

CANADA
DEPARTMENT OF MINES
HON. CHARLES STEWART, MINISTER; CHARLES CAMSELL, DEPUTY MINISTER

NATIONAL MUSEUM OF CANADA
W. H. COLLINS, ACTING DIRECTOR

BULLETIN No. 51

ANTHROPOLOGICAL SERIES, No. 10

**Uren Prehistoric Village Site,
Oxford County, Ontario**

BY

W. J. Wintemberg



OTTAWA
F. A. ACLAND
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1928

Price, 20 cents



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UREN PREHISTORIC VILLAGE SITE, OXFORD COUNTY, ONTARIO

INTRODUCTION

Uren prehistoric village site is on the farm of Joseph N. Uren, on the south half of lot 8, concession VII, South Norwich township, Oxford county, Ontario.

The writer, who made an intensive exploration of it from September 1 to September 31, 1920, for the National Museum of Canada, wishes to acknowledge his indebtedness to Mr. Uren for permission to excavate on his property; to his son, Gordon Uren, for presenting some specimens found at the site; to Dr. Gerrit S. Miller, curator of the Division of Mammals, and Dr. J. W. Gidley, assistant curator of the Division of Fossil Mammals, U. S. National Museum, Washington, for identifying most of the mammalian remains; to Dr. Alexander Wetmore, Assistant Secretary, Smithsonian Institution, for identifying the bird remains, and to Mr. Morley E. Wilson, Geological Survey, Canada, for determinations of most of the rocks and minerals.

Most of the illustrations are from drawings made by the author. Three others, including the map, are the work of O. E. Prud'homme, artist of the Anthropological Division. Except where otherwise stated all illustrations are one-half actual size.

THE SITE

The Uren site is about 15 acres in extent and shows the usual evidences of occupancy, consisting of refuse deposits composed of black soil and ashes, through which are scattered artifacts, animal bones, etc. The site was not enclosed by earthworks and no traces of palisades were discovered. It is one of ten sites within an area of about 20 square miles,¹ all of the same culture and all of which may have been occupied contemporaneously. They differ from most later Neutral sites in this county and in Waterloo county, and resemble Algonkian sites² in being close together, and also in being mostly on the banks of large streams.

¹One site is on the farms of James Johnston and Robert Mash, a few hundred yards to the north. A single refuse deposit occurs south of the site on the farm of C. Daikens, in concession VIII of the same township. Three or four other deposits are on the south bank of Campbell creek, still farther south in the same concession. East of the quarter townline, there are two deposits on the McMullen, and two or three on the Williams farms, lot 7, concession VII. There is a large site on the farms of John Oddy and George Bertrand, lot 7, concession VIII. Others are on the McLeod farm, lot 2, concession VII, and on the A. E. Moore farm, lot 15, concession IX. A site on the farm of Angus Oatman, lot 28, concession XI, apparently also belongs to the same culture. There are two sites in North Norwich township, one being on the farm of George Huggins, lot 2, and the other on the Campbell farm, lot 3, concession VI. There is also a site on the Force farm, north half of lot 14, concession III, Burford township, Brant county.

²See maps, Wintemberg, J. W.: "Archæology of Blenheim Township," Annual Archæological Report, 1902, being part of Appendix to the Report of the Minister of Education of Ontario, Toronto, 1903, and "Archæology of Blandford Township," Victoria Memorial Museum, Bull. No. 1, Oct. 23, 1913.

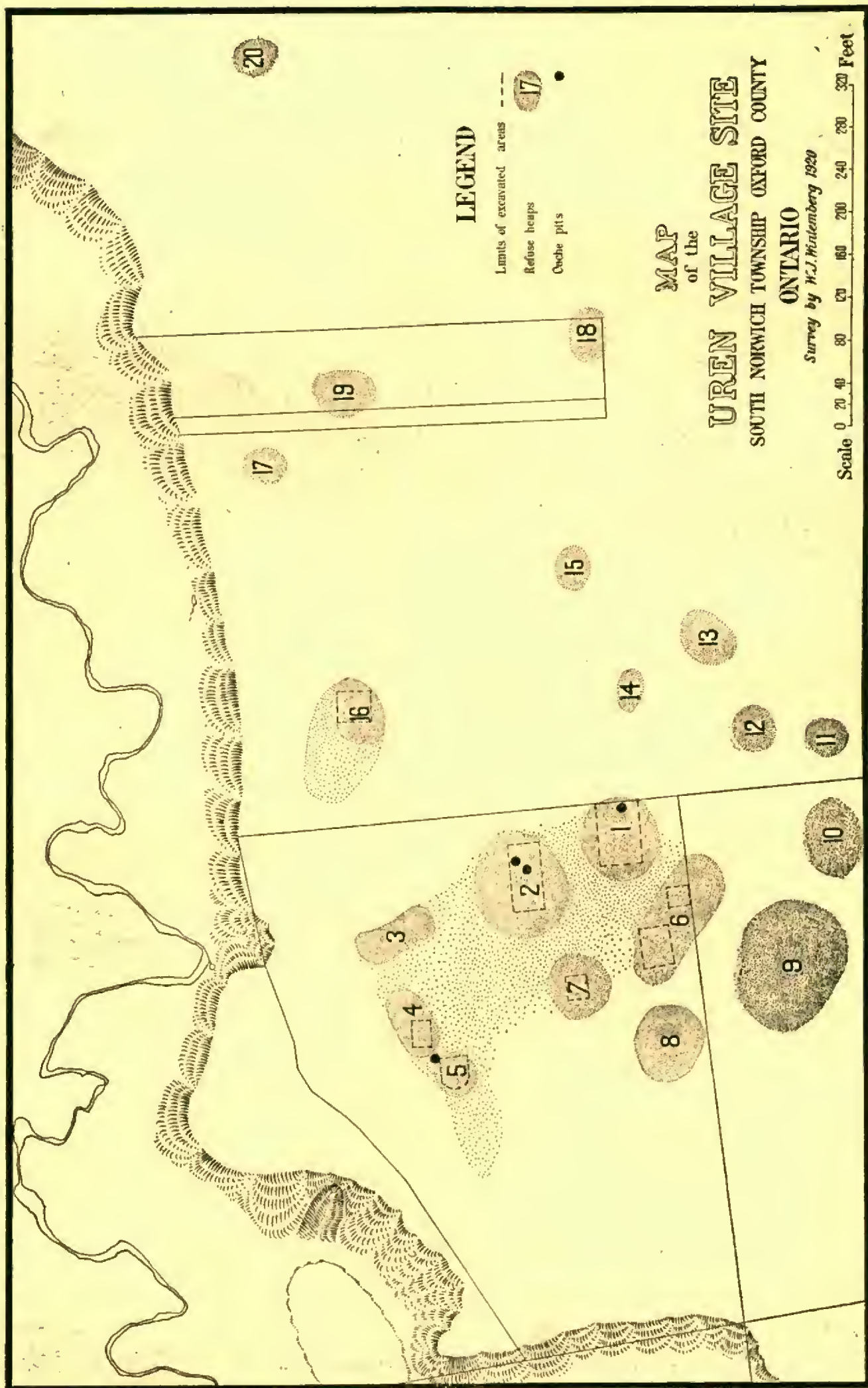


Figure 1.

HISTORY OF THE SITE

The main part of the Uren farm was cleared by Captain Michael Stover in 1812 and has been under cultivation for many years. The best part of the site, where most of the excavations were made, has been cultivated since about 1913.

AGE OF THE SITE

No stumps, whereby an idea of the approximate age of the site could have been obtained, remained standing on any of the refuse deposits. The absence of articles of European origin, however, shows that it is at least prehistoric.

PHYSIOGRAPHIC FEATURES, TIMBER, ETC.

The site occupies a more or less undulating area south of a small stream that flows through a wide valley, bordered by steep banks, and joins Otter creek about a mile below the site. The soil is a sandy loam and the prevailing timber of the adjacent uncultivated area is white pine, hemlock, tamarack, sugar maple, basswood, blue beech, ironwood, aspen, and American elm. The fruit and nut-bearing trees, found in the neighbourhood, are the chokecherry, wild black cherry, wild plum, butternut, black walnut, shagbark hickory, bitternut hickory, chestnut, white oak, red oak, and beech. There are two small springs at the foot of the bank, at the north side of the site (*See map, Figure 1*).

The refuse deposits, locally known as ash-beds, and sometimes as mounds, are twenty in number. As will be seen from the map, there is no apparent regularity in their disposition; some are on knolls, others on low, flat areas. There are no hillside dumps, although some occur at two of the nearby sites.

It is difficult to define the exact limits of the deposits. Most of them merge into one another, owing to the diffusion of the black soil by cultivation. Thirteen of them (Nos. 3, 8 to 15, and 17 to 20), which were not excavated because they were too shallow, require no description. Their location and relative sizes can be seen on the map.

Deposit No. 1, about 70 by 80 feet in extent, with a maximum depth of about 17 inches, occupies a low area, with a gradual rise to the west. It was composed of three layers—a top layer of black soil, an almost continuous layer of ashes from 2 to 5 inches thick, and a layer of black soil, which rested on the undisturbed sand. In the shallower parts, the lower layer was missing. An area of about 40 by 60 feet, excavated in this deposit, yielded more artifacts than any of the others. A cache or refuse pit, near its eastern extremity, was 3 feet 3 inches deep, with a diameter at the bottom of about $4\frac{1}{2}$ feet. It was filled with ashes mixed with charcoal, discoloured soil, pottery fragments, and other artifacts, and, at the bottom, a layer of pure ashes 8 to 12 inches thick.

Deposit No. 2, on the side of a small knoll, almost merges, through the effects of cultivation, into the diffused parts of the surrounding deposits. It is about 100 feet long, 90 feet wide, and 1 foot deep. The ashes occurred in patches, which suggests that each had been a fireplace. An excavation, 65 feet long by about 30 feet wide, was made in this deposit, but in spite of

its extent and promising surface indications comparatively few artifacts were found. Two large pits were discovered at its bottom, one 4 feet deep and 2 feet in diameter, the other 3 feet 9 inches deep, bulging out at the sides, near the bottom, to nearly 2½ feet. Both were filled with ashes, black soil, animal bones, pottery fragments, and a few artifacts. The ashes and black soil in these pits were mixed and not in separate layers.

Deposit No. 4 is about 70 feet long, 35 feet wide, and 10 inches deep. The ash layer, from 2 to 3 inches thick, was not continuous, being smaller than the area excavated. An excavation, 18 by 25 feet in extent, was made in the deepest part of the deposit, but very few artifacts were found.

Deposit No. 5 is 40 feet in diameter and 10 inches deep. An area of about 20 by 26 feet was excavated, but very few artifacts were discovered. A pit 2½ feet in diameter and about 2 feet deep lay near the northeast corner of the excavation. At the bottom was a 3-inch layer of sand, hardened apparently by fire, of which there was no other sign, and below was the natural, undisturbed sand. A few artifacts were found near the top of the pit, which was filled with discoloured soil.

Deposit No. 6, on a low knoll, suggests by its oblong outline that it consists of two merged deposits. It is about 130 feet long by 50 feet wide, with a maximum depth of about 16 inches. Two excavations, one 18 by 20 feet and the other 35 by 40 feet, were made in the deepest parts of the deposit, which consisted of the usual three layers. Over a part of the area excavated, the sand below the ash layer, which was from 3 to 6 inches thick, had been hardened by fire. Many artifacts were discovered in this deposit.

Deposit No. 7, on a low knoll, is about 55 by 60 feet in extent, with a depth of about 15 inches. An excavation 20 by 22 feet was made in this deposit. The ash layer, from 4 to 5 inches thick, was overlain near the middle of the deposit by a layer of sand 3 to 6 inches thick, above which was the usual top soil of discoloured earth. A few artifacts were found.

Deposit No. 16, on a low knoll, is about 70 feet long, 40 feet wide, and about 1 foot deep. An excavation 30 feet square, made near the middle of the deposit, did not yield many artifacts. The ash layer was about 4 inches thick.

RESOURCES

FOOD

Vegetal Food

Kernels of corn and a few fragments of cobs, a sunflower seed, and a fragment of a butternut, all carbonized, were the only evidences of vegetal foods discovered¹. The corn kernels, most of which are large, occurred in several of the refuse deposits, but not so abundantly as at the Roebuck and other Iroquoian village sites in eastern Ontario. None of the fragments of cobs retained the kernels, but judging from the number of rows of pits on the largest fragment, the corn was probably all of the ten-rowed variety.

¹The writer found carbonized beans in the refuse of a later Neutral site, on lot 7, con. IV, West Oxford township, about 13 miles northwest of Uren, so it is possible that beans were used here also.

Animal Food

Nearly three thousand six hundred whole and fragmentary shells, animal bones, teeth, and antlers were found, most of them belonging to animals whose flesh had probably been used as food. Many of the bones were broken, probably to extract the marrow or to make them small enough to go into cooking pots.

Shells of the following species of land snails were found: *Polygyra albolabris*, *Polygyra albolabris dentata*, *Polygyra palliata*, *Polygyra sayi*, *Polygyra fraudulenta*, *Polygyra monodon*, *Patula alternata*, and *Omphalina fuliginosa*. There are also two poorly preserved shells of freshwater snails, one *Pleurocera subulare*, the other possibly *Pleurocera elevatum*. Although some of the shells of the land snails are unquestionably old, being quite chalky in appearance, it is not certain that they are not intrusive. The smaller species, such as *Polygyra fraudulenta*, *Polygyra palliata*, and *Polygyra monodon* are certainly too small to have been of any use as food, so their presence in the deposits is probably accidental. Moreover, we have no evidence that snails were used as food by the Indians of this part of the continent.

Clam shells were not as abundant here as at later Neutral sites in the same county. Only nine specimens were found, representing the species *Unio gibbosus*, *Lampsilis luteolus*, and probably *L. radiatus*. In the little stream, north of the site, live two species of clams, *Symphynota compressa*¹ and *Anodontoides ferussacianus* var. *subcylindraceus*, but the shells of neither occurred in the refuse deposits of the site, either because they did not inhabit the creek when the site was occupied, or were not considered suitable for use as food or as material for artifacts.

Nearly one hundred, or about 2 per cent of the animal remains, are those of fish. Most of the bones are not sufficiently characteristic to be easily identified, but those of the following species can be recognized: common catfish, pike, sand pickerel, and sheepshead. J. J. Williams, of Otterville, Ontario, informs me that the catfish and sheepshead still inhabit Otter creek. Other important food fishes in this creek, according to Mr. Williams, are the rock bass, speckled trout, suckers (probably *Catostomus commersoni*), and brown mullet (probably *Moxostoma aureolum*). The little creek, flowing along the north side of the site, probably once contained trout.

The presence of several bones of frogs, about the size of those of the leopard frog, suggests that these animals were used as food.

Thirty-eight, or about 1 per cent of the bones, are those of the painted turtle and snapping turtle. The bones of the former were the most numerous, and consisted mostly of parts of the carapace and plastron.

Two hundred and fifty-four, or about 8 per cent of the bones, are those of birds, of which about one-sixth are mere splinters. Fourteen different species of birds are represented; some of them may not have been used as food. The names are given in order of abundance: passenger pigeon, wild turkey, ruffed grouse, Canada goose, bald-headed eagle, flicker, horned grebe, pintail duck, swan (*Olor* sp.), barred owl, raven, crow, brown thrasher, and robin.

¹Shells of this species were abundant at village sites in York county, Ontario. See W. Brodie: "Animal Remains Found on Indian Village Sites," Ann. Archæological Rept., 1901, being part of Appendix to the Rept. of the Minister of Education, Ontario, Toronto, 1902, p. 45. It is referred to under its old name *Unio pressus*.

About three thousand one hundred and sixty, or about 88 per cent of the animal remains, are bones of mammals. Most of them are in fragments and a few are charred. The following species of mammals, given in order of relative abundance, are represented: Virginia deer, grey or black squirrel, black bear, woodchuck, red fox, Canadian beaver, raccoon, dog, red squirrel, chipmunk, grey fox (*Urocyon* sp.)¹, grey wolf, pine marten, Canada porcupine, otter, mink, muskrat, rabbit (*Sylvilagus* sp.), Canada lynx, meadow mouse, and a species of deer mouse (*Peromyscus* sp.). More than two thousand, or about 70 per cent of the mammal remains, are those of the deer. All of these, except the smaller foot bones, are more or less fragmentary; even the lower jaws and the phalanges were split. The bones of the dog, occurring in association with the remains of other animals, may indicate that its flesh was used as food, although perhaps ceremonially only. The ends of some of the deer bones are gnawed, by dogs apparently. The bones of the meadow mouse and deer mouse may have been accidentally introduced into the refuse deposits, or may indicate that those animals were eaten. According to Sagard, mice were used as food by the Hurons.²

ROCK, MINERAL, ANIMAL, AND VEGETAL RESOURCES

The materials used in the manufacture of artifacts consisted of rocks, minerals, bones, antlers, teeth, and, probably, wood and vegetal fibres.

Rock and Mineral Materials

No rock is visible anywhere in the vicinity of the site and no boulders or even pebbles occur naturally in its soil. Most of the rocks and minerals used by the inhabitants were probably obtained from surface supplies in other parts of the township, for nearly all of them occur in the drift. Of those discovered the majority are either in process of manufacture or are finished artifacts. The different kinds, given in order of abundance, are as follows: chert, shale, sandstone, hornblende schist, limestone, basalt, slate, chalcedony, quartz, quartzite, diorite, diabase, gabbro, impure arkose, granite-gneiss, syenite, hornblendite, pyroxenite, bituminous shale, and hematite.

Chert, always of the same colour, is the most abundant stone material. About three thousand chips were found, one-half of them in a single refuse deposit. Some retain part of the original waterworn surface of the pebble, showing that a proportion of the material came from the drift or gravel beds, rather than from rocks *in situ*; most of it was probably obtained from point Abino, on the shore of lake Erie, about 75 miles southeast. Of these three thousand chips and chunks of chert about five hundred are slightly worked and two hundred are real artifacts.

Although several chips of opaque chalcedony were discovered no artifacts were made of this material.

One chip and two projectile points of quartz, and two chips and one point of quartzite, were also found. Artifacts chipped from quartz and quartzite are rarely found at later Neutral sites in this part of Ontario.

¹The discovery of bones of this animal is probably the only record of its presence in Ontario in prehistoric times. See Wintemberg, W. J.: "Archæological Evidence Concerning the Presence of the Grey Fox (*Urocyon* sp.) in Ontario," *The Canadian Field-Naturalist*, vol. XXXV, pp. 19-20 (January, 1921).

²*Le Grand Voyage du Pays des Hurons*, new ed., 1865, pp. 312-313, and *Histoire du Canada*, new ed., vol. III, p. 689.

No copper, or artifact of copper, was found, but the people here were probably acquainted with it, as copper artifacts have been found at neighbouring sites of the same culture. A. E. Moore found a copper point for a spear at the site on his farm, and a hammered piece was found in a refuse deposit at the site on the Force farm, Burford township, by the late J. F. Rathbun, of Drumbo, Ont.¹ A copper point for a spear, and a curved copper knife, are said to have been taken from "mounds" near Norwich by the late Warren Haley.² As there are no mounds³ in the neighbourhood, these artifacts must have come from one of the nearby sites, probably the one on the Oddy and Bertrand farms, where most of the specimens in Mr. Haley's collection are said to have been obtained.

Clay of good quality for pottery making is found in the valley of the little creek, and in the bank above one of the springs.

Animal Materials

All less perishable animal materials, such as bones, antlers, teeth, and shells were found. It may be assumed that the pelts of some of the mammals mentioned in the list on an earlier page were made into clothing and that the plumage of some of the birds was used for personal adornment. The sinews of animals may have been used for sewing and for snares.

Bone. Judging from the number of specimens found, more artifacts were made of bone than of any other animal material. Both whole bones and pieces of split bones were used.

Although certain whole bones required very little modification to transform them into artifacts, very few were so treated. They consist chiefly of radii, tibio-tarsi, and tarsi-metatarsi of birds, splint bones and ulnæ of the deer, ulnæ of the raccoon and bear, and fibulæ of the lynx, which were made into awl-like tools. A few dorsal and pectoral spines of the catfish, and the jaw of another large fish, were used for various purposes, humeri, ulnæ, radii, and tibio-tarsi of birds were cut into beads, some turtle shells appear to have been made into rattles, and parts of them were certainly converted into ornaments.

About one thousand three hundred, or 37 per cent of the animal bones, found at Uren, including even a few ribs, are split. One rib has the outer wall broken off, probably to shape into a needle-like tool like the one seen in Plate XX, figure 23. More than one thousand, or about 70 per cent of the split bones, belonged to deer. Very few can be recognized as bear bones, and artifacts made from bear bones are correspondingly few. The split deer bones consist of pieces of lower jaws, pelvi, and the larger leg bones. Pieces of the metapodials were the most numerous. The deep natural groove on the front and back of the metatarsals permitted the bone to be easily broken into long, slender pieces suitable for manufacture into awls. Besides, these grooves required very little deepening to allow the bone to be still more easily broken.

Many of the split pieces of bone are of a size and shape suitable for manufacture into artifacts, but, in spite of the large quantity of this and other bone material available, only three hundred and twenty-two speci-

¹Cat. No. 36788, Provincial Museum, Toronto.

²Cat. Nos. 25136 and 25137, Provincial Museum, Toronto.

³The writer has heard Mr. Haley refer to refuse deposits as mounds.

mens show artificial modification. Fifteen of these are merely scraped and polished pieces of bone, fifty-eight show cutting, fifteen are unfinished, and two hundred and thirty-four finished artifacts.

Antler. Fewer artifacts were made of antler than of bone, for among over two hundred pieces of antler, there are only twenty-seven worked pieces and twelve finished artifacts.

Teeth. Teeth seem to have been rarely used as material. Only canines of the bear and incisors of the beaver show artificial modification. The bear teeth were broken into splinters or had the dentine chipped or broken off for some purpose, Plate XXI, figure 4. No finished artifacts made of these teeth were found. A few incisors of the beaver were split and a few others were made into tools (page 23).

Freshwater Shells. Clam shells were the only freshwater shells that were used as tools.

Marine Shell. A shell of a small ocean mollusc, which ranges from cape Hatteras to the West Indies, had been made into a bead.

Vegetal Materials

The use of wood for artifacts may be inferred. All the charcoal found here is of close-grained wood, probably pine.

That vegetal fibres were made into cords is suggested by what seem to be cord impressions on pottery.

THE SECURING OF FOOD

Implements used in securing animal food consist of points for arrows, chipped from stone, points made of bone and antler, a barbed antler point for a harpoon, and what may have been a bone point for a compound fish-hook. The presence of corn and a sunflower seed show that the soil was cultivated, but no artifacts were found which seem adapted for use as blades for hoes and spades. Such implements, therefore, were probably made of wood.

POINTS FOR ARROWS, CHIPPED FROM STONE

Thirty-three whole, and sixty-eight fragmentary, finished and unfinished points for arrows, were found. More than half of the fragmentary points have the tip missing, and about one-third are tips of broken points. A few have part of one of the edges broken off; in others part of the base is missing.

All but three of the points are chipped from grey chert, the rest from quartz and quartzite.

The points are leaf-shaped, triangular, pentagonal, stemmed, and notched. They are from $\frac{3}{4}$ -inch to $2\frac{1}{4}$ inches long. One of the imperfect triangular points was probably 3 inches long before it was broken.

Seven of the whole number of recognizable types of points are somewhat leaf-shaped. One of these is the rough asymmetrical point illustrated in Plate I, figure 1, which may also be a blank in process of specialization into a notched point. It is about nine-sixteenths inch thick. The point illustrated in figure 2, which may not have been used as a projectile point at all, retains most of the original fracture on the reverse side, making it almost plano-convex, and has three deep notches on the left edge.

Of the forty-eight triangular points, twenty-seven, or more than one-half, have the tips missing. Ten have the base and edges more or less straight, thirteen have convex edges, and twelve others have the edges incurved or concave. Twenty-five specimens have indented or concave bases. What seems to be an unfinished point of this triangular type, illustrated in figure 3, is a concavo-convex chip of chert with all the edges, on the side illustrated, trimmed off round. The tip is unfinished or possibly broken, and the base is indented as in some of the finished points. Probably, however, it was useless as a projectile point on account of the curvature. Figure 4 illustrates a thin point with convex edges and straight base. An irregularly shaped point, with the base considerably worn, is seen in figure 5. Figure 6 shows a well-chipped point with convex edges and indented base; another, illustrated in figure 7, is one of the largest whole points. One of the best points, illustrated in figure 8, is about three-sixteenths inch thick, with both edges incurved and the base deeply indented, producing two prominent barbs. Four other points have similarly incurving edges and concave bases.

The only specimen of a pentagonal shape is a large point, with the tip missing.

Three points are stemmed or shouldered, but not barbed. A crude, thick, and possibly unfinished specimen shown in figure 9 is a flake left nearly in its original condition, except that it has a crudely chipped stem. Its crude appearance suggests that it may be a reject, the work of chipping having proceeded far enough to show that it would perhaps be useless as an arrow point. Another stemmed point, seen in figure 10, is thick and slightly asymmetrical, with an attenuated, delicate tip and concave base.

Fourteen points are notched. Most of them appear to have been produced from triangular forms by notching the edges near the base. The specimen illustrated in figure 11 has shallow notches. The wide, shallow notches of the point, illustrated in figure 12, were made with a bevel in opposite directions, so that the cross-section of this part of the point is rhomboidal; two other points are notched similarly. The edges of the point illustrated in figure 13, which is almost as wide as long, are bevelled in opposite directions. Figure 14 shows a point where the bevelled edges extend only about half the length of the blade. Another point was found with the edges similarly bevelled in opposite directions.

MANUFACTURE OF STONE POINTS FOR ARROWS

That the manufacture of points for arrows was carried on here, is suggested by the abundance of chert chips. Most of the progressive steps in their manufacture can be illustrated by incomplete specimens, including chips and large pieces of chert with secondary working, and leaf-shaped forms showing a still further advance.

BONE POINT FOR ARROW

Only one of all the bone artifacts, found here, seems adapted for use as a point for an arrow. It is illustrated in Plate I, figure 15. This point is rhomboidal in cross-section near the tip. The broken basal end seems to have been wedge-shaped.

CONE-SHAPED ANTLER POINTS FOR ARROWS

Four more or less fragmentary cone-shaped points made from the tips of deer antlers were found. One of them, the small crude point illustrated in Plate I, figure 16, is whittled at the tip and has a cone-shaped socket hole about one-fourth inch deep. The slender point with the tip abruptly pointed, illustrated in figure 17, has a socket hole only about three-sixteenths inch deep. Another slender point, with part of the basal end cut and broken, is about one-fourth inch shorter than the last-mentioned specimen. A polished, pointed fragment of antler found here may be the tip of an arrow point.

The points from this site resemble some of those in the Museum's collections from Yarmouth, Malahide, and Bayham townships, Elgin county¹, in having shallow socket holes.

None of these antler points has been found at later Neutral sites in this county, but one was found at a site on lot 40, concession XII, North Dumfries township, Waterloo county.

MANUFACTURE OF CONE-SHAPED ANTLER POINTS FOR ARROWS

The manufacture of these points is illustrated by a few specimens, consisting of broken and cut pieces of antler and partly finished points. A few suitable tines had been separated from the rest of the antler, either by breaking, or by burning and breaking (*See under manufacturing processes*). Pieces of tines, from which the pointed tip had been removed by grooving and breaking, are illustrated in Plate XXI, figures 8, 11, and 12. Two nearly completed points were found. In one, illustrated in Plate I, figure 18, the socket hole has been commenced and the base concaved, possibly to form barbs; the tip is missing. Longitudinal striæ along the sides suggest the use of a scraper to reduce it into shape. The other unfinished point, which is warped and broken, bears similar striæ.

UNILATERALLY BARBED ANTLER POINT FOR HARPOON

Only one unilaterally barbed harpoon point was found, and that is unfinished. It is illustrated in Plate I, figure 20. The tip is missing, and the barb barely projects beyond the edge of the shaft. The under side is hollow, possibly through decay of the soft cancellated part of the antler. A deep groove has been made from above the axil of the barb to within half an inch of the base, about three-eighths inch away from and nearly parallel with the barbed edge; it was probably made in order to remove this part of the point and render it less clumsy. Marks of rubbing with, or on, some gritty stone may still be seen on the side shown in the illustration.

This is the most westerly known find of this type of harpoon point in southwestern Ontario².

FISH-HOOKS

No fish-hooks were found. The people here may have used compound hooks, made by fastening a pointed piece of bone to a wooden shank at

¹Cat. Nos. VIII-F-1283, VIII-F-7813, VIII-F-7822, and VIII-F-7858, National Museum of Canada.

²See map on page 34 of the writer's article on "Bone and Horn Harpoon Heads," Annual Archæological Report 1905, being part of Appendix to the Report of the Minister of Education, Ontario, Toronto, 1906.

an angle. The pectoral spine of a catfish, illustrated in Plate I, figure 19, may have served this purpose; the larger end is rubbed off at a slant, possibly to facilitate its attachment to the shank.

THE PREPARATION OF FOOD

Artifacts which were probably used in preparing food consist of a stone pestle, a stone muller, stone mortars, and pottery. Certain other objects such as sharp chert chips, some of the projectile points chipped from stone, clam shells, pitted hammerstones, and awl-like tools, described in other sections, may also have been utilized for this purpose.

HAMMERS FOR CRACKING NUTS AND BREAKING BONES

Some of the pitted hammerstones, described under "Tools Used by Men", no doubt sometimes served also as nut crackers, the pits in the sides probably resulting from continuous use. The hammers with peripheral abrasions were probably used to break up animal bones to get the marrow.

PESTLES

A fragment of a spatulate shale or sandstone pebble was possibly a small pestle for grinding or crushing seeds.

MULLERS

A fragment of small, smoothly worn gabbro boulder seems to have been used as a muller in grinding corn. Mullers occur abundantly at later Neutral sites in other parts of this country.

MORTARS

There are eleven fragments of what seem to have been small portable mortars, made of limestone, syenite, granite-gneiss, and hornblendite. Only one is perceptibly hollowed. Three, about an inch thick, seem to be parts of large flat slabs. One specimen is smooth on both sides.

At some of the later Neutral sites in this county and in Waterloo county mortars were worked directly from the surface of suitably large stationary boulders, but here no boulders occurred. Possibly mortars made of wood were mostly used.

STONES UPON WHICH FOOD WAS CRUSHED

A slab of shale, about $4\frac{1}{4}$ by $5\frac{3}{8}$ inches in diameter and about $1\frac{3}{8}$ inches thick, has one of the sides scored and pitted, probably from use as an anvil for the cracking of nuts and bones.

KNIVES

Sharp chips of chert and some points for arrows chipped from chert, such as are illustrated in Plate I, figures 1 and 7, were perhaps used as knives in skinning animals and cutting up the meat. They could have

been used either directly in the hand or set in a handle. Unmistakable cuts, apparently made with a knife when removing the flesh, can be seen on some of the animal bones.

Clam shells with sharp ventral margins also may have been used for cutting. We have the testimony of Henry Hudson that clam shells were so used by the Indians¹.

POTTERY

Although none of the earthenware pots was whole, nearly six thousand fragments were secured, about one thousand seven hundred of them being fragments of rims. It would be difficult to determine the exact number of pots without restoration, but, estimating from the rims, there would be about one thousand and seventy.

Most of the fragments were found above the layer of ashes, some being at a depth of $2\frac{1}{2}$ feet. The larger pieces were found below plough depth, which accounts for their size.

Judging from the size and shape of the fragments, the pots varied from a few, a little more than an inch in diameter, that held probably about half an ounce (Plate III, figure 5), to some 16 inches in diameter across the rim, with a capacity of several gallons (Plate IX, figure 6; Plate XII, figure 9; and Plate XIII, figures 3 and 4). The two partly restored pots, seen in Plates XV and XVI, probably represent the most usual sizes.

The crudeness of the very small vessels can only be the result of carelessness, unless the pots were the work of children, who undoubtedly in many cases amused themselves by copying in miniature the pots which the women were engaged in making.

Most of the pots seem to have been symmetrically proportioned, and several types can be recognized from the shapes of the fragments. The most common had a round-bottomed, globular body, slightly constricted neck, and a flaring mouth, mostly with a more or less incurved or rolled rim, in which we seem to see the nascent overhanging rim characteristic of most Iroquoian pottery (See Plate III, figures 12 and 14; Plate IV, figures 3, 7, 13, and 14; Plate V, figures 9, 10, 12, 13, and 15; Plate VI, figures 4, 6, and 9; Plate VII, figures 3, 5, 10, and 12; Plate VIII, figures 1 and 4; Plate IX, figures 1, 2, and 5 to 8; Plate X, figures 5 and 10; Plate XI, figures 1, 6, 9, and 10; Plate XII, figures 1, 7, and 9; Plate XIII, figures 2 to 4, 10, and 11; Plate XIV, figures 1, 2, 15, and 16; and Plate XV). Other pots, mostly small and crude, had round bottoms, with the walls rising nearly perpendicularly and either slightly incurved at the top (Plate III, figure 13), or else with the rim slightly everted. In a few others, as in the specimen illustrated in Plate XVI, the rim was smaller in circumference than the globular body and rose more or less vertically from the shoulder. Fragments of only three pots show features distinctly Iroquoian in character, the pitcher-like lip seen in Plate XIV, figure 18, and the fragments illustrated in Plate VIII, figure 8, and Plate IX, figure 3 (See also the cross-sections in figure 2 *l*, *m*, and *n*).

¹De Laet's *Discovery of the New Netherlands*, Collections of the New York Historical Society, Sec. ser., vol. I, p. 300 (1841), quoting Hudson's narrative.

