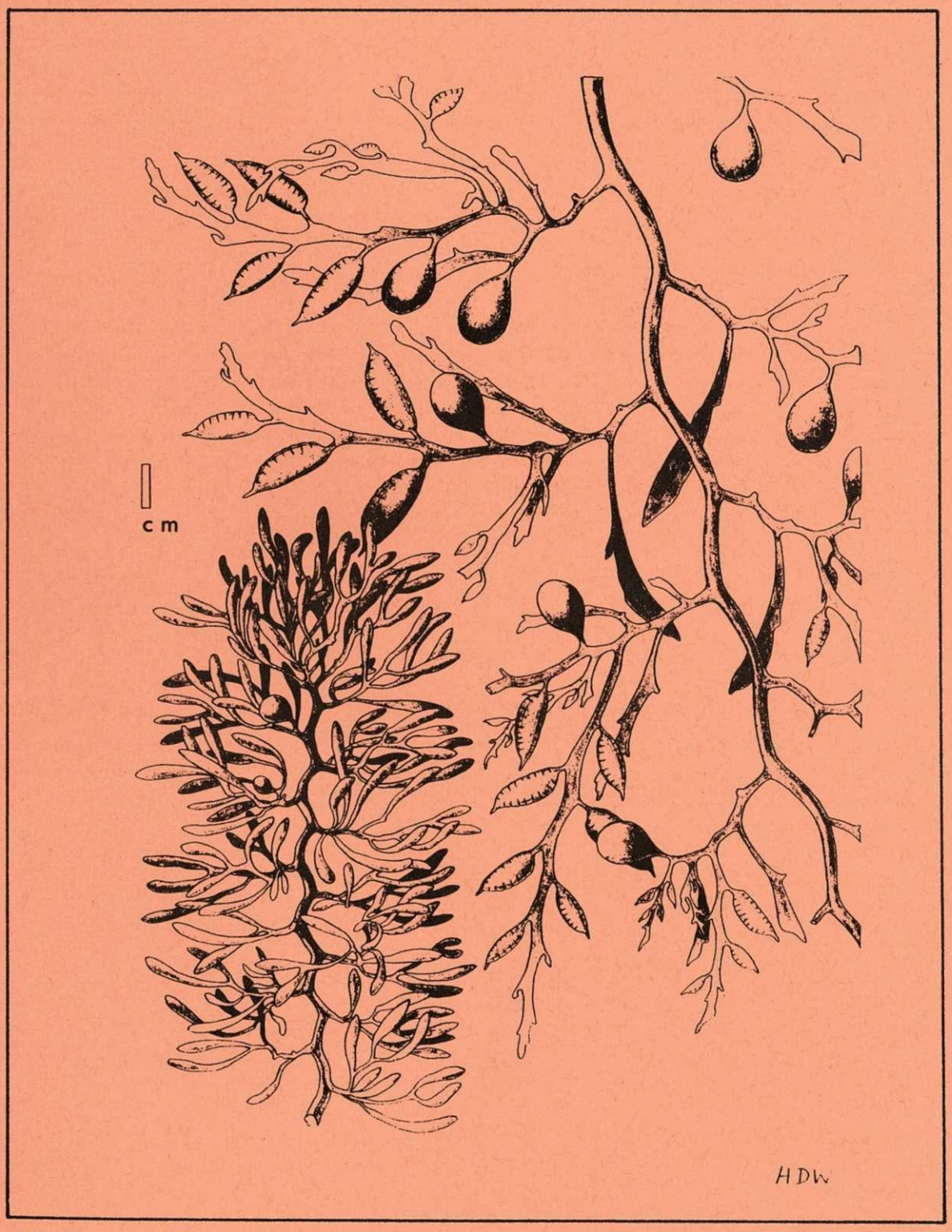
NEW ZEALAND BOTANICAL SOCIETY

NEWSLETTER

NUMBER 5 SEPTEMBER 1986



INAUGURAL MEETING

In Numbers 3 and 3 of this Newsletter, the idea of an inaugural meeting of the New Zealand Botanical Society in May 1987 to tie in with the Fiftieth Jubilee of the Auckland Botanical Society was put forward. Subsequently, a small group in Auckland carried out some preliminary planning for such an event.

In the face of Government spending cuts, it now appears unlikely that sufficient travel funds will be available to ensure a large gathering in Auckland at this time. We have therefore decided to postpone the inaugural meeting until a suitable focus which will assist in gathering a wide range of New Zealand botanists together arises.

SUBSCRIPTIONS

The 1986 subscription for four issues of the Newsletter (March, June, September, December) is $10.00, payable to the New Zealand Botanical Society, C/- Auckland Institute and Museum, Private Bag, Auckland 1. A reduced subscription of $5.00 per annum is available to full-time students. New subscriptions are always welcome. Back issues of the Newsletter are available at $1.00 for Number 1 (August 1985) and $2.00 for Number 2 (December 1985).

INVITATION TO CONTRIBUTE

Contributions from all souces are welcome. A list of possible column headings can be found on page 2 of Number 1. Feel free to suggest new headings and provide content for them!

DEADLINE FOR NEXT ISSUE

The deadline for the December 1986 issue (Number 6) is 25 **November 1986.** Please forward contributions to the Editor:

Anthony Wright
Auckland Institute & Museum
Private Bag
AUCKLAND 1

NEW ZEALAND BOTANICAL SOCIETY
NEWSLETTER
NUMBER 5 SEPTEMBER 1986

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Cover illustration: *Cystophora torulosa* (left) and *C. platylobium* (Cystoseiraceae)

These are brown algae with zig-zagging main stems and small rounded floats. They are abundant at and below low tide on coastal rocks and are frequently washed up on beaches. They occur throughout New Zealand and also in southern Australia (Hugh Wilson). Reports on some current research on marine algae in New Zealand can be found on pages 6 - 9.

NEWS

Regional Bot Socs

■ **Auckland Botanical Society**

Wednesday Evening Meetings	Saturday Field Trips
1 October Brent Maxwell Natural history of Aitutaki, Cook Islands.	18 October Jack Rattenbury Karamatura/Fletcher Tracks, Waitakere Ranges.
5 November Ewen Cameron Rushes, sedges and grasses.	15 November, Ewen Cameron Whatipu (to look at rushes, sedges and grasses.

Members of other botanical societies and visitors are welcome to join these meetings and field trips.

