THE BULLETIN

Number 60 March 1974

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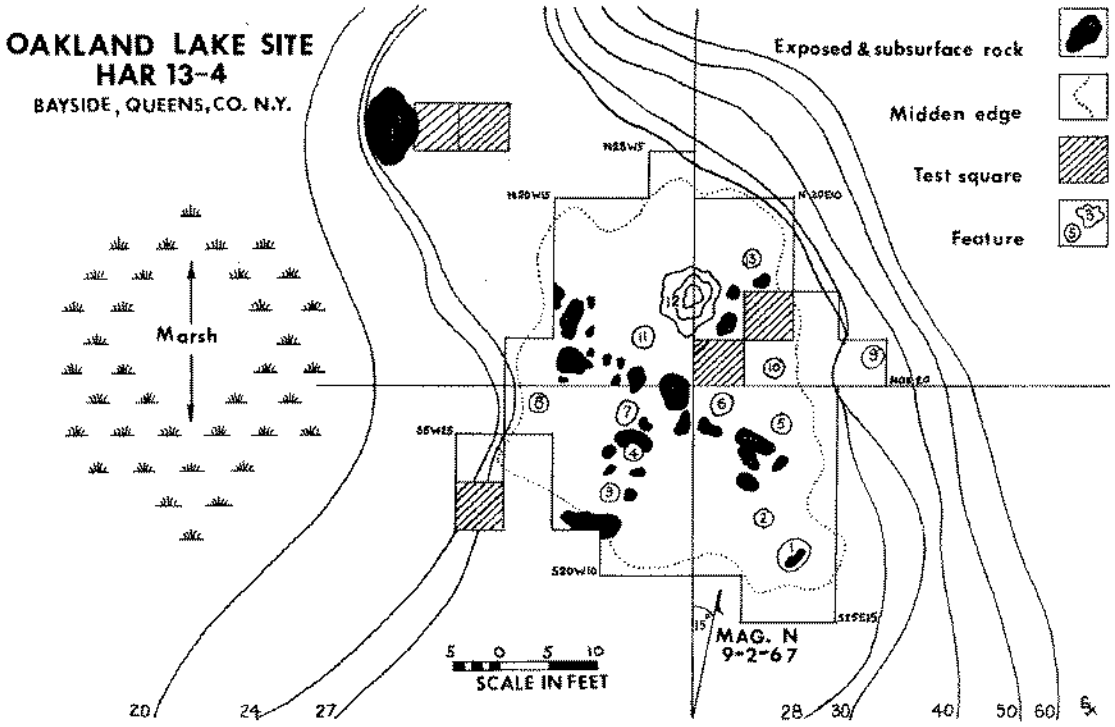
NUMBER 60 MARCH 1974



EHLERS AND MASTODON

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THE OAKLAND LAKE SITE (Har-13-4)

Edward Kaeser N.Y.S.A.A.F. Metropolitan Chapter

Introduction

The Oakland Lake site was introduced to the Metropolitan Chapter, N.Y.S.A.A., by members Stanley Wisniewski and Matthew Schreiner. Their topographical report and site test cultural material collection previewed the possible in situ existence of several Woodland period components and, hopefully, vestiges of a pre-ceramic occupation. The membership concluded that it was a promising site warranting Chapter investigation.

A permit to excavate was obtained from the Queens Borough Director of Parks, and F. Newton Miller, then Metropolitan Chapter President (1966) undertook the directorship of the dig. The site mapping and excavation commenced on April 9, 1966, with work crews ranging in number from 22 on opening day to 6 individuals on May 21, 1966 when excavation was concluded by Mr. Miller. Representative specimens of cultural material recovered from the 1966 excavation displayed for the membership that winter amply justified the decision to continue fieldwork on the site.

The Park Department permit was renewed for continuation of research with a terminal date of October 31, 1967, and the writer accepted the responsibility for directing the excavation of the site to its completion. Shortly after the resumption of work, notice was given that the entire site area would be destroyed by building construction in the near future. This notice altered plans from a general site excavation to that of a salvage project. It became incumbent upon the excavating crew to gather as much data as time permitted and upon the director to accept the responsibility for interpreting the recovered data.

The Site

The Oakland Lake site (Har-13-4), is situated in Alley Park, Bayside, Queens County, in a northwest-southeast oriented ravine which, approximately 100 yds northward of the site locus, curves due north 600 ft. into Oakland Lake (Lat. 40°, 45'N., Long, 73°, 45' 30"W., U.S. Geological Survey, Harlem Quadrangle, 7-1/2 minute series). What is presently the southern end of the ravine had been filled to street grade for the construction of P.S. 203 on Springfield Boulevard. This fill choked the flow of a stream which, through seepage and rain run-off, sustains a reed-filled marsh abutting the site. The marsh continues northward through the ravine to its confluence with Oakland Lake. The western embankment rises at a 60-degree gradient about 80 ft. to the intersection of Springfield Boulevard and 51st Avenue. Approximately 250 ft. across the ravine floor, the eastern slope (at the foot of which the site is located) rises 100 ft. at an angle of roughly 45 degrees to what was formerly the Oakland Lake Golf Course clubhouse area, now part of the newly constructed building complex of Queensborough Community College. The grading and landscaping for these buildings completely buried the site in 1968.

Examination of the geological survey quadrangle reveals that a direct water route to the site was possible in prehistoric times. Prior to the construction of the Long Island Railroad track bed, the Cross Island Parkway-Northern Boulevard Interchange, and many other land fill operations which now crosscut Alley Creek and the tidal flats north of the site, dugouts could navigate from Long Island Sound or the East River into Little Neck Bay and Alley Creek. By continuing the shore contour map lines of the Bay through Alley Park, Oakland Lake could be reached either by a few hundred yards portage or if, as suspected, the fresh water of Oakland Lake emptied into Little Neck Bay, it would be possible to beach canoes at the site. Dotted lines shown on the survey map clearly illustrate that the lake at some time in the not too distant past filled the ravine to a considerable distance south of the site locus.

Many of the present conditions should provide clues to the past. This ravine is one of the few Coastal New York locations known to the writer which could afford prehistoric Indians

COVER ILLUSTRATION: Map of excavations, Oakland Lake site, showing features and limit of midden concentration.

protection from the northeasters off Long Island Sound and the prevailing northwest winds of winter. During the summer months of our investigation, we enjoyed comfortable digging conditions, shaded by large elms and oaks, and cooled by a constant flow of air drawn through the ravine from the lake and bay. Accessibility to potable water is fundamental to all animal and human life and the ease with which this necessity, shellfish and household chattels could be transported to the ideal shelter of the encampment provided additional reasons for our assumption that the excavation might yield significant cultural and temporal data.

Several problems were posed during the excavation and later analysis of the collected data, the solutions to which would help reach beyond the descriptive to an explanatory level of interpretation. They were:

1. To determine whether this site was occupied the year round or used as a seasonal collecting encampment, being abandoned during the severe winter months, as suspected for the majority of Coastal New York shell midden sites. An answer to this question would depend upon the recovery of food remains indicating the season of their availability, assuming the occupants emphasized food gathering, fishing or hunting in their economy and fully utilized the resources at hand.

2. Relevant archeological evidence of house types, drying racks and other wooden post constructed features are sorely lacking in the Coastal New York area literature. Careful observations would be made to record the existence of post mold patterns which would denote architectural features, particularly those indicating winter shelters.

3. It is not unusual for sites situated in the western portion of Coastal New York to produce a mixed pottery series of both the Windsor and East River cultures ceramic traditions. These multi-component, ceramic and associated artifact inventories occasionally exhibit some typological variation from site to site. Generally, aside from sporadic aberrant ceramic occurrences, a high degree of cultural homogeneity is evident. The Oakland Lake site test specimens and the 1966 excavation recoveries hinted at a lengthy occupation of this locus by peoples of different socio-cultural type. The near-surface appearance of Cayadutta Incised pot sherds, denoting the presence of Late Woodland period, with Mohawk-Iroquois and Abbott Zoned Decorated sherds recovered from a lower depth, hypothesized by the writer to be coexistent with Coastal New York's Middle Woodland period, Clearview focus, added to the complexity of the time depth of the occupations and potential value of reconstructing the culture history of the Oakland Lake site.

4. At numerous sites in Coastal New York, distinctive Abbott-like zoned decorated ceramics have been consistently recovered with certain contextual evidence which, when reported, disclosed the difficulties that the researchers encountered in placing these cultural materials within the existing sequence. While recognizing the inherent vagaries of stratigraphic context and culture material preservation, it was hoped that this excavation might produce the additional evidence needed to establish the chronology of the Abbott complex (Kaeser 1968: 8-26), its separate identity, and additional clues to the likely center from which the Abbott ceramic tradition radiated.

1967 Excavation

On May 20, 1967, the site was cleared of trash accumulated during the previous winter, and the base lines and grid of 5 ft. squares reestablished. Access to the field records of the 1966 season not being available, a decision was made to re-dig every square which had been previously worked and to expand the grid to the limits of concentrated habitation evidence.

The midden appeared to be localized on a flat, alcove-like terrace approximately 27 ft. above mean sea level. The western edge of the terrace dropped off 3 ft. at an eroded embankment to the ravine floor. An examination of the embankment face showed, except for a thin duff surface layer, clear sandy clay soil containing numerous waterworn cobbles. No horizontal separation was apparent, such as ash-stained soil or shell lenses.

A much-used footpath crossed the northwestern corner of the site exposing hard packed black carbonaceous earth, crushed shell and fire broken stones. Various other bare surface spots were in evidence along the western periphery of the site where sod had been removed and

topsoil scraped away, apparently by local gardeners. This scraping did not extend to an appreciable depth because it was necessary to sift off the intermixed and unwanted shell fragments and stones, piles of which were found scattered across the site area. Unfortunately, it was in this obviously disturbed superior level that the latest Indian and possibly Caucasian contact material was expected to occur.

Datum readings taken at grid surface indicated little variation in contour except for an approximate 3 degree west to east rise in grade approaching the foot of the ravine slope. This gradient of approximately 1 ft. was subsequently revealed to be the result of soil washed from the slope face consisting of sterile yellow clayey earth, thinly surface stained by leaf mold.

Excavation was done by following the subsurface contours or zones of natural stratigraphy. As each distinct zone was removed and the data recorded, a constant search was made for the possible definition of levels within the zones which would further subdivide the major strata in deposition sequence. As no clear lines of demarcation could be visually drawn within the zones, a chronological interpretation demonstrating sequential deposition had to be attempted by analysis of trait modifications of cultural materials, cooking pit levels and other visible features, from top to bottom of each zone. As squares were in the process of excavation, the occurrence of non-uniformities and cultural features were recorded and their stratigraphic provenience plotted in profile and plan.

After excavation of the site was terminated on October 28, 1967, the site map, cover illustration, revealed a rather sharply defined shell midden, the broadest lateral spread of concentrated midden debris to be approximately 40 ft. north to south and 35 ft. east to west. During 20 of the 24 Saturdays allowed for our investigation, 50 five-by-five foot squares were excavated, representing a surface area of 1,250 square feet.

Stratigraphy

Four distinct physical strata involving natural soil and cultural refuse deposition were evident. These major levels were designated as zones of habitation. Artifacts, stone chipping debitage and refuse food bone were recovered from all four zones. Only occasional small bits of charcoal were found, usually clustered on the interior surfaces of mollusk shells.

Zone 1

Where not scraped for garden soil, the surface of this stratum was topped by a thin sod and weed growth. Removed from the surface were quantities of charred wood fragments of recent brush fire origin, scattered metal and glass food containers, and parts of a late model auto mobile, the stripped body of which had to be manhandled clear of the western perimeter of the grid.

Measured from the surface, zone 1 averaged 4 in. in thickness, consisting of loose brown earth containing scattered oyster and hard clam valve fragments, sparse chipping debris, fire broken and unmodified stones.

Zone 2

The fill of zone 2 was visually unstratified, composed of a black, charcoal-impregnated, mottled black-brown earth having a greasy consistency when wet. Although not clearly marked by animal burrows, it was presumed that the mixed color condition was the result of rodent tunneling through this midden layer downward into the yellow subsoil (Zone 4). There was also the equal possibility of modern and prehistoric human digging activity which would also tend to induce stratigraphic confusion by reversing the normal horizontal position of cultural material and soils transported upward from lower levels.

The stratum was heavily charged with whole and fragmented oyster and hard clam valves with an estimated comparative ratio, 95 percent oyster (*Crassostrea virginica*), 5 percent hard clam (*Venus mercenaria*). Minor mollusk species consisted of a scattering of fragmented bay scallop (*Pectens irradians*), soft clam (*Mya arenaria*) and channeled whelk (*Busycon canaliculatum*). In and near cooking pits containing lenses of fire burned earth and shell, concentrations of fire broken stones were found. Scattered in the lower portion of the stratum were numerous un-

modified stones coated with calcium carbonate leached out of the surrounding shell and re-deposited on the stones upper surfaces.

Measured from its junction with Zone 1, this stratum maintained a nearly consistent 5 in. thickness. However, in an oval shaped natural hollow extending from squares N.15-W.10 to N.5W.5, and in a foot-print-shaped hollow from S.5-E.5 to 5.20-E.10, the stratum dipped into two localized Zone 3 surface undulations an additional 10 and 12 in. in thickness.

Zone 3

The transition in soil texture and color between Zones 2 and 3, at their junction, was quite sharp. Zone 3 was composed of loose, brown and mottled brown-yellow sandy earth containing scattered whole and fragmented oyster and hard clam valves, the observed ratio, approximately 3 to 1; fire broken and unmodified waterworn cobbles.

The thickness of this stratum ranged from 1 in. to an 8 in. maximum, averaging 4 in. in thickness. The only noticeable variation within the stratum was a gradual lightening of the soil color as depth increased. Although clearly defined, the zone disappeared at several locations across the grid.

Zone 4

This stratum, at its junction with Zone 3, was dense clayey earth, the surface stained a light brown color. This 1 to 2 in. stain was irregular and poorly defined, probably representing an original sod line or a humic deposit resulting from the leaching of organic matter through the overlying 2 and 3 Zones into the subsoil. Below the stain, clear yellow dense clayey earth containing scattered water rounded cobbles and pebbles. This stratum was devoid of shell. The only evidence of food refuse was scattered deer bone fragments.

Features

PITS (Front cover)

Thirteen bowl-shaped pits were uncovered. Most pit bases intruded into lower zones. Pit orifices were round or oval shaped and were round, pointed or asymmetrical at bases. Largest pit orifice was 5 ft. in diameter; the majority averaged slightly over 1 ft. in diameter. The deepest pit was 18 in. from orifice to base. Most pits were filled with black earth and compact whole and broken shell, some of which was burned in pit bases; others, their function less obvious, contained dark colored earth only. In instances where cultural material occurred within the fill of pits, the items were added to the inventory of the level of pit origin.

Pit #1 Provenience: 5.20-E.10, 5.20-E.5; junction Zone 1, to Zone 3. Pit type: Refuse; bowl shaped, orifice 2.5 ft. diameter, 10 in. deep, round base. Content: Black earth, whole oyster and hard clam shell; large stone slab in almost vertical position.

Pit #2 Provenience: 5.15-E.5; 2 in. below junction Zones 3 and 4; probably originated at base of Zone 3 into subsoil. Pit type: Cooking; bowl shaped; orifice oval, 12 in. diameter, 5 in. deep; round base. Content: Ash, burned clay and fragmented shell.

Pit #3 Provenience: 5.15-W.10; junction Zones 1 and 2, through Zone 3 into Zone 4. Pit type: Refuse; bowl shaped; orifice 17 in. diameter, 13 in. deep; pointed base. Content: Black earth, fragmented oyster shell.

Pit #4 Provenience: 5.10-W.10; junction Zones 2 and 3. Pit type: Refuse; bowl shaped; orifice 12 in. oval, 7 in. deep, round base. Content: Black earth, fragmented oyster and hard clam shell.

Pit #5 Provenience: S.5-E.5; junction Zones 2 and 3, into Zone 4. Pit type: Possible storage; bowl shaped, orifice 15 in. diameter, 7 in. deep; round base. Content: Black earth.

Pit #6 Provenience: S-5-E-0; junction of Zones 2 and 4 (no Zone 3 stratum this location). Pit type: Possible cooking; bowl shaped; orifice 21 in. oval, 13.5 in. deep; round base. Content: Black earth, whole compact oyster shell, 3 unmodified cobbles at east rim of pit.

Pit #7 Provenience: S.5-W.10; Zone 2. Pit type: Cooking; bowl shaped; orifice 2 ft. 4 in. diameter, 15 in. deep; round base. Content: Burned earth, 5 unmodified cobbles at rim of pit.

Pit #8 Provenience: S.5-W.20; junction Zones 2 and 4 (no Zone 3 stratum this location). Pit type: Possible hearth; bowl shaped, orifice 12 in, diameter; 2 in. deep, round base. Content: Black earth.

Pit #9 Provenience: N.O-E.15; junction Zones 2 and 3. Pit type: Refuse; bowl shaped, orifice 22 in. diameter, 11 in. deep, round base. Content: Black earth, whole and fragmented oyster and hard clam.

Pit #10 Provenience: N.O.-E.5; Zone 4. Pit type: Possible storage; bowl shaped; orifice 12 in. oval diameter, 5 in. deep; round base. Content: Mottled black-brown earth.

Pit #11 Provenience: N.O.-W.10, N-0-W-5; N.5-W.10, N.5-W.5; junction of Zones 2 and 4 (no Zone 3 stratum this location). Pit type: Cooking; bowl shaped, orifice 19 in. diameter; 5 in. deep; round base. Content: Burned earth, fragmented and whole oyster and hard clam.

Pit #12 Provenience: N-5-E.0, N.5-W.5; N.10-E.0, N.10-W.5; junction Zones 2 and 4 (no Zone 3 stratum this location). Pit type: Cooking; bowl shaped; orifice 5 ft. diameter; 12 in. deep; round base, Content: Basal center, red earth; ringed with pink earth and clay; at rim, yellow grey ash, fire-broken and unmodified stones.

Pit #13 Provenience: N.1--E.5; junction Zones 2 and 4 (no Zone 3 stratum this location). Pit type: Possible storage; probable animal burrow; orifice 15 in. oval diameter; 5 in deep. Content: Dark brown earth.

Undoubtedly utilized in the process of pit cooking, 6 concentrations of thermally broken and cracked quartzite cobbles were uncovered. Four of these groupings were in close proximity to or at the same orifice level as the pits in which they were possibly used. Two groups could not be associated with specific hearth or pit features.

