

VAN BESIEN (AfHd-2):
A STUDY IN GLEN MEYER DEVELOPMENT
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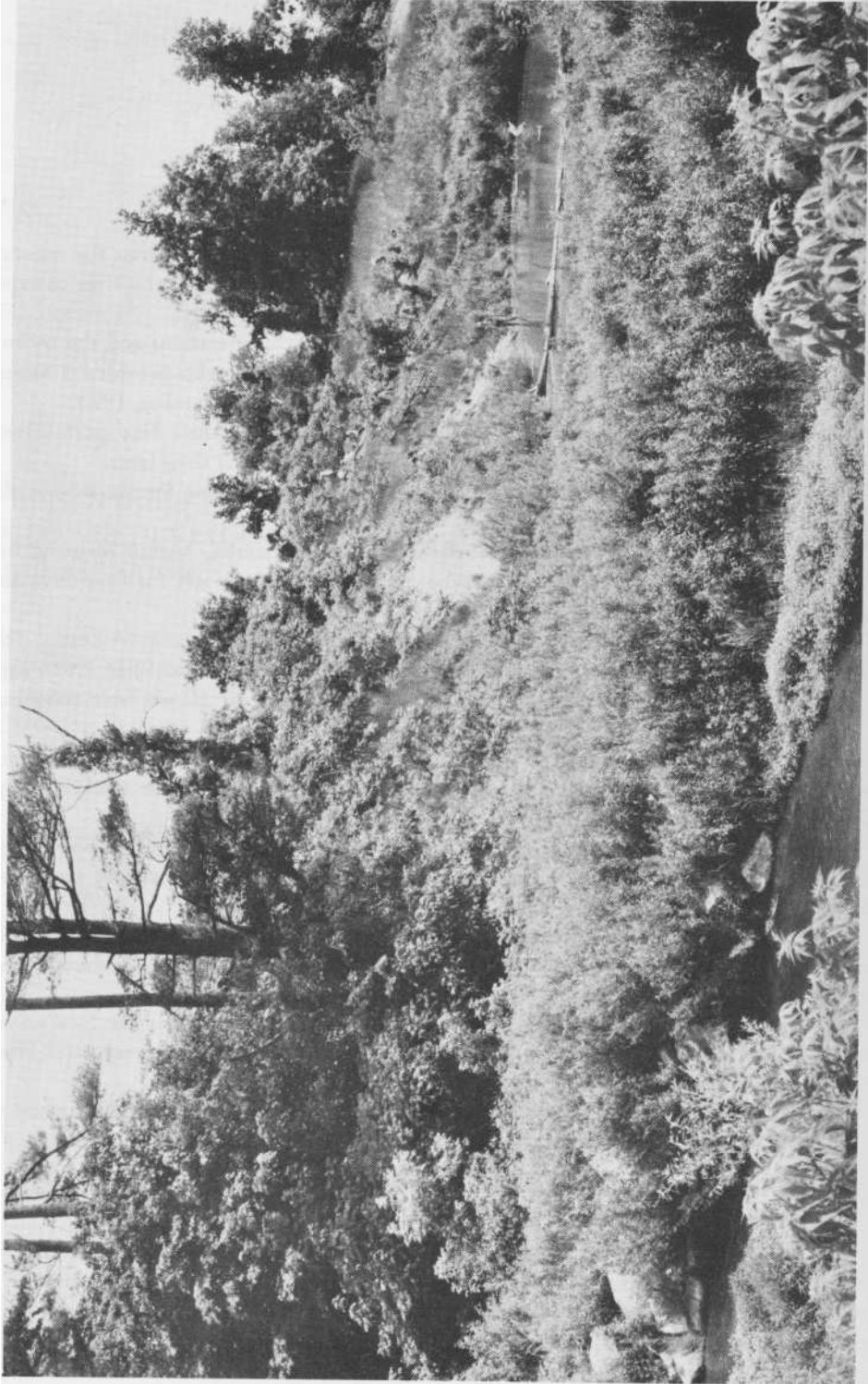
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1. INTRODUCTION

As an important aspect of developmental Ontario Iroquois, Glen Meyer studies **have** recently progressed substantially beyond Thomas E. Lee's (1951; 1952) early definition, and the subsequent analyses by James V. Wright (1966). Indeed, the current research is of such an expanded nature that it promises to dispel the twenty-year paradox in which, despite recognized and continual usage of the term Glen Meyer, most Iroquois prehistorians remain



Frontis. Western Perimeter of the Van Besien Village

unfamiliar with what actually constitutes Glen Meyer culture—even in its most basic material aspects. In large, this situation has been perpetuated because of a paucity of written reports based on first-hand field excavations, and, secondly, because the number of field researchers engaged in Glen Meyer studies has been inexplicably few. Aside from Lee and Wright, only two current researchers have handled Glen Meyer materials extensively: William A. Fox and William C. Noble. Others such as Kidd (1954), White (1964), and Keenlyside (1972) have handled Glen Meyer materials but, for various historical, analytical and interpretative reasons, they have not recognized them as such.

Today, Glen Meyer is seen by this author to cover all of southwestern Ontario from Hamilton (Donaldson, 1965; Fox, 1967) to the Niagara River (McCarthy, 1962; White, 1964), and thence westward through a primary centre in Oxford and Norfolk Counties to Point Pelee (Keenlyside, 1972) and Chatham (Kidd, 1954). Influences are also apparent in southeastern Michigan (Fitting, 1970:154; Wright, 1966).

Too, Glen Meyer origins are considerably clarified in terms of cultural development and dating. Once viewed with some reservations, the comparative analyses herein leave no doubt that the Porteous village (AgHb-1) near Brantford (Noble and Kenyon, 1972) represents a bona fide early Glen Meyer manifestation. Dating ca. 700 A.D. by radiocarbon, this early Glen Meyer expression arises in whole or part from the Princess Point complex, guess-dated ca. 200-500 A.D. Dating 940 A.D., Van Besien represents a middle period Glen Meyer component, and can be traced to Porteous for its cultural ancestry. In sum, the Glen Meyer time span has been lengthened to encompass a period between ca. 700-1250 A.D.

In the opinion of this author, Lee (1951) and Keenlyside's (1972) Point Pelee (Period I) complex represents another *regional* late Middle Woodland ancestor to Glen Meyer. It definitely has continuities to the later Point Pelee Periods II and III (Keenlyside, 1972), where the radiocarbon dates, ceramics, lithics, fauna and settlement patterns leave little doubt that they represent middle period Glen Meyer fishing stations. Comparative similarities between the Point Pelee Periods II and III, and inland Glen Meyer villages are obvious to this author, but concrete comparisons will have to await Keenlyside's analyses. That Point Pelee Periods II and III would be Glen Meyer is an expected occurrence, for Glen Meyer is the *only* known expression of *formal village life* in the early Ontario Iroquois sequence for southwestern Ontario between ca. 700-1250 A.D.

While it appears that summer fishing stations are located along the north shore of Lake Erie, one must look inland for the larger, semi-permanent palisaded Glen Meyer villages. Currently, we have the benefit of three major inland village excavations, namely, Porteous (Noble and Kenyon, 1972), Van Besien, and DeWaele (Fox, 1971; 1972). Partial settlement data are also available from the Goessens site (Lee, 1951; 1952) near the town of Glen Meyer, nine miles south of Tillsonburg.

It is the description, analysis and comparison of the materials unearthed at Van Besien that comprise the main content and purposes of this report. Chronological trends and observations also help outline this site's position within the new, broadened framework for Glen Meyer development.

THE VAN BESIEN SITE

The Van Besien village (AfHd-2) lies on the tobacco farm of Mr. Willey Van Besien, Lot 51, Concession 7, South Norwich Township of Oxford County, southwestern Ontario. Situated on

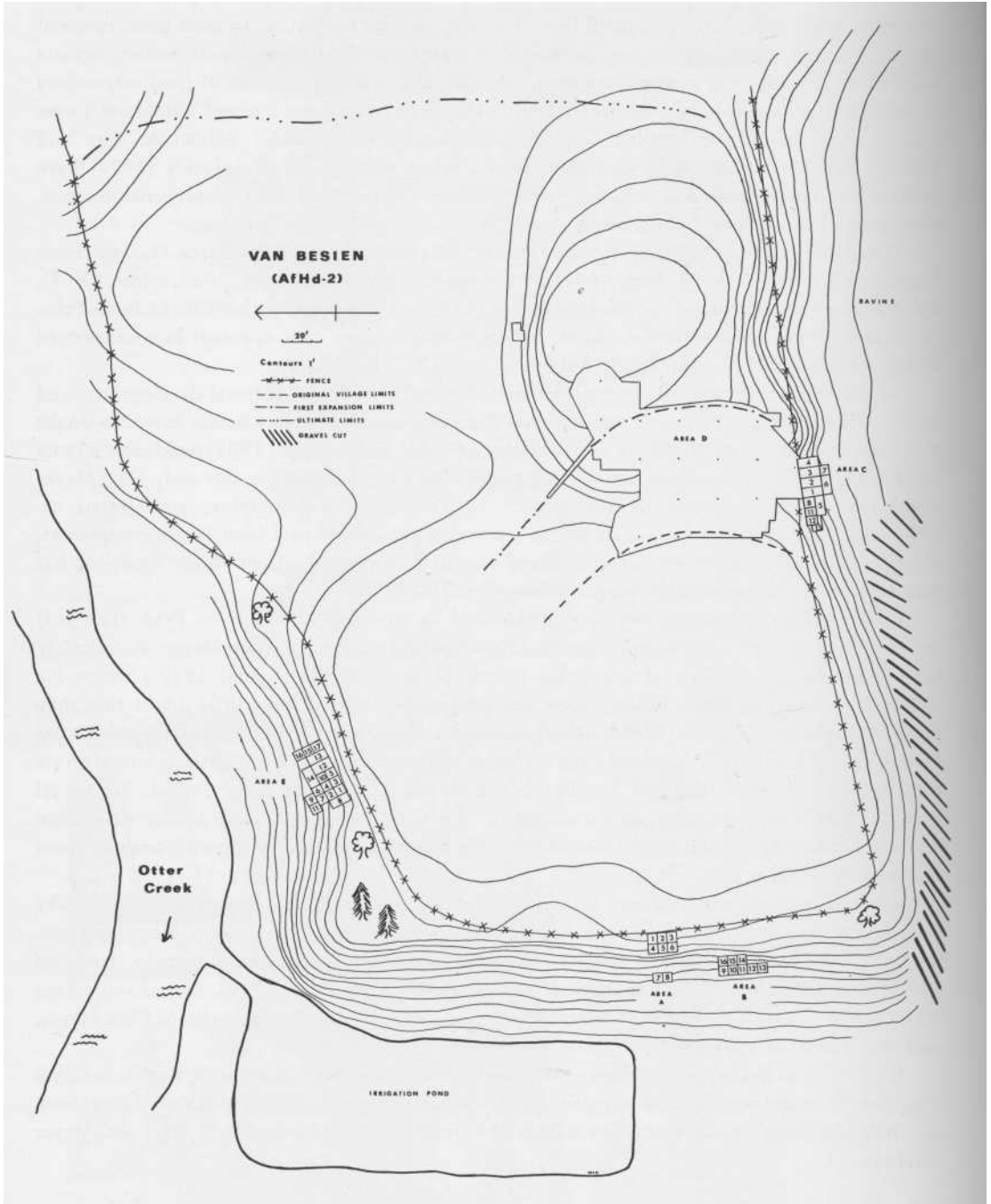


Figure 1. The Van Besien Site Map

a knoll forming part of the Norfolk Sand Plain, the northern perimeter of the site steeply overlooks clear running Big Otter Creek, while the western and southern peripheries also fall away to ravines (Figure 1). Major gravel extraction for the nearby Big Otter Creek bridge has removed the extreme southwest end of the site. Palisaded at various times throughout its history, the village expanded from 1.2 to 1.5 acres, and finally attained a size of 3.0 acres.

This site came to the author's attention in May, 1969, through the efforts of three McMaster students. Personally travelling to the site on June 23, 1969, the author assessed it as an important component rapidly being destroyed by local collectors. It was not, however, until June 22-25, 1971, that further attention could be directed to the village and, in that year, 400 square feet were opened in Areas A and B through salvage excavations by eleven McMaster students under the author's direction. Further full-scale excavations with a crew of five students and support from the Canada Council during May 29 June 29, 1972, saw the recovery of settlement patterns and increased midden data in Areas C and D. McMaster student Mr. James Taylor also excavated Area E during the late summer and fall of 1972. Extensive tests for burials within and outside the village proved futile and, thus, Glen Meyer burial patterns remain as elusive as ever. In total, 8,535 square feet were manually excavated and backfilled at Van Besien.

2. SETTLEMENT PATTERNS

Settlement patterns are proving to be an important aspect of Glen Meyer studies, and at Van Besien such patterns are distinctive. Here, the interrelation of middens, palisades and house structures indicate several village configurations shown in Figure 2. All features in the 6,795 square feet of Area D and the adjacent 415 square feet of Area C are numbered as encountered during recording by cross-tape triangulation.

As a village configuration, the question arises as to whether Van Besien expanded or contracted during its tenth-century period of occupation? Since it is important for the interpretation of subsequent settlement pattern details, an attempt will be made here to ascertain the adequacy of qualitative and quantitative lines of evidence bearing on this problem.

Qualitatively, the southwestern sector of the village contains the heaviest accumulation of on-site debris; visibly this shows up as a blacker soil discolouration than is to be found in any other sector of the village. It is believed that the richer accumulation of surface debris reflects an intensive prolonged occupation and, thus, the southwestern sector of Van Besien probably represents the oldest habitation centre of the village. Admittedly, this observation by itself neither confirms nor denies whether the village expanded or contracted during its occupancy.

However, there are other lines of evidence to consider. For example, Areas A and B on the southwestern perimeter of the village are the only middens yielding corded stick exterior decorated rim sherds. Such rims are presumed to be relatively reliable indicators of an early age (the concept of ceramic vestiges), and at Van Besien they have a minority (8.0%) frequency. In all probability, middens A and B are earlier than those around the southeastern and northeastern village perimeters. If these latter sectors of Van Besien truly date to the original occupation, then we would expect the corded stick wares to appear there too. They do not.

Most convincing, however, is the shape and superimposition of the exterior palisade arcs. All known developmental and classic Iroquois villages with palisades exhibit palisade arcs which are predominantly *convex* to the interior habitation area. None is continuously concave. At Van Besien, the excavated exterior palisades in the middle of the village all curve convexly towards the east and northeast (Figure 2). By itself, this evidence again neither confirms nor denies an expansion or contraction hypothesis, but when it is observed that certain west wall

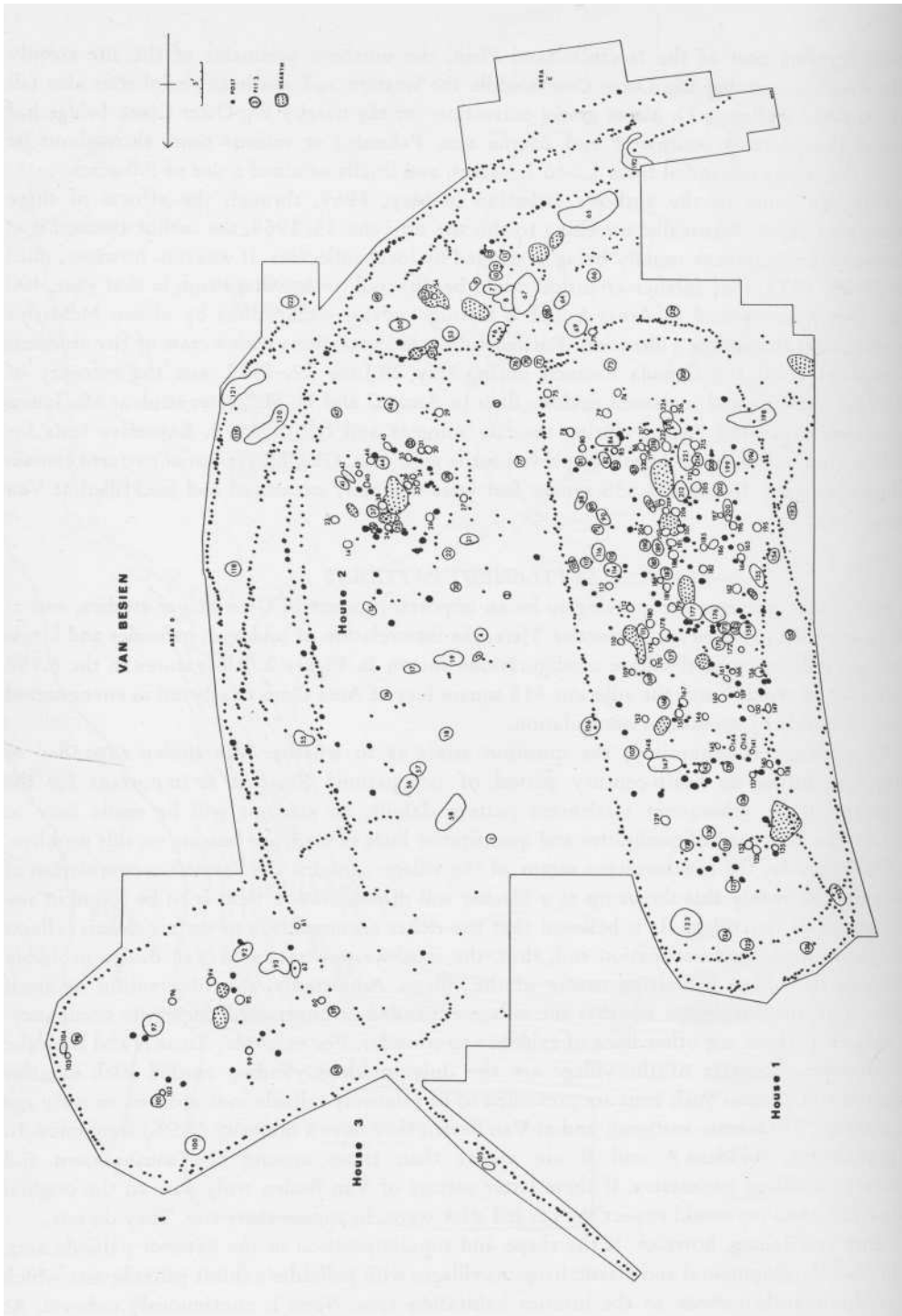


Figure 2. Van Besien Settlement Patterns

posts and pits and a hearth of House 1 *superimpose* palisade post moulds, then the expansionary nature of the village becomes evident.

In short, the available qualitative and quantitative evidence indicates that Van Besien apparently grew as a village configuration, rather than contracted. This is not entirely unexpected, for depopulation is not apparent in the Norwich-Glen Meyer region between 900-1000 A.D. (e.g., the large Goessens village covers seven acres [Lee, 1951:45]). Expansion and concomitant population growth is the interpretation presented below for the Van Besien village patterns.