The Secretary, Auckland Botanical Society, 14 Park Road, Titirangi, Auckland 7

■ **Rotorua Botanical Society**

Members of other botanical societies are most welcome to join the Rotorua Bot Soc on any of their forthcoming field trips.

Sunday 14 September MT HIKURANGI, UREWERA NATIONAL PARK, Galatea foothills. Altitudinal sequence from conifer/tawa forest to red beech forest (summit at 929 m a.s.l.). Meet at Rotorua Civic Theatre at 8.30 am or Kopuriki Store at 9.45 am. Leader - Sarah Beadel (ROT 87208).

Saturday 4 October KOPUATAI PEAT DOME, on the Hauraki Plains. A number of interesting communities including Sporodanthus rushland, Schoenus-Empodisma sedge rushland, Baumea-Gleichenia sedge fernland, Baumea-Empodisma sedge rushland, manuka scrub and kahikatea forest. Meet at Rotorua Civic Theatre at 8.00 am or Tee Canal (north of Te Aroha adjacent to bog) at 10.00 am.Leader - Paul Champion (HAM 68 249)

Sunday 2 November PURIRI SCENIC RESERVE, near Thames. Coastal forest with some interesting northern plants, e.g. Celmisia adamsii and Metrosideros albiflora. A degree of agility is required for this trip. Meet at Rotorua Civic Theatre at 7.30 am or at the Puriri Hotel at 9.45 am. Leader - Nick Miller (ROT 24 747).

Friday 28 - Sunday 30 November MT MOEHAU, COROMANDEL PENINSULA. Northern outlier of sub-alpine vegetation and home of the native frogs Leiopelma archeyi and L. hochstetteri. Leave Rotorua Friday afternoon and return Sunday evening. More information will be given in the Newsletter closer to the time. Leader - Bruce Clarkson (ROT 24 622).

The Secretary, Rotorua Botanical Society, c/- Mourea Post Office, Rotorua

■ Wellington Botanical Society

At the Society's AGM on Monday 18 August 1986 the following were elected:

President:	Rodney Lewington
Vice-Presidents:	Bev Abbott
	Susan Timmins
Secretary:	Vicky Froude
Treasurer:	Kingsley Brown
Committee:	Tom Moss, Barbara Polly, Barry Sneddon, Carol West, Margaret Wassilief.
Bulletin Editor:	Colin Ogle

Our programme for the next two months is as follows:
Monday Evening Meetings (7.30 pm at Victoria University of Wellington, new Kirk Building, 3rd floor room K303).
15 September - Peter Johnson, Botany Division DSIR Dunedin on Wetlands of Otago and Southland.
20 October - Dr Ross McQueen, VUW Botany Department on Divaricating around: low woody vegetation of South America and the Mediterranean.

Field Trips
Saturday 4 October - Butterfly Creek, Eastbourne. Leader - Carol West telephone 686 053 (h), 673 119 (w).
Friday 31 October to Sunday 2 November. Cape Palliser Coast. Leader - Jeanette Putnam (telephone 285-577)

The Secretary, Wellington Botanical Society, 70 William Street, Petone

■ Canterbury Botanical Society

At the AGM in June, the following Officers and Committee were elected:

President:	Neil O'Brien
Vice-Presidents:	Eugene McNeill, Ian Tweedy
Secretary:	Valerie Lovis
Treasurer:	Tony Burnett
Committee:	David Crayford, Daphne Banks, Ross Lake, David Norton, Nigel Taylor, Raewyn Young.

Ross Elder was elected an honorary member of the Society, in recognition of his guidance and work in various official

roles, far beyond that normally expected from members. He continues to do so by agreeing to supervise the Sutherland Bequest Project, in which the Society plans to publish a guide to small-leaved shrubs of Canterbury and Westland.

The Society's programme for September onwards is:

September 12 - David Norton 'Introduction to the botany and ecology of south Westland.
September 13 - Field trip to Mt Oxford.
October 3 - Matt McGlone 'Biogeography of New Zealand plants'
October 11 - Field trip to Mt Somers Walkway.
November 7 - Don Meed 'Beekeeping in forests'.
November 14-16 - Show Weekend camp - Okain's Bay, Banks Peninsula.

This year's summer camp will be held at Hari Hari, South Westland. Visitors to the region are most welcome to attend meetings and field trips. For further information please contact: Philippa Horn, Plant Sciences Department, Lincoln College (phone 252811); David Norton, School of Forestry, Canterbury University (phone 482009); Nigel Taylor, Botany Division, D.S.I.R., (phone 252511).

The Secretary, Canterbury Botanical Society, P.O. Box 8212, Riccarton, Christchurch.

University Departments

■ **Personal Chair for Dr David Lloyd**

Dr David Lloyd has been appointed to a personal chair in the Department of Plant and Microbial Sciences at the University of Canterbury. Professor Lloyd has published more than 50 scientific papers on his research into the reproductive biology of flowering plants, the general theory of natural selection and the evolution and reproduction of New Zealand plants.

His work, which has won him international botanical attention, has contributed to considerable changes in understanding of the dynamics of flowering plant reproduction. In this he has very successfully utilised examples from the New Zealand flora.

Field work has taken Professor Lloyd to most parts of New Zealand, to Tennessee, Alabama and Costa Rica in America, and to Wales. Recently he visited Scandinavia. One of his more recent interests involves species selection by selective immigration to islands, including such unusual islands as the Galapagos Islands and Surtsey Island, the new volcanic island off Iceland.

Professor Lloyd, who is 48, graduated in 1969 from the University of Canterbury with First Class Honours. A Frank Knox Scholarship took him to Harvard where he gained a PhD in Biology in 1964. After three years of grassland research he was appointed to a Lectureship at Canterbury in 1967, rising to Senior Lecturer in 1971 and to Reader in 1975.

His publications have brought him international recognition and resulted in invitations to several congresses and symposia, as well as being awarded visiting professorships at Harvard, Rutgers, Texas and Massachusetts Universities.

He was President of the New Zealand Genetics Society in 1981 and Vice-President of the Society for the Study of Evolution in 1979. He is a Fellow of the Royal Society of New Zealand.

Other Botanical Research Establishments

■Botany Division Herbarium (CHR)

As from 1 April 1986 Murray J. Parsons has been appointed Herbarium Keeper at Botany Division. This will allow David Given to continue with important plant conservation work. David has been asked to be author of a world text on the principles and practice of plant conservation funded through IUCN/WWF (International Union for the Conservation of Nature/ World Wildlife Fund).