Hearth Stone Group:

#1, 160 pieces scattered from rim of pit #12; N.10-W.5, N.5-W.5, Zone 2,
#2, 20 pieces scattered from pit #11; N.0-W.10, Zone 2.
#3, 18 pieces scattered from pit #10; N.0-E.5, Zone 4.
#4, 115 pieces scattered from pit #4; 5.10-W.10, 5.10-W.5, Zone 2.
#5, 25 pieces (no feature); N.15-E.5, Zone 2.
#6, 200 pieces (no feature); 5.15-W.5, 5.15-E.0, S.10-E.0, Zone 2.

Four additional concentrations of visually unmodified ovoid quartzite stones were recorded. Their utility is unknown. Possible alternative explanations for these concentrations might include their use as boiling stones, or stones to confine open cooking fires stored to dry on the surface to minimize exploding due to trapped moisture.

Unmodified Stone Group:

#7, 15 pieces near rim of pit #10; N.0-E.5, Zone 4.
#8, 22 pieces, 5.10-W.5, Zone 2.
#9, 91 pieces, 5.15-W.10, 5.20-W.10, 5.15-W.5, Zone 2,
#10, 46 pieces, near large boulder, 5.15-W.15, Zone 2.
#11, oval sandstone drift boulder in vertical position, entire top surface spalled as if used as anvil, 6 inches west of pit #4, 2 inches below junction of Zones 2 and 3; 5.10-W.10.

Artifactual Recoveries

Ceramics:

A total of 1,064 classifiable potsherds were recorded from the excavation. This count does not include the Wisniewski and Schreiner site test collection. These specimens will be covered in the "Interpretation" portion of this paper. Close to 500 additional potsherds were recovered,

all too small or badly defaced to be identified. These pottery fragments were not included in the ceramic inventory or analysis.

Based on Coastal New York's defined pottery types (Smith 1950: 188-197), (Lopez 1957: 25), the New Jersey Abbott pottery types (Cross 1956: 137, 144-45, 147-48), and the Mohawk ceramic tradition (MacNeish 1952: 77-8), a seriation of 8 pottery types totaling 482 sherds was possible. Seven additional sherd groups totaling 582 sherds are assigned to wares. Since the majority of the 7 sherd groups are from the bodies of vessels and cannot be assigned to types with certainty, criteria for classification was based on the sorting of sherds according to surface finish, decorative technique and motif, paste consistency and color, aplastic type and size, cross section thickness, and when possible, manufacturing technique and vessel form.

I have little doubt that a considerable number of the typologically undefined, plain-surfaced sherds represent vessel body fragments of the East River ceramic tradition Late Woodland type, Eastern Incised, or are classifiable as the Mohawk ceramic tradition type Cayadutta Incised. Analysis of the clays or mineral aplastics may, in the future, help clarify this sorting problem. Body sherds of both types are smooth surfaced on the exterior and interior; paste is hard, compact and thin, and generally fine mineral grit-tempered; however, the definitive characteristics of the types are generally confined to the rim and collar portions of the vessels.

Body sherds of exterior cord-marked vessels form the bulk of most Coastal New York ceramic collections, making their typological classification difficult. Errors in typological analysis and chronological deductions are possible in the seriation of scattered cord-marked pottery fragments recovered from multi-component sites or collections lacking provenience data. Exterior cord-wrapped paddle malleation was employed as a technological step in the manufacture of pottery to compact the paste and weld together the clay coils of most uncollared, and some collared vessels. As fashion or tradition dictated, after complete exterior cord malleation, the rim, neck or shoulder portions of vessels were wiped smooth in preparation for decoration or application and modeling of collars. Thus, cord-marked body sherds might represent constituents of completely cord-marked vessels, of partially smoothed, decorated rimmed vessels, or of collared vessels. Easy to make mistakes in identification can place the pottery type or ware, and the associated cultural material assemblage, at erroneous temporal extremes of the Woodland period. Because of this manufacturing technique's long duration, exterior cord marking is not a sensitive time indicator for ceramics of this area.

Most collarless, exterior cord-marked vessel rims were either straight-sided or slightly out-flaring, the lip thinned, flattened or rounded and the surface finger-smoothed or left cordwrapped paddle marked. Apparently, the delicate lip portion of the rim was most vulnerable to abrasion and breakage during the vessel's domestic use, and evidently more so after discard. The recovery of uncollared and undecorated rim sherds of exterior cord marked vessels retaining definitive rim lip finish is rare.

In the absence of rimsherds bearing type-defining neck and body portions, the analyst must resort to a close examination of the complete site ceramic collection (Kaeser 1969:15-18), and consult the field records showing each pot sherd's relative stratigraphic provenience. With a few "ifs" a relationship of undefined sherds to types or wares is possible and a valid pottery seriation can be constructed.

(a) if the site is physically stratified or is composed of a single apparently homogeneous culture bearing stratum containing sherd samples large enough to reflect popularity rather than chance occurrence.

(b) if the mixture by human or natural disturbance of sherds from different strata or from top to bottom within a single stratum is obviously not too great to attempt seriation.

(c) (c) if the observation of sherd frequency stratigraphically suggests the probable first appearance of a pottery type or ware at the base of a stratum, a predominance over associated types or a gain in frequency at mid-stratum, and a gradual decrease, to disappearance or replacement, by a new type or variety approaching the overlying stratum.

Needless to say, these criteria are rarely all met in the field. Unless the cultural contents of the deposition units show contrast, positional observations have little chronological significance. Table 1 shows the relative frequencies of the pottery types and wares by zone. Besides

TABLE 1
OAKLAND LAKE SITE CERAMICS

ZONE	DEPTH IN INCHES	TYPE: VINETTE I	CAYADUTTA INCISED	ABBOTT ZONED INCISED	NORTH BEACH NET MARKED	EASTERN INCISED	ABBOTT ZONED DENTATE	CLEARVIEW STAMPED	ABBOTT ZONED NET IMPRESSED	MODIFIED VINETTE	WARE: EXTERIOR CORD MARKED	PLAIN	PLAIN - INTERIOR BRUSHED	CORD ON CORD	INCISED-PUNCTATE	HORIZONTAL INCISED	% TOTAL
I	1					6						17					
	2		1			6						11			2		17%
	3		1			14					9 (2s)	16 (6s)			3		
	4					17 (2s)					30 (7s)	34				2	
2	5			2 (1s)	4		2	1			70 (10s)						
	6			5	6 (2s)						59 (32s)		5	1 (1s)			
	7			23	12				120 (s)	13s	45 (26s)						80%
	8			2 (6s)	51				9s	40	32 (18s)						
	9				12				114 (s)	33	27 (6s)						
3	10	2								13							
	11	5								9							3%
	12	31															
	13	25															
GRIT		63	2	32	85	43	2	1		98	272	78	5	1	5	2	611
S= SHELL				7	2	2			243	13	101	6		1			453
TOTAL		63	2	39	87	45	2	1	243	111	373	84	5	2	5	2	1,064
%		5.9	.2	3.7	8.1	4.2	.2	.1	22.8	11.3	35.0	7.1	.5	.2	.5	.2	100%

showing the sequence of deposition, the recorded provenience and sherd cluster data (Fig. 1), serves to demonstrate in profile the first appearance, peak and decline of the various pottery types and wares within the zones. Typological associations and comparative changes from zone to zone is also demonstrated. The non-ceramic artifact inventory is listed by zone of recovery in Table 2, their provenience and context is incorporated in the "Analysis" and "Interpretation" sections.

Observations and Analysis

Each zone of natural stratigraphy as seen in the profile showed significant differences in soil characteristics and artifact content from the zones above and below. Cultural material modifications were evident within the individual zones. By typological analysis, the four zones express a depositional sequence spanning the Middle Archaic to the Late Woodland periods. The zones of occupation are described in a reverse order of excavation.

Zone 4, the basal excavated level of the niche-like terrace on which the site was situated, conveyed the appearance of an alluvial fan constructed of a mixture of clay and sand carried down the embankment slope and deposited at the foot. These mixed materials blanketed glacial till, thinning in lateral spread, forming a gently sloping beach. Presumably, subsequent water runoff from the ravine banks cut numerous shallow furrows into this surface as it drained to the lake, giving the site surface a sculptured, undulating contour. The 1 to 2 in. brown organic stain capping the zone probably represents the original turf line and is characterized in this study as the primary cultural horizon. It is upon this uneven, stained surface that the artifacts of the site's first occupants were dropped. One Normanskill, 1 Brewerton Side-Notched and 1 conical antler tip projectile point were recovered from the stained surface layer and 1 Brewerton Side-Notched point was found 1 in. below the stain. If the stratigraphic position of each of these points can be considered in their original deposition level, their vertical distribution would be significant. Typologically, Normanskills and Brewerton Side-Notched points are currently placed within the Late Archaic period (Ritchie 1961: 10), and stratigraphically the point types conform to this provenience. The Brewerton Side-Notched point, believed to be the earliest Brewerton type, was found at the greater depth. Although an uncommon find in Coastal New York, conical antler tip projectile points were used over a long period of time. The point form has been recovered from Middle to Late Woodland period burials on Staten Island. Its probable use during the Archaic at this site is supported by a Brewerton Phase attribution in central New York State (Ritchie 1965:93; P1.29).

Although it is conceivable, there is little likelihood that these few scattered classifiable points were dropped all at the same time. Besides possible disturbance by the numerous possible agencies of man and animals, it is questionable that any of a large number of points, if left on such an uneven surface, would remain in their original positions. A few might remain on or near flat surface areas where they had been solidly fixed by trampling. Most however, would be displaced and buried at different elevations in the profile by soil eroded from the high spots, making it impossible to fix their original deposition. In addition to natural surface leveling processes which tend to displace some artifactual materials in the profile, another cause for displacement would be the aboriginal digging of cooking and storage pits.

Pits number 3, 5, 6, 8, 11, 12, 13 intruded into the Zone 4 stratum and the bottoms of pits 6, 11, 12, 13 terminated in the subsoil. Pit 10, containing sterile, mottled black-brown earth, originated within the Zone 4 surface stain and its bottom was traced downward 10 inches into the subsoil. This pit is the only feature attributable to Zone 4. Three point rejects or blanks, 2 combination pitted-anvil and hammer stones; 12 quartz cores; 25 quartz, 6 quartzite and 2 chert flakes, and 96 fragments of refuse food bone tentatively identified as deer, plus 1 shed deer antler base, were found scattered downward to a depth of 8 in. below the Zone 4 surface. The bone represented 6.7% of the total food bone recovered in the site collection.

The above noted items, particularly the projectile points, can add only to our knowledge of the geographical distribution of the defined artifact types, but certainly cannot define a cultural component. On the basis of typology and stratigraphic provenience, the recoveries constitute the site's earliest depositions. The occupation of Zone 4 is tentatively placed within the Late Archaic temporal period. (See Plate 1, Fig. 1-6.)

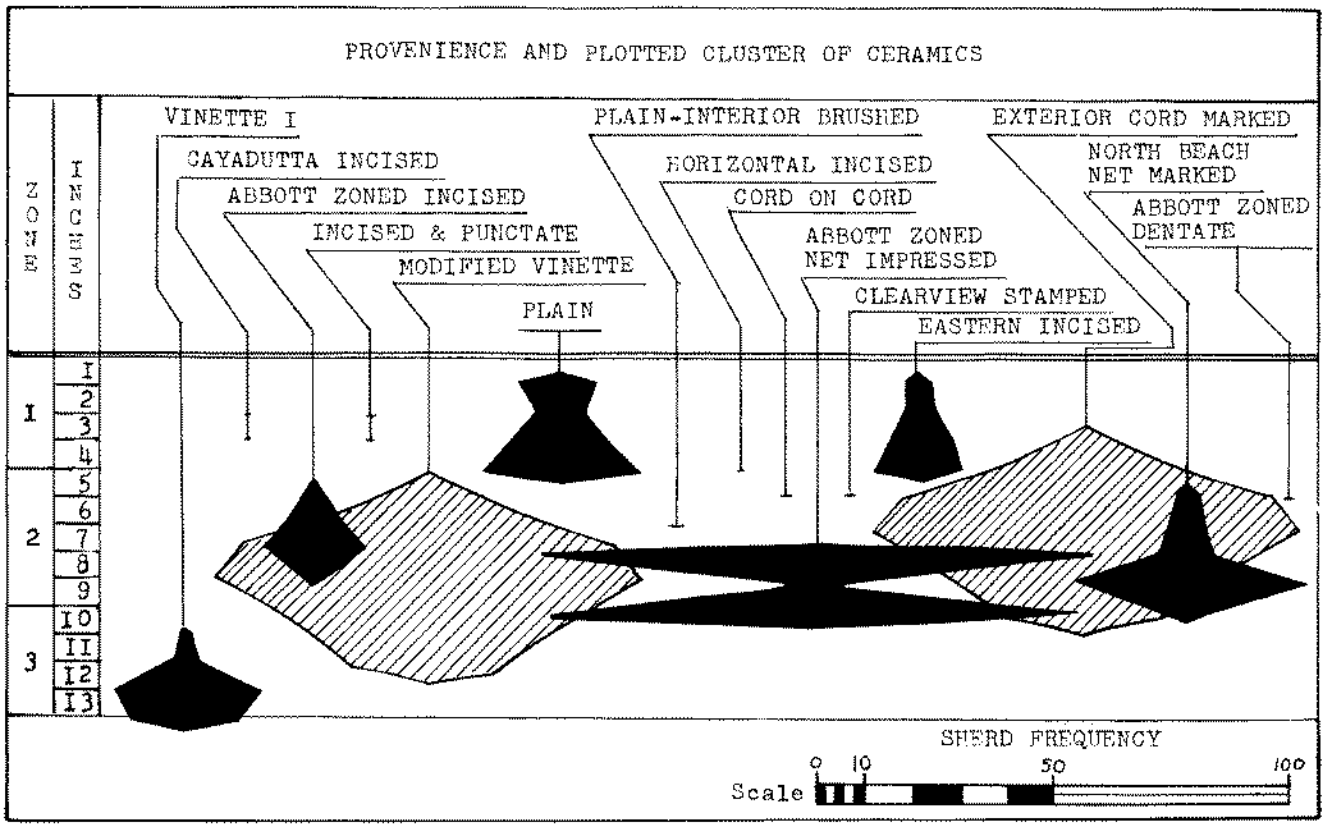
PROVENIENCE AND PLOTTED CLUSTER OF CERAMICS
ZONE
INCHES
VINETTE I
CAYADUTTA INCISED
ABBOTT ZONED INCISED
INCISED & PUNCTATE
MODIFIED VINETTE
PLAIN
PLAIN-INTERIOR BRUSHED
HORIZONTAL INCISED
CORD ON CORD
ABBOTT ZONED NET IMPRESSED
CLEARVIEW STAMPED
EASTERN INCISED
EXTERIOR CORD MARKED
NORTH BEACH NET MARKED
ABBOTT ZONED DENTATE
1
2
3
1 2 3 4
5 6 7 8 9
10 11 12 13
SHERD FREQUENCY
Scale
0 10 50 100

Fig. 1.

TABLE 2
ARTIFACT INVENTORY

Industries	Zone 1	2	3	4	TOTAL
Chipped stone					
Projectile points					
Madison	2				2
Levanna	4				4
Cony Stemmed		13			13
Cony Lanceolate		5			5
Bear Island			2		2
Rossville			2		2
Normanskill				1	1
Brewerton Side Notched				2	2
Reject or preform	4		8	3	15
Knives					
Lanceolate	1				1
Trianguloid		1			1
Scrapers					
Thumbnail end scraper		2	1		3
Reworked Cony Stemmed end scraper		1			1
Flake side scraper	1				1
Flake end scraper		1			1
Spall scraper	1	6	1		8
Drills					
Reworked Cony Stemmed point		1			1
Rough stone					
Double pitted hammer	2	1		1	4
Pebble hammer	2	2	5		9
Side notched hammer			1		1
Combo. Double pitted anvil and hammer		1		1	2
Notched pebble net sinker		3			3
Uniface spall chopper	1		2		3
Biface cobble chopper		1	1		2
Grooved cobble fragment	1				1
Worked cores (quartz)	1	3	1	12	17
Paint stones					
Hematite geode cup	2	2			4
Hematite rubbed and unaltered	15	21	3		39
Bone					
Awls					
Polished splinter	2	8	1		11
Tip fragments		3	1		4
Notched and incised		1			1
Notched			1		1

The Zone 3 stratum filled the underlying Zone 4 depressions to a near level surface. Where the Zone 4 surface rose in highest elevation, Zone 3 thinned or abruptly disappeared, giving the stratum at alternate locations across the grid, the appearance of separate lens-like deposits. Despite this lenticular nature of the stratum, its continuity was followed by soil color, texture and shell content. The lenticular deposits of Zone 3 are not easily explainable; still, a reasonable reconstruction places this stratum as the first concentrated habitation deposit on the site. The thickest cultural debris (containing the first remains of shell fish eaten at the site) and organically stained soil, filled natural depressions which feathered to just a trace over higher Zone 4 surface spots. Seasonal weathering and wash cleared the thinly covered higher areas leaving lens-like concentrations which were subsequently covered by Zone 2.

Pit 1, originating in Zone 2, intruded into the upper level of the Zone 3 stratum. Pit 3, also originating at the surface of Zone 2 was dug through Zone 3 and terminated in Zone 4. Pit 2, originating at the junction of Zones 3 and 4 might have carried upward and dispersed cultural material from the lower stratum.

It is within Zone 3 that the first recognizable divisions of material cultural stratigraphy could be distinguished, pointing up some of the trends of cultural development in Coastal New York and demonstrating a succession of components on the site.

In the basal portion of the stratum, almost at the junction of Zones 3 and 4, 2 Bare Island projectile points, with 25 Vinette I potsherds in close proximity, were recovered. The points are postulated as constituents of the Late Archaic to Early Woodland-Transitional period, and the Vinette I sherds, diagnostic of the North Beach focus - Windsor Aspect, constitute the earliest defined ceramic vessel type for Coastal New York.

Approaching mid-thickness of the stratum, 1 Rossville point, 31 Vinette I sherds and 1 smooth surfaced steatite bowl rim sherd were recovered. The Rossville point, Vinette I sherds and the smooth surfaced steatite bowl fragment can, with some degree of certainty, also be placed within the Transitional (non-ceramic Archaic, to pottery making Early Woodland) stage which characterizes the emergence of ceramic cooking vessel technology.

At mid-stratum, 5 Vinette I sherds were associated with 9 sherds of Modified Vinette ware. Modified Vinette ware retains the basic Vinette I typological attributes of straight aided, pointed bottom vessel form, .25 to .5 in. in thick cross section and poorly consolidated granular paste containing coarse crushed quartz or feldspar temper. Distinguishing this ware however, is the appearance of intentionally smoothed-over areas on the exterior and interior surfaces, where typically Vinette I vertically aligned, cord-wrapped paddle impressions on exteriors, and similar but horizontally aligned cord impressions on interiors have been partially obliterated. This observation implies a subtle primary step in regional ceramic technological evolution. It is thus reasonable to assume Vinette I pottery to be chronologically precedent and culturally ancestral to Modified Vinette ware.

