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New Zealand Artifacts from the United States "Transit of Venus Expedition" 1874-1875

Ian W. Keyes

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IWK

New Zealand Geological Survey
Lower Hutt
New Zealand
August 17, 1964

New Zealand Artifacts from the United States "Transit of Venus Expedition," 1874–1875

By Ian W. Keyes

Introduction

On Monday, June 8, 1874, just over 90 years ago, the U.S. steamer *Swatara*, under Comdr. Ralph Chandler, U.S. Navy, sailed from New York Harbor—her destination, the remote sub-Antarctic Crozet and Kerguelen Islands, Tasmania, New Zealand, and the Chatham Islands.

Three years previously, in 1871, a committee that had been established under the authorization of the U.S. Congress (U.S. Navy, 1875, p. 16; Newcomb, 1880, p. 9) had completed earlier plans whereby a series of astronomical observatories would be established in various parts of the world during 1874, to conduct scientific observations on the "transit of Venus" scheduled to take place during December 9th of that year. Other countries also had formulated plans to send expeditions to suitable localities where that celestial event could most effectively be followed, particularly in the Southern Hemisphere. In addition to the five scientific parties which the U.S. Government planned to send into southern waters, three stations were scheduled for the Northern Hemisphere; at Nagasaki, Peking, and Vladivostok (Newcomb, 1880, p. 12–13). The *Swatara*, with its complement of 26 astronomers and photographers, comprising the Southern Hemisphere contingent of the "Transit of Venus Expedition" along with stores, instruments, and equipment for establishing five observatories, set sail from New York for the 46° south latitude.

The first call was at "Bahia" (Salvador, Brazil) on Friday, July 10 (Chandler, MS. a) from which the vessel proceeded to Cape Town where she arrived at Table Bay on Wednesday, August 5th. From here, on August 17th, she rounded the Cape of Good Hope heading east-southeastwards for the Crozet Islands where the first observation party was to be landed. However, the high winds and heavy seas that were encountered on August 31st when the islands were reached, precluded a landing, so the *Swatara* continued on her easterly course towards the Kerguelen group, the site selected for the next observatory. Three Island Harbor was reached on Monday, September 7th. A camp was established at the northern end of Royal Sound and the scientific party landed, equipped for a long stay both to carry out the astronomical observations and to conduct additional biotic studies of the island (Kidder, 1875, 1876). On September 13th, the *Swatara* departed and headed for Hobart, Tasmania, where the next observatory was due to be sited. At Hobart, on October 3d, equipment and stores were unloaded for establishing this station and the instruments and personnel of the Crozet party were landed so that an additional observatory might be established at Campbelltown (Newcomb, 1880, p. 18).

Bluff Harbor, Southland, New Zealand, was reached on Friday, October 16th, and the New Zealand party under Prof. C. H. F. Peters was met by Lieut. E. H. Bass (assistant astronomer to the New Zealand party), who had spent 2 weeks in the country selecting the most suitable site for the Transit observatory. The *Swatara* sailed from Bluff Harbor on Saturday, October 17th, and after a brief stop off the Tairua Heads at the entrance to Port Chalmers, headed for the Chatham Islands. Chatham Island was reached on Monday, October 19th, and the final party of nine under Edwin Smith, the chief astronomer, disembarked at Port Hutt (northwest shore of Petre Bay), where a station was established on rising ground to the west of Whangaroa Bay. The *Swatara* sailed from Petre Bay on Monday, October 26th, for New Zealand, then to Hobart, where she remained until after the Transit.

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Collections

The "Transit of Venus Expedition" comprised one of the largest governmental scientific undertakings at that time to be organized for astronomical research, and yet played an important secondary role in the field of natural history. The overall published scientific astronomical results of the expedition are contained in Newcomb, 1880, and the complete additional natural history observations and descriptions of materials collected by the Kerguelen party and by Dr. E. Kershner, surgeon on the *Swatara* during the course of the year-long voyage, are to be found in Kidder (1875, 1876).

The purpose of this paper is to describe unpublished ethnological and archeological specimens collected by the expedition from Chatham Island and New Zealand (pls. 5–8), which are retained in the ethnological collections of the Smithsonian Institution, U.S. National Museum, Washington, D.C. This material is of particular interest (apart from its historical connection) because the lithic artifacts collected from Lake Wakatipu record an interesting range of adz types referable to New Zealand's early eastern Polynesian culture, from a rather remote inland portion of the South Island. Amongst the objects obtained at Riverton, Southland, several possess unique characteristics, while the artifacts from Chatham Island provide additional data on the material culture possessed by the inhabitants of this remote outpost of early eastern Polynesian culture.

LAKE WAKATIPU

The site selected by Lieutenant Bass for the New Zealand observatory was at Queenstown, Lake Wakatipu. The six-man party established their observatory on the terrace northeast of Queenstown along Melbourne Street, on section 10 and 11, block 32, and occupied the site for approximately 11 weeks.

The collection of artifacts described below (pls. 5 and 6), owes its existence to Israel Russell, first assistant photographer of the New Zealand party, who evidently explored the surrounding region collecting artifacts, native birds, bones of the extinct moa, plants, insects, crustacea, and small vertebrates, destined for the Smithsonian Institution (Smithsonian Institution, 1876, pp. 49–50). The available information concerning the artifacts collected comes from Kidder (1876, p. 83): "There are a large number of fossil shells from Lake Wakatipu, New Zealand, and of recent forms from the same pit in which the Maori implements were found." Although the site for this cache of adzes cannot be determined with precision, it is possible to deduce within reasonable limits the likely locality concerned.