The Stage Two extensions of the Herbarium are under way by J J Construction Company Ltd. The first pegs were put in 2 June and the first concrete poured on 15 July. The extensions are on the east side of the present Herbarium and will be connected to the present Herbarium. The building will be in the same style as the present frontage and will be partly two storied. There will be a new enlarged preparation room, a drying room, six new staff rooms and a computer and labelling room. The Herbarium storage space will be increased by about 250%. This will enable many of the collections in storage at present to become readily accessible. The date for completion is 12 July, 1987.

The Herbarium Management Committee has been reassessing the Field Form Books and the computer printed labels used by Botany Division. A new Field Form has been designed which is more like the final herbarium label with the addition of habitat keywords which should speed up retrieval of information. All new New Zealand collections are being given computer printed labels and the backlog will be processed as staff and time permit.

Herbarium Keeper, Botany Division, DSIR, Private Bag, Christchurch

NOTES AND REPORTS

Current Research

■ **Seaweed research at the National Museum**

Distribution (in preparation):
The marine algae of the Bay of Islands area, by W.A. Nelson and N.M. Adams; The marine algae of Fiordland, by N.M.Adams, C.H. Hay and M.J. Parsons.

Taxonomy (in preparation):
The genus Polysiphonia in New Zealand; Illustrated handbook of N.Z. seaweeds; Synonymic list of N.Z. macro-algae - Chlorophyta, Phaeophyta and Rhodophyta.

Publications:
N.M. Adams & W.A. Nelson 1985: The marine algae of the Three Kings Islands. National Museum Miscellaneous Series No.13.
C.H. Hay, N.M Adams & M.J. Parsons 1985: The marine algae of the Subantarctic Islands of New Zealand. National Museum Miscellaneous Series No.11.

Herbarium:
The herbarium of the National Museum (Natural History Unit) now contains almost 20,000 specimens of marine algae. Major recent contributors have been:

J.C. Yaldwyn & C.H. Hay - Bounties, Snares, Antipodes, Auckland and Campbell Islands; C.H. Hay - Tristan da Cunha, Gough, Marion and Inaccessable Islands, Cape of Good Hope and Tasmania; W.A. Nelson - Northland, Bay of Plenty & Kermadec Islands; M.A. Francis - Three Kings Islands, and other northern off-shore islands; Fiordland. Smaller collections have been presented by: A.J. Knowles - South Georgia; P.M. Sagar - Kerguelen; M.J. Wynne - Alaska; E. Arron - Fiordland; P. Redfearn - Auckland Is.; G.S. Hardy - Snares Is.; A.N. Baker & L. Shaw - Dusky Sound; R.J. Searles - southern Chile.

Nancy M. Adams, Botany Department, National Museum, Private Bag, Wellington

■ Proposal for a Flora of New Zealand: benthic marine macroalgae

There is a need for a synthesis of existing knowledge of the benthic marine macroalgae of the New Zealand Botanical Region. This synthesis will bring together in authoritative texts all the information that will enable accurate determination of specimens to be made and to define clearly the areas in which further study is required. Existing knowledge on the ecology, distribution and uses of algae should be included.

It is some 30 years since the late Professor Val Chapman published the first part of his Flora, and this has yet to be completed. The final part of Chapman's Flora, the Ceramiales, is being worked on by Max Hommersand, of North Carolina.

Botany Division, DSIR, has a function to describe, classify and name the native and naturalised plants and vegetation of the New Zealand Botanical Region. In recent years, a series of volumes have been published entitled "Flora of New Zealand". Until 1985, when a volume on Lichens by David Galloway was published in this series, the higher plants have featured in three volumes and others are in preparation. In June this year the first of three volumes on the New Zealand Desmids, written by Hannah Croasdale and Elizabeth Flint was published. Botany Division is now planning other cryptogamic volumes to include one on mosses, one on liverworts, and volumes on the marine macroalgae.

Although all parts of the published marine macroalgal Flora require revision, it is considered most appropriate to begin with a volume on the Chlorophyta (green algae) since this is the oldest volume of Chapman's Flora and many of the keys are inadequate. Also considerable progress has been made on green algal research around the world. In order to get this co-operative project underway and to involve as many people as possible, phycologists with an interest in taxonomy have been asked to list the projects that they are carrying out or planning on any algal topic to allow full co-operation and avoid duplication of effort.

The projects have been grouped into: 1. Specific taxonomic revisions; 2. Regional species lists; 3. Illustrated works independent of a Flora; and 4. General ecological surveys and descriptive studies. The latest draft of this Proposal included a "Collecting List" with three requests for material required for taxonomic research.

The Proposal for a marine macroalgal Flora has been mailed out to all known phycologists and marine organisations in New Zealand that might be interested. If any reader would like a copy, this may be obtained from:

Murray J. Parsons, Botany Division, DSIR, Private Bag, Christchurch.

■ Studies on the phylogeny of marine algae

As many New Zealand Botanical Society members are probably aware, research on the ultrastructure, biochemistry and molecular biology of the algae has caused a major reconsideration of the phylogenetic relationships of various algal groups to each other and to other groups of organisms. Some of those who work in this area (including myself) would argue that, given a strict phylogenetic definition of what a plant is, only the green algae qualify as plants, other eucaryotic algae belonging to groups that are neither plant or animal. Neither can they be lumped together as "protists", the kingdom Protista being at best a paraphyletic assemblage of organisms, not a natural taxon.

My contribution to this body of knowledge in recent years has been to examine swimming cells of selected algal groups with the transmission electron microscope, prepare (from analysis of serial sections) a three-dimensional reconstruction of the structures associated with swimming (the flagellar apparatus), and, my making the assumption that the three-dimensional arrangement (the "absolute configuration") of the flagellar apparatus is an evolutionarily conservative feature of algae, developing phylogenetic hypotheses based on the flagellar apparatus data and testing them against contemporary ideas (O'Kelly C.J. & Floyd G.L. 1984: BioSystems 16:227).

