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REPORT ON EXCAVATION OF WHAKAMOENGA CAVE, LAKE TAUPO

By T. Hosking

The excavation described here took place from December 1961 to January 1962. The excavators were Miss Anne Leahy, Miss Sylvia Reece, "Skip" Evans and myself.

The Site

The site of this excavation is a large cave a few chains from the lake edge at Whakamoenga Point on the north-eastern shore of Lake Taupo. (NZMS.1:25,000 N94/7 483317). The Point is the southern-most of the land-mass that forms the western shore of Tapuaharuru Bay on which the town of Taupo is situated. The site is 1200 feet above sea level. The cave has a high arched opening to the S.E. and a smaller opening to the S.W. The front or S.E. opening is some 15 feet high and 30 feet across to where a rock column separates a further small entrance to the western chamber of the cave. The ground in front of the entrance is level for about a chain and rises up some 6 feet to the entrance, when it then slopes down gently into a hollow in the centre before rising again to the rear. To the left of the entrance are two rocks that appear to rest on the surface. Behind them and occupying most of the western chamber are further rocks of considerable size taking up most of the floor space. In the main gallery one large rock (14) projects above the floor and tops of others are just visible in the surface dust. To the north-east there is a further low chamber some 5 feet by 18 feet that runs back into the rock for a further 30 feet.

Preparations

The cave floor for the most part is covered by an inch of floury black dust containing evidence of recent occupation by fishermen. It was in fact a fisherman who drew my attention to the cave and with the advent of a motorable road built by the owner, I was able to investigate the report. A test pit 18 inches square was put down in the centre of the floor to establish evidence of habitation. In the 2 feet I was able to excavate, there were no less than seven major layers with as many more sub-layers, varying in thickness from several inches down to mere discolorations.

There followed a period of research with Maori Elders, local people and the Department of Lands and Survey to establish the present and past owners.

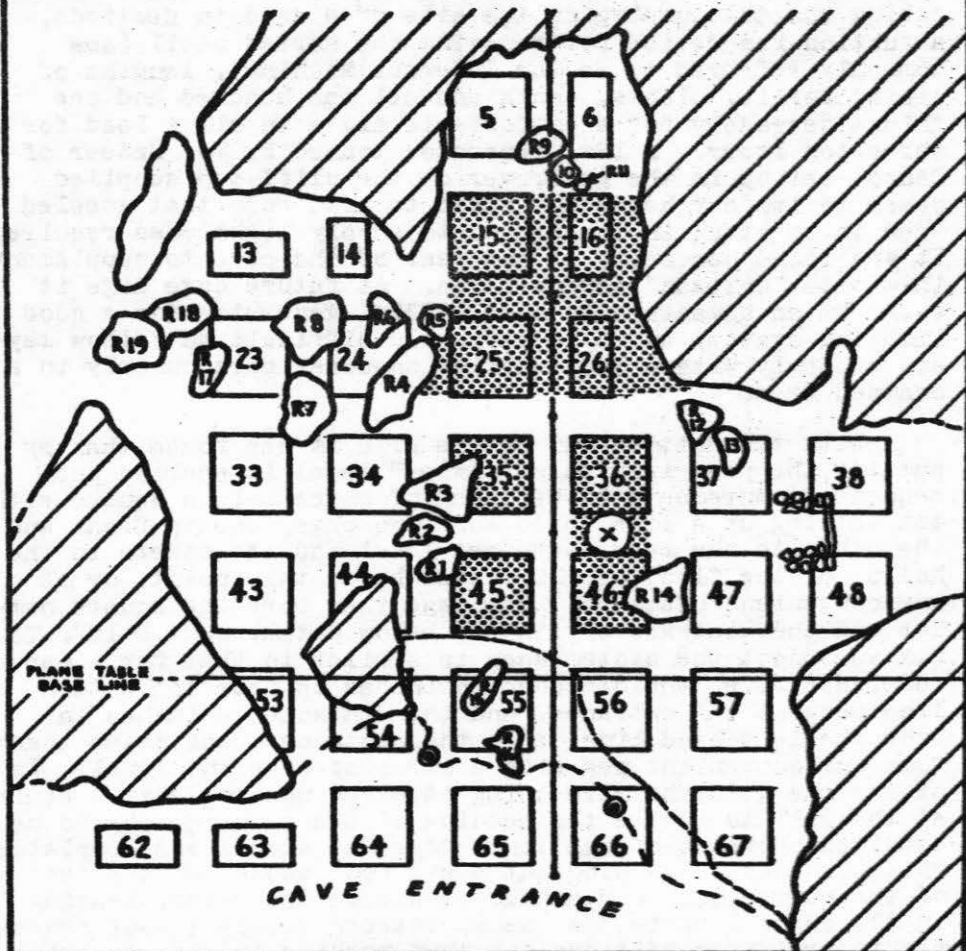
Several weekends prior to Christmas were spent in making a plane-table survey of the site using somewhat primitive instruments. However, various problems were met and overcome and an accurate plan was drawn. The next major undertaking was the dumping on the site of a shed in sections, a suction-fan device for removing the sorted spoil (now commonly referred to as the Infernal Machine), lengths of piping for it, planks, tools and all the hundred and one things necessary for a comfortable dig - in all a load for a three-ton lorry. A 12v. generator loaned by Mr. McKear of Taupo, set up in the Landrover on the cliff-top supplied power to two car headlamps fixed to iron rods that enabled them to be stuck in the ground to supply light when required. It was found necessary at the rear of the cave to supplement them with "Coleman" petrol lamps. At future cave digs it would be an advantage to have a 230v. generator for a good lighting system, as it is extremely difficult to follow layers properly with a lamp casting shadows, particularly in a cramped area.

