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**NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION NEWSLETTER**



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## GRAVEL QUARRIES IN THE WAIKATO

Doug Pick.

Early Waikato missionaries recorded in reports and diaries the numerous people and the extensive cultivations of the "Wycotto". The tribes were in the main of Tainui descent, with a possible mixture of people who had earlier occupied this rich food-producing area. The tribes on the rivers were Ngati Tipa, Ngati Mahanga, Ngati Koroki, Ngati Raukawa, Ngati Maniapoto, Ngati Matakore and, later, the Ngati Haua. They had a saying in praise of the cultivator: "He Toa Taua he toa Pahekeheke he toa mahi he toa pumau." (The fame of the warrior is transient, but the fame of the food producer is enduring.)

On the Waikato and Waipa Rivers the Maori found wide open lands for agriculture, and river escarpments and bends for strongholds. On these river terraces and flats and on the gentle rolling downs, he carried out the old "slash and burn" preparations, dug the ash-covered ground and made hills or mounds for planting kumara and gourds. If the soil was cool or hard, he dug a deep hole near the cultivation, and in baskets quarried suitable shingle and sand to top-dress the cultivations; this was spread around the kumara mounds to warm the soil or to make it friable. The present-day evidence of this extensive agriculture is the quarry.

The records of early travellers contain numerous references to the quarrying activities of the Maoris. The Rev. J. Stack (1893) said that "at Kaiapoi the natives top-dressed the kumara hills with six inches of gravel". Mr H. Beattie (Best, 1925) was told by a Maori at Molyneux, Otago, that "a special variety of kumara was planted, and the mounds were covered with or formed by sand or gravels". Rev. Dunnage (Best, 1925) writing in "Old Canterbury" said, "The Maories covered the kumera hills with light soil". Archdeacon Walsh (1962: 12) wrote, "The land was improved by a layer of sand from the river bed or wherever it could be got. In the Waikato, the clay soils were often treated in this manner with sand from the pumice plains where the pits from which the supply was procured are still to be seen." Shortland (1854) mentions "their knowledge of the art of horticulture was not inconsiderable for they employed the method of forming an artificial soil by mixing sand with the natural soil in order to make it light and porous, and so render it more suitable to the growth of the sweet potato. In parts of the Waikato district where the kumara was much cultivated, the traveller

frequently meets with large excavations from 20 to 30 feet deep, like the gravel pits one is accustomed to see in England near the public roads, and, in reply to enquiries, he learns to his surprise that the pits were formed by those who resorted there year by year to procure sand for manuring the ground in the manner described." Yate (1835: 156) said that "the natives make the soil light by carrying sand and small gravel from the rivers. They found that these sands and gravels are the best meliorators of a clayey soil." Colenso (Best, 1925) wrote, "For the kumara, a dry light sandy or, rather, a gravelly soil was selected, and if it were not so naturally, it would become such as every year the people laboriously carried on to it many a back-load of fine gravel obtained from the pits, in large and peculiarly close woven baskets specially prepared for this purpose only." Elsewhere Colenso wrote, "the kumara or sweet potato was planted with much ceremony and regularity in little hillocks in selected dry ground, facing the sun, carefully prepared and heavily gravelled with fresh gravel from some pit or bed of a neighbouring stream, this annual gravelling of the kumara grounds was alone a heavy service." E. J. Wakefield (Best, 1925) wrote of small cultivations on hillsides near Paekakareki, "the terraces were covered with sand from the beach, the natives assured me that this made the best soil for kumaras." Edward Tregear (1904: 96) records, "The kumara is an annual and needs considerable skill in cultivation. The little hillocks on which it was planted had to be manured every year with fine gravel obtained from pits or river beds, and carried in closely woven baskets with much labour on the bearer's back, to the place where it was used." He also stated, "Gravel or sand had to be brought and spread over the soil in which the taro roots were planted, in order that the heat of the sun should be drawn to the plants to nurture them." The Rev. J. Buller (Best, 1925) wrote, "The kumara is planted in the little hillocks of sheltered ground facing the sun. The ground, which was carefully prepared, was mixed with gravel which the women carried in baskets from some pit, or from the bed of a running stream hard by. The women bore the heavy burden on their backs, because the chiefs (being tapu) could not do so." Elsdon Best (1925), quoting a Maori source, states, "In planting the taro the holes were made in a straight line, a quantity of gravel was put in the holes and this gravel was flattened out, a hollow was formed in it, and two or three taro plants were put in the hole and covered with gravel. When the young shoots grew up more gravel was put around them." J. White (Best, 1925) states, "Leaving Rawa Rawa and travelling south by the seaside, I passed several of the taro plantations of the natives. These plantations were large, in nice condition and looked very neat; the plants being planted in the true quincux order and the ground strewed with fine white sand." Judge Wilson (Best, 1925) wrote, "Maoris are proved to have come from the tropics by the tropical character of the plants they brought with them. Kumara and taro are both of that character, the latter particularly so; for six hundred years the taro had to be grown artificially. Sand and gravel was dug from a pit and carried to the fields and placed in layers over the soil. This drew the sun's rays and warmed the soil." Finally,



trees grow in clusters.

Quarries and made soils have been reported in many areas throughout New Zealand and a closer study of these should be made before they are all lost through increased European agricultural activities.

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EDITOR'S NOTE:

The Journal of the Polynesian Society, Volume 76, No. 3, of Sept. 1967 carries a paper by Kathleen Shawcross on Maori Food Production in Agricultural Areas in the 18th Century. This well documented argument proposes that fern-root was the staple food at that time and sweet potato (kumara) and taro were subsidiary delicacies. Furthermore, she concludes "that had the 18th Century Maoris not practised agriculture at all but relied totally on fern-root in agriculturally favoured areas ... their population and distribution would probably have been practically the same as that actually recorded...." The perspective of total food economy of the Maori may have tended to have been overbalanced by the dramatic field evidence of quarries and shell middens, and the editor would like to bring to attention her paper, which is just to hand.