Most of my work has been on green algal groups and in collaboration with Dr Gary Floyd of the Ohio State University, Columbus, Ohio, USA, with whom I spent four years as a postdoctoral associate. For the most part, this work involved identifying the features that permit the placement of most marine green algae in a segregate class, the Ulvophyceae (O'Kelly C.J. & Floyd G.L. 1984: p.121 in Irvine D.E.G. & John D.M. [eds.] Systematics of the Green Algae, Academic Press), and redefining two of the orders in this class, the Ulotrichales and the Ulvales (Floyd G.L. & O'Kelly C.J. 1984: Am. J. Bot. 71:111). At present I am preparing papers with Dr Floyd and other associates on the phylogenetic affinities of the freshwater genus Chaetopeltis (a new order of green algae, considered fairly primitive) and the Prasiolales (not closely related to other marine green algae, possibly belonging to a recently-proposed, still poorly understood class, the Pleurastrophyceae). More recently, I have been investigating relationships among the orders of brown algae, and the possibility that the brown algae evolved from a group of filamentous chrysophytes, extant members of which are presently placed in the golden algal order Sarcinochrysidales (O'Kelly C.J. & Floyd G.L. 1985: Phycologia 24:263). I am currently working up material collected during a postdoctoral fellowship year spent with Dr William J. Woelkerling of La Trobe University in Melbourne, and hope to add New Zealand material to this collection in due course. Incidently, no member of the Sarcino-

chrysidales has been reported previously from Australasia, to my knowledge, but I collected two species from the Mornington Peninsula (Australia), and would expect to find species here as well. I am preparing a paper that will propose the splitting of the Sarcinochrysidales into two orders, with one of the orders possibly antecedent to the brown algae, and the other to a group of golden flagellates, the prymnesiophytes, that is only very distantly related to the browns.

As I have not yet been in New Zealand a year, research on New Zealand marine algae is not yet underway - necessary equipment and supplies have just begun to arrive. My plans are to continue the research on algal phylogeny outlined above, carry out taxonomic studies on the Sarcinochrysidales and on selected groups of marine green algae, in particular the "marine Chaetophoraceae" and the Monostroma complex, and examine life history patterns in culture for economically-important seaweeds and from those entities in the diverse and unique marine algal flora of New Zealand that promise to have unusual features. I am also contemplating setting up a culture collection for algae and protozoa at Massey University that would be accessible to New Zealanders requiring stocks of these organisms for teaching and research purposes, and I would welcome comments from readers concerning the desirability and feasibility of such a project.

Charles J. O'Kelly, Department of Botany and Zoology, Massey University, Palmerston North

■ Algal Research at Fisheries Research Division, MAF

Wendy Nelson of Fisheries Research Division of the Ministry of Agriculture and Fisheries is working on the following topics: continuing field work on Gracilaria - the seasonal/sexual variation in agar quality, quantity, and population dynamics; the taxonomy of New Zealand members of the red algal genus Porphyra and field studies on the seasonality and impact of harvest on Porphyra; regional flora of northern New Zealand (with Nancy Adams); a description of a new genus in the red algal family Rhizophyllidaceae (with Nancy Adams).

Wendy Nelson, Fisheries Research Division, Ministry of Agriculture and Fisheries, P.O. Box 297, Wellington.

■ Plant chemotaxonomy using comparative flavonoid chemistry

Some members of the Natural Products Section, Chemistry Division, DSIR, are applying flavonoid chemistry to the problems of chemotaxonomy.

Flavonoids are characteristic constitutents of green plants with the exception of algae and (probably) the Anthocerotae. They also occur in virtually all plant parts. They are phenolic compounds and constitute approximately 2% of the plants dry weight. Because they are virtually ubiquitous and are found in reasonable amounts in the plants, they are very useful in chemotaxonomy. It is recognised that

there is a strong tendency for taxonomically related plants to produce similar types of flavonoids. In fact, reliable, species specific patterns are produced which are valuable for chemotaxonomy studies, including the determination of the parental origin of hybrids.

Three major lines of research are presently being undertaken:

1) Actinidia (kiwifruit)

A joint project with Dr Ross Ferguson, Division of Horticulture and Processing, DSIR, Mt Albert Research Centre, Auckland, has been established to study the chemotaxonomy of the genus Actinidia. Actinidia is a large genus which has been split, possibly into too many species. The current project is largely concentrated on a study of those species which are of relevance to breeding programmes, but some of the other species, which are already growing in New Zealand, are also being included. These data should also be useful for a study of interspecific hybrids produced experimentally.

2) Podocarpus, Dacrydium and Libocedrus

In conjunction with Dr Brian Molloy, Botany Division, DSIR, Lincoln, a chemotaxonomic study of New Zealand conifers is being conducted. The study of Podocarpus has been completed and gave good support to de Laubenfels' proposed subdivision of this genus into three separate genera:

i) Dacrycarpus: D. dacrydioides (P. dacrydioides)

ii) Podocarpus: P. acutifolius, P. hallii, P. nivalis and P. totara

iii) Prumnopitys: P. taxifolia (P. spicatus), P. ferruginea (P. ferrugineus)

Work is almost completed relating to hybrids formed between Podocarpus acutifolius, P.hallii, P.nivalis and P.totara. Studies of Dacrydium and Libocedrus species are also underway.

3) Lower Plants

Miscellaneous comparative flavonoid studies on bryophytes, ferns and fern allies are also being conducted. Recent work has included studies of the mosses Dicranoloma, Plagiomnium and Bryum and of the fern allies, Isoetes, Psilotum and Equisetum. This work is being carried out in collaboration with Drs David Given and Allan Fife of Botany Division, and with overseas scientists.

Ken Markham, Rosemary Webby, Raymond Wilson, Chemistry Division, DSIR, Private Bag, Petone

■ The current status of Clematis vitalba in New Zealand (July 1986)

Clematis vitalba is now a class B target noxious plant in many areas of New Zealand. Declaration as a class B target plant means that the landowner is legally required to eradicate this plant from their land. An eradication programme must

be drawn up, and within reasonable limits, carried out within the time allocated.

