The Waitaki River Mouth Moa Hunter Site Revisited

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In spring 1926, Hugh McCully identified the former Korotuaheka fishing reserve on the south bank at the Waitaki River mouth as a moa hunter site (Heritage New Zealand site 5680). For 35 years, McCully accompanied many people to the site, including members of the Evans family who shared McCully's interest in South Canterbury's regional history. In 1926, McCully was in pursuit of two adzes ploughed up by J B Chapman on his farm near Te Maihāroa's 1879 settlement, and to his amazement found himself on the margins of a 150–acre moa hunter site. This article presents McCully's eye-witness descriptions of the site as it was in 1926. The hāpua (barrier lagoon) on the Waitaki River's north bank, the shingle bank and numerous palaeo-channels are evidence of the geomorphological processes that formed the site. A five-page extract from David Teviotdale's 1931 diary records some views McCully discussed with Teviotdale. The authors also describe how McCully accompanied Arowhenua Māori to the site in 1936. The final objective is to present observations McCully made on the Māori stone toolkit and provide a small gallery of hitherto unpublished photographs of artefacts which McCully found at Korotuaheka. The authors, who are grandchildren of Hugh McCully and Ben Evans, have written the article to mark the centenary of McCully's identification of the Waitaki moa hunter site in 1926 and to acknowledge the friendship between Hugh McCully and the Evans family.

Keywords: artefacts, Evans, flakes, McCully, moa hunter, Waitaki

Introduction

Hugh McCully (1878–1967) started collecting greenstone, aged 9½, in 1888 (*New Zealand Free Lance*, 21 February 1958: 17) and went on to amass and dispose of at least three archaeological collections containing Mousterian, Aboriginal and Māori artefacts to five New Zealand museums. In 1963, he sold his last collection to Allister Evans (Fig. 1). This article, draws upon Evans and McCully family records to mark the centenary of McCully's identification of Korotuaheka (Heritage New Zealand site 5680) in Figures 2 and 5 as a moa hunter site in spring 1926.

Figure 1. Hugh McCully (2nd left, front row), Allister Evans (2nd right, back row) and Ben Evans (3rd right, back row) with Tony Fomison (1st left, front row) and members of the South Canterbury Historical Society at Hazelburn, 1959. Photographer Langford Studios, Timaru. South Canterbury Museum 2014/107/328

McCully was a foundation member of the South Canterbury Historical Society (1941) and of the South Canterbury Regional Committee of the Historic Places Trust (1956). His engagement in experimental archaeology from 1904 onwards complemented his interest in designing agricultural machinery. He was particularly interested in the manufacture and use of stone tools from a mechanic's viewpoint (McCully 1948). He invented the McCully Hustler, a drag harrow which was widely used by South Island farmers in the 1920s and 1930s. Farmers who bought the Hustler often told McCully about local archaeological sites. In spring 1926 a Mikikihi farmer told McCully about J B Chapman ploughing up two adzes on his farm at the mouth of the Waitaki River (Fig. 2). McCully promptly visited Chapman's farm and was escorted by Raniera Matenga (Daniel Martin) to a ploughed patch on Terrace 1 in the vicinity of the prophet Te Maihāroa's former 1879 kaika (settlement) (Fig. 5(**E**)).

McCully subscribed to a pre-history paradigm promoted by Tregear (1904) and Te Rangi Hīroa (1925) that proposed moa hunters populated New Zealand before Māori and had different cultural and racial origins, or unknown ones. Such erroneous views have been superseded and today, based on archaeological excavation of a large number of sites, it is accepted that New Zealand was colonised by Eastern Polynesians who arrived just before 1300 and commenced moa hunting (Bunbury et al. 2022: 1). Moa were extinct by the mid-1400s (Holdaway et al. 2014), largely due to hunting and environmental changes caused by human activities.

Geomorphology

Figure 2 reveals some of the geomorphological processes that created the Korotuaheka site. In 1868, the Korotuaheka fishing reserve was created by Judge Fenton of the Native Land Court. A fishing reserve was where fishing was designated the primary activity rather than occupation, cultivation or timber felling. Fenton also created the Manuhaea and Te Awakokomuka fishing reserves (Fisher 2020). The Korotuaheka reserve consisted of 489 acres (197.9 hectares). By 1879, 200 acres (81 hectares) had been scoured away by coastal erosion (Taylor 1952: 102), an extraordinary loss of coastline in 11 years. The sea eroded half a chain (10 m) of coastline in the 11 years J B Chapman had occupied the property, according to David Teviotdale (1870–1958) who excavated at Korotuaheka 5–14 April 1937 (Teviotdale 1939: 167). In 1937, J B Chapman, in his letter to the Editor of the *Evening Star* (31 July 1937: 22), said his farm was a "200-acre block" and ancient umu (ovens) were scattered across almost 100 acres. Earlier, in spring 1926, when McCully recognised Korotuaheka as a moa hunter site, archaeological evidence had spread across 150 acres (60.7 hectares) and J B Chapman's farm was larger then. By 1961, coastal erosion had further reduced the moa hunter site to 50.5 hectares (Knight and Gathercole 1961: 133).

McCully believed John Hardcastle (1847–1927), loess geologist and newspaperman, was correct in proposing an ancient curved fan of the Waitaki River once extended several miles out to sea during the last glaciation, but rising sea levels post-glaciation and erosion had straightened the coastline. McCully (1951: 2) reported "according to the original survey the rate of erosion is one yard (0.9 m) per year [but] this needs verification". Hugh McCully (1951: 2) wrote, "The sea has taken its kai (food)".

The Southland Current sweeps eastwards in from the Tasman Sea around the southern coast of Te Waipounamu South Island, and then it flows northeast along the southeast coast of Aotearoa New Zealand (Sutton 2003: 645). It is a band of warm, salty water that flows parallel to the coast, above the continental shelf and slope, and reaches speeds of 25 centimetres per second.

Wave action in the surf zone erodes coastal sediments, transports them northwards and redeposits them along the southeast coast of the South Island. This longshore drift of sediments creates spits and barriers which often enclose hāpua (barrier lagoons) at the mouths of braided rivers, and a former one of these is visible (Figs. 2 and 5(**B**)) to the north of the Waitaki River's present-day, man-made mouth.

The Waitaki River's channels moved northwards, seeking new discharge outlets because southern river outlets were serially closed by the longshore drift shingle barrier which is 5–10 m high in places (Fig. 3). As the channels moved northwards, hāpua formed and eventually dried up. The river formerly discharged into the sea through a gap in the shingle barrier three miles (4.8 km) further north of the present river mouth, a matter discussed later. The shingle bank, which forms the coastline, and the former hāpua are visible in Figure 2.

In 1937, J B Chapman (*Evening Star*, 31 July 1937: 22) said "oven sites were thickest along the south bank of a certain shallow lagoon", a remnant hāpua on his property. The easiest way to get to Terraces 2 and 1 (Fig. 5 (**I**) and (**J**)), and avoid wading across any remnant hāpua, was to walk along the top of the coastal shingle barrier. Palaeo-channels and relict islands were once a feature of the Korotuaheka site (Figs 2 and 4), until largely removed by farming activities.