Ascending to the surface of the Zone, 2 Vinette I and 13 Modified Vinette sherds were recovered, illustrating the phasing out of Vinette I and its replacement by Modified Vinette ware. Most of the sherds from this zone sub-division show a change to thinner vessel walls, averaging .25 in. in cross section, and a harder paste with fewer grit inclusions protruding from wall surfaces. Aside from 1 shale thumb-nail, scraper found near the zone's surface, the following stone tools and bone implement recoveries from Zone 3 lend little to a list of diagnostic traits for the Late Archaic to Early Woodland periods: 8 points-in-process or rejects; 1 spall scraper; 5 pebble hammer stones; 2 uniface spall choppers; 1 biface cobble chopper; 1 tabular abrader; 3 fragments of hematite; 1 limestone cobble containing negative fossil shell impressions; 1 quartz core; 10 quartz, 4 chert and 2 flint flakes; 1 polished bone splinter awl; 1 awl tip; and 1 notched base bone awl fragment. Food bone remains from the stratum consist of 285 fragments of deer bone, 2 occurrences of deer teeth in mandible fragments, 1 shed deer antler base, 1 broken out elk antler base (with Vinette I sherds in association), 2 bird bones (turkey ?), and 1 turtle carapace fragment. This assemblage represents 20% of the total food bone collection. (See Plate 1, Fig. 7-18.)

Aside from two localized hollows where Zone 2 dipped to match surface depressions in Zone 3, the Zone 2 stratum maintained a near uniform thickness. The uniformity of the layer and its surface evenness is thought to be the result of the constant scattering, leveling off and

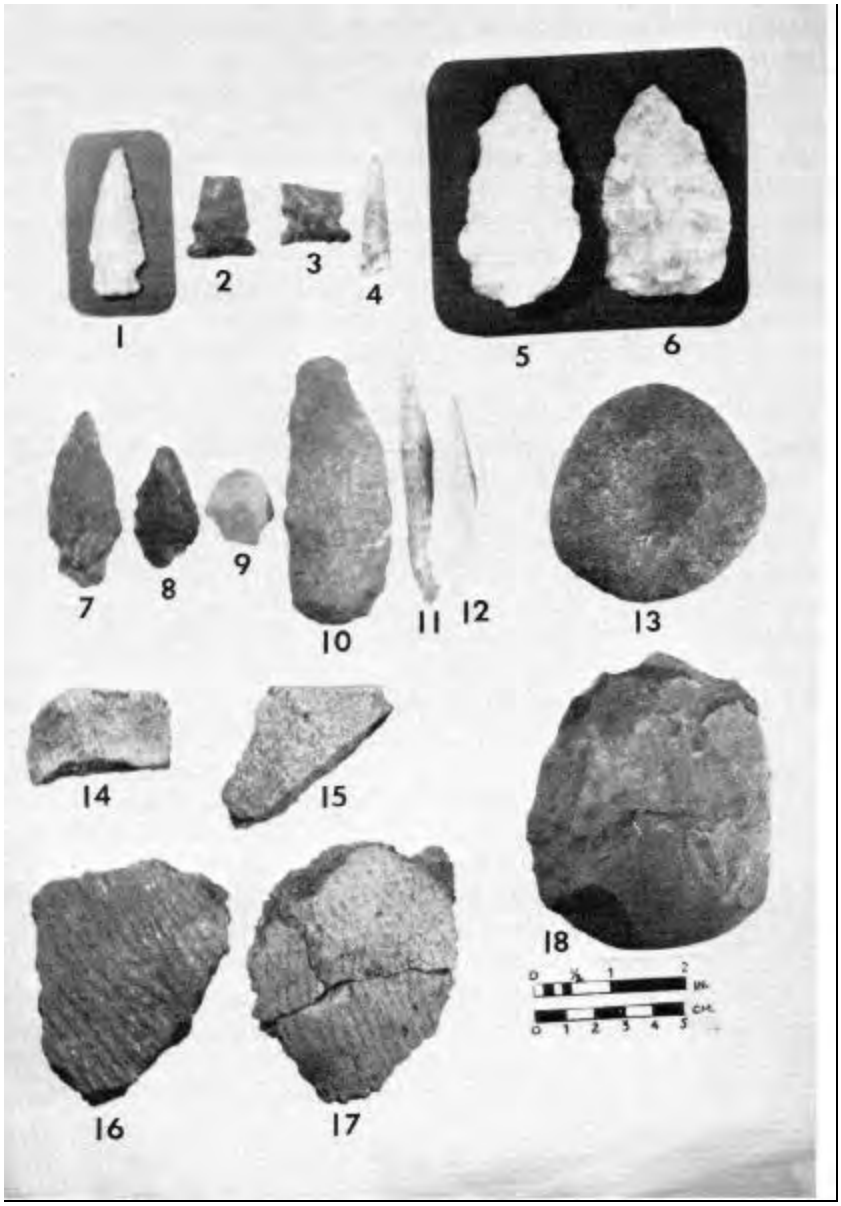

PLATE 1. Oakland Lake site. Artifacts from Zone 4. Fig. 1, Normanskill point; 2, 3, Brewerton Side-Notched; 4, conical antler tip point; 5, 6, quartz point preforms. Artifacts from Zone 3. Fig. 7, Bare Island point; 8, Rossville point; 9, thumbnail scraper; 10, lanceolate knife; 11, bone splinter awl; 12, notched bone splinter awl; 13, double pitted hammer; 14, Vinette I rim; 15, steatite bowl rim sherd; 16, Vinette I body sherd; 17, Modified Vinette ware body sherd; 18, cobble chopper.

covering of piles of opened shells and other camp refuse by the site's occupants. The compact shell and charcoal-impregnated earth composing the stratum is comparatively resistant to erosion and its surface would be more readily stabilized by seasonal weed cover which tends to grow rapidly and luxuriantly in such soils.

Pits 1 and 3 originated near the upper surface of the stratum and terminated within Zones 3 and 4. Pit 7, its orifice slightly lower, terminated 1 in. above Zone 3. The orifices of pits 4, 5, 6, 8, 9, 11, 12, 13 were not distinct in the profile because of the homogeneity of the upper portions of the pit contents with their surrounding midden material, making an exact definition of their level of origin tenuous. The pits are, however, attributable to the Zone 2 horizon.

At the top of this stratum, marking the junction of Zones 2 and 3, a pronounced change in the picture occurred. Almost predictable by its numerical decline in the underlying 3 zone, Vinette I disappeared. In addition to 33 sherds of Modified Vinette the pottery assemblage from the basal level contained 33 sherds of Exterior Cord Marked ware. Setting this ware apart from the completely or nearly complete cord-malleated vessels is the total smoothing of the interior surfaces and the adoption of crushed shell as the aplastic in 12 specimens. Also present in the level were 12 grit tempered sherds of the type North Beach Net Marked and 114 shell tempered sherds of Abbott Zoned Net-impressed. The completely exterior net-stippled, grit tempered, North Beach Net-Marked type is placed as a diagnostic within Coastal New York's late North Beach and early Clearview foci ceramic developmental stages of the Windsor Aspect (Early Middle Woodland period). Presumably contemporary, with Abbott Zoned Net-impressed pottery its source of dispersal to Coastal New York is believed to be in the mid-Delaware Valley. It shows a stylistic change from overall net impression to carefully applied bunched-net stamping confined within large incised squares and parallelograms. The decorative elements which, on occasion, occur in several horizontal rows, cover more than half the vessel body and are separated from each other and from flattened and transverse incised, everted rims by plain areas. Paste is flaky and shell-tempered, and vessel interiors are smooth.

Besides the introduction of Exterior Cord Marked, North Beach Net Marked and Abbott Zoned Net-impressed pottery, the basal level of Zone 2 produced 1 Cony lanceolate point (Kaeser, 1968), 4 spall scrapers, 1 pebble hammer stone, 1 notched pebble net-sinker, 3 quartz cores and 2 polished bone splinter awls.

Slightly above the Zone 2 basal level, an increase in sherd frequency changes was apparent. Modified Vinette with 40 sherds, North Beach Net Marked with 51, and Exterior Cord Marked with 50 increased in relative frequency, while Abbott Zoned Net-impressed decreased to 9 specimens. Abbott Zoned Incised, 7 sherds, was introduced at this level. As the type name implies, Abbott Zoned Incised vessel exteriors are decorated by horizontal, vertical or cross-hatch incision, filling horizontal bands, parallelograms, diamonds, etc. Decoration generally covers two-thirds of the vessel body. Plain areas separate the body design elements and the flat, everted, transverse-incised rim lips. Paste texture is granular, grit or shell tempered and the interiors are smooth. Recovered in association with the ceramic assemblage were 3 Cony lanceolates and 1 Cony stemmed projectile point, 10 fragments of limonite, 26 quartz, 4 quartzite, 12 chert and 25 flint chips, and 2 polished bone splinter awls.

The marked change in ceramics type frequency between this level and the stratum base suggests a nearly complete absence from the site of Abbott Zoned Net-impressed vessel users for an unknown length of time. Filling this gap, Modified Vinette continued a gradual growth in popularity and North Beach Net Marked showed a sudden and sizable increase in the resident Windsor population. During this interval, Abbott Zoned Incised was introduced to the site, augmenting the Abbott ceramic tradition.

Approaching mid-stratum, the seriated ceramic sequence again provided a basis for dividing the zone into habitation levels. Abbott Zoned Incised with 2 sherds, and Exterior Cord Marked with 71 sherds, increased in frequency. Modified Vinette, with 16 sherds, decreased and its use soon ended. Of most significance, North Beach Net Marked, 12 sherds, decreased and Abbott Zoned Net-Impressed increased to 120 sherds. This change in frequency reversed the North Beach Net Marked-Abbott Zoned Net-impressed trend observed in the lower level. Non-ceramic recoveries from this level are as follows: 12 Cony Stemmed, and 1 Cony lanceolate points, 1 isosceles trianguloid knife, 2 thumb-nail scrapers, 1 Cony stemmed point reworked

to end scraper, 1 flake end scraper, 2 spall scrapers, 1 Cony point reworked to drill, 1 double pitted anvil stone, 1 pebble hammerstone, 1 combination pitted-anvil and hammer, 2 notched net sinkers, 1 biface cobble chopper, 2 hematite geode cups, 8 rubbed and unaltered hematite fragments, 1 fragment of sheet mica, 1 zoomorphic chert nodule, 2 argillite chips, 4 polished bone awl tip fragments and 1 notched and tally incised bone awl base.

Food bone recoveries consist of 917 deer bone fragments, 5 occurrences of deer teeth in mandible fragments, 2 broken out deer antler bases, 2 unmodified antler tines, 7 segments of turtle carapace, 4 bird bone fragments (turkey?), 1 fox mandible fragment and 1 beaver tooth, totaling 64.3% of the food bone collection.

From mid-Zone 2, where a trend of increase in pottery frequency was indicated, possibly equating with a growth in population, to the junction of Zones 1 and 2, dramatic frequency changes occurred in the ceramic sequence. Abbott Zoned Net-impressed declined abruptly and disappeared slightly above mid-stratum. North Beach Net Marked, and Abbott Zoned Incised began a gradual decline at mid-stratum and disappeared just below the Zone 2 surface. Gradually increasing at mid-stratum, Exterior Cord Marked ware held an almost constant frequency through the upper half of the zone totaling 171 sherds. Immediately below the Zone 1-2 junction, this ware also exhibited an abrupt reduction in relative frequency.

As these frequency changes were taking place, 1 Clearview Stamped sherd and sporadic recoveries of Abbott Zoned Dentate, Plain Interior Brushed ware, and Cord-Wrapped Stick Stamped over Exterior Cord Marked sherds were recovered. Clearview Stamped is at present considered to be the diagnostic terminal Middle Woodland Windsor ceramic type for western Coastal New York. The decoration motif of Abbott Zoned Dentate (2 sherds) almost duplicates the design elements found on Abbott Zoned Net-impressed and Abbott Zoned Incised, consisting of alternating triangles and bands filled with horizontal dentate stamping on a plain exterior. Interior brushing found on 5 Plain sherds is the single attribute which might relate this ware to the Windsor ceramic tradition. Chronologically, Windsor Brushed (brushed on both surfaces), was popular during the late Middle Woodland period Clearview focus and, apparently, the interior brushing technique was carried on by Windsor potters through the later Sebonac focus approaching the final Woodland period on eastern Long Island and southern Connecticut.

Two specimens exhibiting horizontal rows of cord-wrapped-stick stamping over exterior paddled cord marking defy positive identification. The decorative technique and motif is similar to that found on the early East River ceramic tradition Bowmans Brook Stamped pottery type, and on the presumably contemporary Owasco aspect cord-on-cord vessels of the Canandaigua focus. Only one fact is certain. Because one sherd was tempered with shell and the other with grit, two individual vessels are represented.

Non-ceramic recoveries from the upper half of Zone 2 were meager, consisting of 3 fragments of hematite, 3 chert and 17 flint chips, 2 polished bone splinter awls and 1 awl tip fragment. (See Plate 2, fig. 1-16 for non ceramic artifacts from Zone 2. For ceramic recoveries see Plate 3, fig. 1-14).

The gradual frequency decline of Exterior Cord Marked ware observed near the upper surface of Zone 2 continued through the basal level of Zone 1 and the ware disappeared at mid-stratum. Within the lower half of Zone 1, and indicative of the Late Woodland period, 67 Plain ware and 39 Eastern Incised sherds were recovered, their highest frequency clustered slightly above the junction of Zones 1 and 2. Scattered within the level were 2 Cayadutta Incised, 7 Incised and Punctate, and 2 Horizontal Incised sherds. The associated non-ceramic inventory includes 3 Levanna points, 4 trianguloid rejects or points in process, 1 lanceolate knife, 1 spall scraper, 2 double pitted anvil stones, 1 pebble hammer, 1 spall uniface chopper, 1 tabular abrader, 1 hematite geode cup, 13 hematite fragments, 1 limestone cobble containing negative fossil shell impressions, 1 double grooved cobble fragment of unknown use, 1 quartz core; 4 quartz, 2 jasper, 3 chert, and 7 flint chips and 1 polished bone splinter awl.

The upper half of Zone 1, including the grass roots and exposed surface areas, produced 17 Plain ware and 6 Eastern Incised sherds, 2 Madison and 1 Levanna points, 1 flake side scraper, 1 pebble hammer, 1 hematite geode cup, 2 unaltered hematite fragments, 1 cut section of whelk columella, 8 flint chips and 1 polished bone splinter awl.

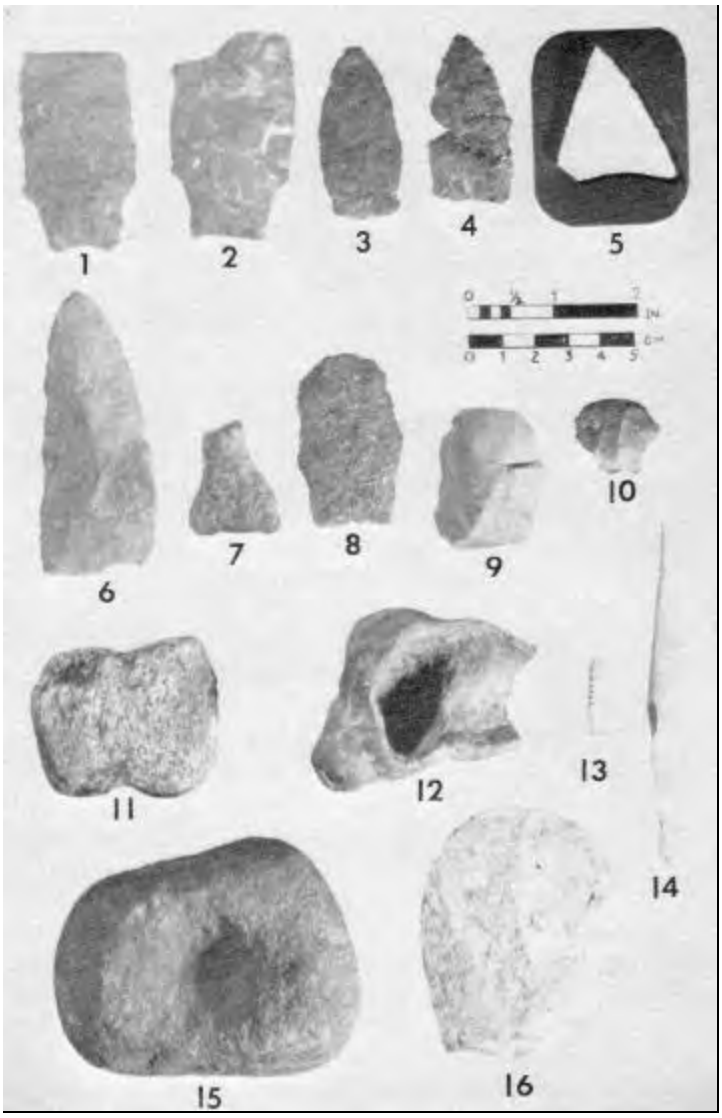

PLATE 2. Oakland Lake site. Artifacts from Zone 2. Fig. 1, 2, Cony Stemmed points; 3, 4, Cony Lanceolate points; 5, Levanna Point; 6, Cony trianguloid knife; 7, Cony drill; 8, Cony end scraper; 9, scraper; 10, thumb-nail scraper: 11, net sinker; 12, limonite geode cup; 13, talley marked and grooved awl base; 14 bone splinter awl; 15, double pitted hammer; 16, teshoa.