At the time of writing, C. vitalba has been gazetted as a noxious plant in the following District Noxious Plants Authorities (DNPAs - which generally follow county boundaries):

North Island	South Island
Rodney	Buller
Central Auckland	Inangahua
Piako	Grey
Matamata	Lake
Waitomo	Wallace
Whakatane	Southland (incl. Stewart Island)
Opotiki	
Tauranga	Waihemo
Taumarunui	

More DNPAs are due for gazettal in the near future. In line with Noxious Plants Council policy, DNPAs in which C. vitalba does not occur will not be gazetted. To the best of our knowledge, the following DNPAs do not contain C. vitalba:

North Island	South Island
Mangonui	Maniototo
Whangaroa	
Bay of Islands	
Hokianga	
Hobson	
Whangarei	
Otamatea	
Thames/Coromandel	
Hauraki Plains	
Ohinemuri	
Waiapu	
Otorohanga	
Taupo	

If anyone has substantial, recent information on the occurrence of C. vitalba in any of these DNPAs, please let me know (see NZMS 310A for county boundaries). It is a relatively simple matter to deal with small, isolated infestations.

Carol West, Botany Division, c/- N.Z. Soil Bureau, DSIR, Private Bag, Lower Hutt

New Plant Records

■ **Avicennia marina var. resinifera, Tolaga Bay, Uawa Estuary, N89/90690705, latitude 38°23'S.**

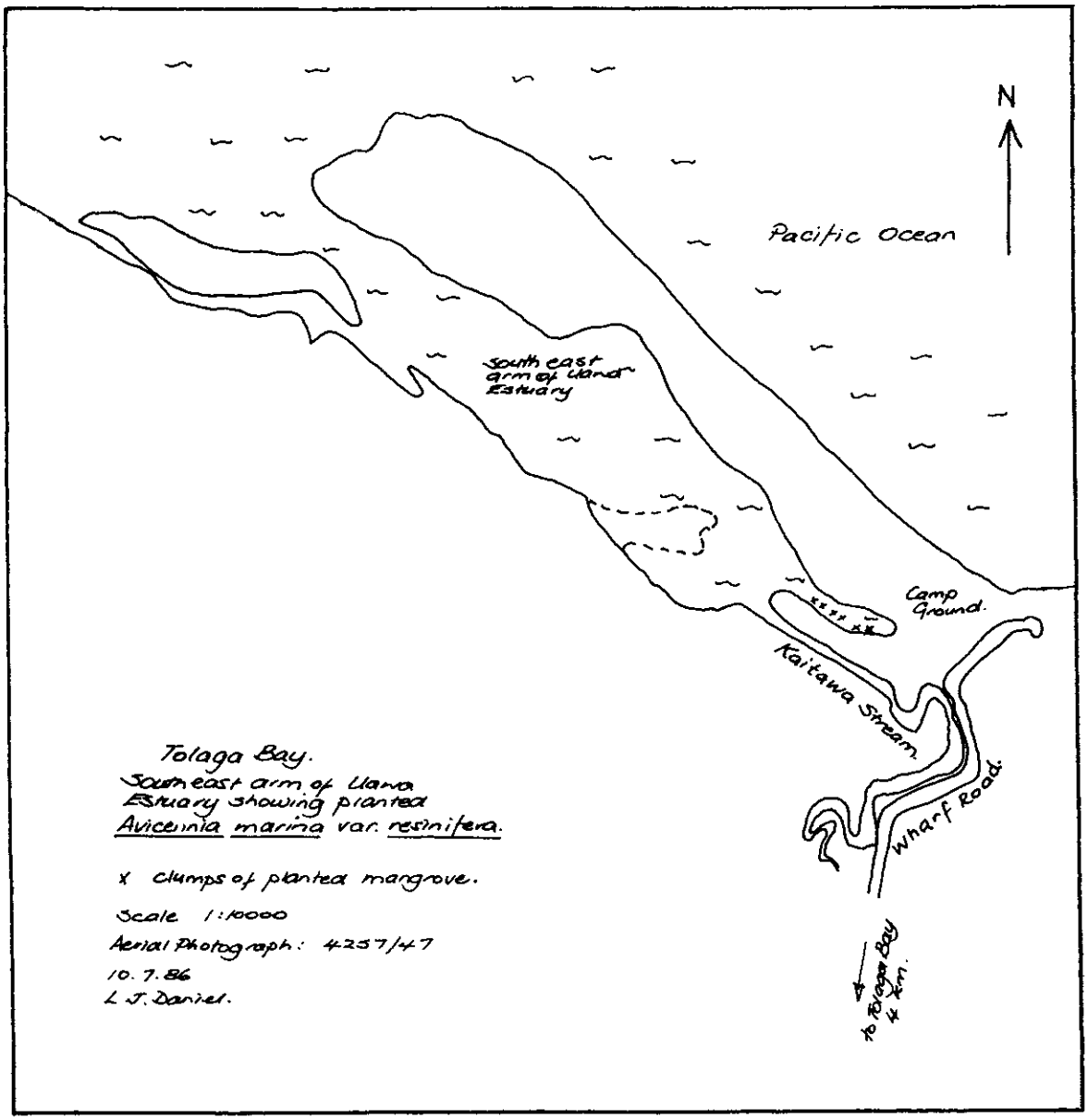
Some six clumps containing fifty-two very small plants were

found on 13 March 1986; one of the fifty-two plants is a seedling. Extensive searching of the estuary and beach were made to locate propagules, but none were found.

The six clumps are confined to a small arm in the south eastern upper estuary close to the mouth of the Kaitawa Stream (see map). All are growing on the south western side of the arm within 5 metres of dry land. They are growing in deep fine anoxic mud soils, and in some cases appear to be in neat rows.

All plants except the seedling were flowering. Whether full anthesis occurs is unknown.

With the exception of the seedling, all plants appear to be single aged, possibly five to six years old. Average size is 550 mm in height, 600 mm canopy diameter with a



stem diameter (50 mm above mud level) of 19 mm. All plants appear healthy and vigorous, with no insect infestation. A notable feature was their morphology. Compared with mangroves in Ohiwa Harbour, eastern Bay of Plenty, the plants are erect with no evidence of frost shaping. Pneumatophore diameters for each plant are under one metre, and the pneumatophores are short, often reaching only 75 mm above mud level.

The Uawa estuary is of a high quality, but the land above EMHWS is highly modified. A few very small remnants of gradation from rushes to manuka remain. One of the best examples of that gradation exists on the northern side of the arm of the estuary containing the mangroves: manuka - Plagianthus divaricatus→Juncus maritimus var. australiensis - Lepocarpus similis→Scirpus americanus. There are small areas of salt marsh throughout the estuary.