A palaeo-channel (Fig. 4), ploughed under in the late 1950s, once skirted the high ground where the historic-period urupā (cemetery) is situated; it hints at why this site, a relict high ground, was "tapu rawa" (very holy/restricted) according to J B Chapman (1940: 306). The palaeo-channel was visible in the tussocky landscape and known to Te Maihāroa and his followers in 1879 and it

Figure 2. Aerial photograph of Korotuaheka site, annotated by Hugh McCully, showing palaeo-channels (marked "ancient river courses"); relict islands; the shingle bank; the urupā established 1885–86; McCully's dotted site boundary; the location of mystery stone (**Y**); and McCully's estimation of the distance of the site from the mouth of the Waitaki River. Waitaki Museum & Archive Id 6005P.

Figure 3. Hugh McCully (left), Ben Evans (centre) and Allister Evans (right) standing alongside the longshore drift shingle bank. The depression they are standing in was either a hāpua or a former palaeo-channel whose mouth was closed off by the shingle barrier. Photographer Stewart Willetts who accompanied McCully and the Evans pair around his farm. Gary Evans Collection. All Rights Reserved

Figure 4. Stewart Willetts (left), Hugh McCully (centre) and Ben Evans (right) picking up artefacts in front of the historic-period urupā where Te Maihāroa was buried 1885–86. The view looks west towards the Southern Alps. The palaeo-channel was ploughed under by the Willetts in the late 1950s. Photographer Allister Evans. Gary Evans Collection. All Rights Reserved

was still visible in the landscape in 1936 when McCully and a party of 50 Māori were on-site (Fig. 17), an event also discussed later.

McCully (1951: 2) noted the relict high ground was "almost surrounded by ovens and whare sites of the original inhabitants". McCully implies quite a few ovens and whare sites existed but does not give a number. Buick (1937: 168) reported "several" hut sites existed, and in 1931 Teviotdale (Fig. 9) observed the "foundations of several round hut sites", one of which was 20 feet (6 m) in diameter. His map of the site (Teviotdale 1939: 182) records two round moa hunter sites and five oblong ones on the south side of the urupā. The exact number of hut sites remains unknown, but Teviotdale's diary entry (Fig. 9) records McCully and Hornsey had already excavated the oblong hut sites on Terrace 2. Buick (1937: 168) accounts for the absence of hut post holes (noted by later archaeologists) by suggesting the huts were made of "slender non-endurable material, such as rushes, raupo, or totara bark".

On "level ground" near the coastal boundary, and alongside what Teviotdale called a "back water" of the river, McCully showed Teviotdale some anchor stones with grooves (Fig. 9). McCully (1951: 2) thought Korotuaheka was the "terminus of river traffic by mokihi (raupo canoe), of foodstuffs, principally moa from the interior". Teviotdale (Fig. 9) recorded McCully's idea that moa killed at upstream sites were ferried down the Waitaki by moa hunters on mōkihi. Having served their purpose, mōkihi were "cast adrift because it was impossible to take a canoe upstream against the river current of eight miles per hour" (McCully 1951: 2). The anchor stones, therefore, possibly tethered seaworthy waka which were used in a coastal trade of greenstone, Nelson argillite, mutton birds and also potted moa flesh, as McCully described to Teviotdale (Fig. 9). McCully (1951: 2) was conversant with the map of named South Island anchorages provided by an unknown Māori for E Halswell, Protector of Aborigines, in 1841 or 1842. A portion of it appears in Andersen (1916: 39) who recorded "the Maoris were constantly traversing the land in all directions and sailing up and down the coast on fishing or other expeditions".

The erosive power of the sea current and the damage it inflicts on this archaeological site is demonstrated by what happened to a charcoal pit which McCully found in the early 1940s. He perceived this pit to be different from umu-tī and moa-cooking ovens (although it may have been an umu-tī) and he believed that charcoal production had occurred on-site along with wood-working activities and moa butchery. He found two charcoal pits at Korotuaheka, one 10 feet by 12 feet by 4 feet (3.1 m by 3.6 m by 1.2 m) which he showed to H D Skinner (1886–1978) in the late 1930s, and a smaller second pit he described in letters to Skinner (dated 30 May 1942) and to Leo Fowler (dated 27 March 1958). He told Fowler about the charcoal pits at Korotuaheka because Fowler (1957) was also interested in Māori charcoal pits. McCully thought the production of charcoal contributed to the deforestation of the landscape around the Waitaki mouth, noting residents in Te Maihāroa's kaika fetched their firewood from Waimate 13 miles away (McCully 1951: 2), and Mikaere (2022: 106) records Matiti was constructed of wood fetched from Horomona Pohio's "depleted forest" at Waimate. With regard to the second charcoal pit he found, McCully (1951: 2) recorded:

> *The charcoal oven was, like many other interesting things, not visible from the surface until exposed. It was 9 ft [2.74 m] in length and 3 ft 6 [1.07 m] in depth, with the width not ascertainable. The charred wood, some of which was 18 inches [45.72 cm] in diameter, was probably used for heating whares, grilling and rendering fat for preserving moa flesh, evidence for such uses being based on excess charcoal in several places. A photograph of the oven and pieces of charcoal have been preserved.*

He told Fowler this second pit had been exposed by "sea invasion of a 40′ [12.2 m] shingle terrace". It was partly washed away when McCully first saw it which was why he could not establish its width. Then all of it was swept away in a heavy sea early in 1942 – a very real example of the impact of coastal erosion on the site and how archaeological evidence is destroyed in an on-going process.

Historic Occupation

The Waitaki River Mouth Moa-hunting Site lies on the right (south) bank of the Waitaki River, south of Kaik Road (Fig. 5(**D**)), near the river's current mouth (Fig. 5(**C**)), on the former Korotuaheka Māori fishing reserve. Korotuaheka is said to be the name of a long lagoon in the vicinity (*Timaru Herald*, 10 January 1936: 10). In 1926, archaeological evidence spread across three river terraces, the highest and southern-most being the oldest (Fig. 5(**H**)). A high embankment (Figs 5(**G**) and 7) separates Terrace 2 from Terrace 3. Hugh McCully excavated on all three terraces.

The 10-acre (4 ha) Te Awakokomuka fishing reserve granted by Judge Fenton of the Native Land Court in 1868 to Ngāi Tahu was on the northern bank of the Waitaki River, almost opposite the 489-acre (197.9 ha) Korotuaheka fishing reserve on the southern bank. The Korotuaheka

fishing reserve was granted on 7 May 1868 (*Timaru Herald*, 3 June 1868: 2). Te Awakokomuka fishing reserve was drained, at a date unknown, sometime after being created a reserve (Fisher 2020: 2).

In November 1923, fishermen associated with the Waimate Acclimatisation Society decided the hāpua was "dead" and an impediment to the free running of fish (*Timaru Herald*, 20 November 1923: 7). Up until November 1923, "the river took a bend at the [fishermen's] camp and travelled northwards parallel to the seafront for a distance of about three miles before discharging" (*Timaru Herald*, 20 November 1923: 7) through a former gap in the shingle barrier (Fig. 5(**A**)) now closed by the longshore drift of shingle. The fishermen cut a new mouth (Fig. 5(**C**)) where the river turned northwards, near where the hāpua commenced. They cut a narrow two-feet-wide (0.6 m) channel across the chain-wide (20.1 m) shingle barrier. The river broke through at that point and within hours the breach had become two chains wide (40.2 m). The river had a new man-made mouth.

Kaik Road (Fig. 5(**D**)) did not exist until 1907, the tender for its formation being called in October 1906 (*North Otago Times*, 19 October 1906: 2). This road provided easier access to the Waitaki River mouth where Chinook salmon, acclimatised upstream on the Hakataramea tributary in 1901, were reported being caught at the river's mouth in 1905 (*Otago Witness*, 20 December 1905: 58).