The rims of about eighty different pots are carried up in rounded, peak-like projections (See Plate III, figures 12, 13, 15, and 16; Plate IV, figures 3, 10, and 13; Plate V, figures 4 and 5; Plate VI, figures 3, 4, 7, 9, and 11; Plate VII, figures 5, 10, and 11; Plate VIII, figure 8; Plate IX, figures 7 and 8; Plate X, figure 6; Plate XI, figure 6; Plate XII, figures 8 and 9; Plate XIII, figures 5, 6, and 11; and Plate XIV, figures 1, 2, 5, 11, 13, 17, 19, and 20). The usual number of projections is four, but one pot seems to have had as many as six. On another fragment the projections are about $1\frac{1}{2}$ inches apart and give the top of the rim a scalloped appearance. Even some of the smaller pots had these elevations.

With few exceptions the pots are round-mouthed. A projecting lip, like the one seen in Plate XIV, figure 18, gave the mouth an almond or egg shape, and the elevations on the rims of others, as those in Plate III, figure 15, and Plate VIII, figure 8, made it square or diamond-shaped. The mouth of the small pot, seen in Plate III, figure 12, is oval.

The thickness of the rims varies from three-sixteenths to about three-fourths inch, the majority being about three-eighths inch. Fragments of the bodies run from about one-eighth to seven-eighths inch in thickness, the majority being three-eighths.

Although the outer contour of the pots was even and symmetrical, the inner surface was mostly uneven; the walls varying in thickness in different parts of the same vessel. Thus, in many pots, the rim was thick, with the wall becoming thinner in the neck, thicker in the shoulder, then thinner in the body nearly to the bottom, where it again gradually became in many cases thicker to its maximum. Even the thickness of the rim in many cases varied in parts of the same pot.

That painstaking care was taken to produce shapely rims can be seen from the cross-sections in Figure 2, some of which are quite ornate. The easiest way to finish a rim was to round off the margin as in *a*, but only forty-two, or about 4 per cent of the pots, had margins rounded in this way, and they were mainly small, crude vessels. Six hundred and four, or about 56 per cent of the pots, had the rim margins squared off (*b*, *d*, *h*, *j*, *k*, and *l*). In two hundred and two, or about 11 per cent of the pots, the margins sloped either to the inside or outside of the rims, as in *c*, *g*, *q*, *r*, and *s*. Sixty pots, or about $5\frac{1}{2}$ per cent, had the margins finished off somewhat like those seen in *i* and *n*. A very few had the rim margin stepped, as in *o*; in a few others it was shouldered, as in *p*, *q*, *r*, and *s*. In some the inner angle of the rim is dilated, as shown in the cross-sections in *d* and *s*. The cross-section in *h* shows a rim with both angles dilated.

Very few fragments have smooth outside surfaces. Many retain the impressions, or vestiges of the impressions, left by the welding or mal-leating tools, referred to below. The inside surface of the pots is more commonly smooth than the outside. Only a few, however, are very smooth. The inside surface of many fragments is granular, and a few show this granular or rough surface on the outside also.

The colour of the inside and outside surfaces of the pots varies from light buff to dark reddish brown, and from light grey to black. In many cases it varies in a single pot, probably owing to unevenness of firing. The largest proportion of fragments are buff or red on the outside, the next

largest grey, and a very small proportion are black. Grey predominates as the inside colour, the next largest number being red, and black least numerous. More fragments have both inside and outside surfaces red than grey, and only a very small proportion black. Many fragments are of one colour on the inside and of another colour on the outside.

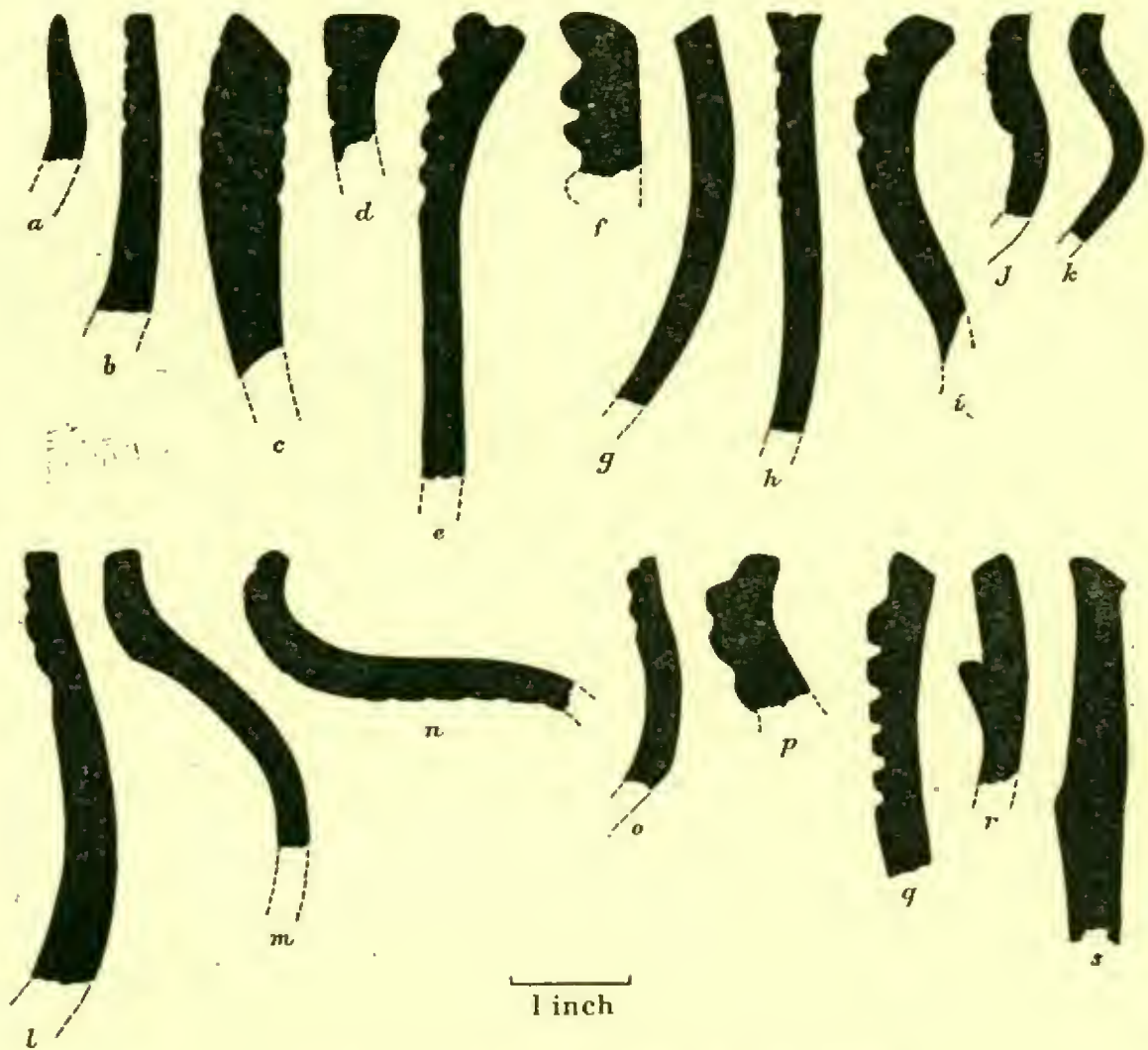


FIGURE 2. CROSS-SECTIONS OF POT RIMS

a, Cat. No. VIII-F-17122*a* (See Plate III, figure 3); *b*, Cat. No. VIII-F-17459*b* (See Plate XII, figure 5); *c*, Cat. No. VIII-F-16458*b*; *d*, Cat. No. VIII-F-17128*e*; *e*, Cat. No. VIII-F-16433*a*; *f*, Cat. No. VIII-F-17134*b*; *g*, Cat. No. VIII-F-16753*a*; *h*, Cat. No. VIII-F-17216*t* (See Plate X, figure 1); *i*, Cat. No. VIII-F-16458*j*; *j*, Cat. No. VIII-F-16466*a* (See Plate V, figure 9); *k*, Cat. No. VIII-F-15956*s* (See Plate VI, figure 6); *l*, Cat. No. VIII-F-16451*a* (See Plate IX, figure 3); *m*, Cat. No. VIII-F-16432*a* (See Plate VIII, figure 8); *n*, Cat. No. VIII-F-16474 (See Plate XIV, figure 18); *o*, Cat. No. VIII-F-17217*c*; *p*, Cat. No. VIII-F-15960*b*; *q*, Cat. No. VIII-F-16464*a*; *r*, Cat. No. VIII-F-16756*b* (See Plate V, figure 4); and *s*, Cat. No. VIII-F-16415*i* (See Plate V, figure 3).

One fragment bears traces of what seems to be red paint.

One thousand and forty, or nearly 98 per cent of the pots, had the rims decorated; two hundred and forty-seven, or about 23 per cent of them, being decorated on both inside and outside surfaces. Sixty-nine different pots, or about 6 per cent, have the same kind of decoration on both surfaces. Fifty-five different vessels, or a little more than 5 per cent, in addition to the decoration on the inside and outside of the rims, have ornamentation on top of the rim margin. Only one fragment bears decoration on the shoulder (Plate XII, figure 13).

Most of the pots were probably used exclusively for culinary purposes, but some of the larger vessels may have served for holding grain and other foods. That food was cooked in many of them is suggested by the accumulation of black encrusted matter on the inside surfaces of the rims, necks, and shoulders. According to Lafitau the Indians never removed the scum from their pots for fear of wasting the contents¹, and this may account for the presence of the encrustation. Some pots have the carbonaceous encrustation on the outside also.

MANUFACTURE OF POTTERY

The material used in the manufacture of pottery was either clay alone or clay tempered with crushed stone, mostly gneiss, in fewer cases diabase, diorite, and chert: in some pieces the tempering consists of coarse sand, and in one fragment apparently limestone. The structure of some nodules of baked clay, of which several were found, suggests that some of the ware was tempered with vegetal material. No shell tempering appears to have been used, unless the shell was so finely powdered as to be unrecognizable. The stone tempering is in many cases very coarse. A piece of stone in one pottery fragment is half an inch long and about as thick as a lead pencil. Excess of such coarse tempering naturally increased the friability of the ware. It was necessary to add tempering material to the too plastic clay, as otherwise, owing to the hasty and imperfect methods of firing necessarily adopted, much of the ware would burst into fragments early in the burning. A body composed of clay and crushed stone was far more open or porous, and contained less moisture, than one of clay alone; its porosity reduced the shrinkage in drying to a minimum, the steam arising from the clay readily escaping during the early stages of firing.

Most of the ware is tempered. The fragments of untempered ware all belong to very small, crude pots, but they seem just as firm and durable as any of those tempered with crushed stone. Very little tempering material, except fine particles of mica, shows on the surface.

The large number of split pieces indicates that the walls were not formed by coiling, because coiled ware seldom if ever splits. The edges of some fragments which do seem to suggest coiling are merely instances of luting. The laminated appearance of the broken edges, and the fact that so many of the pieces are split into as many as three distinct layers², would at first sight suggest that the walls of the pots had been built up by applying successive layers of clay. The splitting, however, as explained below, was probably due to imperfect firing rather than to the method of manufacture. The pots were probably modelled directly from a mass of clay, as were unquestionably some of the very small cup-like vessels.

There is no evidence that a slip was applied to the surface.

Rims were formed either by adding a piece with a lap weld to the thinned-out edge of the top of the unfinished vessel, or by folding the thinned

¹"Ils n'écumant jamais leur chaudière, de peur de rien perdre."—Mœurs des Sauvages Américains, Paris, vol. II, p. 91 (1724).

²Nine hundred and six, or about 11 per cent of the fragments, are split. A very small proportion of these are pieces of rims. This can be accounted for partly by the fact that there are more fragments of bodies than of rims, and partly that the rims were probably more evenly burned than the walls below. The cleavage is very seldom seen in the thinner pieces. The lines of cleavage are mostly between the dark coloured core and the outer, lighter coloured parts.

edge over on the outside, as seems to have been done on the fragments illustrated in Plate II, figures 7 and 8. Other pieces suggest that the thinned edge was folded over on the inside. In some cases, as on the fragment illustrated in Plate VIII, figure 8, a thin layer of clay was luted to the margin of the rim¹. Ornamentation in relief, like that on the fragment seen in Plate V, figure 4, was luted on.

After the walls and the rims were formed the inside was probably scraped and smoothed, possibly with the edges and sides of clam shells like that in Plate XX, figure 6. Stones, also, may have been used for smoothing the surface, for several smooth, oval, and spatulate stones were found that show signs of use, and would have served admirably for the purpose.

The exterior paste of most of the pots was welded or malleated either by rubbing, scarifying, or paddling. The object in roughening or scarifying may have been to overcome the crackling or crazing so often seen on smoothly finished surfaces. The operation of finishing and smoothing the pots seems to have brought the clay to the surface and concealed the coarser particles; the surface then shrank more than the interior and in some cases broke up into a network of fine cracks, something like a glaze which crazes when it does not fit the body. Possibly a pot with a rough surface, especially when the roughening also gave a certain decorative effect, was preferred to a crazed one. Some of the unscarified fragments show this crazed or crackled appearance.

The surface of a few pieces seems to have been roughened by rubbing with a wisp of dried grass.

Most of the fragments are scarified, giving the surface a ridged or corrugated appearance. The scratches or grooves are horizontal, oblique, or vertical, but mostly horizontal; and they vary in width from one-sixteenth to about one-fourth inch. The ragged edges and the rough appearance of the bottom of the grooves on some of the fragments, suggest that the surface had become partly dried before it was scarified. Scarified fragments are illustrated in Plate II, figures 1, 2, 3, and 9; Plate IV, figure 2; Plate VI, figures 10 and 11; Plate VII, figure 5; Plate IX, figures 1, 3, and 7; Plate X, figure 12; Plate XI, figures 1 and 6; Plate XII, figure 10; Plate XIII, figures 3, 6, and 11; and Plate XIV, figures 1 and 3. The scratches on many fragments cross each other at different angles and in many cases give either a cross-hatched or pseudo-textile effect (Plate II, figure 2).

The writer discovered by actual experiment that similar effects can be produced either with a notched or toothed tool, or with a paddle ribbed on the flat sides, and drawn along lengthwise. Most of the grooves found on the pottery here seem to have been produced with toothed or notched tools.

Pottery from later Neutral sites in the same county is not scarified. Parker found scarified pottery at the Erie site near Ripley, N.Y.,² and it has also been found in Wyoming valley, Pennsylvania.³

¹Part of it has scaled off in this specimen.

²Parker, A. C.: "Origin of the Iroquois as Suggested by Their Archaeology," *American Anthropologist*, vol. 18, p. 487 (1916).

³Wren, Christopher: "A Study of North Appalachian Indian Pottery," *Proceedings of the Wyoming Historical and Geological Society*, Wilkes-Barre, Pa., 1914, Plate 3.

Malleating with ribbed paddles produced effects resembling the scarifications, which can be distinguished from them only by the absence of longitudinal striæ in the bottom of the grooves, and by the more uniform widths of the grooves and ridges. On many fragments the grooves cross each other (Plate II, figure 3). In some cases the general effect of this kind of malleating is rather patchy.

Chequered markings, probably produced with paddles with a griddle-like surface, occur on many fragments, and in some cases cover nearly the entire pot. In some the depressions are more roundish than square. Chequered surface markings can be seen on the fragments illustrated in Plate II, figure 6; Plate XII, figure 9; and on the partly restored pot in Plate XVI. Pottery with chequered markings has a wide distribution, being found as far south as Florida.

Comparatively few pieces show impressions made with cord-wound malleating tools, but a few pots seem to have been almost entirely covered with these impressions. Some of the fragments are shown in Plate II, figure 4; Plate VI, figure 1; Plate VII, figure 6; and Plate XV.

None of the pottery from later Neutral sites shows textile texturing, but it occurs on Iroquoian pottery elsewhere in Ontario, and has a wide distribution in eastern North America.

A few pieces are both scarified and chequered, and a few others are both chequered and cord-marked.

Some impressions do not seem to have been made either by scarifying or with cord-wound tools. Their appearance rather suggests that the malleating tools consisted of paddles wound either with grass leaves, grass stems, thin buckskin thongs, or other pliable, but not twisted, materials.

On many pots most of the marks left by the malleating tools have been effaced by subsequent smoothing.

A few fragments, some of which are seen in Plate II, figure 5, and Plate III, figures 1, 9, and 14, bear narrow, irregularly spaced, linear depressions, which were perhaps made accidentally with the corners of a malleating paddle.

As stated above, most of the pottery was decorated. In dealing with decoration here the writer will confine himself to the purely technological aspect of the subject and leave the æsthetic side to be discussed in the section on Decorative Art.

The following processes seem to have been employed in pottery decoration: modelling, punching, impressing, stamping, trailing, incising, and embossing. Special tools need be used in only a few of these operations; the kinds are suggested by the impressions and markings.

Modelling to produce æsthetic effects can be seen on many of the pots, especially on the piece of a rim with ornamentation in relief, illustrated in Plate V, figure 4.

Punching round, oval, half round, triangular, and square, more or less deep, depressions was done with variously shaped tools. Round and oval depressions, made with finely pointed or obtusely pointed sticks or bones, probably some of the tools considered as awls, are seen on the fragments illustrated in Plate III, figures 5, 11, and 15; Plate XIII, figure 8; and Plate XVII, figure 20. The round impressions on the fragments seen in Plate

XIV, figures 19 and 20, were probably made with a tool which was round in cross-section and cut squarely off at one end. Other round and oval depressions, apparently made with an antler tine punch, are seen on the fragments shown in Plate XIV, figure 17, and Plate XVIII, figures 4 and 6. Depressions, probably produced with half-round tools, are seen on the fragment illustrated in Plate XI, figure 2. The triangular depressions seen on the fragments in Plate IV, figure 5, and Plate XIV, figure 10, and the square ones on the fragment in Plate IV, figure 6, were probably made with a tool which was either triangular or square in cross-section.

Impressing was done with the finger nails, cords, cord-wound, sinew-wound, or grass-wound twigs, crude makeshift tools, and what seem to have been special tools. The finger and thumb nails seem to have been used to make impressions like those seen on the fragments illustrated in Plate III, figures 7 and 8; Plate V, figure 7; Plate VI, figures 5, 6, 7, 9, and 10; Plate VII, figures 12 and 13; Plate VIII, figure 3; Plate X, figure 8; Plate XI, figure 7; Plate XII, figures 1, 6, 8, and 11; Plate XIII, figure 1; Plate XIV, figure 13; and Plate XVII, figure 16. Two fragments bear what seem to be impressed lines made by pressing a cord lengthwise into the moist clay. Impressions apparently made with cord-wound twigs are seen on the fragments illustrated in Plate III, figure 12; Plate IV, figures 2, 3, and 4; Plate X, figure 11; and probably Plate XIV, figure 19. Others (Plate IV, figure 9) seem to have been made with twigs similarly wound, either with sinew or grass. Crude impressions apparently made with the rough end of a stick, appear on the fragments illustrated in Plate III, figures 1, 2, 3, 14, and 15; Plate IV, figure 1; Plate VIII, figures 10 and 11; Plate X, figure 12; Plate XI, figure 6; Plate XII, figure 5; Plate XIII, figure 2; and Plate XVII, figures 12, 17, and 18. It is difficult to determine what kind of tool was used to make the oblique impressions on the fragments seen in Plate IV, figure 13, and those in the two upper rows on the fragment in Plate V, figure 12. Large, triangular impressions (Plate VI, figure 2, and Plate XVIII, figure 5) were apparently made by pressing the end of a three or four cornered stick into the clay. The notches on the outer and inner angles of the rims seem to have been produced by pressing similar tools transversely across the angles (*See* Plate V, figure 2). Other impressions, like those seen on the fragments illustrated in Plate IV, figure 6, were probably produced with a piece of wood or an implement either square or oblong in cross-section. Almond and kidney-shaped impressions, like those seen in Plate V, figures 13 and 15, Plate XI, figures 4 and 9, Plate XII, figures 3, 5, and 9, and Plate XIII, figure 4, were probably made with a rounded or blunt point. Narrow, semicircular impressions, which look as if they had been produced with a gouge-like tool, are seen on the fragment illustrated in Plate IV, figure 14, and on the margin of another rim fragment. Separate impressions, closely following each other and in many cases merging into one another, giving the effect of a broken line, seem to have been made by drawing some of the above-mentioned tools with obtuse points and those with the ends cut squarely off at the ends, with a jerky motion across the surface. These lines in some cases look like cord impressions. At first sight it would appear as if this method of making lines was due to the potter's inability to draw a continuous line freehand. Many of them, however, appear to have been so

made solely for decorative effect. For want of a better descriptive term, and also to distinguish them from the trailed lines described below, they will be referred to as interrupted lines. Examples are seen in Plate III, figure 13; Plate V, figures 9, 11, 13, and 14; Plate VIII, figures 7 and 12; Plate IX, figures 1, 3, 6, and 7; Plate X, figure 12; Plate XI, figures 1 to 3, 6, 7, and 10; Plate XII, figures 5 to 9; Plate XIII, figures 2, 3, 5, 6, and 11; Plate XIV, figures 3, 5, 6, 11, 15, 17, and 18; Plate XV; Plate XVI; Plate XVII, figure 13; and Plate XVIII, figure 5.

The writer has not seen later Neutral pottery from elsewhere in this county and Waterloo county, with this kind of line, but lines produced apparently in a similar way occur on pottery from Wyoming valley, Pennsylvania.¹

Stamping should perhaps not be differentiated from impressing. However, the writer will consider separately those impressions which were probably produced by using the tool end-on like a stamp. The tools used in producing most of the short, vertical, oblique, and horizontal impressions, seem to have consisted of thin splinters of wood cut squarely off at the stamping end, which was either left in a rough state, or smoothed, or notched. Impressions apparently made with the rough end of such a splinter are seen on the fragments illustrated in Plate III, figure 4; Plate IV, figure 12; Plate V, figures 1 and 11; Plate VI, figures 3 and 4; Plate VIII, figures 1, 2, and 8; Plate IX, figures 2, 7, and 8; Plate X, figure 5; Plate XI, figure 10; Plate XII, figure 10; Plate XIII, figures 5 and 6; and Plate XVII, figures 19 and 20. Impressions apparently made with the smoothed end of a splinter, some of which, however, could also have been produced with the finger nails, are seen on the pieces illustrated in Plate V, figures, 2, 5, 6, 10, and 14; Plate VII, figures 1, 4, and 6 to 10; Plate X, figures 3, 7, and 10; Plate XI, figure 5; Plate XII, figures 2, 7, and 13; Plate XIV, figures 1, 5, and 12; and Plate XVII, figures 5 to 7. Impressions which seem to have been made with the notched end of a splinter are seen on the fragments illustrated in Plate V, figures 3 and 4; they in many cases resemble those made with a roulette. The short, curved impressions, seen on some of the fragments, and the peculiar impressions on the fragments illustrated in Plate IV, figures 10 and 11², and Plate X, figure 9, may also have been made with a stamp.

Circles were made by stamping with the ends of small tubes, perhaps some of the smaller bone tubes considered as beads (*See* Plate IV, figure 8; Plate V, figure 15; and Plate XIV, figure 18). Similar impressions, apparently made with hollow grass stems³, which should perhaps be also considered as stamped, are seen on the fragments illustrated in Plate XI, figure 4; Plate XII, figure 10; and Plate XIV, figure 20. The unevenly severed fibres at the end of the stem gave a peculiar, broken effect to the impressions on the fragment shown in Plate XI, figure 4.

Trailing or drawing the rounded point of a tool, possibly some of the blunt awls, across the plastic surface, left smooth, grooved lines, such as are seen on the fragments illustrated in Plate III, figures 10 and 16; Plate IX, figures 4, 5, and 8; Plate X, figures 1 to 10; Plate XI, figures 5, 8,

¹See Wren, *op. cit.*, Plate 17, figures 2, 5, and 7, and Plate 21, figures 6, 7, and 11.

²Impressions resembling those seen in figure 11, occur on a piece of pottery from Wyoming valley, Pennsylvania (*See* Wren, *op. cit.*, Plate 22 [fig. 11]).

³Similar impressions are to be seen on a fragment of an earthenware pipe, from this site (Cat. No. VIII-F-17096e).

and 9; Plate XII, figures 2, 4, and 11; Plate XIII, figures 1, 4, 7, and 8; and Plate XIV, figures 1, 2, 10, 14, 16, and 20. Both trailed and interrupted lines are seen on the fragment illustrated in Plate IX, figure 1. None of the bands of trailed lines appears to have been made by a single operation with a notched or grooved implement, but each line was made singly, the depth of the resulting groove depending on the amount of pressure exerted. The grooves are unusually deep on the fragment seen in Plate X, figure 1. Trailed and interrupted lines are about equally common. Some of the short lines or strokes, like those seen on the fragments illustrated in Plate VII, figures 9 and 11, and Plate IX, figures 5 and 6, and on the partly restored pot seen in Plate XVI, may have been drawn into the clay with a blunt point.

Incising differs from trailing only in this respect, that a thin, knife-like blade, instead of a blunt point, was probably used to produce the lines. Such apparently incised lines are seen on the fragments illustrated in Plate XII, figures 1 and 3; Plate XIII, figure 9; and Plate XIV, figures 4, 7, and 8.

Embossing to produce nodes or bosses on the outside of the rims by punching holes from the inside, while the walls were still plastic, may be seen on fragments of about eighty-five different pots, some of which are illustrated in Plate IV, figure 8; Plate V, figures 1, and 8 to 15; Plate VII, figure 9; Plate VIII, figure 12; Plate XII, figure 4; Plate XIV, figure 13; and Plate XV.

Wren's suggestion that the deep indentations, producing the nodes, "which are the farthest removed from the direct action of the heat, may have been made so that the heat could more fully penetrate the shell at these parts, and produce a more even expansion of the shell,"¹ does not seem to be a satisfactory explanation. The indentations, or rather the nodes produced by them, seem to have been wholly decorative. The holes are irregular, round, oval, oblong, triangular, square, rectangular, or kidney shaped; a few are punched at an angle. The hole on one fragment (Plate XIV, figure 8) went entirely through the wall. The irregular, and some of the angular, holes were produced with rough-ended sticks. Of the round holes some were made with rounded, pointed, or squarely cut ends of smoothly finished tools, others with tools having a hollow in the end. These holes are from about $\frac{1}{8}$ to about $\frac{3}{8}$ inch in diameter, but one of the oblong depressions is about $\frac{5}{8}$ inch long. The holes and the resulting bosses are nearly equidistant on all the pots and from $\frac{1}{4}$ inch to about 2 inches below the rim. They are close together on the fragments illustrated in Plate V, figures 9 and 11 to 15. In some instances the bulge on the outside is scarcely perceptible (Plate V, figure 1, and Plate VIII, figure 12); in others, as in the specimen shown in Plate V, figure 8, the node projects more than $\frac{1}{8}$ inch beyond the side of the rim.

The holes had the disadvantage of retaining the food that was cooked in the vessels and some of them are filled with the carbonaceous matter that encrusts the inside surface of many of the pots.

No pottery with bosses has been found at later Neutral sites in this county and in Waterloo county. Stray specimens come from elsewhere in Ontario, some from Iroquoian sites, and pottery with this kind of decoration has a wide distribution in the United States.

¹Op cit., p. 35.

On the whole the potters seem to have been careful workers, in spite of the difficulties they encountered in modelling their coarsely tempered clay. In many cases they succeeded in getting the bands of decoration of uniform width and in making the lines and other impressions uniformly equidistant. The few curved lines, however, are poorly executed, the potters seeming to have lacked the confidence of the better trained artists, who made the bold, curved lines seen on ware from the southern United States.

No evidence of the methods of firing or baking was discovered, although the black interiors (where they are not due to the carbonized remains of food or to some process designed to render the vessels more impervious) suggest that the pots were baked from the inside by inverting them over a small fire. The thin-walled pots were naturally more thoroughly burnt than those with thick walls; but, although the thin ware is harder and less friable than the thick ware, it is more fragile, and consequently broke into much smaller fragments. The mottled appearance of some pieces suggest that the pots were unevenly burnt. The broken edges of many of the thin, well-burnt pieces are of a nearly uniform dark colour. In some cases only the colour of the surface was changed by the firing, a few fragments with greyish outside and inside surfaces, for instance, presenting fractured edges of red instead of grey, as one would expect.

The black core, so commonly seen in the pottery found here, is due to the lack of oxidation, which almost invariably occurs when the firing is done too quickly, not to the walls being built up with layers of different raw materials. The surfaces became hard before the interior of the wall was oxidized, so that the iron content in the clay remained in a reduced condition, with the black colour characteristic of imperfectly oxidized clay wares. The reducing action in the interior of the wall in many cases caused a line of cleavage between the well oxidized outer parts and the reduced core, so that the inner black layer appears to be made of a different raw material from that of the outer layers. Such imperfectly fired pieces naturally were in many cases split by frost and other agencies.

There is no doubt that a large proportion of the pottery was broken during the firing. Other pots seem to have been broken in the "green" state, before firing or were only partly fired. This is suggested by the fact that some pieces, especially some with red interiors, become quite soft and sticky when soaked in water.

Briefly summarized, the differences between the ware from this site and from sites in the same county and in Waterloo county¹ known to be later Neutral, are as follows: the pottery here consists mostly of simple forms, generally inferior in technique to that of the later Neutral pottery, just as much of the latter is inferior to most of the ware found at Iroquoian sites in eastern Ontario; it splits more commonly than pottery of the later Neutrals; much of it is scarified and bears chequered or other paddle markings and textile texturing, which the writer has not seen on later Neutral pottery; there is more decoration consisting of stamped and crude impressions; the horizontal lines on about half of the pottery are interrupted rather than trailed; cord impressed lines, although rare here, are not seen

¹In comparing the pottery the writer is confining himself to the ware of this limited area because it is a region with which he is most familiar.

on later Neutral pottery and very seldom on Iroquoian ware elsewhere; the embossed nodes and the large ornamental depressions on the inside of the rims also do not occur on later Neutral pottery.

The correspondences, on the other hand, between the Uren ware and the later Neutral ware, are as follows: the pots are round bottomed; practically the same kind of coarse tempering ingredients are used; a few pieces have rims like the overhanging rims typical of later Neutral and Iroquoian ware generally; both have peak-like elevations on the rims; and both have trailed lines.

The divergences from Algonkian ware, in Ontario generally, are as follows: the ware here has a few overhanging, cornice-like rims; pitcher-like lips; peak-like elevations on the rims; is scarified on the outside instead of the inside surface; bears ribbed paddle marking; many lines are interrupted; and embossed nodes occur on the outside instead of the inside of the rims.

The correspondences with Algonkian ware are: simplicity of form; inferior technique; chequered paddle marking; textile texturing; and decoration with cord-wound twigs.

SPOONS

Some of the spoons used by the people of this site may have been made of wood. It is probable that half shells of freshwater clams were used in some cases. The shells described on page 42 have the ventral margin worn down, perhaps as a result of scraping against the gritty inside surface of the pots containing the food.

FORKS

Long, pointed bone specimens, like the one illustrated in Plate XX, figure 16, where it is described as an awl, may have served as forks for conveying food to the mouth or for removing hot pieces of meat from the cooking pots. The modern Iroquois use a specially made wooden stick for the purpose.¹

TOOLS USED BY MEN

Tools which were probably used by men comprise an ungrooved stone ax, stone adze blades, hammerstones, tools made of beaver teeth, drill points, flaking tools, scraper-like tools, and whetstones.

UNGROOVED AX MADE OF STONE

Only one ungrooved stone ax² was found, a thick wedge-shaped specimen, nearly symmetrical as seen from the narrow sides, made of hornblende schist.

¹See Waugh, F. W.: "Iroquois Foods and Food Preparation," Geol. Surv., Canada, Mem. 86, fig. 1 (1916), Ottawa.

²Instead of the usual "celt" the writer is using the term suggested by Willoughby. See his article on "The Adze and the Ungrooved Axe of the New England Indians," American Anthropologist, N.S., vol. IX, pp. 296-306.

ADZE BLADES MADE OF STONE

Only one of the thirty-four adze blades found here, is whole. Most of the blades are made of hornblende schist, a few of basalt, impure arkose, slate, diabase, and granite-gneiss. All are flat-backed and asymmetric as viewed from the narrow sides. They vary in length from 2 to $4\frac{5}{8}$ inches.

Considering that only one of the blades is whole, they were evidently subjected to considerable rough usage.

Plate XIX, figures 6 to 9, illustrates the different kinds found here.

The smallest specimen, 2 inches long, about 1 inch wide, and about $\frac{1}{4}$ -inch thick, is made from a thin splinter of hornblende schist, with just enough rubbing done on it to produce a cutting edge. Another crude blade of the same material is illustrated in Plate XIX, figure 6; part of the sharp cutting edge is missing, and the attenuated poll suggests that that end was possibly thrust into a hole in some sort of handle. Figure 7 shows a small, smoothly finished blade also made of hornblende schist and with part of the cutting edge missing. Figure 8 shows another small blade from the same kind of stone, rectangular in cross-section; the poll is left in the original unworked condition of the stone. The blade illustrated in figure 9, of basalt, is the only finished specimen found here, and the largest.

Judging from the number of specimens found on the surface, and at Neutral sites elsewhere in this county and in Waterloo county, adze blades were just as numerous here as at later Neutral sites.

MANUFACTURE OF STONE AXES AND ADZES

Thirteen pieces of diabase, basalt, and hornblende schist appear to be in process of manufacture into either axes or adzes. Most of the specimens are fragmentary. Three pieces are incipient forms without any suggestion of a cutting edge, and five others are similar forms with the cutting edge either partly or wholly chipped into shape. Four specimens show signs of pecking or bruising. One small piece, of hornblende schist, about half an inch thick, has flattened sides, both more or less smoothed, and nearly straight, parallel edges. The cutting edge has been commenced by rubbing one of the ends. Another specimen consists of a massive form, chipped from diabase, 9 inches long, $4\frac{1}{2}$ wide, and $2\frac{1}{4}$ thick.

Six of the broken ax and adze blades are in process of being reworked either into other implements of the same kind or for some other use. All of them have been rechipped, and some show pecking and grinding. One specimen has both edges deeply grooved by pecking.