PALISADES

Palisade lines are clearly evident at Van Besien, and are manifest along the northern perimeter (here they were observed but unrecorded in Area E), as well as through the middle and southeastern sectors of the village (Figure 2). Some of the palisade lines are most sturdy and complicated, thereby leading to the legitimate inference that they served primarily as protective measures against prevailing winds or unfriendly foes. Indeed, certain of the palisade constructions (e.g., closed arcs and interior cordons) leave little doubt that wartime defence was a major village concern. In the following, various palisade lines are described as they pertain to the interpreted series of village expansions.

First Village Limit

A first village limit at Van Besien appears in the closely-spaced single line of 3-inch diameter posts distributed in a 64-foot-long arc through the west wall of House 1 (Figure 2). This palisade wall bends convexly towards the east. Since House 1 and particularly House Pit 156 and the house's northernmost hearth superimpose part of this palisade, the palisade obviously predates House 1, which is part of a subsequent village expansion. Using this first village palisade as an easternmost boundary, the initial village is calculated to have covered approximately 1.2 acres.

Second Village Limit

A second series of palisade lines indicates yet another expansion of the Van Besien village. Bounding the south end of the site, triple lines of palisade pickets, 2-1/2 to 3 inches in diameter, cut through the Area C midden where refuse became trapped between the outer and middle palisade lines. Occasionally, a large 6 to 8-inch post occurs in these lines, which can be traced for 185 feet around the southern and eastern perimeters of the site. Along the village's southeast corner, the palisades pinch into a double row and ultimately narrow to a single line on the village's eastern boundary. This arrangement of palisades has the effect of creating a series of "closed arcs," a rather sophisticated and efficient measure for defence. With this new construction of palisades, the Van Besien villagers expanded their living area to 1.5 acres from the former 1.2-acre limit.

Internal Cordon

Within the second village limit, at least two new houses (1 and 2) were constructed, as well as a single, sinuous cordon of internal palisades. This internal defensive feature composed of 2-1/2 to 3-inch diameter pickets is visible for 21 feet in an east-west direction. It ties the southeast end of House 1 to the outer village southeast limit palisades (Figure 2). As such, the cordon tends to compartmentalize the southeastern end of the village, and might well be an attempt to confine potential attackers to restricted fighting around or within specific

longhouses if the outer palisade walls were breached. Such interior cordons are also reported from the later Glen Meyer DeWaele village (Fox, 1972:14, 21).

Ultimate Village Limits

Ultimately, the Van Besien village expanded to three acres. This observation rests on the extent of surface cultural debris to the east and northeast of the second village limit. Too, numerous test pits immediately east of Area D continued to reveal subsoil village pits, and House 3, which extends through and beyond the second village limit, also appears to indicate expansionary processes. Presumably, palisading also ringed the final village, which more than doubled the original site size (Figure 2). Why Van Besien expanded as many times as it did, and who the villagers were defending themselves against, remain unresolved questions at this time.

HOUSE PA/ ERNS

Considerable variation is a feature of Glen Meyer architectural styles, and the house structures at Van Besien help to illustrate this fact. Typically Iroquois, three longhouses are present, each possessing significant constructional and internal differences (Figure 2). Single and double walled houses occur with internal refinements such as central hearths and division walls. These refinements are expected for they are present at the earlier Porteous site (Noble and Kenyon, 1972), but it is important to note that internal refinements are not a standardized feature of all Glen Meyer houses. No oval or circular structures appear at Van Besien, as reported for DeWaele (Fox, 1972:16).

House 1. This, the largest complete house (Figure 2), superimposes the first village limit palisade, and, therefore, was erected during the first village expansion. Measuring 74 feet long by 25-1/2 feet in maximum width, the house narrows at either end to 22 feet wide, with rounded ends. Entranceways are clearly demarcated through the north end and southeast side walls where the single lines of closely spaced 2-1/2 to 3-inch diameter vertical pickets extend 5 to 8 inches into the subsoil. Single line interior division walls across either end of the house reflect a definite interest in organizing internal living space. Of seven oval hearths within the house, four are centrally aligned, and three are offset to the sides of the house's main axis. Large, these hearths range between 2 to 4-1/2 feet in length and, notably, the northernmost heart superimposes palisade pickets of the first village limit. Another hearth immediately outside the southeast doorway also appears to have been associated with this house, possibly as a summer kitchen fire.

Large 6 to 9-inch-diameter posts, 9-16 inches deep, occur within the house and probably served as interior structural supports.

Interior pits are prolific (128), and together with the high number of hearths they indicate an intensive occupation of House 1. Specific data on each pit are summarized in Appendix A, but it is to be noted that 105 of the 128 features are circular in shape. Round bottoms prevail unless otherwise noted. Three categories of pits, defined on the basis of their contents, include: refuse, grey ash, and black soil pits. Containing food remains or other artifacts, the 32 refuse pits have a black soil matrix, whereas the 15 other pits contained exclusively grey ash. Clearly, the predominant house pit (81) is the circular type with solely black soil content.

House 1 is oriented northwest to southeast.

House 2. Incompletely preserved, House 2 was also erected at the time of the first village expansion (Figure 2). This house had rounded ends leading into double lines of sidewall pickets, a feature of the 800-875 A.D. Glen Meyer houses reported by Keenlyside (1972:9) at Point Pelee. With a maximum width of 21 feet and an interior width of 18 feet, House 2 measures at

least 60 feet long judging from interior pit and large interior support post distributions. Of three preserved oval hearths, two are centrally aligned. Large 5 to 9-inch diameter posts, embedded 9 to 41 inches deep, probably served as interior structural supports, and characteristically, interior pits occur through this house.

As with House 1, circular pit shapes predominate (28 of 36 pits) over the seven oval and one irregular formed subsoil features. Five pits produced refuse (Appendix A), while all others simply contained black sterile soil. Charcoal from Pit 36 near the hearth cluster has returned a radiocarbon date of 940 A.D.±90 (I-6847).

Aligned parallel to House 1 in a northwest-southeast orientation, House 2 conceivably has double sidewalls as a protective measure in view of the general palisade strengthening at the southeastern end of the village as a whole.

House 3. Extending through and over the second village limit palisade, House 3 appears to be an expansionary structure dating later than Houses 1 and 2. It has rounded ends and single lines of exterior wall posts, in an oblong shape measuring 48-1/2 feet long by 26 feet wide. There are two oval central hearths, and large 6 to 10-inch diameter support posts within the interior.

Eighteen interior pits are predominantly circular in outline (14), and of the normal sterile black soil type (12); only six pits yielded refuse (Appendix A). A very small charcoal sample, untreated for the removal of humic acids, has returned a questionable radiocarbon date of 775 A.D. -1-140 (I-6848).

Oriented northeast to southeast, House 3 does not appear to have been occupied intensively.

Middens

Side-hill garbage dumps occur around the three sloped borders of Van Besien (Figure 1). Here a total of 1,345 square feet was opened in Areas A, B, C and E, to obtain a representative sample of material culture items.

Two hundred square feet excavated in Area A indicate numerous disturbances by previous relic hunters. Clearly, the bulk of the midden A refuse resides upslope on the brow of the hill. Here cultural debris extends 13 inches below the present soil surface, as opposed to an 8-inch depth in Square A-8.

Area B also has 200 square feet excavated and former disturbances were noted in Square B-9. Apparently, a 9-foot-wide gulley once existed through Squares 10-11 and 14-15. Filled with midden debris to a maximum depth of 27 inches, this gulley has produced charred human bone and copious charcoal. Carbon from the very bottom of Square B-15 registers a date of 945 A.D.±90 (I-6167).

Four hundred and fifteen square feet excavated in Area C indicate that refuse was thrown against and between the palisade pickets of that area. Midden debris extends 10 inches deep below the present ground surface.

Area E represents the final midden tested, and here 525 square feet were excavated by Mr. James Taylor. A complete dog skeleton from Square E-12 shows that while this canine was discarded in an articulated condition, no special burial pit or ritual accompanied its demise. Palisade posts were noted through the up-slope squares, but no record of their distribution was made.

In all, the midden debris from Van Besien has provided a very adequate sample of middle period Glen Meyer artifacts.

3. ARTIFACT ANALYSIS

The analysis of specimens from Van Besien clearly demonstrates that this village belongs to the Glen Meyer branch of the Ontario Iroquois tradition (Wright, 1966). Indeed, the synthesis comparisons herein leave no doubt that Van Besien lies in a middle position on the continuum from the early Glen Meyer Porteous village ca. 700 A.D. (Noble and Kenyon, 1972), to the later Glen Meyer villages analyzed by Wright (1966). As such, we are fast filling in many of the gaps formerly extant in our understanding of early Glen Meyer development.

Table 1 offers a breakdown of the various classes of artifacts from Van Besien, and obvious is the fact that pottery, lithics and faunal remains predominate. As once noted by Wright (1966:38), worked bone is not well developed on Glen Meyer sites, a fact further substantiated by the Porteous and Van Besien analyses.

TABLE 1

VAN BESIEN ARTIFACT CLASSES

Class	f	%
Pottery	6370	39.5
Faunal remains	4964	30.8
Lithics	4517	28.0
Worked bone, antler, teeth	186	1.2
Pipes and portions	45	.3
Cultigens	25	.15
Human remains	10	.06
Worked shell	4	.02
Totals	16121	100.

*POTTERY**Rim Sherds*

A total of 823 analyzable rims are available from Van Besien, and this total includes 53 castellations. Unfortunately, analysis of representative vessels proves impractical according to number, for published comparative Glen Meyer information is based solely upon total rim sherd frequencies (Wright, 1966; Noble and Kenyon, 1972). However, to counteract possible statistical error, all Van Besien mended rims and reconstructed vessels are counted as a single rim each. This procedure has been practised successfully for Huron ceramics (Noble, 1968:25-26), and it is important to point out that empirical tests of significance for Ontario Iroquois ceramics reveal no substantial practical advantage of vessel analysis over total, rim frequencies (Noble, 1968:25).

The analysis of the Van Besien rim sherds is presented on the basis of seven select attributes and modes which are believed to reflect distinctive ceramic techniques useful for chronological indicators. No attempt is made to use types; valid comparisons simply cannot be drawn from the existing Glen Meyer literature.

In many of the following tables, Van Besien is compared with available analyzed data from the reports of Wright (1966), Wright and Anderson (1969), Fox (1967), and Noble and Kenyon (1972). Future detailed analyses of the ceramics from the dated DeWaele village (Fox, 1971), and the Point Pelee Periods II and III (Keenlyside, 1972) should provide further pertinent information for studies of Glen Meyer development.

Exterior Rim Decorative Techniques

Clearly, linear stamp (impressed stamp incising) and incised rims predominate in the Van Besien sample (Table 2). This represents a marked change from Porteous times. Too, regional differences in specific decorative techniques are suggested by the higher incidence of incising at Van Besien than at Goessens, and through the apparent higher retention of corded stick at Goessens than at Van Besien. Care, therefore, must be accorded these two decorative techniques when taxonomically weighing them for temporal ordering. Most important are certain of the minority decorative techniques. Corded punctate, for instance, all but dies out by Van Besien times, as does suture stamp. Also, Crescent Stamp and Punctate Dentate Stamp first appear around Van Besien times and increase at the Goessens site (Wright and Anderson, 1969:Table 16). In particular, Crescent Stamp promises to be a very sensitive decorative technique to follow throughout Glen Meyer development.

In overview, 67 of 76 (88.1%) of the Porteous rims have exterior rim decoration as compared with 683 of 778 (87.7%) examples at Van Besien and 451 of 494 (91.3%) rims at Goessens.

TABLE 2

GLEN MEYER EXTERIOR RIM DECORATIVE TECHNIQUES

Technique	Porteous		Van Besien		Goessens	
	f	%	f	%	f	%
Corded stick	3	(44.7)	63	(8.0)	107	(21.7)
Plain	4					
Plain	9	(11.8)	95	(12.2)	43	(8.7)
Cord malleated	8	(10.5)	48	(6.2)	16	(3.2)
Incised	7	(9.2)	175	(22.5)	19	(3.9)
Smoothed-over-cord	6	(7.9)	68	(8.7)	0	
Corded punctate	6	(7.9)	1	(.1)	0	
Linear stamp	3	(3.9)	297	(38.2)	240	(48.6)
Suture stamp	2	(2.6)	2	(.2)	0	
Cord and incised	1	(1.3)	10	(1.3)	0	
Crescent stamp	0		8	(1.0)	29	(5.9)
Punctate dentate stamp	0		6	(.7)	13	(2.6)

Table 2 (Continued)

Fingernail impressed	0	3	(.3)	0
Cord malleated and incised	0	2	(.2)	0
Other	0	0		27 (5.4)
Totals	76 (99.8)	778 (99.6)		494 (100.0)

Lip Decoration

Lip decorations on rim sherds prove to be a useful mode for study. As presented in Table 3, plain lips clearly predominate at Van Besien and Goessens (Wright and Anderson, 1969:Table 19), while corded lips, so prevalent at Porteous, decline markedly on the later Glen Meyer villages. Five new lip decorations occur during Van Besien times, of which Punctuation, Incised and Criss-Cross Crescent Stamp decorative techniques appear to be most important. Two rims from Area C-3 at Van Besien have a red ochre slip on their lips.

TABLE 3

GLEN MEYER LIP DECORATIONS

Decoration	Porteous		Van Besien		Goessens	
	f	%	f	%	f	%
Corded	20	(50.9)	56	(6.8)	56	(11.3)
Plain	10	(18.2)	558	(67.8)	246	(49.8)
Smoothed-over-cord	9	(16.4)	54	(6.6)	5	(1.0)
Incised	4	(7.2)	90	(10.9)	96	(19.4)
Corded groove	3	(5.4)	4	(.5)	11	(2.2)
Incised groove	1	(1.8)	17	(2.0)	8	(1.6)
Punctates	0		21	(2.6)	23	(4.7)
Smoothed-over-punctate	0		16	(1.9)	0	
Incised criss-cross	0		5	(.6)	11	(2.2)
Crescent stamp	0		1	(.1)	27	(5.5)
Other	0		1	(.1)	11	(2.2)
Totals	55	(99.9)	823	(99.9)	494	(99.9)

Overall, 45 of 55 (88.8%) Porteous rim lips have decoration as compared with 265 of 823 (32.2%) examples at Van Besien and 248 of 494 (50.2%) rims at Goessens. A general decline through time appears to be the rule.

Interior Rim Decoration

Interior rim decorations at Van Besien again indicate changes from Porteous times, as well as significant local variations with the Goessens site (Table 4). Whereas cording is retained in higher frequency at Goessens (Wright and Anderson, 1969:Table 18) than at Van Besien, the potters at both sites clearly preferred plain rim interiors. As noted for lip and exterior rim decorative techniques, the minority forms of interior rim decoration appear to be very significant for seriation purposes, particularly the Incised Criss-Cross and Crescent Stamp techniques.

TABLE 4
GLEN MEYER INTERIOR RIM DECORATIONS

Decoration	Porteous		Van Besien		Goessens	
	f	%	f	%	f	%
Corded	36	(67.9)	40	(5.1)	88	(17.8)
Plain	11	(20.7)	608	(78.0)	200	(40.5)
Incised or Linear stamp	5	(9.4)	100	(12.8)	122	(24.7)
Smoothed-over-cord	1	(1.8)	10	(1.3)	0	
Incised criss-cross	0		13	(1.7)	41	(8.3)
Dentate stamp	0		5	(.6)	2	(.4)
Crescent stamp	0		2	(.2)	23	(4.7)
Cord criss-cross	0		1	(.1)	1	(.2)
Punctates	0		0		3	(.6)
Chevron linear stamp	0		0		7	(1.4)
Other	0		0		7	(1.4)
Totals	53	(99.8)	779	(99.8)	494	(100.0)

The 42 of 53 (79.2%) cases of interior rim decoration at Porteous contrasts with 171 of 779 (22.0%) rims at Van Besien, and 294 of 494 (59.5%) rims at Goessens.

Punctates and Bosses

Punctuation and bossing are very sensitive and important features of developmental and classic Glen Meyer rim sherds. Indeed, when analyzed in detail, such attributes appear to be

among the most reliable indicators of temporal sequence for Glen Meyer pottery. In Table 5, the history of this distinctive motor habit is traced from Porteous to King's Forest Park times (i.e., ca. 700-1250 A.D.).

TABLE 5

GLEN MEYER PUNCTATION

Punctates	Porteous		Van Besien		Goessens		King's Forest Park	
	f	%	f	%	f	%	f	%
Exterior	22	(91.6)	39	(19.5)	16	(8.4)	2	(4.0)
Interior	2	(8.4)	161	(80.5)	174	(91.6)	48	(96.0)
Totals	24	(100.0)	200	(100.0)	190	(100.0)	50	(100.0)

From the above table it is clear that exterior punctation is the favoured technique in the early Glen Meyer period; this is definitely a carry-over from the earlier ancestral Princess Point complex. Clearly, exterior punctation gives way to interior punctating motor habits by Van Besien and Goessens times.

Normally, a raised boss accompanies each punctate as evidenced in Table 6. Only one Van Besien rim sherd had multiple rows of punctates; this sherd possessed two lines of interior punctates with matching exterior bosses.

TABLE 6

GLEN MEYER PUNCTATE AND BOSS CORRELATIONS

Attribute	Porteous		Van Besien		Goessens	
	f	%	f	%	f	%
Exterior punctate (no boss)	2	(2.6)	16	(1.9)	5	(1.0)
Interior boss	20	(26.3)	23	(2.8)	11	(2.2)
Interior punctate (no boss)	0		31	(3.7)	49	(9.9)
Exterior boss	2	(2.6)	130	(15.8)	125	(25.3)
Absent	52	(68.4)	623	(75.7)	304	(61.5)
Totals	76	(99.9)	823	(99.9)	494	(99.9)

Completing the punctate analysis for Van Besien, a metric study was undertaken fashioned after that of Wright (1967) for Laurel ceramics. Compared with Porteous (Table 7), the following trends are observed: (a) exterior punctates decrease in size through time, but simultaneously become wider spaced and lower on the rims; (b) by contrast, interior punctates consistently enlarge in both diameter and spacing through time.

TABLE 7

COMPARATIVE PUNCTATE METRICS

Mean Measurements (mm.)	Porteous	Van Besien
Exterior punctates:		
Diameter	3.8	2.9
Distance apart	10.8	13.8
Below rim	20.0	24.2
Interior punctates:		
Diameter	2.0	3.3
Distance apart	8.0	15.7
Below rim	10.0	17.0

Castellations

Castellated rims are no surprise in Glen Meyer ceramics, for the history of this distinctive Iroquoian trait goes back to Princess Point times. Expectedly, the castellations from Van Besien fall into two categories—incipient (simple) pointed, and incipient (simple) rounded. As indicated in Table 8, simple pointed forms usually predominate on Glen Meyer sites, the sole exception being Stafford. Calculated on form alone, Wright's (1966) Incipient Pointed and Punctate Face castellation types from Smale, Stafford, Woodsmen and Goessens are grouped here within a Simple Pointed category.