In winter 1877, a heke (migration) of Ngāi Tahu, led by Te Maihāroa, occupied land at Ōmarama. They were evicted in 1879 (*Otago Witness*, 16 August 1879: 9). Some of Te Maihāroa's followers returned to Waimate and Morven while others occupied the Korotuaheka fishing reserve where they engaged in fishing and growing potatoes (*North Otago Times*, 24 November 1879: 3). Buick (1937: 176) recorded "that fifty or sixty years ago [in the 1870s and 1880s] the mouth of the Waitaki River was remarkable for the rich harvests of fish that at times were to be gathered there". Mikaere (2022: 106) states "the men found labouring and shearing work on nearby farms", and McCully (1951: 2) found blade sheep-shears on the Korotuaheka site, as well clay pipes for smoking tobacco. He also found fragments of a coconut shell bowl in 1927; he disposed of one fragment (D28.327) to Otago Museum.

They built whare (sod huts) and a wharekura (house of learning), called Matiti (Taylor 1952: 103), which also functioned as a meeting hall and church (Mikaere 2022: 106). Te Maihāroa died in 1885 and was buried in the newly created urupā on the relict high ground (Figs 4 and 5(**F**)).

Figure 5. Annotated topographical map of mouth of Waitaki River indicating changes made to the landscape in the vicinity of the Korotuaheka site, 1879–1923. Scale 1:50,000 **A**, Former point of discharge for Waitaki River. **B**, Former hāpua. **C**, River mouth cut November, 1923. **D**, Kaik Road, constructed 1907. **E**, Approximate site of Te Maihāroa's 1879 settlement. **F**, Urupā, established 1885–86. **G**, Embankment separating Terrace 2 and Terrace 3. **H**, Terrace 3. **I**, Terrace 2. **J**, Terrace 1. This work is based on/includes Toitū Te Whenua Land Information New Zealand data which are licensed by Toitū Te Whenua Land Information New Zealand for re-use under the Creative Commons Attribution 4.0 International Licence https://www.linz.govt.nz/products-services/maps/new-zealand-topographic-maps/topo50-map-chooser/topo50-map-cb19-waimate

Figure 6. Matai Tuture (left) and Mere Matenga who, as children, lived at Korotuaheka in Te Maihāroa's kaika. In 1936, they were two of five surviving residents of Te Maihāroa's settlement (*Timaru Herald*, 10 January 1936: 8). Mere Matenga lived on site at Korotuaheka while Matai (David) Tuture lived at Arowhenua. Photographer unknown. Reproduced with permission of *Stuff*

Mikaere (2022: 115) states the kaika was deserted in 1895 but this was not the case. In 1898, Protestant missionaries visited the kaika and described the residents' religious practices as "superstitious" and "Hauhauism [was] also evident" (*Otago Daily Times*, 12 February 1898: 3). Fisher (2020: 28) records that in 1915 some Māori, with their livestock, still resided on 10 acres of the reserve. He records that in 1915, David Williams had been illegally leasing the other 479 acres of the 489 reserve for an unknown period (Fisher 2020: 28), but he could not have leased 479 acres because coastal erosion had substantially reduced the acreage, as discussed previously. In 1919, A J Keith was legally leasing the reserve, and then according to Fisher (2020: 34),

> *In 1927 the [Māori] Land Board allowed a sale at £3 per acre but unfortunately there is no information about the sale. It is highly unlikely that any consultation took place with the owners regarding the alienation. When the sale was approved by the Maori Land Board in 1927 all of the reserve, except for a small urupā, was sold to the lessee of the land.*

It was J B Chapman who was the lessee of the land immediately prior to its sale in 1927. Chapman himself, in a letter to the Editor of the *Evening Star* (31 July 1937: 22) said he "had farmed this land for 12 years", making him the lessee-on-site by 1925. He was definitely the occupier of the land in 1926, a fact recorded by David Teviotdale (1931), Lindsay Buick (1937: 163), Hugh McCully (1951: 2) and William Taylor (1952: 103). In spring 1926, Chapman started ploughing a portion of Terrace 1 near the former potato patch adjacent to Te Maihāroa's kaika. The kaika was northwest of the large moa hunter camp (Fig. 5(**E**)), the boundary of which Hugh McCully dotted in on Figure 2, just west of the urupā.

McCully (1951: 2) recorded, "In 1926, the only family left at the kaika was Mrs Martin and her husband Daniel [Raniera]". As a child, Mere (Mary) Matenga (Martin) had lived in Te Maihāroa's kaika with her parents, but now the married couple "spent the evening of their days in a neat wooden cottage as the sod [one] had for long been in ruins" (McCully 1951: 2). "Old associations" and the fact that family members were buried in the urupā kept Mere Matenga (Fig. 6) and Raniera on-site (McCully 1951: 2). Although Raniera died sometime after 1926, Mere Matenga continued to live at the kaika and was still there in 1936, according to the *Press* (10 January 1936: 10). In the early 1950s, Taylor (1952: 103) recorded Chapman had allowed "one Maori lady to reside on her tribal land".

Matiti was burned down in 1895 by Wi Pokuku to avoid Te Maihāroa's powers being desecrated (Mikaere 2022: 115). The sod huts were not destroyed in 1895, and ruined remnants still remained in situ in 1936, and are described later. But by 1944 "little evidence" of the kaika could be observed (Taylor 1952: 103), possibly because of Stewart Willetts' farming activities.

In 1940, Stewart Willetts (Fig. 4) bought Korotuaheka, which was a run-down pig farm according to Isobel Wray, Willetts's daughter, who recalls she was 8-years-old at the time (pers. comm. 7 January 2025). In December 1950, Hugh McCully, Roger Duff (1912–1978) and two others visited Korotuaheka. There was some disagreement over whether Terrace 2 should be ploughed in order to locate patches of moa bones and hut sites, with McCully opposing this excavation approach because of the damage wrought by ploughing Terrace 1 in 1926, and Duff supporting it (Duff letter to Willetts, 20 December 1950). Duff had used a plough at Wairau Bar in the 1940s because "it was a quicker method" (Duff 1977: 55) of exposing archaeological deposits on a large site. The Willetts family

Figure 7. Waitaki moa hunter site looking from Terrace 1 towards the high embankment separating Terrace 2 from Terrace 3, 1920s. Tussocks indicate this patch was unploughed. McCully told Hardcastle (1927: 7) that patches of oven stones were visible on the surface of the ground in 1926. McCully and A G Hornsey excavated five oblong hut sites at the foot of the embankment visible in the background. Photographers Ben Evans and Hugh McCully. Gary Evans Collection. All Rights Reserved