The mangroves were planted by Mr John R. Hewitt, veterinary surgeon at Tolaga Bay, about 1980. The propagules were taken from Mud Flat Bridge, Kutarere in Ohiwa Harbour. They were planted out of curiosity. No known planting has taken place since. Mr Hewitt, who owns the adjacent property, thinks he has seen propagules from the mangroves he planted. The single seedling, possibly two years old, is from the planted mangroves.

Voucher specimens have been sent to DSIR Botany Division Herbarium at Lincoln, and the Forest Research Institute Herbarium at Rotorua.

Lindsay Daniel, Department of Lands & Survey, P.O. Box 1149, Gisborne

■ Equisetum arvense at Hauturu, Awaroa Valley, Kawhia

The distribution of this trouble-some weed has been well documented by Brownsey et al. (1985, Wellington Botanical Society Bulletin 42:16-21), noting its past occurrences throughout New Zealand and the present size and distribution of extant colonies.

In the North Island, Equisetum is confined to the Manawatu, with very large infestations around the Rangitikei River (Brownsey et al. 1985). In these localities it is typically found along the banks of rivers and in muddy, wetland sites bordering the Rangitikei River.

Thus it came as an unpleasant surprise to discover a small (ca. 1 m^2) patch of Equisetum growing in thick alluvial muds behind the small township of Hauturu, at the head of the Awaroa Valley. The colony was discovered in a poorly drained paddock, which is regularly flooded by the Awaroa River during times of high rainfall or spring tides. Plants were noted mainly in tall Juncus effusus swards and on the edge of the main river. No plants were found in small seasonal pools in the main paddock. The plants noted were all sterile

and the colony was very localised, suggesting a recent introduction to the area. With this in mind a search along both sides of the Awaroa as far as the Kaimango Road turnoff was conducted. No further colonies were found in this area. The more extensive saltmarsh north of the Hauturu Bridge has not been searched.

It is interesting that Equisetum should turn up in this area, since Hauturu is one of the older settlements along the southern Kawhia Harbour. It is possible that the plant is a garden escape hailing from the early days, when settlers arrived by ballot from England (during the 1890's, J. McKay pers.comm.). However, if this were so, one would expect a much larger colony in the area, with such an invasive, vigorous species. Possibly, this colony is the result of long distance dispersal of spores, (which is unlikely, especially since Equisetum arvense rarely forms cones in New Zealand - Brownsey et al. 1985), or is a propagule of dormant spores or rhizomes from another colony destroyed before it became known to local botanists.

What ever the true story, I suppose we will never know. In the mean time the colony has been removed and the material burned. Hopefully, this isolated occurence will remain as such. There is a voucher deposited at the Waikato University Herbarium (WAI 5880) consisting of a single barren piece.

P.J. de Lange, 19 Cranwell Place, Hillcrest, Hamilton

■ Some observations of thermal area Nephrolepis plants

In July 1985, Mike Imber of the Wildlife Service brought me a fragment of a frond of Nephrolepis from Motuhora (Whale Island) in the Bay of Plenty. He had found a patch which he later estimated to cover about 10 m x 3 m, on thermally heated ground about half-way up the main peak of the island, and surrounded by kanuka scrub. Because of its habitat, I assumed this to be the native Nephrolepis (N.sp. in Brownsey, Lovis and Given (1985), N.Z.J.Bot.23 p.468), although this species had not been recorded on Motuhora previously.

Relocating this patch of Nephrolepis was one of the aims of the Offshore Islands Research Group's (OIRG) expedition to Motuhora, 28 December 1985 - 5 January 1986. It was not until 3 January that Bruce Hayward, one of the OIRG party, discovered what was probably the patch found earlier by Mike Imber, although it measured some 10 m x 15 m. There was also a smaller patch 25 m downslope. Inspection of the colony by several of the party the next day revealed that:
(i) the plants were more robust than is usual for the native Nephrolepis in thermal area;
(ii) the plants bore "bulbs" or "tubers".

A specimen is lodged with the Auckland Museum herbarium (AK 174131). It appears, therefore, that Motuhora's Nephro-

lepis is the introduced species [N. cordifolia (L) C. Presl, in Brownsey et al., (loc.cit.), pp. 444, 468] which is common on the mainland, in cultivation and as an occasional garden escape.

After leaving Motuhora I visited Waimungu thermal area south of Rotorua on 6 January 1986. Heavy rain in the Bay of Plenty on several days preceding my visit had caused widespread flooding, and at Waimungu there were many clumps of the native Nephrolepis which had slipped from a steep, steaming bank above the main path near the Iodine Pool. None of these dislodged plants was found to possess "bulbs".

Brownsey et al's (loc.cit.) distinction of a native taxon of Nephrolepis without bulbs and apparently confined to thermal areas in New Zealand, from an introduced taxon of Nephrolepis which possesses bulbs and which grows readily (sometimes too readily) in gardens, appears to be justified. Motuhora is the only recorded population of the introduced Nephrolepis in a thermal site in New Zealand.

Colin Ogle, 8 Donlin Road, Pukerua Bay

Phenology

■ **Myrsine australis - matipo**

Flowers of this species have been described as unisexual, with the female flowers having four "sterile" stamens. My studies, carried out at Bushy Park, reveal the following:

Around the grounds at Bushy Park there are 5 of these plants. All, except one, had female flowers. The fifth plant bore male flowers. Three of these female plants are found on the front lawn, with the other being up by the stables, close to the glasshouse. The one male plant is located in front of the stables and up on the bank. It would seem highly unlikely that this one male plant would have pollinated all - if any - of the female plants, considering how far away they all are. This would apply particularly to the 3 down on the front lawn.

No male flowers were found on any of the female plants, to indicate monoeciousness. But then there were literally hundreds of flowers on each plant - or shrub - and they are so minute that it is quite necessary to use a lens to observe them.

By March 1986 three of the four plants had produced berries. Later, the fourth plant also produced berries. None of these berries are yet ripe. The fact that all four "female" shrubs did, in fact, produce berries in great quantities, leads me to believe that the species is either monoecious, or, more likely still, that at least some of the so-called "sterile stamens" on the female flowers are, in fact, not sterile - but function normally. Thus these flowers would be hermaphroditic, or bisexual.

I have also found that this species reproduces vegetatively by means of a form of stolon which runs along just under the ground surface and

then suddenly surfaces a short distance from the parent plant, with a new plant "shooting" from it. At this point it also often sends down roots into the ground. I have severed one of these new plants from the parent plant, and planted it to see if it will grow. Two months later the plant still appears to be alive, although at this stage it is not showing any signs of growth.