TABLE 8

GLEN MEYER CASTELLATION TYPES

Site	Rim Sample	Simple Pointed	Simple Rounded	Castellation Totals	Castellation S
Smale	46	0	1	1	2.1
Woodsmen	42	4	0	4	9.5
Stafford	175	5	12	17	9.7
Goessens	419	19	5	24	6.0
Van Besien	823	29	24	53	6.4
Porteous	76	7	4	11	14.4

Notable, the castellation frequencies from Porteous, woodsmen and Smale are subject to low rim sherd sampling error, and thus overall frequency trends are precluded. From Table 8, Goessens appears to be temporally close to Van Besien, a feature also inherent in other rim attributes.

Further correlations of the Van Besien castellation types with exterior rim decorative techniques indicate that incised rims are most frequently castellated (Table 9).

TABLE 9
 VAN BESIEN CASTELLATIONS AND EXTERIOR RIM DECORATION

	Simple Pointed	Simple Rounded	Totals
Incised	18	16	34
Corded	3	4	7
Smoothed-over-cord	3	1	4
Plain	2	2	4
Cord and incised	1	1	2
Crescent stamped	1	0	1
Suture stamp	1	0	1
Totals	29	24	53

Collared Rims

The development of collared wares is in its infancy at Van Besien. Of 823 analyzable rims, only 22 (2.6%) exhibit collars, and they are incipient.

Rim Shapes

Wright (1966:28) first pointed out the marked variability in Glen Meyer rim shapes, and this was subsequently substantiated by Noble and Kenyon's (1972) findings of 19 different rim shapes at the Porteous village. Also, rim shapes vary independently of decorative techniques and motifs. Such limiting factors were kept in mind during the Van Besien analysis, and only one rim shape of potential meaningful significance is tabulated. This is the rolled rim form, most popular on later middle period Ontario Iroquois villages. At Van Besien, 77 of 823 rims (9.3%) are rolled.

Neck Sherds

In Table 10, Glen Meyer neck sherds seemingly do not offer a sensitive index for seriation, and surprisingly, decorated necks are more popular at Van Besien (55%) than at any other analyzed Glen Meyer site. The reasons behind this phenomenon presently remain unknown (it may be entirely local), but it is clear that both vessel necks and rims were favoured decorative areas to the Van Besien potters.

TABLE 10
GLEN MEYER NECK SHERDS

	Van Besien		Goessens		Stafford		Woodsman		Smale		King's Forest Park	
	f	%	f	%	f	%	f	%	f	%	f	%
Plain	388	(27.2)	393	(42.0)	156	(53.0)	66	(37.0)	69	(42.0)	106	(40.0)
Decorated	784	(55.0)	335	(36.0)	85	(29.0)	88	(50.0)	76	(46.0)	27	(10.1)
Smoothed-over-cord	158	(11.0)	130	(14.0)	24	(8.0)	14	(8.0)	16	(10.0)	94	(35.5)
Scarified	22	(1.5)	75	(8.0)	28	(9.0)	8	(5.0)	4	(2.0)	37	(14.0)
Cord malleated	49	(3.4)	4	(.4)	0		0		0		1	(.4)
Fabric Impressed	25	(1.8)	3	(.3)	0		1	(1.0)	0		0	
Painted	1	(.1)	1	(.1)	1	(.4)	0		0		0	
Ribbed paddle	0		0		1	(.4)	0		0		0	
Totals	1427	(100.0)	941	(100.8)	295	(99.8)	177	(101.0)	165	(100.0)	265	(100.0)

In order to more effectively investigate the high percentage of decorated Van Besien neck sherds, specific decorative techniques are tabulated. Neither Wright (1966) nor Fox (1967) have pursued this approach, and, thus, potential comparative trends are precluded. Too, due to small sample size, no reliable neck sherd comparisons can be made with the earlier Porteous village. It is to be noted, however, that the techniques of Suture and Dentate stamp are present at Porteous (Noble and Kenyon, 1972:Table 16), and continue in minor frequencies at Van Besien. The decorated category at Van Besien actually includes seven specific techniques of which incising predominates (Table 11).

TABLE 11
DECORATED VAN BESIEN NECK SHERDS

Technique	f	%
Incised	546	69.6
Linear stamp	173	22.0
Corded stick	28	3.6
Punctate	19	2.4
Dentate stamp	13	1.7
Suture stamp	3	.4
Fingernail	2	.3
Totals	784	100.0

From the Van Besien neck sherd analysis, mention can also be made of two mending holes, both conically drilled from the exterior. One hole, 5 mm. wide, occurs on a plain neck (Figure 22,12), while a smoothed-over-cord example has a mending hole 7 mm. wide. A single painted neck in the Van Besien sample has a red ochre wash (slip).

Body Sherds

Analyzed for Van Besien are 4,019 body sherds and 16 basal sherds; all sherds are grit tempered. In only one instance did a coil break occur, thereby indicating that the paddle and anvil technique of pot construction was overwhelmingly preferred by the Van Besien potters. Body sherd colours range from white through grey, buff, black and red.

Decorative Techniques. The body sherd decorative techniques from Van Besien are compared in Table 12 with those from Porteous (Noble and Kenyon, 1972) and four other Glen Meyer villages (Wright, 1966:143). The most probable seriation again places Goessens close to but slightly later than Van Besien. Small samples from Stafford, Woodsmen and Smale leave room for future revisions. Of all the decorative techniques, Smoothed-over-cord seemingly has the most consistent trend, increasing in its frequency from early to late. Plain body sherds are most prevalent in the early part of the Glen Meyer sequence, and the minor decorative techniques of Cord Stick, Corded Punctate and Incised all but die out by Van Besien times. Ribbed Paddle, a major late Pickering treatment (Wright, 1966:146) definitely is minor on Glen Meyer body sherds.

TABLE 12

GLEN MEYER BODY SHERD TREATMENT

	Porteous		Van Besien		Goessens		Stafford		Woodsman		Smale	
	f	%	f	%	f	%	f	%	f	%	f	%
Plain	274	(30.0)	1313	(32.6)	189	(10.0)	113	(16.0)	35	(8.0)	32	(11.0)
Smoothed-over-cord	232	(25.3)	1171	(29.1)	681	(38.0)	237	(34.0)	206	(46.0)	163	(56.0)
Cord malleated	194	(21.2)	888	(22.0)	129		(7.0)	38	14	(3.0)	15	(5.0)
							(5.0)					
Fabric impressed	12	(1.3)	480	(12.0)	244		(14.0)	22	131	(29.0)	48	(16.0)
							(3.0)					
Cord stick	101	(11.0)	22	(.5)	0		0		0		0	
Incised	65	(7.1)	33	(.8)	0		0		0		3	(1.0)
Cord punctate	38	(4.1)	9	(.2)	0		0		0		0	
Scarified	0		70	(1.7)	518	(29.0)	191	(27.0)	51	(11.0)	32	(11.0)
Scarified-over-cord	0		3	(.07)	41		(2.0)	35	9	(2.0)	0	
							(5.0)					
Ribbed paddle	0		30	(.7)	5		(.3)	64	0		0	
							(9.0)					
Totals	916	(100.)	401	(99.7)	1807	(100.)	700	(99.0)	44	(99.0)	293	(100.)

It is to be noted that the Porteous body sherd analysis presented in Table 12 has been slightly altered from Noble and Kenyon (1972), for it is now apparent that the decorative techniques of Interrupted Linear, Linear Stamp, Suture Stamp and Dentate Stamp in the initial Porteous analysis relate to neck sherd treatments. Also, Fabric Impressed sherds were not separated from those of Cord malleated in the 1972 analysis, but have been differentiated here. Because of the high 68.7 per cent incidence of Smoothed-over-cord body sherds at King's Forest Park (Fox, 1967) (398 of 579 analyzable specimens), it is believed that this Glen Meyer site in Hamilton falls late in the sequence.

Thickness. Thickness of Glen Meyer body sherds was believed by Wright (1966:29) to have seriation significance, and in a general sense there is a trend through time towards thicker manufacture as indicated by mean measurements in Table 13. The figures for Woodsmen are definitely anomalous, probably because of low sample size (446 specimens).

TABLE 13
GLEN MEYER BODY SHERD THICKNESS

Porteous VanBesien Goessens Stafford Woodsmen Smale

Thickness (mm.)	Porteous	VanBesien	Goessens	Stafford	Woodsmen	Smale
Range	3-17	3-19	3-16	4-14	3-15	4-16
Mean	6.7	6.7	7.1	8.0	6.1	8.0

Basal Sherds. A total of 16 basal sherds represented in the Van Besien sample are all grit tempered and conoidal in shape. Thicknesses range between 8-23 mm. with a mean of 11.1 mm.

Juvenile Ceramics. Small and generally crudely fashioned, there are 58 portions of 57 discrete juvenile pots. Two pots, virtually complete, help illustrate two basic shapes—conoidal and flat-bottomed. The first complete vessel (Figure 23,8), with a conoidal base, has a well developed shoulder, and decorated neck-rim exterior. From Pit 82 of House 1, this miniature measures 53 mm. high by 50 mm. in maximum width. The rim orifice, 46 mm. wide, has a 6 mm. thick lip. Two lines of shallow punctations on the shoulder lead to horizontally incised neck lines and a chevron incised rim.

A second near-complete vessel (Figure 23,10), from Pit 150 of House 1, has a flat bottom leading to straight sides over its 51 mm. height. Measuring 45 mm. wide, this scarified pot has a 46 mm. wide rim orifice and 5 mm. thick lip.

Exterior decorations on the juvenile vessels include plain, corded, smoothed-over-cord, and incised designs. Eight measurable basal sections range between 7-11 mm. thick with a mean of 9.1 mm.

Clay Spoon or Miniature Bowl (Figure 23,6). This rather unique item from the Area E midden resembles a small spoon, or conceivably a replica of a larger bark bowl. Measuring 46 mm. long by 30 mm. wide, the specimen is 17 mm. deep and has 3 mm. thick sides. Grit temper occurs in the fired clay, and juvenile finger impressions attest to and provide yet another example of some Van Besien youngster's ceramic abilities.

Gaming Items. Two presumed gaming items include a single round fired clay ball, 10 mm. in diameter, resembling a marble (Figure 23,3). Too, a single flat small circular disc of fired clay

provides an early replica of what is probably a gambling disc (Figure 23,2). From Pit 115 of House 1, this specimen measures 20 mm. wide by 4 mm. thick.

Clay Bead or Pendant (Figure 23,1). Oval in shape, this perforated clay disc is 21 mm. by 16 mm. wide and 8 mm. thick. With its 5 mm. wide perforation, this item possibly served as a pendant or bead.

Pointed Clay Item (Figure 23,4). Well smoothed and sharply tapered, this 34 mm. long item may represent a clay projectile point or a juvenile attempt at a pipe stem.

Clay Wastage. There are 22 lumps of fired clay wastage from Van Besien; all are twisted or otherwise kneaded into contorted shapes.

Pipes

Pipes are not unexpected in the Van Besien assemblage, for they occur in the earlier Porteous (Noble and Kenyon, 1972) and Princess Point periods. Indeed, the relatively high frequency of pipes at Van Besien implies that these people were very accustomed to smoking tobacco or some other substitute. Of 30 different bowls or fragments, all are of fired clay with fine grit temper except for one bluish-black steatite specimen (Figure 24,1). Two complete pipes recovered include an obtuse angled specimen from Pit 109 of House 1 (Figure 24,4) and a juvenile or miniature specimen from the Area E midden. In addition to the bowls there are 25 portions of pipe stems and mouth pieces. Effigy pipes are absent from Van Besien, and appear only rarely in late Glen Meyer (Fox, 1967:21).

Bowls. The Van Besien pipe bowls are analyzed according to shape, decoration, stem-bowl angle, and three measurements each. Bowl shapes and decorative techniques are tabulated in Table 14, where the plain barrel form predominates.

TABLE 14

VAN BESIEN PIPE BOWLS

	Barrel	Vasiform	Totals
Plain	20	1	21
Punctate	5	1	6
Corded	1	0	1
Incised	1	0	1
Scarified	1	0	1
Totals	28	2	30

Seven Van Besien pipe specimens can be measured for stem-bowl angle; 5 meet at a 90° angle, while 2 obtuse angled pipes measure 107° and 110° . Table 15 summarizes three additional pipe bowl measurements. Bowl heights are measured from extreme base to lip.

TABLE 15
PIPE BOWL MEASUREMENTS

	Diameter (mm.)	Height (mm.)	Lip Thickness (mm.)
Fired Clay Pipes			
Range	19-26	42-57	3-6
Mean	24.4	47.6	4.6
Miniature Clay Pipe	17	20	4
Catlinite Pipe	22	—	3

Stems and Mouthpieces. All 25 pipe stems are plain and mouthpieces straight. Eighteen smooth stick stem holes prevail over two twisted reed examples and five indeterminate specimens. The range in stem hole diameters falls between 2-5 mm. with a mean of 3.4 mm. Stem shapes include eight dorsally flattened, six round, and eleven undetermined, while the diameters have a range of 12-26 mm. with 19.5 mm. mean.

LITHICS

As at other Glen Meyer sites, lithics constitute a large proportion of the Van Besien assemblage (28%). Clearly, the lithic industry is strong, and although the 3,592 flakes skew the sample, the worked categories are nonetheless representative. Previous work undertaken at the Princess Point and Porteous sites (Noble and Kenyon, 1972) indicates that heavy lithic detritus can be typically expected throughout Glen Meyer development.

At Van Besien, the most common chert utilized is the grey Bois Blanc type, with some of the lustrous black Bois Blanc variety also showing up. Much rarer are nineteen pieces of opaque Ohio derived chert, as well as a single core of white quartz. Slate, black gabbro and brown sandstones have also been utilized.

Table 16 presents a breakdown of the lithics recovered at Van Besien.

TABLE 16
VAN BESIEEN LITHICS

Item	f	%
Flakes	3592	79.5
Scrapers	482	10.7
Cores	233	5.2
Projectiles	77	1.7
Bifaces	42	.9
Celts	21	.5
Whetstones	15	.3
Bipolar pieces	15	.3
Drills	13	.28
Worked slate	12	.26
Anvils	4	.08
Hammerstones	3	.06
Gravers	3	.06
Pestles	2	.04
Paintstones	2	.04
Netsinker	1	.02
Totals	4517	99.9

Projectile Points

Seventy-seven analyzable projectile points from Van Besien are attributable to the Glen Meyer period. All are unground, and clearly the 63 triangular forms predominate over the rarer side-notched (9), stemmed (2) and corner-notched (1) varieties. As indicated in Table 17, the frequencies of stemmed and corner-notched types decline appreciably from Porteous to Van Besien times.

TABLE 17
VAN BESIEN AND PORTEOUS PROJECTILES

Type	Porteous		Van Besien	
	f	%	f	%
Triangular	21	(70.0)	6	(84.4)
Side-notched	4	(13.3)	9	(11.6)
Stemmed	4	(13.3)	2	(2.6)
Corner-notched	1	(3.3)	1	(1.3)
Totals	30	(99.9)	7	(99.9)

In Table 18, form and metric data for all of the triangular projectile points from Van Besien are compared with that from three other analyzed Glen Meyer villages (Wright, 1966:144; Noble and Kenyon, 1972). The following seriation from early to late emerges: Porteous, Van Besien, Goessens and Stafford. Mean lengths of triangular points increase through time, as do mean thicknesses and weights. Variations are noted in widths, and concave-based specimens have a slight predominance over straight-based forms after Porteous times.

TABLE 18
GLEN MEYER TRIANGULAR PROJECTILE POINTS

	Porteous	VanBesien	Goessens	Stafford
	f(14)	f(65)	f(40)	f(11)
Straight base	9	30	16	5
Concave base	5	35	19	5
Convex base	0	0	5	1
	f(8)	f(28)	f(17)	f(5)
Length range (mm.)	24-40	21-59	21-59	27-45
Length mean (mm.)	31	35.4	38	29.4

Table 18 (Continued)

	f (14)	f (61)	f (37)	f (11)
Width range (mm.)	13-27	13-36	14-36	14-32
Width mean (mm.)	19.6	24.8	22.5	23.6
<hr/>				
	f (14)	f (65)	f (40)	f (11)
Thickness range (mm.)	3-8	3-7	3-11	4-10
Thickness mean (mm.)	4.6	4.8	5.6	7.4
<hr/>				
	f (5)	f (23)		
Weight range (gm.)	1.1-3.5	1.4-8.1	-	-
Weight mean (gm.)	2.4	3.6	-	-
<hr/>				

Further breakdown of the triangular points from Van Besien leads to the establishment of a new type. Sufficiently distinctive and specialized, this is a spurred variety of triangular projectile, here named Glen Meyer Spurred. These points are not as long as the conventional concave or straight-based Levannas (Ritchie, 1961), although widths are not noticeably different. In weight, however, the Glen Meyer Spurred type is noticeably lighter than the other triangular forms, despite the fact that they are slightly thicker (Table 19). Spurs are usually 2 mm. long. The Glen Meyer Spurred type is known to occur at Porteous (Noble and Kenyon, 1971:Figure 5,2) and at other later Glen Meyer villages.

TABLE 19
VAN BESIEN TRIANGULAR POINT TYPES

	Str. Based Levannas	Concave Levannas	Glen Meyer Spurred
Length range (mm.)	26-56	21-59	25-36
Length mean (mm.)	36.4	36.1	30.7
Width range (mm.)	13-34	18-33	24-36
Width mean (mm.)	21.6	26.2	26.4
Thickness range (mm.)	3-8	4-7	4-7
Thickness mean (mm.)	4.5	4.7	5.0
Weight range (gm.)	1.4-7.7	1.5-8.1	1.8-3.1
Weight mean (gm.)	3.8	3.7	2.8
Total specimens	30	26	9

Side-notched projectiles are the next most common variety at Van Besien. Metric data for nine specimens follow in Table 20.

TABLE 20

VAN BESIEN SIDE-NOTCHED POINTS

	Length (mm.)	Width (mm.)	Thickness (mm.)	Notch Width (mm.)	Weight (gm.)
	40	21	7	4	4.7
	23	14	4	4	1.5
	27	16	3	5	1.6
	36+	21	4	5	-
	35+	20	6	5	-
	23+	19	5	6	-
	32+	16	5	5	-
	20+	15	5	-	-
	32	-	5	5	-
Range	23-40	14-21	3-7	4-6	1.5-4.7
Mean	30.5	17.7	5.4	4.8	2.6

Of stemmed and corner-notched varieties, metric data are presented in Table 21.

TABLE 21

VAN BESIEN STEMMED AND CORNER-NOTCHED POINTS

Body Length (mm.)	Body Width (mm.)	Thick- ness (mm.)	Weight (gm.)	Stem Length (mm.)	Stem Width (mm.)	Notch Width (mm.)
30	21	5	3.5	9	8	0
27	19	4	-	-	-	0
32	28	5	3.6	0	14	8

Other Projectiles at Van Besien

Mention also can be made of two Archaic periods represented at Van Besien. First is a very early Archaic manifestation in the form of a single LeCroy bifurcate stemmed point (Figure 7,13) from the surface of Area D. Similar examples of this type occur in various collections from the region north of Lake Erie to Hamilton, and specimens of this type are dated between 5100-6920 B.C. from Level 8 of the Sheeprock Shelter in Pennsylvania (Bebrich and Willey, 1968:58), while farther to the east Ritchie and Funk (1971) have specimens dating between 5310-7410 B.C. from Staten Island. The Van Besien specimen and others like it from southwestern Ontario probably date between 5-6000 B.C.