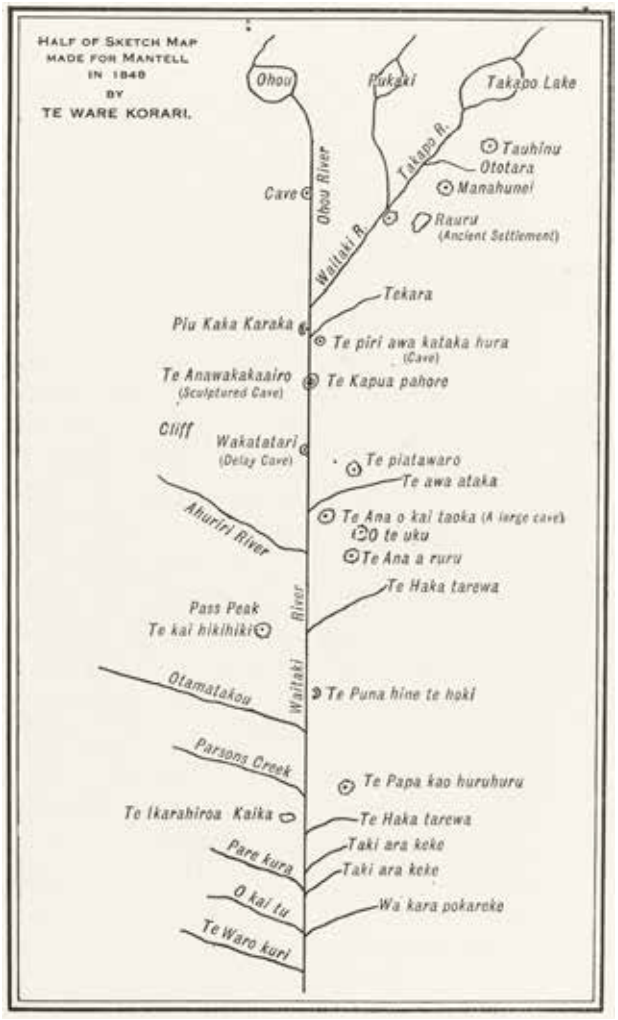


Figure 8. Sketch-map drawn in 1848 by Te Ware Korari for W B O Mantell which names historic occupation sites or places known from tradition. The moa hunter camp at the terminus of the Waitaki is unnamed by Te Ware Korari. Andersen (1916: 39) *Jubilee History of South Canterbury*

started ploughing Terrace 2 in 1952.

Waitaki River Mouth Site

How much of Terrace 1 was ploughed in spring 1926? Heritage New Zealand (https://www.heritage.org.nz/the-list/details/5690) briefly states:

> *This site attracted amateur archaeologists' attention in 1926, when what became identified as the No. 1 terrace was ploughed, apparently for the first time, exposing moa bones and middens. H.S. McCully and A.G. Hornsey of Timaru worked here and on No. 2 terrace. Teviotdale followed their work in 1931.*

But only part of Terrace 1 was ploughed in 1926, not the entire area as implied. McCully was clear on this point. Buick (1937: 163) also wrote ploughing occurred only "in the vicinity of the former Maori kaika", and Teviotdale (20 March 1931) noted only "part of the area [was] ploughed". Much of Terrace 1 remained unploughed (Fig. 7).

Raniera Matenga escorted McCully to the spot where the adzes had been ploughed up and McCully observed bones exposed in furrows and others lying in patches further away. Raniera Matenga told McCully they were the bones of cattle which had died on-site, and given Māori had farmed livestock at Korotuaheka from the 1870s (Anderson 1989: 132) until 1916 (Fisher 2020: 34), this was not an unreasonable opinion. But the huge number of "cattle" bones perplexed McCully. McCully, who had been collecting moa bones for about 25 years at this point, picked up a bone and recognised it was a moa bone. He knew the difference between cattle bones and moa bones because his brother William had owned a slaughterhouse at Milford, Temuka, in the late 1890s as well as a butcher's shop in Timaru in the early 1900s, so he was familiar with cattle bones. He explored further and found he was on the margins of a "great necropolis" that "resident Maori of that day knew nothing of it" (Buick 1937: 164).

Raniera Matenga was not alone in not knowing the bones were moa bones. Pita Paipeta (1867–1957), who was the inaugural chairman of the Arowhenua Māori Council (*Temuka Leader*, 21 October 1902: 2) and was married to Te Maihāroa's granddaughter Wikitoria Kahu (1877–1940), was knowledgeable about local Māori history. Paipeta told Herries Beattie (1953: 17) that "the Maori residents of South Canterbury were surprised when Moa bones were unearthed at Waitaki Mouth". Korotuaheka was known to Judge Fenton, Te Maihāroa's followers and Pita Paipeta as a fishing camp, not a moa hunter butchery site. Earlier still, in 1844, Edward Shortland (1851: 215) recorded it as "a fishing station at the [Waitaki River's] mouth". McCully was familiar with the sketch map of historic occupation sites and places traditionally known to Māori along the Waitaki River, drawn by Te Ware Korari in 1848 for W B O Mantell (Fig. 8). McCully (1951: 2) commented "the name of the terminal camp is omitted, its name not known to local Maoris".

McCully's recognition of Korotuaheka as a moa hunter site was archaeologically significant. He advised Otago and Canterbury Museums. Early in 1927, Hugh McCully described the materials scattered across the wider 150-acre site to John Hardcastle (1927: 7), telling him the moa hunters had left:

> *… an abundance of chips of the stony materials they worked in, and "cores" or remnants of boulders from which flakes had been split. At Waitaki south these are scattered over a large area, which is dotted with patches of oven stones, about which lie fragments of moa bones, and moa "gastroliths" (gizzard stones) are common.*

Hardcastle died on 12 June 1927 (*Timaru Herald*, 13 June 1927: 8) and his article on McCully was published posthumously. McCully (1951: 2) observed the abundant flakes found at Korotuaheka:

> *… were made in the same way as practised by earliest man. This does not indicate racial contact at some remote period – it simply shows how limited is the technique of manufacture and how easy this is to follow and acquire by anyone interested. To assess the important part played by flake tools it is only*

necessary to say that they served purposes for which adzes and chisels were not applicable.

One purpose a flake served was to rip open the skin of a moa, and McCully and Teviotdale tested the sharpness of a flake on sacking as a substitute (Fig. 9).

Hugh McCully (1951: 2) described the extent of the site as it existed in 1926, and he also noted this information on Figure 2:

From the most southerly part of the camp to the nearest water and the northern limit of the camp is about three-quarters of a mile [1.2 km], while the mouth of the river is quite one mile and a half further on [2.4 km].

The site extended "10 chains [0.2 km] beyond the highest southern terrace" (Fig. 5(**H**)), and McCully excavated there. McCully (1951: 2) found it odd that moa hunters would choose to occupy the "flat top" of Terrace 3 because it was, in 1926, "the most exposed of all [terraces] and without shelter of any kind". However, he noted it was visible from Māori Swamp 60 miles (96.5 km) upstream and he thought smoke signals could be exchanged between Māori Swamp and Korotuaheka, warning the occupants of Korotuaheka that cargoes of moa were on their way and to fire up umu. Anderson (1989: 131) proposes the moa hunters' initial settlement was on Terrace 3 when the channel at the foot of the high embankment still held water. Remnants of this palaeo-channel are visible in Figure 7 at the foot of the embankment.

McCully took long-time friend Arthur George Hornsey to the Waitaki site in 1928 and it turned Hornsey into a serious collector of artefacts (*Timaru Herald*, 16 January 1943: 4). Together they excavated the five oblong huts at the foot of the embankment separating Terrace 2 from Terrace 3 (Fig. 7), and showed the hut sites to Teviotdale in 1931 (Fig. 9). Hornsey excavated a piece of pounamu (greenstone) in one of these huts. McCully found a piece of partially worked greenstone at Korotuaheka (Fig. 16), although greenstone artefacts were not particularly numerous there. At the foot of this embankment, Stewart Willetts ploughed up numerous "huge pits" of moa bones (Anderson 1989: 133).