CHIPPING TOOLS

Six, short, blunt sections of antler, with rounded or conoid ends, found here, were possibly used as chipping punches for arrows and other artifacts. Plate XIX, figures 1 to 4, shows the different kinds and sizes. The specimen illustrated in figure 1 is a tine broken from a deer antler, with the broken edge rounded off by rubbing; it is scarred for nearly half its length, possibly from use in flaking by pressure, and there is a scarred area near the tip, on the side shown, which may be the result of similar use. The specimen seen in figure 2 is made from a section of a tine. The smaller end is conoid and shows signs of use. The punch was possibly held so that the rounded end

rested on the edge of the object being chipped. The straight end, which seems to show the effects of such treatment, probably received the blows of the hammer. Only the larger end of the specimen, illustrated in figure 3, shows signs of use, this being perhaps the end that was hit with the hammer. The specimen is slightly polished, and has the cancellated structure exposed on the reverse side. The shoulder seen near the broader end is natural. Another specimen is in a poor state of preservation. Figure 4 illustrates a specimen which is more or less rectangular in cross-section.

Specimens similar to these have been found at later Neutral sites in the same county¹ and in Waterloo² and Elgin³ counties. Mills found some of the same type at the Baum village site in Ohio⁴.

HAMMERSTONES

Three whole and eight fragmentary hammerstones that were found consist either of chunks of chert, or pebbles of slate, basalt, diorite, sandstone, shale, or limestone. One chunk of chert has been reduced to a more or less oval shape by continuous use, possibly as a chipping or pecking hammer. The other hammerstones consist of large oval and pear-shaped pebbles, with abrasions on the sides and periphery. Three fragments of spatulate pebbles, a broken stone adze or ax, and four whetstones bear similar evidences of use as hammers.

PITTED HAMMERSTONES

Six other hammerstones are mostly oval or round pebbles, with the sides flattened and either one or both pitted. Three have pits on one side only, the rest are pitted on both sides; but none of them has the smoothly rounded pits seen on some specimens from later Neutral sites. One of the hammers is an irregularly shaped piece of fossil coral (*Favosites* sp.), with a deep, irregular pit on one side. The specimen, illustrated in Plate XIX, figure 16, has irregular pits on both sides and the entire periphery battered. Two other specimens are of the same shape.

Pitted hammerstones were as common here as at later Neutral sites in this county and in Waterloo county.

KNIVES

No artifacts which can be definitely classed as knives were found. It is reasonable to suppose that some of the chert chips with sharp edges were used in cutting wood, bone, and antler, although none bears evidence of such use. Some of the points for arrows, especially those seen in Plate I, figures 1, 4, and 7, may have been used as knives.

TOOLS MADE OF BEAVER TEETH

Three tools made of the incisor teeth of the beaver were discovered, but it is difficult to determine their exact uses. One is split in half length-

¹From village site on lot 10, con. VIII, Bleaheim tp., about 22 miles north of this site; Cat. No. 24146, Provincial Museum, Toronto.

²From village site on lot 11, con. II, block A, Wilmot tp.; Cat. No. 24985, Provincial Museum, Toronto.

³Cat. Nos. VIII-F-859, VIII-F-1282, VIII-F-7816, VIII-F-7819, VIII-F-7823, and VIII-F-7825, National Museum of Canada.

⁴Mills, William C.: "Exploration of the Baum Village Site", Reprint from the Ohio Archæological and Historical Quarterly, vol. XV, Columbus, p. 65 and fig. 53 (1906).

wise and has the natural slant of the cutting part of the tooth accentuated by rubbing. The cutting end of another is slightly rubbed also. Such specimens, if set in a handle, could have been used as chisels. A split fragment of a tooth, which has the broken part smoothed, producing a fairly sharp edge on the incurved side, may have been a knife blade.

POINTS FOR DRILLS CHIPPED FROM STONE

Twenty-seven specimens chipped from chert were probably used as points for drills. Five are more or less fragmentary. Thirteen of the whole points are suitably shaped, but crude and irregular chert chips, such as are seen in Plate XIX, figures 10, 11, and 14. Three are somewhat triangular, three lanceolate (*See* figure 13) and three others were originally notched points for arrows (*See* figure 15).

The tips of many of these points are worn from use. The broad, not the more attenuated, end was used in the case of two that are lanceolate in shape. A specimen found at the Bertrand farm site also has the broad end worn. One point is worn at both ends. The tip of another is discoloured as if it had been frequently dipped in oil or some other substance while in use.

Some of the points, especially those showing wear at both ends and those with broad bases (figures 10 and 14), were probably used in the hand gimlet fashion; others (figures 11, 13, and 15), may have been fastened to a handle or a drill shaft. The discoloured appearance of the smaller end of the point in figure 13 suggests that it may have been held in place with some glue-like or gummy substance.

The fragmentary drill with a broad point, shown in figure 12, was probably used to drill the bowl cavity of stone pipes. The missing upper part may have been pointed for insertion in a drill shaft.

Points for drills were as numerous here as at later Neutral sites in this county and in Waterloo county.

SCRAPERS FOR WOOD-WORKING, ETC.

Many chert chips with one or more edges trimmed to a bevel, may have been used as scrapers in working wood, bone, and antler. That they had a purpose is evidenced by their carefully finished appearance; the smaller specimens, especially, suggest some specific use. They are mostly concavo-convex, oval and oblong objects, with the edges delicately chipped off at a slant. The smallest specimen is $\frac{1}{16}$ inch long, $\frac{5}{16}$ wide, and $\frac{1}{8}$ thick; the largest $1\frac{1}{8}$ inches long, $\frac{7}{16}$ wide, and $\frac{1}{8}$ thick.

WHETSTONES

One hundred and eighteen whetstones were found, many of them fragmentary. The majority are made from finely grained pieces of shale and sandstone, but a few are of limestone and one of granite gneiss. Many are angular pieces with broken edges; others retain the waterworn edge of the pebble from which they are derived. Only one specimen seems to have its edges rubbed into shape. About one-third of all the specimens have both sides smoothed from use, a few others are deeply hollowed on one side, and one is worn to a deep hollow on both sides. They vary in thickness from about $\frac{1}{4}$ inch to about $1\frac{3}{8}$ inches.

Four specimens, judging from the deep abrasions on the sides, were in some cases used as hammers.

The objects described on page 41, one of which is illustrated in Plate XIX, figure 5, may have been whetstones, the incurved edges perhaps resulting from continuous use.

ARROWSHAFT SMOOTHERS OR SCRAPERS

A few chert chips with deep concave notches may have been used as arrowshaft scrapers. They resemble some specimens figured by Wilson¹.

TOOLS USED BY WOMEN

The following tools used by women were found: scrapers chipped from stone, shell scrapers, beaming tools or drawshave scrapers made of bone, pointed bone awl-like tools, a bone needle-like tool, and some possible cord or sinew smoothers.

SCRAPERS CHIPPED FROM CHERT

Thirty-nine whole and eleven fragmentary specimens were probably intended for use as scrapers in tanning hides. Plate XX, figures 1 to 5, shows the different types. Most of them are made from plano-convex chert chips, retaining the original fractured surface on the flat sides. Others are concavo-convex. The lower side of two blades, one of which is illustrated in figure 4, is convex. Thirteen specimens are irregularly shaped and eleven have the upper end narrower than the scraping edge, both edges converging nearly to a point on six specimens (See figure 4). One specimen has a scraping edge at each end (figure 5). Three-fourths of the blades show no signs of wear on the scraping edge. An irregularly shaped specimen, with concave back, is seen in figure 1. The blade shown in figure 2 has the edges above the scraping end deeply incurved, possibly to facilitate fastening to a handle. The upper end of the plano-convex blade, seen in figure 3, is wedge-shaped.

Scrapers were as plentiful here as at later Neutral sites in this county and in Waterloo county.

MANUFACTURE OF SCRAPER BLADES

Nine specimens, found here, are apparently either in process of manufacture into scraper blades or are rejects. One is a thick, leaf-shaped form, much larger than any of the completed blades; another seems to be a reject, a misdirected blow in the course of the chipping having rendered further work on it useless.

SCRAPERS MADE OF SHELLS

Four half shells of freshwater clams, with the ventral margin worn, seem to have been used as scrapers, perhaps for smoothing the inner and outer surfaces of pottery vessels. One is a whole right valve of *Lampsilis*

¹Wilson, Dr. Thomas: "Arrowpoints, Spearheads, and Knives of Prehistoric Times," Report of the U.S. National Museum, 1897, pt. 1, Washington, figs. 2 and 6, Plate 26 (1899).

luteolus; another is a right valve, probably of the same species of clam; a third is too fragmentary to identify. The one seen in Plate XX, figure 6, a right valve of either *L. luteolus* or *L. radiatus*, has part of the anterior and the whole of the ventral edge considerably worn.

DRAW-SHAVE SCRAPERS OR BEAMING TOOLS MADE OF BONE

Four fragments seem to have been beaming tools, used in tanning. In one of them, made from the left metatarsus of a deer, the back of the bone had become so deeply worn and thin at the middle that it was easily broken.

So far as is known no artifacts of this kind have previously been found in Ontario. The nearest records we have are from New York¹ and Ohio².

AWL-LIKE IMPLEMENTS MADE OF BONE

Of one hundred and twenty-four pointed, bone, awl-like tools more than half are broken. The majority were probably used as awls. The different kinds and sizes are shown in Plate XX, figures 7 to 22.

Excepting pottery fragments, bone awls were more numerous than any other kind of artifact.

One specimen is made of a fish bone, nine from bird bones; eighty-five are probably made of deer bones, principally ulnæ, splint bones, tibiæ, metacarpals, and metatarsals. Even pieces of the basal portion of deer jaws were fashioned into awls. The remaining specimens are made from bones of the bear, raccoon, lynx, and undetermined species of animals.

Long burial has not affected the smooth surfaces of most of the specimens, a few of which are polished.

Thirty-five specimens are mere splinters rubbed to a point at the smallest end (See figure 13). Eighty-four retain part of the marrow hollow on one side. Twelve are smoothly finished, thus obliterating all the distinguishing features of the bones from which they are derived; and of these eight are oval in cross-section and four round. Thirteen awls retain traces of the longitudinal cutting, on one or both edges and on the sides. Most of the awls are acutely pointed, but none double-pointed. They vary in length from $1\frac{3}{8}$ to $6\frac{3}{8}$ inches. Six specimens have the butts carved or notched; some probably for the attachment of a cord, others for ornament.

The dorsal spine of a fish, probably a small catfish, illustrated in figure 7, has the sharpness of the point accentuated by rubbing. The awl seen in figure 8 is made from a fibula, probably of a lynx. A specimen made from the same kind of bone and retaining one of the joints, was found by Mr. Uren. One awl is a sharpened radius of a bird; another, with the tip missing, is from the ulna of a bald eagle. Figure 9 illustrates one of two specimens derived from tibio-tarsi of two different species of birds. The awl illustrated in figure 10 is made from the distal third of the right tarso-metatarsus of a wild turkey. A deep V-shaped longitudinal cut can be

¹See Beauchamp: "Horn and Bone Implements of the New York Indians," New York State Mus., Bull. 50, Albany, 1902, fig. 331 and description on page 325; and Parker, A. C.: "A Prehistoric Iroquoian Site," Res. and Trans. of the New York State Archæological Association, Morgan Chap., Rochester, N.Y., 1918, p. 35, and Fig. 11, 1.

²Mills, op. cit., fig. 37.

seen on each side in line with the tibial artery foramen and the deep notch separating the outer from the middle trochlear process. Figure 11 shows one of three awls derived from the little bones known as splint bones, which support the accessory hooflets of the deer. Of three specimens from the proximal half of deer ulnæ, one, figure 12, from the left ulna, has most of the olecranon process of the bone removed and the distal end sharpened; the other two specimens have the tips missing, and the larger end of one is polished, possibly from long use. A fourth specimen made from this kind of bone was found by Mr. Uren. Two awls are made from the distal ends of deer ulnæ. The crude specimen seen in figure 14 is derived from the distal end of the left tibia of a deer. The large awl or punch, with the tip missing, illustrated in figure 15, is the sharpened left ulna of a bear, and a fragment of another specimen is derived, apparently, from the same kind of bone. One of the largest perfect awls, illustrated in figure 16, is made from the front part of the metatarsus of a deer; the broken edges have not been smoothed and the proximal joint remains. Another specimen, derived from the same kind of bone, is illustrated in figure 17. It was fashioned from a piece cut from the stock bone by longitudinal grooving and breaking; the tip is obtusely pointed. The large, wide awl, seen in figure 18, seems to be derived from part of the back wall of a deer tibia; the presence of a number of deep transverse scars on both sides, near the tip, suggests that it was perhaps used as a weaving tool to press down the weft of fabrics. A smaller specimen, with the tip missing, is similarly but more deeply abraded. A smoothly finished specimen, somewhat oval in cross-section, illustrated in figure 19, is ornamented with incised lines and notches. The specimen illustrated in figure 20 has the butt grooved, possibly for the attachment of a cord, and is nearly round in cross-section. The long specimen, seen in figure 21, seems to have been made from the thin outer wall of a rib and retains the cancellated structure on one side; the edges of the expanded base are ornamented with shallow notches. A short, twisted specimen, with deep encircling grooves near the butt, is shown in figure 22.

Bone awls were as numerous here as at later Neutral sites in other parts of Oxford county and in Waterloo county.

PERFORATED NEEDLE-LIKE TOOL MADE OF BONE

A fragmentary bone needle-like artifact, illustrated in Plate XX, figure 23, may have been used either in the making of snowshoes or the weaving of mats and coarse fabrics. The cancellous part of the bone remains on one side, suggesting its derivation from the outer wall of a rib. It is about one-sixteenth inch thick and about one-fourth inch wide. The sides near the tip are polished, possibly from use. The eye seems to have been oblong and gouged out rather than drilled. The edge of the remaining part of the hole shows no signs of wear.

SPINDLE-WHORLS

The perforated pottery disks, illustrated in Plate XXIII, figures 3 and 4, and described as being used, perhaps, in games, do not seem suitable for use as spindle-whorls, because the hole in the smaller one is not in the centre and the hole in the other is drilled at a slant.

CORD OR SINEW SMOOTHERS OF STONE

Several abraded fragments of oblong and spatulate limestone and shale pebbles may have been used as cord or sinew smoothers.

WEAPONS USED IN WARFARE

Although no traces of earthworks or palisades were discovered, the triangular points for arrows, which are generally believed to have been used exclusively in warfare, suggest that the inhabitants were warlike.

PROCESSES OF MANUFACTURE

Evidence was discovered that the people of this site worked by breaking, burning and breaking, cutting, cutting and breaking, chipping, pecking, scraping, rubbing, drilling, perforating, punching, modelling, impressing, and twisting. Specimens illustrating some of these processes are seen in Plate XXI, figures 1 to 21.

BREAKING

One of the simplest processes, and one requiring no special tools, was that of breaking. Round and oval pebbles with peripheral abrasions, such as those described as hammerstones, were probably used in this operation. Many long splinters of bone resulted from the process, although the primary motive may have been more to extract the marrow from the bones, or to make the bones small enough to go into pots for boiling, than to secure suitable pieces for the manufacture of artifacts. Plate XXI, figure 1, illustrates one of these bone splinters. Stones were in many cases broken to obtain suitable pieces.

BURNING AND BREAKING

In this process an encircling line seems to have been burnt, around the bone, possibly by holding it on a small live coal or flame and revolving it, thus rendering this part of the bone brittle and easily broken straight across. Three bone beads, one of which, described on page 34, is shown in Plate XXII, figure 17, and four phalanges of the deer, described on page 36, and illustrated by the two specimens shown in Plate XXIII, figures 5 and 7, had an end removed in each case, apparently by burning and breaking; at least, the burning does not appear to have occurred accidentally subsequent to the breaking.

The corroded appearance on one side and the discoloration on the other side, along the straight edge of the specimen illustrated in Plate XXII, figure 12, suggest that this part of the plastron was severed from the rest of the turtle shell by burning and breaking.

The separation of antlers into smaller pieces was facilitated by the application of fire, if we may judge by what appear to be burnt areas at the ends of many specimens. The scorched areas appear only on one side of the pieces. Their extent can be seen at each of the broken ends of the

antler fragment illustrated in Plate XXI, figure 5. Some of the pieces had the scorched part hacked with an ax or a knife to permit it to be broken still more easily.

CUTTING

This required some special tool such as a knife or a sawlike implement, although any suitably sharp piece of chert was probably in many cases used for the purpose. Specimens illustrating the process are shown in Plate I, figures 16 and 17; Plate XX, figures 10, 17, and 22; Plate XXI, figures 6 and 10; and Plate XXII, figures 1, 2, 14, 15, 18, and 22.

The piece of antler illustrated in Plate XXI, figure 6, has been whittled to a point and the sides also show evidence of whittling. One of the cuts is about half an inch long. To make such a long, clean cut, on tough material like antler, would seem to require a knife with a sharper and less brittle edge than any of the specimens, thought to be knives, that were found at Uren, unless the antler was first softened by boiling in water.

CUTTING AND BREAKING

To cut a piece of antler or bone crosswise, the material was first deeply scored or grooved on two sides, or all around, and then broken. Eighteen pieces of antler and eleven pieces of bone show this method of cutting. Most of the bone beads were severed from the stock bone in this manner. The specimen represented in Plate XXI, figure 9, is the left humerus of a large bird (probably the wild turkey), with the distal end removed, possibly with the intention of transforming the shaft into a tube or bead by removing also the other joint. The distal extremity of a right humerus of a wild turkey, and the proximal joint of the right femur of a bald eagle, were severed from the shaft by cutting and breaking. The cut on the fragment of a right ulna of a deer, illustrated in Plate XXI, figure 14, seems to have been made to remove part of the olecranon process, as in the awl shown in Plate XX, figure 12. The piece of antler shown in Plate XXI, figure 7, was whittled and then broken across, leaving some of the slivers projecting beyond the sides of the cut, as in many cases occurs when hurriedly cutting a stick in two. These slivers appear to have been removed from the piece shown in figure 8, on the same plate. In both specimens the cuts were apparently made toward the larger end of the antler, suggesting that the knife was drawn toward the worker in the usual Indian manner. The pieces of antler seen in Plate XXI, figures 11 and 12, were deeply grooved and then broken. The specimen illustrated in figure 13 shows two parallel cuttings.

To obtain long and more or less slender pieces with straight, parallel edges, without danger of breaking them crosswise, deep longitudinal grooves were made with a plough grinder, or in some cases perhaps with a piece of chert, and the remaining thin part of the bone then broken. Forty-eight pieces of bone and two pieces of antler show this method of cutting. Twenty-four certainly, and ten probably, are pieces of the metacarpal and metatarsal bones of the deer. Nineteen of these specimens show that advantage was in some cases taken of the deep natural groove

on the back of the metacarpals and the front and back of the metatarsals, because they required very little artificial deepening to make the bone break easily along the desired lines. The fragment of a metatarsus, illustrated in Plate XXI, figure 15, shows evidence of the use of a plow grinder that has not, however, deepened the natural narrow groove; there is also the beginning of a longitudinal groove on the back. A fragment of a metacarpus is deeply grooved on the front and back, one of the grooves being along the natural, faint depressed line on the front of the bone. The fragment, seen in figure 16, is a piece separated either from a metacarpus or metatarsus by two separate parallel cuts. The long, slender, fluted bone, seen in figure 18, retains traces of the longitudinal cutting on both edges. It was probably in process of manufacture into an awl, for thirteen finished awls were made from pieces of bone cut from stock bones by this method.

As may be seen in the fragment of what appears to have been the bowl of a stone pipe, illustrated in Plate XXI, figure 19, this method was in some cases used to cut pieces of stone. Both cuts on the severed edges were deep, the one at the left leaving a septum, about one-sixteenth of an inch thick, to be broken. Another longitudinal V-shaped cut may be seen about the middle.

The striæ on the sides of the grooves in some specimens suggest that the plow grinder, or other tool used to do the cutting, was of a gritty nature. Deeper and more irregular striæ on other pieces suggest that the cutting tool was chipped from stone. The point for an arrow, illustrated in Plate I, figure 5, has the basal edge considerably worn, as if from some such use, the pointed end having been inserted in a handle.

CHIPPING

Stone specimens, illustrating this process, are seen in Plate I, figures 1 to 14; Plate XIX, figures 10 to 15; Plate XX, figures 1 to 5; and Plate XXI, figures 20 and 21. The specimen seen in Plate XXI, figure 20, is a thin, oblong shale pebble, with the edges at one end and one side chipped, possibly in preparation for grinding or fashioning into a tool. The chipped piece of stone illustrated in figure 21 seems to be a fragment of an implement in process of being refashioned into some other tool. The facets which remain on the slate gorget, illustrated in Plate XXIII, figure 18, show that it was chipped into form before it was ground to its present shape. The rougher chipping was probably done with hammerstones. In the finer work tools like those seen in Plate XIX, figures 2, 3, and 4, were probably used.

PECKING

This process in many cases succeeded the chipping process in the manufacture of some of the artifacts made of such non-siliceous materials as slate, granite, diabase, etc. The pecking was probably done with hammerstones like the one made of chert, described on page 23.

SCRAPING

Several specimens illustrate this method of reducing pieces of bone and antler into shape before beginning the rubbing process. The long, slender piece of bone, illustrated in Plate XXI, figure 3, has portions of

the broken edges smoothed by scraping. Several pieces of antler, one of which is illustrated in Plate I, figure 18, and two others in Plate XXI, figures 8 and 11, bear longitudinal striæ, which were evidently made by finely chipped scrapers, possibly some of those described on page 24. The thickness of the antler tines, seen in figures 8 and 12, seems to have been reduced by scraping, leaving a distinct shoulder around the circumference. The points were afterwards cut off and probably made into arrow points (*See* page 10). Three other specimens are similarly shouldered, the shoulder on all but one being just below where the point was cut off.

RUBBING

Many specimens show evidence of this process (*See* Plate I, figures 15, 16, 17, 18, and 20); Plate XIX, figures 2 to 4 and 6 to 9; Plate XX, figures 7 to 23; Plate XXI, figure 17; Plate XXII, figures 1 to 4, 7, and 13; and Plate XXIII, figures 1, 2, 4, 6, 8, and 16 to 18. Some of the whetstones were probably used to rub artifacts into shape.

DRILLING

Most of the holes in the artifacts were drilled from one side. Holes of this kind are seen in the pottery fragments shown in Plate II, figure 9; in some specimens made of turtle shell, one of which is illustrated in Plate XXII, figure 12; in the potsherd disk seen in Plate XXIII, figure 3; and in most of the specimens made from the phalanges of the deer. One of the imperforate and three of the perforated phalanges, of which two are illustrated in Plate XXIII, figures 5 and 6, have the distal articular facet scorched, probably to make the perforating easier.

The holes in one of the pebble pendants (Plate XXII, figure 6), in the stone gorget (Plate XXIII, figure 18), and in one of the fragments of pottery, were drilled from both sides.

Judging from the number of fragments of pottery with drilled perforations, broken pots were in many cases repaired by drilling holes near the broken edges and binding them together with thongs (*See* Plate II, figure 9).¹ In two instances, the holes were drilled through the node produced by a punched hole (*See* Plate IX, figure 7).

The bowl cavity and the stem hole of the unfinished pipe, illustrated in Plate XXIII, figure 8, were possibly drilled with solid wooden drills, aided by sharp sand and water. The deep striæ on the sides of both holes also suggest the use of chipped drill points.

PERFORATING

The holes through the ends of some of the cups made from deer phalanges appear to have been gouged out rather than drilled.

PUNCHING

Discussed on previous page.

¹At the Force farm site S. K. Benham, of Princeton, Ont., once found two perforated fragments of pottery lying with the broken edges together and with the impression of the binding thong still visible in the ground below.

MODELLING

Some of the nodes on the pipe stem, illustrated in Plate XXIII, figure 14, show plainly the marks left by the tool used in modelling them.

IMPRESSING

Discussed on previous page.

TWISTING

That cords were twisted from vegetal fibres is suggested by what seem to be cord impressions on pottery.

DRESS AND ADORNMENT

Articles of dress and adornment, discovered at this site, consist of what may have been material for paint, combs, pin-like bone objects, pendants made of bone and stone, a probable wristlet made of bone, and beads made of shell and bone.

PAINT

A small piece of hematite ore, found here, may have been used for making face paint.

COMBS

Two broken specimens, made of concavo-convex pieces of antler, are probably unfinished combs (Plate XXII, figures 1 and 2). That shown in figure 1 bears incised ornamentation. Originally it had three teeth; the only one remaining is more or less smoothly finished. The tip is obtusely pointed. Part of the broken stub of the tooth at the right was removed by grooving and breaking. The rough whittled condition of the upper edge suggests that this comb is unfinished, probably having been broken in the making. The other specimen, also unfinished, is made from a piece derived from the expanded part of the antler, where it branches. It seems to have had only two teeth, one of which was cut off close after it became broken. The stub of the remaining tooth is smoothly finished.

The ornamentation, and the small number and length of the teeth, suggest that such combs were possibly hair ornaments rather than instruments to comb the hair.

Combs have been found at only one other prehistoric site in this county. Five specimens, one of them with five teeth, were found at a later Neutral site in lot 7, con. IV, West Oxford township.

PINS FOR FASTENING CLOTHING, ETC.

The specimens made of bone, illustrated in Plate XXII, figures 3 and 4, are too slender and delicate for use as awls and so may have been pins for fastening clothing, a cord attached to the grooved end preventing loss. The one in figure 3 is oval in cross-section. The other specimen, figure 4, which is apparently derived from the outer wall of a rib, is thin,

oval in cross-section, and more or less straight; the encircling groove is narrow and shallow. The specimen, illustrated in Plate XX, figure 22, and described as being probably an awl, may also have been used as a pin.

ORNAMENTS MADE OF BONE

Two bone objects, found here, were probably worn as ornaments.

One, the lower jaw of a mink, illustrated in Plate XXII, figure 11, has both ramii broken off and the sides near the broken ends slightly polished. Mills found lower jaws of the mountain lion and wild cat in the Harness Mound, in Ross county, Ohio, which were so utilized¹.

The other specimen, illustrated in Plate XXII, figure 12, is made from the upper half of the plastron of a painted turtle. A hole drilled through the median suture near the upper end shows signs of wear on the counter-sunk edge, suggesting that the object was probably worn as an ornament. This use is also suggested by the smoothness or polish on the inside of the object, which would have been the side worn next to the skin or garment.

Ornaments made from pieces of turtle shells are not common even at later Neutral sites in this county and Waterloo county. The writer knows of only two other specimens, one being a pendant made from a section of the carapace of the painted turtle, which was found at a village site on lot 11, con. II, block A, Wilmot tp., Waterloo co.² The other is a fragment, possibly of a wristlet, found at a village site on lot 10, con. VIII, Blenheim tp., Oxford co.³

PENDANTS MADE OF STONE

Notched and perforated pebbles, like those seen in Plate XXII, figures 5, 6, and 7, were probably used as pendants. Three finished and two unfinished specimens were found.

The specimen, illustrated in figure 5, is an irregular, oblong, black shale pebble, with two deep V-shaped notches, possibly for fastening the suspending cord. The small pendant, seen in figure 6, is made from a thin, flat, pear-shaped pebble of black shale; the hole, drilled from both sides, retains the striæ left by the chipped drill point. The other perforated pendant, seen in figure 7, is made from a much thicker, irregularly oval limestone pebble. Part of the side illustrated has been rubbed flat. The hole, which seems to be natural, is slightly worn on the upper edge.

The unfinished specimens are shown in figures 8 and 9. The large, thin, and nearly circular, shale pebble, seen in figure 8, has the drilling of the suspension hole commenced on one side; on the other specimen (Figure 9) it has been started on both sides.

Many similar pendants are found at later Neutral sites in this county and in Waterloo county.⁴ There are some in the Museum's collections from Elgin county, and they have been found also in Middlesex county.

¹"Explorations of the Edwin Harness Mound," reprint from the Ohio Archæological and Historical Quarterly, vol. XVI, figs. 44 and 45 (Columbus, 1907).

²Cat. No. 24394, Provincial Museum, Toronto. See Fig. 69, Boyle, Annual Archæological Report, 1904, being part of Appendix to the Rept. of the Minister of Education, Ontario, Toronto, 1905.

³See fig. 46, Wintenberg, W. J.: "Relics of the Attiwandarons," Records of the Past, vol. IV, Washington (1905).

⁴Cat. Nos. 24417, 24418, 24500, and 26184, in Provincial Museum, Toronto. See Figs. 62, 64, and 66, Boyle, Rept. 1904, *op. cit.*

PENDANTS MADE OF BONE

The specimens made from the proximal phalanges of the deer, described under "Games," and illustrated in Plate XXIII, figures 5 and 6, may have been pendants.

WRISTLETS OR ARMLETS

The specimen of thin bone, illustrated in Plate XXII, figure 10, which seems to be derived from the outer wall of a rib, may be a fragment of an armlet or wristlet; the small hole near the end has been broken out.

Bone wristlets, some of them with ornamentation, have been found in Oxford,¹ Elgin,² and Wentworth³ counties, Ontario.

BEADS MADE OF SHELL

A broken bead, illustrated in Plate XXII, figure 13, had been manufactured from a small ocean shell (*Marginella apicina*). The suspension hole was made by grinding off one side of the spire.

A bead made from the same kind of shell was found at a later Neutral village site on lot 10, con. VIII, Blenheim tp., Oxford co.⁴

Although two shells of freshwater snails were found (one *Pleurocera subulare*, the other possibly *P. elevatum*), neither appears to have been perforated, as are some specimens from sites in Blenheim township and in Waterloo county.⁵

BEADS MADE OF BONE

Eight whole and thirteen fragments of beads, made from short sections of hollow bird bones, vary from $\frac{7}{8}$ -inch to $2\frac{3}{8}$ inches long, and from $\frac{5}{16}$ to $\frac{1}{2}$ -inch wide. Several kinds and sizes are seen in Plate XXII, figures 14 to 22.

Figure 14 shows one of two fragments of the shortest beads. The marks of cutting have not been effaced on the specimen illustrated in figure 15. There is a deep, transverse cut, about an eighth of an inch from each end, one of which can be seen on the side illustrated. The polished bead seen in figure 16 is made from a section of a tibio-tarsus, possibly of the wild turkey. Figures 18 and 21 illustrate crude beads, apparently derived from the humeri of two different species of birds. The specimens seen in Figures 19 and 20 are made from bird ulnæ, and retain the characteristic row of elevations or muscular attachments, along one side of the bone. The ends of the one in figure 20 have been only slightly smoothed. The longitudinal striæ, visible on the sides of the longest whole bead, illustrated in figure 22, were probably made with a scraper.

Hollow bone beads are common at later Neutral sites in Oxford and Waterloo counties, and belong also to other Iroquoian cultures in Ontario and in New York.

¹From village site on lot 10, con. VIII, Blenheim tp. See Fig. 46, "Relics of the Attiwandarons," op. cit.

²From village site on lots 1 and 2, con. VIII, Bayham tp., Cat. No. VIII-F-8006, National Museum of Canada.

³Cat. No. H.D. 1246, Royal Ontario Museum of Archæology, Toronto.

⁴Cat. No. 24150, Provincial Museum, Toronto.

⁵See p. 66, Wintemberg: "The Use of Shells by the Ontario Indians," Annual Archæological Report, 1907, being part of Appendix to the Rept. of the Minister of Education, Ontario, Toronto, 1908.

An otolith of a sheephead was not perforated for stringing, as is one from Malahide township, Elgin county, in the Museum.¹

GAMES, AMUSEMENTS, OBJECTS OF RELIGION, AND SMOKING

Objects probably used in playing games; fragments of turtle shells, possibly used as rattles in religious ceremonials; gorgets made of stone and bone; stone and earthenware pipes; a bone tube; and a fragment of what may have been a bone whistle, were found.

TOYS

Some of the smaller pottery vessels described on page 12, may have been toys. The small earthenware pipe, seen in Plate XXIII, figure 9, and more fully described on page 38, was evidently a toy, probably made by a child.

DISKS MADE FROM POTSDHERDS

Three crude disks, made from fragments of pottery, may have been used as "men" in playing some kind of game. The specimen, illustrated in Plate XXIII, figure 1, is more square than round, and has a small depression on the concave side, possibly the beginning of a perforation. Two of the corners are slightly rubbed. The marks seen on the convex side were left by the malleating tool. The specimen, seen in figure 2, is also squarish in shape, with one of the edges slightly rubbed. The third specimen is roughly chipped to an oval shape, but with no signs of rubbing on the edges.

No disks chipped or rubbed from pottery fragments have been found at any of the later Neutral sites in Oxford and Waterloo counties, nor has the writer seen any imperforate disks from other Neutral sites in southwestern Ontario. There are some in The Provincial Museum, Toronto, from York and Victoria counties. They were common at the Roebuck village site, and at sites which appear to be of the same culture as the Roebuck, in eastern Ontario. Similar disks have been found in New York² and Kentucky.³

PERFORATED DISKS MADE OF POTSDHERDS

Two other disks, made from potsherds, are perforated. The specimen seen in Plate XXIII, figure 3, is chipped to a roughly circular shape. The hole is a little off the centre and seems to have been drilled entirely from the concave side, detaching a large scale on the convex side as it came through. The other specimen, illustrated in figure 4, is larger and has most of the edge rubbed smooth. The bi-conical hole, which was drilled through at a slant, shows distinct signs of wear. The convex side retains the chequered marking left by the malleating tool.

¹Cat. No. VIII-F-3195, National Museum of Canada.

²Beauchamp, W. M.: "Earthenware of the New York Aborigines," Bull. of the New York State Mus., vol. 5, No. 22, p. 81 (Albany, 1898).

³Smith, Harlan, I.: "The Prehistoric Ethnology of a Kentucky Site." Anthropological Papers of the Am. Mus. of Nat. Hist., vol. VI, pt. II, p. 210, and Plate XLIII, figs. 9 and 10 (New York, 1910).