Eric Turfrey, 20 Duigan Street, Wanganui

ANNOUNCEMENTS

■ **Competition**

This is an invitation to submit designs for a Botany Division logo, together with an explanation of the symbolism contained in the design. The logo should be of a form which can be readily identified by the general public, and which can be presented in full colour or in black and white.

On receipt of all entries, a panel will be asked to recommend the most suitable design.

An award of $100 will be presented for the design considered most suitable as the Botany Division logo.

Entries close on 1 November 1986.

W. Harris, Director, Botany Division, DSIR, Private Bag, Christchurch

■ **Apology**

In Newsletter Number 4, June 1986, p.9, I stated that New Zealand specimens of Caladenia iridescens had been taken to America by Dr Cooper. Apparently I was misinformed.

Dr Cooper tells me he took no New Zealand material to St Louis, and I must apologise most sincerely, both for the error, and for the distress my note has caused.

E.D. Hatch, 25 Tane Road, Laingholm, Auckland 7

■ **Research on the vegetation of New Zealand**

The papers which form the basis of this volume were presented by eminent New Zealand botanists at a symposium held in May 1984 to mark the retirement of Dr E.J. Godley from Botany Division, DSIR, of which he was the Director for 22 years. The aim of the symposium was to review botanical research on indigenous vegetation in New Zealand, and so the symposium represented a fitting tribute to a man who has contributed much to this area over the past 40 years.

As a collection, the papers make a significant statement on the current position of botanical research in New Zealand and represent a reference point for the assessment of future developments.

Research on the Vegetation of New Zealand covers a broad range of subjects including plant biosystematics, plant form and function, plant biogeography, plant ecology, and vegetation conservation. All papers are reprinted from the New Zealand Journal of Botany, Volume 23, Number 4, 1985.

Black and white photographs, line drawings, and graphs illustrate the clearly written text. 199 pages, soft cover. Order your copies at $NZ15.00 (plus postage and packing - NZ$1.35, overseas $NZ3.50) from:

The Publication Officer, Science Information Publishing Centre, DSIR, P.O. Box 9741, Wellington

DESIDERATA

■ **Pollen studies in Auckland - a call for fresh flowers!**

In recent years a number of research projects involving the techniques of pollen analysis have been undertaken by students and staff members at Auckland University. Pollens and spores have extremely durable outer walls which may enable their preservation in peat and lake sediments. By studying these 'fossilised' pollens we can learn about the vegetation of the past, and how it may have responded to climatic and other environmental changes. Such information is valuable to botanists, geologists, archaeologists and geographers alike and pollen studies will continue to refine and increase our understanding of the natural history of this country.

As an example, the writer is currently investigating lake sediments from the Waikato Basin which it is hoped will provide a continuous record of pollen deposition for the past 20,000 years. During this period it is believed that climate and vegetation have varied considerably from the present, but the details of the timing and nature of the changes have yet to be properly clarified. The level of taxonomic precision achieved in the identification of the fossil pollens will be a critical factor in this work. To assist in this and other research projects staff and students of Botany and Geology Departments have been building a modern pollen reference collection so that comparisons can be made between fossil materials and modern type specimens. Such reference collections exist in Wellington and Canterbury but a comprehensive collection is lacking from Auckland, to the detriment of previous pollen studies undertaken here. Collections consist of microscope slides containing pollens collected from living or herbarium material. The Auckland collection at present is adequate for current work but it is hoped to expand it as more material becomes available. Indeed the biggest restriction is in obtaining fresh pollen, an understandable one considering the difficulty in locating some specimens and of being able to sample them when flowering. It is in this respect that Botanical Society members and their friends could make a valuable contribution, as many of you are growing or can otherwise obtain specimens presently lacking in the reference collection. A list of these follows:

PODOCARPACEAE	Lagarostrobus colensoi
	Halocarpus biformis
	Halocarpus kirkii
CHLORANTHACEAE	Ascarina lucida
CRASSULACEAE	Tillaea sp.
DROSERACEAE	Drosera sp.
CARYOPHYLLACEAE	Colobanthus sp.
	Scleranthus uniflorus
	Stellaria sp.
PORTULACEAE	Claytonia australasica
	Montia fontana
POLYGONACEAE	Polygonum sp.
CHENOPODIACEAE	Chenopodium sp.
GERANIACEAE	Geranium pilosum
HALORAGACEAE	Gunnera sp.
	Haloragis sp.
	Myriophyllum sp.
THYMELAEACEAE	Drapetes sp.
ROSACEAE	Acaena sp.
PAPILIONACEAE	Canavalia obtusifolia
URTICACEAE	Urtica sp.
LORANTHACEAE	Loranthus micranthus
BALANOPHORACEAE	Dactylanthus taylori
SAPINDACEAE	Dodonaea viscosa
UMBELLIFERAE	Aciphylla sp.
	Centella sp.
	Schizeilema sp.
	Hydrocotyle elongata
	Hydrocotyle moschata
	Hydrocotyle novae-zealandiae
	Liliaeopsis sp.
ERICACEAE	Gaultheria sp.
EPACRIDACEAE	Pentachondra pumila
APOCYNACEAE	Parsonsia sp.
RUBIACEAE	Galium sp.
GENTIANACEAE	Gentiana sp.
GOODENIACEAE	Selliera sp.
SCROPHULARIACEAE	Euphrasia sp.
LENTIBULARIACEAE	Utricularia sp.

Male flowers or the stamens themselves should be put in labelled paper bags or envelopes (separate bags for different species please!) and mailed to the following address:

Pollen Reference Collection, c/- Rewi Newnham, Geology Department, University of Auckland, Private Bag, Auckland 1

■ **Seed wanted**

Donatia novae-zelandiae	Myosotis pulvinaris
Forstera tenella	Ourisia caespitosa
Haastia pulvinaris	Phyllachne colensoi
Lobelia roughii	Raoulia eximia
Leucogenes grandiceps	Raoulia rubra
Myosotis explanata	Senecio scorzoneroides

Priv. Doz. Dr. V. Melzheimer, Botanischer Garten der Universitat, Karl-von-Friebn-Strasse, D-3550 Marburg, West Germany

MEETING REVIEW

■ **Fifth annual New Zealand Herbarium Curator's Meeting**

This meeting, held at the DSIR Mt Albert Research Centre in Auckland, gave 13 representatives from New Zealand herbaria the opportunity to report on recent activities, and to discuss problems, projects and items of mutual interest.