McCully told his granddaughters (two of the authors) that, in 1926, Chapman's ploughed patch "was white with bone", a phrase Stewart Willetts also used to describe the density of moa bones he ploughed up on Terrace 2 in 1952 (Anderson 1989: 133). In 1926, numerous moa bones were visible because, just after ploughing, a squally gale had swept in and blown away the thin topsoil. David Teviotdale (1939: 168) recorded similar information.

In 1961, Knight and Gathercole (1961: 133) met 83-year-old Hugh McCully at the site and lamented:

Today, erosion and ploughing, to say nothing of excavation, have destroyed the surface indications of stone pavings and rectangular and round huts which so attracted the attention of earlier workers. Our present knowledge of these structures at sites rich in moa remains is depressingly meagre – and the significance of the Waitaki Mouth site as it was in the 1920's can hardly be exaggerated.

McCully (1951: 2) reflected:

To those of us who have viewed the old [Terrace 1] camp under the plough and observed the quantity of moa remains disturbed and thereby destroyed, the thought of such destruction of bird life is really appalling; a pity the fight was so unequal.

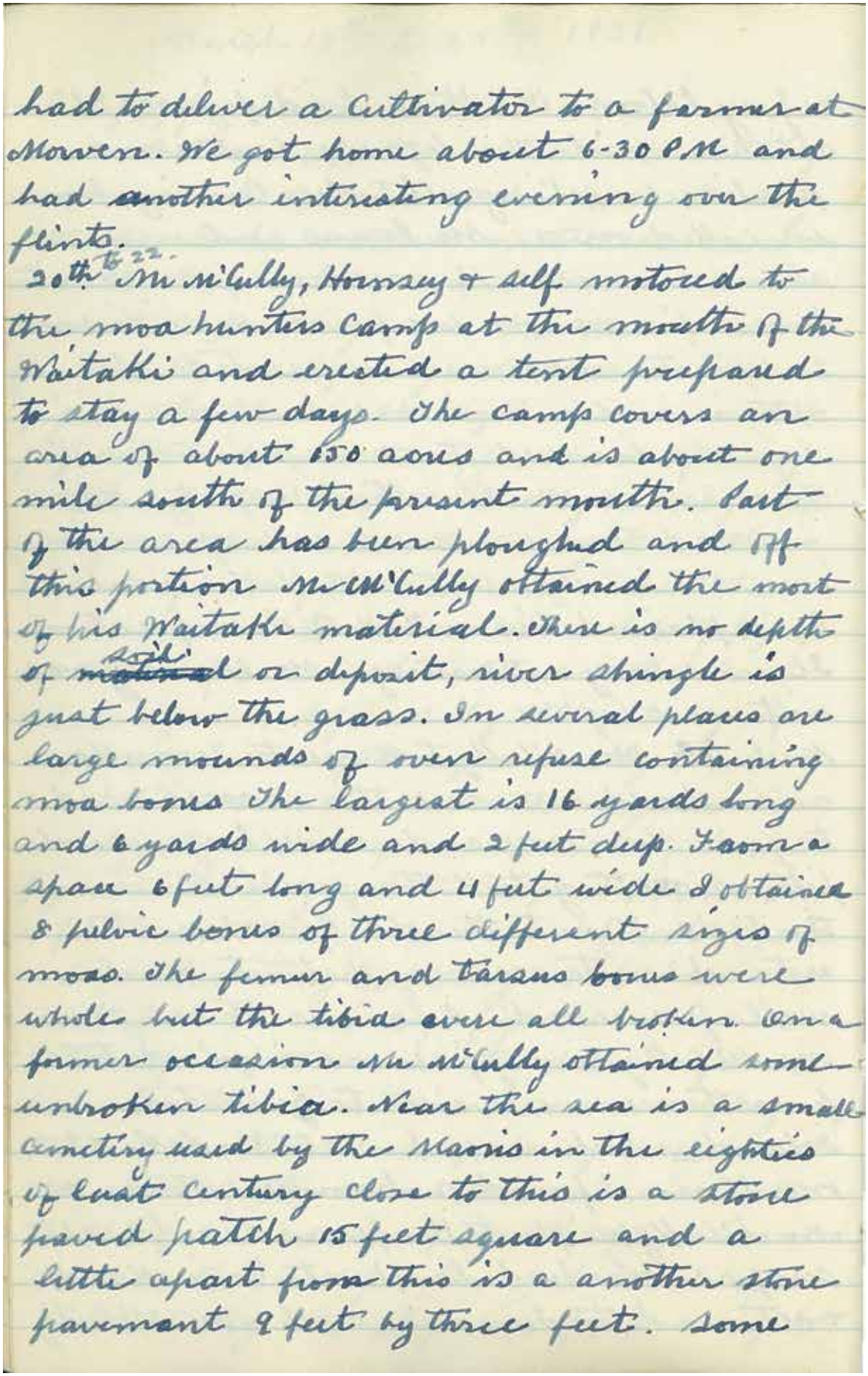
Although McCully had informed Otago Museum of the existence of the moa hunter site in 1926, it was not until after David Teviotdale was employed by H D Skinner in 1929 that Otago Museum got around to first excavating it in 1931. Meanwhile, McCully had amassed a collection of artefacts, many of which he sold to Otago Museum (Samson 2003: 162) while others remain in private collections. In March and September 1931, McCully, Hornsey and Teviotdale excavated together at Waitaki. Figure 9 consists of pages from Teviotdale's diary, dated 20–25 March 1931. It recounts how these early archaeologists interacted with the site and presents some of McCully's views on moa hunters.

While perusing Figures 10 to 16, it is worthwhile keeping in mind that McCully invented agricultural machines and this influenced how he engaged in experimental archaeology from 1904 onwards and explains his "mechanic's" approach to studying the Māori stone tool kit (McCully 1948). Of particular relevance is his invention of the revolutionary McCully Hustler cultivator in 1917. He paid particular attention to energy and forces (mechanics) and their effects on men's and horses' bodies, and to the in-field performance of his machines (their efficiency and longevity). All models of his Hustler had an intended minimum longevity of 25 years and could cultivate 15,000 acres (6,070 ha) within 10 years of their purchase at a cost of £1 ($2) of maintenance supplies over that period (*Timaru Herald*, 25 October 1928: 3). McCully (1943: 204) addressed "edge renewal", that is the maintenance of sharp edges on tines by making them rotatable 180° and also replaceable. Tines were comparable to disposable stone flakes – new edges could be chipped off a flake (tine rotation or sharpening) or a new flake chipped (tine replacement).

He focused on the chaîne opératoire (a description of the stages of production of material culture) as it related to the manufacture of stone tools several decades before it became a major focus in archaeology in New Zealand. In McCully's (1941: 187) words:

To anyone interested in mechanics the art of the flaketool craftsman makes a strong appeal; each flake bears a record of treatment received, some of the difficulties met with, and of opportunity used to the greatest advantage.

He did not subscribe to European archaeologists' views that Neolithic toolmakers were more "human", intelligent and culturally advanced than "primitive" Palaeolithic stone toolmakers. Lankester (1910: 381) said:



had to deliver a Cultivator to a farmer at Mowven. We got home about 6-30 P.M and had another interesting evening over the flints.