Perforated potsherd disks are not found at any of the later Neutral sites in Oxford and Waterloo counties. The writer knows of only two other specimens from southwestern Ontario,¹ one from a site on lot 25, con. VII, Malahide tp., Elgin co., the other from elsewhere in the same township. Such disks are more common at Iroquoian sites in Victoria county. None was found at the Roebuck village site, in eastern Ontario. They occur at sites in Kentucky.²

DICE

Although many astragali of the deer were found, they are not artificially modified, and one can not be sure that any of them were used as dice.

CUP AND PIN GAME

Fifteen specimens made from the proximal phalanges of the deer were probably cups used in the familiar cup and pin game. Three apparently unfinished specimens suggest that cups were in some cases made also from the penultimate or middle phalanges. The specimens in Plate XXIII, figures 5 and 6, have holes drilled through the distal extremity. The broken edge was left in a rough state on all but three of the perforated and apparently completed specimens (*See* figure 5). The cup seen in figure 6 has the edge partly smoothed.

Cup-like units made from the proximal phalanges are common at later Neutral sites in Oxford and Waterloo counties. We have them in the Museum from Onondaga township, Brant county; from Yarmouth, Malahide, and Bayham townships, Elgin county; from Houghton, Walsingham, and Woodhouse townships, Norfolk county; and from the Roebuck village site, in eastern Ontario. They occur also at sites in Ohio³ and Kentucky.⁴

The Museum has cups made from the middle phalanges, from Malahide, Yarmouth, Houghton, and Walsingham townships.

Culin illustrates an Assiniboine and two Dakota Indian ring and pin games with cups made from perforated phalanges, which retain the proximal ends.⁵ The first, or uppermost cup, of the Dakota specimens is made from a middle phalanx. This suggests the possibility that our specimens were similarly strung.

Notched bone awls, like those illustrated in Plate XX, figures 20 and 22, may have been used as the striking pins in this game; or the pins may have been made of wood.

MANUFACTURE OF CUPS FOR CUP AND PIN GAME

The method of making these cups from phalanges can be learned from fourteen unfinished specimens (eleven of which are proximal phalanges and three middle phalanges) and some of the finished cups. The proximal

¹Cat. Nos. VIII-F-5160 and VIII-F-5792, National Museum of Canada.

²Smith: *Op. cit.*, p. 210, and Plate XLI, figs. 14 and 15, and Plate XLIII, fig. 11.

³Mills, W. C.: "Explorations of the Gartner Mound and Village Site"; reprint from the *Ohio Archaeological and Historical Quarterly*, vol. XIII, p. 58; Fig. 61 (Columbus, 1904).

⁴Smith: *op. cit.*, p. 209; Plate XLII, fig. 9, and Plate XLIII, figs. 5, 6, and 7.

⁵Culin, Stewart: "Games of the North American Indians"; *Twenty-fourth Ann. Rept. of the Bureau of American Ethnology*, Washington, 1907, Figs. 737, 738, and 739, and descriptions on pp. 555-557.

joint of the bone was removed either by breaking, or burning and breaking. The broken edge was then rubbed smooth. Seven of the proximal and two of the middle phalanges have the hole at the distal joint commenced. The conical holes in some of the finished specimens were apparently made with drills like those illustrated in Plate XIX, figures 10 and 14; other holes seem to have been gouged out rather than drilled.

RATTLES

Two fragments of plastrons and part of a carapace of the painted turtle are possibly parts of rattles. One specimen from part of the bridge portion of the plastron retains traces of a drilled countersunk hole at one of the broken edges. The other fragment has a number of perforations. Part of two countersunk holes, about 2 inches apart, can be seen on one of the broken edges of this fragment. Another hole was drilled near the sulcus or depressed line between the gular and humeral plates, or rather, that part of the plastron covered by these plates, about $\frac{1}{8}$ -inch from the left margin of the plastron. There is the beginning of another perforation near this hole; still another goes through the intersection of the median suture and the sulcus dividing the humeral and pectoral plates, about 2 inches from the margin of the plastron. These holes are the only signs of artificial modification on the specimen.

The only specimen made from the carapace is illustrated in Plate XXIII, figure 17. It is fragmentary. The edges of the carapace have been ground down to a nearly straight edge, obliterating one of the marginal bones and parts of others. The underpart of the rounded end was rubbed down until the cancellous tissue of the bone was exposed.

The specimen, illustrated in Plate XXII, figure 12, and described as an ornament, may have been part of a rattle.

GORGET MADE OF STONE

The slate gorget, with two holes, illustrated in Plate XXIII, figure 18, was found by Daniel Gould, a former owner of the farm. It is about five-sixteenth inch thick, and apparently unfinished. The holes are bi-conical. The curved mark near the upper hole, apparently, was made accidentally.

Slate gorgets have been found at later Neutral sites in Blenheim township, Oxford county.¹

GORGET MADE FROM PIECE OF HUMAN SKULL

A circular gorget, with several perforations, said to have been made from a fragment of a human skull,² was found here by Mr. Gould, but was afterwards lost.

Gorgetts made from bone have been found at a later Neutral site in Waterloo county, and at other Iroquoian sites in Ontario, Quebec, and New York state.

¹See p. 83, of the author's "Indian Village Sites in Oxford and Waterloo," *Archæological Rept.*, 1899, being part of Appendix to the Report of the Minister of Education, Ontario, Toronto, 1900; and "Archæology of Blenheim Township," *op. cit.*, p. 64.

²This gorget may possibly have been made of shell. Warren Haley told the writer that he had found circular shell gorgets at one of the nearby sites.

STONE PIPES

The unfinished specimen illustrated in Plate XXIII, figure 8, was the only stone pipe found at Uren. It is about $2\frac{1}{4}$ inches long, $1\frac{7}{8}$ inches high and 1 inch wide. Both bowl and stem are nearly square in cross-section. The mouth of the conical bowl cavity is $\frac{5}{8}$ -inch wide. The stem hole is also conical and about $\frac{5}{16}$ -inch in diameter. Marks of rubbing can be seen on all sides of this pipe. The stone was cracked, possibly in the course of drilling the stem hole. When finished it would probably have been of the type McGuire calls monitor.¹

Stone pipes were probably not as scarce at other sites of the same culture as they were here. The writer found a piece cut from the stem of a soapstone pipe² at the site on the Bertrand farm and a whole stone pipe was discovered at the same site, by the late E. Coventry of Woodstock, Ont.

EARTHENWARE PIPES

Of twenty-five fragmentary earthenware pipes twelve are stems, thirteen others bowls and fragments of bowls, some retaining part of the stem. The pipes are mostly crude. Very few are ornamented, and only one has ornamentation on the stem.

Most of the pipes appear to have been of McGuire's monitor type, or else derivatives, of which at least two can be distinguished. The specimen seen in Plate XXIII, figure 11, nearly approaches the typical form in having had a prow-like projection apparently at the front of the bowl. Five other specimens seem more suggestive of the form illustrated in McGuire's Figures 89 and 90, except that the bowls in the Uren specimens were more nearly at right angles to the stem. On at least three specimens (Plate XXIII, Figures 11, 13, and 15), the bowl appears to have been at right angles to the stem; on the bowl illustrated in figure 10, at an angle of about 40 degrees.

About one-half of all the fragments seem to have belonged to cylindrical bowls of the same type as the one seen in figure 10. One small fragment seems to be part of an ovoid bowl. Another has a slight lip, suggesting that it may also be part of a small pottery vessel. The small, crude specimen, seen in Plate XXIII, figure 9, is undoubtedly a toy made by a child. The bowl cavity is triangular and connects with a round stemhole.

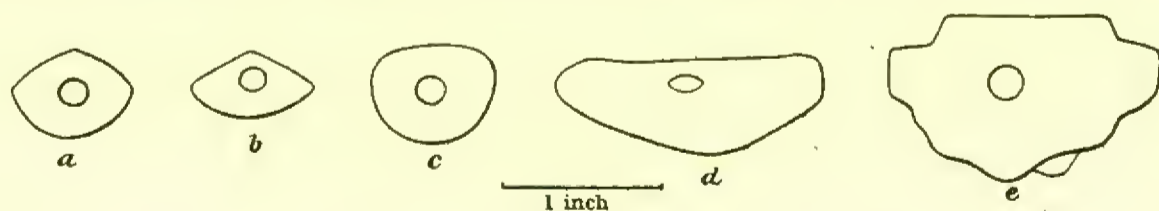


Figure 3. Cross-sections of pipe stems.

At least seven of the pipes had short stems; some of the badly broken specimens may have had long ones. The longest, measuring from where the bowl begins, is about $1\frac{3}{4}$ inches, the shortest about $1\frac{1}{8}$ inches long. The specimen seen in Plate XXIII, figure 13, is rather thick and stubby. Three stems are round, or nearly round in cross-section (figure 13); two are oval; one is diamond-shaped; two are curvilinear-triangular (Figure 3, a); one is

¹See Figs. 89 and 90, "Pipes and Smoking Customs," Rept. of the U.S. Nat. Mus. for 1897, Washington, 1899.

²Cat. No. VIII-F-15888, Nat. Mus. of Canada.

mixtilinear-triangular (Figure 3, *b*); and two, one of which is illustrated in figure 15, have the tops slightly flattened (Figure 3, *c*). The top of the stem of the fragmentary pipe, seen in figure 11, was flat or perhaps slightly concave throughout its entire length (See Figure 3, *d*). The base was convex from side to side and apparently also from end to end. Most of the stems are wider than thick, and the edges of two specimens, one of which is seen in figure 11, extend beyond the sides of the bowl, as in most pipes of the monitor type. At least three stems present one other characteristic of this type, as described by McGuire, *i.e.*, "a pronounced ridge running the length of the centre of the stem."¹ The stem, shown in figure 14, may have been part of an animal effigy pipe (See under "Decorative Art"). The broken part of the bowl seen in figure 10 has been chipped to a more or less conical form to serve as a mouthpiece. The holes in most of the stems are round, but a few are oval.

The pipes were light to dark grey, and light, dark, and reddish buff, in colour.

The chief differences between most of the pipes at Uren and those from later Neutral sites in the same county and in Waterloo county, are that, with few exceptions, they all have more or less cylindrical simple bowls with very short stems, which are seldom round in cross-section and, on the whole, resemble closely the stems on monitor pipes. The bowls of pipes found at the later sites, on the other hand, are of several different types, being trumpet-shaped, vasiform, conical, and ovoid, with long and in some cases quite slender stems, almost invariably round in cross-section. Then, too, the pipes with very short stems, which are rarely found at these later sites, are usually so crude as to suggest that they were the work of children, or at least persons inexperienced in pipe-making. Thomas² seems to regard a monitor pipe with prow-like extensions of the stem in front of the bowl, as probably of Cherokee origin; it is found also in mounds. Short stems seem to be characteristic of Algonkian pipes. There are only two stems of broken earthenware pipes and one whole pipe in the Museum, which can be safely regarded as of Algonkian origin, judging from the character of the decoration and the site at which they were found. Only one of them, however, is at all conformable to the kind of pipe found at Uren, and then solely as regards the extreme shortness and the mixtilinear-triangular cross-section of the stem.³

In shortness and shapes in cross-section the stems of these pipes closely resemble those on some earthenware pipes found in shell-heaps in New York⁴ and at sites in Pennsylvania.⁵

Earthenware pipes were less numerous at this site and other sites of the same culture, so far examined, than at later Neutral sites in the same county. This becomes apparent if we compare the number of pipes secured by intensive exploration at Uren, and the number found on the surface only of a much smaller Neutral site (No. 5, in Blenheim township⁶). Twenty-five specimens (two of which are surface finds) were found at Uren, and

¹Op. cit., p. 470.

²Thomas, Cyrus: "The Cherokees in Pre-Columbian Times," New York, 1890, p. 81.

³From lot 4, con. VII, Blandford tp., Oxford co. Cat. No. VIII-F-8303.

⁴Skinner, Alanson: "The Lenape Indians of Staten Island," Anthropological Papers of the Am. Mus. of Nat. Hist., vol. III, p. 26; Plate IX, figs. 8 and 13 (New York, 1909). Also, by the same author: "The Pre-Iroquoian Algonkian Indians of Central and Western New York," Indian Notes and Monographs, Mus. of the American Indian, Heye Foundation, vol. II, No. 1, p. 25 (New York, 1919).

⁵Wrea: op. cit., Plate 14, figs. 1, 2, and 4, and Plate 15, figs. 19, 23, and 26.

⁶See the author's "Archæology of Blenheim Township," op. cit. p. 64.

twenty were collected by the writer from the surface of the later site; and many others are known to have been found by collectors and the owners of the farm.

This comparative scarcity of earthenware pipes at Uren accords with their scarcity at Algonkian sites in Ontario, New York, and Pennsylvania.

MANUFACTURE OF EARTHENWARE PIPES

The material of which these pipes were made consists of clay containing in twelve specimens no recognizable tempering. Eight show scattered particles of feldspar, quartz, or some other rock. Five other pieces, judging from angular cavities on their surfaces, seem to have been tempered with some vegetal material—possibly grass or grass stems—either purposely or accidentally mixed with the clay and destroyed during the firing; a charred piece of vegetal material is plainly recognizable in one fragment. One of the stone tempered pieces seems to be impregnated with iron salts.

The shape of the bottom of the bowl cavity of one fragment suggests that the clay had been modelled over one of the straight ends of a cylindrical object.

The round holes, seen in the stems of most of the pipe fragments, seem to have been made by modelling the clay around a reed or twig, which was either withdrawn or allowed to be burnt during the firing.

All the fragments show that pipes were burnt as hard as most of the pottery ware found here.

BONE TUBES

The tube, illustrated in Plate XXIII, figure 16, was made by removing the extremities of what is apparently the femur of a young bear. The edge of the more complete end is smoothly finished; the other end is broken. Two fragmentary bone specimens may be parts of similar tubes; and a polished bone tube in the Museum¹, from lot 25, con. VII, Malahide tp., Elgin co., is made from the same kind of bone.

BONE WHISTLE

A fragment of a bird bone, with the remains of what appear to have been finger-holes or vents, at about equal distances apart, may be part of a whistle.

CHARMS OR AMULETS

Perforated pebbles, like those illustrated in Plate XXII, figures 6 and 7, may have been regarded as charms, especially the one illustrated in figure 7, if the Indians ever held the belief, current among whites, that naturally perforated stones have protective or prophylactic powers, or bring good luck.

A few periotic bones² of the deer seem unnaturally polished, as if they had been carried or worn suspended as charms. Such bones, like the curious fossils and other objects often cherished as fetishes, may have been invested with mystic virtues on account of their curious shape. The same kind of bone, taken from the skull of the domestic pig, is known to be carried by some whites as a prophylactic charm. We have no evidence, however, that even modern Indians ever used such bones as amulets.

¹Cat. No. VIII-D-7837, Nat. Mus. of Canada.

²The internal bones of the ear, also known as the petrous portion of the temporal bone.

MISCELLANEOUS SPECIMENS

It is difficult to determine the exact uses of some other artifacts found at Uren. They are mostly crude and possibly makeshift tools.

Three specimens are of the same type as the one illustrated in Plate XIX, figure 5. The slightly incurved edge of this specimen is moderately sharp, but the other is dull and rounded; it is about five-sixteenths inch thick at the widest end and about one-fourth inch at the other. A crude specimen has one edge deeply incurved and worn, and a fragmentary specimen probably had the same shape. Another specimen, about five-eighths inch thick, with both of the expanded ends missing, has a deep V-shaped groove on one side, close to, and nearly parallel with, the deeply incurved edge; there is a shallower groove on the other side. A fragment of a large specimen, with a hoe-like blade, has the sharp edge only slightly incurved. The general shape of these tools suggests several different uses. If it were not for the incurved edges, one might think they were plow-grinders for making the longitudinal cuts in bone, described on an earlier page. They may have been knives, although the edges are mostly dull. The polish or slight wear on the incurved edges suggests that they may have been used as scrapers by drawing them along draw-shave fashion, or they may have been whetstones or pottery markers.

Similar specimens have been found at sites of the same culture nearby. There are three specimens from Malahide township, Elgin county, in the Museum¹, and Boyle describes and illustrates one of these tools from Norfolk county².

The fragmentary bone specimen, with the marrow hollow exposed on one side, illustrated in Plate XXI, figure 17, is made from the anterior part of the lower jaw of a deer. It may be in process of manufacture. There was found also a fragment of the middle part of a deer's lower jaw, with the molar teeth either broken off or removed entirely, and one of the broken ends smoothed off. Both sides are slightly polished.

Plate XXI, figure 2, illustrates the left radius of a fox or dog, with both joints removed. This specimen may be in process of manufacture or a completed artifact. Perhaps it was used as a handle, or else as a counter in a game.

Two specimens, made from pieces of the thin plates of scapulæ, appear to be fragments of larger implements. One is somewhat trapezoidal in shape, with one of the ends slightly rounded and the edges smoothed. The other is triangular, with the converging edges finely chipped to a sharp edge. Part of one edge, near the tip, has been rubbed.

A few whole or nearly whole animal bones appear to have been used as smoothers or polishers. One of them is the jaw of a large fish, possibly a pike, with the front part polished. A humerus of a deer has part of the outer surface of the shaft polished, possibly from use in some smoothing operation. The shaft of the humerus of a wild turkey is similarly polished. A right radius of a deer with the distal extremity removed and the external surface more or less smoothed, probably had some special use; signs of wear on the edges of the broken end suggest that this end may have been used as a sort of flesher in tanning, the polish on the shaft resulting from

¹Cat. Nos. VIII-F-2199, VIII-F-4447, and VIII-F-4455, Nat. Mus. of Canada.

²Ann. Archæological Rept. and Can. Inst. (Sess. 1891), Toronto, 1892, p. 39, fig. 48.

wear in the hand. Two other makeshift tools are made from the upper half of a metatarsus and the proximal half of a radius of the deer. The latter is broken off at an angle, and parts of the broken edges of both specimens are worn from use.

The pointed, broken ends of several splinters of bone are worn from use, possibly as pottery markers, for which some of them are adapted. The worn and polished appearance of the broken edges of some of the spalls of bone, suggest that they were perhaps utilized as scrapers.

The clam shell shown in Plate XX, figure 6, besides having the edges worn, seems to have been used in some smoothing operation, probably on the inside of pottery vessels, with the result that its side was worn down until a hole appeared. Another shell has the side similarly worn, but not enough to produce a hole. Clam shells, similarly worn on the sides, are common at later Neutral sites in the same county and in Waterloo county.

DECORATIVE ART

Decorative art is confined almost exclusively to earthenware pots and pipes. The only other ornamented articles were bone awls and an antler comb. It is probable that ornamentation was applied also to perishable materials such as skins, wood, and bark.

With the exception of a few crude, but undoubted representations of the human face, and a fragment of a possible animal form, the art is mainly geometric. It consists of the following decorative elements: notches, round and oval pits, irregular or angular depressions, short vertical and oblique lines, crescentic depressions, horizontal lines, curved lines, circles, and nodes. Although most of these elements occur on pottery, a few, such as notches, round or oval pits, oblique lines, crescentic depressions, and horizontal lines, also occur on earthenware pipes. Notches and lines are seen on a few bone awls.

In most cases the decoration on pottery consists wholly of one of these elements, horizontal lines occurring on the largest number of pots and short oblique lines on the next largest number—the number of occurrences of either one of these two elements alone being greater than that of all the other elements combined. Complex patterns composed of two or three different elements occurred on only one hundred and ninety-two pots, or about 16 per cent of all the pots bearing ornamentation. There are not many patterns represented, but some of the designs are quite distinctive. One is certainly an advance on those seen on later Neutral pottery, not even excepting such elaborate designs as the chevrons, which were not found at Uren.

The purely technological processes involved in the production of the decorative elements on pottery have been discussed on pages 16 to 20 and need not be repeated here.

Of the simpler kinds of decoration one of the most common consists of notches. On pots it is restricted to the outer and inner angles of the rims (*See* Plate IV, figure 5; Plate V, figure 2; Plate X, figure 12, and Plate XVIII, figures 4 and 5); the inner angle is notched in about twice as many pieces as the outer. This decoration occurs in combination with

other elements on a few rims. The base of the awl seen in figure 19, and the edges of the flattened, expanded butt of the one in Plate XX, figure 21, are also decorated with notches.

Equally as simple as the notches are the round and oval pits, seen on the fragments of pottery illustrated in Plate III, figure 11, and Plate XI, figure 8. Pits are less commonly used than notches, being the sole decoration on only twenty pots, and occurring in combination with other elements on a few others. A few pieces have this decoration on the inside surface. Pits are also seen on the fragment of a pipe shown in Plate XXIII, figure 11.

There are large, deep, round, and oval depressions on the inside of the rims of about seventy different pots. Some of them can be seen in Plate XVIII, figures 2, 4, and 6. In some cases they occur at intervals around the inside of the rims, but in most cases in groups of three, which are usually below the peak-like elevations of the rims, as in Plate XVIII,¹ figure 6.

The various kinds of angular depressions—rectangular, triangular, arrowhead-like, and irregular—might also be called simple elements (*See* Plate III, figures 14 and 15; Plate IV, figures 1, 5, and 6; Plate VI, figures 1, 2, and 4; and Plate XVII, figures 12, 14, 16, and 17). They occur on both inside and outside surfaces, but in fewer cases on the inside than on the outside. About fifty pots had this kind of decoration, about one-fourth having other decorative elements in addition.

Equally simple, as well as among the commonest decorative elements, are the short, oblique elements which occur about as often on the inside as on the outside of the pots. One hundred and ninety-two pots had this kind of decoration on the outside, and about two hundred and eighteen had it on the inside (*See* Plate II, figure 7; Plate III, figures 4 and 8; Plate IV, figures 2, 3, 4, and 10; Plate V, figures 1 to 6, 10, 11, and 15; and Plate XII, figures 10 and 13). These oblique lines are in many cases combined with other decorative elements. On a few pieces, as on the fragment illustrated in Plate VI, figure 11², they are crowded together. In some cases they are in two rows, with the elements of each row at different angles. The decoration on one fragment of pipe consists of a row of these oblique elements, each slanting in a different direction. The two rows on the pottery fragment, illustrated in Plate X, figure 7, might be described as pectinated, giving a zigzag effect which could not be brought out clearly in the illustration.

Short, vertical elements, like those seen on the fragment illustrated in Plate IV, figure 12, are seen in fewer cases than those just described, only about twenty pots having been decorated with them. They occur in nearly as many cases on the inside as on the outside of the rims.

Curved depressions, like those on the fragments seen in Plate V, figure 7, and Plate VI, figures 5 to 7, 9, and 10, occur on both outside and inside surfaces, in some cases in combination with other elements. About fifty pots were so decorated. This kind of decoration is also seen on the sides of the stem of the fragmentary earthenware pipe, illustrated in Plate XXIII, figure 11.

¹Fragments of pots with similar depressions on the inside from sites on lot 61, con. III, Onondaga tp., Brant co. (Cat. Nos. VIII-F-8835*a* and *j* and VIII-F-8861*a* and *b*); lot 25, con. VII, Malahide tp., Elgin co. (Cat. No. VIII-F-3798); and lots 1 and 2, con. VIII, Bayham tp., Elgin co. (Cat. Nos. VIII-F-3729 and VIII-F-3752), are in the Museum.

²*See* Wren: *op. cit.*, Plate 19, fig. 5, for a fragment from Pennsylvania, similarly decorated.

Short, crescentic depressions occurred on fourteen pots, but more commonly on the outside than on the inside surface of the rims. The decoration on the fragment seen in Plate IV, figure 14, consists of confused bands of small crescentic depressions.

Arrangement of either the oblique lines or crescentic impressions in a double row, with the elements of each row slanting in opposite directions, resulted in a pinnate or herring-bone pattern (See Plate VII, figures 1 to 7, 12, and 13; Plate XVII, figure 19; and Plate XVIII, figures 1 and 3). Twelve of fifty pots, so decorated, had this pattern on the inside of the rim. It is seen in combination with other elements in Plate VII, figures 4, 7, 9, and 11 to 13, and Plate XII, figure 2. A departure from the usual arrangement is seen in the fragment, illustrated in Plate VII, figure 1, where a blank space is left between each oblique line of the upper row. Part of the pattern on the inside surface of the rim fragment, illustrated in Plate XVII, figure 19, consists of two rows of oblique lines slanting in the same direction, and part of two rows each with lines slanting in opposite directions. Although resembling a spray of leaves, it is hardly likely that these pinnate designs were intentionally phyllomorphic. They do not occur on pottery from later Neutral sites in Oxford county and Waterloo county. Some pottery from what are probably Neutral sites, in other parts of the province, bears this kind of decoration; one site is on lot 61, con. III, Onondaga tp., Brant co.¹, the other on lot 4, con. V, Malahide tp., Elgin co.²

A repetition of this pinnate arrangement formed a band of vertical disconnected zigzags, like those seen in Plate VII, figures 8 to 11. Thirteen pots had this kind of decoration. In the design, seen on the fragment illustrated in Plate IX, figure 8, each row of oblique elements is separated by an encircling horizontal line.

The reticulate pattern on the fragments, shown in Plate VIII, figures 4, 5, and 8, and Plate XVIII, figure 4, resulted from a further combination of oblique elements. Forty-nine pots bore this decoration, twenty-six of them having it on the inside of the rim and thirteen on the outside. The reticulate design, seen on the fragment illustrated in Plate III, figure 9, is crudely irregular. The lines on the small fragment seen in figure 10, on the same plate, cross each other at right angles. What may be regarded as stages in the evolution of this particular pattern are seen on the fragments illustrated in Plate VIII, figures 1 and 2 (lower row).

Horizontal lines occur either singly or in bands of from two to seven lines on a large number of pots (See Plate VIII, figures 6, 11, and 12; Plate IX, figures 1, 3, and 4; Plate X, figures 1 and 6; and Plate XIV, figure 15).

Very few of the pots had this decoration on the inside surface of the rims. Bands, consisting of three horizontal lines, occurred on the largest number; bands of four on the next largest number; then bands of five, two, six, and seven lines. Single lines occurred more commonly than bands of six or seven lines. The lines on the inside surface of one pot, as is shown by the fragment illustrated in Plate XVIII, figure 6, were separated into four nearly equal divisions or sections. The short oblique lines, which join the ends of the horizontal lines of this section, slant to the

¹Cat. Nos. VIII-F-8834c and VIII-F-8842, Nat. Mus. of Canada.

²Cat. No. 24830, Prov. Mus., Toronto.

right; those of two other sections slant to the left. Those of the fourth section possibly slanted to the right, to conform with those of the section illustrated, but this part of the pot was not found. There is a somewhat similar design on the opposite side of the rim of the partly restored pot, seen in Plate XVI. Horizontal lines, combined with other decorative elements, occurred on two hundred and two pots (*See* Plate III, figure 16; Plate V, figures 9, 11, 13, and 14; Plate VII, figures 4 and 12; Plate VIII, figures 3, 7, and 10; Plate IX, figures 2, and 5 to 8; Plate X, figures 2 to 5, and 7 to 12; Plate XI, figures 1 to 10; Plate XII, figures 1 to 9, and 11; Plate XIII, figures 1 to 6 and 9 to 11; Plate XIV, figures 10, 11, 14, and 16 to 20; and Plate XVIII, figures 5 and 6). A few of these composite patterns resemble some of those seen on Neutral pottery.

Curved lines, usually forming part of the decoration given by horizontal lines, occurred on only a few pots. Some of these are seen on the fragments illustrated in Plate XIII, figures 1, 3, 8, and 11, and Plate XIV, figure 1.

Curved lines, other than impressed circles, in this northern part of the continent, occur almost solely on what Holmes styles the "Northwestern Group of Pottery."¹

Small circles occurred on a few pots. They appear along the top of the rim on three fragments, as in the one illustrated in Plate XIV, figure 20; along the outer angle of the rim of the fragment, seen in Plate XII, figure 10; between the nodes on the fragment, illustrated in Plate V, figure 15; and grouped in the form of a triangle, as in Plate XIV, figure 18.

The nodes have a certain decorative effect. They do not occur on pottery devoid of other decoration, and they form part of only a few of the more complex designs (*See* Plate IX, figure 6; Plate X, figure 10; and Plate XI, figure 5). In some cases the spaces between the nodes are decorated with other elements (*See* Plate V, figures 11 to 15).

Part of the decoration of about twenty pots consisted of U or V-shaped, shield-like figures below the rims, as on the fragments illustrated in Plate XIII, figures 1 to 9, and 11, and Plate XIV, figures 1, 2, 4, and 18. They occurred most commonly on the pots with peaked rims. This figure was used to break a band of horizontal lines surrounding three pot rims (*See* Plate XIII, figures 2 and 9, and Plate XIV, figure 1), where it embraced no additional ornamentation, but left a small, blank, triangular field. In one instance, this space is partly filled with a row of short lines that have two longer vertical lines below (Plate XIII, figure 6). Another fragment has the space partly filled with short, oblique elements (Plate XIII, figure 11). In the design, seen on the fragment illustrated in Plate XIII, figure 1, the space is filled with finger-nail impressions. Other specimens have the space filled with long, vertical lines, as seen in figures 3 and 4, on the same plate, those in figure 3 consisting of one long and two short. In two instances, the space is occupied by conventionalized human faces (Plate XIV, figures 18 and 20). Judging from the part of the design still remaining on the fragment, illustrated in Plate XIII, figure 10, it was probably different from the others on the same plate. In Plate XIV, figure 3, one of the V-shaped figures is placed below an encircling band of horizontal lines. In figure 5, on the same plate, the figure is reversed, and

¹*See* Holmes, W. H.: "Aboriginal Pottery of the Eastern United States," Twentieth Ann. Rept. of the Bureau of Am. Ethn. (1898-99), Plate CLXIII, figure *f* (from Madisonville, Ohio), and Plate CLXVIII, *b* (from Illinois).

the rest of the design consists not of horizontal lines, but of rows of short, vertical lines. The addition of the tail-like appendage to the bottom of the V-shaped figure, seen in Plate XIV, figure 1, makes the design strikingly bird-like. It may, however, have been a mere whim of the potter, without any intention to represent a bird. The writer does not remember seeing anything similar in prehistoric or modern Indian graphic art. Neither has he seen the V-shaped figures on later Neutral pottery; they do not occur on the pottery found at the Roebuck village site, in eastern Ontario.

The triangular grouping of circles, as well as of the oval and round depressions, seen on the fragments illustrated in Plate XIV, figures 17 to 20, was probably intended to represent the eyes and mouth of the human face. This motive is one of the links connecting the art of the Uren site people with that of the Iroquois, as it is very rarely seen outside of the Iroquoian area¹. The writer knows of only one example on later Neutral ware, on a fragment found at a village site in West Oxford township, about 13 miles northwest of this site. The motive occurs abundantly on probable Mohawk-Onondaga pottery in eastern Ontario (notably at the Roebuck village site), at the site of Hochelaga in Montreal, in northeastern New York, and in Vermont.

The pan-Iroquoian chevron design was not found here; the nearest approach to it is seen on the fragment of an earthenware pipe, illustrated in Plate XXIII, figure 12. The pattern on the fragment, seen in Plate XIV, figure 16, is somewhat like a Greek fret. A crude pattern, consisting of curved and straight lines, is seen on the fragment illustrated in figure 7, on the same plate. Unusual patterns also occur on the fragments illustrated in figures 8 to 11 and 13 to 15. Other composite designs, on this and other plates, do not require any special comment.

Most of the different elements, described above, were used to decorate the rim-tops of pots; a few of these decorated margins are seen in Plate XVII, figures 1 to 11. The most common decoration consists of lines running obliquely across the top of the rim, which accords with the repeated use of short oblique lines on the exterior and interior of the walls of pots. Single longitudinal lines occur in nearly as many cases on the rim margins as the oblique lines. A longitudinal line is also seen on top of the margin of the pipe bowl, illustrated in Plate XXIII, figure 11. Only on eight pots does the top edge of the rim bear decoration consisting of more than one element. Not more than a few patterns require particular notice.

The double row of alternating transverse impressions, seen in Plate XVII, figure 7, is unusual. The oblique lines, seen in figure 5, on the same plate, engage with the notches on the outer angle of the rim. A single row of transverse lines, at right angles to a single longitudinal line, is seen in figure 6, and one of the margins is decorated with a peculiar zigzag, like that at the top of the fragment illustrated in Plate XII, figure 4. An unusual arrangement of short lines is seen in Plate XVII, figure 10; and similar lines occur on the fragment, illustrated in Plate VIII, figure 9. In Plate XIII, figure 2, the line on top of the rim margin descends abruptly over the outer edge of the rim and merges with the upper line of the V-shaped figure.

¹See Holmes: *op. cit.*, Plate CLXXV, fig. a, and Shetrone, H. C.: "The Campbell Island Village Site and the Hine Mound and Village Site," *Certain Mounds and Village Sites in Ohio*, vol. 4, pt. 1, Fig. 31. (Columbus, Ohio, 1923).

Part of the decoration on the antler comb, illustrated in Plate XXII, figure 1, is very unusual. The zigzags across the top and through the middle, of course, are not uncommon, but the zigzags, with each, or every other angle, bisected, are rarely seen.

The writer knows of only two other artifacts from Ontario, which bear similar designs; one is an earthenware pipe, found at a site on lot 25, con. VII, Malahide tp., Elgin co.,¹ the other, a sandstone pipe, from Markham township, York county². A stone pipe, of Micmac type, from Matapedia, Quebec,³ bears a somewhat similar design.

Ornamental carvings in the round can be seen on only three specimens (See Plate XX, figures 19, 20, and 22). The upper groove on the specimen, seen in figure 19, encircles the awl.

Exclusive of the nodes, seen on many of the pots, only one pot had plastic ornamentation in high relief (See Plate V, figure 4).