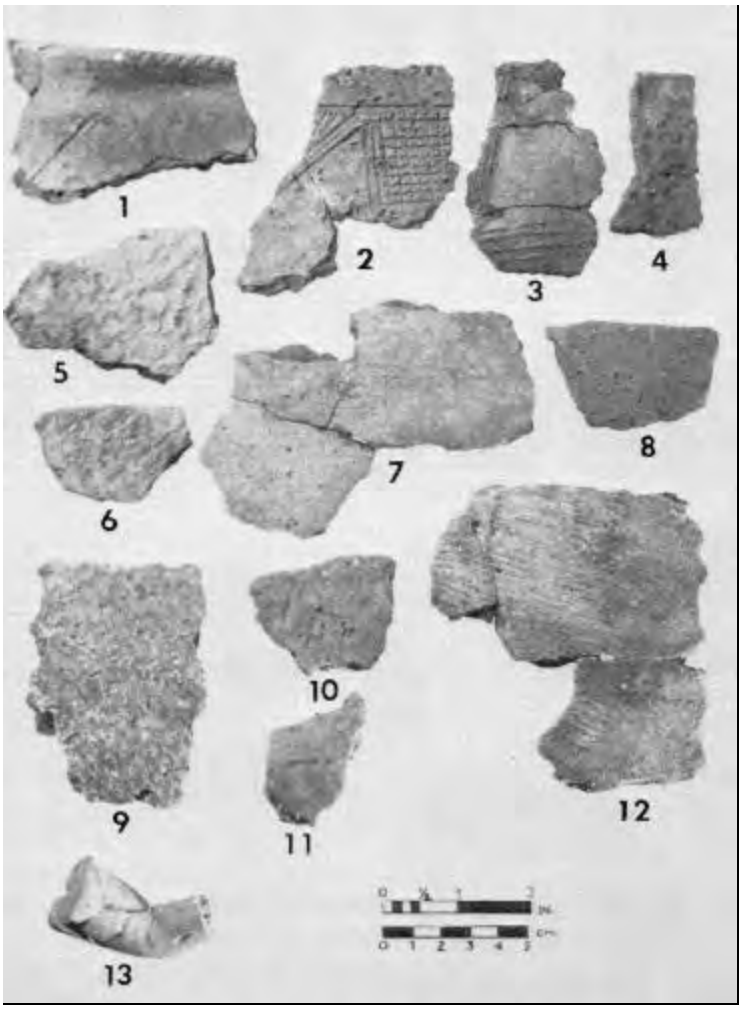

PLATE 3. Oakland Lake site. Artifacts from Zone 2. Fig. 1, Abbott Zoned Net Impressed rim; 2, Abbott Zoned Incised rim; 3, Abbott Zoned Incised (stab and drag) near rim sherd; 4, Abbott Zoned Punctate rim; 5, Abbott Zoned Net Impressed body sherd; 6, North Beach Net Marked rim; 7, Modified Vinette ware exterior; 8, Exterior Cord Marked ware rim; 9, North Beach Net Marked body sherd; 10, Modified Vinette ware interior; 11, Clearview Stamped; 12, Exterior Cord Marked body sherd; 13, Elbow pipe.

Food bone remains from Zone 1 consist of 127 deer bone fragments, 2 segments of turtle carapace and 1 fox tooth, 9%o of the total food bone recovered. (See Plate 4, fig. 1-17, for artifacts from Zone 1.)

Interpretation

From the preceding data and a few personal assumptions, the following partial reconstruction of the Oakland Lake sites cultural history is postulated. The site, a natural sheltered stopping place, was visited initially by hunters during the Late Archaic period, leaving behind sparse evidence of their cultural identity and mode of subsistence. The shed deer antler base recovered from this lowest stratum might imply that at least one sojourn occurred during the winter season. Bucks usually drop antlers in December and January and the shed antlers rarely survive porcupine and other rodent destruction for long thereafter.

Subsequently, during the Early Woodland period when ceramic vessels had virtually replaced stone cooking bowls, a small, possibly nuclear family, group established seasonal residence on the site. Although deer, elk and various smaller game were hunted, it is quite clear that during this first occupation by ceramic pottery-using people at Oakland Lake shellfish collecting commenced and became relatively more important with the passage of time.

As a preface to the following, the usual lack of reliable quantitative data dealing with percentages of surviving faunal and vegetal food remains from open sites such as this precludes assessment of the economic pattern and increase or decrease in importance of various wild species in the inhabitants' diet. Archeological evidence alone cannot explain in detail why the rarely isolated Archaic campsites of southernmost Coastal New York are generally devoid of shellfish remains, while the numerous Woodland period components reflect what appears to be an almost total involvement in shell-fishing.

Bypassing the modern day, clam and oyster on the half-shell gourmet argument that this fare would become monotonous after a few months, the nutritive value of a subsistence based totally on shellfish is questionable. I feel quite certain that antecedent coast ranging Archaic hunters and gatherers ate anything that, through trial and error, was found non-poisonous or did not eat them first, and the abundant and easily available mollusk was no exception. Louis Brennan's research in the lower Hudson Valley refutes any theory arguing an intentional avoidance of shellfish as food in the Archaic period due to personal taste or idiosyncrasy (Brennan 1970: 176-229). (See note by Brennan at end of paper.) The question focuses on whether the sporadic Archaic horizon finds and more numerous cultural materials diagnostic of the succeeding Woodland period occupations represent the remains of free wandering or semi-sedentary (central-based wandering) peoples. Answers lie not only in analysis of surviving food remains found in the middens but also in coastal environment settlement pattern observations and some knowledge of the habitat requirements of the marine and terrestrial animal species the area supported in prehistory.

First, and most obvious, the emphasis placed on shellfish gathering correlates with the close proximity of camp sites to ecological features such as bays and river shallows containing highly productive clam and oyster beds. This food gathering activity however, could not be continuously pursued during the intolerable winter season.

The miscellaneous skeletal elements of deer found on Coastal New York camp sites indicate that deer hunting was not predominantly done close to the site during the Woodland period. The deer population in New York State is probably larger today than it was in prehistory and the activities of a shell fishing encampment would not be conducive to close-by hunting. Deer skulls, spinal elements, scapulae and pelves are the least common parts carried back from the kill site. Aside from the brain, useful in the finishing of hides, and the tongue, these elements contain little usable meat or marrow and are heavy. It is proposed that hunting parties or single individuals ranged some distance from the site. Fore and hind quarters, edible organs, tongue with mandibular fragments attached and antlers and ligaments were removed at the kill site and carried back to camp packaged within the hide.

The presence of deer remains and absence of shellfish refuse in association with defined Archaic period projectile points at Oakland Lake and other sites in the western portion of Coastal

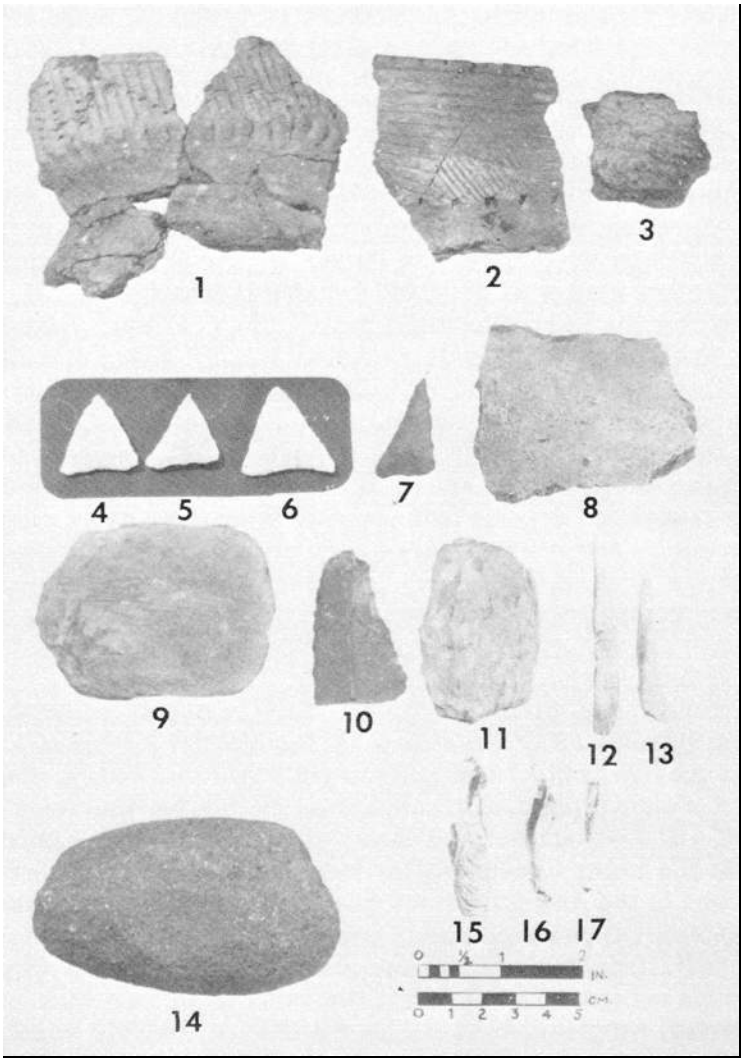

PLATE 4. Oakland Lake site. Artifacts from Zone 1. Fig. 1, Cayadutta Incised rim; 2, Eastern Incised rim; 3, cord on cord ware; 4-6, Levanna points; 7, Madison point; 8, Exterior Cord Marked ware body sherd; 9, abrading stone; 10, flake knife; 11, end scraper; 12-13, bone splinter awls; 14, double pitted hammer; 15-17, cut whelk columella sections.

New York possibly reflect the activities of small hunting groups who capitalized on the winter "yarding" or harem characteristic of deer. This hunting technique would be especially productive in deep snow, particularly if the hunters were equipped with some form of snowshoes that would enable them to keep within bowshot of floundering animals.

Sudden storms and falling temperatures would, however, pose serious problems which would border on the fatal for people caught away from adequate shelter. With the above in mind, since hunting is presumed to have provided the food base for inhabitants of the site during the Archaic period, winter hunts would, of necessity, be much more circumscribed, with a base camp within easy reach.

House structure references, relevant to piecing together subsistence-settlement patterns, are notably absent in the Coastal New York archeological literature. Whereas most known excavated coastal sites were situated just out of reach of present-day high water, or upon the first terrace above a beach, the Oakland Lake site was ideally located in a uniquely sheltered situation. Here, it was hoped, evidence of cultural relationships to prehistoric environment data could be collected. With this problem in mind, a concerted effort was made to descry postmold patterns indicative of house types or other domestic structures. In spite of a careful search in the various midden strata and particularly in the underlying yellow subsoil into which large posts would be set for winter shelter construction, none were found. It is possible that lightly framed warm season shelters were built directly upon middens and the dark colored refuse deposits made post molds inconspicuous. It is, however, inconceivable that a people possessing a high degree of woods lore and ingenuity despite an enviable physical stamina developed to tolerate climatic extremes, would attempt to survive winter camp life on exposed coastal sites without the shelter of substantially constructed houses. Apparently, architectural features delineating permanent winter quarters have been overlooked at or, in fact, are absent from all Coastal New York sites that I am personally aware of, and they must be searched for elsewhere. Although the lack of evidence continues to prevent a winter-season coastal site abandonment hypothesis from being conclusively demonstrated, I think it is reasonable to propose warm season shellfish gathering at coastal sites as one part only of a central based wandering people's cyclical utilization of many food resources. My own observations in Coastal New York strongly suggest that this subsistence pattern originated in the Archaic period and was continued by Woodland period cultures to the time of Caucasian displacement.

Although the following historic analogs may not derive from societies having similar subsistence levels, by way of example there is some ethnohistoric defense for a semi-sedentary lifeway in the New York coastal region. In February 1644, Captain John Underhill, in command of a body of Dutch troops attacked and destroyed an Indian village arranged for winter quarters near Stamford, Connecticut (Bolton 1881: Vol. I, 9-11);

> . . .snugly ensconced in a low mountain recess, completely sheltered from the bleak northerly winds, and consisting of a large number of huts disposed in three streets, each about eighty paces long.

Five to seven hundred Indians were killed in this single village fight, most burned to death within the houses where they had taken refuge.

In 1675, it was resolved by a General Court of Assize in New York (Bolton 1881: Vol. II, 36);

> . . .that the Indians at Mr. Pell's or Ann Hook's Neck [present day northern Pelham Bay Park, Bronx County] be ordered to remove to their usual winter quarters, within Hell Gate, upon this island.

Returning our attention to the Oakland Lake site, all indications point to a long series of seasonal reoccupations, commencing each year before a differentiating sterile zone could form to dissociate the occupations stratigraphically. Supporting this reasoning are the significant differences in ceramic typology between and within the homogeneous-appearing zones. Because ceramics are at present stylistically the most sensitive indicators of temporal change and can also provide us with a reasonably adequate basis for distinguishing regional types and their cultural relationships, primary attention is placed on the pottery sequence recovered in our excavation. As previously noted, the Early Woodland period Windsor culture introduced the first

ceramic vessel tradition to the area, characterized by the pottery type Vinette I, the salient determinant of Coastal New York's, North Beach focus. The oldest C14 date for Vinette I pottery in New York is placed at approximately 1000 B.C. By experimentation or the adoption of diffused technological refinements this tradition probably evolved indigenously, initiating the first recognizable evolution in Coastal New York ceramics. Undoubtedly, this change did not take place over night. Vinette I, or its look-alike, occurs over a large territory, and this dispersal in itself demanded time for its development. Stratigraphically, the emergence of Modified Vinette ware at Oakland Lake seriates approximately one-half the distance from the top of the Early Woodland period sequence (Plate 2) and equates with the decline-to-disappearance of Vinette I which marks the end of the Early Woodland period. The next sequential event takes place as possible descendants of the site's previous occupants, in company with culturally related or friendly visitors from the mid-Delaware Valley, continued the seasonal exploitation of shellfish. By comparative volume of midden refuse, culture material, cooking pit frequency and magnitude of ceramic change, the Early Middle Woodland period cultural horizon constitutes either a sizable increase in the resident population engaged in intensive shellfish gathering, or a series of seasonal occupations of long duration or probably both. In the lower level, Windsor-inspired Modified Vinette ware began a steady growth in popularity, and North Beach Net Marked vessels were added to the Windsor ceramic tradition. It is within this formative Middle Woodland period horizon that the Abbott complex made its first appearance, characterized by the association of distinctive Abbott Zoned Net-impressed pottery and Cony lanceolate and stemmed projectile points. The Cony lanceolate form appears to be the earlier type, the 5 specimens recovered clustering within the basal half of Zone 2. Thick, Exterior Cord Marked ware, probably an additional constituent of the Abbott ceramic tradition, was also introduced to the site at this time.

The most intensive Abbott occupation, adumbrated by Abbott Zoned Incised vessels and Cony stemmed points, clustered slightly below the Zone 2 mid-stratum, where Windsor-North Beach Net Marked sherd frequencies declined (Plate 2). The contextual association of both the Windsor and Abbott ceramic tradition exhibited at this site dispels any doubt of a Windsor culture cohabitation with kinship related or friendly visiting peoples. In view of the large number of Abbott sherds recovered, this hypothesis seems more acceptable than one propounding a Windsor acquisition of Abbott pottery by trade. The terminal Middle Woodland period occupations are demonstrated by the abrupt decline-to-disappearance of the Windsor ceramic tradition and a reduced frequency of thick Exterior Cord Marked ware. After a sporadic presence of Abbott Zoned Dentate, the Abbott ceramic tradition and the Cony projectile points that I attribute to the Abbott complex, also dwindled and disappeared. Recovered from the surface of this level was a single Clearview Stamped sherd, believed to be the late Middle Woodland period pottery type and denoting the termination of Windsor material culture in western Coastal New York, plus a few unclassified plain, interior brushed sherds showing an interior surface wiping technique commonly found on late Middle Woodland period, Windsor-Sebonac vessels from eastern Long Island and the Connecticut coast. Also presently considered aberrant, were two Owasco-like, cord-on-cord near-rim sherds, similar in decorative technique to Bowmans Brook Stamped, the earliest defined pottery type diagnostic of the East River ceramic traditions (early Late Woodland period) Bowmans Brook focus. Chronologically, both the Interior brushed and cordon-cord specimens, although typologically undefined, can be considered as precursors of the Late Woodland period in western Coastal New York.

After the passing of at least two millenia of seasonal occupations (Transitional Archaic to Early Woodland to Late Middle Woodland), the site's final occupation again suggested a series of brief stop-overs by small transient groups whose meager cultural remains characterize the Late Woodland period. This horizon's ceramic inventory contained a few untyped Incised and Punctate, and Horizontal Incised sherds. Comparable plain surfaced and uncollared specimens have been occasionally recovered from Clasons Point focus components in Bronx County (Kaeser 1970, p. 27), and have their closest resemblance to the cord malleated, Indian Head Incised type from Salem County, New Jersey (Cross 1971: Pl. 10). Thin, Exterior Cord Marked ware, technologically superior but notably reduced in frequency, is the only pottery group to survive from an early Middle Woodland period prototype.

As noted elsewhere (Kaeser 1968: 20), it was surprising that a Bowmans Brook or early Clasons Point focus component was not present within the Late Woodland horizon at Oakland Lake. Generally, constituents of at least one such East River cultural stage lie above Middle Woodland Windsor components. Apparently a hiatus occurred in the sequence of occupations at Oakland Lake. The site was abandoned at the end of the Middle Woodland period and, except for a few early Late Woodland period visitors, not inhabited again until the arrival of people carrying a ceramic tradition imitative of late prehistoric northern-based New York Chance and Deowongo Incised vessel types. These Eastern Incised sherds, which occurred in the superior level, are presently attributed to the final stage of the Clasons Point focus in Coastal New York, and are believed to have endured to the time of European contact. Although earlier Clasons Point vessels such as Clasons Point Stamped and Van Cortlandt Stamped exhibit castellated collars and a trend towards rounded bottoms, it does not seem likely that this area initiated the smooth surface and intricate linear incised decorations defining the type Eastern Incised. These techniques may validly constitute evidence of Iroquois inspiration through trait diffusion, though it is not definitely known that any Iroquoian dominating influence was exerted upon the coastal residents during the late prehistoric occupation. Convincing proof, however, that the Iroquois visited the site was demonstrated by the recovery of Cayadutta Incised sherds from the same level producing Eastern Incised. The sample is small and caution must be used when making inferences. While it is tempting to visualize attacks on small coastal campsites by marauding Mohawk war parties, I have no substantiating evidence that this occurred. There is no clue to suggest that domestic pottery making was ever a masculine activity, and war and hunting parties had no use for such vessels. Apparently the group which used the Cayadutta Incised pottery at Oakland Lake was composed of a very small population of both men and women.

Ethnohistory records Iroquoian military and possibly cultural influence over much of Coastal New York during its early historic period. Collectively, Coastal New York sites have produced a considerable amount of stylistically Iroquoian artifactual material as convincing evidence of their presence. Viewed individually, however, no single site has produced more than a few tantalizing bits and pieces. In terms of areal distribution, the probable center of Mohawk culture was in present-day Fulton County, New York, on the north bank of the Mohawk River, and the distinctive pottery type, Cayadutta Incised, attributed to the Iroquois-Mohawk (Garoga Phase), might have come from that area to the coast. The small chert equilateral triangle and Madison points were probably part of this assemblage. The nature and extent of contact between the Mohawk and the Oakland Lake site residents, if contact did occur, is archeologically unknown.

The spalled limestone cobbles containing negative fossil shell impressions recovered from the upper portion of Zone 3 (Early Woodland), and lower portion of Zone 1 (Late Woodland) sustains the writer's opinion that these curiosities were actually collected and possibly used as magic o-religious charms (Kaeser 1962: 5-8).