20th to 22nd Mr McCully, Hornsey & self motored to the moa hunters Camp at the mouth of the Waitaki and erected a tent prepared to stay a few days. The camps covers an area of about 150 acres and is about one mile south of the present mouth. Part of the area has been ploughed and off this portion Mr McCully obtained the most of his Waitaki material. There is no depth of ~~material~~ soil or deposit, river shingle is just below the grass. In several places are large mounds of oven refuse containing moa bones The largest is 16 yards long and 6 yards wide and 2 feet deep. From a space 6 feet long and 4 feet wide I obtained 8 pelvic bones of three different sizes of moas. The femur and tarsus bones were whole but the tibia were all broken. On a former occasion Mr McCully obtained some unbroken tibia. Near the sea is a small cemetery used by the Maoris in the eighties of last century close to this is a stone paved patch 15 feet square and a little apart from this is a another stone pavement 9 feet by three feet. Some

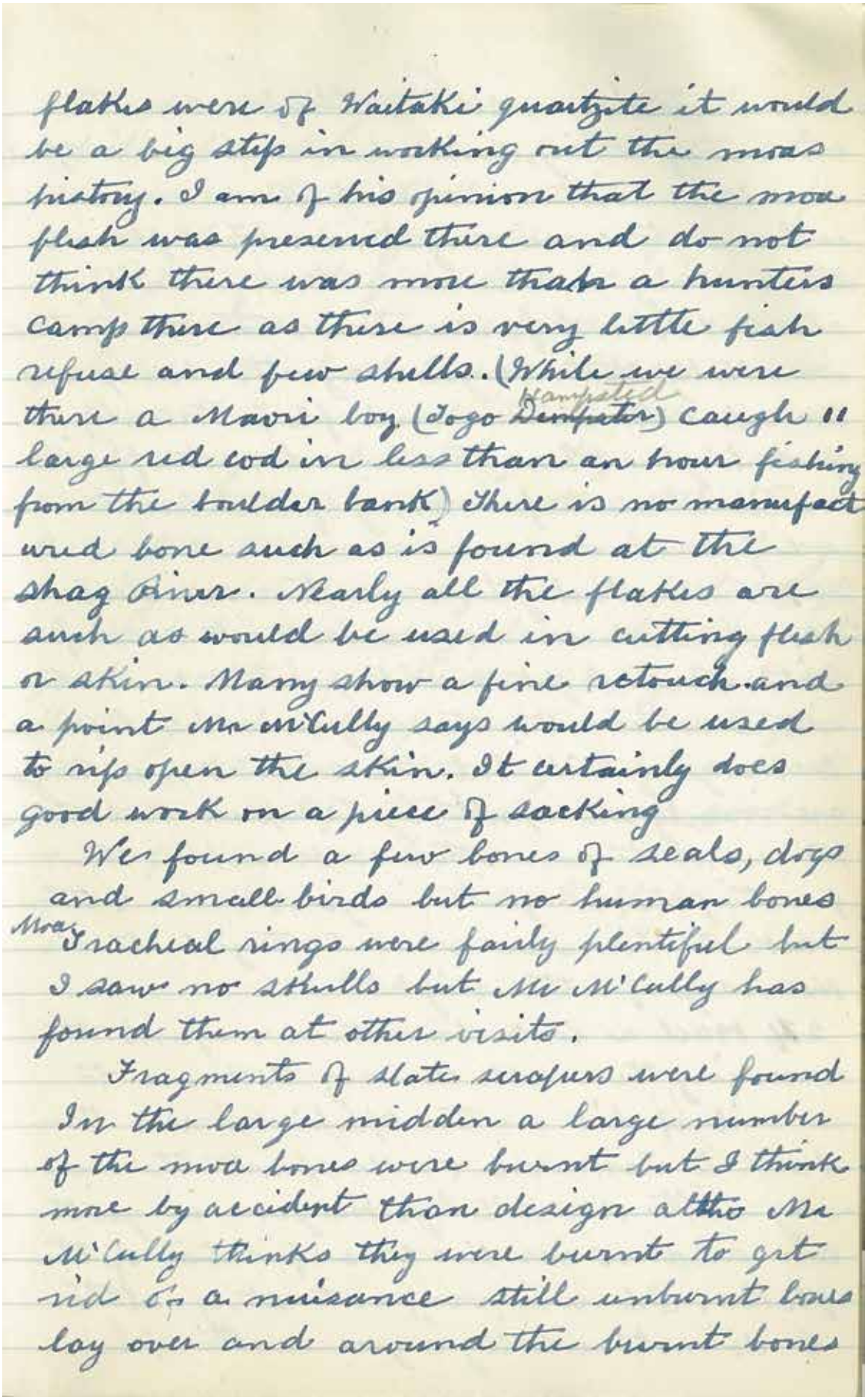
Figure 9. David Teviotdale's account of his first visit to the Waitaki moa hunter site with Hugh McCully and Arthur Hornsey, 20–24 March, 1931. Teviotdale, David: Papers. Hocken Collections–Uare Taoka o Hākena, University of Otago, MS-0500/014

distance away is a line of stones about 15 feet long ooooooooooo evidently the pont of a hut. this line runs approximately East and West. Under a terrace are several hut sites oblong in shape. Digging in the largest some time ago Mr Hossey found 6 large pieces of slatey schist and a piece of partly worked greenstone about 6 inches long by one inch wide and ¼" thick evidently intended for a pendant. Continuing his work I found a small piece of greenstone about 2 inches square. It had been a flake off an adze but was formed and edged for a thin scraper. In a hole about 12 inches deep and square I found upwards of 40 pieces of roughly squared moa bone (evidently solid pieces of tibia) which had been stored there probably for taking away at some future time. Mr McCully had found a similiar cache at Te Aka. We also saw the foundations of several round huts One was 20 feet in diameter. There was no deposit just shingle under the grass so I did no digging. At one spot between two middens I dug for some time in a very shallow deposit of burnt bone and ashes but got nothing but a few flakes and as the others did not approve of my digging there I gave it

Figure 9. (Continued)

up. We searched all over the place getting a large number of quartzite flakes and one or two fragments of adzes. We dug out a midden near the coast and Mr McCully got a polished piece of bone and a broken stone implement  shaped so and the usual lot of flakes were obtained. At one time the back water of the river reached near here and Mr McCully showed me a number of large stones he called anchor stones lying on a level piece of ground. One was broken but had a rough groove on one side No other stones were near & these have evidently been carried where they are He holds the idea that the moas were killed near the upper reaches of the river and conveyed in "Kopis" to the camp. This is quite probable but does not account for all the bones nor the great extent of the camp and I think a larger number would be driven in by bands of men and killed on the ground. Mr McCully also suggests that the moa flesh was preserved much as the mutton birds are preserved and taken to other districts to be consumed. He thinks the presence of obsidian flakes shows the hunters came from Hawkes Bay and suggests that quartzite flakes would be found on village sites there. If so and these

Figure 9. (Continued)



flakes were of Waitaki quartzite it would be a big step in working out the moas history. I am of his opinion that the moa flesh was preserved there and do not think there was more than a hunters camp there as there is very little fish refuse and few shells. (While we were there a Maori boy (Togo Dempster) caught 11 large red cod in less than an hour fishing from the boulder bank) There is no manufactured bone such as is found at the Shag River. Nearly all the flakes are such as would be used in cutting flesh or skin. Many show a fine retouch and a point Mr McCully says would be used to rip open the skin. It certainly does good work on a piece of sacking

We found a few bones of seals, dogs and small birds but no human bones Moa Tracheal rings were fairly plentiful but I saw no skulls but Mr McCully has found them at other visits.