The only apparent life form, modelled in the round, is the stem of a pipe, illustrated in Plate XXIII, figure 14. Its lower side, of which a cross-section is shown in figure 3e, is covered with rounded nodes or bosses, which give it a somewhat botryoidal appearance, suggestive of the manner in which the scutes on the body of the alligator are sometimes represented⁴. We would scarcely find representations of this animal so far north as Ontario, but the similarity in treatment suggests that if an animal figure had been modelled on the bowl of this specimen, it would have represented the alligator or snapping turtle, which has rows of scutes along the top of the tail⁵.

The fact that much of the pottery decoration differs from that on Iroquoian ware, both in simplicity and technique, whereas the culture otherwise is mainly Iroquoian, might lead some to argue that the art here was decadent. The writer thinks, however, that it was more likely in a formative stage. Parker suggests that the Iroquois possibly had different pottery when they first came into New York state,⁶ and the pottery of the first Iroquoian arrivals in Ontario may have been different likewise. The Iroquois evidently developed their distinctive ware after they arrived in the east, for none, or very little, is found along any of the presumed routes by which they may have come from their former home.⁷ They must have used pottery during their migration, but we can safely assume that most of the decorative designs were not what we commonly call Iroquoian, since otherwise we would surely find them. In view of this, and also on account of the culture generally being more Iroquoian than Algonkian, why could not the decorative art on the Uren pottery, and pottery from other sites of the same culture, be that of some early Iroquoian arrivals, and represent their art in process of evolution or development into what we now recognize as typically Iroquoian?

¹Cat. No. VIII-F-5656, Nat. Mus. of Can.

²See Fig. 464, W. K. Moorehead's "Stone Art in North America," vol. II (Boston and New York, 1910).

³No. 287, Patterson collection, Dalhousie University, Halifax, N.S. See Plate LXXXIII, fig. 1, Harlan I. Smith: "An Album of Prehistoric Canadian Art," Op. cit.

⁴Hartman, C. V.: "The Alligator as a Plastic Decorative Motive in Certain Costa Rican Pottery," Am. Anthropologist, N.S., vol. 9, pp. 307-314, Plates XV-XX (1907).

⁵A somewhat similar specimen is illustrated by Schoolcraft (Plate 33, figure 6), and on page 94, described as an "implement of pottery, with a singular rugose mouth." (Information Respecting the History, Condition, and Prospects of the Indian Tribes of the United States, Philadelphia, 1853, pt. I). Unfortunately, he does not give the locality where it was found.

⁶Op. cit., p. 481.

⁷Parker illustrates some pottery from a site near South Bend, Indiana, which may be Iroquoian. See his "Archæological History of New York," New York State Mus. Bull., Albany, No. 235, pt. 1, Pl. 55. (July-August, 1920).

Briefly summarized, the outstanding differences and resemblances between the decorative art on the pottery and other objects at Uren, and at later Neutral sites in the same county and Waterloo county, are as follows:

More extensive decoration at Uren of the inside surfaces and on top of the edges of pots, but in only one instance decoration extending beyond the neck on the outside; less decoration of earthenware pipes, in no case elaborate; less decoration of bone objects; fewer carvings in the round; more groups of simple decorative elements than complex patterns composed of two or more different elements; fewer rectilinear designs; a few curvilinear designs; a design resembling a fret; zigzags with angles bisected by other lines; and V-shaped figures.

The resemblances or correspondences in art are few, although certain identities in pottery decoration can be seen. Both at Uren and at later Neutral sites there is the human face motive, consisting of three impressed circles; notches on the angles of the rim margins, and longitudinal lines on top of the rims; designs composed of alternating horizontal lines and rows of short perpendicular and oblique lines; and reticulate designs. Ornamental heads and grooves occur on bone awls.

In addition to the correspondences noted on page 21, the extensive decoration of the inside surfaces of the rims accords with that on Algonkian pottery from Ontario generally. The embossed nodes and the curved lines suggest the affinity of the art here with that on certain pottery, possibly Andaste, found in Wyoming valley, Pennsylvania,¹ and with that on Holmes' "Northwestern Group" of pottery, the ethnic provenience of which has as yet not been ascertained.

BURIALS

No human skeletons were found during the excavations of the refuse deposits, neither did trenching in the most likely spots of other parts of the site bring any to light. A skeleton, however, was plowed up by Daniel Gould, between deposits 14 and 16, nearly opposite deposit 2. One was found on the Mash farm, a few hundred feet north of deposit 20, in 1922. Another skeleton was found by John Bowerman in one of the fields in the next concession, south of the site. Skeletons have been discovered at all the other nearby sites of the same culture—on the Williams, Oddy, McLeod, Campbell, and Huggins farms.

A few stray human bones were found in deposit 1. These comprise a fragment of what seems to be the parietal of a child, the lower jaw of an adult, two molar teeth, and the head of a femur. Both of the teeth are pathological, and the triturating surface of one has been worn down until the cusps disappeared. That the lower jaw belonged to an aged individual is suggested by the loss of all the teeth and the almost entire absorption of the alveolar processes.

The occurrence of these stray human remains, associated with the bones of food animals, suggests that the inhabitants of this site possibly practised ceremonial cannibalism.

¹ See also other correspondences noted on previous pages.

IDENTITY OF THE INHABITANTS

Previous to the exploration of this site, we had archæological evidence of two successive periods of pre-European occupancy of this general region, the earliest being Algonkian and the latest Neutral-Iroquoian.

The inhabitants of this site were probably not Algonkian. Although there are a few identities in pottery decoration, and some of the pipes show Algonkian characteristics,¹ the culture otherwise is different. The extent and depth of most of the refuse deposits, and the presence of corn, point to a sedentary, semi-agricultural people, whereas, as we know, the Canadian Algonkians generally were more or less nomadic. Then, too, if this site had been of Algonkian origin we should have found some of the grooved stone axes, stone gouges, bar amulets, bird amulets, one-hole gorgets, and banner stones, so characteristic of the Algonkian culture.

Although most of the pottery decoration and the pipes are sufficiently characteristic to differentiate the culture from that of any known northern Iroquoian tribe, and suggest other ethnic relationships, other cultural features are unmistakably Iroquoian. Probably the people were Neutrals, among the earliest Neutrals, perhaps, to arrive in this region, their culture possibly modified by contact with Algonkian predecessors. Comparison of the material from Uren, with that from three presumed Neutral sites, in Brant and Elgin counties, Ontario², the culture of which seems to be in a secondary or transitional stage, considerably strengthens this suspicion. As a matter of fact, the correspondences³ are so numerous as to lead one to the conclusion that all these sites were occupied by the same kind of people, although apparently at different time periods. The inhabitants of Uren, therefore, were probably proto-Neutral.

SUMMARY AND CONCLUSION

The Uren village site has many large refuse deposits, some of them quite deep. This is characteristic of sites occupied by a sedentary people. The presence of corn and a sunflower seed show that the people depended in part on the products of agriculture for subsistence. That they cultivated the tobacco plant is suggested by the discovery of pipes. Most of the animals, living in the vicinity, supplied food, and material for clothing and tools. No rocks or even drift boulders occur locally, so this material, especially chert, had to be brought from a distance. With few exceptions, the implements used in the various activities of the people, such as securing and preparing food; working stone, clay, shell, bone, antler, and wood; tanning skins of animals and making them into garments, etc., are practically the same as those from known Neutral sites. The occurrence of draw-shave scrapers, which have been found at only two other sites of the Iroquois, suggests contact with some people from Ohio, where such artifacts are abundant. Most of the pottery is simple; its special characters are round bottoms; no handles; inferior technique for the most part to later

¹These Algonkian characteristics may be due either to contact with Algonkian predecessors; to Algonkian women, with whom members of the tribe had intermarried; or to the presence of Algonkian captives.

²Lot 61, con. III, Onondaga tp., Brant co.; and lot 25, con. VII, Malahide tp., and lots 1 and 2, con. VIII, Bayham tp., Elgin co.

³Some of these similarities have been noted in various places above.

Neutral pottery occurring in the same region; occasional overhanging cornice-like rims; rarity of deeply constricted necks; and a surface either smooth, scarified, chequered, or with textile marking. The absence of earthworks and palisades indicates that the inhabitants were peaceable. Love of personal adornment is suggested by the combs, stone and bone pendants, probable bone wristlet, and shell and bone beads. That the inhabitants did some trading with other people appears from the presence of an ocean-shell bead. Certain objects were used in games and amusements; a few others were probably religious paraphernalia. Only one stone pipe was discovered and the earthenware pipes, which are mostly of the monitor type, differ from most of those found at Iroquois sites elsewhere in Ontario. Decorative art is seen on pottery, bone awls, a bone comb, and earthenware pipes. The ornamentation on pottery is mostly geometrical, and the designs are both curvilinear and rectilinear. Decoration consisting of groups of simple elements occurs more commonly than complex designs composed of two or more different elements. One unusual design resembles a fret, another may have been intended to represent a bird, and a few probably represent human faces. In certain features the pottery decoration resembles Algonkian pottery, in others the probable Andaste pottery from Pennsylvania and Holmes' "Northwestern Group" from Ohio and Illinois; a few designs resemble those on later Neutral pottery. Part of the ornamentation on an antler comb consists of a rarely used type of zigzag. The decoration of the pipes is of the most simple character. There are only a few carvings in the round, and only one possible life form modelled in clay. A few scattered human remains, but no graves, were found. The site is prehistoric, the inhabitants probably proto-Neutral, nearly on the same plane culturally as the later pre-European Neutrals, but showing certain distinctive differences in their earthenware pipes and in most of their pottery ornamentation.

PLATE I

IMPLEMENTS USED IN SECURING FOOD

(All $\frac{1}{2}$ natural size)

- Figure 1. Crude leaf-shaped chert form. From general digging in deposit 16. Cat. No. VIII-F-17387.
- Figure 2. Crude chert point. From general digging in deposit 1. Cat. No. VIII-F-16231.
- Figure 3. Crude or unfinished chert point. From general digging in deposit 6. Cat. No. VIII-F-17171.
- Figure 4. Thin, triangular chert point. From surface. Cat. No. VIII-F-15932*b*.
- Figure 5. Asymmetric triangular chert point. From general digging in deposit 6. Cat. No. VIII-F-17017*b*.
- Figure 6. Triangular chert point. From general digging in deposit 1. Cat. No. VIII-F-16232*e*.
- Figure 7. Triangular chert point. From 10 inches deep in deposit 6. Cat. No. VIII-F-17018.
- Figure 8. Triangular chert point. From 10 inches deep in deposit 1. Cat. No. VIII-F-16235.
- Figure 9. Unfinished stemmed chert point. From general digging in deposit 1. Cat. No. VIII-F-16236.
- Figure 10. Stemmed chert point. From general digging in deposit 1. Cat. No. VIII-F-16239.
- Figure 11. Notched chert point. From general digging in deposit 1. Cat. No. VIII-F-16238.
- Figure 12. Notched chert point. From surface. Cat. No. VIII-F-15937.
- Figure 13. Notched chert point. From 4 inches deep in deposit 6. Cat. No. VIII-F-17020.
- Figure 14. Notched chert point. From general digging in deposit 6. Cat. No. VIII-F-17019.
- Figure 15. Bone point. From general digging in deposit 6. Cat. No. VIII-F-17021.
- Figures 16 and 17. Hollowed antler points. From general digging in deposit 1. Cat. Nos. VIII-F-16242 and VIII-F-16243.
- Figure 18. Unfinished antler point. From general digging in deposit 4. Cat. No. VIII-F-16775.
- Figure 19. Pectoral spine of catfish. From general digging in deposit 7. Cat. No. VIII-F-17286.
- Figure 20. Antler harpoon point. From general digging in deposit 1. Cat. No. VIII-F-16244.

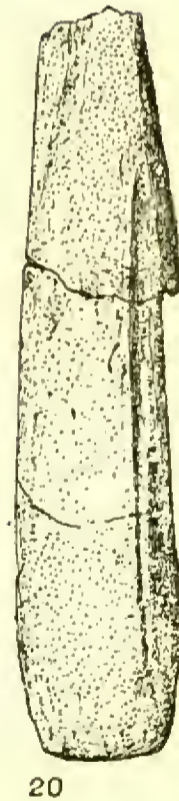


PLATE II

POTTERY—MANUFACTURE

(All $\frac{1}{2}$ natural size)

- Figure 1. Fragment with scarified surface. From general digging in deposit 16. Cat. No. VIII-F-17445j.
- Figures 2 and 3. Fragments with scarified surface. From general digging in deposit 2. Cat. Nos. VIII-F-16732d and VIII-F-16730o.
- Figure 4. Fragment with marking left by cord-wound tool. From general digging in deposit 2. Cat. No. VIII-F-16736g.
- Figure 5. Fragment with linear depressions. From general digging in deposit 1. Cat. No. VIII-F-16396a.
- Figure 6. Fragment with marks left by malleating tool. From general digging in deposit 1. Cat. No. VIII-F-16369a.
- Figure 7. Fragment showing imperfectly joined seam on outside. From general digging in deposit 6. Cat. No. VIII-F-17211a.
- Figure 8. Fragment with imperfectly joined seam on outside, showing how it split along the seam. From general digging in deposit 1. Cat. No. VIII-F-16421a.
- Figure 9. Fragments of pottery showing method of repairing a break. From general digging in deposit 6. Cat. No. VIII-F-17147b and c.

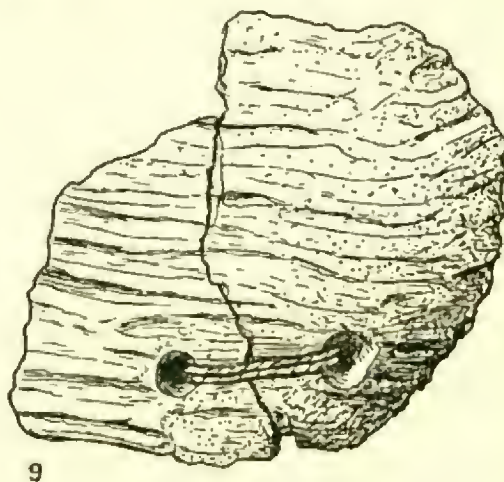
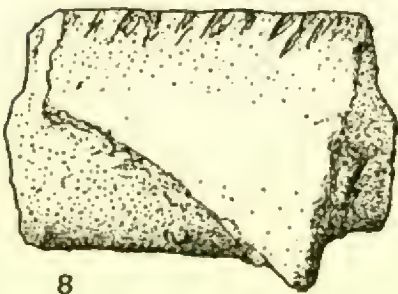
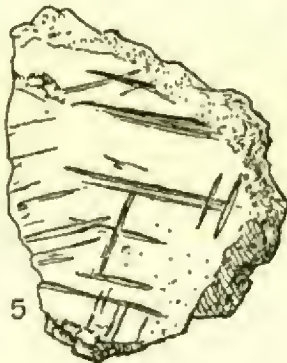
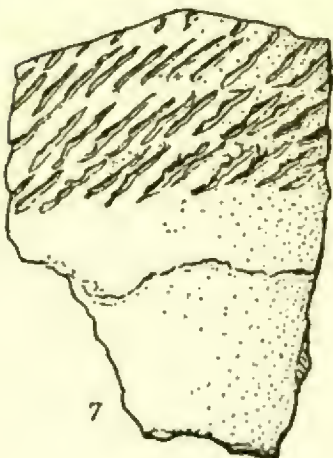
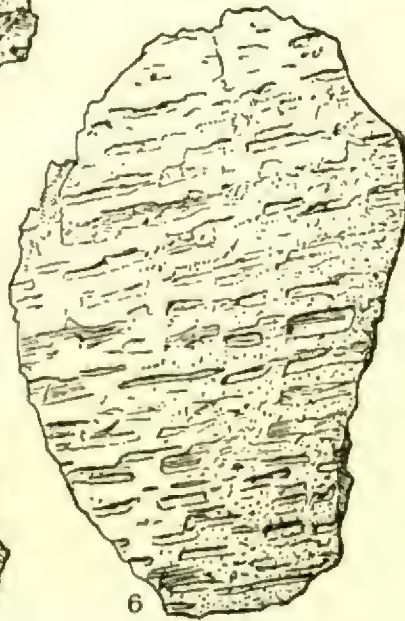
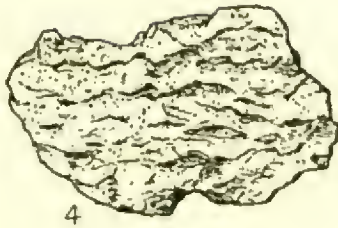
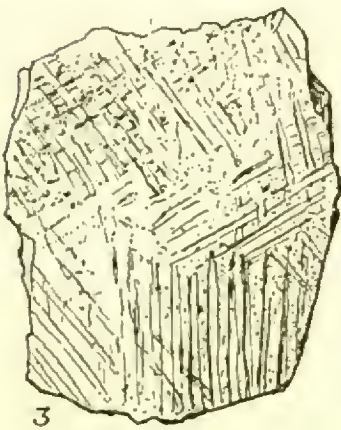
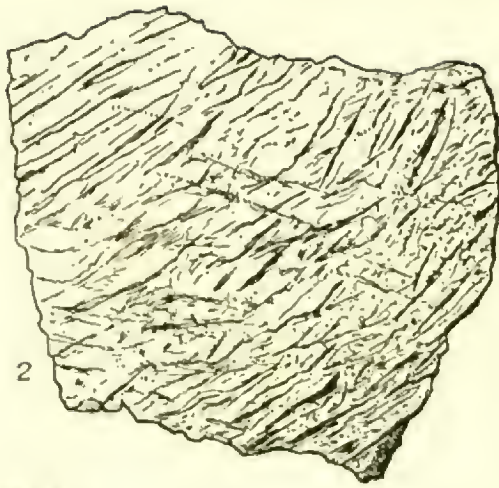
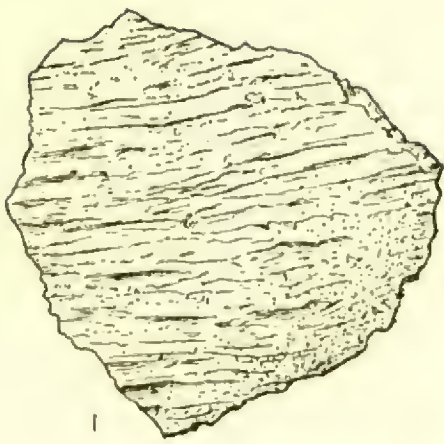


PLATE III

POTTERY—DECORATION

(All $\frac{1}{2}$ natural size)

- Figure 1. Fragment of small pot with crude decoration. From general digging in deposit 2. Cat. No. VIII-F-16745*b*.
- Figure 2. Fragment of small pot with crude decoration. From general digging in deposit 1. Cat. No. VIII-F-16400*h*.
- Figure 3. Fragment of small pot with crude decoration and notched rim. From general digging in deposit 6. Cat. No. VIII-F-17122*a*. For cross-section See figure 2*a*.
- Figure 4. Fragment showing crude decoration. From general digging in deposit 2. Cat. No. VIII-F-16747*k*.
- Figure 5. Fragment of small crude pot with stylus impressions. From general digging in deposit 7. Cat. No. VIII-F-17326*a*.
- Figure 6. Fragment showing crude decoration. From general digging in deposit 1. Cat. No. VIII-F-16409*l*.
- Figure 7. Fragment with finger-nail impressions. From general digging in deposit 6. Cat. No. VIII-F-17122*c*.
- Figure 8. Fragment with oblique impressions. From general digging in deposit 6. Cat. No. VIII-F-17123*a*.
- Figure 9. Fragment of small pot with crude decoration. From general digging in deposit 2. Cat. No. VIII-F-16745*a*.
- Figure 10. Fragment of small pot with chequered pattern. From surface. Collected by Gordon Uren. Cat. No. VIII-F-17483.
- Figure 11. Fragment with stylus impressions. From general digging in deposit 2. Cat. No. VIII-F-16753*k*.
- Figure 12. Partly restored small pot. From general digging in deposit 1. Cat. No. VIII-F-16419*a* and *b*.
- Figure 13. Fragment with stylus impressions. From general digging in deposit 1. Cat. No. VIII-F-16450.
- Figure 14. Fragment of small pot with stylus impressions. From general digging in deposit 1. Cat. No. VIII-F-16408.
- Figure 15. Partly restored small pot with stylus impressions. From general digging in deposit 16. Cat. No. VIII-F-17452*a-c*.
- Figure 16. Partly restored small pot with crude decoration. From general digging in deposit 6. Cat. No. VIII-F-17207*a-c*.

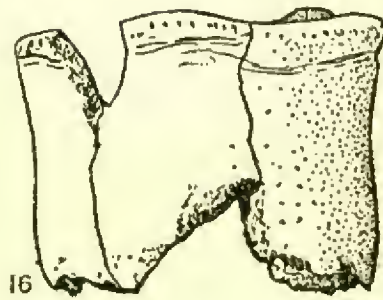
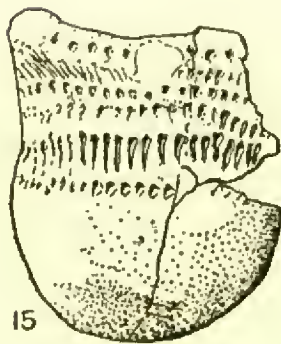
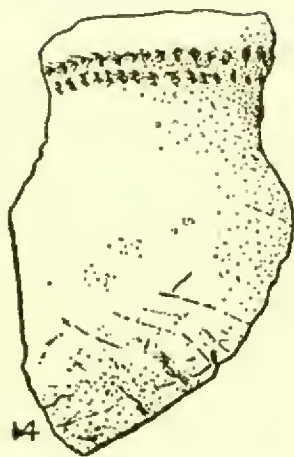
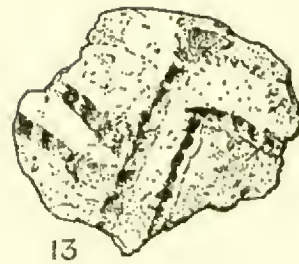
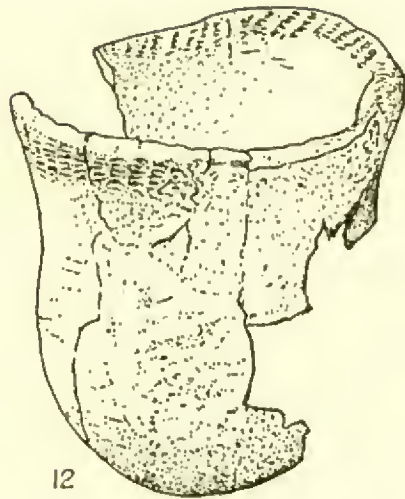
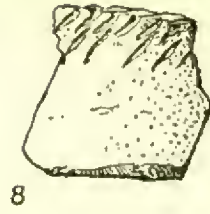
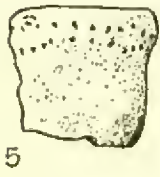
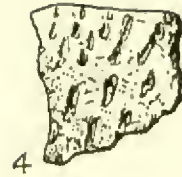
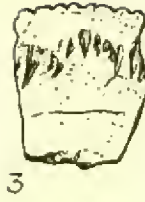
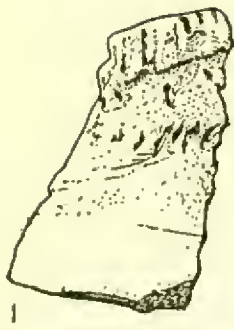


PLATE IV

POTTERY—DECORATION

(All $\frac{1}{2}$ natural size)

- Figure 1. Fragment with crude decoration. From general digging in deposit 1. Cat. No. VIII-F-16415*l*.
- Figure 2. Fragment showing decoration with cord-wound twig. From surface. Cat. No. VIII-F-15959*a*.
- Figure 3. Fragment showing decoration with cord-wound twig. From general digging in deposit 2. Cat. No. VIII-F-16750*a*.
- Figure 4. Fragment showing decoration with cord-wound twig on inside surface. From surface. Cat. No. VIII-F-15959*b*.
- Figure 5. Fragment with triangular stylus impressions. From general digging in deposit 6. Cat. No. VIII-F-17209*c*.
- Figure 6. Fragment with crude decoration. From general digging in deposit 5. Cat. No. VIII-F-16924*b*.
- Figure 7. Fragment with simple decoration. From general digging in deposit 1. Cat. No. VIII-F-16496*c*. For decoration of inside surface of another fragment from same pot *See* Plate VIII, figure 5.
- Figure 8. Fragment with bosses and impressions made with hollow tool. From surface. Cat. No. VIII-F-15970*c*.
- Figure 9. Fragment with oval impressions, probably made with cord-wound loop. From general digging in deposit 2. Cat. No. VIII-F-16752*a*.
- Figure 10. Fragment with crude decoration. From general digging in deposit 7. Cat. No. VIII-F-17330*b*.
- Figure 11. Fragment with crude decoration. From general digging in deposit 1. Cat. No. VIII-F-16436*b*.
- Figure 12. Fragment with crude decoration. From general digging in deposit 5. Cat. No. VIII-F-16918*d*.
- Figure 13. Fragment with almond-shaped impressions. From general digging in deposit 2. Cat. No. VIII-F-16748*f* and *g*.
- Figure 14. Fragment with semicircular impressions. From general digging in deposit 1. Cat. No. VIII-F-16415*h*. For decoration of inside of this fragment *See* Plate XVIII, figure 3.

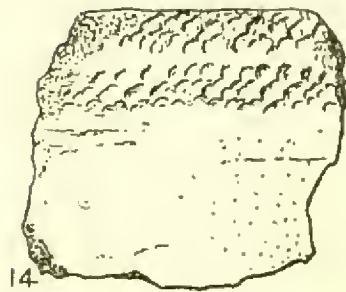
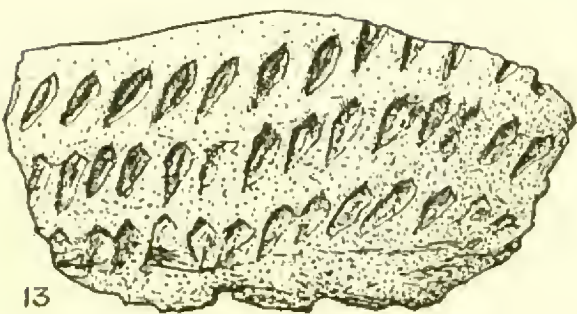
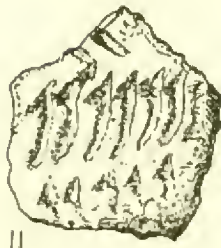
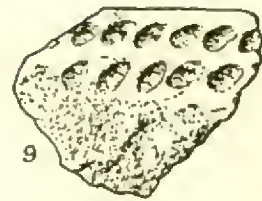
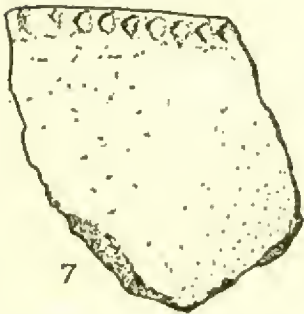
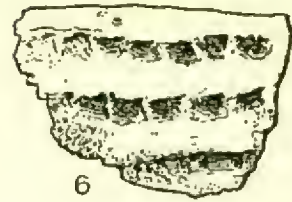
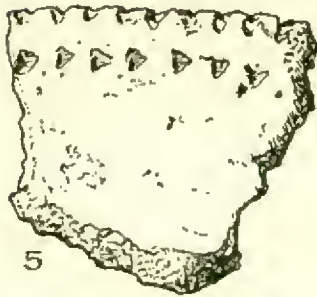
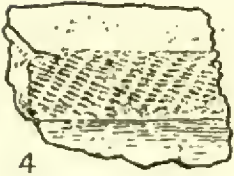
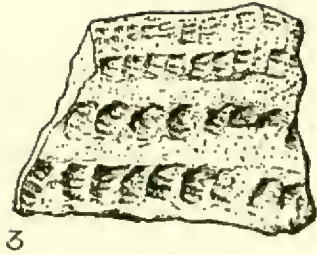
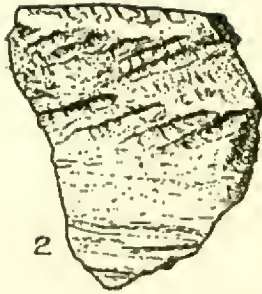
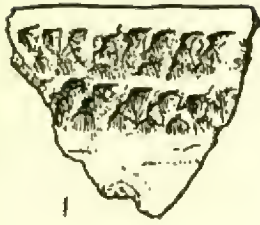


PLATE V

POTTERY—DECORATION

(All $\frac{1}{2}$ natural size)

- Figure 1. Fragment with crude decoration. From general digging in deposit 1. Cat. No. VIII-F-16418a.
- Figure 2. Fragment with notches and oblique impressions. From general digging in deposit 2. Cat. No. VIII-F-16746a.
- Figure 3. Fragment with impressions made with notched end of a stick. From general digging in deposit 1. Cat. No. VIII-F-16415i. For cross-section *See* text Figure 2, s.
- Figure 4. Fragment with impressions made with notched end of a stick. From general digging in deposit 2. Cat. No. VIII-F-16756b. For cross-section *See* text Figure 2, r.
- Figure 5. Fragment with oblique impressions. From general digging in deposit 1. Cat. No. VIII-F-16486d.
- Figure 6. Fragment with crowded oblique impressions. From general digging in deposit 16. Cat. No. VIII-F-17456c.
- Figure 7. Fragment with curved impressions. From general digging in deposit 1. Cat. No. VIII-F-16420b.
- Figure 8. Side view of fragment showing projecting boss. From general digging in deposit 6. Cat. No. VIII-F-17213e.
- Figure 9. Fragment with bosses. From general digging in deposit 1. Cat. No. VIII-F-16466a. For cross-section *See* text Figure 2, j.
- Figure 10. Fragment with bosses, etc. From general digging in deposit 7. Cat. No. VIII-F-17333p.
- Figure 11. Fragment with bosses, etc. From general digging in deposit 4. Cat. No. VIII-F-16803a.
- Figure 12. Fragment with bosses, etc. From general digging in deposit 6. Cat. No. VIII-F-17212h.
- Figure 13. Fragment with bosses, etc. From surface. Cat. No. VIII-F-15970d.
- Figure 14. Fragment with bosses, etc. From general digging in deposit 2. Cat. No. VIII-F-16753h.
- Figure 15. Fragment with bosses, etc. From general digging in deposit 6. Cat. No. VIII-F-17214c.

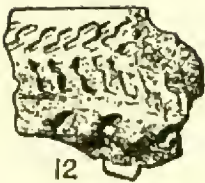
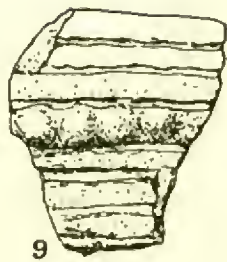
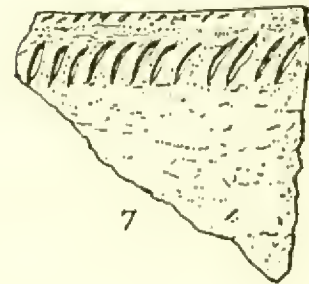
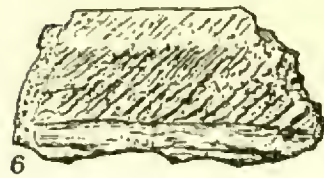
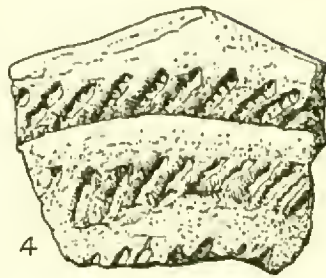
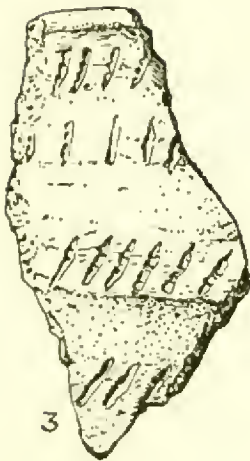
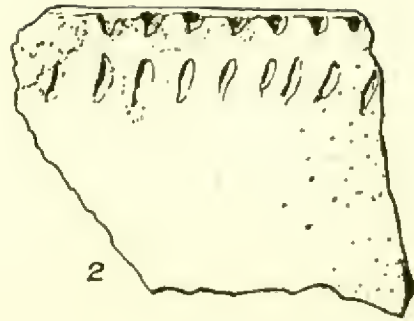
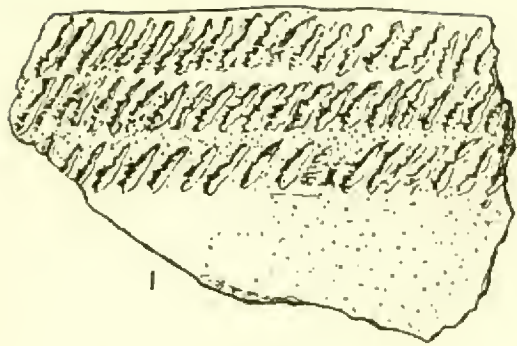


PLATE VI

POTTERY—DECORATION

(All $\frac{1}{2}$ natural size)

- Figure 1. Fragment with crude decoration. From general digging in deposit 1. Cat. No. VIII-F-16410*b* and *e*.
- Figure 2. Fragment with triangular impressions. From general digging in deposit 1. Cat. No. VIII-F-16411*a*.
- Figure 3. Fragment with vertical impressions, the lower row deeply pressed into clay. From general digging in deposit 1. Cat. No. VIII-F-16429*a*.
- Figure 4. Fragment with oblique impressions. From general digging in deposit 16. Cat. No. VIII-F-17455*x*.
- Figure 5. Fragment with finger-nail impressions. From general digging in deposit 6. Cat. No. VIII-F-17122*d*.
- Figure 6. Fragment with finger-nail impressions. From surface. Cat. No. VIII-F-15956*s*. For cross-section *See* text Figure 2, *k*.
- Figure 7. Fragment with crescentic impressions. From general digging in deposit 2. Cat. No. VIII-F-16749*a*.
- Figure 8. Fragment with crescentic impressions. From general digging in deposit 4. Cat. No. VIII-F-16812*e*.
- Figure 9. Fragment with finger-nail and stylus impressions. From general digging in deposit 5. Cat. No. VIII-F-16922*a*.
- Figure 10. Fragment with finger-nail (?) impressions. From general digging in deposit 7. Cat. No. VIII-F-17334*g*.
- Figure 11. Fragment with crowded finger-nail impressions. From general digging in deposit 5. Cat. No. VIII-F-16934*n*.