Three other Archaic projectiles from the surface of Van Besien resemble versions of Ritchie's (1961:16) Brewerton corner-notched type. As such, they indicate another later Archaic occupation at Van Besien ca. 2000-1500 B.C. (Figure 7,14-16).

TABLE 22

GLEN MEYER SCRAPER VARIETIES

	Porteous		Van Besien		Goessens		Stafford		Smale	
	f	%	f	%	f	%	f	%	f	%
Irregular flake (Random)	63	(45.0)	315	(65.3)	29	(49.0)	22	(59.0)	6	(55.0)
G.M. Stemmed snubnose	24	(17.1)	80	(16.6)	15	(25.0)	5	(14.0)	2	(18.0)
Flake Side-scraper	23	(16.4)	44	(9.1)	-		-		-	
Small oval	9	(6.4)	7	(1.5)	-		-		-	
Pointed flake	9	(6.4)	9	(1.9)	-		-		-	
Thumbnail	7	(5.0)	12	(2.5)	1	(2.0)	4	(11.0)	1	(9.0)
Bifacial	5	(3.5)	6	(1.2)	3	(5.0)	0		1	(9.0)
Side-notched	0		4	(.8)	1	(2.0)	0		0	
Spokeshave	0		5	(1.0)	10	(17.0)	6	(16.0)	1	(9.0)
Totals	140	(99.8)	482	(99.9)	59	(100.0)	37	(100.0)	11	(100.0)

Scrapers

As at Porteous (Noble and Kenyon, 1972:20), scrapers are the second most common lithic items recovered from Van Besien, and, as Wright (1966:35) notes, the irregular (random) flake scraper dominates the scraper category throughout the Glen Meyer sequence. Such is clearly indicated in Table 22.

Wright's (1966:34) typical Glen Meyer end scraper, herein termed Glen Meyer stemmed snubnose, is also an important scraper variety at Van Besien. Indeed, this scraper type follows a noticeable temporal trend with its increase in size from Porteous to Goessens times (Table 23) (Wright, 1966:34; Noble and Kenyon, 1972:29).

TABLE 23
GLEN MEYER STEMMED SNUBNOSE SCRAPER SERIATION

		Porteous	VanBesien	Goessens
Length (mm.)	range	18-42	19-56	29-80
	mean	28.2	33.6	46.3
Width (mm.)	range	11-27	15-31	19-36
	mean	18.5	20.9	26.9
Thickness (mm.)	range	5-11	4-15	10-22
	mean	8.2	7.9	13.6
Weight (gm.)	range	2.6-14.4	2.1-29	-
	mean	5.5	6.7	-
Bit angle (°)	range	58-73	45-85	-
	mean	64.1	65.2	-

The distal edge-angles of the Van Besien snubnose specimens have a wide range (45° - 85°), and if Wilmsen's (1968:156-157) correlations are correct, those between 66° - 75° would have been useful for skin softening, heavy shredding, bone working and wood working. Edge-angled specimens between 46° - 55° could have functioned in skinning and hide scraping tasks, shredding sinew or plant fibres, or in heavy duty cutting of bone. It seems probable that the predominance of the 60° - 70° cutting edges of the Van Besien examples served primarily as finishing tools for hides. Presumably, the stemming is a hafting device.

Distributionally, 217 or 45 per cent of the 315 total scrapers occurred as surface finds at Van Besien. Area C midden produced 102 (21.2%), Area A, 59 (12.2%), Area E, 39 (8.1%), Area D, 38 (7.9%), and Area B, 27 (5.6%). Certainly, the irregular flake scraper is the most common type found within house pits (Table 24), while side-scrapers (Figure 9,16-20, 25) possessing a working edge(s) parallel to the longitudinal axes and the "thumbnail" end-scrapers, being wider than they are long, are markedly rarer. Only one side-notched specimen comes from a house pit; all others are surface finds.

TABLE 24

VAN BESIEN SCRAPERS AND PIT CORRELATIONS

Pit	G.Meyer				Side Notched
	Irregular (random)	Stemmed Snubnose	Flake Side-scr.	Thumbnail	
South of	65	2	0	0	0
House 1	66	2	2	0	0
	67	0	2	0	0
House 1	82	0	0	1	0
	84	2	0	0	0
	88	1	1	0	0
	109	1	0	1	0
	124	1	0	0	0
	127	1	0	0	0
	128	2	0	0	0
	130	1	0	0	0
	133	2	0	0	0
	138	0	1	0	0
	139	1	0	0	0
	155	0	0	0	1
	156	1	0	0	0
	158	1	0	0	0
	175	2	0	0	0
	185	0	0	0	1
	199	1	0	0	0
	200	2	0	1	0
	201	0	0	0	1
	223	1	0	0	0
House 3	97	1	0	0	0
	100	1	0	0	0

The side-notched scraper type is rare on Glen Meyer villages (Table 22), and of the four found at Van Besien, lengths range between 23-38 mm. (29.5 mm. mean), by 19-30 mm. wide (25 mm. mean), by 6-8 mm. thick (6.7 mm. mean). Their weights measure 2.5-9.9 gm. (6.1 gm. mean), the distal edge-angles 60°-68° (64.5° mean), and their notch widths vary from 8-13 mm. with a mean of 9.5 mm. It is of interest to point out that the Van Besien side-notched scrapers are all of the snubnose variety (Figure 9,8).

Other minor forms of scrapers at Van Besien include the pointed flake (Figure 9,23-24), small oval, bifacial and spokeshave types.

Drills. Thirteen Van Besien drills include all six known Glen Meyer forms. Most common are the rectangular (winged) type followed by the bulbous, triangular and simple forms. One irregular drill from Porteous (Noble and Kenyon, 1972:21; Figure 5,11) is a "simple" type in Wright's (1966:35) terminology. Table 25 lists and compares the Van Besien drills with those from four other Glen Meyer sites. Small sample sizes preclude any definition of trends.

TABLE 25

GLEN MEYER DRILLS

Type	Porteous	VanBesien	Goessens	Stafford	Smale
Rectangular (winged)	6	4	1	0	0
Bulbous	0	3	3	1	1
Triangular	0	3	2	0	0
Irregular flake	0	3	0	0	1
Simple	1	2	1	2	0
T-shaped	2	1	0	0	0
Totals	9	16	7	3	2

Gravers. Three gravers occur in the assemblage, each exhibiting a single graving prong. Gravers appear to be a minor lithic item on middle to late Glen Meyer sites; five were recovered from Porteous (Noble and Kenyon, 1972:21).

Bipolar Pieces. Bipolar pieces (Figure 9,26-27), some of which probably served as wedges, are an expected item in Glen Meyer lithic assemblages (see Noble and Kenyon, 1972:20). Fifteen occur at Van Besien, ranging in size between 21-35 mm. long (27.5 mm. mean), by 11-23 mm. wide (17.6 mm. mean), and 5-17 mm. thick (8 mm. mean). On a distributional basis, six occurred as surface finds, six came from the Area C midden, two came from the Area A midden, and a single specimen was recovered from Pit 67, south of House 1.

Bifaces. Forty-two bifaces and portions from Van Besien occur in four basic shapes: triangular (19), ovate (13), linear (7) and large pentagonal (3). The latter exhibit assymmetrical-rectangular bases, 42-47 mm. wide, converging to a distal point. Lengths measure 50-59 mm. and thicknesses are consistently 7-8 mm. Presumably, all biface forms served as knives.

Lithic Celts. Of 21 complete and fragmentary celts, both adzes and axes are represented. Three complete axes measure between 71-161 mm. long (116.6 mm. mean) by 40-62 mm. wide (52.3 mm. mean) by 15-58 mm. thick (34.3 mm. mean). Compared with the five Porteous axes (Noble and Kenyon, 1972:21), the Van Besien specimens are larger. The two complete adzes from Van Besien range between 123-130 mm. long (126.5 mm. mean) by 54-62 mm. wide (58 mm. mean) by 27-44 mm. thick (35.5 mm. mean). The illustrated adze (Figure 10,8) comes from the interior southwest corner of House 1.

Pestles. Two circular pestles within the lithic assemblage include a small specimen 42 mm. long by 23 mm. wide, and a larger one (Figure 10,6), measuring 120 mm. long by 51 mm. wide. Distal crushing scars attest to the pestle usage of these specimens. One bipolar pestle is known from Porteous (Noble and Kenyon, 1972:21).

Anvil Stones (Figure 10,7). Four bi-pitted anvil stones are all circular to oval in form. They

conform to those described from other Glen Meyer sites (Wright, 1966:37; Noble and Kenyon, 1972:21).

Hammerstones (Figure 10,5). The three circular hammerstones from Van Besien all exhibit hammering facets around their outside edges. Wright (1966:37) describes similar specimens from the Goessens, Stafford and Smale sites.

Whetstones. Of the 15 whetstones or abraders recovered, 3 are fashioned from dolomite with the remainder being silty sandstone. That they are common on Glen Meyer sites is known from their occurrence at Porteous (Noble and Kenyon, 1972:21), and the 24 and 32 specimens respectively from Goessens and Stafford (Wright, 1966:36-37).

Notched Net Sinker (Figure 10,4). A single flat cobble net sinker comes from Pit 97 of House 3. Unifacially notched on opposing edges, this item attests to netting techniques in taking fish.

Worked Slate. Twelve pieces of worked black slate occur in the Van Besien assemblage, of which only two are bifacially chipped; the remainder have been ground. Eight flakes with ground edges are complemented by two finished items. The first, a decoratively incised fleshing implement (Figure 10,1), has been bilaterally bevelled to form a symmetrical cutting edge around at least two of its margins. A second finished item (Figure 10,2) also exhibits surface incisions, but in random fashion, and has been highly ground around its perimeters. No known function is attributed to this second finished slate item. Slate specimens are also reported for the Porteous (Noble and Kenyon, 1972:22), Goessens and Stafford Glen Meyer villages (Wright, 1966:37).

Paint Stones. One red ochre nodule and a scored maroon fine-grained sandstone tablet (Figure 10,3) probably provided powders for red paints. Such stones and paint evidence are similarly known from Porteous, Goessens, Woodsmen and Stafford (Noble and Kenyon, 1972:22; Wright, 1966:37).

Cores. Of the total 233 cores and fragments at Van Besien, all but seven are of a rough or random form; this feature is consistent with the high percentage of irregular (random) flakes detached. Seven core tablets exhibit flake flutes 2-8 mm. wide, but none is prepared in any manner, nor is there a specimen as classic as that illustrated from Porteous (Noble and Kenyon, 1972:34, Figure 6,16). Four of the seven core tablets derive from Pits 8, 51, 124 and 185, the latter two of which are within House 1. Two others are surface finds, while yet another comes from Square 15 of midden B.

Overall, only thirteen rough cores are from pits, mostly within the peripheral interior of House 1. A single specimen derives from Pit 6 south of House 1 as does one from Pit 67. From the southeast side of House 1, two rough cores were found in Pit 81, one from Pit 88 and three from Pit 90. Too, a single specimen comes from Pit 108 on the east side, while Pit 150 on the west side of the house yielded a single core. One specimen only is represented from House 3 (Pit 97).

Flakes. A total 3,591 chert flakes from Van Besien are analyzed according to material, shape and place of detachment. Except for sixteen irregular flakes of opaque Ohio chert, all others are derived from the grey Bois Blanc (Onondaga) type, and more rarely the lustrous black variety of Bois Blanc chert. Table 26 clearly indicates that irregular-shaped flakes predominate (69.5%), while expanding flakes with well pronounced percussion bulbs rank second in frequency (17.8%).

TABLE 26
COMPARATIVE LITHIC FLAKES

	Porteous		Van Besien	
	f	%	f	%
Irregular	1303	(85.1)	249	(69.5)
Expanding	125	(7.5)	640	(17.8)
Decortication	30	(1.9)	276	(7.7)
Utilized	33	(2.1)	123	(3.4)
Linear	41	(2.6)	57	(1.6)
Totals	1532	(99.2)	3592	(100.0)

Seemingly, linear flake production falls off through time and mean flake widths increase in size. The forty Van Besien linear flakes (Figure 9,28-29), 11 mm. wide or less range between 5-11 mm. with a mean of 8.7 mm. This contrasts with a 5.1 mm. mean from Porteous (Noble and Kenyon, 1972:22). The seventeen linear flakes over 11 mm. wide from Van Besien range between 12-16 mm. with a mean of 13.1 mm. Since 11 mm. is generally considered the maximum width for microblades, but evidence for true prepared microblade cores is lacking from Van Besien, both sizes of linear flakes are simply classified as blade-like. Of the 123 utilized flakes in the Van Besien sample, only 12 occur as linear flake products.

WORKED BONE, ANTLER AND TEETH

Worked bone assemblages are not well known for Glen Meyer sites, and, thus, the 186 items in the Van Besien sample provide an important baseline for definition. In all, worked bone is not a dominant Glen Meyer feature; too, utilization of antler appears to be equally common.

TABLE 27

VAN BESIEN WORKED BONE, ANTLER AND TEETH

Item	No .	%
Cut antlers	52	28.0
Bone awls	46	24.7
Worked rodent incisors	28	15.0
Conical antler points	15	8.1
Worked deer phalanges	7	3.8
Bone beads	4	2.2
Bone brads	3	1.6
Beamers	3	1.6
Bone punches	2	1.0
Drilled turtle bones	2	1.0
Antler flaker	1	.5
Whistle	1	.5
Decorated bone	1	.5
Miscellaneous bone	21	11.3
Totals	186	99.8

Cut Antlers (Figure 11,20). Cut or modified antler is very common at Van Besien with 50 of 52 pieces retaining their rounded tine shape. Two longitudinally-split tine portions are a decided minority.

Conical Antler Points (Figure 11,2-5, 21). Not previously considered definitive for Glen Meyer sites are fifteen conical antler points from Van Besien. All have a typical socketted head, usually accompanied by surrounding proximal spurs. These projectiles appear in both short and long lengths, a feature probably associated with different projectile and spearing functions. The short variety (Figure 11,2-5) range between 42-60 mm. long with a mean of 50 mm., while the longer type range between 97-140 mm. with a 118.5 mm. mean. The long specimen illustrated (Figure 11,21) comes from Pit 123 of House 1; this specimen also exhibits an unique 22 m. long lateral slot along one side. Wright (1966:38; Plate XIV, Figure 10) describes a single short specimen from the Goessens site.

Antler Flaker (Figure 11,14). From Pit 150 of House 1 is a 100 mm. long antler flaking punch. It is rounded at both ends.

Bone Awls (Figure 11,10-12, 16-19). Of 46 awls in the Van Besien assemblage, 30 are derived from splinters. Nineteen complete specimens range between 55-126 mm. long with a mean of 84 mm. Such awls are duplicated at the Goessens site (Wright, 1966:Plate XIV). Only two awls come from Van Besien house pits, those being Pits 175 and 176 of House 1.

Worked Deer Phalanges. Seven deer phalanges show workmanship in the Van Besien sample. Of two proximal phalanges, one resembles a toggle (Figure 11,9), while the other is of the "cup-and-pin" variety. The remaining five terminal phalanges all exhibit centrally drilled holes through the proximal ends.

Bone Beads (Figure 11,7). Of four bone beads, three are fashioned from avian leg bones, and one from mammalian bone. Cut and polished, the beads measure 22, 28, 41 and 54 mm. long. Bone beads are also known from the Goessens and Woodsmen sites (Wright, 1966:Plate XIV).

Bone Brads. Three bone brads at Van Besien resemble small spatulates. Measuring 4-5 cm. thick, each is flattened dorsally and ventrally, and the one complete specimen illustrated (Figure 11,13) measures 55 mm. long.

Bone Beamers (Figure 11,15). Illustrated is the smallest of three beaming fleshing tools; it is fashioned from a raccoon fibula. Another beamer made from a split deer metapodial is complemented by yet a third made from a deer scapula. Beamers have not been reported previously from Glen Meyer sites.

Bone Punches. Two bone punches at Van Besien measure 117 and 169 mm. respectively. Each exhibits longitudinal use-wear striations at their tips.

Whistle (Figure 11,1). Fashioned from the femur of a sandhill crane, this single-hole whistle from Square A-3 provides an interesting sidelight into the leisure activity of at least one Van Besien villager.

Decorated Bone (Figure 11,6). Functionally difficult to interpret is a notched, incised and polished piece of rib from Van Besien. Having a small polished nipple at its tapered end, this item is only decorated on the dorsal surface, where incised lines border and traverse it. The lateral margins of the bone are also embellished with a series of closely-spaced notches.

Drilled Turtle Bones. Two worked turtle bones include a drilled carapace of Blanding's turtle, which has a 4 mm. wide exterior perforation, while the other is a 3 mm. perforated Painted turtle plastron. Presumably, both specimens are rattle portions.

Worked Rodent Incisors (Figure 11,8). Eighteen worked beaver incisors and ten porcupine incisors probably are woodworking chisels.

Miscellaneous Worked Bone. There are a total of 21 miscellaneous worked bone fragments in the Van Besien assemblage, each exhibiting cut marks of no known intent.

WORKED SHELL

Three specimens of the water snail *Pleurocera subulare* are perforated (Figure 12,2). As Wintenberg (1908:48, 66) once believed, they presumably served as ornamental beads. An additional fresh-water bivalve piece (*Unio sp.*) exhibits marked grinding along its normally sharp exterior edge. Conceivably, this specimen served as a spoon or a soft substance scraper for wet clay or unrendered fat.

NATIVE COPPER

No native copper items are known from the McMaster excavations at Van Besien, but reputedly a local collector from the nearby town of Scotland has a single native copper awl or punch from the vicinity of the Area A midden. Wright (1966:39) describes a single native copper bead or pendant from the Stafford site in Elgin County, while Fox (1972:23) mentions two native copper rolled beads from the DeWaele village.

FAUNAL REMAINS

Van Besien has yielded one of the best Glen Meyer faunal samples to date. In part this is due to the excellent state of preservation at the site where the dry alkaline Norfolk sandy soils have a decided non-erosive quality. Too, a low degree of fragmentation and productive sampling techniques have contributed towards the excellent state of the sample. It is certainly much more extensive and representative than that for the Goessens (Wright, 1966:39) or Porteous villages (Burns, 1972).

Of a total 4,891 faunal items examined by faunal analyst Mr. James Burns (1973), he is able to specifically analyze 3,108. In the following I have excerpted and condensed various

portions of Mr. Burns' report, and expanded the analysis by including my own analysis of 73 molluscs. A total of 3,181 items are identified beyond simple class recognition (64.0% of the total 4,964 items).

Table 28 presents an overall tabulation of the vertebrate and invertebrate classes in the Van Besien subsistence economy. Clearly, mammalian remains predominate. Two domestic pig bones and six human portions have been deleted from Mr. Burns' faunal tabulations. The pig bones are obviously intrusive, and the human items are described elsewhere.