Lake Wakatipu, situated in the Province of Otago, South Island, is the longest lake in the country—50 miles in length. Filling a synclinal depression deeply gouged by Pleistocene glacial action out of the Otago chlorite schist, the lake occupies a generally steeply cliffed indentation. It is difficult to reconcile from the locality information the concomitant association of "fossil" and recent shells in a pit at Lake Wakatipu. The reference to "fossil shells" is considered misleading, for true fossils are very rare in this region of metamorphic rocks. There is a locality at Bobs Cove, of Landon Series (Oligocene) age limestone, downfaulted into the schist, which has yielded a few sparse fossils, but this is confined to a rather inaccessible location (particularly in 1874) about 9 miles west of Queenstown and is not worthy of consideration in the argument. Rather, it is more certain that the reference to "fossils" is to a midden deposit of lake shells (or perhaps to subfossil land mollusca). Freshwater pelecypods are common in the shallow parts of Lake Wakatipu, particularly around the Frankton Arm, whereas the northern end of the lake, though shallow, is not suitable owing to influxes of cold meltwater accompanied by much silt. The Frankton Arm area is shallow and much warmer than most other areas of the lake, and is known to have been both a camping and eeling site of the later Maori. The information Kidder recorded indicates that the pit must have been situated along the shores of the Frankton Arm northeast of Queenstown, toward the outlet of the Kawarau River. The adzes were probably uncovered in a cache; perhaps when a pit was excavated in gravels which also revealed freshwater lake shells—either as part of a midden or mixed with the gravel.

The rock types represented by the Wakatipu Lake adzes are considered to be locally derived. They are all essentially Paleozoic Maitai or Te Anau Series sedimentary rocks varying from coarse to fine grain size, of a dark green-gray to black color. However, they are specially selected types and have a hardness above that of normal indurated sediments of Paleozoic age. It is likely that they were associated with the ultramafic belt (Red Mountain Ultramafics and Livingstone Volcanics) which lies westward of the lake (between Te Anau and Wakatipu Lakes), where inclusions of contact-baked, silicified tuffaceous sandstones, mudstones, graywackes, and argillites are present, to which have been imparted an additional toughness and hardness necessary in a material from