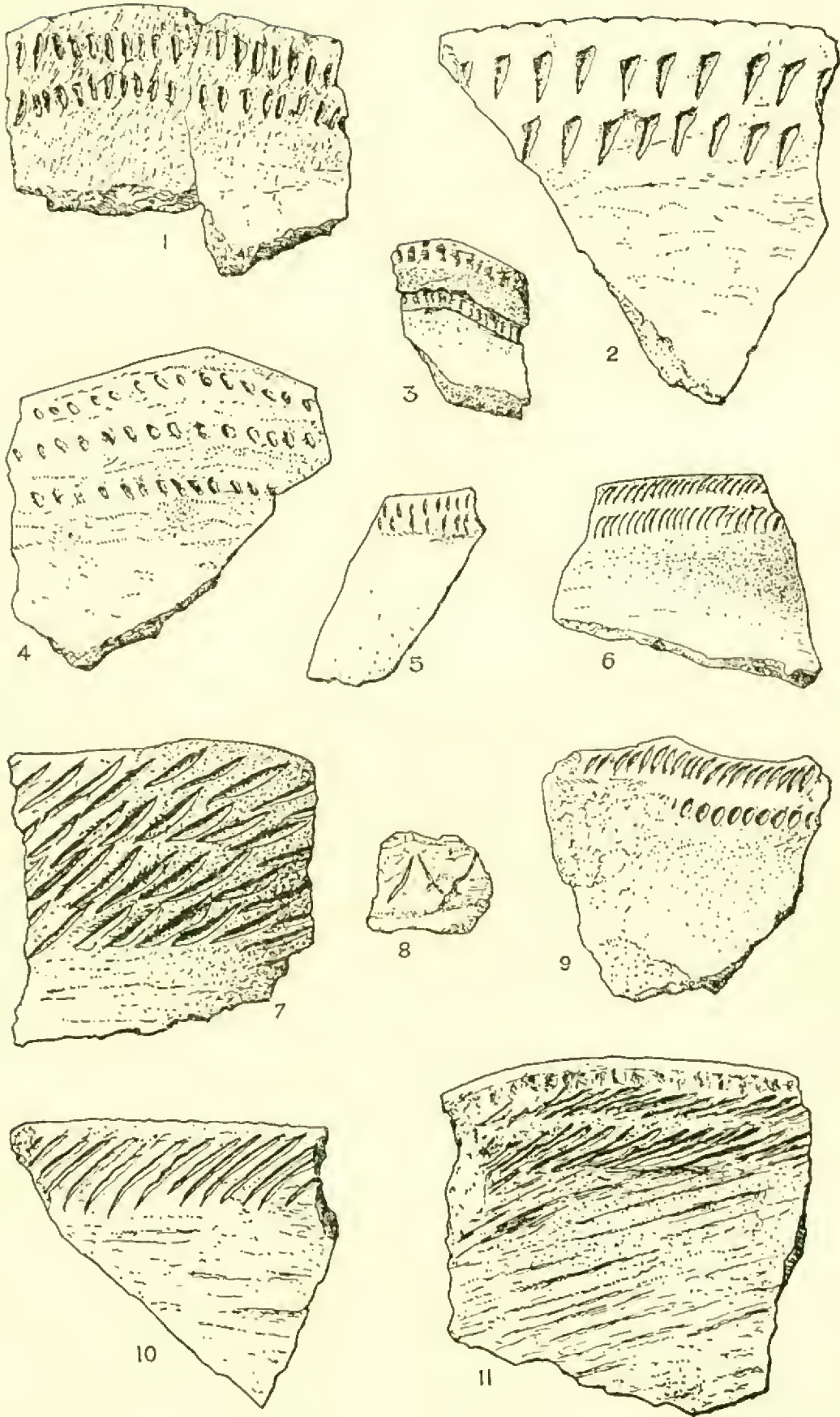


PLATE VII

POTTERY—DECORATION

(All $\frac{1}{2}$ natural size)

- Figure 1. Fragment with pinnate design. From general digging in deposit 2. Cat. No. VIII-F-16753*i*.
- Figure 2. Fragment with pinnate design. From general digging in deposit 16. Cat. No. VIII-F-17455*a*.
- Figure 3. Fragment with pinnate design. From general digging in deposit 2. Cat. No. VIII-F-16753*e*.
- Figure 4. Fragment with pinnate design and trailed lines. From general digging in deposit 1. Cat. No. VIII-F-16491*a* and *b*.
- Figure 5. Fragment with pinnate design. From general digging in deposit 6. Cat. No. VIII-F-17215*a*.
- Figure 6. Fragment with pinnate design. From general digging in deposit 1. Cat. No. VIII-F-16433*b* and *c*.
- Figure 7. Fragment with semicircular impressions and pinnate design. From general digging in deposit 1. Cat. No. VIII-F-16434*h*.
- Figure 8. Fragment with pinnate design. From general digging in deposit 7. Cat. No. VIII-F-17337*b*.
- Figure 9. Fragment with pinnate design and bosses. From general digging in deposit 4. Cat. No. VIII-F-16811*a*.
- Figure 10. Fragment with pinnate design. From general digging in deposit 1. Cat. No. VIII-F-16431*d*. Decoration on the inside of another fragment of the same pot can be seen in Plate XVIII, figure 6.
- Figure 11. Fragment with double pinnate design and crude impressions. From general digging in deposit 7. Cat. No. VIII-F-17336*a-c*.
- Figure 12. Fragment with pinnate design consisting of finger-nail impressions and impressions made with crude tool. From general digging in deposit 16. Cat. No. VIII-F-17462*b*.
- Figure 13. Fragment with pinnate design. From general digging in deposit 6. Cat. No. VIII-F-17126*h*.

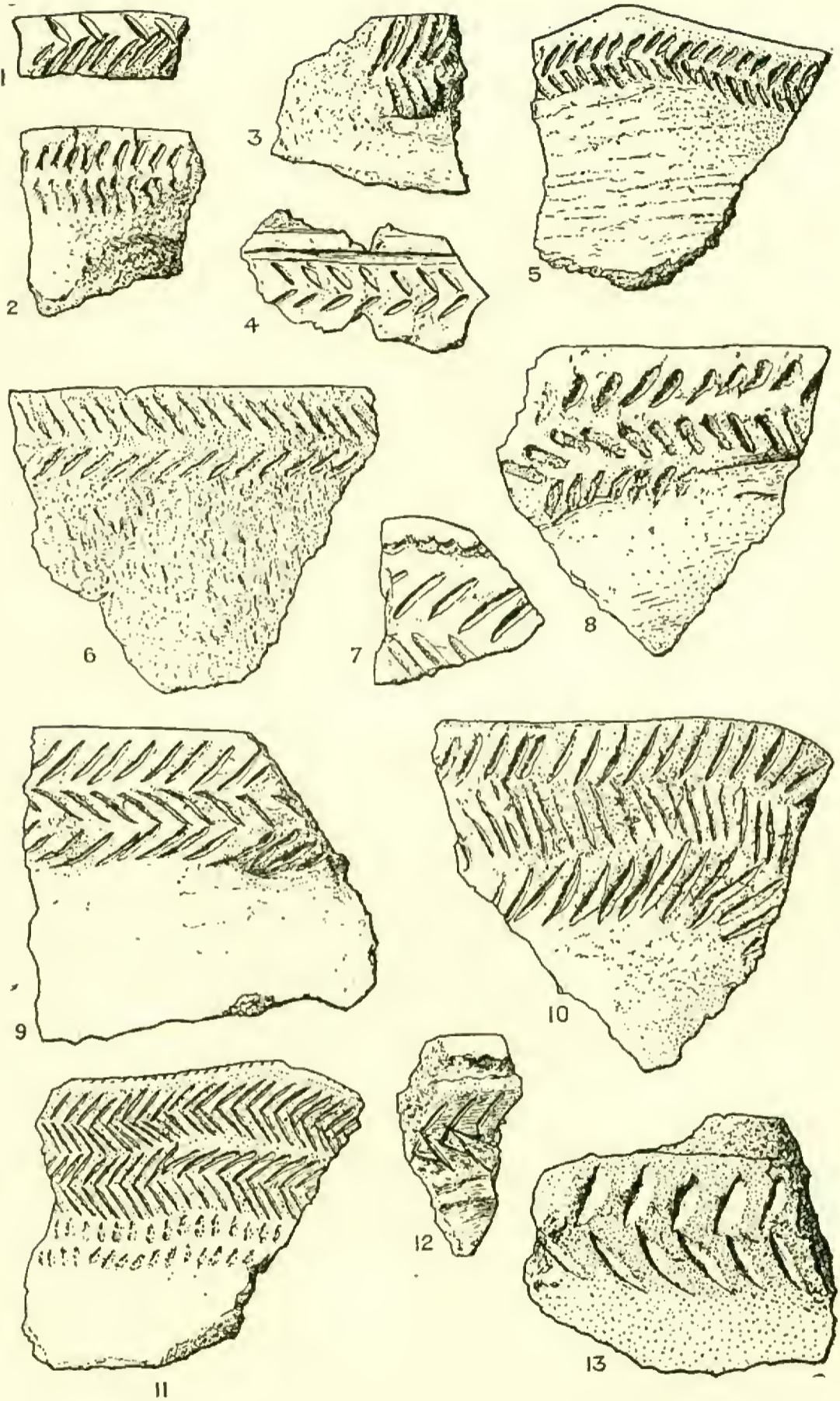


PLATE VIII

POTTERY—DECORATION

(All $\frac{1}{2}$ natural size)

- Figure 1. Fragment with zigzag design. From general digging in deposit 1. Cat. No. VIII-F-16490*h*.
- Figure 2. Fragment showing decoration on inside surface. From general digging in deposit 16. Cat. No. VIII-F-17456*d*. For decoration on the outside of another fragment of the same pot *See* Plate V, figure 3.
- Figure 3. Fragment with reticulate design, etc. From general digging in deposit 16. Cat. No. VIII-F-17462*f*.
- Figure 4. Fragment with double reticulate design. From general digging in deposit 2. Cat. No. VIII-F-16757*f*.
- Figure 5. Fragment showing decoration on the inside surface. From general digging in deposit 1. Cat. No. VIII-F-16496*a*. For decoration on the outside of another fragment of the same pot *See* Plate IV, figure 7.
- Figure 6. Fragment showing interrupted lines. From general digging in deposit 1. Cat. No. VIII-F-16442*q*.
- Figure 7. Fragment showing interrupted lines. From general digging in deposit 16. Cat. No. VIII-F-17459*a*.
- Figure 8. Fragment showing pinnate and reticulate designs. From general digging in deposit 1. Cat. No. VIII-F-16432*a* and *b* and VIII-F-16434*j*. For cross-section *See* text Figure 2, *m*.
- Figure 9. Fragment showing diagonal broken line. From general digging in deposit 7. Cat. No. VIII-F-17344*d*.
- Figure 10. Fragment showing decoration. From general digging in deposit 1. Cat. No. VIII-F-16440*g*.
- Figure 11. Fragment showing decoration. From surface. Cat. No. VIII-F-15964.
- Figure 12. Fragment showing decoration. From general digging in deposit 6. Cat. No. VIII-F-17217*i*.

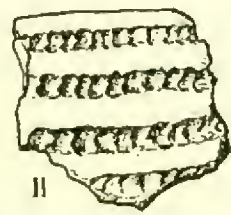
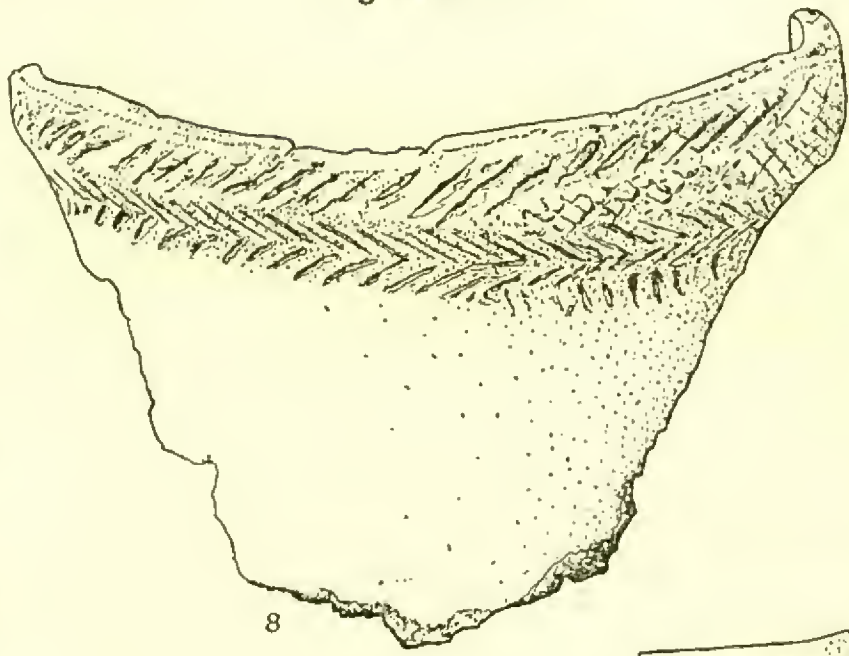
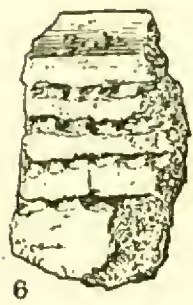
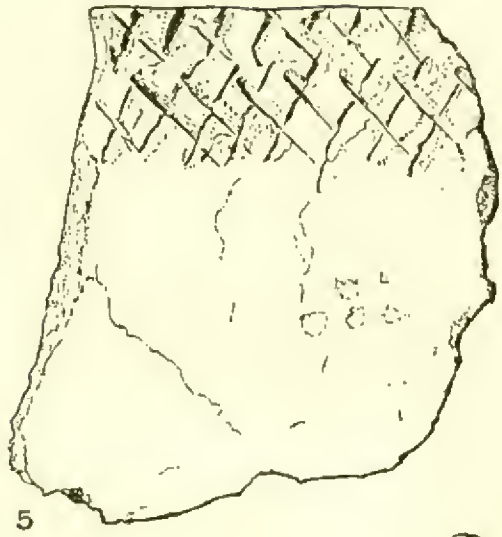
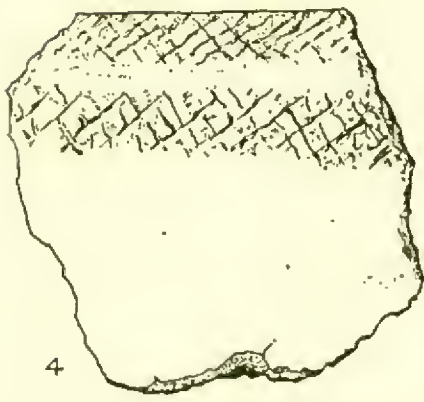
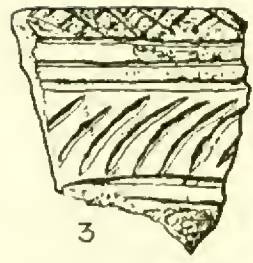
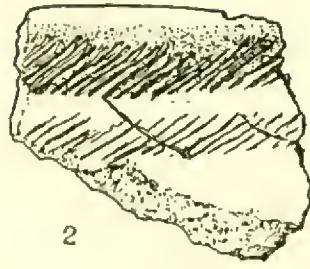
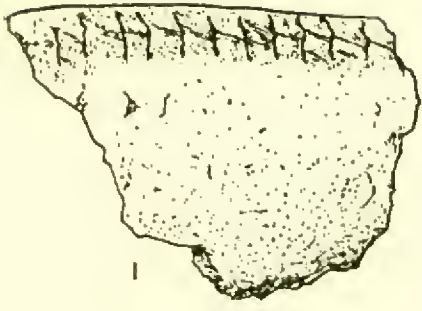


PLATE IX

POTTERY—DECORATION

(All $\frac{1}{2}$ natural size)

- Figure 1. Fragment with both trailed and interrupted lines. From general digging in deposit 6. Cat. No. VIII-F-17217*d*. For inside decoration *See* Plate XVIII, figure 2.
- Figure 2. Fragment with trailed lines and vertical impressions. From general digging in deposit 1. Cat. No. VIII-F-16486*c*.
- Figure 3. Fragment with decoration of horizontal lines only. From general digging in deposit 1. Cat. No. VIII-F-16451*a*. For cross-section *See* text Figure 2, *l*.
- Figure 4. Fragment with decoration of horizontal lines only. From general digging in deposit 1. Cat. No. VIII-F-16464*a*. For cross-section *See* text Figure 2, *q*.
- Figure 5. Fragment with composite design. From general digging in deposit 6. Cat. No. VIII-F-17221*d*.
- Figure 6. Fragment with composite design. From general digging in deposit 5. Cat. No. VIII-F-16929*a*.
- Figure 7. Fragment with composite design. From general digging in deposit 6. Cat. No. VIII-F-17213*f*.
- Figure 8. Fragment with composite design. From general digging in deposit 1. Cat. No. VIII-F-16488*a*.

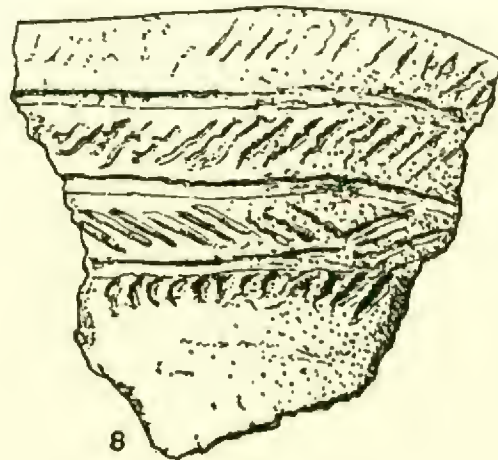
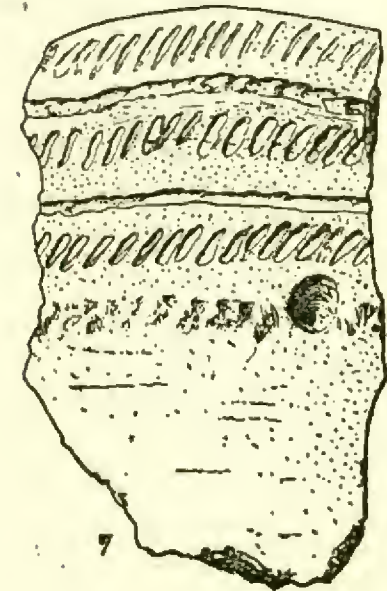
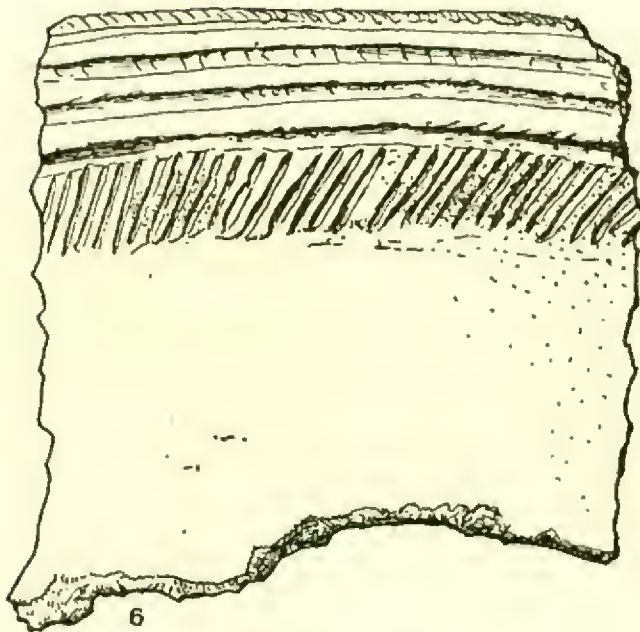
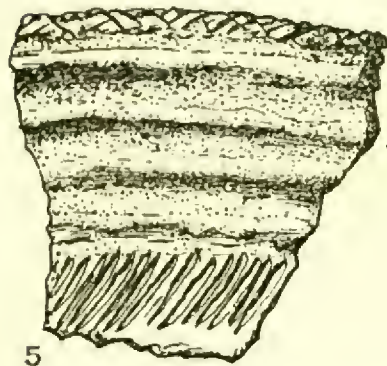
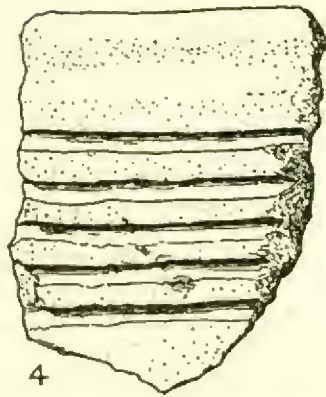
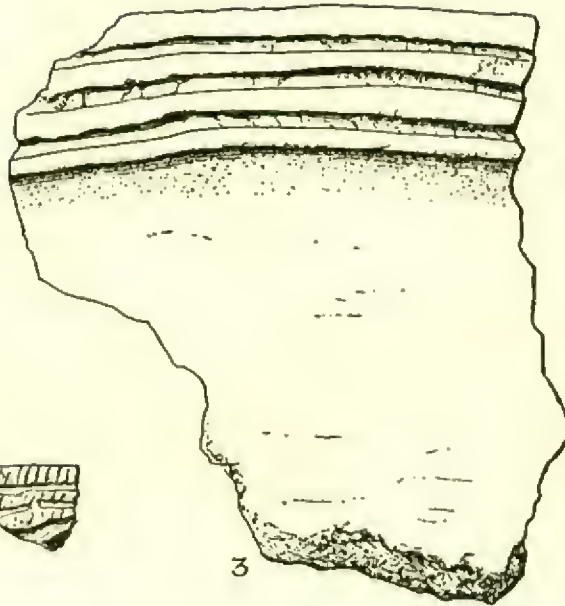
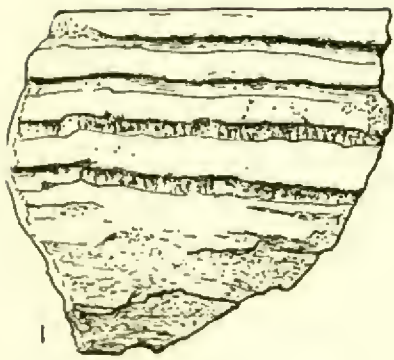


PLATE X
POTTERY—DECORATION

(All $\frac{1}{2}$ natural size)

- Figure 1. Fragment with trailed lines. From general digging in deposit 6. Cat. No. VIII-F-17216*l*. For decoration on inside surface of this fragment *See* Plate XVIII, figure 1, and for cross-section *See* text Figure 2, *h*.
- Figure 2. Fragment with composite design. From general digging in deposit 1. Cat. No. VIII-F-16459*d*.
- Figure 3. Fragment with composite design. From general digging in deposit 4. Cat. No. VIII-F-16806*d*.
- Figure 4. Fragment with composite design. From general digging in deposit 2. Cat. No. VIII-F-16753*d*.
- Figure 5. Fragment with composite design. From general digging in deposit 1. Cat. No. VIII-F-16472*h*.
- Figure 6. Fragment with trailed lines. From general digging in deposit 7. Cat. No. VIII-F-17339*r*.
- Figure 7. Fragment with composite design. From general digging in deposit 6. Cat. No. VIII-F-17140*a*.
- Figure 8. Fragment with composite design. From general digging in deposit 5. Cat. No. VIII-F-16928*k*.
- Figure 9. Fragment with composite design. From general digging in deposit 1. Cat. No. VIII-F-16471*b*.
- Figure 10. Fragment with composite design. From general digging in deposit 16. Cat. No. VIII-F-17462*d*.
- Figure 11. Fragment with composite design. From general digging in deposit 4. Cat. No. VIII-F-16812*a*.
- Figure 12. Fragment with composite design. From general digging in deposit 2. Cat. No. VIII-F-16755*a* and *b*.

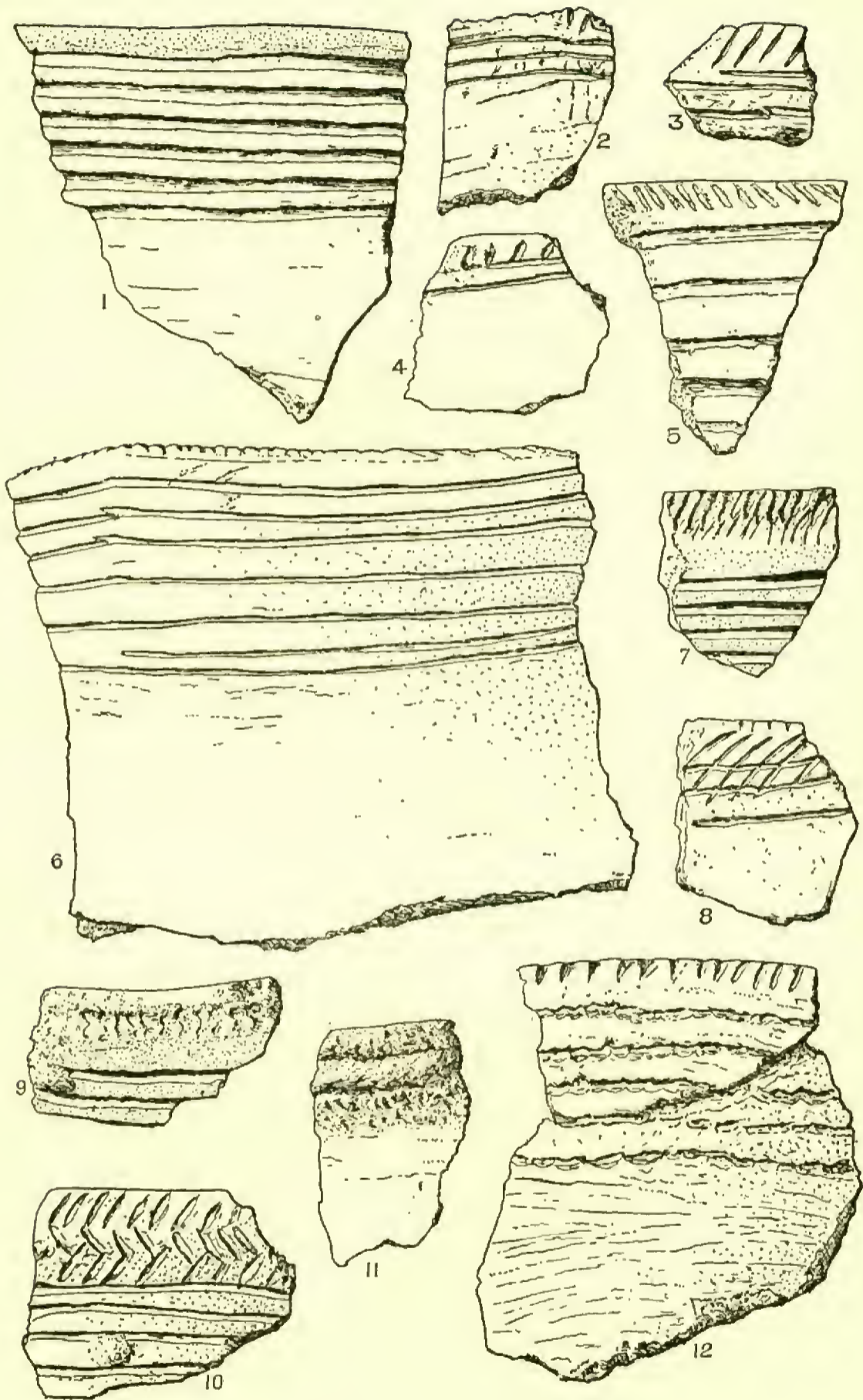


PLATE XI

POTTERY—DECORATION

(All $\frac{1}{2}$ natural size)

- Figure 1. Fragment with rows of impressions made with stylus. From general digging in deposit 1. Cat. No. VIII-F-16478*a*.
- Figure 2. Fragment with composite design. From general digging in deposit 6. Cat. No. VIII-F-17146*e*.
- Figure 3. Fragment with composite design. From general digging in deposit 1. Cat. No. VIII-F-16497*m*.
- Figure 4. Fragment with composite design. From general digging in deposit 6. Cat. No. VIII-F-17217*g*.
- Figure 5. Fragment with composite design. From general digging in deposit 7. Cat. No. VIII-F-17340*j*.
- Figures 6, 7, and 8. Fragments with composite design. From general digging in deposit 1. Cat. Nos. VIII-F-16406*a* and *b*, VIII-F-16457*y*, and VIII-F-16459*l*.
- Figure 9. Fragment with composite design. From general digging in deposit 2. Cat. No. VIII-F-16758*a*.
- Figure 10. Fragment with composite design. From general digging in deposit 1. Cat. No. VIII-F-16484*b* and *c*.

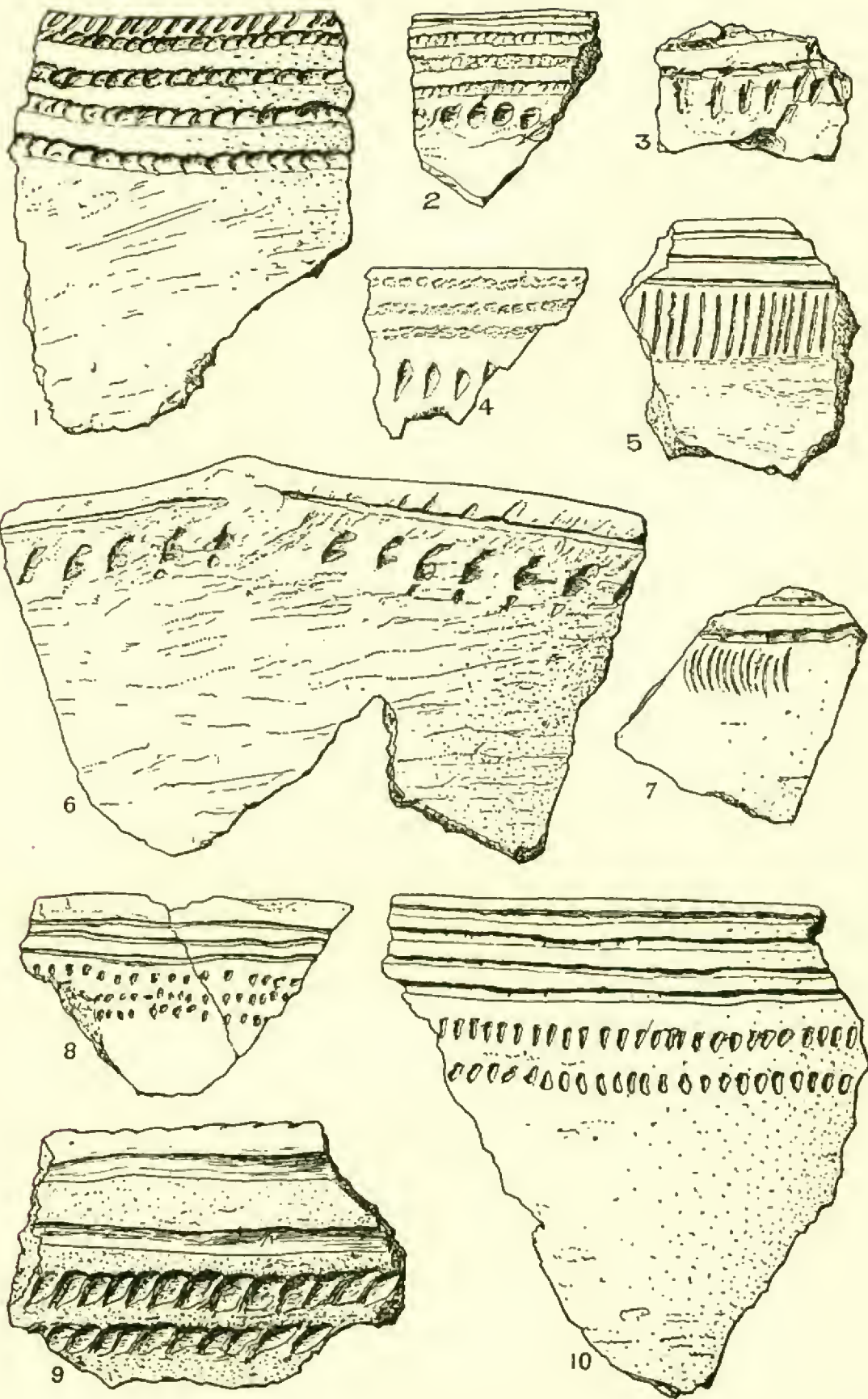


PLATE XII

POTTERY—DECORATION

(All $\frac{1}{2}$ natural size)

- Figure 1. Fragment with composite design. From general digging in deposit 1. Cat. No. VIII-F-16419*g*.
- Figure 2. Fragment with composite design. From general digging in deposit 2. Cat. No. VIII-F-16754*a*.
- Figure 3. Fragment with composite design. From general digging in deposit 7. Cat. No. VIII-F-17340*b*. For decoration on inside surface of another fragment of the same pot *See* Plate XVII, figure 16.
- Figure 4. Fragment with composite design. From general digging in deposit 1. Cat. No. VIII-F-16467*e*.
- Figure 5. Fragment with composite design. From general digging in deposit 16. Cat. No. VIII-F-17459*b*. For cross-section *See* text Figure 2, *b*.
- Figures 6 and 7. Fragments with composite design. From surface. Cat. Nos. VIII-F-15966*k* and VIII-F-15966*e*.
- Figure 8. Fragment with composite design. From general digging in deposit 16. Cat. No. VIII-F-17455*w*.
- Figures 9, 10, and 11. Fragments with composite design. From general digging in deposit 1. Cat. Nos. VIII-F-16407*i*, VIII-F-16421*d*, and VIII-F-16486*j*.
- Figure 12. Fragment of shoulder of pot with vertical impressions. From general digging in deposit 1. Cat. No. VIII-F-16486*b*.
- Figure 13. Fragment with oblique impressions on keeled shoulder. From general digging in deposit 1. Cat. No. VIII-F-16435*s*.