TABLE 28

VERTEBRATE AND INVERTEBRATE CLASSES AT VAN BESIEN

Class	No. of Remains	%	No. of Individuals	%
Mammalia	4275	86.1	82	39.6
Pisces	415	8.4	26	12.6
Aves	121	2.4	18	8.7
Reptilia (Turtles)	76	1.5	6	2.9
Mollusca	73	1.4	73	35.3
Amphibia	7	.2	2	.9
Totals	4964	100.0	207	100.0

The identified Van Besien faunal assemblage (Table 29) clearly indicates that these people had a diffuse subsistence economy of a year-round nature. No less than 58 different species are represented, some of which are currently extinct in the area (e.g., elk, black bear, wild turkey, passenger pigeon). Clearly apparent too is the fact that of mammals, white-tailed deer formed the dominant species taken (48.2%). Burns (1973:2) estimates that the 25 individual deer identified yielded over a ton of meat.

TABLE 29
ANALYSED VAN BESIEN FAUNA

Fauna	No. of Remains	%	No. of Individuals
Mammals			
Whitetailed deer	2059	48.2	25
Dog	255	6.0	5
Beaver	163	3.8	12
Woodchuck	114	2.7	10
Grey squirrel	63	1.6	6
Eastern cottontail	27	.6	2
Raccoon	23	.5	2
Black bear	22	.5	1
Porcupine	10	.2	2
Eastern chipmunk	6	.1	2
Muskrat	6	.1	1
Otter	6	.1	2
Marten	5	.1	2
Snowshoe hare	3	.07	1
Wolf	3	.07	1
Red squirrel	2	.05	1
Red fox	2	.05	1
Fisher	2	.05	1
Elk	2	.05	1
Grey fox	1	.02	1
Mink	1	.02	1
Cervidae sp.	7	.2	-
Carnivora sp.	5	.1	-
Canis sp.	1	.02	-
Rodentia sp.	1	.02	-
Unidentified	1486	34.8	-
Totals	4275	99.9	82
Fish			
Sucker	71	17.1	5
Catfish	21	5.1	2
Pickeral/Sauget	20	4.8	3
Bass sp.	12	2.9	2
Whitefish	10	2.4	1
Burbot	7	1.7	1
Lake sturgeon	5	1.2	1
Yellow perch	5	1.2	1
Freshwater drum	4	1.0	1
Bowfin	4	1.0	1
Pumpkinseed	3	.7	3
Lake trout	3	.7	1
Rock bass	2	.5	2
Longnose gar	1	.2	1
Pike	1	.2	1

Table 29 (Continued,)

Fauna	No. of Remains	%	No. of Individuals
Percidae sp.	2	.5	-
Centrarchidae sp.	1	.2	-
Unidentified	243	58.6	-
Totals	415	100.0	26
Birds			
Passenger pigeon	29	24.0	3
Wild turkey	19	15.7	3
Red-shouldered hawk	5	4.1	1
Ruffed grouse	4	3.3	1
Barred owl	3	2.5	1
Common loon	1	.8	1
Canada goose	1	.8	1
Bufflehead	1	.8	1
Old squaw	1	.8	1
Hooded merganser	1	.8	1
Common merganser	1	.8	1
Sandhill crane	1	.8	1
Yellow-shafted flicker	1	.8	1
Passeriformes sp.	1	.8	1
Grouse sp.	1	.8	-
Unidentified	51	42.1	-
Totals	121	99.7	18
Turtles			
Painted	44	57.9	3
Snapping	18	23.7	1
Blanding's	8	10.5	2
Unidentified	6	7.9	-
Totals	76	100.0	6
Molluscs			
Water snails	28	38.4	28
Landsnails	23	31.5	23
Freshwater bivalves	22	30.1	22
Totals	73	100.0	73
Amph			
Frog sp.	7	100.0	2

Notes on the Fauna

While the variety of mammals from Van Besien is profuse, only a few would have provided significant input to the subsistence diet. Clearly, deer is a mainstay, and Burns (1973:7) noted that "every part of the skeleton was amply represented, indicating a close-to-home hunting territory." Only 212 of the 2,059 deer bones (10.3%) belong to immature animals, the youngest of which is estimated to be seven to nine months old, based upon attrition and tooth eruption considerations (Burns, 1973:16). By contrast, other aged deer had molars so worn down that identification of the tooth in the mandibular series was impossible. As most age classes of deer are represented, it is suggested that the Van Besien hunters did not discriminate against or conserve any particular age group. Too, it seems apparent that deer were abundant in the local region. A sizable swamp several miles upstream from Van Besien possibly provided an ideal deer-hunting habitat.

A virtually complete dog skeleton from midden Square E-12 offers information about its type, and practices accorded dogs by the Van Besien villagers. The E-12 dog shows no dismembering for eating (it was articulated in the midden), and it has no special feature associations to suggest that it was accorded a formal burial within its own pit such as occurred at the Pickering Branch Bennett site (Wright and Anderson, 1969:13). The adult Van Besien dog exhibits no pathology or signs of violent death, and, thus, probably died of old age. Lacking a splanchnic bone (baculum), it is suggested that the dog was a female, and from measurements, Burns (1973:5) estimates it resembled a small terrier. The facial index of 117, cranial index of 58, skull index of 58 and 152 mm. skull length indicate this to be a small dog by Miller *et al.* (1964:8) standards.

While fish remains constitute only 8.4 per cent of the total faunal assemblage, this could easily be an underestimation of their true value. Many fish may have been cut and dried away from the village. However, it is of interest that at least sixteen different species were taken, ranging from potential giants like the sturgeon to tiny sunfish like the pumpkinseed (Burns, 1973:8). Notably, speckled trout are absent, a native species which currently swims in nearby Big Otter Creek.

Of avian remains, fourteen families are represented, but only the two species, passenger pigeon and wild turkey, appear in quantity. Most of the pigeons are adult (Burns, 1973:13), only two being juvenile. The wild turkey bones from Van Besien are the earliest yet reported from Ontario (see Clarke, 1948, for distribution data).

Three species of molluscs include freshwater bivalves (Figure 12,1), two of which derive from Pit 73 of House 1. Gastropoda are also represented by two species, one being the water snail *Helisoma trivolvis macrostomum* (Figure 12,3). Seven of these snails were deposited in Pit 190 of House 1, while another came from Pit 84 of the same structure. All of the land snails, *Anguispira alternata* (Figure 12,4) were recovered from midden contexts. It seems reasonable to believe that most of the snails were boiled.

Faunal Pathologies

Six abnormal bones were recovered. The two bear bones were from the hind paw, one a phalanx with non-specific osteoporosis, and the other a metacarpal with a healed fracture. The pathological otter femur featured an unnatural surface where the posterior lateral sesamoid bone articulated; it was reminiscent of arthritis but the femoral condyles were not affected. Perhaps it was the result of some local trauma.

Two probably consecutive deer ribs (Pit-218, house 1) showed signs of fracture distally with no subsequent match-up of the "free" ends. Osteophytes has proliferated but healing was not well advanced.

In addition, a right mandible of a deer was noted to have lost the first tooth (2nd premolar) in the cheek series, and the alveolus was completely reabsorbed. Dentition was fully adult. (Burns, 1973:18)

Burnt Bone. Some evidence concerning food preparation is forthcoming from the Van Besien faunal analysis. Of 168 burnt pieces, two are fish vertebrae, one a bird wing phalanx, and 165 mammalian bones (Burns, 1973:17). Less than 5 per cent of the deer bones were burnt, a figure which seems low, but may indicate a preference for boiling. Elsewhere, evidence for roasting can be demonstrated through parched corn kernels.

Faunal Seasonality. The fauna from Van Besien indicate year-round occupation of the village. Strong evidence from antler, a juvenile deer mandible and certain fish species clearly indicate winter-month habitation. Within the deer antler sample, Burns (1973:19) notes that:

Three paired frontals and four single frontals (5 individuals) feature concave pedicles where antlers have parted in the natural shedding process. Additionally, seven basal antler portions feature the corresponding convexity. According to Henke (1971) we can expect antlers of white-tailed deer to be shed from mid-December into January.

Too, an immature deer mandible estimated to be between seven to nine months old helps place occupation sometime between January and March, for white-tailed deer are normally born in May or June (Peterson, 1966).

Spawning periods for fish are useful, and presumably this is the season when major fishing was pursued. To this end, it is noted in southern Ontario that Lake Trout spawn during October-November, Whitefish from November-December, and Burbot from January-March (Scott, 1967). All of the above species are represented at Van Besien, and, as Burns (1973:21) notes, that while all are generally available during ice-free months, ice-fishing may have been practised.

Spring to fall species are well represented in the Van Besien sample, and this conforms to the seasonal horticultural activities (corn raising) of the Van Besien occupants. The passenger pigeon was a spring to fall resident, and two immature pigeon bones indicate some were taken during May or June. Too, wild turkey was a year-round source except in the coldest winters (Burns, 1973:21), and most if not all of the ducks, geese and loon in the sample were probably taken during the spring to fall period. Spawning dates for other Van Besien fish include: the sturgeon, pike and pickerel in early spring; the gar, bowfin, sucker, catfish, pumpkinseed and perch in later spring; the bass and drum in May to June. Also, it is to be noted that turtles, snails and frogs are usually available only from spring to fall. Appendix B, compiled by Mr. Burns, outlines further specific habitat, distribution, and seasonal data for the Van Besien birds and fish.

CULTIGENS

At Van Besien, 25 floral items come from midden and house pit contexts. Notable, all are charred, thereby testifying indirectly to the traditional Iroquois cooking technique of parching.

Twenty of the 25 cultigen items are corn kernels. By measurement, the kernels are

determined to be derived from eight-row cobs of which there were at least five cobs ascertained from five discrete provenience finds. Eight-row corn is expected at Van Besien for it probably is the type represented at Porteous (Cutler and Blake, 1973:74) and the earlier Princess Point type site. Eight-row corn is very common on post-1000 A.D. Ontario Iroquois sites, with the ten-row variety being somewhat rarer (Noble, 1968:297). Charred corn kernels also occur at the Glen Meyer villages of Goessens and Stafford (Wright, 1966:39).

Two wild plum pits (Figure 12,5), one wild cherry pit (Figure 12,6) and a single hazelnut (Figure 12,8) all derive from midden Square C-5, directly south of the excavated longhouses. This occurrence of wild plum and wild cherry is 500 years earlier than their previously-known 1400 A.D. appearance in the Ontario Iroquois tradition (Noble, 1968:280). Too, a single charred walnut (Figure 12,7) from Pit 59 completes the cultigen inventory. Pit flotation did not reveal raspberry or grape seeds, and the major post-1300 A.D. cultigens of beans, squash and sunflower seeds are absent as expected (see Noble, 1968:280).

HUMAN REMAINS

At Van Besien, ten portions of human bone are identified, and notable is the fact that nine come from definite refuse contexts. In Area D, a broken distal end of an adult's left femur occurred in the topsoil between the eastern wall of House 2 and the nearby inner line of palisade. From Pit 127 of House 1 in Area D, two further human bones were recovered, probably belonging to the same individual. They include a centrum and a neural arch of a thoracic vertebra or vertebrae, attributable to a young adult. The midden Squares 9, 10 and 16 of Area B produced five additional human bones. Two from B-9 are identified as a lunate bone from the left wrist, and a proximal foot phalanx which is evenly charred black. In the adjacent square, B-10, a scaphoid bone was recovered also of the left wrist, while the adjacent Square B-16 yielded a metacarpal of the left thumb. Conceivably, all of these hand portions belonged to a single individual, and they became separated when scattered in the midden. Three additional pieces of human bone occurred within the Area A midden, and were donated by Mr. Russell King. They include an adult lumbar vertebra, number 4 or 5 in the vertebral column, as well as two portions of human crania.

None of the Van Besien human bones comes from true burial contexts. They are all obvious refuse rejects, and as such this evidence suggests cannibalistic practices of the nature reported for later period Ontario Iroquois villages. The single *charred toe* phalanx from midden Square B-9 reinforces this interpretation. That cannibalism may have a very early incidence in Glen Meyer development is possibly indicated by the single small piece of human cranium found at Porteous (Noble and Kenyon, 1972:29).

RADIOCARBON DATING

Three radiocarbon dates determined from charcoal samples place the occupation of Van Besien within the first half of the tenth century A.D., or slightly over a thousand years ago. A first return registering 945 A.D.±90 (I-6167) comes from the bottom of a 27-inch depression within midden Square B-15 on the western perimeter of the site. Close agreement to this date comes from a second sample in Pit 36 of House 2; it dates 940 A.D.±90 (I-6847). Yet a third date of 775 A.D.-1140 (I-6848) from Pit 104 of House 3 is quite questionable; this extremely small sample was untreated for the removal of humic acids prior to its analysis. However, with a one-sigma deviation, this third sample also could fall within the tenth century at 915 A.D.

Variability in radiocarbon returns for the first millennium A.D. appears to be a recurring phenomenon and problem in the Northeast. Indications of this fact are not only manifest at the

Porteous site (Noble and Kenyon, 1972:29), but also for Kipp Island in New York (Ritchie, 1965:228). At Van Besien, however, the variability in radiocarbon returns is not major, and an occupation date between 900-945 A.D. is entirely acceptable.

4. DISCUSSION

VAN BESIEN

With detailed analyses completed, certain synthesis statements can be formulated concerning Van Besien. Clearly, this site represents a middle period Glen Meyer village within the early Ontario Iroquois sequence as determined from ceramic and radiocarbon analyses. Dating to the first half of the tenth century A.D., the Van Besien village expanded at least twice from an initial 1.2 acres to a final three-acre size. Its various palisades and interior cordons also indicate an obvious defensive concern, presumably against the Pickering peoples of southeastern Ontario, or conceivably against contemporary western New York populations. Together with specific cannibalistic evidence, the Van Besien defensive features all point to a general pattern of endemic warfare akin to that known for the historic Ontario Iroquois.

Three longhouses, ranging between 48-1/2 to 74 feet long by 21 to 26 feet wide, indicate communal dwellings to be the primary mode of habitation. While each of the Van Besien houses has its own constructional variations, certain interior organizational features are common. Noteworthy are the central hearth alignments and pit clusters around the hearths. Indeed, one structure, House 1, even has well-defined storage cubicles at either end. Elsewhere, Noble (1969) has suggested that such internal residence refinements are indicative of a maturing lineage system in developmental Iroquois social organization. The fact that the Van Besien houses are not consistently aligned parallel to one another also suggests that conscious village planning by civic officials had not yet developed. This type of village planning apparently occurs only after 1300 A.D. (Noble, 1968; 1969).

That the people of Van Besien utilized their village on a year-round basis is attested from their floral and faunal dietary practices. Hunting and fishing at all seasons is indicated from the mammals and fish taken, of which deer was a particularly favoured food source. Too, the corn raised would also offer an important adjunct to the forest, air and riverine subsistence products, for grown in surplus it could be stored for year-round usage. Indeed, it seems probable that corn horticulture was entirely successful, such that combined with hunting, fishing and gathering products, it provided a stable subsistence base for semi-permanent residence and population increases. The various village expansion at Van Besien directly attest to population growth, and inferentially to the subsistence successes.

How long the Van Besien people occupied their village cannot be definitely determined. Analogies to the historic Ontario Iroquois tribes suggest village occupations between eight and twenty years, depending upon available natural resources. At Van Besien, however, continuous occupation may well have spanned two or three generations if the multiple village expansions occurred with each new generation. Simply stated, ethnohistoric analogies cannot be applied rigidly to Van Besien with certainty.

GLEN MEYER CULTURAL PATTERNS

Compared with other Glen Meyer components, Van Besien helps to isolate and define certain specific patterns (systems) now recognized in Glen Meyer culture history.

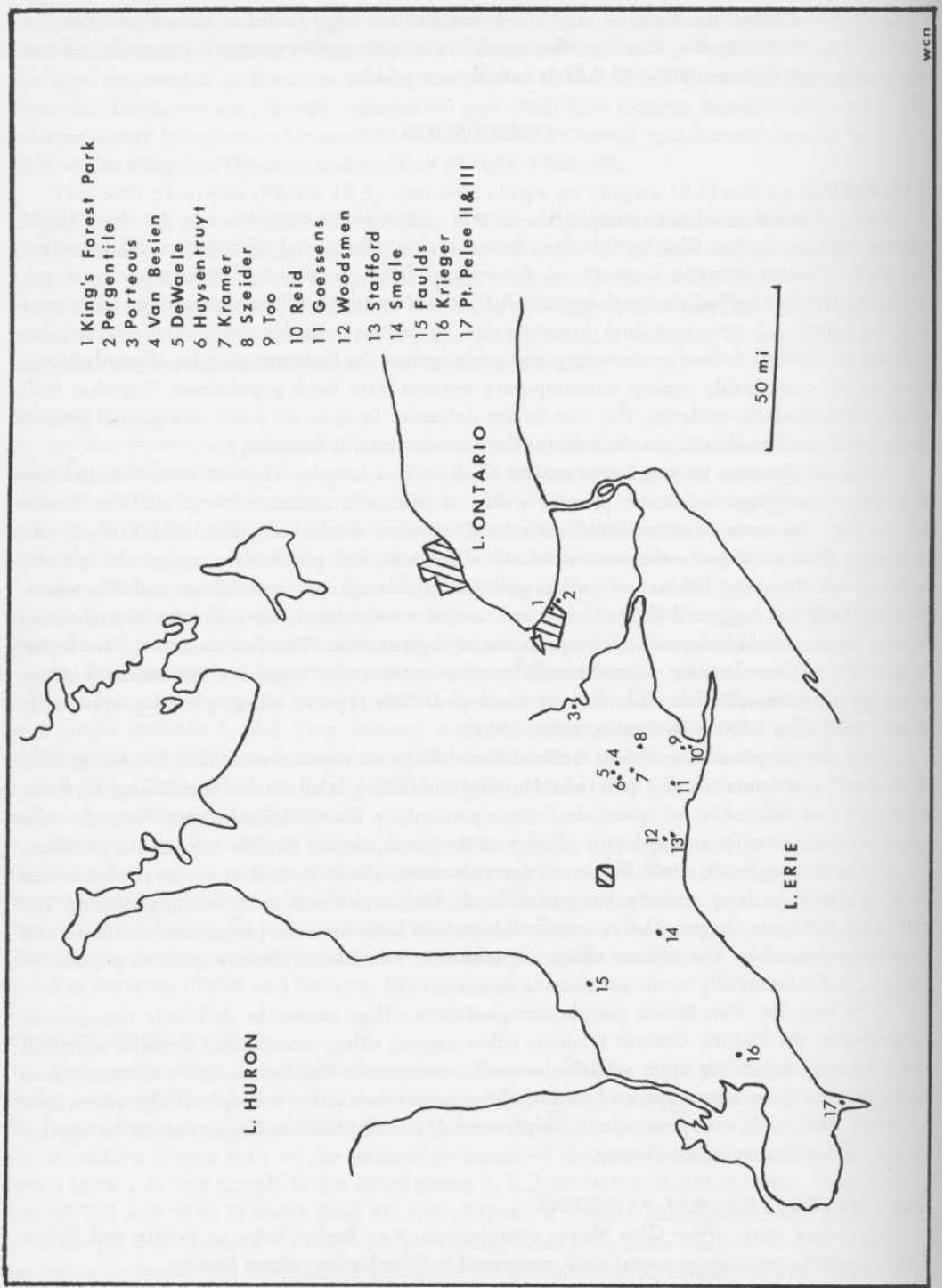


Figure 3. Some Glen Meyer Components

Glen Meyer Settlement Patterns

As outlined in the introductory chapter, Glen Meyer sites are primarily distributed throughout southwestern Ontario from Hamilton to Lake St. Clair. Figure 3 presents locations for seventeen of the more well known components, and it is apparent that Oxford and Norfolk Counties comprise a primary settlement centre.