The pre-excavation, survey collection was purposely retained as a stratigraphic control. The cultural material was recovered within grid squares N.0.-E.0. and N.5-E.5., approximately the center of the site excavation. Because the field notes for this sample did not include a de tailed profile sketch, seriation was based on the recorded visual physical strata, limited to three basic levels of natural soil deposition (topsoil, midden layer, sub-soil). Artifactual provenience was recorded by measurement from the existing ground surface and a measured thickness of the stratum from which the artifact was recovered. This minimal provenience data was adequate to seriate the sequence of culture material deposition and to estimate contextual associations. The relative seriated positions of the sample artifacts broadly parallel the vertical distribution and assemblage sequence observed in the site excavation culture material analysis.

Rim and body sherds of Cayadutta Incised (51), and thin Exterior Cord Marked ware (20), seriated within the topsoil and surface level of the midden layer. This level also produced 1 Madison point, 1 Levanna point, and 2 whelk columella core fragments cut by abrasion in preparation for shell bead manufacture. Thick Exterior Cord Marked ware (3), North Beach Net Marked (67), and Abbott Zoned Incised (1), sherds were confined to the mid-portion of the shell layer in association with 2 plain, obtuse-angle elbow pipes, 1 Levanna point, 1 Cony Stemmed point base, 1 trianguloid point blank, 1 hematite geode, 1 large spall side scraper, and 2 polished

bone splinter awls. Five Vinette I sherds occurred in the basal level of the midden and upper subsoil.

Discussion

Further investigations are required before many of the interpretive problems can be solved. What does seem clear, however, is that there is sufficient evidence to support the thesis that the widespread material cultural traits attributed to the Abbott Complex represent a single cultural unit and that a chronological placement of this manifestation can be made with the data now at hand. With such information, I have focused attention on the Abbott ceramic tradition and the associated Cony projectile point types which relate to the Middle Woodland period horizon. A sound definition of the Abbott Complex involves not only problems of areal and temporal assemblage differences, but also the probable mixing of traits with a contemporary complex such as that defined for the Windsor material culture in the shell midden sites of Coastal New York. The most valid approach at this time is made by segregating and defining the Abbott assemblage on the basis of the Oakland Lake site excavation data. This assemblage can be considered as a basis for comparative purposes at all known coastal New York Middle Woodland period components containing both Windsor and Abbott elements.

I cannot as yet attempt an exhaustive inventory of the culture material remains diagnostic of the Abbott Complex as manifest in Coastal New York. Aside from salient pottery and projectile point traits, the Abbott Complex lacks uniqueness in many respects. If a detailed Abbott trait list is compiled for comparison with Coastal New York's contemporary Clearview focus, (Kaeser 1968: 23), (Smith 1950: 139-42), it is possible to demonstrate the sharing of a significant number of material traits rather than cultural differences. Certain uncommon elements relating to specialized gathering activities are present at widely separated Abbott-Clearview components, such as shallow mortars and cobble grinding stones, presumed to be implements utilized for seed or nut processing.

In my Coastal New York survey of museum and archeological site collections containing Cony projectile points and Abbott ceramics, (Kaeser, 1968) dagger-like, isosceles triangular blades were recorded at Woodland components situated within all the five boroughs of New York City and in Nassau and Suffolk Counties of Long Island. The blades, apparently utilized as knives, are trianguloid in outline, 2 to 6 in. in length, averaging 3 in. Thickness ranges 1/8 to 1/4 inch in flat or biconvex cross section. Blade edges are straight or slightly excurvate. Bases are straight or slightly convex, 1 to 1-1/2 inch in width. The lithic material of manufacture almost duplicates the exotic stone type frequencies recorded for Coastal New York's Cony projectile points, with argillite predominating followed, in descending order, by jasper and chert. Typically, all but the jasper and chert knife specimens indicate a total percussion manufacture showing broad, shallow chipping scars. The jasper and chert specimens, although shaped primarily by percussion, show fine marginal retouching,, suggesting pressure flaking.

Cony projectile points, when made of chert and jasper, also show what appears to be pressure flake finishing. When first encountered the argillite trianguloid blade forms were presumed by the writer to be prepared blanks for Cony points, needing only slight alteration to form the stemmed or lanceolate types. Precluding this probability is the stylistic consistency of the specimens, their relative thinness and finished appearance, particularly when fashioned from cryptocrystalline rocks, plus a near absence of chips of the exotic stone types from which the blades are generally fashioned. For these reasons, and because of the apparent coherence of the assemblage in which the knife form is found, the isosceles triangle knife is added as an associated trait element of the Abbott Complex. (A specimen from Zone 2 is illustrated in Plate 2, Fig. 6.)

If interpretation is based solely on the premise that material culture reflects the living pattern of the makers, the close similarities in stone and bone implement types shared by the Abbott and Windsor groups should point to membership in one cultural continuum. But distortion in cultural reconstruction is possible when interpreting data from seasonally occupied sites used by unrelated groups whose general economy made use of similar implements in the course of parallel activities. The researcher must bear in mind not only the temporary nature and specialized usage of these coastal area camp sites, but also the fact that the archeological evi-

dence constitutes only a scanty surviving sample of them, incompletely representative of even a single subsistence facet of a culture based on a hunting-gathering economy.

Because the majority of the collections examined in my survey were from shell fishing stations, the consistent tool assemblage recovered most likely reflects only this activity. It is possible that, with the discovery of hunting and other food gathering camps, where these activities were extensively pursued, additional implements or varieties of implements developed to fill needs peculiar to each environment may come to light. As a possible example of adjustment in lifeways, or specialized activity, at the Fredenburg site in Otsego County, New York, where Fox Creek (Cony) projectile points were recovered with net impressed pottery in close association, 11 sandstone artifacts were found having one or two chipped and rubbed notches worked into the edge of the stone (Hesse 1968; 27-32). These tools are postulated as abrading or planing stones used for dressing wood shafts. The previously mentioned sporadic recovery of food grinding tools makes it clear that Cony projectile points and Abbott ceramics can be found associated with additional or with an entirely different series of tool forms. Due to the current absence of corresponding stratigraphic and chronologic data from components in Coastal New York, these and other aberrant tool forms cannot as yet be included as persistent Abbott assemblage traits.

To assess fully those material culture similarities indicative of Abbott or Windsor cultural affinity or as evidence of reciprocal trait exchange, it would be particularly useful to isolate and study the data from the more permanent winter quarters of the Abbott and Windsor groups. Combined with the evidence on hand, the assemblage data from such sites could produce a temporally-fixed representative cross section of the entire material culture.

The search to find the Middle Woodland period permanent or winter residences of Coastal New York's Windsor people has been unsuccessful. These sites are probably lost beneath the concrete of New York City or, hopefully, still lie hidden somewhere within the hilly areas of southern Westchester County or Connecticut.

At this writing pottery and projectile point typology remain the prime criteria for our knowledge of the cultural distinctiveness and relative temporal sequence of Coastal New York Abbott. A protracted survey of site collections and reliable archeological data from within Coastal New York combined with comparable data from adjoining areas has produced convincing evidence localizing the Abbott Complex in the mid-Delaware Valley. The extensive Abbott Farm site excavation, near Trenton, New Jersey, from which the complex draws its name, disclosed culture components and diagnostic elements ranging from the Early Historic period backward to traces of Paleo-hunter. It is from this site that the largest volume of Abbott tradition ceramics have been recovered and, although their accurate stratigraphic provenience has not as yet been established, a considerable number of Cony lanceolate and stemmed projectile points are included in the site inventory. The exotic lithic materials used in the manufacture of Coastal New York's Cony points and the near absence of chipping debitage of these stone types from New York components, implies a non-indigenous raw material source and manufactory area. Argillite, the lithic material from which the projectile points are generally made, is obtainable about 30 mi. by water northward of the Abbott Farm site in the Lackatong Creek area of Western New Jersey and in adjacent Bucks County, Pennsylvania. Reference samples of argillite Cony projectile points from Oakland Lake have been found by physicochemical analysis to be virtually identical to samples obtained in western New Jersey and adjacent Bucks Co., Pennsylvania (Venuto 1967 b:21-29).

Raw jasper, a minority exotic material used for the same point types, could be obtained from quarries at Vera Cruz and Macungie, Bucks County, Pennsylvania, at a distance of 60 to 70 miles by water from the Abbott site. In a recent published analysis of lithic materials used in the manufacture of projectile points recovered from Coastal New York sites, another possible source of jasper has been recorded for Staten Island, Richmond County (Rutsch 1970: 4).

At Abbott Farm, within the middle Woodland horizon (third humus) in which the Abbott ceramic tradition clustered (Cross 1956: 194-5), the first appearance of marine shellfish obtained from the Atlantic Coast was revealed. Prior to the Middle Woodland period, fish were taken by net and possibly hook and line, yet only a few traces of fresh water mussel occurred in the lower midden showing little, if any dependence on shellfish in the diet. Although appearing to represent

a useless labor, but demonstrating the obduracy of technological tradition, the shells of salt water species found in the third humus probably represent raw material brought back from the coast to be used in tempering pottery. The change in subsistence pattern alluded to by stratigraphic analysis of the Abbott Farm food remains seems conclusive enough at this time to postulate shellfish collecting as a temporal or cultural period horizon marker at that site. The data might suggest that either descendants of the site's Early Woodland residents were forced to add marine shellfish to their diet due to an acute local food shortage or, more likely, that the Middle Woodland period inhabitants, producing the Abbott ceramic tradition were replacements from elsewhere who were familiar with the availability of this food source on the coast and introduced its exploitation to the Abbott Farm site. These hypotheses remain to be tested, however. The prevalence of shell tempered ceramics in the third humus lends considerable support to the proposition that the aplastic probably was adopted by the resident group or introduced by Abbott ceramic tradition carriers at this period in the site's history. The fact remains that the random use of any available tempering material was not a general practice of Woodland period potters.

In addition to Abbott Zoned-decorated vessels and Exterior Cord Marked wares, undecorated overall net-impression became a favorite pottery surface finish technique during the Middle Woodland period. Of the total Abbott Farm site ceramic collection of 29,585 sherds, 9,536 specimens, or 1/3 of the Middle Woodland period pottery, were net impressed (Cross 1956:160, Table 17), and the prevalent aplastic was crushed marine shell.

A limited areal distribution study of collections containing net-impressed ware shows its highest frequency in the central area of New Jersey, decreasing to the south. Thus the locale of the Abbott Farm site from which at least six waterways flow eastward, might prove to be the tradition or diffusion center of net-impressed pottery for the New York coast.

The Abbott Complex is no longer a generalized concept. Specific questions can be asked and adequately tested. The frequency of association of Abbott tradition ceramics and Cony projectile points derived, presumably, from the central Delaware Valley, and Middle Woodland period Windsor pottery constituents on Coastal New York components are clearly separated in context, implying culture-contact rather than a developmental situation.

A search for Abbott-like ceramics was begun a decade ago (Lopez 1961:9), to determine if evidence of contact or diffusion occurred northward to New England. Unfortunately this survey was inconclusive. Abbott-like sherds, decorated by dentate and stab and drag incision technique in straight line or curvilinear motif, were, however, recorded for Greenwich, Shelton, Milford and the lower Housatonic River area of Connecticut. Similar decorated sherds were also recorded for the Sweets Knoll site, Segreganset, Massachusetts. Further research on this course may develop a means of establishing an Abbott or Abbott-like culture area or may delimit the dispersal of the complex's elements as characterized in New Jersey and in Coastal New York. As noted elsewhere (Kaeser 1972:11-15), it is my belief that the Abbott Complex, in total or in part, is not limited to the mid-Delaware Valley and Coastal New York. New evidence shows that the known limits of this distribution extend much farther northward into Massachusetts. Occasional finds of Cony points as far afield as Martha's Vineyard (Ritchie 1969:105-184) may eventually extend this range when data are available. As a further consideration, Abbott Zoned Incised pottery, particularly specimens of fine, hard paste, decorated in the curvilinear motif, must be ranked high in any technological ordering of northeastern Middle Woodland period ceramics. Abbott decorative design elements certainly stem from a different source than any hypothesized for the indigenous Windsor or East River traditions of Coastal New York. Various elements of the Hopewellian culture are widespread and some of its specialized traits and materials, native to the Ohio and Michigan, Hopewellian-influenced manifestations, have been recorded for Pennsylvania and northern New York State. The stylistic similarities between some Abbott zoned decorated vessels and examples of Hopewellian, Zoned Incised and Zoned Stamped wares suggest an attempt at imitation of the elaborate Hopewellian designs or, if it may be permissible to speculate, for the sake of further research, that Abbott ware might ultimately be traceable to migrant Hopewell people.

Conclusion

Considering the evidence from all sources, during the Middle Woodland period, Delaware Valley groups carrying the Abbott ceramic tradition and Cony projectile points, seasonally joined with Coastal New York Windsor culture people for the main purpose of shellfish collecting. Oysters, hard clams, bay scallops and conchs were gathered from nearby Little Neck Bay, and deer, turkey and turtles were undoubtedly hunted in the surrounding woods. Although turtles can be obtained during the winter by searching out their underground places of hibernation, they are more readily caught during the warmer months. When winter made them untenable, the coastal camps were abandoned and the inhabitants returned to sheltered inland base camps or villages, laden with dried or smoked shellfish meat preserved for use as a winter food supplement. By survey of all the known Middle Woodland period sites producing both Abbott and Windsor traits in association, a pattern emerges showing the introduction of the Abbott Complex to the New York coast as approximately contemporary with the appearance of the early Clearview focus, North Beach - Net Marked pottery type. Considerable evidence suggests that the Windsor and Abbott groups lived on the same camp sites at the same time in an essentially peaceful atmosphere and it should be pointed out that archeological work in the coastal region has not yet produced any evidence pointing to hostility between the Windsor natives and the Abbott visitors.

It would be reasonable to assume that, after a long continued association of peoples of the two traditions in the same region, a gradual obliteration of distinctions in material and social culture would result, and a more uniform area tradition would develop. This coalescense probably did come about to some degree since both the Abbott and Windsor ceramic traditions declined and disappeared from western Coastal New York at approximately the same time. Interaction between the two peoples did not, however, culminate in domination or assimilation of the Abbott complex by the Windsor culture or vice versa. The ceramics of both groups and particularly the Cony projectile points of the Abbott Complex remained distinctive until the coincident disappearance of the two groups. This evidence, as recorded in Coastal New York and elsewhere, tends to indicate a highly conservative character for these cultures.

The events which triggered the decline of the Windsor culture in western Coastal New York are conjectural, but undoubtedly are connected with events outside the region. Whether migration was involved cannot be determined positively. The evidence points to a period of instability and change. I believe that it is more than mere coincidence that the Windsor and Abbott traditions disappeared at approximately the same time during the late Middle Woodland period. Archeologically, it has been established with reasonable confidence that at some time during the late Middle Woodland period of Coastal New York's aboriginal occupation, an alien group displaced the resident Windsor people and superimposed their distinctive East River material culture on most of the same Windsor habitation sites. Supporting this reasoning, all definitive elements of the Abbott Complex and Windsor culture are conspicuously absent in the Late Woodland horizon, in the western portion of Coastal New York, and the only remaining hint of Windsor affinity is the rare recovery of an East River tradition pot sherd showing a brushed or scraped interior surface.

Attributes of the Windsor ceramic tradition did survive, however, during the Late Woodland period on eastern Long Island and on the Connecticut coast, characterized as constituents of the Sebonac focus. Whether the Windsor-Abbott discontinuity in western Coastal New York is based on natural or cultural factors, or on a combination of both, remains a problem for further investigation.

Perhaps it was the Windsor-Abbott culture compatibility, which persisted to the late Middle Woodland period, that eventually brought about the undoing of the Windsor culture in western Coastal New York. Probably in this atmosphere of peaceful coexistence the East River culture became dominant, while the Windsor culture disappeared as a separate recognizable entity.

The recovery of artifacts attributable to Archaic and Woodland period peoples at Oakland Lake is an important fact. Apparently the site had been a living feature throughout a substantial part of the prehistoric Indians demonstrable presence in Coastal New York. One basic assumption is that the various cultural-temporal phases represented form a seasonal hunting-gathering economic continuum stretching from a pre-pottery horizon nearly to the period of European contact. This continuum is visualized as a development receiving influences from different areas

of the coast and the adjoining southwestern inland region throughout the course of its history. Interaction that involved migration or cultural diffusion, persistence and change, and autonomous development is thought to culminate in the associated Coastal New York, Abbott-Windsor material cultural manifestation. The most important result of this study has been the ability to define the Abbott Complex in Coastal New York and to indicate its cultural relationships and temporal placement with greater exactitude. The results are felt to be a step toward piecing together the background of Coastal New York's, Middle Woodland horizon.

Acknowledgements

On behalf of the Metropolitan Chapter, I would like to express appreciation to Edward Johannemann for his site survey and for the invaluable work of Stanley Wisniewski, Matthew Schreiner, Julia and Thomas Condit, Robert Kaita, Dudley Tsuruoka and other Chapter members who contributed their labor when possible. My personal gratitude goes to Theodore Robinson who diligently worked with me throughout the 1967 field season.

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NOTE ON "THE OAKLAND LAKE SITE"

While it is not a common practice of "The Bulletin" to append instant comment to its published reports of research, the persistence of puzzlement about the absence of marine shell evidence from Archaic horizons on coastal sites seems sufficient reason to break or make a precedent.

The observation has been repeatedly reported and repeatedly published that middens of shellfish, usually oysters, do not appear at coastal sites until the Early Woodland, as Kaeser reports for the Oakland Lake site. While it is now generally acknowledged that the view that pre-Woodland aborigines found shellfish distasteful or did not know they were edible is untenable, researchers on coastal sites still seem to find the absence of evidence of the dietary use of shellfish during the Archaic on their sites enigmatic, to say the least.

The evidence for that dietary use is overwhelming in the Lower Hudson. We now have 9 C-14 dates on shell midden sites, from Twombly Landing, at the head of New York Bay, to Montrose Point on Haverstraw Bay, only about 35 miles north of the Battery. Long-time readers of The Bulletin have been apprised of many of these dates: 4750 and 4725 C-14 years at Twombly; 5850 C-14 years at Croton Point; 5650, 5075, 5095 and 5155 C-14 years at Montrose Point, Dogan Locus. This past summer (1973) we obtained three more dates on oyster shell heap sites, using shell. Two of these were from the Piping Rock site, at the mouth of the Croton River. They were 4730 plus or minus 140 C-14 years (GX-2999) and 5135 plus or minus 155 years (GX-3238). The third was from Montrose Point, Dogan Locus, where the lowest horizon of shell deposit gave a reading of 6950 plus or minus 100 C-14 years.

It is manifestly absurd to suppose that Archaic hunting-gathering peoples along the coast abstained from shell fish eating or ignored this food resource while people only a few miles away were exploiting oyster beds from almost Early Archaic times, on the dates we have, and certainly from Early Archaic times by inference. Kaeser is aware of this absurdity and remarks "Archaeological evidence alone cannot explain in detail why the rarely isolated Archaic campsites of southernmost coastal New York are generally devoid of shellfish remains, while the numerous Woodland components reflect what appears to be an almost total involvement in shell-fishing."