With the setting out of the grid it was found that by putting the pegs in with a "Cowley" level it enabled subsequent measurements to be taken of objects in a square without setting up a line to do so. Two pegs, one in front and the other to the rear, were set level and the others in the hollow of the floor set 12 inches below this point, or at any convenient distance. The pegs then bore the square number and the distance of its top below datum, e.g. D-12". To fix an object the system used is similar to that for a map reference, i.e. the distance in inches up from the bottom line nearest the entrance, and the distance in inches in from the left-hand line, then the distance below datum taken from any convenient peg with a straight-edge and level. In siting the grid the main thing stressed was to leave a baulk at the wall to enable the bedding of the stratigraphy to be examined by means of sections after the square was completed. This was done by setting out a six foot square on the left of the centre line and a half square on the right, leaving in all cases a three foot baulk between squares; most necessary in cramped conditions and when working in soft material of unknown depth.

For recording baulks a set-up was used that may be of value to other members. It consisted of a light straight-edge with a white-faced tape fixed to its upper edge 18 inches from the left-hand end, two $\frac{1}{2}$ inch rods with clamping devices and a movable tape that hung down from the straight-edge. The method is to set the two rods firmly so that the straight-edge is held with its top at datum and the end of the tape over the left-hand baulk. A layer can then be foll-

WHAKAMOENGA CAVE (TAUPO NUI A TIA) 1962

SCALE IN FEET



KEY:

- | | | |
|---------------------|---------------------------|------------------|
| Cave walls | Areas excavated | Sub-surface rock |
| Roof-fall rocks | Cliff line: shelter limit | Recent fireplace |
| Edge of outer slope | Trees | |

owed at say, 6 or 12 inch intervals, with the second tape hung from the straight-edge, giving its vertical position.

The Excavation

Squares 15 and 16

Excavation was begun on the 2nd of January with the opening up of Sq.15 and half of Sq.16 at the rear of the main chamber. Sq.15 contained little cultural material; in the main only fern and stones. The layers were thin as expected and ran out on to the yellow rubble that covered beach sand over most of the area excavated. Evidence of burial was found in a single scapula and a patch of kokowai granules, staining a hollow in Layer 2 and mixed with fern, sticks and leaves. Sq.16 proved a little more interesting with the appearance of hangi making near the wall, which had disturbed all the layers in this area with the exception of those near the centre baulk.