Settlement patterns provide a crucial yardstick in defining what is and what is not Glen Meyer. Particularly is this true for the early developmental period, when the advent of village life with longhouses crystallizes beyond the non-village, riverine Princess Point settlement pattern. Porteous (ca. 700 A.D.) (Noble and Kenyon, 1972) represents the earliest true Glen Meyer village known to date.

Typically, the inland Glen Meyer villages are situated on elevated sandy knolls near a water source (Lee, 1951:45; Noble and Kenyon, 1972:11; Fox, 1972:13), and they are ringed by palisading; such occurs at DeWaele (AfHd-1) (Fox, 1972:13), Goessens (AeHk-1) (Lee, 1952:73), Van Besien (AfHd-2), and Porteous (Noble and Kenyon, 1972). Village sizes range from the .8 acres at DeWaele (Fox, 1971:3), a reputed 7 acres at Goessens (Lee, 1951:45), the 1.2, 1.5 and 3 acres at Van Besien, and 1.5 acres at Porteous (Noble and Kenyon, 1972:11). That seasonally occupied fishing stations also exist is best illustrated with the Point Pelee II and III manifestations (Keenlyside, 1972).

For micro-settlement patterns, few complete Glen Meyer house structures have been excavated. The corner of one house is known from Goessens (Lee, 1958:39), and Fox (1972:63-14) encountered portions of four longhouses, and two possible rectangular structures at DeWaele. The three longhouses from Van Besien, described herein, show that house styles can vary even on a single site. During Point Pelee II times (800-900 A.D.), Keenlyside (1972:10) notes portions of house walls from a rectangular structure, while Porteous (Noble and Kenyon, 1972:14) has the earliest complete longhouses yet defined for Ontario, or, for that matter, any early developmental northeastern Iroquois site. Because of variability and few complete house excavations, Glen Meyer habitation trends must remain general at best. Table 30 indicates that longhouses generally increase in both length and width over time, but other irregular structures also occur at both Point Pelee II and DeWaele.

TABLE 30
GLEN MEYER HOUSE DIMENSIONS

	Porteous	Pt. Pelee II	Van Besien
House 1	37h' x 20'	ca. 20' x 10'-12'	74' x 25½'
House 2	43+ x 20'-23'		60+ x 18'-21'
House 3			48h' x 26'

Attention has been drawn to the internal refinements of the Porteous and Van Besien longhouses (e.g., central hearth alignments, pit concentrations around hearths, and internal division walls). Such features definitely reflect a concern for ordering internal residential space, which in turn is probably correlated with a maturing lineage system (Noble, 1969). Clearly, formal village planning with consistent parallel house alignments has not yet developed during Glen Meyer times.

Glen Meyer Subsistence Patterns

Glen Meyer dietary studies require more detailed analyses than currently exist before meaningful species trends can be defined. However, several observations do emerge from the data for Goessens (Wright, 1966:39), Krieger (Kidd, 1954:147, 170), DeWaele (Fox, 1972:13), Van Besien, Point Pelee II and III (Keenlyside, 1972:8), Porteous (Noble and Kenyon, 1973:29), and the earlier ancestral Princess Point complex.

Clearly, hunting, fishing and gathering have long been important subsistence activities for the Glen Meyer peoples, with white-tailed deer being hunted extensively. Existing faunal analyses also indicate that late summer seasonal fishing stations exist, like Point Pelee II and III, in addition to the larger semi-permanent year-round inland villages.

Too, it is obvious that all of the inland Glen Meyer villages have corn throughout the Glen Meyer sequence (predominantly eight-row Eastern Complex corn), and in all probability this cultigen provided a major causative subsistence staple for year-round semi-permanent village occupation. The presence of corn with Glen Meyer village life is an expected correlation, for corn horticulture in southwestern Ontario initially appears with the even earlier small, riverine, non-village encampments of the ancestral Princess Point complex (Noble, n.d.).

It is suggested here that the most meaningful trend in early corn horticulture for southwestern Ontario lies not in a difference of kind, but in the degree to which corn was raised. Formal village life during Glen Meyer times appears to reflect a substantially more *successful and intensified* production of corn than occurred in the earlier ancestral Princess Point period.

Glen Meyer Artifact Observations

In Glen Meyer development, certain ceramic modes appear sensitive for determining chronological and regional assessments. For instance, cord punctated exterior rims have an early occurrence in the Glen Meyer sequence, as do corded stick wares, but unlike cord punctate, which virtually dies out at Van Besien, the corded stick technique persists to post-1000 A.D. Also, local regional differences are reflected in the higher retention of corded stick at Goessens than at Van Besien where incising is very common. Minority decorative techniques such as crescent stamp and punctate dentate stamp, first appearing around Van Besien times, definitely increase throughout the late Glen Meyer sequence. But clearly the best Glen Meyer pottery indicators (modes) are punctates and bosses. They show a consistent developmental preference for interior punctates with matching exterior bosses through time and across space.

Distinctively Iroquoian, castellations occur throughout Glen Meyer development. However, meaningful trends are all too few except to note that the simple pointed form usually predominates over simple rounded examples. At Van Besien, castellations occur most frequently on incised rims, a correlation that may be entirely local.

Glen Meyer neck sherd techniques apparently do not follow even seriation frequencies, but they may prove useful in future for isolating local village differences. Body sherd decorative techniques also follow uneven frequencies, although the smoothed-over-cord technique seemingly has the most consistent trend, increasing in its incidence from early to late.

Smoking pipes are characteristic of Glen Meyer, but few trends are forthcoming until more comparative data are available. The typical Glen Meyer pipe has a short stem and long barrel; many have a 90 degree stem-bowl angle, while others are obtuse-angled. In particular, the dorsally flattened (D-shaped) stem pipe with punctated bowl appears to be typically Glen Meyer.

Glen Meyer lithics are well developed, and in addition to Levanna isosceles projectiles, spurred isosceles (Glen Meyer spurred), side-notched and stemmed varieties also occur. Too, ground slate portions appear to be typical in Glen Meyer as are blade-like flakes from unprepared micro-cores. Stemmed snubnose scrapers, probably serving as hafted hide preparation tools, increase in size throughout the Glen Meyer sequence. With its further complement of drills, gravers, bifaces, adzes, axes, whetstones, net sinkers and pestles, the typical Glen Meyer lithic tool kit is admirably adapted to a wide range of woodworking, hunting, fishing, leather working and food preparation activities.

By comparison with lithics, Glen Meyer worked bone assemblages are poorly developed. Distinctive, however, are conical antler projectiles with socketting spurs, and bone beamers which are rarely reported for early Iroquois sites. The Van Besien assemblage (186 specimens), provides the best baseline yet known for Glen Meyer worked bone, antler and teeth.

Glen Meyer Burial Patterns

Glen Meyer burial patterns remain elusive, and poorly known. Indeed, only one reported burial that is unequivocally Glen Meyer is known from the entire central settlement zone of northern Lake Erie. This comes from the Stafford village in Elgin County (Lee, 1958:40), and notable, this example is not much of a burial. The remains found only comprise a slab of fossiliferous limestone and a single lower mandible of an elderly male within a pit (Lee, 1958:40).

One of the initial purposes for digging at Van Besien arose from the report of an alleged ossuary on the sandy knoll in Area D. Despite diligent testing outside the village, and the opening of a sizable portion within it, no true pit burials were encountered. Conceivably, the typical Glen Meyer burial pattern could conform to the single, flexed interment's present at the Surma site, Fort Erie (Emerson and Noble, 1966), and it may be as William A. "ox (personal communication) believes, that the Glen Meyer people buried their dead near the northern Lake Erie and Niagara River shorelines, away from the inland villages. Whatever the ultimate evidence may be, it seems clear to this writer that the Glen Meyer people did not practise ossuary interment; that practice of secondary communal interment appears in Ontario Iroquois development apparently from the more easterly Pickering Branch (Noble, 1968:219, 291; Kenyon, 1968).

That Glen Meyer burial patterns probably vary across space is evidenced at the Krieger site near Chatham (Kidd, 1954:170). Specifically late Glen Meyer from its lithic, ceramic and horticultural remains, Krieger remains enigmatic regarding its burials. The pattern exhibited here, a multiple interment (eight individuals) with complex skeletal arrangements as well as a refuse pit containing three or four persons, has not been found to date at any other Glen Meyer site. Nor can the pattern be duplicated in southeastern Michigan despite ceramic influences between Krieger and the Younge site (Kidd, 1954:174; Fitting, 1970:154). Apparently, the Glen Meyer peoples of extreme southwestern Ontario are either developing their own unique burial ceremonialism, or they are receiving as yet undefined influences from cultures farther south.

In sum, Glen Meyer burial patterns remain inconclusive.

Glen Meyer Trade

Evidence for aboriginal trade by the Glen Meyer peoples is admittedly limited, but nonetheless definitely present. To date, four commodities indicate some type of commerce between southwestern Ontario and localities far spread.

First is the occurrence of rare pieces of bluish steatite on at least two Glen Meyer sites. One small bead is known from the late-dating Smale site (Wright, 1966:38), and from Van Besien there is an incomplete steatite pipe bowl. Presumably, such material comes from Pennsylvania (Ritchie, 1965:161).

A second non-indigenous commodity, native copper, also appears in Glen Meyer territory, but again not in marked volume. Wright (1966:39) reports one rolled bead from the Stafford site, while Fox (1972:23) recovered two beads from DeWaele. Reputedly, a native copper awl came from Van Besien. A probable source for the native copper lies in the upper Great Lakes region of the Canadian Shield.

Third, there is the occurrence of red ochre on Glen Meyer ceramics in the form of slips. Such slips occur at the Van Besien, Goessens, Woodsmen and Stafford villages (Wright, 1966:37). Conceivably, the recently discovered red ochre mine on the Mattawa River (Tyyska and Burns, 1973) could be the source for this hematite.

Fourth and last is the indication of trade between southwestern Ontario and Ohio, with the appearance of opaque Ohio chert on early Glen Meyer sites. Rare pieces occur at Porteous (Noble and Kenyon, 1972:17), and 19 items of this distinctive material come from Van Besien (16 irregular flakes, 2 rough cores, 1 Glen Meyer stemmed snubnose end-scraper).

In total, there is evidence for contacts between Glen Meyer and more distant peoples throughout Glen Meyer development (ca. 700-1300 A.D.), but importation of exotic raw materials is definitely very limited.

Glen Meyer Dating and Sequence

With recent radiocarbon analyses and ceramic seriation, the Glen Meyer cultural sequence has been clarified considerably. Not only is the sequence extended back to ca. 700 A.D., but the development of early village life also emerges as a pertinent research topic in early Ontario Iroquois development.

Table 31 summarizes available radiocarbon dated sites, and includes other key components seriated according to ceramic trends. It is suggested here that three main periods of Glen Meyer components can be delineated: those early in the sequence (ca. 700-900 A.D.), those occurring in a middle period (900-1100 A.D.), and those terminal manifestations dating between 1100-1300 A.D.

TABLE 31
GLEN MEYER DATING AND SEQUENCE

Time A.D.		Villages	Summer Stations
		King's Forest Park	
1200	G	Smale	
1100	r	DeWaele 1095A.D.+90(I-6412) (AfHd-1) 1050A.D.+90(I-6411)	
	N		Period III (Pt. Pelee) 1010A.D.+90(I-4010) 1010A.D.+90(I-4760)
1000	M	Goessens (AeHk-1)	
	E	VanBesien 945A.D.+90(I-6167) (AfHd-2) 940A.D.+90(I-6847)	
	Y	775A.D.+140(I-6848)	
900			Period II (Pt. Pelee) 875A.D.+55(BGS-82) 840A.D.+95(I-4762) 804A.D.+57(BGS-81)
	R		
800			
700		Porteous 825A.D.+100(I-4972) (AgHb-1) 580A.D.1,90(I-5820)	
		Late Woodland	
600			Point Pelee Complex 640A.D.+100(I-4012)
500			
		Princess Point Complex	

In the early period, best illustrated by Porteous (Noble and Kenyon, 1972), initial village settlement appears complete with longhouses, corn horticulture and a ceramic and lithic inventory that leaves little doubt about ultimate origins from the Princess Point and Point Pelee complexes. Middle period Glen Meyer life is best known from the Van Besien, Goessens and DeWaele sites which seriate and date early to late in that order. Village life is certainly well established, complex, and diversified to the point where subtle regional (local) village variations are apparent. This author's seriation would place the Stafford site slightly later than Goessens, and Krieger too appears to fall between 1000-1150 A.D. Final analyses from the DeWaele village will undoubtedly provide an important comparative contribution for the latter part of this sequence. Keenlyside's (1972) Point Pelee Period III also falls within this time, and, while he suggests a depopulation for the Point Pelee area (Keenlyside, 1972:19), this may be more apparent than real. The Glen Meyer data from Essex, Kent and Lambton Counties are simply too imperfectly known at present. Conceivably, the extreme western Glen Meyer peoples may have moved eastward to the Norfolk-Oxford County centre after 1000 A.D.

The terminal Glen Meyer period is best known from the Smale and King's Forest Park components. However, refinements are clearly necessary, particularly with respect to Wright's (1966:40) proposed conquest and fusion of Glen Meyer by the more easterly Pickering peoples. Uren, initially described by Wintemberg (1928:1) as covering a remarkably large fifteen acres, is now believed to consist of two villages, with Middleport materials at one end of the site and late Glen Meyer at the other (Fox, personal communication). If this is true, then both Wintemberg's and Wright's analyses of the Uren collection are open to artifact mixture and error. Until clarified, Uren seems inappropriate as a viable horizon in Ontario Iroquois development, and Wright's conquest hypothesis remains as controversial as ever. The late Glen Meyer sequence will certainly continue to pose interesting research problems.

EARLY ONTARIO IROQUOIS DEVELOPMENT

In summation, the new data from Van Besien can be integrated within early Ontario Iroquois development as a whole. As part of a broadened sequence, it falls within Glen Meyer which forms one of two important branches (phylla) towards Ontario Iroquois development (Wright, 1966). Increasingly new evidence from both the Glen Meyer and Pickering branches allows a revised model (Figure 4) for the early portion of the Ontario Iroquois sequence, and several features deserve comment.

First, *regional expressions* are the general rule for late Middle Woodland groupings in Ontario and the Great Lakes region (Noble and Kenyon, 1972:30). In southwestern Ontario, the Princess Point and Point Pelee I complexes illustrate this feature, and both appear to definitely underlie and be ancestral to Glen Meyer. Thus, the concept of multiple origins must be considered for Glen Meyer.

Second, Glen Meyer is distinguished by formal village life with longhouses. This type of settlement pattern commences with Porteous (ca. 700 A.D.), and is an important feature separating Glen Meyer from the earlier riverine (non-village) encampments of Princess Point times.

Third, the early part of the Pickering branch also comes under review. It will be noted in Figure 4 that the Miller and Boys villages are placed much earlier in time than previously thought. Boys has yielded a reliable radiocarbon date of 975 A.D.±120 (I-7322), and definitely seriates later than Miller. The previous radiocarbon date of 1125 A.D.±70 (S-108) (Kenyon, 1968:50) for Miller is believed to be questionable, and this author would guess-date Miller to ca. 800 A.D. Obviously more charcoal samples for both villages could clarify this problem.

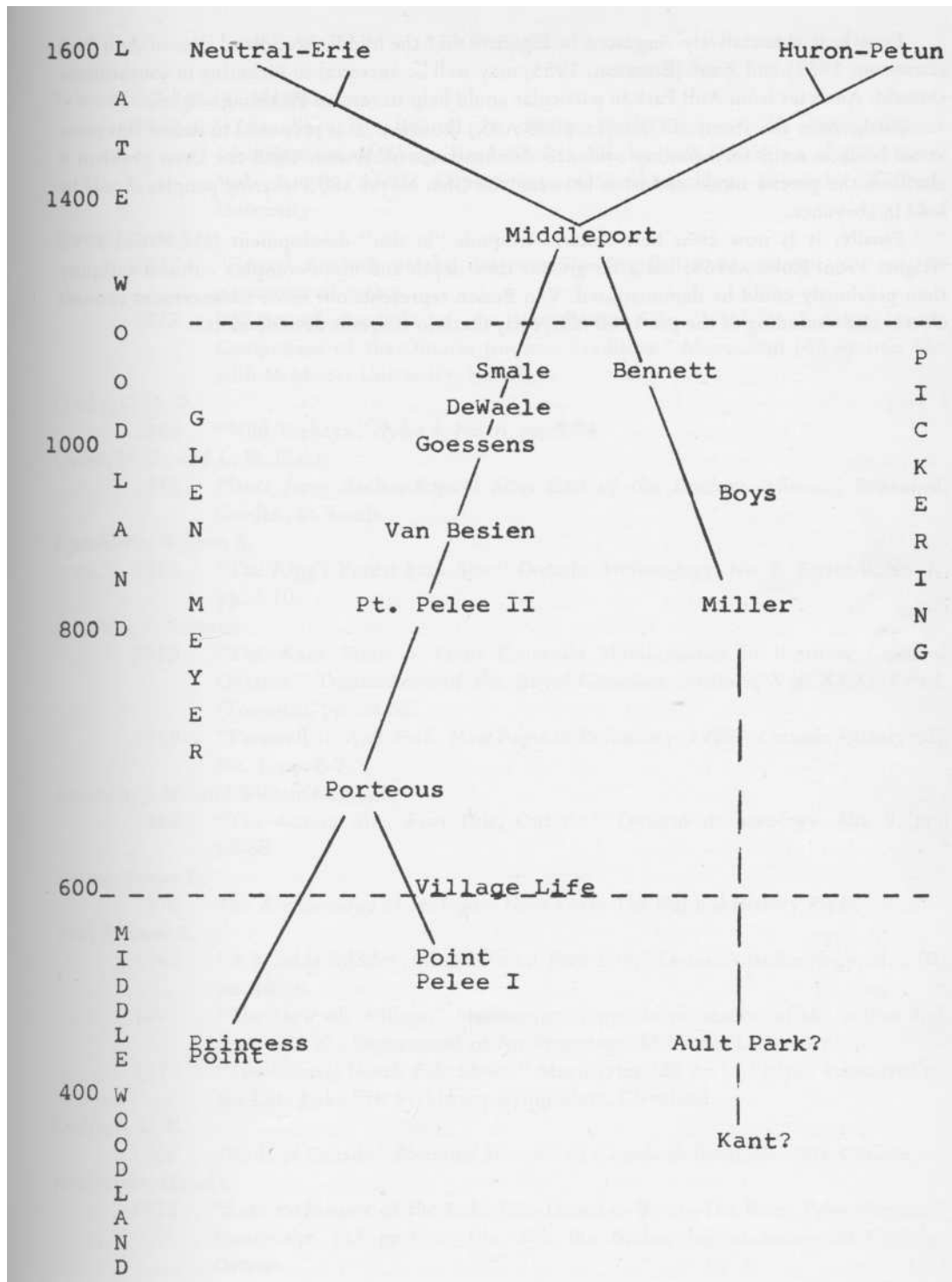


Figure 4. Early Ontario Iroquois Development

Fourth, it is tentatively suggested in Figure 4 that the Middle Woodland sites of Ault Park (Emerson, 1959) and Kant (Emerson, 1955) may well be ancestral to Pickering in southeastern Ontario. Analyses from Ault Park in particular could help to resolve Pickering origins.