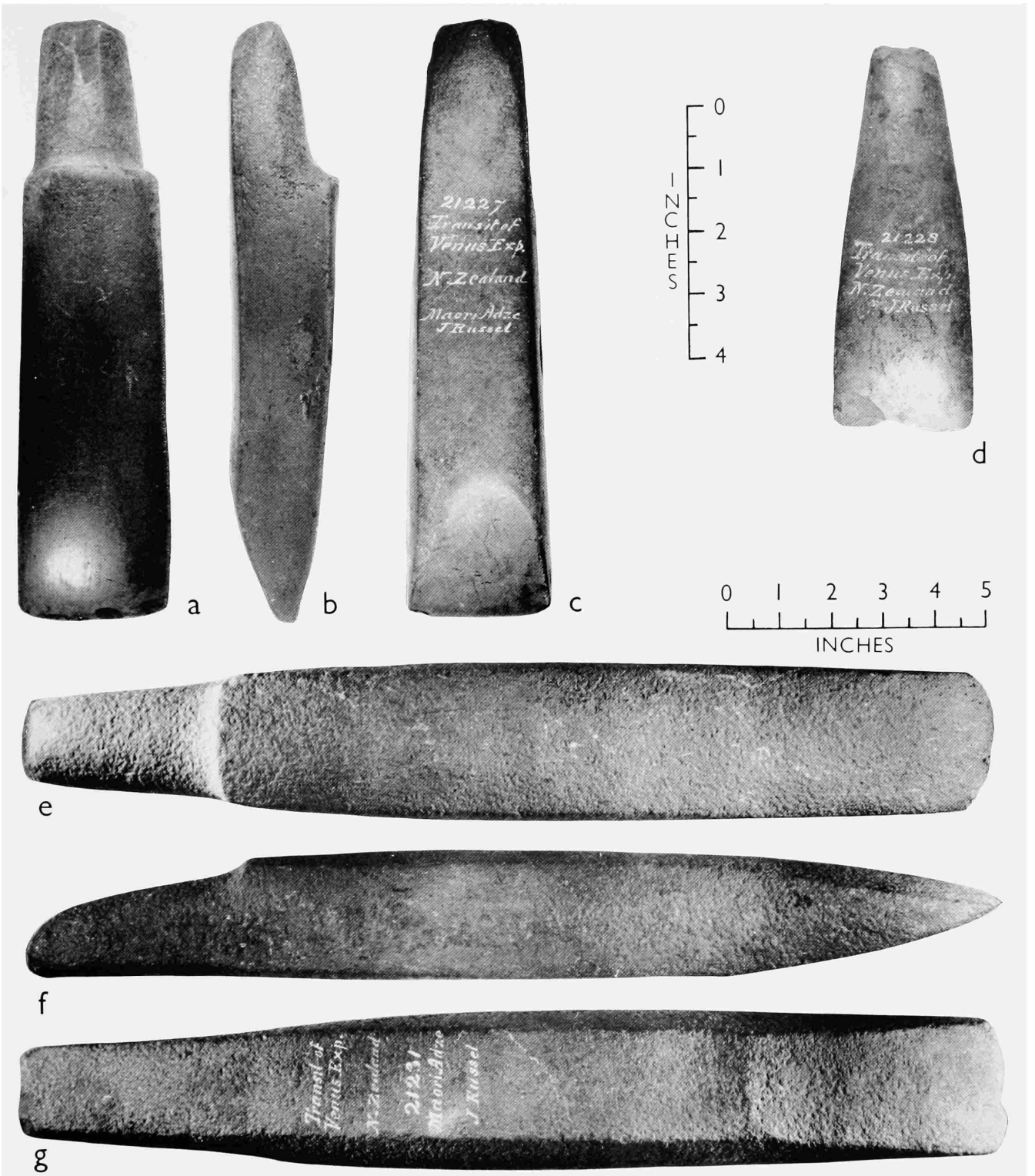

PLATE 5

Lake Wakatipu artifacts

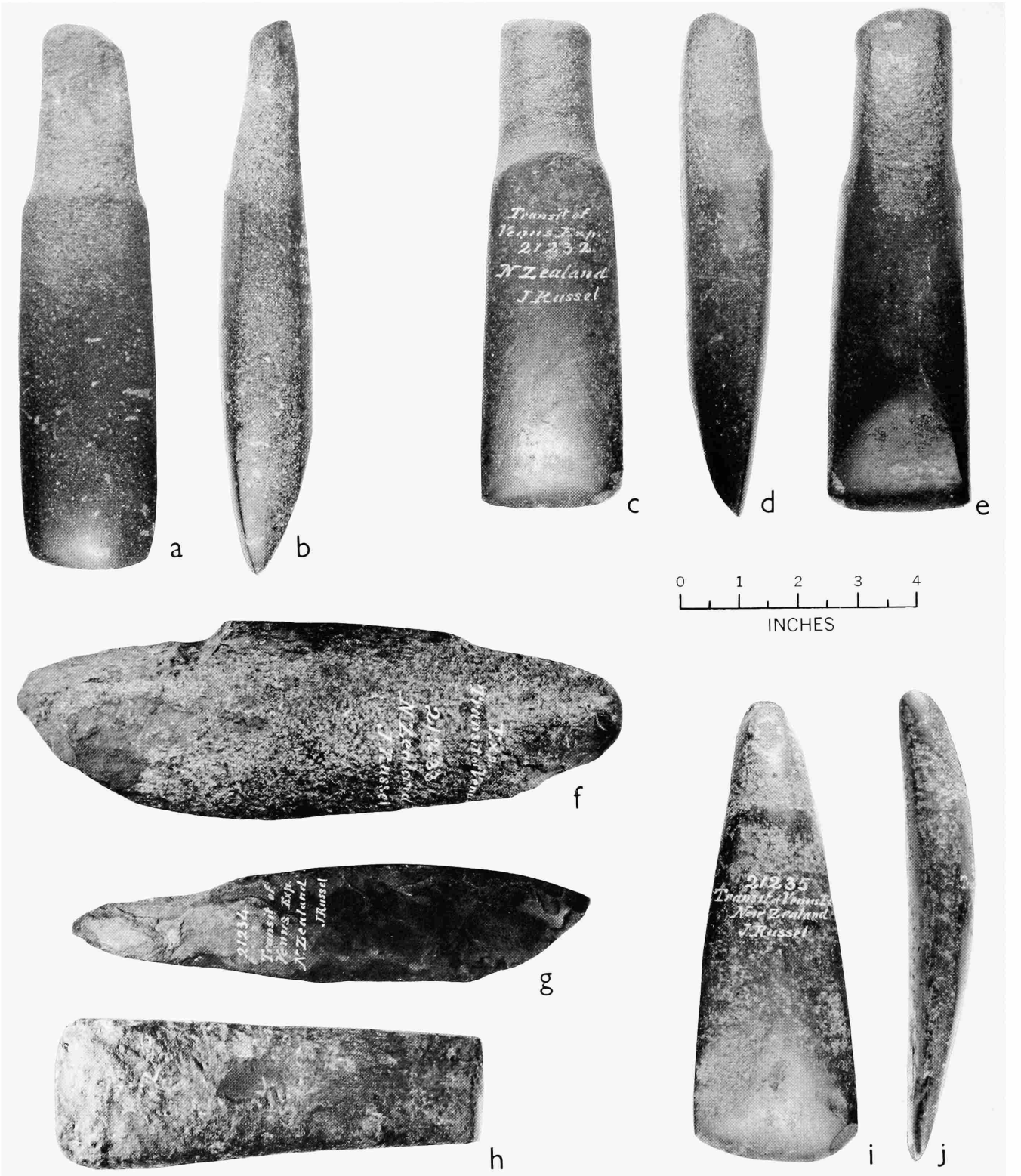

PLATE 6

Lake Wakatipu artifacts

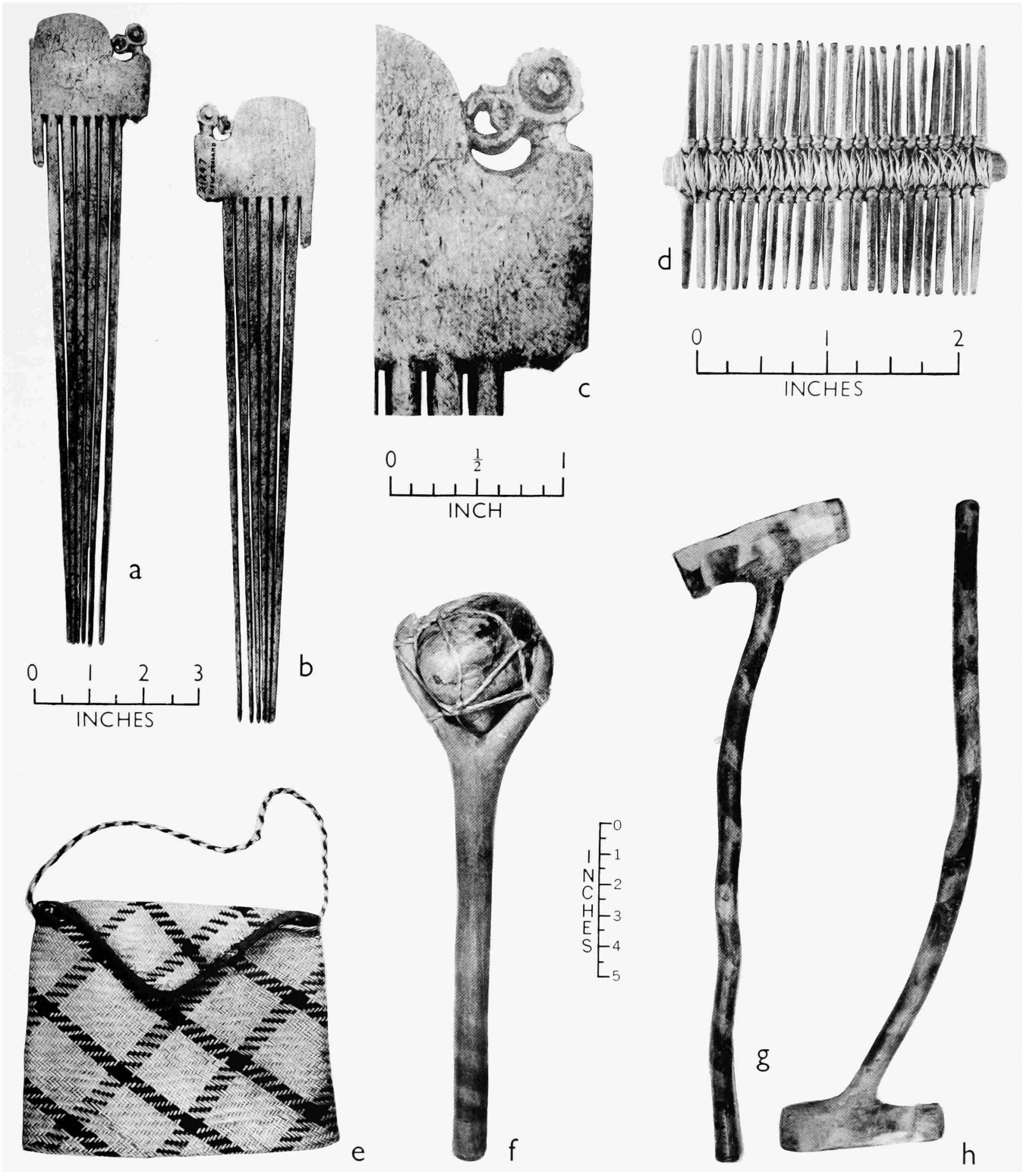

PLATE 7

Riverton, Southland, artifacts

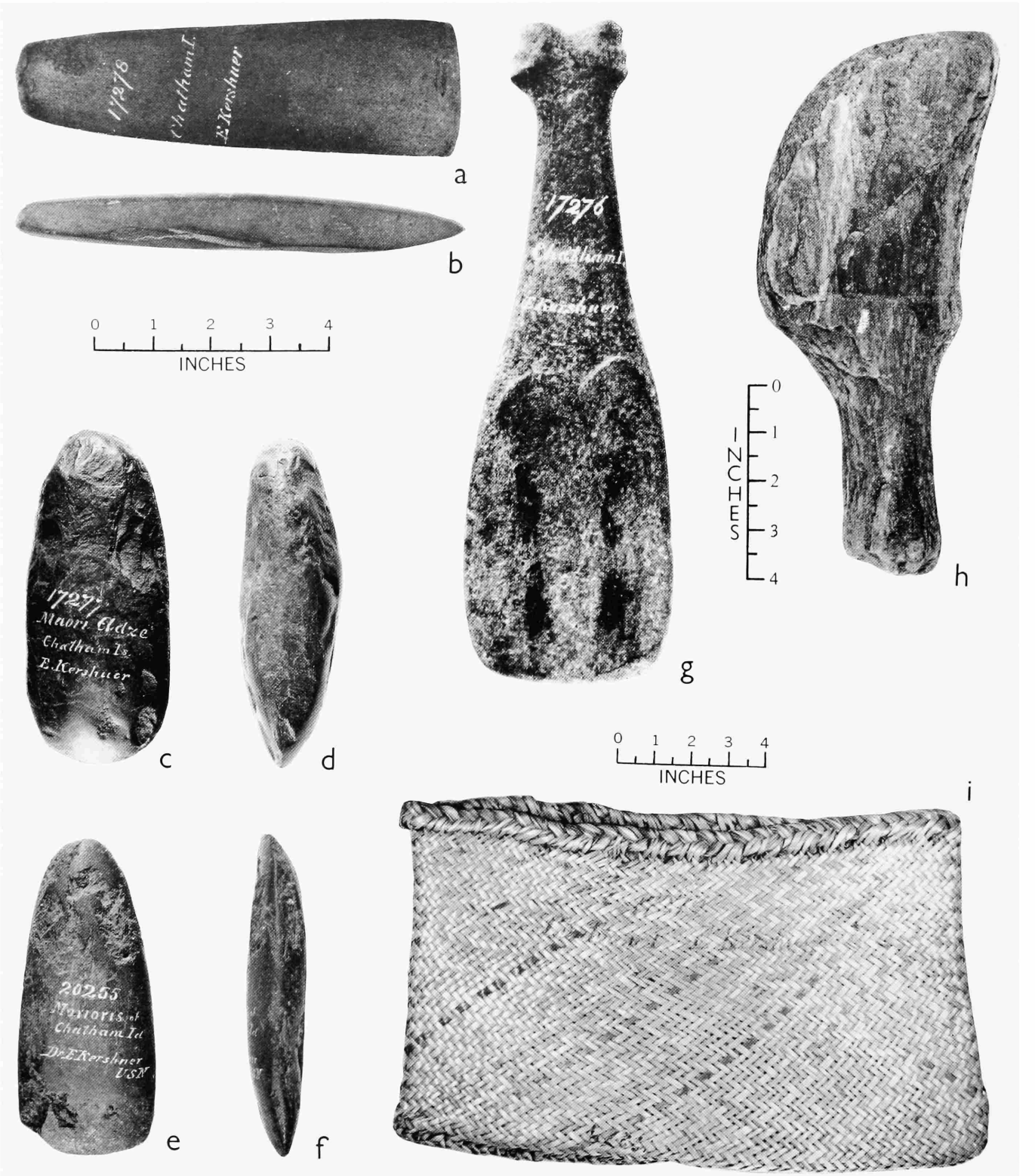

PLATE 8

Chatham Island artifacts

which adzes are to be made. Because their significance lies in the fact that they are altered sediments (like the famous soda-metasomatised argillite of conchoidal fracture that outcrops along the Nelson-Marlborough Mineral Belt, the northern extension of this ultramafic belt), they are termed herein as "metamorphosed" graywackes or mudstones.