Fragments of slate scrapers were found In the large midden a large number of the moa bones were burnt but I think more by accident than design altho Mr McCully thinks they were burnt to get rid of a nuisance still unburnt bones lay over and around the burnt bones

Figure 9. (Continued)

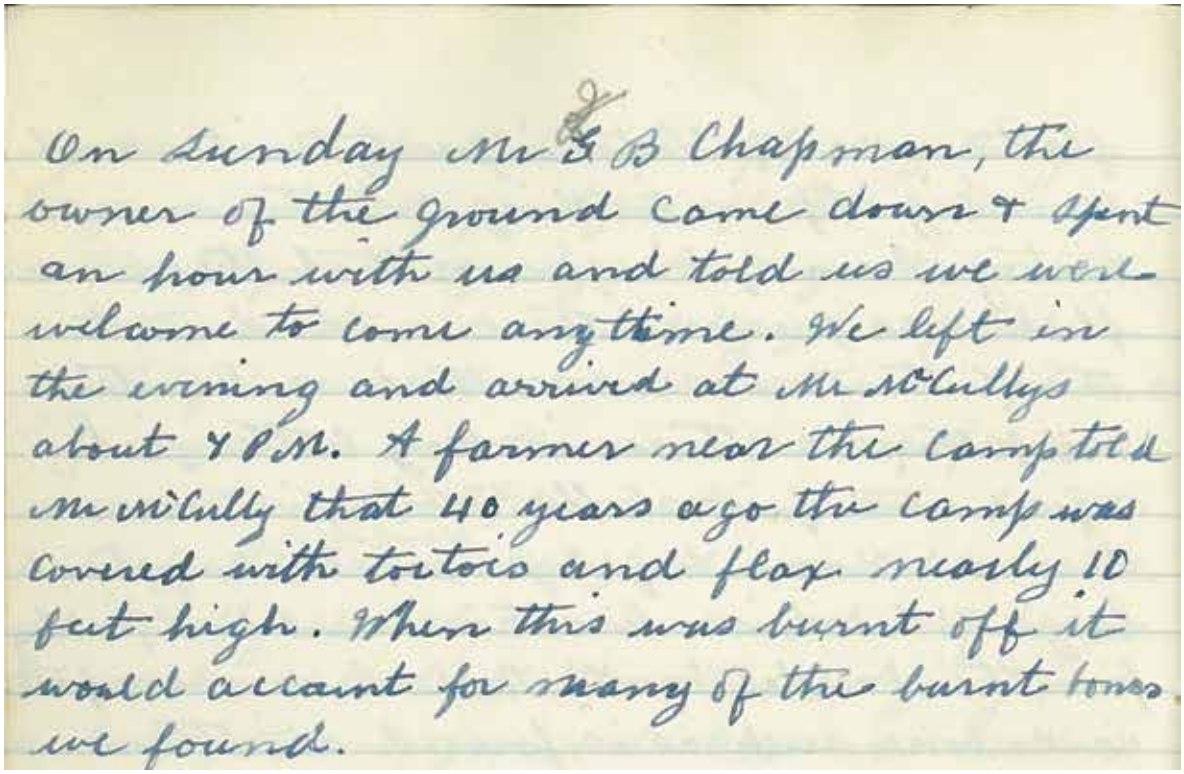

On Sunday Mr G B Chapman, the owner of the ground came down & spent an hour with us and told us we were welcome to come anytime. We left in the evening and arrived at Mr McCullys about 7 P.M. A farmer near the camp told me McCully that 40 years ago the camp was covered with toitois and flax nearly 10 feet high. When this was burnt off it would account for many of the burnt tops we found.

Figure 9. (Continued)

> *It is a legitimate and useful thing thus to draw a strong line between the Neolithic and the Palaeolithic portions of the Stone Age. The Neolithic men belong, so to speak, to our own days …. The Palaeolithic men and their whole surroundings and arts of life have no touch of familiarity for the modern inhabitants of Europe.*

Pre-European Māori had used chipped (Palaeolithic) stone tools alongside polished (Neolithic) stone tools and they chose whatever kind of tool did a reliable job. McCully (1941: 202) was adamant:

> *The term 'primitive' cannot be applied to tools made by the Maori if it implies a low stage of culture. It would be more satisfactory if these were regarded as belonging to three types, viz., (1) 'temporary,' (2) 'less temporary,' and (3) 'permanent' tools. Practically every type of edge or tool can be arranged in series connecting the 'temporary' in quartzite with the 'permanent' in nephrite or greenstone.*

Farmers like McCully spent a lot of time sharpening plough shares and hand-held blade sheep-shears. When he experimented with making stone tools he concentrated on:

- How the sharp edges of both polished (ground) and flaked stone tools were maintained
- What a tool was used for (its purpose and function)
- The intended longevity of a tool (permanent, temporary or less temporary)
- The time and effort that went into manufacturing a permanent versus a temporary or less temporary stone tool (its production costs)
- The chaîne opératoire and the decisions a tool maker made while fashioning a tool to make it fit-for-purpose
- The qualities of the petrological materials used, and their source locations
- How easy the tool was to use and handle (good design), and the effectiveness of its application (its efficiency) and
- Whether the tool was "embellished" or "pitted" (McCully, 1943: 204, 205).

McCully's Hustler cultivators had production costs, and he considered stone tools also had production costs in terms of time spent sourcing the right type of stone, whether goods had to be traded in order to obtain the desired stone material, the time spent manufacturing a tool, and the physical effort that was required to make it. Grinding required more sustained effort than flaking. The production of a ground argillite adze "cost" far more physical labour than a disposable flaked knife, but potentially the adze could be used for years if its haft and lashings were replaced. An adze blade could be re-sharpened but this could lead to an overall adjustment of the size of the tool and, possibly, re-hafting. A hafted adze had "maintenance costs", as did his Hustlers.

The authors are not archaeologists and have described the artefacts in Figures 10 to 16, which McCully collected from the Waitaki River mouth site, in general terms. The polished artefacts are "permanent" tools (McCully 1941: 202). The tool in Figure 13, is smaller than its original size and is possibly an example of what McCully (1943: 204) calls "edge renewal". The pigment production kit in Figure 11 is quite rare because the ochre "crayons" have been preserved. The artefact in Figure 15 is probably an early adze. Figure 14 is a chisel. A partly worked piece of pounamu (greenstone) appears in Figure 16.

Figure 10. Adze of Nelson argillite with polished blade and hammer-dressed tang. McCully (1941: 202) classified a tool like this as "permanent". Length 30 cm. Width at apex 6 cm. Height at apex 4.5 cm. Private collection

Figure 11. A rare pigment production kit consisting of a greywacke bowl and its two red ochre grinding "crayons". Bowl width 10.5 cm. Bowl height 2 cm. Large crayon 2.5 by 2 cm. Small crayon 1.5 cm by 1 cm. Private collection

Figure 12. Adze of Nelson-Marlborough argillite with polished blade and flaked and ground tang. Length 22 cm. Width at apex 8.5 cm. Height at apex 3 cm. Private collection

Figure 13. A smallish Nelson-Marlborough argillite adze, possibly shortened through "edge renewal" (McCully 1943: 204) or possibly given a new bevel and blade after breaking across the body. Haft bindings have polished the tang. Length 11 cm. Width 6.5 cm. Height at apex 2 cm. Private collection

Figure 14. An unknown type of stone chisel with its base, sides and top polished and a light polish over hammer-dressing elsewhere. Small pieces of stone and broken adze fragments were commonly reworked into chisels for wood working. Length 4.5 cm. Width 1.25 cm. height 1.5 cm. Private collection