Items reported and/or discussed included: the presentation of the bryophyte and lichen collections of the late John Bartlett to Auckland Museum; the rehousing of the National Museum's Natural History Unit in a separate building; the start of work on major extensions to the Botany Division herbarium at Lincoln, Christchurch.

Four herbaria reported on computerisation of records, together with label printing. All four still have many records to process! Most herbaria suffer from a shortage of staff - Botany Division of DSIR is trying to alleviate the problem with a group of volunteers who are styled "Friends of the Herbarium".

Microwave drying of herbarium specimens is not recommended; not only does each item require a different (and precise) "cooking" time, but the microwaves also damage the internal structures.

The desirability of a checklist of New Zealand plants provoked a lively discussion. Most indicated that such a list, containing up-to-date names (and their synonyms) would be extremely useful. However, its compilation presents many difficulties. Hopefully there will be a progress report next year.

Collating specimens of handwriting of notable New Zealand botanists (both past and present) is a project begun two years ago. Institutions with appropriate material supply photocopies of letters and/or hand-written specimen labels, which are being collated into alphabeticl loose-leaf files, and circulated to herbaria. This is a continuing project.

Philippa Horn, Department of Plant Science, Lincoln College, Canterbury

THESES IN BOTANICAL SCIENCE

■ **University of Auckland, Department of Botany**

Court, A.J. 1985: Aspects of the Ecology of Dysoxylum spectabile. MSc.
Forbes, S.K. 1985: Isolation, Identification and Pathogenicity of fungi found in Association with Coprosma J.R. & G. Forst. Decline in the Auckland area. MSc.

Lewis, D.H. 1985: Pollination and Fruit Set in the Tamarillo. MSc.
O'Flaherty, B.F. 1985: Aspects of Saprophitic Antagonism towards Botrytis cinerea on Tomato. MSc.
Pak, H.A. 1985: Aspects of desiccation tolerance and avoidance in intertidal algae.
Rattray, M.R. 1985: The effect of Phosphorus on the growth and metabolic activity of a watermilfoil. MSc.
Snowball, A.M. 1985: Flower development in kiwifruit. MSc.

■ **University of Canterbury, Department of Plant and Microbial Sciences**

Clinton, P.W. 1986: Biomass, productivity and nutrient stocks of the fine roots of 15 year old Pinus radiata and mixed-aged Nothofagus truncata forests of north-west Nelson. MSc.
Donaldson, L.A. 1985: The relation between cell wall composition and morphology in the secondary xylem of Pinus radiata D. Don. MSc.
Dunn, M.J. 1985: An ecological study of Griselinia littoralis Raoul. MSc.
Konlechner, J.C. 1986: Studies on the fate and effects of a paraffin based crude oil in an Antarctic coastal ecosystem. MSc.
Middleton, T.A. 1986: Vessels of stem wood in N.Z. Nothofagus (Fagaceae). MSc.
Rainey, P. 1985: A study of physical, chemical and biological properties of the mushroom casing layer. MSc.
van Gardingen, J.R. 1986: The physiological ecology of Clematis vitalba L. MSc.

LETTER TO THE EDITOR

Dear Editor,

We are all aware of the revolution affecting the organisation and funding of science in New Zealand. The most important changes from the botanist's point of view relate to funding and to the administration of environmental research in the public sector.

There is no doubt that economic problems affecting New Zealand need to be addressed and that the public sector should be as active as any other in meeting present difficulties. But present policies seem to go beyond this and emphasise the need to return a financial profit. One consequence of this is that DSIR divisions are now required to charge for their services, not only to implement the "user pays" philosophy, but also to meet the shortfall created by shrinking funds received directly from government.

In the case of Botany Division, as Dr Warwick Harris pointed out at a recent seminar, this means that the division will need to earn 20% of its 1985/1986 budget by 1990 in order to maintain its present level of activity. Failure to do so implies a reduction in staffing levels, and consequently, a reduction in the problems it tackles and the services it offers. In this case some hard decisions must be made.

Most of us believe that a positive response, no matter how distasteful for some, is better than passively accepting a shrinking division and a probable deterioration of standards as they are presently practised. While some divisions, e.g. Chemistry Division, recoup about 70% of budget from forensic services to the Police Department, others, e.g. Botany Division, find it much more difficult to generate revenue. Indeed some sections of the division may well find that their earning capacity is negligible, and because of this worry about their fate in the long-term.

Whatever the eventual result of these present policies it has become necessary for each group to look at the services it offers and to charge for them. Accordingly the taxonomists and herbarium staff have been forced to consider charging for the much used identification service, without much hope of realising an ever increasing revenue target over the next few years. The situation here is akin to those who are living on a fixed income - there is a steady demand for identifications but the demand shows little sign of increasing markedly each year. Further, does the revenue earned truly reflect the effort required to earn it. On the other hand ecologists within the division are able to earn a relatively large income many times greater than their colleagues. In monetary terms ecologists are the group to foster, but anyone concerned with plants knows that interaction between taxonomist and ecologist provides the necessary balance for the best work. Those familiar with Botany Division know that this is a fact clearly illustrated in the recent seminar to mark the retirement of our gardens curator.

The effects, short-term and long-term, of existing monetary policies on the well-being of our botanical science need to be monitored. I believe that unless the issues are debated, properly formulated and understood, we botanists in New Zealand risk a reduction in effort and fall-off in standards which will be detrimental to the "national good". These are matters which in my opinion need to be discussed at a national level by all disciplines and in the case of botanists one avenue is through this Newsletter.

In any consideration of the present situation we should try to learn from overseas experience. According to Graeme Stevens (Geological Survey Overseas Travel Report) monetarist policies have been detrimental to the development of geology in Britain and in West Germany. Although many of us were aware of these effects, the trenchant comments in the report really drive home the chaos that is attendant upon the inflexible imposition of such policies. I hope that this Newsletter will encourage debate on what is effectively a "cultural revolution" in New Zealand.

N.T. Moar, 8 Maurice Street, Lincoln, Canterbury

Acknowledgement: *This Newsletter was typed by Mrs Mary Best*

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