He is right. The factor that explains the anomaly is not archaeological. But it has been known for sometime. It is the post-glacial rise in sea level. At 6950 C-14 years ago the sea was about 80-90 ft. below present level. As late as 4750 C-14 years ago it was still about 30 ft. below present level. Not until 3000 years ago, to judge from the archaeological evidence of middens yielding Vinette I pottery, did the shoreline approach its present location. Obviously all the near-shore locations where Archaic peoples would have, indeed, certainly did camp are now under several fathoms of water.

In Archaic times the Oakland Lake site was too inconveniently far from the shellfish beds for the transport of burdens of shellfish.

The use of shellfish for food has nothing to do with adoption of ceramic pottery, as some have suggested. It is only coincidence that sea level happened to have reached almost its present level, dictating where sites of shellfish gatherers would camp, at the time that ceramic

pottery reached the area. And it may prove, with more precise dating, not to have been exactly coincidental.

At the time it was camped on during the Archaic the Oakland Lake site was not the well-placed locus it became when the sea moved closer; hence its meager yield of Archaic artifacts. Nor is it likely that when the sea was appreciably lower the geography was such as to place good shellfish habitat in the vicinity. Oysters, in particular, grow in an estuarial environment, in less than full sea salinity. To be near the sea is not enough. The beds are found only where there is also an input of fresh water to dilute the salinity. The clams and whelk do like a higher salinity than oysters, but where oysters are present there must be fresh water flow into the immediate sea environment.

The Lower Hudson, as far north as the Bear Mt. bridge, and, at times, much farther north, provided the proper conditions for oyster viability, quite evidently as early as 6950 C-14 years ago. Those conditions lasted until 3000 years ago-the beginning of Woodland times-because we have the same situation as at Oakland Lake, steatite and some Vinette I pottery in shell middens. During those 4000 years the native population gathered and ate oysters, using the same sites for camping during the whole time. Why, then, is the Lower Hudson so different from the coast? Simple: because the coastal plain is low-lying and flat and a few feet of sea level rise spreads over a considerable expanse of territory. But the Lower Hudson is steep-sided and fjord-like. Although some sites were undoubtedly at shore line, that is, at sea level and were submerged as the sea rose, several were perched on the high places above the oyster beds, on the terrace of post glacial Lake Hudson. The Dogan locus was one of these. At 6950 C-14 years ago it was at least 80 ft. above the level of the river; it is now about 10 ft. above sea level. That 70 ft. up is as far as the Lower Hudson Archaic people had to travel in 4000 years to find campsites. But on the coast that 70 ft. meant that they had to move and remove by many miles.

There seems to be no further reason to speculate about why Archaic hunter-gathers did not leave shell middens behind on the same sites that those of Woodland times found suitable. Note also the following comment.

L. A. Brennan

A COMMENT ON SNOW'S "RISING SEA LEVEL AND PREHISTORIC CULTURAL ECOLOGY IN NORTHERN NEW ENGLAND" *

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Snow's (1972) resurrection of the "Kosher Indian Hypothesis" (see Fairbridge and Newman 1968) seems a lamentable faux pas considering that both Emery and Edwards (1966) and Salwen (1967) effectively destroyed the myth that Archaic Man suddenly discovered shellfish about 1 A.D.

It was Louis Brennan of Ossining, New York, who first aroused my interest in the paleoecological implications of the oyster middens that abound along the shores of the Lower Hudson Valley and was responsible for obtaining the first radiocarbon date on charred wood from the Croton Point midden. The 5850±200 year B.P. age (Y-1315) proved far older than expected (see also Salwen 1965). Under the guidance of Brennan, I collected a large oyster valve for radiocarbon dating from near the base of the large midden at Montrose Point, several miles upstream from Croton Point. This sample yielded an age of 5650±200 years B.P. (L-1038E, in Newman and others 2969). At the north end of the Hudson Highlands Gorge, 61 miles upstream from the Narrows in New York City, Ritchie (1958) described the Bannerman aboriginal campsite which contained an oyster valve layer. These lenses of valves ranged up to 1.3 feet in thickness and were found 1.0 to 2.0 feet below the surface. Artifacts were unearthed both below and above this level while charcoal from a hearth apparently below the shell stratum dated 4480±300 years B.P. (M-287). Some years ago, Dr. Ritchie graciously provided me with a *Crassostrea virginica*

*Snow's report was published in *American Antiquity*, Vol. 72, 1972.

valve from the small midden layer at the Bannerman site. I finally had the specimen dated this past September 1971 and the age came in at 6150±120 years B.P. (RL-177). (The reversed stratigraphy remains unexplained-the hearth may be intrusive into the midden.) It seems evident to me that the lower Hudson aborigines of 6000 radiocarbon years ago had no taboo concerning the utilization of shellfish in general and oysters in particular-they certainly were not kosher!

Snow's (1972: 220) statement that "This (the exploitation of oysters, mussels, and quahogs) occurred by about A.D. 1 on the Damariscotta estuary, and probably at about the same time elsewhere along the coast." is obviously anachronistic and incorrect. At least some folks along the northeast coast were enjoying oysters some 4000 years earlier. Indeed, it seems inconceivable to me that early man would bypass shellfish as a food source - it's such an easy way to make a living! The scarcity of early man sites 6000 years and older on the emerged Americas and the growing evidence that man was on these continents prior to the latest glaciation (Stalker 1969) urges the suggestion that the submerged continental shelves were the loci of relatively higher human population densities and will one day yield evidence of many a clambake and oyster chewing parties.

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EXCAVATION AT OLD FORT II

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Background

The excavation discussed in this report is an outcome of an agreement between Professor Howard Winter of New York University and myself to co-direct a field school during August, 1972, using students from both State University New Paltz and New York University. The location of the site area was initially chosen as a possible follow-up to the discovery of the Dutch stockade in Kingston, New York, by Professor Bert Salwen. During the Second Esopus War the

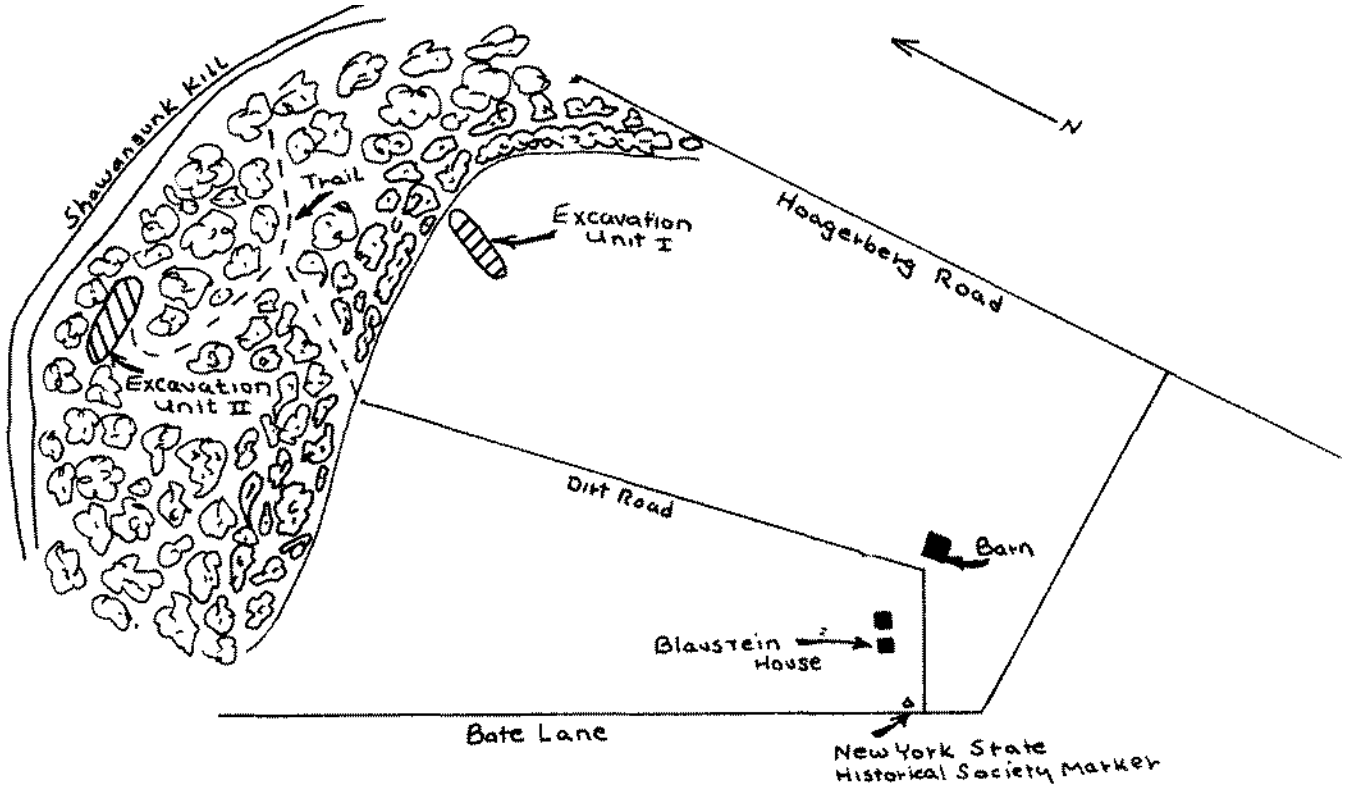

Fig. 1. General Map of Old Fort

Dutch at Kingston waged a military campaign against the local Indians. In the Fall of 1663 they destroyed an Indian "castle" said to be located along the Shawangunk Kill in Ulster County, New York (Ruttenber 1971: 152). According to local historical documents, as well as the description on an historical marker, the property currently owned by Mr. Ed Blaustein near Wallkill, New York, was the most likely place to find the remains of the destroyed Indian fort.

In all, 7 test excavations were conducted on Mr. Blaustein's property, none of which revealed any evidence of an historic Indian presence. What they did disclose, however, was the presence of a number of prehistoric Archaic occupations. Furthermore, 2 of the excavation units, I and II, proved to be major areas of prehistoric activity. Unit II forms the basis of this report. A written discussion of Unit I is currently being prepared.

Excavation and Physical Setting

Excavation Unit II was located on a small hilltop in a forest, 30 ft. above and 130 ft. away from the south shore of the Shawangunk Kill. The forest slopes downward from a lofty plain 50 ft. higher and 150 ft. distant from Unit II (see Figure 1). A survey of the forest showed that it was a deciduous type, composed of mixed temperate to cold climate trees. It was in a climax state, dominated by a beech-maple association. The older trees, those with the largest diameter, occurred along the bluff-top and river's edge, the two most stable areas in terms of erosion. Furthermore, the oldest trees were oak and hickory, which appeared along the bluff-top.

A total of 23 five by five foot squares were excavated to a maximum depth of 40 in. However, one square, 1L/20, was abandoned after it was discovered that a pony had recently been buried there (see Figure 2). Profiles and planviews were taken, and features were mapped where they occurred. Balks were left between adjoining squares and were removed after the adjacent squares had been excavated. The basic digging method was to excavate 6 in. levels where no

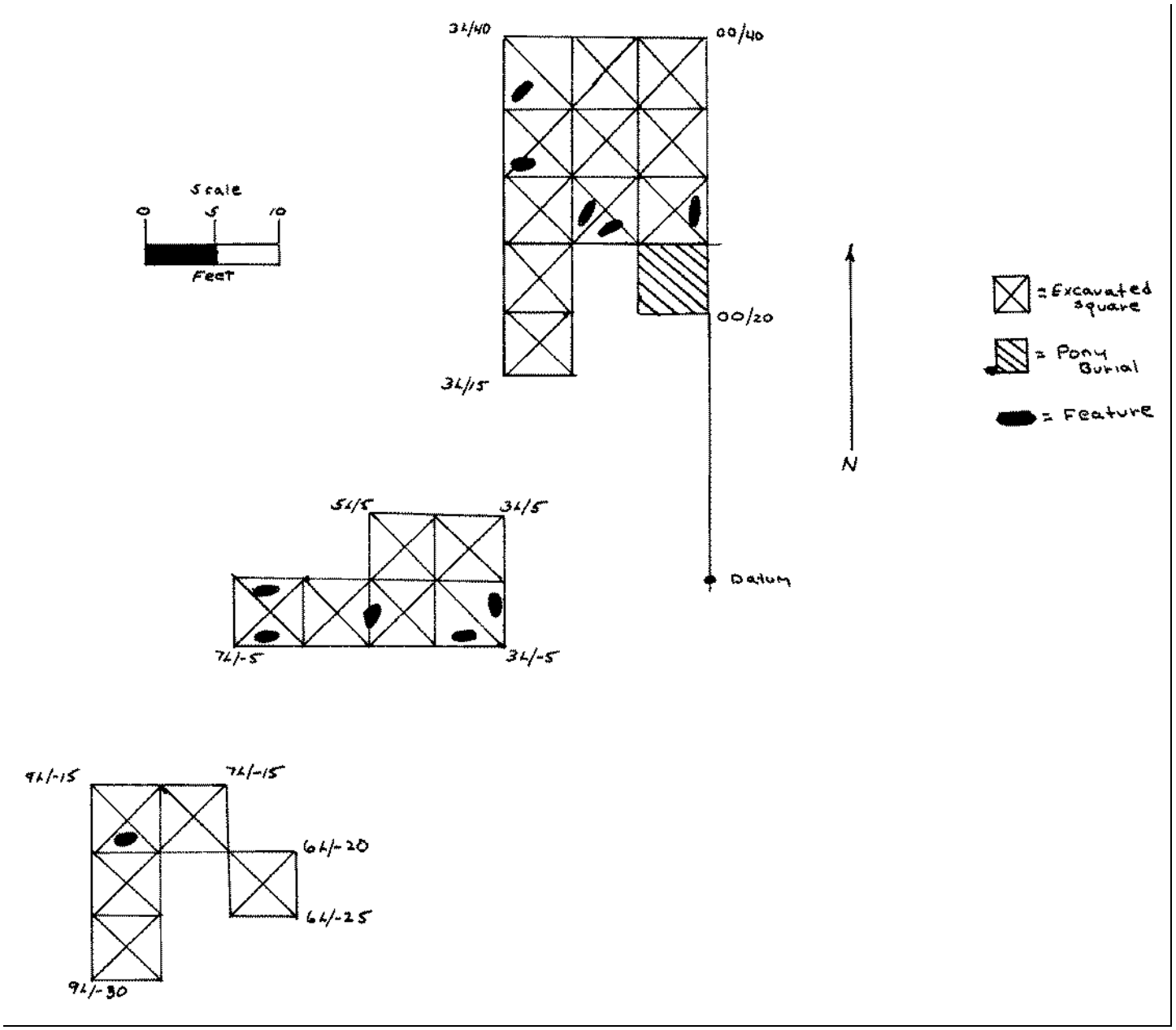

Fig. 2. Planview of Excavation

discernible soil stratigraphy was encountered. The in situ recording of artifacts was made whenever possible. Counts and measurements were taken on everything recovered, and will be discussed below. Unfortunately, not enough undisturbed charcoal was recovered to allow for radiocarbon dating.

The stratigraphy throughout the site was essentially similar: an overlying humus level varying from 4 to 5 in. in depth, was underlain by a mottled yellow loam continuing to a depth averaging about 30 in. below ground level. Beneath this was found a yellow sandy gravel containing a large concentration of small, water-worn pebbles such as are found on a lake bottom. A State University New Paltz geology professor, Russell Waines, visited the site and informed us that the soil profile demonstrated an essentially uniform water lain deposit with the deepest, gravelly zone a result of gradual sedimentation from above.

About 12,000 B.P. the Wisconsin glacial ice receded for the last time in the Wallkill Valley in a northwest direction. As the glacial recession reached the lowlands, a number of lowland drainage outlets were uncovered, some of which were filled by glacial ice. The topography of the Valley of the Shawangunk Kill is of a stagnant ice type, i.e. characterized by deranged drainage patterns and reversals (Connally and Sirkin 1967: A1-A12). Today there are two major bodies of water in the site area: the first and largest is the Wallkill River, and the second is the Shawangunk Kill. Presently, both bodies of water flow in a northwest direction.

Given this information, it was decided to attempt to discover information about the postglacial environment that might be relevant to an analysis of our site. Consequently, a pebble analysis was conducted to discover the size and direction of flow of the presumed post-glacial lake that once covered the site area. Our procedure began by taking pebble samples from the easternmost and westernmost excavation units on the bluff-top. We inferred that if the sediments excavated were from a post-glacial lake, they should be fine grained products from glacial erosion; they were-95% of the pebbles recovered were less than 1/4 in. in diameter. We also inferred that if our lake was small, we would expect the coarse deposits to be located near the top of the soil. This is because the lake currents would sweep the lighter deposits towards the outlet. Our hypothesis was substantiated when we found that the largest pebbles lay near the top of the soil.

In order to determine the direction of lake flow, we inferred that the heavier pebbles would fall first and a measurement of this phenomenon could be employed to reconstruct the route of current. The most westerly sample (Excavation Unit IV) yielded about 2 pounds per cu. ft., while the most easterly sample (Excavation Unit I) yielded under 1 lb. per cu. ft. In addition, a north and a south sample were taken from the same units. In both, the north sample was heaviest. As a result it is believed that our small lake flowed in a northwest to southeast direction.

As a result of this study, it is believed that the bluff-top, on which Excavation Unit I is located, would have been swampy until about 6000-5000 B.C., the time of the earliest reconstructed occupation of that site. The site could have not been occupied until the river (or lake) cut down far enough to isolate the bluff top. Excavation Unit II, on the other hand, which lies 50 ft. lower than the bluff-top, would have also been swampy or under water until about 3000 B.C., when the Shawangunk would have cut below the site's present hilltop location. This 3000 B.C. date is based upon Unit II's earliest diagnostic artifact, a Vosburg point.

The cultural stratigraphy of Unit II was difficult to discern insofar as the site apparently witnessed a considerable amount of disturbance. Aside from the pony burial, there was a large amount of root and burrowing activity. As a result the original positions of many artifacts were probably altered. Nevertheless, the site did provide enough information for us to be able to list a number of prehistoric occupations, as well as to discuss the activities of its inhabitants.

Features

A total of 11 features were discovered during the course of the excavation. They consisted solely of areas of fire-cracked rock concentration and fire-reddened soil. Most of the features were circular or oval in outline, ranging from 12 to 60 in. in diameter, and averaging 5 in. vertically. The horizontal distribution of the features is shown in Figure 2. Vertically, the

features do not appear to cluster at any one level. They are stratigraphically distributed from 6 to 31 in. below ground level. Figure 3 illustrates the planview of 2 typical features.

