HAVE PLANT, WILL TRAVEL

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The lot of the plant geographer has been difficult in trying to elucidate the ways dispersal has occurred but recently a dramatic change has come over Geology, opening up new possibilities for him to explore. This change is the acceptance in the last five years of the theory of continental drift first put forward in 1912 by Wegener, a German meteorologist. This postulates that the continents have drifted slowly to new positions, thousands of miles from the places they occupied when, about 200 million years ago they were bunched closely in two contiguous masses. Wegeners work was generally criticised and derided by geologists, but he did have a few supporters and in later years biologists, trying to unravel the problems of the dispersal of plants and animals, looked longingly at the theory. Geologists mostly flatly denied that continents could have moved in this way, and others said that even if it had happened it had been so long ago in the past that it would not have affected the transfer of organisms in the period when evolution was producing the main modern biota.

The recent upsurge in the study of the oceans resulted in the discovery that ocean floors are quite different in their composition from continents and are also very young, especially in the middle, and get older on either side of the mid-ocean ridges progressively towards the continents. These and other discoveries are interpreted as meaning that volcanic material is welling up on the mid-ocean ridges and spreading towards the sides at from 1 to 20 centimetres per year, building up new ocean floor and pushing the continents with it like rafts. This is sufficient to have created the Atlantic Ocean in the last 150 million years, separating Africa and South America. Geologists now call the study Plate Tectonics and it is so new and exciting there is intense activity going on and much fine detail is still indefinite and many questions have still to be answered. However the above facts now seem to be agreed on.

And how does this affect our ideas on the spread of plants? It appears that about 200 million years ago in the Mesozoic era there existed only two vast continents, probably touching near the equator to form a world continent, called Pangea. The two parts separated soon after but retained connections at a few points for some time. The northern part Laurasia, has since broken up to form North America, Europe and Asia while the southern mass, Gondwanaland, has over the same period spread apart forming South America, Africa, India, Australia, Antarctica and New Zealand. The inclusion of India may be surprising but there seems complete agreement that it separated very soon after the middle Mesozoic and moved steadily north-east until about 45 million years ago when it collided with Asia, plunged underneath at the junction and in so doing pushed up the edge of Asia to create the world's highest mountains, the Himalayas. After India a combined South America - Africa moved off from the rest and later itself split to leave the Atlantic Ocean in between. South America kept a rather tenuous connection with Antarctica - Australia for some time and finally Australia hived off from Antarctica some 40-50 million years ago.

Before Gondwanaland broke up into its parts there grew in temperate regions of the southern land mass, both gymnosperms which had arisen and developed some millions of years before, and angiosperms which were appearing and developing at that time. Among them were members of over sixteen families of larger plants including the Podocarpaceae, Araucariaceae and, of special interest to New Zealand, the Nothofagus genus of the Fagaceae. This then would account for the appearance of these families in almost all southern continents - e.g. Podocarpus species in Chile, Brazil, East Africa, Australia and N.Z. or Araucaria relatives in Chile (monkey puzzle), Brazil (Parana Pine), Queensland (Agathis spp.), Norfolk Is. (N.I. Pine), New Caledonia (a similar pine), N.Z. and Fiji (Agathis spp.). Nothofagus and Proteaceae also have a distribution which is easier to explain with this background although there are still problems.

What about New Zealand itself? Well the study is so new that details are still being worked out and will be for years to come. Most workers seem to think that New Zealand in its movements travelled as part of Australia for a great part of the time, but finally in the Oligocene, say 30 - 40 million years ago, separated from the south-east part accompanied by other pieces of continent some of which, the Lord Howe Rise, the Norfolk Ridge and the Campbell Plateau are now almost submerged, though not very deeply. New Caledonia was also part of this group. The link with Australia still shows today in the small areas of ancient rocks in Fiordland and Nelson which are much older than the rest of New Zealand.

Why did our land not bring with it marsupials, acacias and eucalypts; why did no tuataras remain in Australia and why are there no dinosaur fossils in New Zealand rocks such as are found in Australia? There is an enormous amount still to be worked out but it is most interesting and botanists can now try a different approach to their problems.

SOME RECENT NAME CHANGES IN N.Z. FLORA

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PSEUDOPANAX (ARALIACEAE)

In the New Zealand Journal of Botany Vol. 11 No. 1 pages 171-172, March 1973, Dr.E. Edgar discusses names in the N.Z. species of Pseudopanax. Apparently Panax and its compounds have been treated as neuter (neither masculine or feminine) in N.Z., but according to the International Code of Botanical Nomenclature and to Dr. W.T. Stearn of the British Museum, the masculine gender should be applied to names in Panax.

Accordingly Dr.Edgar has recommended the following spellings for New Zealand species of Pseudopanax (the names listed here