Figure 15. A smallish adze of greywacke with a shortened body which suggests a much longer adze has been broken and reworked. The tang is reduced on both sides which is typical of early adzes. Polishing is limited to the top one-third, done only to the bevel, its sides and a portion of the base. Hammer-dressing has been used to partially shape it. Length 13.5 cm. Width 5 cm. Height at apex 3 cm. Private collection

Figure 16. Partially worked flaky piece of pounamu (greenstone) with some polishing on the top and on one side. It has a small patch of polishing on the base, but no polishing on the other side. Nevertheless, it has an overall smooth surface. Length 12 cm. Width 4.5 cm. Height at middle 4.2 cm. Private collection

Full Circle

Early in January 1936, Hugh McCully, accompanied by Arthur Hornsey, took a party of about 50 people, largely composed of members of the Arowhenua Māori Women's Institute (Fig. 17), on a promised excursion to the Waitaki River Mouth Moa-hunting Site (*Press*, 10 January 1936: 10; Taylor 1952: 102). The party were greeted in "true Maori custom" (*Press*, 10 January 1936: 10) by Mrs Mere Matenga (Fig. 6), the widow of Raniera Matenga who had guided Hugh McCully to the spot where Chapman had ploughed up the adzes in 1926. Mere Matenga was still residing on site in 1936 (*Press*, 10 January 1936: 10). The trip must have been poignant for Wikitoria Kahu Paipeta, a granddaughter of Te Maihāroa (who is buried in the urupā) and for Matai Tuture (Fig. 6) who was born at the kaika and lived there as a child (*Press*, 10 January 1936: 10). In January 1936, Mere Matenga, Matai Tuture, Hemi Tano Paiki, Hana Waaka, Mrs T Wesley Snr and Taina Te Ururaki were the only surviving residents of Te Maihāroa's settlement.

The Māori "pilgrimage" alighted close to the ruins of the 1879 kaika where they observed the "outlines" of both sod huts and a church (Matiti) (*Press*, 10 January 1936: 10). The kaika's structures were in ruins yet still held evocative memories for Matai Tuture who "recalled with enthusiasm the house in which he once lived"; to the "casual observer it was just a heap of weatherworn sods", but to Matai Tuture it was home (*Press*, 10 January 1936: 10). In 1898, evangelists belonging to the Southern Māori Mission visited the "Waitaki Kaik" and noted the whare were "one-roomed structures of clay, with thatched roofs of tussock" and were entered through a "low door" forcing a person to "bend almost double"; inside there were no tables or chairs but "the earthen floor [was] covered with flax mats" (*Evening Star*, 12 February 1898: 3).

The Arowhenua visitors also visited the urupā where each grave was marked with a fencing standard (stake). The palaeo-channel still skirted the relict high ground in 1936. There were "no signs of occupation nearby" (*Press*, 10 January 1936: 10) in the area adjacent to the urupā, and Buick (1937: 170) recorded a lack of ovens in its vicinity. McCully, Stewart Willetts and Ben Evans can be seen fossicking in this area in Figure 4.

After a short "walk across the brown tussocks" the visitors found themselves on the moa butchery site (*Press*, 10 January 1936: 10). They observed numerous mounds of used oven stones, which Buick (1937: 165) described as "burned and broken" and J B Chapman (*Evening Star*, 31 July 1937: 22) as "low mounds of fire-broken stones". But one of these mounds was 16 yards (14.6 m) long by 7 yards (6.4 m) wide by about 1 yard (0.9 m) high. This particular mound was surrounded by ovens, and in this arrangement "may be seen the means [of] dealing with the quantities of the birds in a rush period owing to a successful catch or

delay on account of weather conditions" (*Press*, 10 January 1936: 10). Lindsay Buick (1937: 191) envisaged "fleets" of mōkihi transporting moa to the butchery site. Reporting McCully's views, "whose knowledge of the area was freely given and every point of interest was explained", the *Press* 10 January 1938: 10) described how, in the hinterland, moa were probably snared by their legs which were then broken to prevent them escaping from the capture site while other moa were caught or sufficient mōkihi were constructed to transport them (live) to the terminus on river waters swollen with summer melt. That mōkihi of various lengths and widths were constructed, in 3 or so days, is recorded in Shortland (1851: 200-206), and large mōkihi would have been needed to transport the largest species of moa alive – or perhaps just the haunches of freshly slaughtered large moa were transported. McCully noted warm, freshly killed birds are easier to pluck than cold ones. The harakeke bindings that bound bundles of raupō (*Typha orientalis*) together to make a mōkihi had to be carried into the hinterland because harakeke (*Phormium tenax*) did not grow beyond the point where the Otematata River joins the Waitaki (Stevenson 1943: 191).

In 1926, clusters of gizzard stones of various colours (red, yellow, white) still lay on the ground near the oven sites, as McCully mentioned to Hardcastle (1927: 7), indicating decapitation of some moa had occurred on site. McCully thought it would be useful to collect and geologically identify the gizzard stones to locate the home ranges of the killed moa, but he did not do so. The original inhabitants of Korotuaheka were peaceful and were not cannibals, conclusions McCully (1951: 2) based on the absence of weapons and no human bones being found in middens. He also noted there were no pre-historic burials on site.

The visitors viewed the controversial 5 feet by 4 feet (1.5 m by 1.22 m) "mystery stone" which J B Chapman and two other men had unearthed in the summer of 1934 (*Evening Star*, 24 April 1937: 10). It weighed 13 cwt (660.5 kg) (*Evening Star*, 27 July 1937: 7). It was on a site by itself, with no ovens near (*Evening Star*, 31 July 1937: 22), marked "Y" east of the urupā on Figure 2. McCully stands beside it in Figure 17.

The *Evening Star* (27 July 1937: 7) reported the "mystery stone" consisted of consolidated wood ash, fragments of shells, fractured bird bones and some sand – a viewpoint which McCully and H D Skinner shared. This was strongly contested by Chapman who maintained it was a slab of whitish limestone transported to this site by moa hunters and was associated with sacred fire rites. An anonymous correspondent (not Chapman) wrote in the *Evening Star* (24 April 1937: 10) about its association with mākutu (sorcery, bewitching), tohunga (priestly experts) and the ceremony of taupiri (kindling a sacred fire).

The mystery stone became a local *cause célèbre* in the late 1930s. McCully (1951: 2) wrote "the mystery stone was reinterred by Mr Teviotdale, who is now in charge of the Southland Museum". Teviotdale retired from Otago Museum in 1937, continued as an honorary archaeologist for a while, and in 1942 he became Director of Southland Museum 1940–52. In 1940, Stewart Willetts bought Korotuaheka from Chapman. The opportunity to rebury the mystery stone occurred during the switch in ownership. Hugh McCully was told the reburial story by Teviotdale while excavating with him at Greenhills, near Invercargill, in 1944. Knight and Gathercole (1961: 135) reported the re-buried mystery stone was destroyed by ploughing.

Figure 17. Hugh McCully standing beside the "mystery stone" with members of the Arowhenua Māori Women's Institute, and others, at Korotuaheka, 1936 (*Timaru Herald*, 10 January 1936: 10). Photographer unknown. Reproduced with the permission of *Stuff*

A Final Word

Atholl Anderson (1989: 131) says the Waitaki mouth moa hunter site is "possibly the largest of all moa-hunting sites [but it] is also one of the least known". The site is undated. The authors intend this article to add a little more to what is already known about the Waitaki site.

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