Artifacts

Of the 96 artifacts recovered, all were made from lithic materials. They include 24 projectile points, 25 knives, 12 scrapers, 1 graver, 2 drills, 1 utilized flake, 23 hammerstones, and 8 mulling stones. The artifactual specimens are listed according to class and vertical provenience in Table 1.

TABLE 1. VERTICAL DISTRIBUTION OF ARTIFACTS

ARTIFACTS	0"-6"	6"-12"	12"-18"	18"-24"	24"-30"	TOTAL
Projectile Points						
Vosburg	1					1
Brewerton Eared-Triangle		1		1		2
Brewerton Eared-Notched			1			1
Lamoka	1	2	3			6
Beekman	1			1		2
Bare Island		1				1
Normanskill	1					1
Levanna		1		1		2
Stunning-Point?			1			1
Untyped Frag.	2	4	1			7
Knives	14	4	5	2		25
Utilized Flakes			1			1
Scrapers	2	5	5			12
Drills	1	1				2
Gravers			1			1
Stone Modified by use						
Hammerstones	10	5	6	2		23
Mullers	3	1	2	2		8
Total	36	25	26	9	0	96

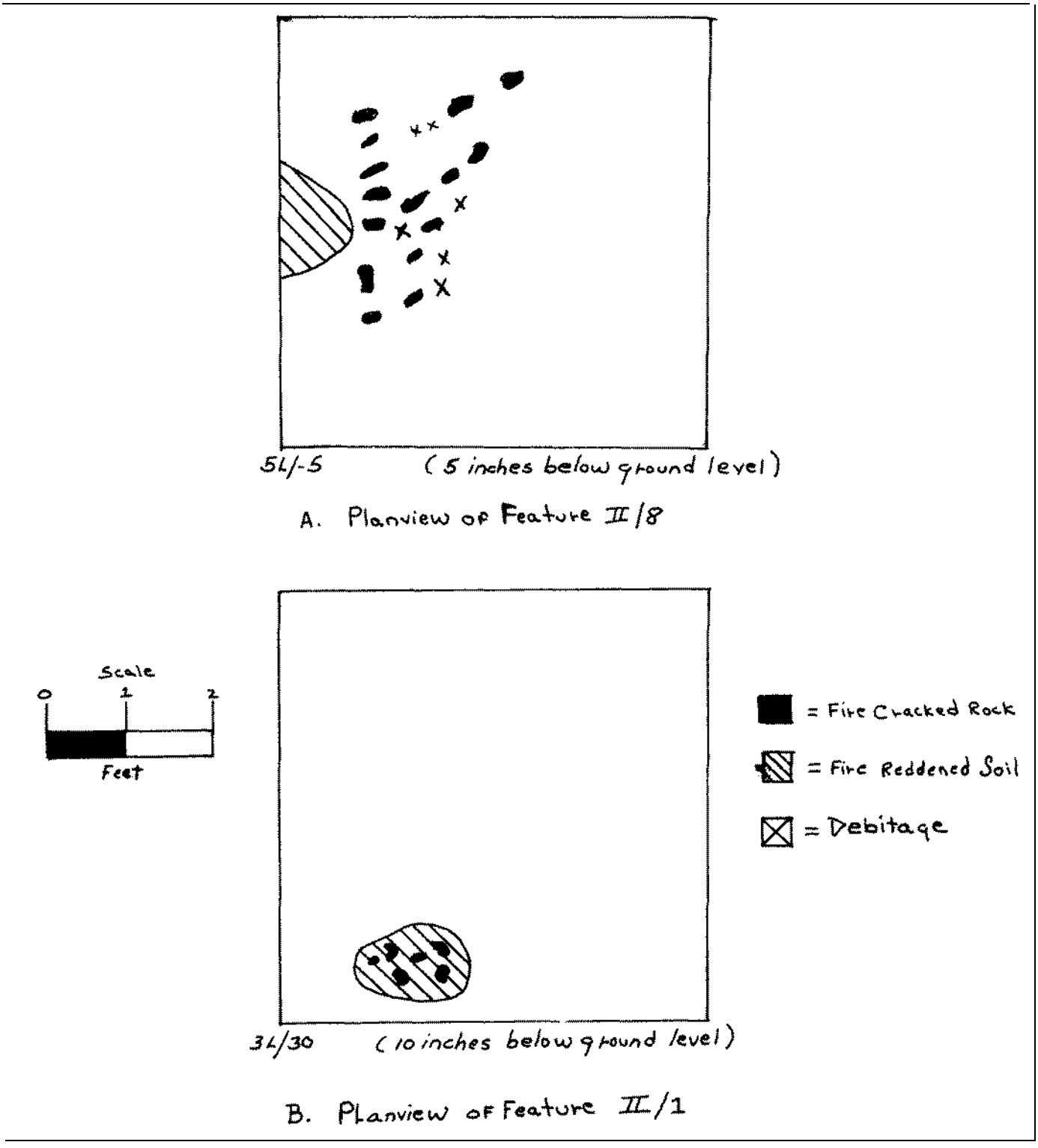

Fig. 3 Planview of Features II/1, II/8

Projectile Points

The projectile points were distinguished as a class on the basis of their functional structure. Insofar as they are designed for penetration, they were distinguished as a class primarily on the basis of blade edge where chipping produced 2 even edges coming together at a point for puncturing. Of the 24 projectile points recovered, 7 were too fragmented to permit a taxonomic designation. Twenty-three were manufactured from eastern New York varieties of chert, and 1, the Brewerton Eared-Notched, from a local shale. Initial sorting of the projectile points into classes was carried out with the objective of having a typology emerge from the data, rather than relying on a previously established taxonomy for the material. Unfortunately, while having the artifact classes emerge from the data was realized as the most desirable situation, the sample was quantitatively and qualitatively insufficient to achieve this objective. As a result, the specimens were assigned a category by comparing their attributes with the types described by Ritchie (Ritchie 1971).

A single Vosburg point with broken tip (Plate 1 fig. 4) (Ritchie 1971: 55) was recovered. Its maximum width was 2.7cm and its maximum thickness was .7cm. It was corner-notched with a short stem, and was basally ground. The blade was triangular and in cross-section it was plano-triangular.

Two Brewerton Eared-Triangle points (Plate 1 figs. 13, 20) (Ritchie 1971: 18) were recovered. They ranged from 2.5-2.9cm in length, and both their widths were 2cm. Their thickness ranged from .3-.5cm; one had basal grinding. The blade shape for both was triangular and their cross-sections were convex-triangular.

One Brewerton Eared-Notched point (Plate 1 fig. 15) (Ritchie 1971: 17) was found with a broken tip. Its length was 4.2cm, maximum width 2cm, and its maximum thickness was .8cm. It was a side-notched point, with the sides protruding into ears. The blade shape was ovate, and it was convex-triangular in cross-section.

Six Lamoka-like points (Plate 1 figs. 3, 6-10) (Ritchie 1971: 29) were recovered. Their length ranged from 2.4-4.2cm, width from 1.4-2.0cm, and their maximum thickness from .6-1-cm. Their bases, with one exception, remained unworked. The one exception (72.2-142) had basal beveling. Their blade shape was triangular, and in cross-section, 4 were convex-triangular, and 2 were plano-convex.

Two Beekman points (Plate 1 figs. 11-12) (Ritchie 1971: 121) were found. They ranged from 2.3-3.6cm in length, 2.5cm in width, with maximum thickness from .4-.5cm. Their shape was triangular, and their cross-section was plano-convex.

One Bare Island point with a broken tip (Plate 1 fig. 14) (Ritchie 1971: 14) was recovered. Its length was 4.9cm, width 2.0cm, and its maximum thickness was .8cm. The sample had sloping shoulders with an isosceles triangular shaped blade. In cross-section it was plano-convex.

A single Normanskill point (Plate 1 fig. 16) (Ritchie 1971: 37) was found. Its length was 4cm, maximum width 2.7cm, and maximum thickness was .7cm. It was corner notched with an expanding stem. The blade was triangular, and in cross-section it was plano-triangular.

Two Levanna points (Plate 1 figs. 1-2) (Ritchie 1971: 31) were recovered. Their lengths ranged from 2.4-2.6cm, maximum width from 2.3-2.5cm, and maximum thickness was from .4-.5cm. Their blade shape was triangular, and their cross-section plano-triangular.

One stunning point? (Plate 1 fig. 5) was found. Its length was 2.3cm, maximum width 1.4cm, and maximum thickness was .6cm. This was a thick small point with an unworked base. The shoulders were sloping, and the blade shape was ovate. In cross-section it appeared plano-convex. It seemed to be a smaller variation of the Lamoka type with a possible function as a stunning point, i.e. bunt.

The remaining 7 points (Plate 1 figs. 17-18, 21-25) were too fragmented to permit classification.

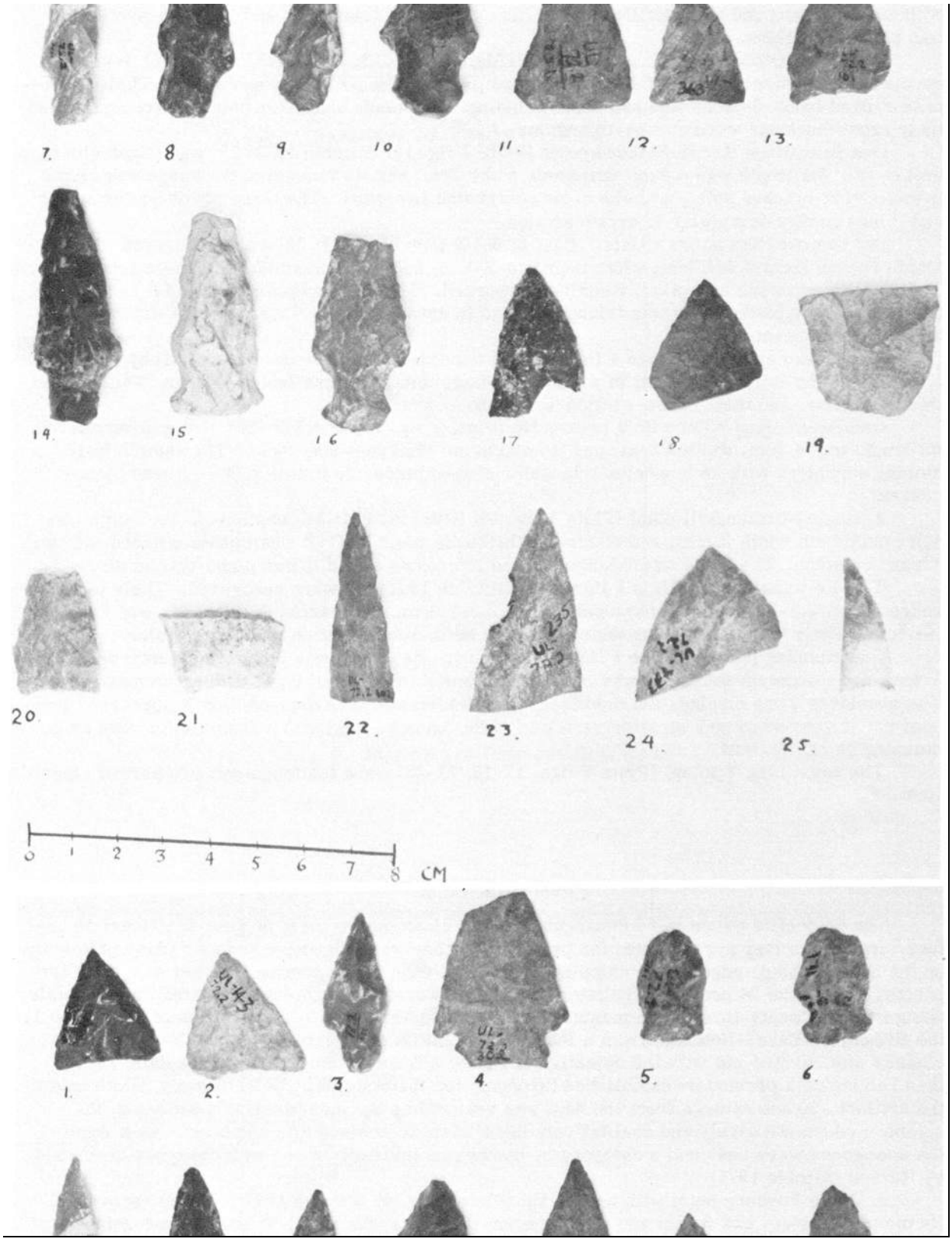
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PLATE 1.

Knives

Knives were distinguished from other chipped stone artifacts on the basis of the criteria described by Winters, ". . . Knives are usually fashioned by removing a series of alternate flakes from adjacent faces of a flake, thus producing a wavy, saw-like edge" (Winters 1969: 32). These artifacts are displayed in Plate 1, figure 19, and Plates 2 and 3.

The 25 knives recovered ranged from 7.4cm-3.9cm in length, 3.7cm-2.3cm in maximum width, and 1.4cm-.8cm in maximum thickness. Twenty-two were biconvex, and 3 were plano-convex in cross-section. It is also of interest to note that only 1 knife was made from siltstone, while the remaining 24 were manufactured from chert. It is suggested that this may be the result of the fact that the mineral structure of chert provides a sharper edge than many other types of lithic materials. Also, chert has sufficient strength to keep its edge fairly well after some use, and may also be easily resharpened.

As an exercise in experimental archaeology, a number of students obtained chert samples from Flint Mine Hill near Coxsackie, New York. They then attempted to manufacture stone tools similar to the ones found, and tried to find out how they were used. A functional study of the use of knives revealed that their sinuous edge prohibited the tool from being an efficient artifact for the cutting of animal hides. Furthermore, on some of the knives recovered from our excavation we found a number of crescentric shaped step fractures. It was discovered that this type of fracturing appeared on the students' knives only after they were utilized in a twisting or drilling fashion, as for widening a crotch in a wooden branch. This experiment made us believe that the aboriginal knives were probably used for an activity such as the disarticulation of bones.

Utilized Flakes

One utilized chert flake was recovered. Its length was 5.3 cm, width 4.3 cm, and its maximum thickness was 1.2 cm. One of its edges displayed signs of use fracturing, and was dulled. It was plano-convex in cross-section.

Scrapers

Twelve chert scrapers were found (Plate 4). They were all manufactured on free flakes, and all displayed the typical beveled scraping edge. They ranged in length from 6cm-2.3cm; width, 4.4 cm-1.8 cm, with maximum thickness from 1.6 cm-.5cm. Eleven were plano-convex, and 1 was bi-convex in cross-section.

Drills

Two chert drill fragments were recovered. One was a broken shaft, and the other a broken base. The shaft was tapered and bi-triangular in cross section. It was l cm wide, and at maximum .6 cm thick. The base fragment was of the expanded type. It was 1.6 cm long, 2.l cm wide, and was .7cm thick. It was plano-triangular in cross-section.

Gravers

A single chert graver was found. It had a triangular shape with a short spur projecting from the tip. Its length was 5.0cm, width 4.2cm, and its maximum thickness was 1.0cm. It was plano-convex in cross section.

Hammerstones

Twenty-three hammerstones were recovered. Twelve were sandstone, 7 were quartzite conglomerate, and 4 were quartzite. All displayed pitting from use on one or more edges. They ranged in length from 14 cm-4.2 cm, width 9.0 cm-2.6 cm, and maximum thickness from 6.0 cm 2.l cm. Two were exceptionally large: 14 x 9 x 6 cm, and 11 x 9 x 5 cm. The average size of the remaining 21 stones was 4.8 x 3.7 x 2.8 cm. The significance of these figures will be discussed in another section.

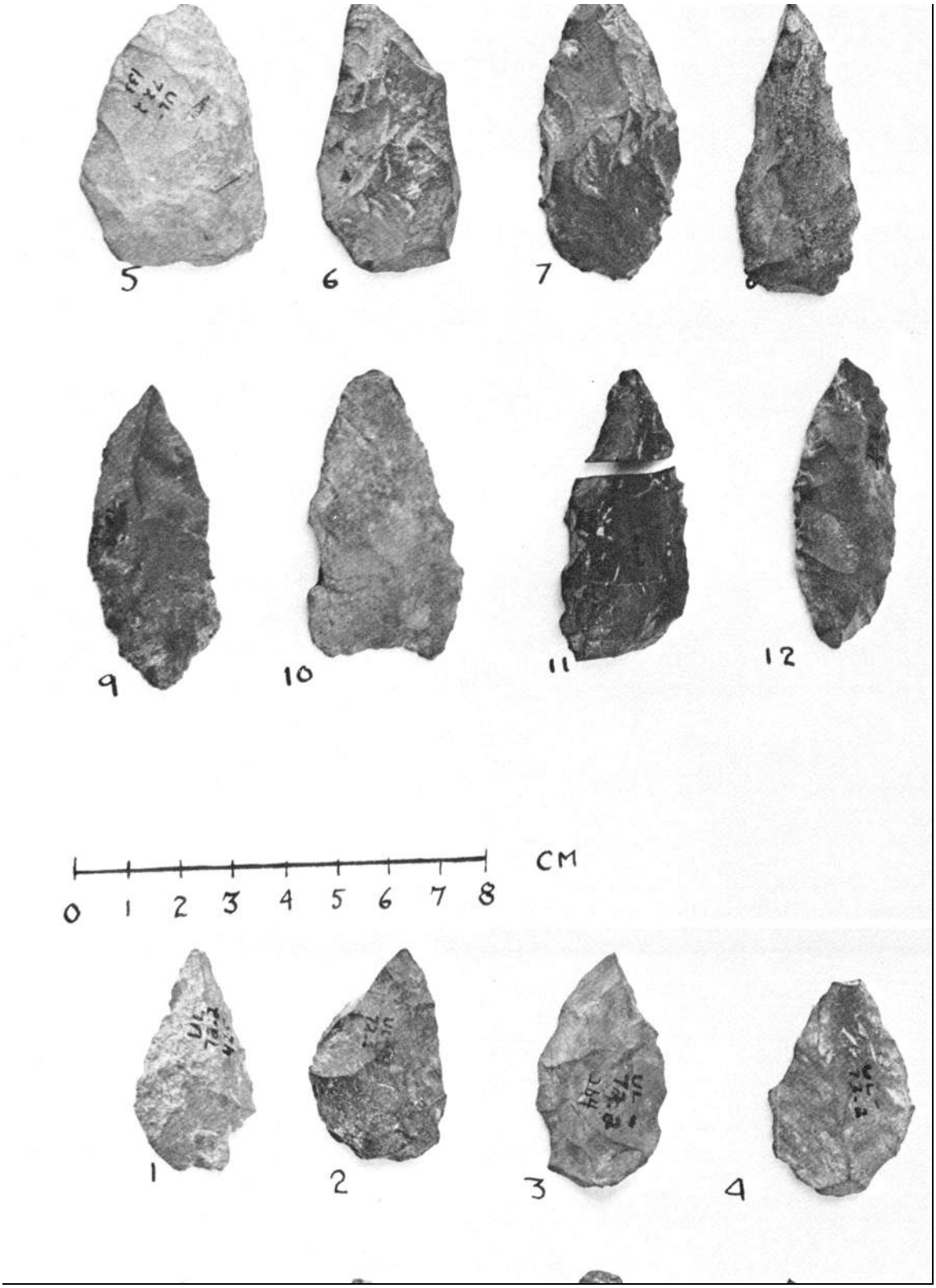

PLATE 2.