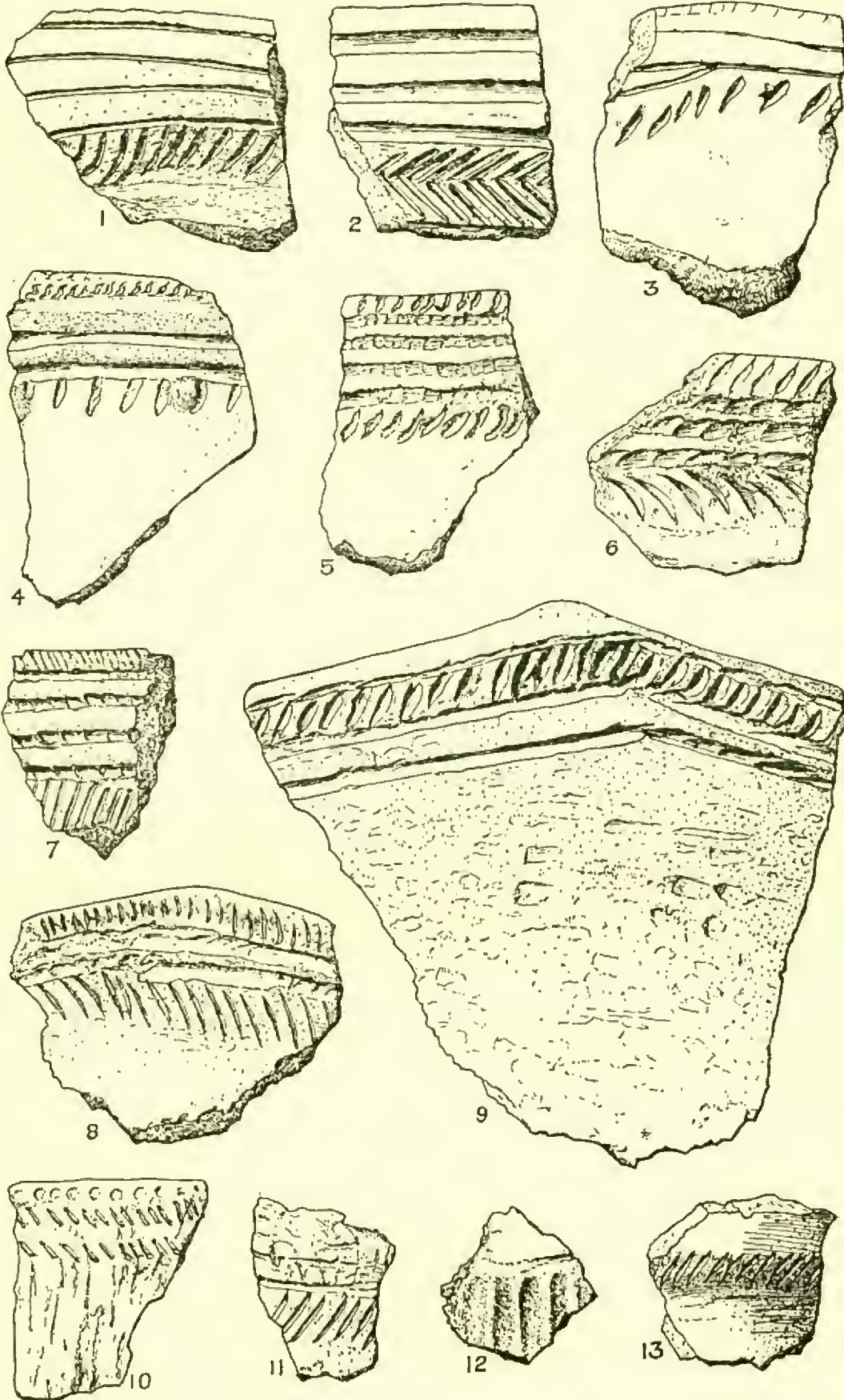


PLATE XIII

POTTERY—DECORATION

(All $\frac{1}{2}$ natural size)

- Figures 1 and 2. Fragments with composite design. From general digging in deposit 6. Cat. Nos. VIII-F-17146*k* and *b*. For decoration on top of margin of *b* See Plate XVII, figure 4.
- Figure 3. Fragment with composite design. From general digging in deposit 5. Cat. No. VIII-F-16933*p*.
- Figure 4. Fragment with composite design. From general digging in deposit 7. Cat. No. VIII-F-17342*b* and *c*.
- Figures 5 and 6. Fragments with composite design. From general digging in deposit 1. Cat. Nos. VIII-F-16482 and VIII-F-16454.
- Figure 7. Fragment with part of design. From general digging in deposit 1. Cat. No. VIII-F-16492*b*.
- Figure 8. Fragment with curved trailed lines. From general digging in deposit 6. Cat. No. VIII-F-17146*h*.
- Figure 9. Fragment with incised lines. From general digging in deposit 6. Cat. No. VIII-F-17221*e*.
- Figure 10. Fragment with interrupted lines. From general digging in deposit 1. Cat. No. VIII-F-16486*g*.
- Figure 11. Fragment with composite design. From general digging in deposit 1. Cat. No. VIII-F-16453*a* and *b*.

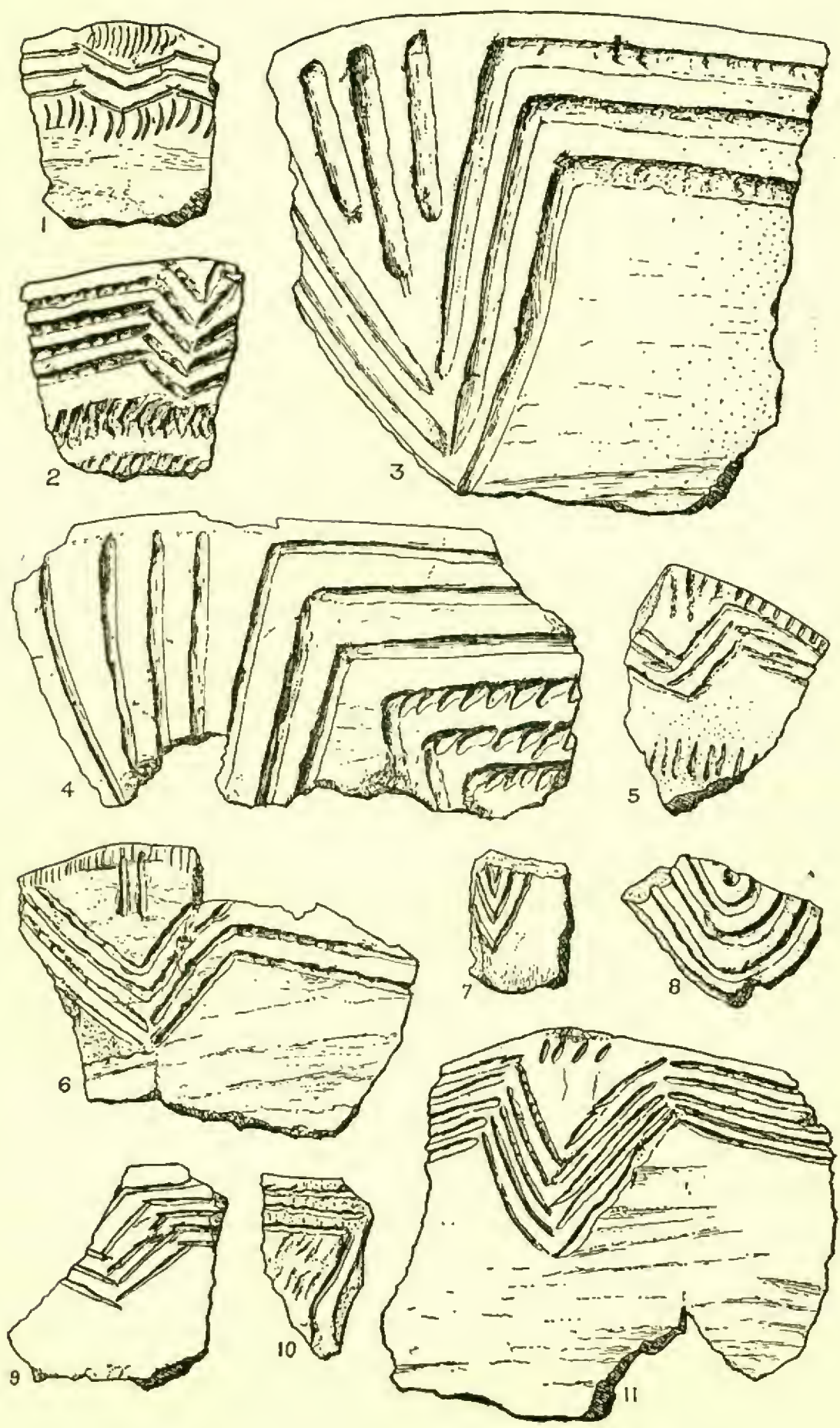


PLATE XIV

POTTERY—DECORATION

(All $\frac{1}{2}$ natural size)

- Figure 1. Fragment with trailed lines and bird-like design. From general digging in deposit 1. Cat. No. VIII-F-16483a.
- Figure 2. Fragment with composite design. From general digging in deposit 1. Cat. No. VIII-F-16490b.
- Figure 3. Fragment with interrupted lines. From general digging in deposit 1. Cat. No. VIII-F-16446b.
- Figure 4. Fragment with part of incised design. From general digging in deposit 5. Cat. No. VIII-F-16928d.
- Figure 5. Fragment with composite design. From general digging in deposit 1. Cat. No. VIII-F-16486t.
- Figure 6. Fragment with design composed of interrupted lines. From general digging in deposit 4. Cat. No. VIII-F-16806b.
- Figure 7. Fragment with crude incised design. From general digging in deposit 16. Cat. No. VIII-F-17453a.
- Figure 8. Fragment with crude incised design. From general digging in deposit 7. Cat. No. VIII-F-17326c.
- Figure 9. Fragment with crude incised design. From general digging in deposit 1. Cat. No. VIII-F-16459e.
- Figure 10. Fragment with composite design. From general digging in deposit 1. Cat. No. VIII-F-16486u.
- Figure 11. Fragment with composite design. From general digging in deposit 5. Cat. No. VIII-F-16928a.
- Figure 12. Fragment with design consisting of series of short, horizontal strokes. From general digging in deposit 1. Cat. No. VIII-F-16486x.
- Figure 13. Fragment with bosses and oblique strokes. From general digging in deposit 1. Cat. No. VIII-F-16430a.
- Figure 14. Fragment of decorated neck. From general digging in deposit 6. Cat. No. VIII-F-17146c.
- Figure 15. Fragment with interrupted lines. From general digging in deposit 2. Cat. No. VIII-F-16753f.
- Figure 16. Fragment with fret-like design. From general digging in deposit 1. Cat. No. VIII-F-16465.
- Figure 17. Fragment with interrupted lines and three oval depressions, probably representing a human face. From general digging in deposit 1. Cat. No. VIII-F-16455.
- Figure 18. Projecting lip of pot with conventionalized human face. From general digging in deposit 1. Cat. No. VIII-F-16474. For cross-section *See* text Figure 2, *n*.
- Figure 19. Fragment with conventionalized human face. From general digging in deposit 6. Cat. No. VIII-F-17146g.
- Figure 20. Fragment with conventionalized human face. From general digging in deposit 1. Cat. No. VIII-F-16475a and b.

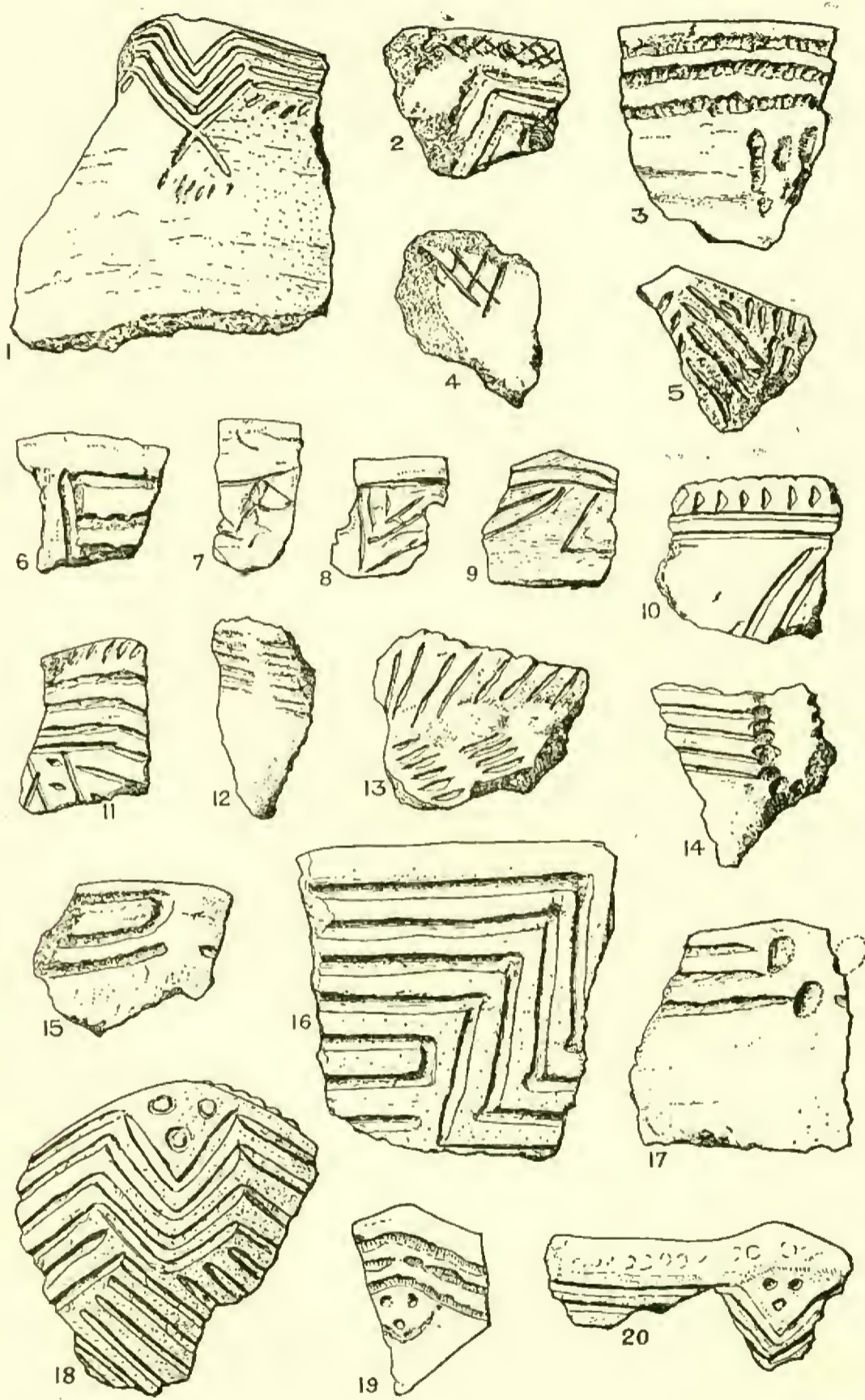


PLATE XV

POTTERY—DECORATION

(About $\frac{1}{3}$ natural size)

Partly restored pot. From general digging in deposit 2. Cat. No. VIII-F-16742.

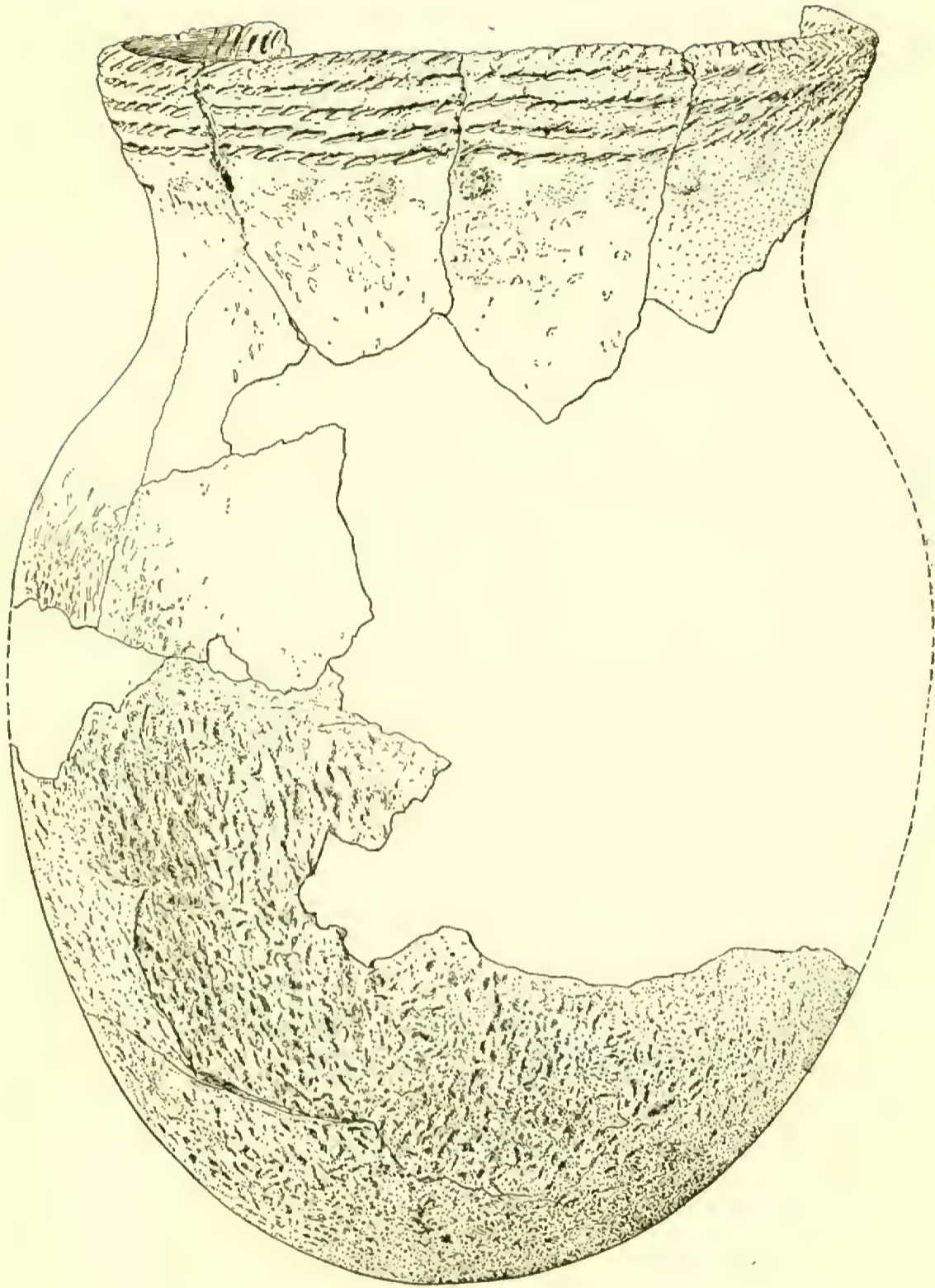


PLATE XVI

POTTERY—DECORATION

(About $\frac{1}{3}$ natural size)

Partly restored pot. From general digging in deposit 1. Cat. No. VIII-F-16405.

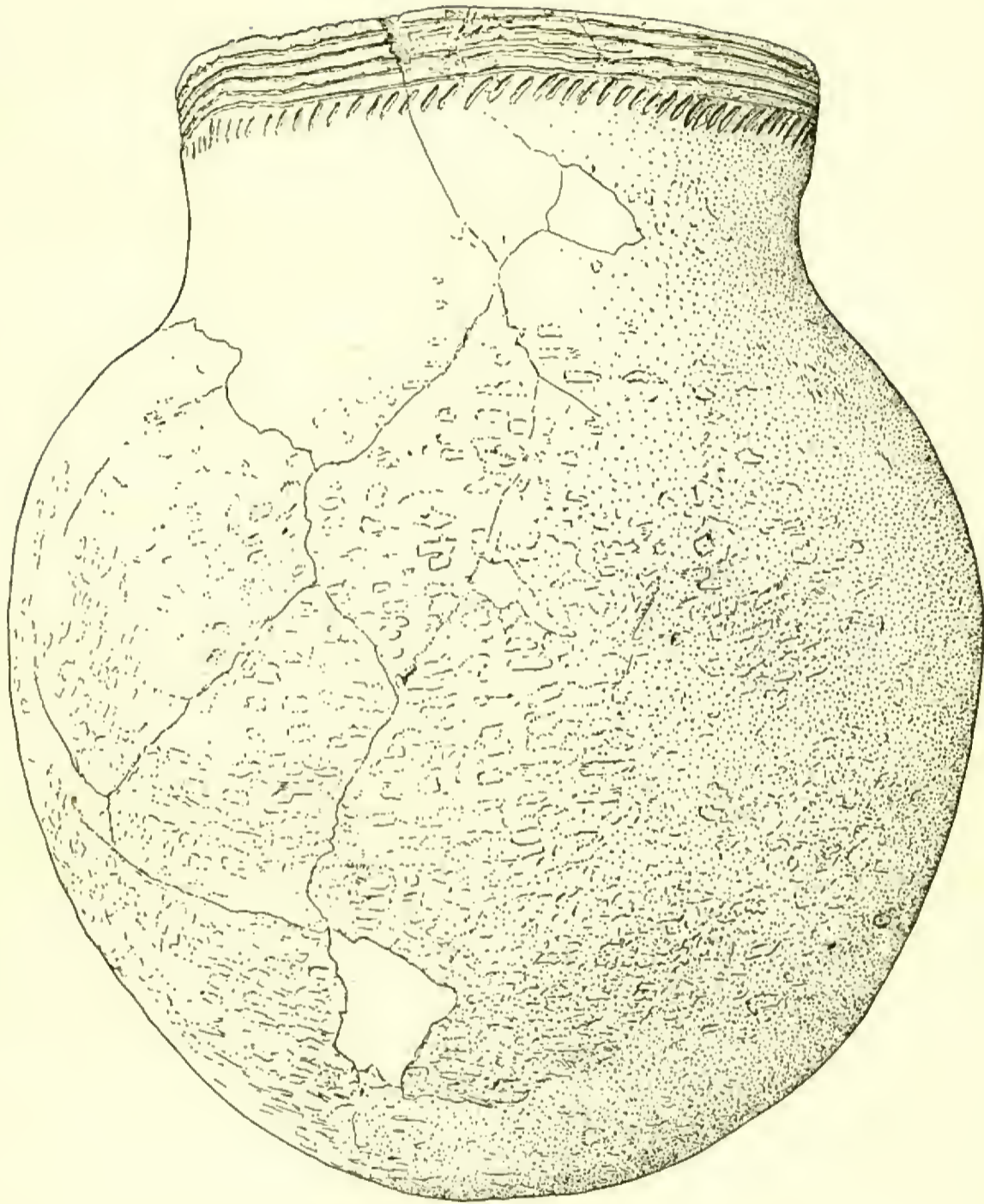


PLATE XVII

POTTERY—DECORATION

(All $\frac{1}{2}$ natural size)

- Figure 1. Fragment with decoration on top of rim. From general digging in deposit 7. Cat. No. VIII-F-17335e.
- Figure 2. Fragment with decoration on top of rim. From general digging in deposit 6. Cat. No. VIII-F-17137k.
- Figure 3. Fragment with decoration on top of rim. From general digging in deposit 7. Cat. No. VIII-F-17336a-c. *See also* Plate VII, figure 11.
- Figure 4. Fragment with decoration on top of rim. From general digging in deposit 6. Cat. No. VIII-F-17146b. *See also* Plate XIII, figure 2.
- Figure 5. Fragment with decoration on top of rim. From general digging in deposit 7. Cat. No. VIII-F-17330a.
- Figure 6. Fragment with decoration on top of rim. From general digging in deposit 1. Cat. No. VIII-F-16486q.
- Figure 7. Fragment with decoration on top of rim. From general digging in deposit 1. Cat. No. VIII-F-16411a. *See also* Plate VI, figure 2.
- Figure 8. Fragment with decoration on top of rim. From general digging in deposit 1. Cat. No. VIII-F-16473b.
- Figure 9. Fragment with decoration on top of rim. From general digging in deposit 2. Cat. No. VIII-F-16749c.
- Figure 10. Fragment with decoration on top of rim. From general digging in deposit 1. Cat. No. VIII-F-16445l.
- Figure 11. Fragment with decoration on top of rim. From general digging in deposit 5. Cat. No. VIII-F-16928f.
- Figures 12 and 13. Fragments with decoration on inside surface of rim. From surface. Cat. Nos. VIII-F-15965c and VIII-F-15963a.
- Figure 14. Fragment with decoration on inside surface of rim. From general digging in deposit 7. Cat. No. VIII-F-17330a. For decoration on outside of another fragment of the same pot *See* Plate IV, figure 10.
- Figure 15. Fragment with decoration on inside surface of rim. From general digging in deposit 4. Cat. No. VIII-F-16805a.
- Figure 16. Fragment with decoration on inside surface of rim. From general digging in deposit 7. Cat. No. VIII-F-17349a. For decoration on outside of another fragment of same pot *See* Plate XII, figure 3.
- Figures 17, 18, 19, and 20. Fragments with decoration on inside surface of rim. From general digging in deposit 1. Cat. Nos. VIII-F-16415v, VIII-F-16415a, VIII-F-16442r, and VIII-F-16463j.

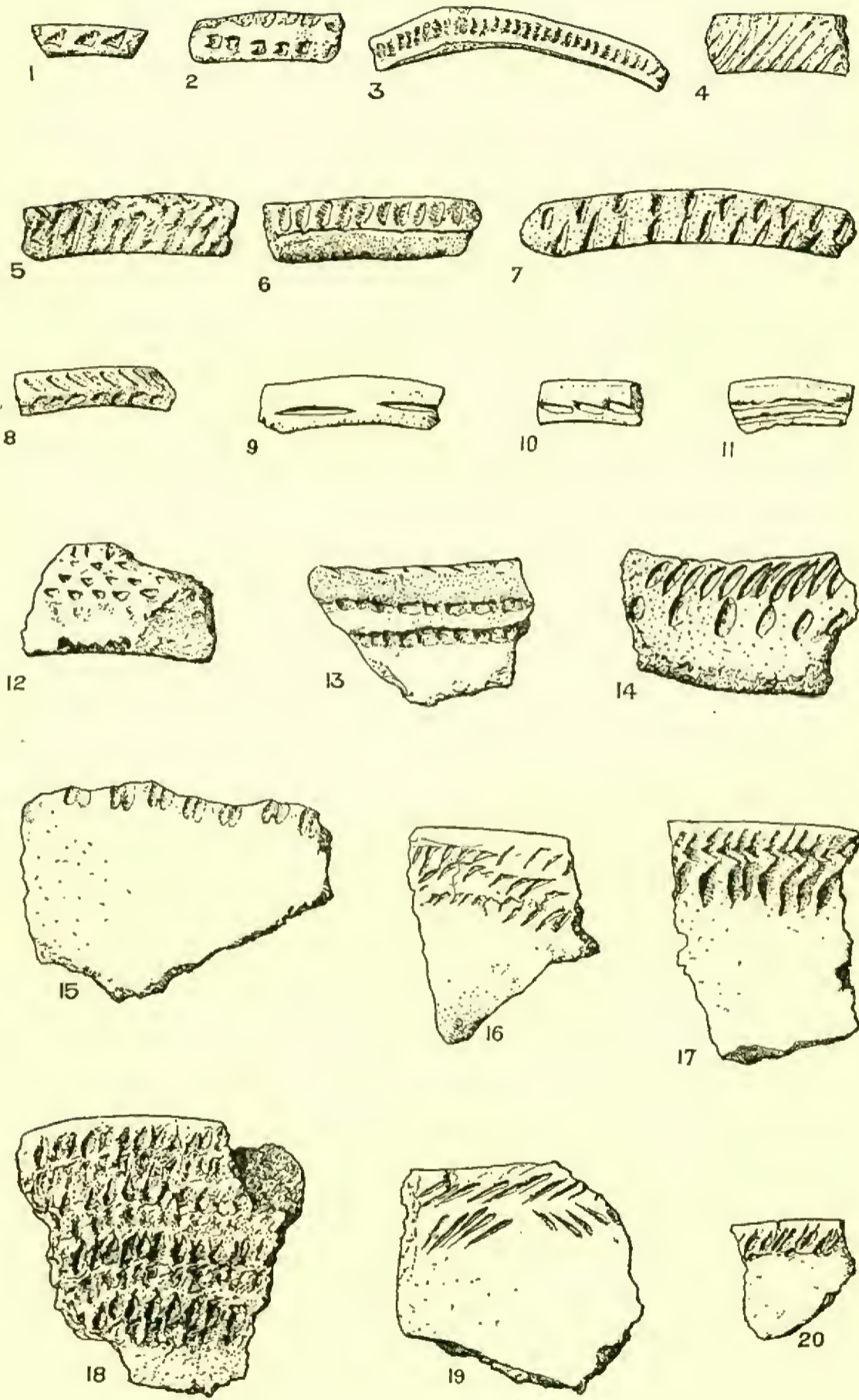


PLATE XVIII

POTTERY—DECORATION ON INSIDE SURFACE

(All $\frac{1}{2}$ natural size)

- Figure 1. Cast showing decoration on inside surface of fragment seen in Plate X, figure 1.
- Figure 2. Cast showing decoration on inside surface of fragment seen in Plate IX, figure 1.
- Figure 3. Cast showing decoration on inside surface of fragment seen in Plate IV, figure 14.
- Figure 4. Fragment with reticulate pattern and deep punched holes. From general digging in deposit 2. Cat. No. VIII-F-16757*g*.
- Figure 5. Fragment with notched outer and inner angles, interrupted lines, and deep angular impressions. From general digging in deposit 6. Cat. No. VIII-F-17133*a*.
- Figure 6. Fragment with broken trailed lines and oval impressions. From general digging in deposit 1. Cat. No. VIII-F-16431*b*.

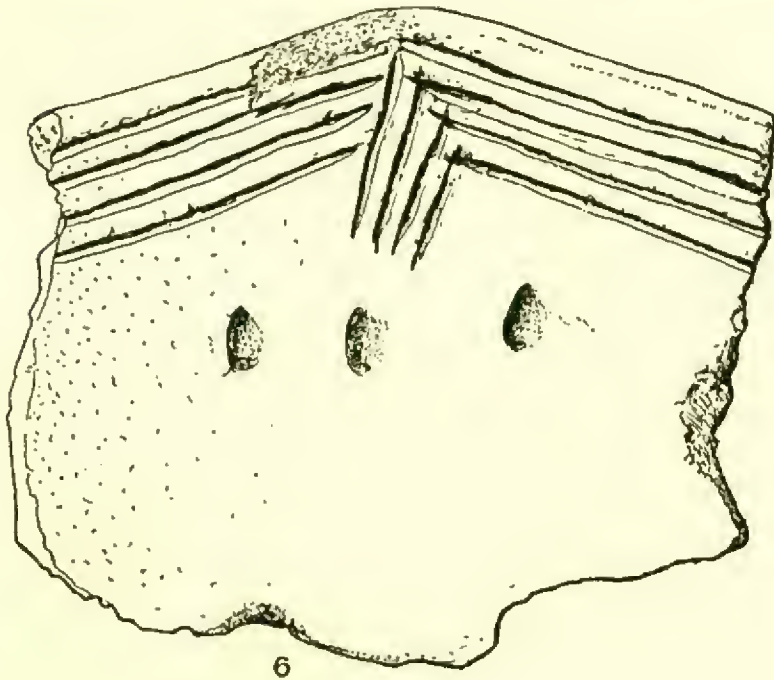
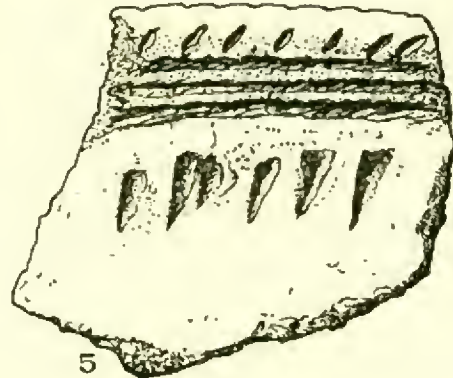
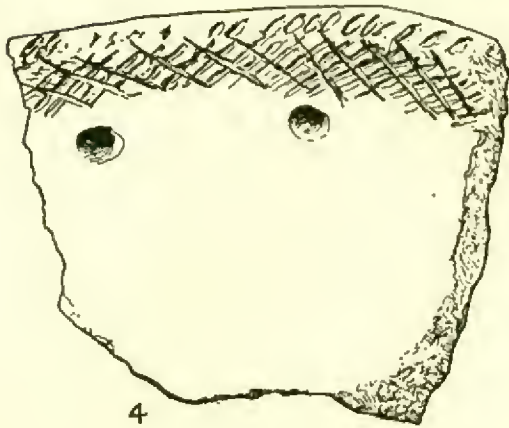
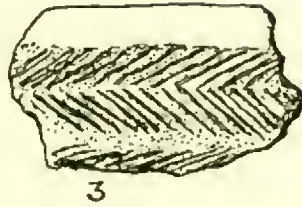
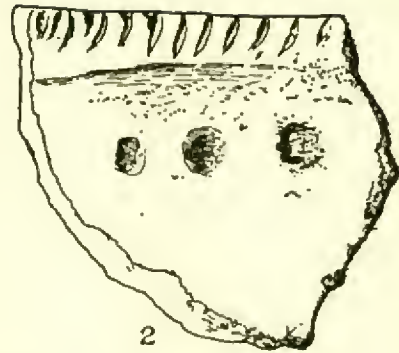
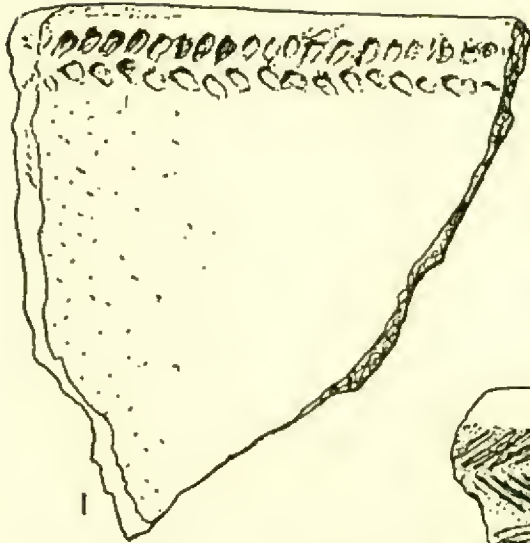


PLATE XIX

TOOLS USED BY MEN

(All $\frac{1}{2}$ natural size)

- Figure 1. Tool made of antler. From about 4 inches deep in deposit 1. Cat. No. VIII-F-16527.
- Figure 2. Tool made of antler. From general digging in deposit 1. Cat. No. VIII-F-16526a.
- Figure 3. Tool made of antler. From about 10 inches deep in deposit 1. Cat. No. VIII-F-16528.
- Figure 4. Tool made of antler. From about 8 inches deep in deposit 5. Cat. No. VIII-F-16876.
- Figure 5. Slate tool. From general digging in deposit 1. Cat. No. VIII-F-16530.
- Figure 6. Crude stone adze blade. From general digging in deposit 5. Cat. No. VIII-F-16874.
- Figure 7. Stone adze blade. From 12 inches deep in deposit 1. Cat. No. VIII-F-16511.
- Figure 8. Stone adze blade. From general digging in deposit 6. Cat. No. VIII-F-17040.
- Figure 9. Large stone adze blade. From surface. Cat. No. VIII-F-15913.
- Figure 10. Chert chip used as a drill. From surface. Cat. No. VIII-F-15985.
- Figure 11. Chert point for drill. From about 7 inches deep in deposit 1. Cat. No. VIII-F-16519.
- Figure 12. Broad chert point for drill. From general digging in deposit 7. Cat. No. VIII-F-17279a.
- Figure 13. Leaf-shaped chert point for drill. From surface. Cat. No. VIII-F-15987.
- Figure 14. Chert point for drill. From surface. Cat. No. VIII-F-15988.
- Figure 15. Chert point for arrow used as drill. From surface of deposit 1. Cat. No. VIII-F-16515.
- Figure 16. Hammerstone. From general digging in deposit 6. Cat. No. VIII-F-17175.