Squares 25 and 26

Sq.25 and Sq.26 adjoining Sq.15 and Sq.16 toward the entrance, revealed a thickening of the fern material in Sq.25 and an increase in the number of layers in both. In Sq.26 the number and size of hangi increased and at the central baulk a large posthole, some 6 inches in diameter, with an accompanying 3 inch peg, was recorded cutting from Layer 2 level. It was also noted that there had been considerable activity in the driving of stakes into the floor of Sq.25, some sixty being recorded, ranging from 1 to 3 inches in diameter. In the lower levels of Sq.26 a hangi had been built over and sealed an early posthole some 6 inches in diameter.

Square 35

From Layer 2, composed mainly of black earth and fern, came three musket balls. Layer 3 was mainly ash material; Layer 4 was interesting with signs of kokowai at its surface and from within the layer came obsidian, stone, shell and a few small bird bones. Layer 5 was a fill layer between a patch of hard material and a rock taking up most of one baulk. This contained shell, wood-ash, obsidian and charcoal. This square was completed to the level of the beach sand and the two dark Moa-period layers, best seen in Sq.36 and Sq.46, were noted. From the upper one came a bone needle with the eye broken out and with evidence of an attempt to drill a second one.

Square 36

It was found that the hangi activity extended about half way out into this square from the wall line, and an interesting series of hangi pits was revealed. One in particular from Layer 2 is worthy of mention. The pan or hollow was only half the depth of the usual hangi and 24 inches in diameter, while in its centre was a pit some 5 inches deep and 10 inches in diameter. After use the hangi had been deliberately sealed over with a layer of clean yellow pumice.

The layers in Sq. 36 were highly complex and most of them appeared to be discontinuous. Layer 6 however was revealed as a fairly extensive one with four hangi cut from its surface, three of which were deliberately sealed over with a patch of clean yellow pumice obtained by crushing the weathered rock of the cave. This material, known as Haparangi Rhyolite Breccia and Tuff, is fairly solid in the mass but when exposed or struck can be crumbled into a coarse sandy material with small pumice lumps.

Below the hard yellow material of Layer 6 the alternating layers of black and grey material began to lap up on to the shelving yellow rubble material of the natural floor. The upper layers were in advance of the lower ones, as is consistent with a build-up of layers from the lowest point of a hollow. The layer below 6 was of a grey colour and had in itself a series of thin bandings. This multiple layer was thinnest at the rear of the cave and thickened towards the front, when its top surface ran up to the level of a rock in Sq. 46 in front. The bottom surface remained fairly level on the top of Layer 8 which proved to be the most interesting yet encountered.

With the removal of Layer 8 it was found that the layer below sloped markedly towards the front of the cave and at the rear of the square stopped against a rise in the underlying yellow material. In the black "floor" level that formed the top of this series was found a piece of obsidian struck from a core, a piece of bird bone and several kakahi shells. Lining the hangi pit was a mat of leaves in a perfect state of preservation. On the surface of this layer, and near the hangi, were recovered a large fragment of moa bone, two flakes of red obsidian, bones of a small bird, rat bones, fish bones, marine shells, kakahi shells and a portion of a tuatara jawbone. The removal of the 6 inch layer revealed the site's earliest cultural layer, resting on the yellow rubble material that formed the pre-occupation surface of the site. This layer proved the most exciting of the series and showed the antiquity of the occupation in broken and burned moa bone, obsidian flakes, charcoal, small bird bone, rat bones and

fish bones, penetrating the soft yellow rubble layer readily.

As can well be imagined, the excitement at this stage was intense and a special trip to town sent the then-suspected moa bone to Dr. John Yaldwyn for positive identification.