Fifth, since the status of Uren (ca. 1300 A.D.) is unclear, it is proposed to delete this name as an horizon until forthcoming evidence demonstrates otherwise. Until the Uren problem is clarified, the precise mode of fusion between the Glen Meyer and Pickering peoples should be held in abeyance.

Finally, it is now clear that Ontario Iroquois "in situ" development (MacNeish, 1952; Wright, 1966; Noble, 1968) has a far greater time depth and more complex cultural antiquity than previously could be demonstrated. Van Besien represents one more advancement towards clearer understanding of the pre-1000 A.D. early Ontario Iroquois development.

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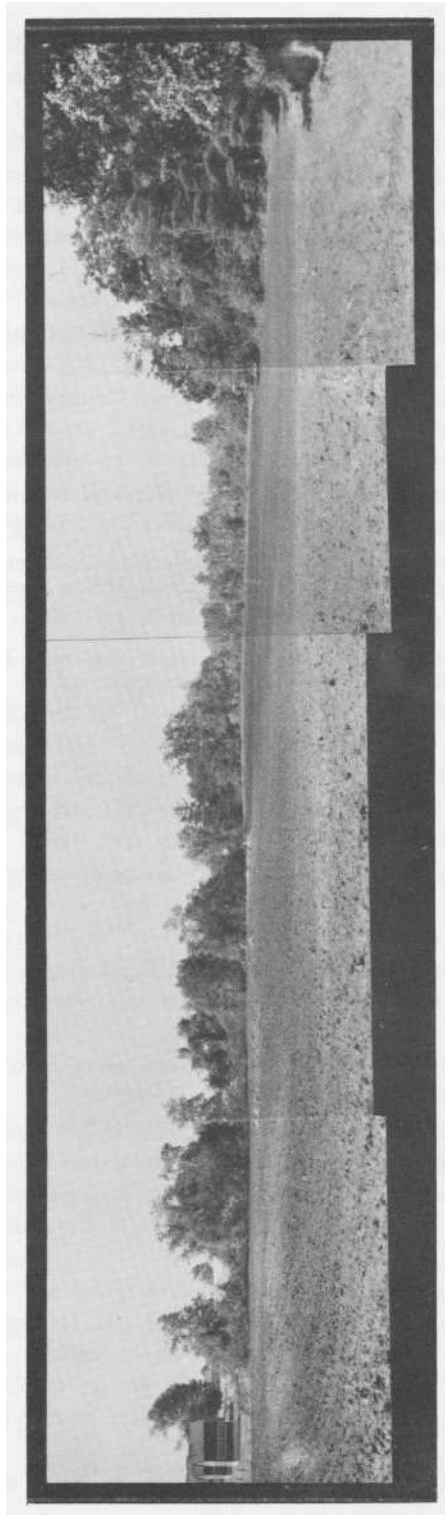


Figure 5. Composite Picture of Van Besien Village Looking Southwest

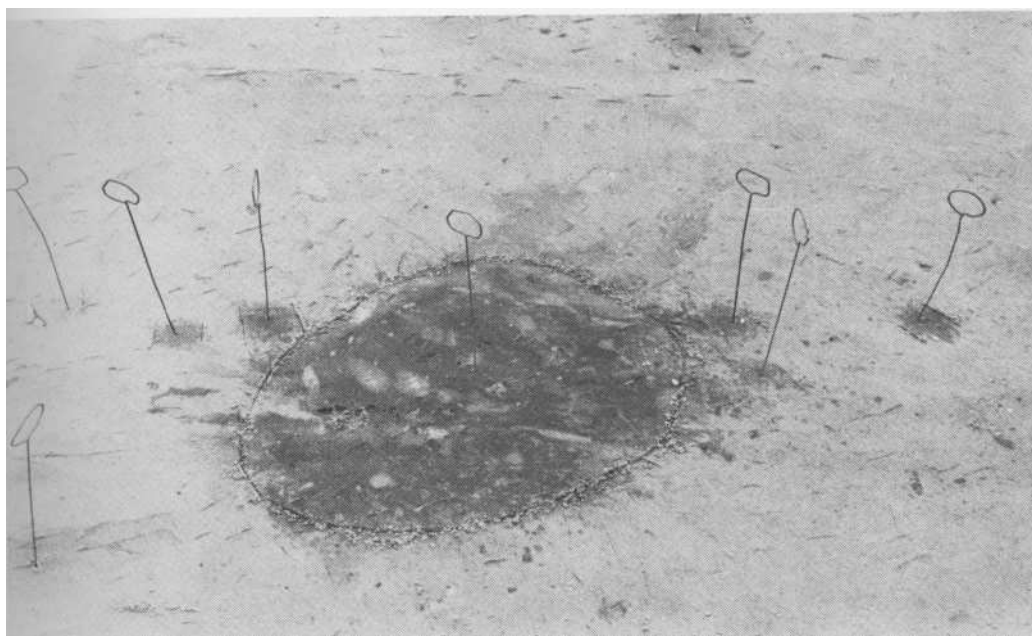


Figure 6. Excavation Features
Top: East wall of House 1, Area D
Bottom: Close-up of Pit 106, Area D

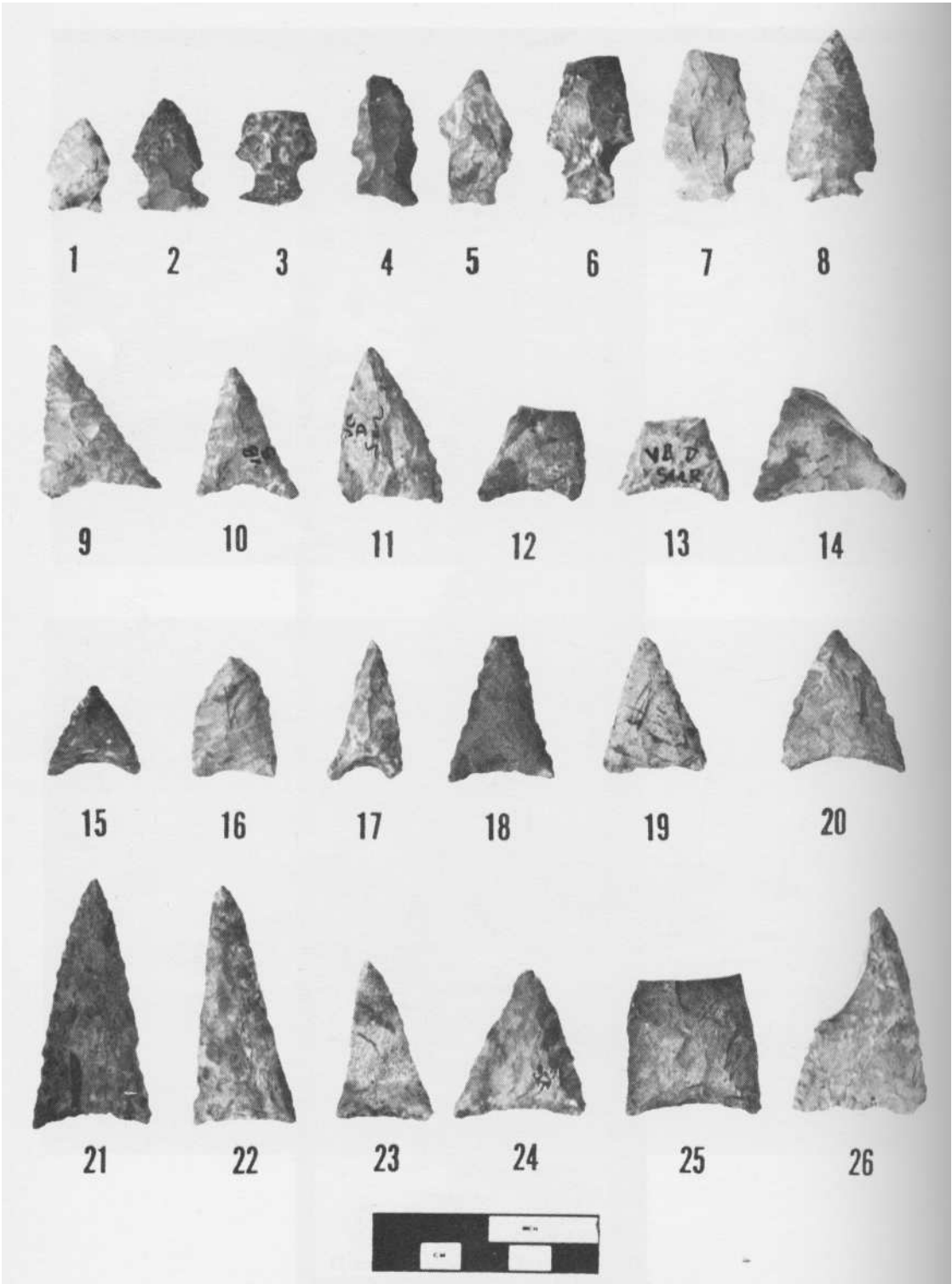


Figure 7. Van Besien Projectiles

1-8 - Side-notched points; 9-14 - Glen Meyer spurred; 15-26 - Concave and straight-base Levanna points.

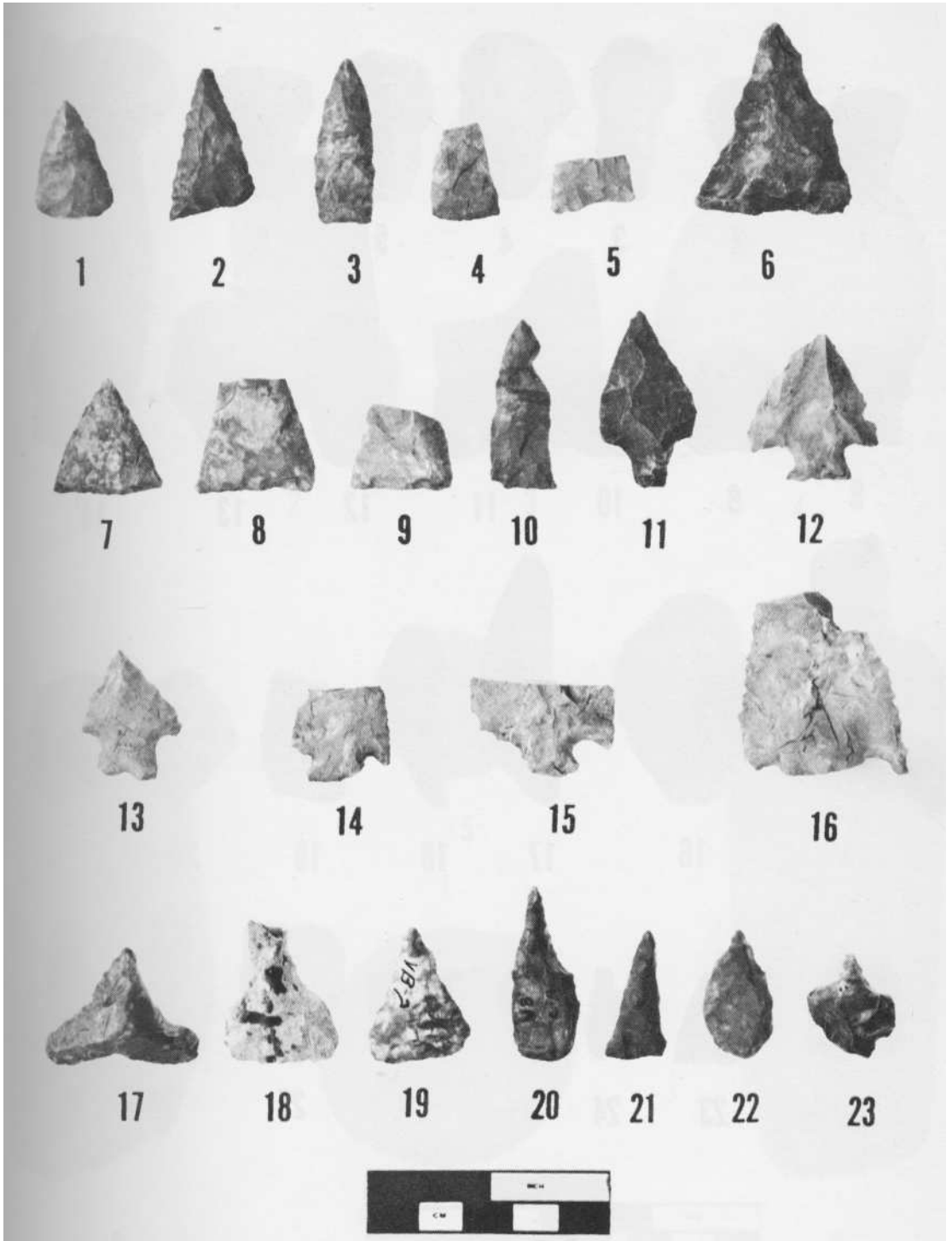


Figure 8. Other Van Besien Projectiles and Drills

1-5 - Various points and fragments; 6 - Projectile preform; 7-10 - Straight-base Levanna points; 11 - Stemmed point; 12 - Corner-notched point; 13 - Le Croy Bifurcate base point (early Archaic); 14-16 - Brewerton corner-notched points (Archaic); 17 - T- shaped drill 18 - Rectangular (winged) drill; 19, 21 - Triangular drill; 20, 22 - Bulbous drill; 23 - Irregular flake drill.

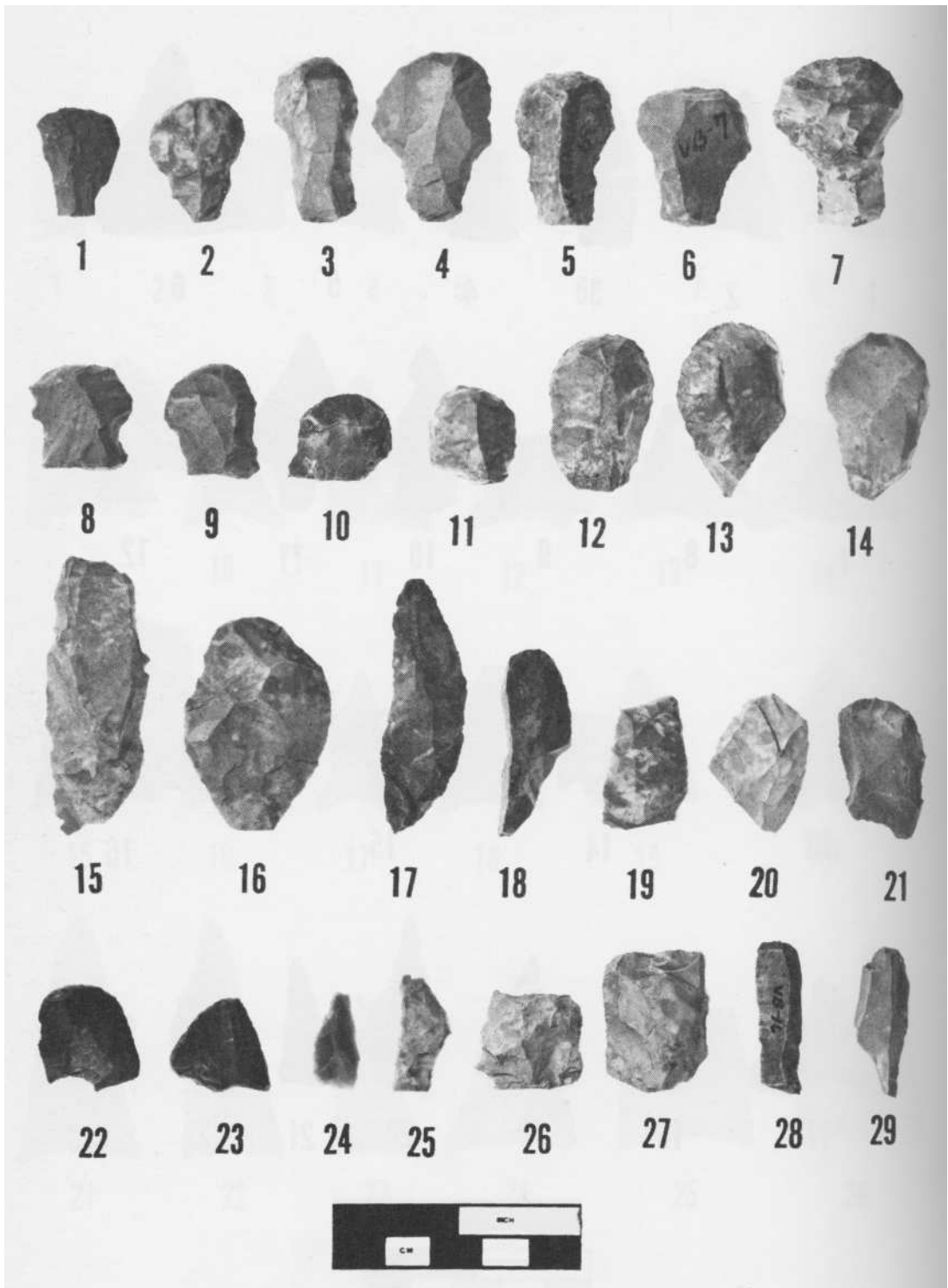


Figure 9. Van Besien Scrapers and Other Lithics

1-7, 9, 12-14 - Glen Meyer stemmed snubnose end scrapers; 8 - Side-notched end scraper; 10-11 - Thumbnail end scrapers; 15-21, 25 - Flake scrapers; 22 - Thumbnail end scraper; 23-24 - Pointed flake scrapers; 26-27 - Wedges; 28-29 - Blade-like linear flakes.