No. 21227 (pl. 5, *a–c;* anterior, lateral, and posterior views).—Tanged quadrangular adz of green-gray, fine-grained tuffaceous metamorphosed mudstone. Surfaces polished. Length, 10 in. (254 mm.); maximum width at cutting edge, 2 7/16 in. (62 mm.); width of butt, 1¼ in. (32 mm.); thickness at butt shoulder, 1⅞ in. (47 mm.); weight, 2 lbs. 13½ ozs. Anterior surface convex longitudinally from butt shoulder to cutting edge; posterior, flat beneath tang, becoming concave towards bevel shoulder. Greater transverse convexity of anterior surface than posterior, as well as greater width. Even taper of lateral edges from cutting edge to butt. Lateral edges transversely flat, with angles sharp. Cutting edge chipped. Rounded blade bevel, 2 11/16 in. (68 mm.) long, terminates in a raised bevel shoulder. Bevel surface transversely hollowed. Marked deep reduction of anterior surface to form pronounced transversely rounded tang, 2¾ in. (70 mm.) in length, downcurving towards butt. No reduction on posterior surface. Slightly upraised butt shoulder, prominent on lateral margins of anterior surface. Tang surface flaked and pecked; butt unworked.

No. 21228 (pl. 5, *d;* anterior view).—Quadrangular tanged adz of hard, fine-grained, greenish metamorphosed mudstone. Cutting edge broken; surfaces ground. Length of specimen (incomplete), 6½ in. (165 mm.); maximum width, at blade break, 2⅜ in. (60 mm.); maximum thickness, at butt shoulder, 1¼ in. (32 mm.); weight, 1 lb. Anterior surface longitudinally convex from butt shoulder towards cutting edge, and transversely curved. Posterior surface shows less convexity, and grades into blade bevel (damaged). Specimen tapers evenly in width from cutting edge to butt. Anterior width slightly greater than posterior and lateral angles prominent throughout specimen. A tang, marked by a slightly raised butt shoulder, 2 1/16 in. (52 mm.) from the butt, is formed by the rounding of the anterior lateral margins to produce a strong transverse curve. No lateral reduction on posterior surface.

No. 21231 (pl. 5, *e–g;* anterior, posterior, and lateral views).—Large elongated, massive tanged quadrangular adz, of hard, coarse-grained, green-gray metamorphosed Paleozoic graywacke. Entire surface bruised to give even, regular, finely-pitted texture. Length, 19¼ in. (488 mm.); maximum width, at midsection, 3⅛ in. (79 mm.); width of cutting edge, 2¾ in. (70 mm.); butt width, 1⅝ in. (41 mm.); maximum thickness, taken at midsection, 2⅝ in. (66 mm.); weight, 10 lbs. The specimen, throughout its length, tapers evenly in width from midsection to cutting edge and butt extremities. Anterior surface follows a gradual curve throughout its length. Posterior flat with slight concavity beneath tang. Cross section forms a "rounded quadrangle" with the anterior and the two lateral surfaces showing equal transverse convexity. The posterior surface is transversely flat. Longitudinal angles distinct throughout length. Prominent butt shoulder 4¼ in. (108 mm.) forward of the butt marks a distinct tang, formed by reduction of the anterior surface. From the butt shoulder, the tang descends in a moderate curve to the poll. Cutting edge slightly curved, with the flat blade bevel extending along the posterior surface for 5¾ in. (146 mm.) and terminating in a marked bevel shoulder in the form of a distinct transverse ridge. Although raised, this ridge is not abrupt.

Of the entire range of adz types collected by the "Transit of Venus Expedition," this specimen ranks as one of the most important. It is characteristic of a certain specialised adz form which is restricted to the Southland district of the South Island of New Zealand (Skinner, 1943, p. 65; Duff, 1950, p. 159–160, fig. 34, Type I, variety D; 1959, p. 130). This additional record extends the distributional range of other past recorded occurrences of this type both inland and northwards into the Otago Province. These adz forms are all characterized by their huge size and weight, the coarse-grained stone used, the carefully shaped and worked surfaces with restricted or no polishing, their rounded quadrangular cross section, the dominance of the opposed blade bevel and tang reduction over the length of the artifact, the raised transverse ridge at the bevel shoulder (also often present at the butt shoulder), and their restricted geographic occurrence (Best, 1912, p. 248–250, pls. 13, 13*a*). The specimen figured herein ranks as being the largest and heaviest of its type to be recorded.

No. 21229 (pl. 6, *a,b;* anterior and lateral views).—Tanged quadrangular adz of dark, coarse-grained metamorphosed graywacke. Length, 9½ in. (241 mm.); width, 2¼ in. (57 mm.); thickness, 1½ in. (38 mm.); weight, 2 lbs. 1 oz. The specimen exhibits longitudinal convexity on both anterior and posterior surfaces as well as transverse convexity in section. Anterior surface wider than posterior with considerable rounding of the posterior lateral margins. Cutting edge in anterior and end view, convex in outline. Blade bevel forms continuous curve with posterior surface. A flattened tapering tang, 3 in. (76 mm.) in length is formed from shallow reduction of the anterior surface, steepening towards the poll, with rounding of the anterior lateral margins. A very slightly raised butt shoulder is present. Concavity in the posterior surface beneath the tang produces a marked thinning towards the poll, giving greater width than depth to the tang. Poll width, 1⅜ in. (35 mm.); poll thickness, 5/8 in. (16 mm.). Anterior surface and blade bevel polished, remaining surfaces bruised and pecked. This specimen in a hafted condition was figured by Buck (1950, p. 185, fig. 37*b*), in a line sketch.

No. 21232 (pl. 6, *c–e;* anterior, posterior, and lateral views).—Tanged quadrangular adz of dark, coarse-grained metamorphosed graywacke (or grit). Length, 8½ in. (216 mm.); width, 2⅜ in. (61 mm.); thickness, 1½ in. (38 mm.); weight, 1 lb. 14½ ozs. The specimen tapers evenly from cutting edge to poll in anterior outline. Anterior and posterior surfaces longitudinally and transversely convex, with greater longitudinal curvature on posterior. Greater width of anterior over posterior surface with well defined longitudinal angles. Cutting edge straight, with steep

blade bevel. Secondary curve on the bevel follows smoothly into the posterior surface. At 2¼ in. (58 mm.) from the poll, a slight butt shoulder marks the reduction of the anterior surface to form a tang, with strong rounding of the anterior margins to give a semicircular section. Poll width, 1$\frac{1}{16}$ in. (40 mm.); poll thickness, 1$\frac{1}{16}$ in. (27 mm.). Specimen polished, except for tang which retains bruised condition.

