Introductory Note to Cyto-Taxonomic Studies of New Zealand Ferns.

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[*Read before Canterbury Branch, March 3, 1954, received by the Editor April 2, 1954*]

Abstract

An introduction is given to the long-term project of cyto-taxonomic studies of New Zealand ferns.

The following is a brief introductory note to a cyto-taxonomic investigation of the New Zealand ferns which it is hoped will eventually cover almost all of the native species. This work is a long term project, and correspondence on the subject is being carried on with Professor Manton, of Leeds.

To date meiotic figures of representatives of the greater number of Leptosporangiate fern families have been examined for chromosome numbers. Most findings have been completely in accord with those noted by Manton (1950) for European species of the same groups, and they also tend to support the divisions adopted in the revised edition of Dobbie's " New Zealand Ferns " (1951). The peculiarity of two distinct and apparently unrelated numbers noted by Manton in the Hymenophyllaceae has also been found to occur in the New Zealand species. Possibly the most interesting new feature to emerge is a similar condition within the genus *Blechnum* (Figs. 1 and 2) Of six species examined three conform to the 34 number noted by Manton, but the other three all show an η number of 28. It is intended to examine a wider range of this genus, and also to follow it up with an investigation into the life cycles of examples from both groups.

The number of 52 for *Hypolepis rugosula* also shows the correctness of renaming this species and removing it from association with *Dryopteris.*

The widely distributed *Asplenium trichomanes* may not be the simple species that has until now been recognized Manton's η number of 72 for European specimens differs from the 108 of the local examples noted In England *Asplenium trichomanes* hybridizes with other species, but in New Zealand this is unknown. The figures 36, 72 and 144 appear to be common among those species of *Asplenium* which hybridize freely. This will be seen from an examination of the accompanying table, and also of Manton's notes on European *Aspleniums*

The following is a list of New Zealand species in which accurate chromosome counts have been made—all are the haploid number.

Family Hymenophyllaceae

Meringium multifidum 26, *Mecodium rarum* 36, *Mecodium flabellatum* 36, *Mecodium demissum* 36, *Mecodium villosum* 36, *Mecodium sanguinolentum* 72, *Polyphlebium venosum* 36

Family PTERIDACEAE.

Dicksonia squarrosa 65, *Dicksonia fibrosa* 65, *Hypolepis rugosula* 52, *Hypolepis tenuifolia* 104, *Paesia scaberula* 26, *Pteridium esculentum* 52, *Histiopteris incisa* 104, *Pellaea rotundifolia* 58.

Family CYATHEACEAE.

Cyathea dealbata 72.

Family ASPIDIACEAE.

Polystichum vestitum 82, *Cyclosorus pennigerus* 72.

Family BLECHNACEAE.

Blechnum penna-marina 34, *Blechnum vulcanicum* 34, *Blechnum fluviatile* 68, *Blechnum discolor* 28, *Blechnum durum* 28, *Blechnum procerum* 28.

Family ASPLENIACEAE.

Asplenium bulbiferum 72, *Asplenium flaccidum* 72, *Asplenium hookerianum* 72, *Asplenium richardi* 144, *Asplenium trichomanes* 108.

Family POLYPODIACEAE.

Microsorium diversifolium 37.

Note: The terminology used throughout is that of the revised edition of Dobbie's " New Zealand Ferns ".

REFERENCES

DOBBIE, H. B., 1951. New Zealand Ferns. 4th edit. Revised by Margaret Crookes. Whitcombe and Tombs Ltd.

MANTON, I., 1950. Problems of Cytology and Evolution in the Pteridophyta. Cambridge University Press.

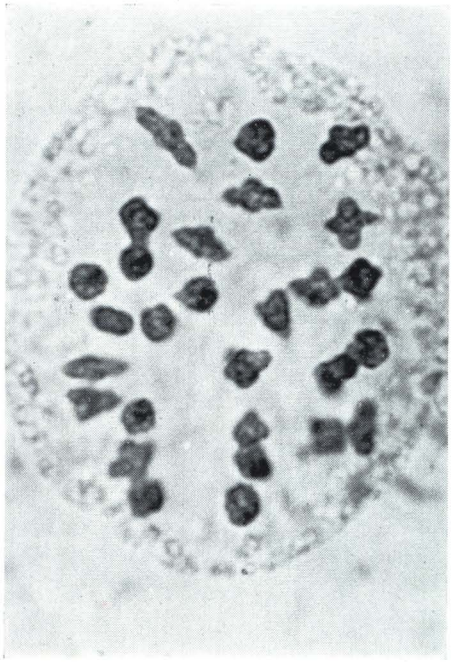

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FIG. 1.—Meiosis in *Blechnum durum* (Moore) C. Christen. × 1800. $\eta = 28$.

FIG. 2.—Explanatory diagram to interpret Fig. 1.

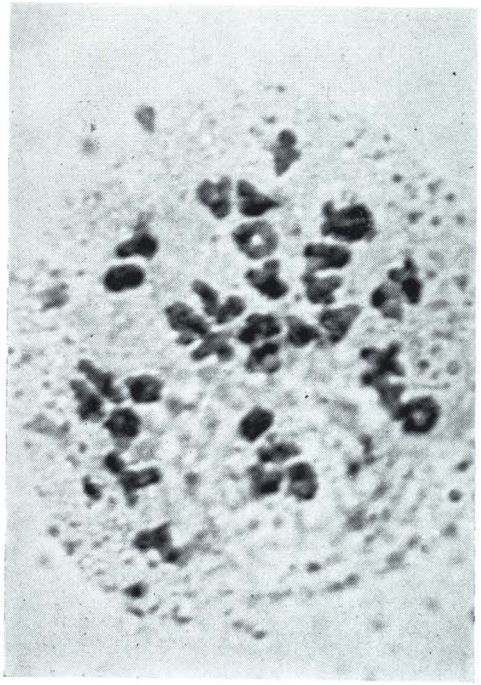

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FIG. 3.—Meiosis in *Blechnum vulcanicum* (Blume) Kuhn, × 1800. $\eta = 34$.

FIG. 4.—Explanatory diagram to interpret Fig. 3.