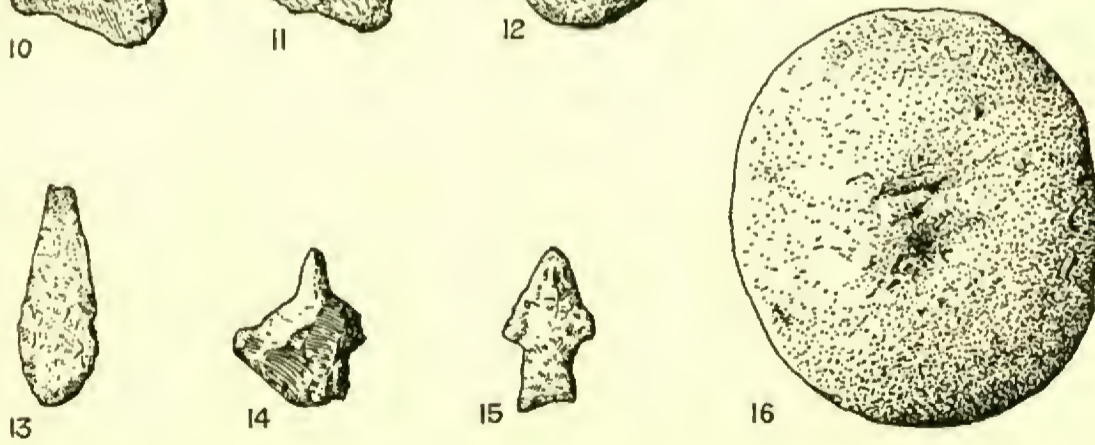
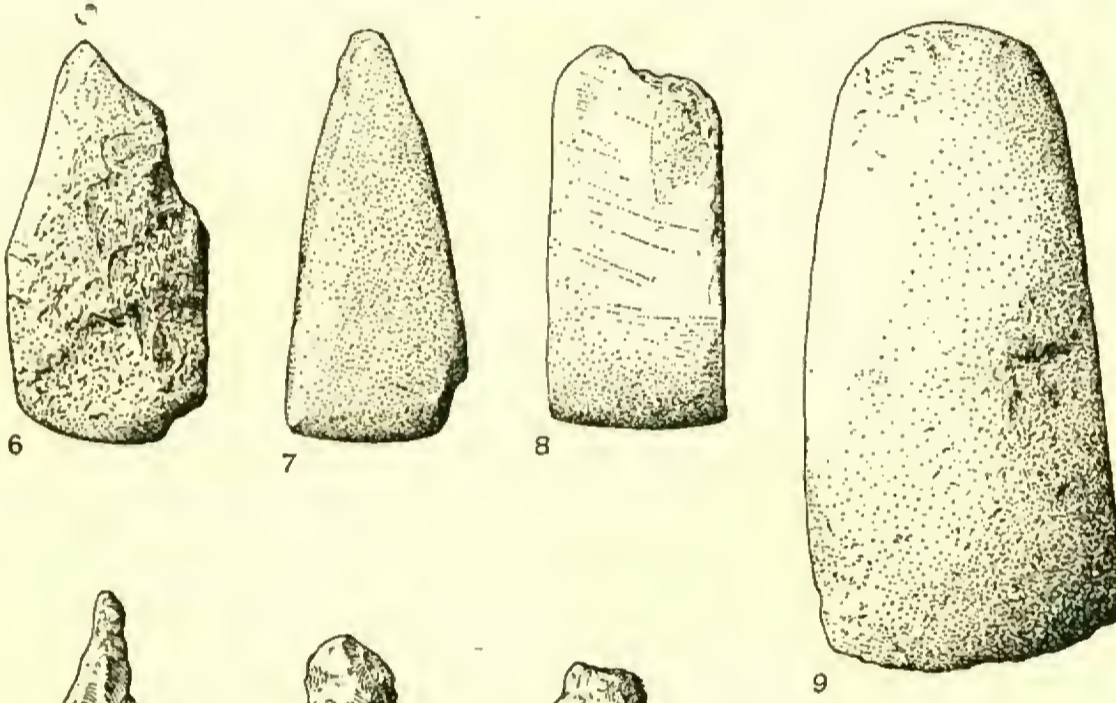
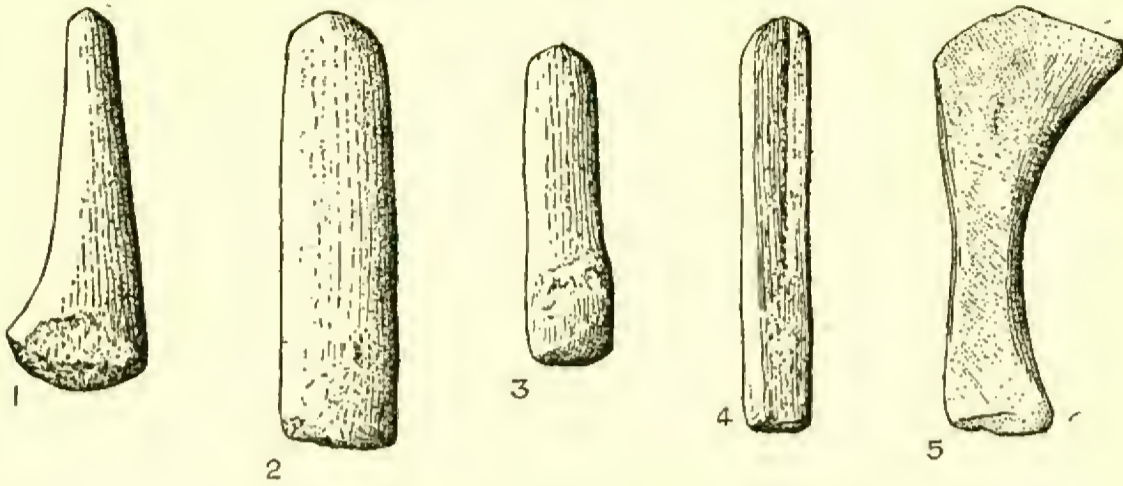


PLATE XX

TOOLS USED BY WOMEN

(All $\frac{1}{2}$ natural size)

- Figure 1. Chert blade for scraper. From general digging in deposit 1. Cat. No. VIII-F-16573*d*.
- Figure 2. Stemmed chert blade for scraper. From surface. Cat. No. VIII-F-15993*h*.
- Figure 3. Stemmed chert blade for scraper. From general digging in deposit 1. Cat. No. VIII-F-16573*k*.
- Figure 4. Stemmed chert blade for scraper. From general digging in deposit 4. Cat. No. VIII-F-16779*d*.
- Figure 5. Double-edged chert scraper. From surface. Cat. No. VIII-F-15994.
- Figure 6. Shell scraper and smoother. From general digging in deposit 1. Cat. No. VIII-F-16538.
- Figure 7. Sharpened dorsal spine of fish. From general digging in deposit 1. Cat. No. VIII-F-16542.
- Figure 8. Awl made from fibula of lynx. From 12 inches deep in deposit 16. Cat. No. VIII-F-17417.
- Figure 9. Awl made from tibio-tarsus of bird. From 10 inches deep in deposit 1. Cat. No. VIII-F-16563.
- Figure 10. Awl made from tarso-metatarsus of wild turkey. From general digging in deposit 6. Cat. No. VIII-F-17182.
- Figure 11. Awl made from splint bone of deer. From general digging in deposit 2. Cat. No. VIII-F-16700.
- Figure 12. Awl made from ulna of deer. From 9 inches deep in deposit 7. Cat. No. VIII-F-17289.
- Figure 13. Awl made from splinter of bone. From general digging in deposit 7. Cat. No. VIII-F-17283*b*.
- Figure 14. Awl made from distal joint of deer tibia. From general digging in deposit 6. Cat. No. VIII-F-17184.
- Figure 15. Awl, punch, or dagger made from ulna of bear. From about 6 inches deep in deposit 6. Cat. No. VIII-F-17188.
- Figure 16. Awl made from metatarsus of deer. From general digging in deposit 6. Cat. No. VIII-F-17185.
- Figure 17. Awl made from metatarsus of deer. From general digging in deposit 1. Cat. No. VIII-F-16547*a*.
- Figure 18. Bone awl. From general digging in deposit 1. Cat. No. VIII-F-16551.
- Figure 19. Ornamented, smoothly finished bone awl. From general digging in deposit 6. Cat. No. VIII-F-17070.
- Figure 20. Ornamented, smoothly finished bone awl. From about 9 inches deep in deposit 6. Cat. No. VIII-F-17071.
- Figure 21. Ornamented bone awl. From about 11 inches deep in deposit 1. Cat. No. VIII-F-16565.
- Figure 22. Ornamented bone awl. From general digging in deposit 6. Cat. No. VIII-F-17186.
- Figure 23. Fragment of bone needle-like tool. From general digging in deposit 1. Cat. No. VIII-F-16572.

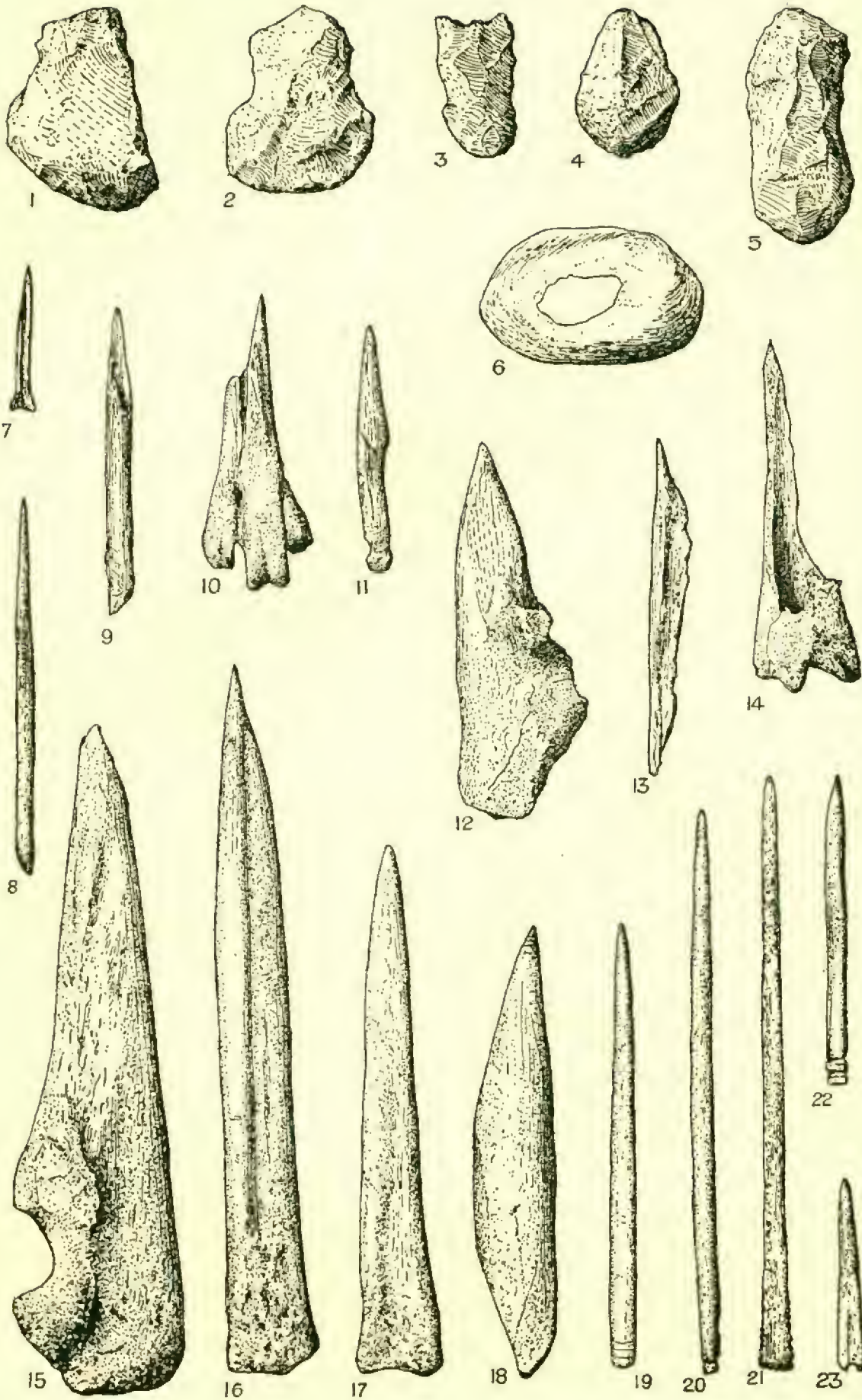


PLATE XXI

SPECIMENS ILLUSTRATING MANUFACTURING PROCESSES

(All $\frac{1}{2}$ natural size)

- Figure 1. Unworked splinter of bone. From general digging in deposit 1. Cat. No. VIII-F-16584.
- Figure 2. Radius of fox or dog with one end removed by breaking and the other by cutting and breaking. From general digging in deposit 6. Cat. No. VIII-F-17056.
- Figure 3. Worked piece of bone. From general digging in deposit 5. Cat. No. VIII-F-16891*a* and *b*.
- Figure 4. Worked canine tooth of bear. From general digging in deposit 1. Cat. No. VIII-F-16086*a*.
- Figure 5. Piece of antler scorched at the ends to facilitate breaking. From general digging in deposit 4. Cat. No. VIII-F-16769*c*.
- Figure 6. Whittled piece of antler. From general digging in deposit 6. Cat. No. VIII-F-17189*b*.
- Figure 7. Cut piece of antler. From general digging in deposit 5. Cat. No. VIII-F-16886.
- Figure 8. Cut piece of antler. From general digging in deposit 1. Cat. No. VIII-F-16588*d*.
- Figure 9. Cut humerus of bird. From general digging in deposit 6. Cat. No. VIII-F-17076.
- Figure 10. Cut piece of bone. From general digging in deposit 7. Cat. No. VIII-F-17294.
- Figure 11. Cut piece of antler. From general digging in deposit 7. Cat. No. VIII-F-17296*b*.
- Figure 12. Cut piece of antler. From general digging in deposit 4. Cat. No. VIII-F-16784*b*.
- Figure 13. Cut piece of antler. From general digging in deposit 1. Cat. No. VIII-F-16589.
- Figure 14. Cut ulna of deer. From general digging in deposit 1. Cat. No. VIII-F-16586.
- Figure 15. Cut metatarsus of deer. From general digging in deposit 16. Cat. No. VIII-F-17429*b*.
- Figure 16. Cut piece of bone. From general digging in deposit 6. Cat. No. VIII-F-17081*c*.
- Figure 17. Unfinished bone tool. From general digging in deposit 6. Cat. No. VIII-F-17054.
- Figure 18. Cut piece of bone. From general digging in deposit 6. Cat. No. VIII-F-17061.
- Figure 19. Cut piece of stone. From general digging in deposit 6. Cat. No. VIII-F-17083.
- Figure 20. Worked pebble. From general digging in deposit 6. Cat. No. VIII-F-17084.
- Figure 21. Worked piece of slate. From general digging of site. Cat. No. VIII-F-16020.

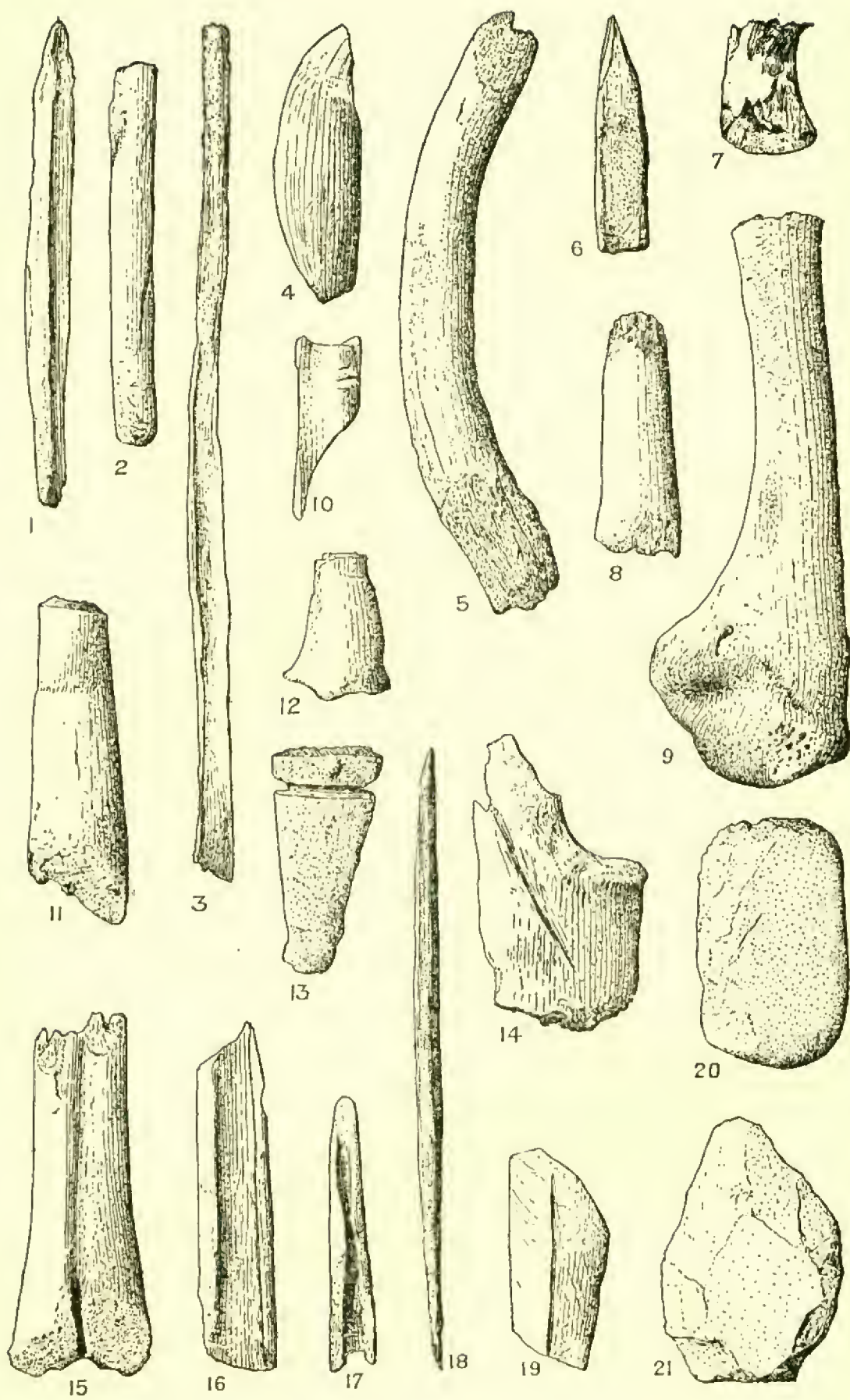


PLATE XXII

ARTICLES OF DRESS AND ADORNMENT

(All $\frac{1}{2}$ natural size)

- Figure 1. Comb made of antler. From about 1 foot deep in deposit 1. Cat. No. VIII-F-16598.
- Figure 2. Broken, unfinished comb made of antler. From general digging in deposit 6. Cat. No. VIII-F-17090.
- Figure 3. Bone pin. From about 2 feet deep in deposit 1. Cat. No. VIII-F-16570.
- Figure 4. Bone pin. From general digging in cache pit 2, deposit 2. Cat. No. VIII-F-16704.
- Figure 5. Notched pebble, probably pendant. From surface. Collected by Gordon Uren. Cat. No. VIII-F-17484.
- Figure 6. Perforated pebble used as pendant. From general digging in deposit 4. Cat. No. VIII-F-16785.
- Figure 7. Naturally perforated pebble used as pendant. From general digging in deposit 16. Cat. No. VIII-F-17430.
- Figure 8. Pebble with perforation commenced on one side. From general digging in deposit 6. Cat. No. VIII-F-17088.
- Figure 9. Pebble with perforation commenced on both sides. From surface. Collected by Gordon Uren. Cat. No. VIII-F-17489.
- Figure 10. Fragment of an armlet or wristlet made of bone. From about 5 inches deep in deposit 1. Cat. No. VIII-F-16599.
- Figure 11. Ornament made from lower jaw of mink. From general digging in deposit 1. Cat. No. VIII-F-16600.
- Figure 12. Ornament made from part of plastron of Painted Turtle. From general digging in deposit 6. Cat. No. VIII-F-17190a.
- Figure 13. Bead made from small ocean shell. From general digging in deposit 1. Cat. No. VIII-F-16597.
- Figure 14. Fragment of bone bead. From general digging in deposit 6. Cat. No. VIII-F-17091b.
- Figure 15. Bone bead. From general digging in deposit 6. Cat. No. VIII-F-17092a.
- Figure 16. Bone bead. From general digging in deposit 6. Cat. No. VIII-F-17093.
- Figure 17. Bone bead. From about 8 inches deep in deposit 16. Cat. No. VIII-F-17434.
- Figure 18. Bone bead. From general digging in deposit 7. Cat. No. VIII-F-17302.
- Figure 19. Bone bead. From general digging in deposit 6. Cat. No. VIII-F-17092b.
- Figure 20. Bone bead. From general digging in deposit 6. Cat. No. VIII-F-17191.
- Figure 21. Fragment of polished bone bead. From general digging in deposit 6. Cat. No. VIII-F-17091e.
- Figure 22. Bone bead. From surface. Cat. No. VIII-F-16012.

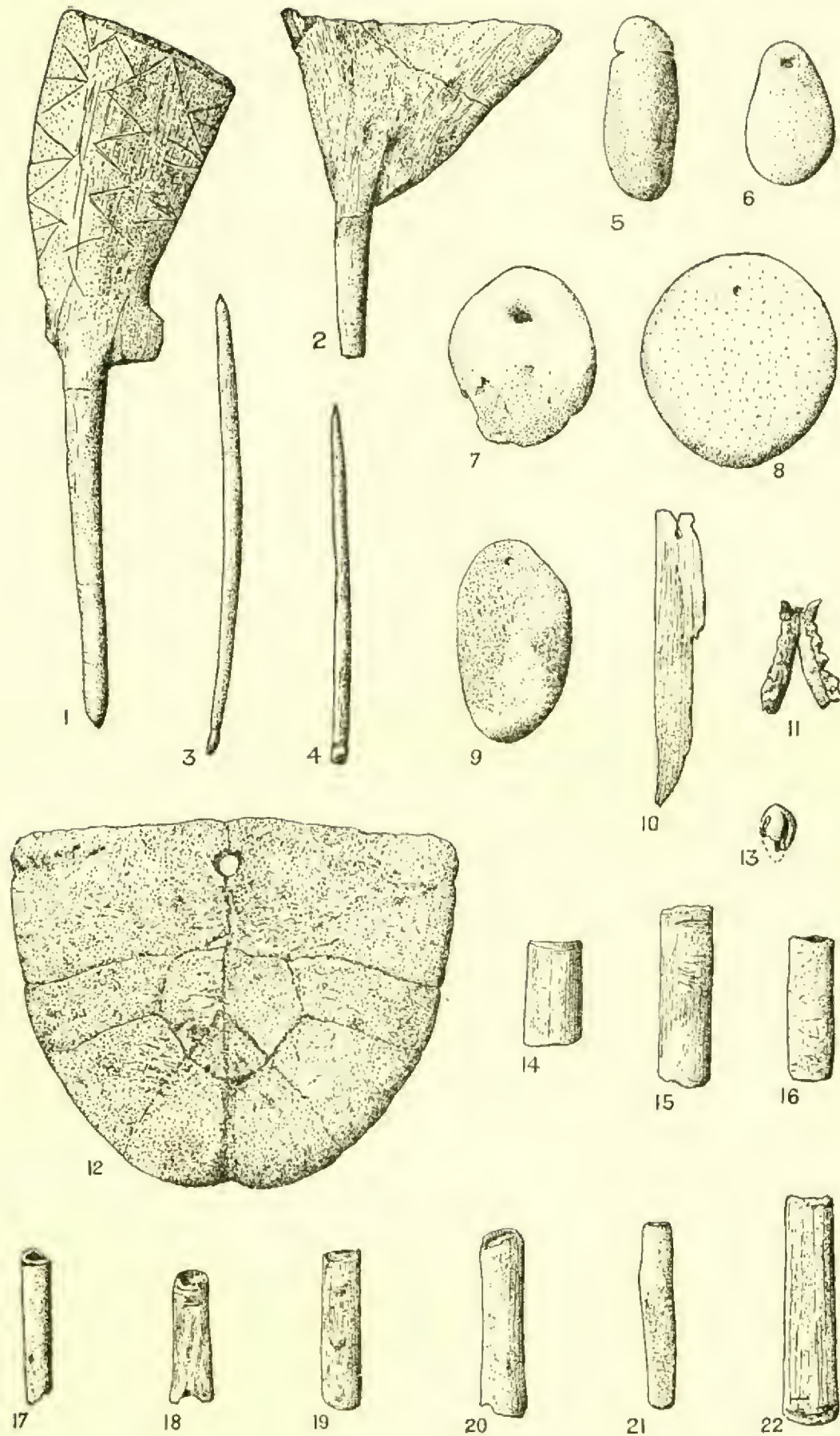
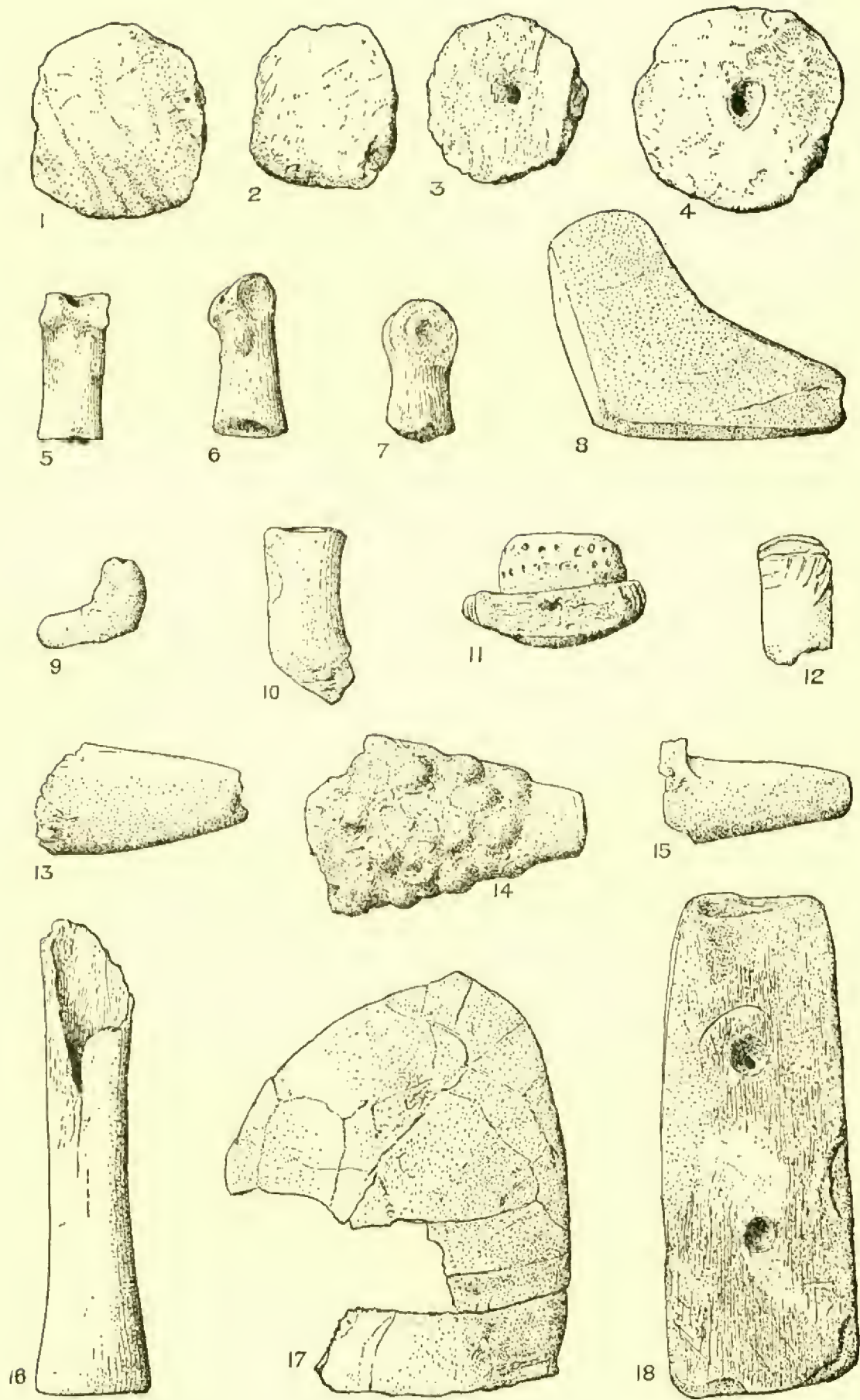


PLATE XXIII

GAMES, AMUSEMENTS, SMOKING, ETC.

(All $\frac{1}{2}$ natural size)

- Figure 1. Disk rubbed from potsherd. From general digging in deposit 1. Cat. No. VIII-F-16602b.
- Figure 2. Disk rubbed from potsherd. From general digging in deposit 1. Cat. No. VIII-F-16602a.
- Figure 3. Perforated disk chipped from potsherd. From general digging in deposit 2. Cat. No. VIII-F-16713a.
- Figure 4. Perforated disk chipped from potsherd. From general digging in deposit 2. Cat. No. VIII-F-16713b.
- Figure 5. Cup for cup and pin game made from proximal phalanx of deer. From general digging in deposit 5. Cat. No. VIII-F-16883b.
- Figure 6. Cup made from proximal phalanx of deer. From general digging in deposit 1. Cat. No. VIII-F-16592f.
- Figure 7. Unfinished cup made from middle phalanx of deer. From general digging in deposit 1. Cat. No. VIII-F-16595a.
- Figure 8. Unfinished stone pipe. From general digging in deposit 6. Cat. No. VIII-F-17098.
- Figure 9. Toy earthenware pipe. From general digging in deposit 1. Cat. No. VIII-F-16606.
- Figure 10. Bowl of broken earthenware pipe. From general digging in deposit 6. Cat. No. VIII-F-17096e.
- Figure 11. Fragment of earthenware monitor pipe. From general digging in deposit 1. Cat. No. VIII-F-16607.
- Figure 12. Fragment of bowl of earthenware pipe. From general digging in deposit 7. Cat. No. VIII-F-17305.
- Figure 13. Stem of broken earthenware pipe. From about 5 inches deep in deposit 1. Cat. No. VIII-F-16611.
- Figure 14. Stem of broken earthenware pipe. From general digging in deposit 7. Cat. No. VIII-F-17306.
- Figure 15. Stem of broken earthenware pipe. From about 10 inches deep in deposit 6. Cat. No. VIII-F-17097.
- Figure 16. Bone tube. From about 14 inches deep in deposit 1. Cat. No. VIII-F-16613.
- Figure 17. Fragment of object made of turtle shell (partly restored). From general digging in deposit 1. Cat. No. VIII-F-16601a-f.
- Figure 18. Slate gorget. From surface. Collected by Daniel Gould. Cat. No. VIII-F-15910.





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