No. 21233 (pl. 6, *f;* lateral view).—Large rounded triangular-sectioned adz of the "hogback" type, in greenish-gray metamorphosed mudstone. Specimen in process of manufacture. Entire surface bruised to shape except for butt extremity and anterior, posterior, and lateral edges which form the cutting edge, these remaining in a roughly flaked condition. Length, 10⅛ in. (257 mm.); maximum width, 2$\frac{9}{16}$ in. (64 mm.); maximum thickness, 3$\frac{3}{16}$ in. (81 mm.); weight, 4½ lbs. Anterior and posterior surfaces longitudinally convex, with slight reduction of anterior surface, 3 in. (76 mm.) from butt, to form tang. Posterior and lateral surfaces transversly rounded.

No. 21234 (pl. 6, *g;* left lateral view).—Triangular-sectioned adz of the "hogback" variety, of hard green metamorphosed mudstone. Length, 9 in. (229 mm.); maximum width, 1$\frac{3}{16}$ in. (31 mm.); width of cutting edge, $\frac{5}{16}$ in. (8 mm.); maximum thickness, 2 in. (51 mm.); weight, 1 lb. 1¾ ozs. The artifact, although completed, retains boldly flaked uneven surfaces with little bruising and with grinding restricted to the bevels forming the cutting edge and along the narrow anterior surface. Anterior surface is convex longitudinally, while posterior is flattened by bruising, and curves into the rounded, ground, blade bevel 2½ in. (64 mm.) in length. Cutting edge is narrow, semicircular and transversely arched. Reduction of anterior (primarily) and posterior surfaces, 2¾ in. (70 mm.) from butt, to form tang.

No. 21236 (pl. 6, *h;* anterior view).—Unfinished, bruised, quadrangular adz blank, of dark blue-gray, medium grained metamorphosed graywacke. Length, 7⅜ in. (189 mm.); maximum width, at cutting edge, 2$\frac{9}{16}$ in. (65 mm.); maximum thickness, 1$\frac{5}{16}$ in. (33 mm.). Both anterior and posterior surfaces thoroughly bruised to give a rough pitted texture. The left lateral edge still retains a thin veneer of natural weathering along a smooth joint-plane surface. A sharp clean transverse break forms the abrupt butt.

No. 21235 (pl. 6, *i, j;* anterior and lateral views).—Strongly tapering, tanged, polished quadrangular adz of hard, medium gray, fine-grained, metamorphosed graywacke. Length, 8$\frac{3}{16}$ in. (208 mm.); maximum width, at cutting edge, 2⅞ in. (73 mm.); width at butt, ⅝ in. (16 mm.), maximum thickness, at midsection, 1⅛ in. (29 mm.); weight, 1 lb. 3¼ ozs. This unusually tapering specimen is particularly distinctive through its great anterior and posterior longitudinal convexity. Anterior surface is more strongly arched and with greater transverse curvature than posterior. Transverse blade curvature decreases towards cutting edge; blade bevel, of steeply rounded slope, grades into posterior surface curvature. Anterior width slightly greater than posterior. Lateral angles prominent throughout length. A slight transverse butt shoulder ridge 2¼ in. (57 mm.) forward of the butt, marks the reduction of the two anterior lateral angles to form a round-sectioned tang which terminates in an almost conical poll. Less rounding of posterior laterals in forming tang. This adz by its unusual morphology is placed slightly apart from the usual early New Zealand adz types, but its tang reduction positively maintains its inclusion within the early cultural adz forms.

No. 21242 (not shown).—A broken quadrangular adz blade of hard, fine-grained, greenish, metamorphosed mudstone. All surfaces ground. Width at cutting edge, 2⅝ in. (67 mm.); blade bevel, ⅝ in. (16 mm.), in the form of a smooth curve. Thickness of adz taken at midsection of break (2⅛ in. from cutting edge), ⅝ in. (16 mm.). The adz type represented by this broken blade is included in the type "2A" category of Duff (1950, p. 162), and is characterised by its tangless, comparatively thin quadrangular form with anterior surface width greater than posterior. It is an abundant early adz type occurring prominently in all the famous moa hunting campsites of the South Island.

No. 21238 (not shown).—Irregular flake, 4¼ in. long, of gray tuffaceous graywacke, struck from a stream boulder. A cutting edge has been ground on one edge. This specimen and the two below may represent surface finds, and probably do not form part of the adz cache.

No. 21239 (not shown).—Flaked quadrangular adz blank, 5 in. long, of blue-green metamorphosed mudstone.

No. 21243 (not shown).—A small narrow elongated chisel, 3¼ in. long, made from a stream pebble. The surface is covered with a hard chocolate-brown natural weathering patina and four bold flakes have produced a sharp cutting edge, exposing a blue-gray fine-grained metamorphosed mudstone matrix.

RIVERTON, SOUTHLAND

Of the artifacts obtained from Riverton (pl. 7), only three items appear to have actually been collected by Israel Russell. The remainder appear to have been presented by private collectors; one whose name has been recorded was T. Daniels of Riverton. Although it cannot be confirmed, it is likely that all the donated specimens were originally collected locally.

No. 21247 (pl. 7, *a–c*).—Decorative bone comb. This example of an ornamental bone comb is unique owing to its great length. This specimen was figured by Skinner (1930), but no measurements were included. It was obtained from the collection of T. Daniels of Riverton, on whose information it originally belonged to "Pokau" (or Pakau), and as Skinner suggests (p. 284) was probably buried with its owner and at a later period recovered and identified. Produced from a section of whalebone, it is 11½ in. (292 mm.) in length and 2¼ in. (57 mm.) in width at the head. Thickness, $\frac{3}{16}$ in. (5 mm.). The comb tapers evenly in outline to the tooth points, and the teeth show even reduction throughout their length from $\frac{5}{32}$ in. down to $\frac{3}{32}$ in. at their extremity. Three of the nine original teeth have been broken off. Skinner concludes that the comb was produced with a thin steel saw, as the tooth separation is extremely fine and even. The teeth margins are bevelled

longitudinally and the tooth points are in the form of a truncated pyramid, a feature not typical in comb styles. At the head of the comb is a carefully carved inward-facing *manaia*. The eye of the *manaia* is recessed leaving a raised central boss which may have been designed for bearing a *paua* shell inlay. Of particular interest is the presence of seven serial notches transversely grooved across the head of the *manaia*. Although being of purely ornamental purpose, this may represent a link with a much earlier decorative art style, retained to a later date in this area than elsewhere, and traditionally older than the Ngai-Tahu introduced bone comb working, to which it was applied.

