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A STUDY OF SOME OF THE FACTORS
CONCERNED IN THE
NATURAL REGENERATION OF THE KAURI
(*Agathis australis*)

being a thesis submitted to the
University of New Zealand
for the degree of
Doctor of Philosophy
by

REX VALENTINE MIRANS

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INTRODUCTION.

New Zealand is a land with a unique and very diversified flora which, along with the great range of habitats to be found throughout the country, has given rise to some remarkable plant communities. As a result of a considerable volume of ecological research, mainly by the efforts of Cockayne, our plant associations are well known and delimited. There have, however, been few detailed analyses of their structure and of the factors operating in any of them, Cockayne's work being primarily descriptive. From the developmental point of view the general life-history of the Kauri forest has been known for many years, but nothing more detailed is known about the changes occurring. It is for the above reason that an attempt has been made in the present research to try and elucidate some of these factors while there are still considerable areas of Kauri forest in a more or less untouched state.

Agathis australis is endemic to New Zealand and in the past has been one of the world's largest timber producing trees. In the earlier days of settlement over-exploitation of this species has reduced it to a level of relative unimportance at the present time. Although the Kauri has been an important tree its distribution is surprisingly limited. According to Cheeseman (1925) it occurs "... in forests from the North Cape southwards attaining its extreme limit on the east coast inland from Maketu in the Bay of Plenty; and on the west side of the island in the vicinity of Kawhia Harbour." This is the absolute limit; the real limit is perhaps further north at Tairua (Coromandel Peninsula) on the east and at the Mamakau Heads on the west. Even over this comparatively small area, the Kauri is by no means a common tree, large areas being dominated by various species of Dacrydium, Podocarpus, Beilschmiedia and perhaps Weinmannia, (Podocarp - broad-leaved - forest). Although limited in its distribution Agathis forms a distinct ^{inct} community and the Kauri

forests, as they are called, were at one time spread over many localities in the Auckland Peninsula.