Square 45

Kakahi shell was recovered from the first layer of Sq. 45. In Layer 2, on top of the rise at the entrance, was found a fractured quartz stone and a piece of flaked greywacke. In this layer also were kakahi shells, a piece of early bottle glass and a possible dog tooth. An interesting find in Layer 3 was a portion of a musket butt plate, making this layer of post-European origin. This square was not complete at the time of writing this report.

Square 46

Sq. 46 (near the entrance) was begun with the machine-sieving of Layer 1. A large patch of yellow grit from Rock 14 occupied most of the lower half of the square, covering an extensive black layer, which had a large quartz stone on its surface. This stone is alien to the volcanic Taupo area. With the removal of Layer 2 there were revealed the tops of several rocks, fallen at different times since the cave was first occupied.

Layer 3 was also black but a little lighter in colour, and had no cultural evidence other than charcoal. Its removal revealed the tops of further rocks, two of which had square pits cut into their tops. The space between these rocks was filled with an unstratified gritty grey layer resting on a black surface. Rocks numbered 20, 21 and 22 rested on this black surface.

The first discovery of note after the removal of Rock 21 was the butt end of a triangular sectioned adze rough-out that had been broken during manufacture. The blade end was recovered from the same layer on the other side of the square under Rock 22. As the two pieces do not fit it seems likely that a third piece forming the middle section has yet to be found. This black cultural layer lapped around Rock 23 which rested on an even earlier layer, with Rock 24 leaning on it. In scraping away the upper black layer a further rock was revealed and numbered 25. In the lower black layer, directly beneath Rock 23, were a core of red obsidian and the tip of a single-barbed bird spear. Due to the way they had fallen, Rocks 23 and 24 had formed a sealed cavity preserving a section of the floor as fresh-looking as the day it was buried,

as well as dried leaves, the vertebra of a moa and a further spear point with a single row of barbs.¹

Rock 25, which appeared to be resting on pumice stones on top of the layer was removed, and under it were a moa pelvis and femur ball. Here again the old floor surface was in a perfect state with the dried leaves and charcoal very fresh-looking. Excavation of this layer brought to light further obsidian flakes, a second vertebra, large kakahi shells and a marine mussel shell. It seems certain that this layer was a floor built up from the yellow rubble on which it lay, for on its top we found further moa bone associated with ovoid-shaped pumice artefacts. A thin piece of ordinary pumice has a suggestion of a human face carved in primitive form. A further exciting find was that of a small adze fashioned from pumice, which could have been a child's toy or perhaps a model to demonstrate the method of making an adze. It has a rectangular cross-section at the bevel-blade angle, where it has its greatest thickness. In plan its greatest width is at the cutting edge and it tapers evenly to a square-sectioned butt. The front of the adze is flat transversely with a slight even curve longitudinally from the cutting edge to near the butt, where the curve increases markedly to the poll. The back is also flat transversely with a slight hollowing longitudinally. All corners are sharp and square and the blade has been broken on one corner by striking against a surface, back down.

On the opposite side of the square a further piece of moa pelvis near a group of small bird sterna and beaks was found as well as a lower mandible of what appears to be a kakapo, and the bones of a small bird, some charred and some reduced to charcoal entirely. Square 46 was completed by putting the top two inches of the beach sand material that underlies the yellow rubble through the sieve. In the main it is sterile but in a pocket of yellow was a piece of obsidian and a chip of moa bone.

Square 36 - 46 Baulk

In the centre of the baulk between Sq. 36 and Sq. 46 was a large rock (26) resting on bedrock and having its sides undercut by wave and shingle action. From the layer above the sealing of the moa level came a conical pumice artefact some 6 inches x 5 inches with a large conical hole cut up from its base to meet a smaller one cut down from its top. A perforation thus made measured about $\frac{3}{4}$ inch in diameter. The underside hole has on its opposite sides two shallow grooves. A possible use for this object could be the fly-wheel for a drill.