No. 21248 (pl. 7, *d*).—Wooden comb of 24 individually lashed teeth. Length, 2⅝ in. (67 mm.); width, 1⅞ in. (48 mm.); thickness at central binding, ¼ in. (7 mm.). The teeth are held in position between two thin medially placed splints of wood, which protrude beyond the end teeth. Crossed lashing between the teeth and diagonally around the splints, as well as looped binding around each tooth, holds them in position and provides even tooth spacing. With age, the thin binding has become limp. The teeth are an even length and taper toward the points (from 3/32 in. to 1/32 in.). The tooth points are formed by a double bevel on both faces, probably added after binding had been completed. This specimen is most unusual in that it does not conform to the conventional Polynesian style of separately toothed wooden combs, which are lashed at one end and always have greater length than width. For this reason then, the specimen cannot be classed amongst wooden ornamental combs but should be considered to be a comb of purely utilitarian purpose.

No. 21246 (pl. 7, *e*).—Flax purse. Length, 10¼ in. (261 mm.); height, 8¼ in. (210 mm.). Although obtained at Riverton, this specimen is said to have come from Stewart Island. In style it follows a modern European purse, both with carrying handle and triangular flap. The edge of the flap is bound with cloth stitched through the flax. Thin strands of flax 3/32 in. wide form the diagonal weave. An open square design of dyed flax, five strands wide, is interlaced with the diagonal weave.

No. 21230 (pl. 7, *f*).—Hafted stone hammer. Length, 18 in. (457 mm.); handle width, 1⅛ in. (28 mm.); weight, 6 lbs. The handle is made from a branch bearing a natural fork, into which the striking stone is lashed. Considerable work has reduced the wooden handle from its natural state to a smooth symmetrical shape. The stone is a tough gray-green stream boulder of tremolite (or actinolite), showing patches of dark green nephrite, and obviously was originally collected from some West Coast streambed. It is held in the yoke by a net type lashing. The present lashing of double-strand twisted flax appears to have been a more modern addition. Further modern work is suggested by a hole bored through one prong of the fork to carry the present lashing, whereas the other prong has been scarfed for a lashing grip. All these features appear to be later modifications to the original artifact. Hafts for stone hammers are not common, as suitable hand held local boulders at a working site provided the usual tool. However, in view of the undoubtedly prized stone used, this artifact was a valued tool. Best (1912, p. 37, pl. 33), figures a similar hafted hammer from the North Island.

Nos. 21228A, 21235A (pl. 7, *g*, *h*).—Wooden adz hafts. Three adz hafts were obtained by the expedition from Riverton. It is apparent, not only by their exellent state of preservation, but by the remains of an old label attached to one specimen that they were "presented" to the expedition, possibly from the T. Daniels private collection. They originally entered the Smithsonian collections associated with three adzes from Wakatipu Lake, but this association is entirely fortuitous. The hafts can be considered to be of late manufacture, for they exhibit definite working by metal tools. They are of light weight and were probably designed for hafting narrow flat iron blades. Because of the nearly identical similarity of all three specimens both in shape and actual dimensions, only one (No. 21228A) is described in detail. Total overall length, 20½ in. (525 mm.); handle (*kakau*) diameter, ⅞ in. (22 mm.); foot (*kauae*) length, 5¼ in. (134 mm.); foot width, 1¾ in. (45 mm.); foot thickness at heel, 1¼ in. (32 mm.), at toe, 1 in. (25 mm.); toe flange length, 13/16 in. (20 mm.). All three specimens bear a transverse groove (*tokari*), between the toe and the shaft to facilitate recession of the lashing (*taka*). The handles are unworked and are curved towards the toe direction. Specimen No. 21229A (not shown) was sketched by Buck (1950, p. 185, fig. 37*b*) with an adz lashed in position.

Five additional lithic specimens were obtained by the expedition from Riverton but are not figured. They all represent surface collections from a coastal area.

No. 21237 (not shown).—Flaked quadrangular adz blank, bruised in some areas; 5½ in. long, of green-gray metamorphosed mudstone.

No. 21240 (not shown).—Flaked stone of green-gray metamorphosed mudstone. One surface with natural weathering patina. No true adz shape discernible.

No. 36946 (not shown).—Partially flaked core of brown chert. These three specimens were presented to the expedition by T. Daniels of Riverton.

No. 21244 (not shown).—Small completely flaked quadrangular stone, 3 in. long, of gray-green metamorphosed argillite. Possibly a portion of a broken adz blank.

No. 21245 (not shown).—Small flaked, splay bladed chisel, 2¾ in. long, composed of similar material. These two specimens were collected by I. Russell.

CHATHAM ISLAND

The artifacts collected from the Chatham Island (pl. 8), were obtained by Dr. E. Kershner, surgeon of the *Swatara*, during the two occasions when the vessel was anchored in Petre Bay. Three specimens (nos. 17276–17278) bear the locality reference "Morgenni," but this name should be considered to actually read "Maunganui" (personal communication, D. Simmons, Otago Museum), which is a locality on the northwest coast of the island. The remaining specimens give Chatham Island as their only locality, but could have been picked up from the large area of sand dunes

between Te Whanga Lagoon and the northwestern end of Petre Bay which has yielded much artifactual material in the past (Skinner, 1923, p. 10). Mr. Edwin Smith, leader of the observing team, also obtained three skulls (Kidder, 1876, p. 83), one of which is specifically stated to be surface collected (ibid., p. 80) from an area in which human skeletal remains were exposed in the dunes through the agency of the weather. (Specimen No. 20256, a small adz, has not been relocated amongst the ethnological collections.)