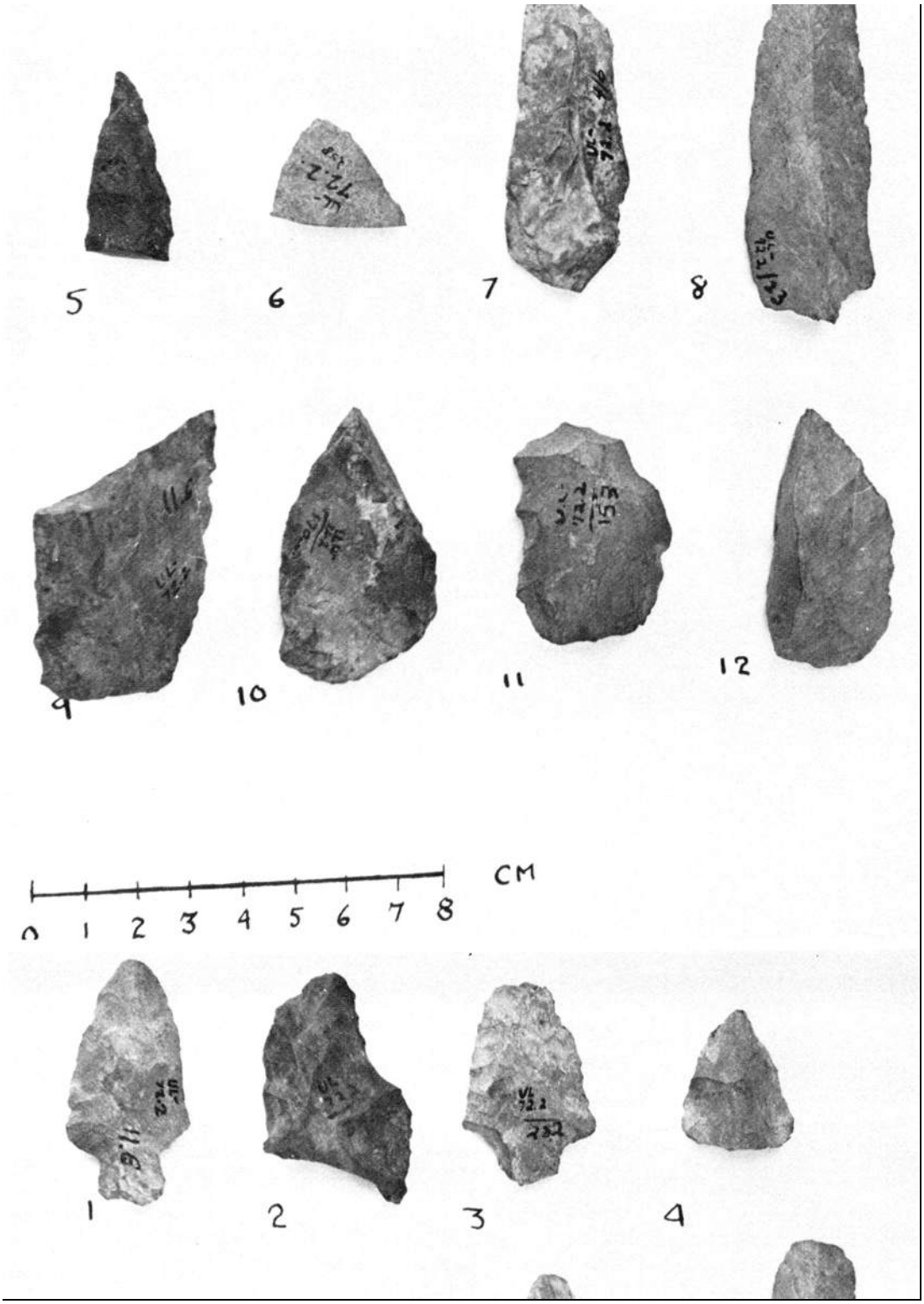

PLATE 3.

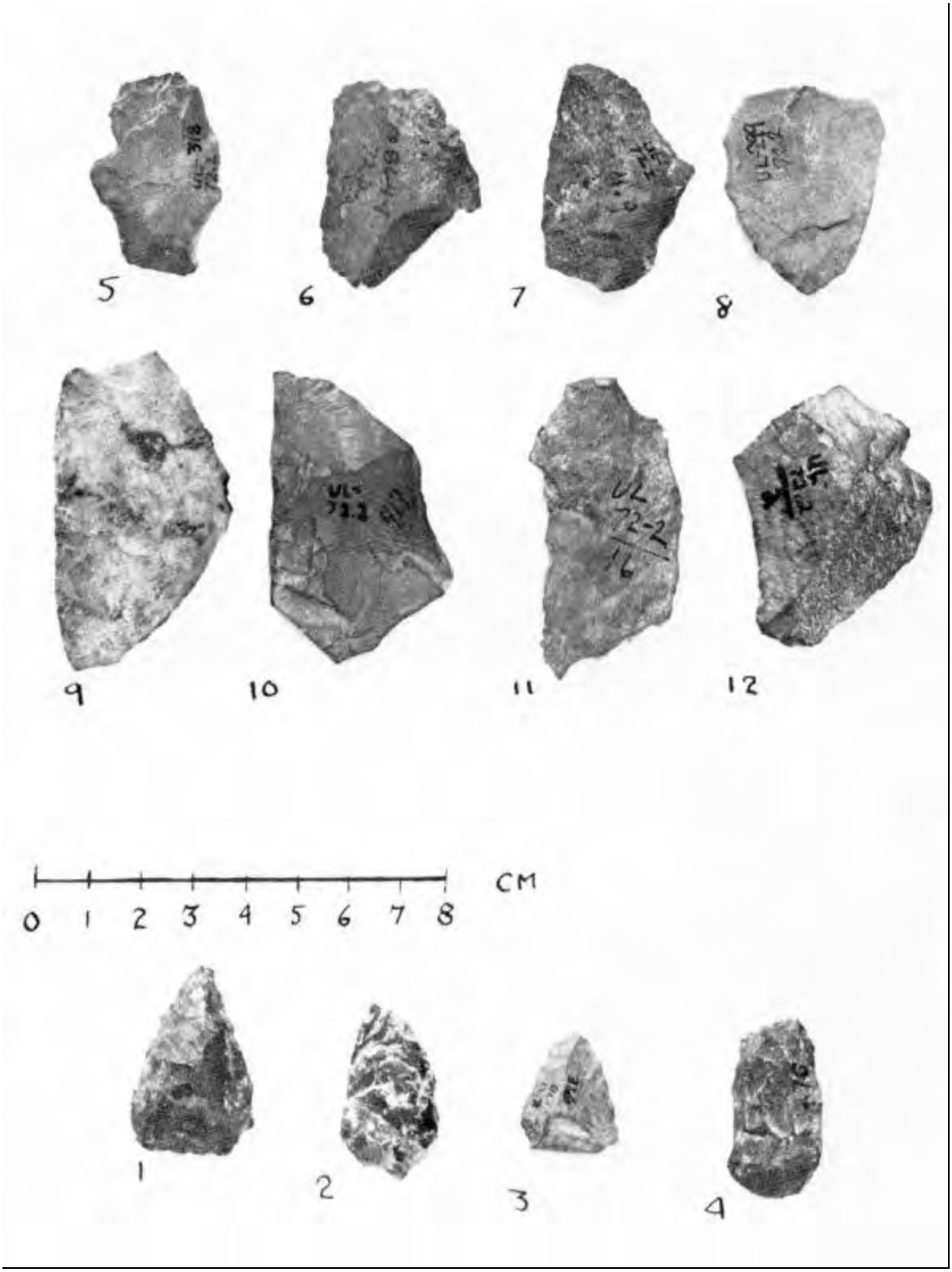

PLATE 4.

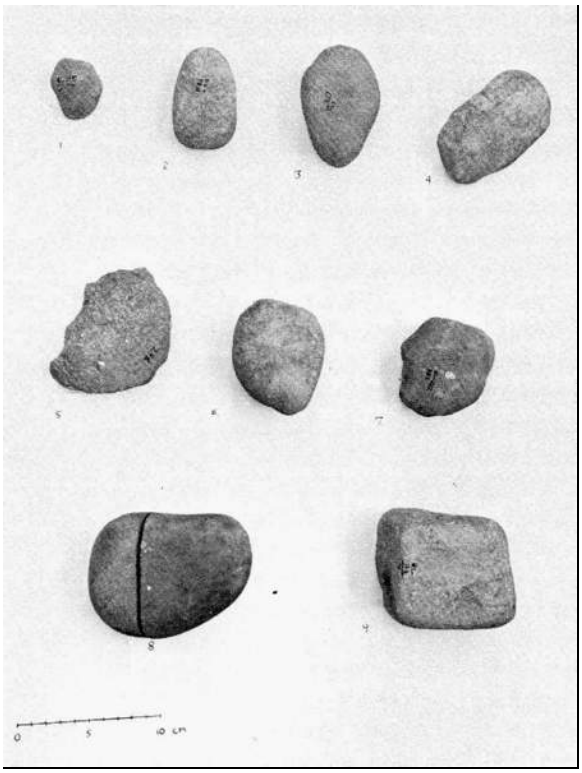

PLATE 5

Mullers

Nine mullers were recovered (Plate 5). Six were made from sandstone, and 3 from quartzite conglomerate. They were either oval or rectangular in outline and 2 displayed a slight circular pit on one face. They ranged in length from 10.2cm-6.6cm, width 9cm-3.6cm, and maximum thickness from 6.7cm-3.4cm. Winters has identified this tool, which he calls a pebble mano, from his Riverton Culture study in Illinois. His criteria for identifying them are:

> . . . 1) battered ends or edges; 2) uniform breaking or erosion of the patina over the entirety of flat or slightly convex surface; 3) erosion of the edges of minute, natural pits on the same surfaces, so that the edges become square rather than rounded as they are in the natural state; 4) occasionally striations developed on the mano surface from abrasion against a metate or other lower grinding element (Winters 1969: 61).

Salwen reports a similar find from Zipser Field, New Jersey (Salwen 1972: 11).

Debitage

Over 500 pieces of debitage were recovered. Ninety-six per cent was composed of eastern New York chert, 2% of chalcedony, 17o quartzite, and 1% of red flint of possible Taconic Mountain derivation. Eighty-eight percent of the material was less than 3cm in length, 11.4% between 3.0-5.0cm in length, and .6% was between 5-7cm in length. This size distribution clearly suggests that the majority of the chert material was being brought into the site as preforms or blanks that were worked out elsewhere. Moreover, the small size of the majority of hammerstones recovered (4.8 cm average length) lends further support to this hypothesis.

Fire-Cracked Rock

Over 400 pieces of fire-cracked rock were found. The sample was identified on the basis of angular fractures and/or a reddish fire-burnt color on the stone. It was hypothesized that if many of these rocks were utilized for stone boiling, a type of stone that heat-fractures easily would be most desirable. Seventy-two percent of the sample was sandstone, and 27% was conglomerate, both of which fracture easily with sandstone somewhat more readily. Both the sandstone and conglomerate were available along the banks of the Shawangunk Kill a few 100 yd. upstream from Unit II.

Discussion

The Old Fort Excavation Unit II site was a temporary hunting camp near the south bank of the Shawangunk Kill, outside of Wallkill, New York. It was utilized sporadically from Middle Archaic to Middle Woodland times. The presence of a Vosburg point may be attributed to a brief visit by a small group of hunters between 3200-2500 B.C. The Brewerton and Beekman points

indicate a number of additional temporary occupations during this same time period (Funk 1965: 139). Following this, a quantity of narrow points, Lamoka-like, Bare Island, and Normanskill, which Funk assigns to his Sylvan Lake Complex, marks an added number of brief visitations between 2500-1500 B.C. (Funk 1965: 151). Finally, the presence of 2 Levanna points indicates another short stay by Middle Woodland people somewhere between A.D. 900-A.D. 1350 (Ritchie 1971: 31).

The number and types of artifacts present point to a series of light occupations. Unfortunately, the obvious disturbed nature of the site (Woodland type point underlying Archaic type points) has left no discernible living floors to describe.

Nevertheless, the high representation of points, knives, and scrapers does allow one to argue for a predominance of hunting and butchering activities at the site. A pH test for soil acidity at Unit II gave a reading of 5.8, which probably explains the virtual absence of osseous remains at the site. However, tests for phosphate presence did reveal a high concentration of this mineral at the 12-13 in. level in square 3L/35. Insofar as discarded and decayed bones cause an increase in soil phosphate, this may indicate the presence of osseous debris.

That some vegetable matter played a role in the diet of these hunters at the site is attested by the presence of stone mullers. The site is surrounded by beech, oak, and hickory trees, all of which could have provided an abundant nut source for our occupants. However, insofar as the artifacts weigh heavily towards a preoccupation with hunting, we may hypothesize that the site was predominately, if not solely, occupied by males. Moreover, the male use of mullers is not foreign to the ethnography of our area. Tooker, discussing Huron males, describes that when traveling they would use two flat stones for grinding corn carried with them (Tooker 1964: 23).

As already pointed out, the presence of a number of different styles of point reflects the multi-component character of the site. Of particular interest are the 6 Lamoka-like points recovered. According to Ritchie, ". . . Lamoka-like projectile points have a much broader geographical range than the Lamoka culture" (Ritchie 1969: 78). Moreover, Funk has pointed out that, ". . . the Lamoka, as a culture is not present in eastern New York" (Funk 1965: 156). Therefore, if the Lamoka per se is concentrated in central New York, as Ritchie argues, then how do we explain a manifestation of this culture, i.e. the Lamoka point, in the eastern part of the state?

> In a recent article on cognitive models for archaeology, Alice and Thomas Kehoe have argued that:
> The organization of diversity approach does not permit "cultures" to be easily set upon the basis of a few shared artifacts. It recognizes that the cognitive maps of millions of prehistoric Americans were unique, and particular artifacts or social practices, representing key nodes on these maps, could be shared along ethnic lines. The approach does highlight the importance of these nodes as indicators of contacts between individuals through time and space. The appearances of the nodes bloc out areas and periods exhibiting a continuity of cognitive contacts . . .
> (Kehoe and Kehoe 1973: 153)

On the basis of this perception it becomes possible to view the Lamoka point distribution as the manifestation of a shared cognitive node. Judging the Lamoka evidence, it appears reasonable to argue for a single projectile point type reflecting a single chronological and geographical horizon. The presence of the Lamoka point in both central and eastern New York is, therefore, viewed as a consequence of the geographical, temporal, and cognitive proximity of a number of different cultures.

Acknowledgements

I would like to thank the members of our 1972 field crew, Mr. John Hammer, and Professors Howard Winters and Bert Salwen for helping me to make the writing of this paper possible.

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ANNUAL MEETING 1973

FRIDAY, APRIL 6, 1973

3:00 p.m. Registration
9:00 p.m. Fee $3.50 (Student members are exempt) Saturday Dinner Fee $6.50
7:00 p.m. Publications Committee
7:30 p.m. Awards and Fellowship Committee
8:00 p.m. Executive Committee-Carriage Room
8:00 p.m. Hospitality Room open to all
11:00 p.m.

PROGRAM, ANNUAL MEETING-1973
SATURDAY, APRIL 7

Morning Session

William A. Ritchie, Chairman, State Archeologist (retired)

9:15 a.m. "Early *and Middle Woodland Occupation at Schuyler Flats*"
R. Arthur Johnson; Van Epps-Hartley Chapter
9:45 a.m. "*Where is Otsiningo? Preliminary Report of the Comfort Site Excavations*"
Dolores Elliott, Triple Cities Chapter

Break-15 minutes

10:30 a.m. "*Where They Have Trod: Archeology on the West Point Parade Ground*"
Donald F. Clarke, Orange County Chapter
11:00 a.m. "*Evidences for Continuity in the Prehistoric Iroquois of Jefferson County, N.Y.*"
Earl R. Sidler III, S.U.N.Y., Buffalo
11:30 a.m. "The *Late Woodland Period in the Upper Delaware Valley, N. J. and its Relationship to New York State*"
Herbert C. Kraft, Metropolitan Chapter, Orange County Chapter

Afternoon Session

Michael J. Ripton, Chairman, Morgan Chapter

1:30 p.m. "*Prehistoric Iroquois Population Shifts*"
Marian E. White, S.U.N.Y., Buffalo
2:00 p.m. "The *Old Fort Site: A Preliminary Analysis of a Multi-component Archaic Occupation near Wallkill, N. Y.* "
Leonard Eisenberg, S.U.N.Y., New Paltz
2:30 p.m. "*In the Footsteps of the Vikings*"
Edward Lenik, Rockland County Community Col.

Break-15 minutes

3:15 p.m. "*Bear Swamp 77: A Late Archaic Campsite in Southeastern Massachusetts*"
Carol Barnes, Cohannet Chapter, M.A.S.
3:45 p.m. "*A War of 1812 Redoubt near Plattsburgh, N.Y.*"
Mark Cohen, S.U.N.Y., Plattsburgh
4:15 p.m. "*The Pottery of the Piping Rock Site*"
Louis A. Brennan, Representative, E.S.A.F. Metropolitan Chapter
7:30 p.m. Dinner-Main Dining Room
Toastmaster-Charles S. Pierce, President, N.Y.S.A.A.
Keynote Address: "*Ceremonial Burials in the Northeast*"
Maurice Robbins, A.B., M.A., Ph.D. State Archeologist, Commonwealth of Massachusetts Director, Bronson Museum, Attleboro, Mass.

SUNDAY, APRIL 8

General Session

Ralph Robinson, Chairman, Orange County Chapter

9:30 a.m. "*A New Look at Pits*"
Marilyn Stewart, Triple Cities Chapter
10:00 a.m. "*Arrowhead Casino: an Archaic Site at Saratoga Lake, N.Y.*"
James Walsh, Auringer-Seelye Chapter
10:30 a.m. "*The Dutch and Their Pipes*"
John McCashion, Van Epps-Hartley Chapter
11:00 a.m. "*The Sugar Loaf Mastodon*"
Elizabeth Dumont, Orange County Chapter
1:30 p.m. Field Trip to Dutchess Quarry Cave