Recovered as well were kakahi shells and a small piece of chert and a further piece of pumice with the appearance of being hollowed out and subsequently broken. From a lower level came a completed and perfect example of hollowed pumice. The object is made from a water-shaped pumice stone and has one surface flattened. Into this surface a rectangular hole has been cut with slightly tapered sides and square corners. At either end, on a centre line, are two small holes bored into the pumice at slight angles outward. Lower, on the moa bone level, half a tibia was recovered with one end charred, as well as obsidian, small bird bone and charcoal.

Conclusion

It appears that the first occupants found the cave with its floor some three feet lower than today's level and composed of a dusty yellow material containing pumice lumps. Across the entrance to the cave was a natural barrier of rock-fall behind which people first lived. Occupation then discoloured the yellow material to a brown surface, still dusty, in which pumice artefacts, moa bone pieces and splinters, charcoal, leaves and small bird bones were lost. This layer culminated in the first black floor surface on which more moa bone and artefacts were deposited. At this point several large rocks fell from the ceiling. Occupation continued with the build-up of a layer containing obsidian, shell, artefacts and moa bone, and other materials until there was sufficient deposit to compact into a second floor level. At this stage a considerable rock-fall took place sealing in all the layers under a jumble of blocks and yellow dust which entered from the entrance (Sq.46) for 14 feet, sealing the earliest layers. A period of layer-building followed, which began with deposits against the rocks. These layers, containing only kakahi shell, built up from the interior of the cave and outward to the entrance, sloping up toward the rock-fall and spilling over to fill the spaces behind. At this time the tops of the rocks had fire-pits cut into them. On this floor surface a series of hard yellow patches were laid down making a clear horizon between this and the three layers overlying it up to the present cave floor. It was in these four layers that most of the recent hangi were cut.

Acknowledgements

In conclusion we would like to extend our thanks and appreciation to the following people whose help made this excavation possible.

Mr. Butler and Mr. and Mrs. Gower for their great interest and generous freedom of their property; Mr. "Skip" Evans

for assistance in the preliminary work of material-handling and excavation at various weekends; Miss Anne Leahy who spent her Christmas vacation assisting keenly and well in the less interesting part of the cave, and helped over several weekends with excavation and section-drawing; Miss Sylvia Reece who devoted a week's good effort; the Editors of the Taupo Times and Herald Tribune of Hastings for keeping the exact location of the site a secret; Mr. A. J. Kear of Taupo for the use of his lighting plant; Timber and Building Supplies Ltd. for the loan of 100 feet of 3 inch pipe for the "Infernal Machine"; Mrs. W. B. L. Power of Auckland who gave us the benefit of her knowledge of the cave some fifty years ago; and finally to the one hundred and sixty-odd visitors who signed the Visitor's Book and gave us an excuse for a spell from work, and who encouraged us by their interest. Public interest and support is vital to our Society, so that visitors should not be treated as an interruption of our work but rather as one of the main reasons for it.

Reference

- (1) Duff R. S. 1956, The Moa-Hunter Period of Maori Culture (Second Ed.) Fig. 59, p. 226, No. E145.237. (The Whakamoenga example resembles this figure but lacks the two small notches).

AN INLAND ARCHAIC SITE

By R. Cook and R. Green

Site N 84/1 Tokoroa

Professor K. B. Cumberland of the University of Auckland first brought to the attention of Mr. J. Golson what appeared to be an inland "moa-hunter" camp near Tokoroa. Mr. Golson in turn suggested to Mr. R. Cook, a member of the local Society then working at Mangakino, that he investigate more fully the site's potential. In September 1961 with the full cooperation and permission of the property owner, Mr. Cook excavated a portion of a single oven at the site and recovered from it a number of moa bones and characteristic obsidian flakes and knives. These bones have tentatively been identified by Mr. R. Scarlett as those of a not quite fully mature Euryapteryx exilis.