Prehistorically, the cultural affinities of the early Chatham Island "Moriori" culture lie very close to that of the earliest cultural group to occupy New Zealand, who originally stemmed from a marginal eastern Polynesian source. It appears that the earliest settlement of the Chatham Islands was by a group originating from the South Island of New Zealand (Skinner, 1923, p. 132; Duff, 1956, pp. 147–148) for it is here that the closest relationships lie. Early Chatham Island material culture did, however, diverge in some ways from its close New Zealand South Island relative through the development of certain characteristic artifact forms, due to the influence of the specialised local environment. At later times there does appear to have been a further minor influence from New Zealand, probably from the North Island, as certain artifact types (as described below), do not bear strict relationships to the earlier predominant eastern Polynesian forms.

No. 17278 (pl. 8, *a, b;* anterior and lateral views).—Quadrangular tangless adz of medium gray basalt. All surfaces ground. Length, 7⅝ in. (195 mm.); maximum width, at cutting edge, 2¼ in. (57 mm.); maximum thickness, 15/16 in. (24 mm.); weight, 1 lb. 2¼ ozs. Anterior surface exhibits even longitudinal and transverse convexity. Posterior flat, with only slight transverse curvature. Anterior width slightly greater than posterior. The poll, although essentially rough, has been partially modified by lateral rounding. Blade bevel, in the form of a smooth flat curve, grades into posterior surface without visible bevel shoulder. Minor subsidiary bevelling on anterior surface at the cutting edge is present.

This specimen can be regarded as typical of many quadrangular adzes found in the Chathams (Skinner, 1923, pl. 19). Duff (1950, p. 163), includes this adz form in his type 2A. The place of these rectangular-sectioned adzes in the culture of the Moriori is difficult to access, for their relationships lie both with early South Island adzes of similar type and with types found in the North Island of much later cultural origin. The frequency of occurrence of this type in the Chathams may well be the result of an increased selective emphasis on this early Moriori type through a later influence from the North Island.

No. 17277 (pl. 8, *c, d;* anterior and lateral views).—Ovoid-sectioned adz, produced from a partially worn natural cobble of hard black basalt. Length, 6 in. (153 mm.); width, 2⅝ in. (66 mm.); maximum thickness 1 13/16 in. (46 mm.); weight, 1 lb. 9½ ozs. Specimen ovoid or elliptical in outline and cross section, and approaching axial symmetry in lateral aspect. Posterior surface can be distinguished, however, by slightly steeper curvature of the bevel. No bevel shoulders or lateral angles, as all surfaces grade into anterior and posterior. Cutting edge sharp and semicircular; butt rounded. Surfaces well polished.

No. 20255 (pl. 8, *e, f;* anterior and lateral views).—Ovoid-sectioned adz, of black basalt. Surfaces ground. Cutting edge broken and chipped on anterior surface. Length, 5 1/16 in. (145 mm.); width, 2½ in. (63 mm.); thickness, at mid section, 1⅛ in. (28 mm.); weight, 12¾ ozs. Specimen nearing axial symmetry in lateral view. Posterior surface exhibits greater longitudinal and transverse convexity than anterior, with slightly steeper curvature forming blade bevel. Blade bevel grades imperceptibly into smooth curve of posterior surface. No lateral edges or bevel shoulder.

Specimens 17277 and 20255 can be considered to be important representatives of an adz type which did not diffuse to the Chatham Islands from the Moriori cultural homeland of the South Island. (Duff, 1950, pp. 163, 167.) Rather, the presence of this ovoid-sectioned adz type (Skinner, 1923, type 4, pl. 21, figs. *a–d*)—rare and intrusive in the South Island (Duff, 1959, p. 133), is believed to be sufficient indication of a later element or influence from the North Island, as these adz forms essentially only find their counterparts from this region.

No. 17276 (pl. 8, *g*).—Patu of gray muscovite schist. Length, 13¾ in. (350 mm.); blade width, 4⅜ in. (111 mm.); handle width, 1⅝ in. (41 mm.); handle thickness, 1 in. (26 mm.). This exceptionally fine specimen of a Moriori schist *patu* (*pohatu taharua*) was figured previously by Skinner and Baucke (1928, pl. 58, fig. *A*), although the actual given length was underestimated. This specimen was chosen by Skinner as the type of his Moriori *patu* group IV (ibid., p. 353) which is a specialised group of *patu* characterised by the presence of two carved opposed stylized human heads on the handle knob. In this case, additional surface ornamentation is present on the blade in the form of a pair of curved "brow ridges" in low relief, concave towards the distal end of the artifact. (This latter feature is characteristic of Skinner's *patu* group III.) The faces on the handle are 1¼ in. (32 mm.) in length, while the "brow" motif (occurring on both blade faces) is 3 in. (76 mm.) in length.

No. 20254 (pl. 8, *h*).—Patu of gray-green muscovite schist. Surface roughly ground. Length, 11¼ in. (288 mm.); width, 4½ in. (115 mm.); handle width, 1⅞ in. (48 mm.); thickness, 1¼ in. (32 mm.); weight, 3 lbs. 3 ozs. In outline, the specimen approaches the *okewa* (billhook or bird form type of *patu*), which is a particularly diagnostic artifact of the Chatham Islands' Moriori culture and not found elsewhere in the Pacific. On edge view, the specimen is flat with no surface reduction except marginal rounding. In outline, the distal end of the *patu* and one longitudinal edge form an even curve thus giving the artifact its characteristic nonsymmetrical shape. The other longitudinal

edge is slightly concave. Both edges taper concavely to form the handle, producing marked shoulders at the points of lateral reduction. The handle is longitudinally concave with convex expansion at the end to form a knob.

No. 17279 (pl. 8, *i*).—Flax (*Phormium tenax*) basket or "kit." Length, 16 in. (406 mm.); height, 9¼ in. (235 mm.). Woven from thin strips 5/32 in. wide, in diagonal plait. The basket type suggests that two carrying handles were required to be added. The basket, according to Dr. E. Kershner, is said to have been made by "old Tenant's Maori wife," thus it is likely to be of traditional Maori work rather than Moriori.

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