SOILS OF ELTHAM COUNTY AND THE TEPHROCHRONOLOGY OF CENTRAL TARANAKI

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by

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Frontispiece. View across the south of Eltham County, to the north-west, with Mt.Egmont in the background, from Tirimoana Road, at N129/917395. The landscape shown here comprises an uplifted marine bench (Kaiatea Terrace) overlain by laharic breccia (Eltham Lahars) and thick volcanic ash. Soils are mapped as Stratford hill-Stratford association.

ABSTRACT

The soils of Eltham County west of the Patea River, are described and their distribution shown on a map at a scale of 1:50,000. The soil-forming factors are discussed with particular emphasis on the soil parent materials, which range from volcanic ash in the west, to peat and sedimentary rock, mainly siltstone and sandstone, in the east. An account is given of the genesis and historical development of the Ngaere and Eltham Swamps and a classification made of the Eltham peat.

A detailed account is given of the stratigraphy of the late Quaternary tephras in central Taranaki. Eight new tephra units (p2, p1, E5, E4, E3, E2, E1 and Mahoe) are described, with type sections and reference localities designated. Isopach maps of their distribution are presented and an attempt is made to correlate these tephras with those further north. Details are given of the westernmost occurrences of Aokautere Ash and the implications of these for the Late Quaternary in Taranaki are examined.

Petrographic studies, X-ray fluorescence and chemical analysis of titanomagnetites by inductively-coupled argon plasma emission spectroscopy (I.C.P.) are also applied to effect positive identification and correlation of the tephras. The composition of the lithic Manganui tephra is established as basaltic.

The morphology and physical properties of the soils are described as are the soil mapping units employed in this survey. Characteristics of the component members of the mapping units are given in an extended legend. Fifteen soil taxonomic units have been recognised and named in the soil survey. Descriptions designed primarily for correlation and reference purposes are provided for each of the taxonomic units. The soils are also rated in terms of their limitations for pastoral cropping, horticultural, forestry and urban uses and in terms of their value for food production. The position of the boundary between Stratford and Egmont soils is established and a basis for distinguishing the two soils is proposed. By examining two steepland subcatchments in detail an insight is provided into the wide range of variability found in the steepland soils in the east of Eltham County. An indication of the presence of volcanic ash or its absence due to erosion is gained by applying the phosphate retention and allophane test. This also provides an understanding of the pattern of parental material variability.

Finally, selected laboratory analyses have been chosen to help characterise the chemical and physical properties of five yellow-brown loams, a gley, an intergrade between yellow-brown loams and recent soils and an organic soil from Eltham County. Detailed analytical data from ten New Zealand Soil Bureau reference sites in Taranaki are included for comparative purposes.

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