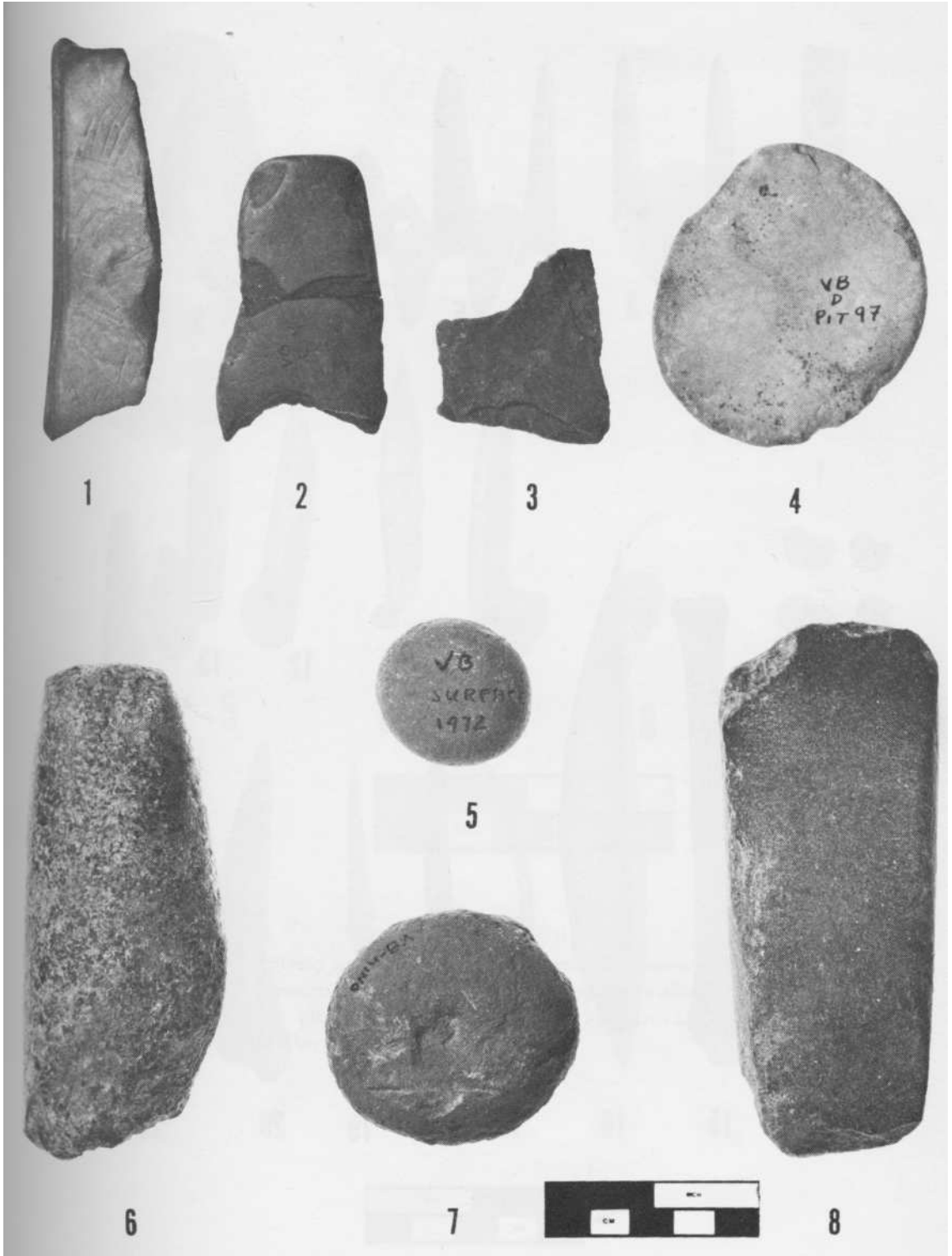


Figure 10. Van Besien Worked **Heavy** Stone
1-Decorated slate flisher; 2-Cut and polished slate item; 3-Paint stone; 4 - Notched net sinker, Pit 97, House 3; 5 - Small circular hammerstone; 6 - Pestle; 7 - Bi-pitted anvil stone; 8 - Adze from southwest corner of House 1.

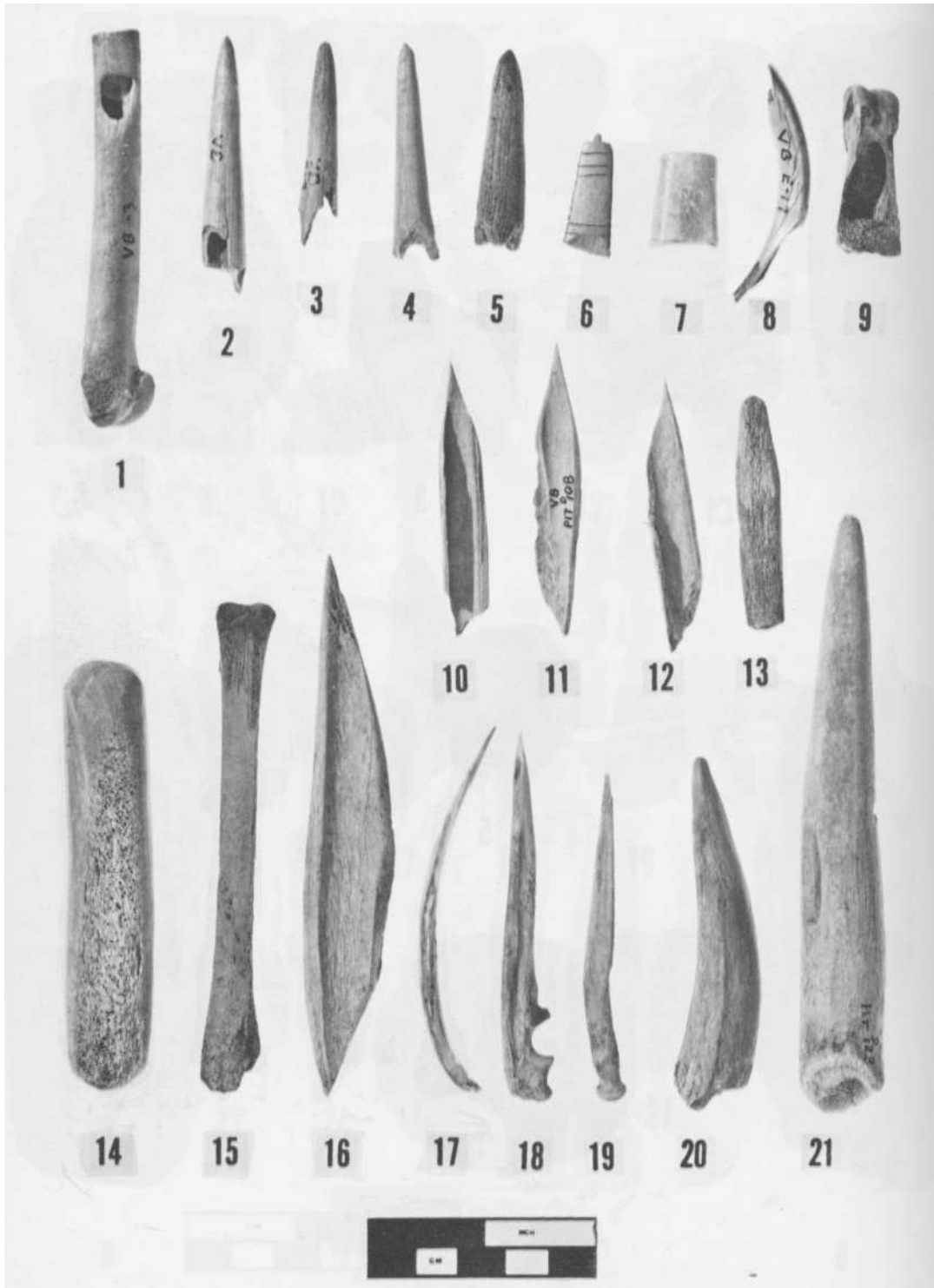


Figure 11. Worked Bone and Antler

1 - Whistle; 2-5 - Conical antler projectiles; 6 - Decorated bone; 7 - Bone bead; 8 - Beaver incisor chisel; 9 - Worked proximal deer phalange; 10-12 - Splinter awls; 13 - Bone brad; 14 - Antler flaker; 15 - Beamer; 16 - Bone punch; 17-19 - Awls; 20-21 - Worked antler tines.

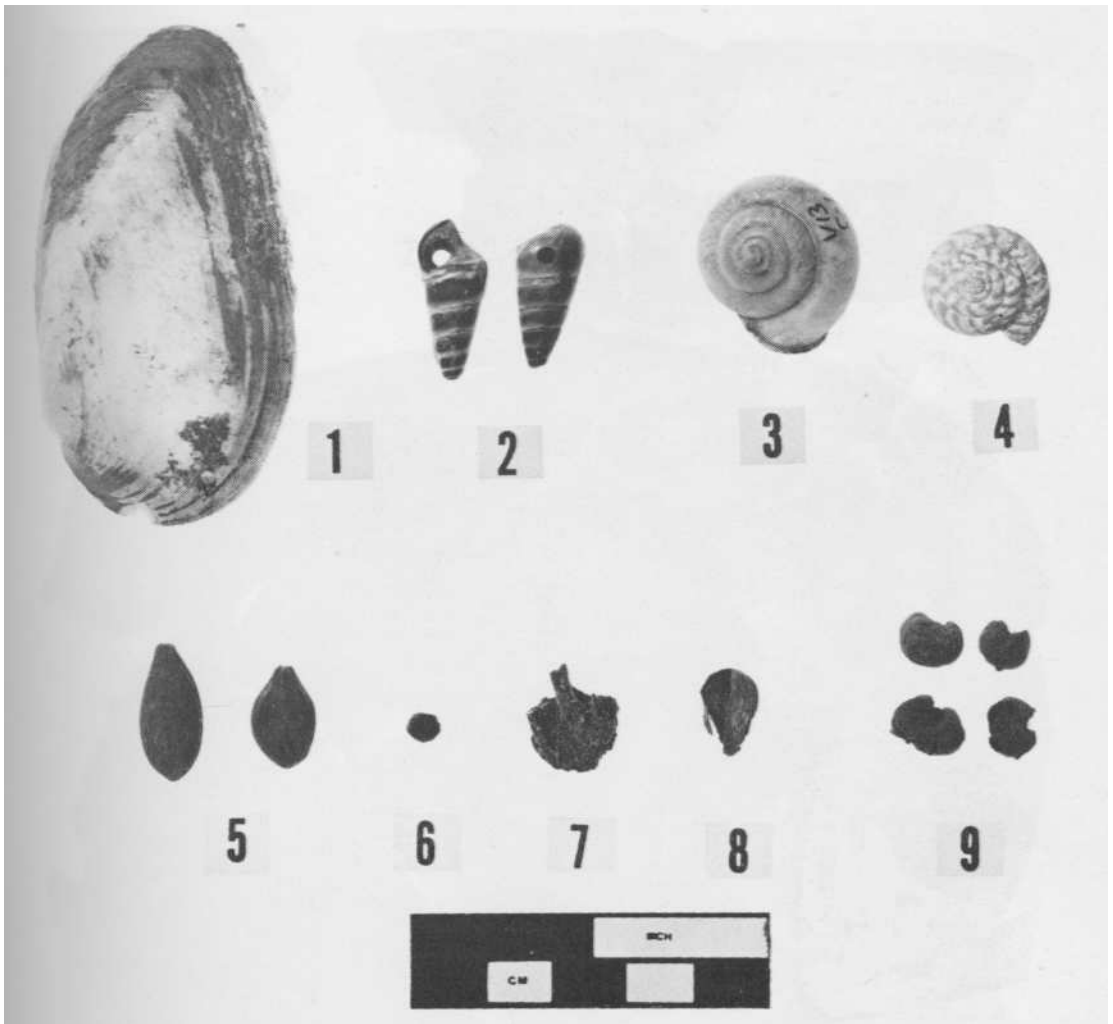


Figure 12. Shells and Cultigens

1 - Freshwater bivalve (*Unio sp.*); 2 - Perforated watersnails (*Pleurocera subulare*); 3 - Water snail (*Helisoma trivolvis macrostomum*); 4 - Land snail (*Anguispira alternata*); 5 - Charred plum pits; 6 - Charred cherry pit; 7 - Charred walnut, Pit 51, Area D; 8 - Charred hazelnut; 9 - Charred eight-row corn kernels.

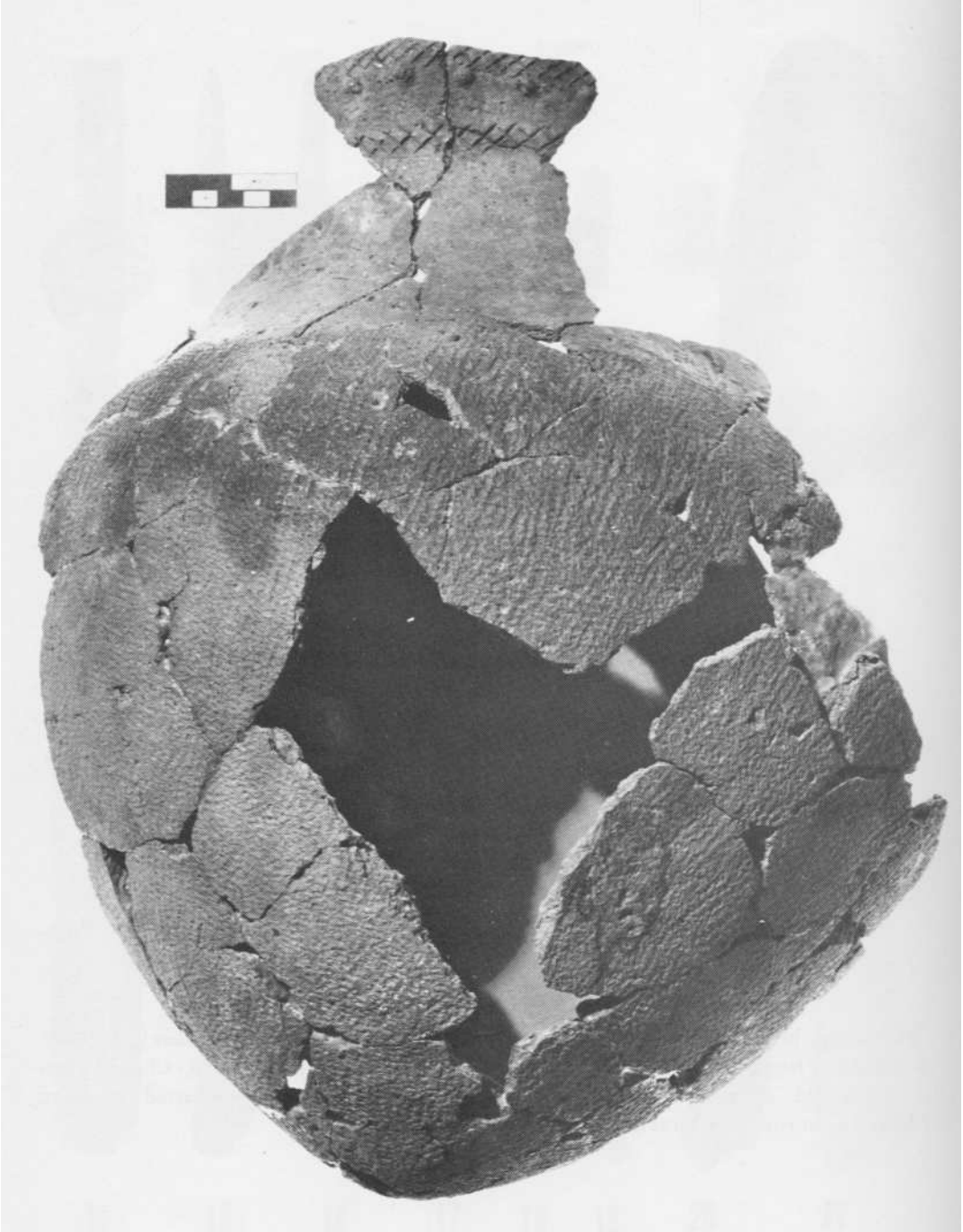


Figure 13. Reconstructed Pot, Area E

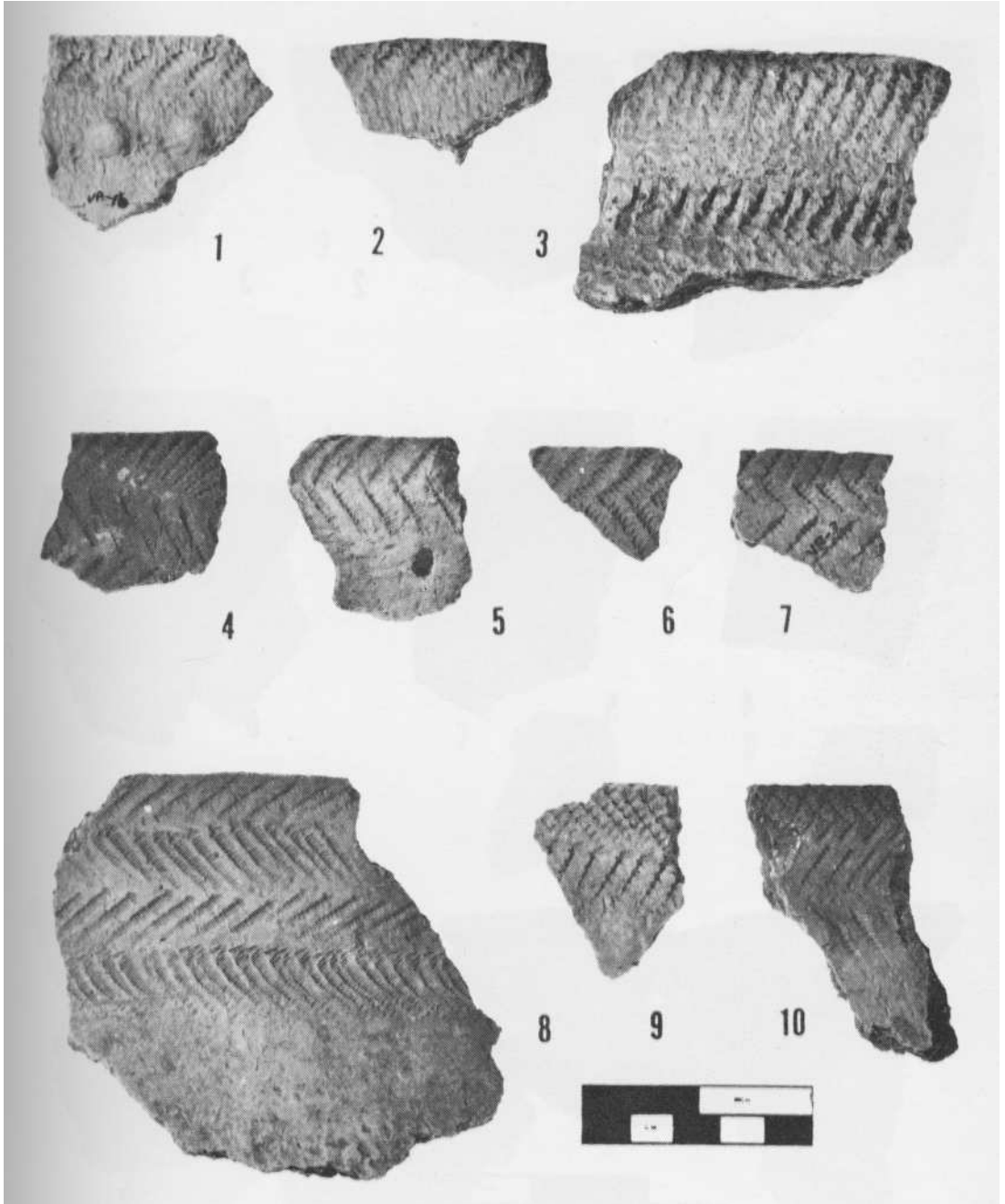


Figure 14. Corded-Stick Rim Sherds

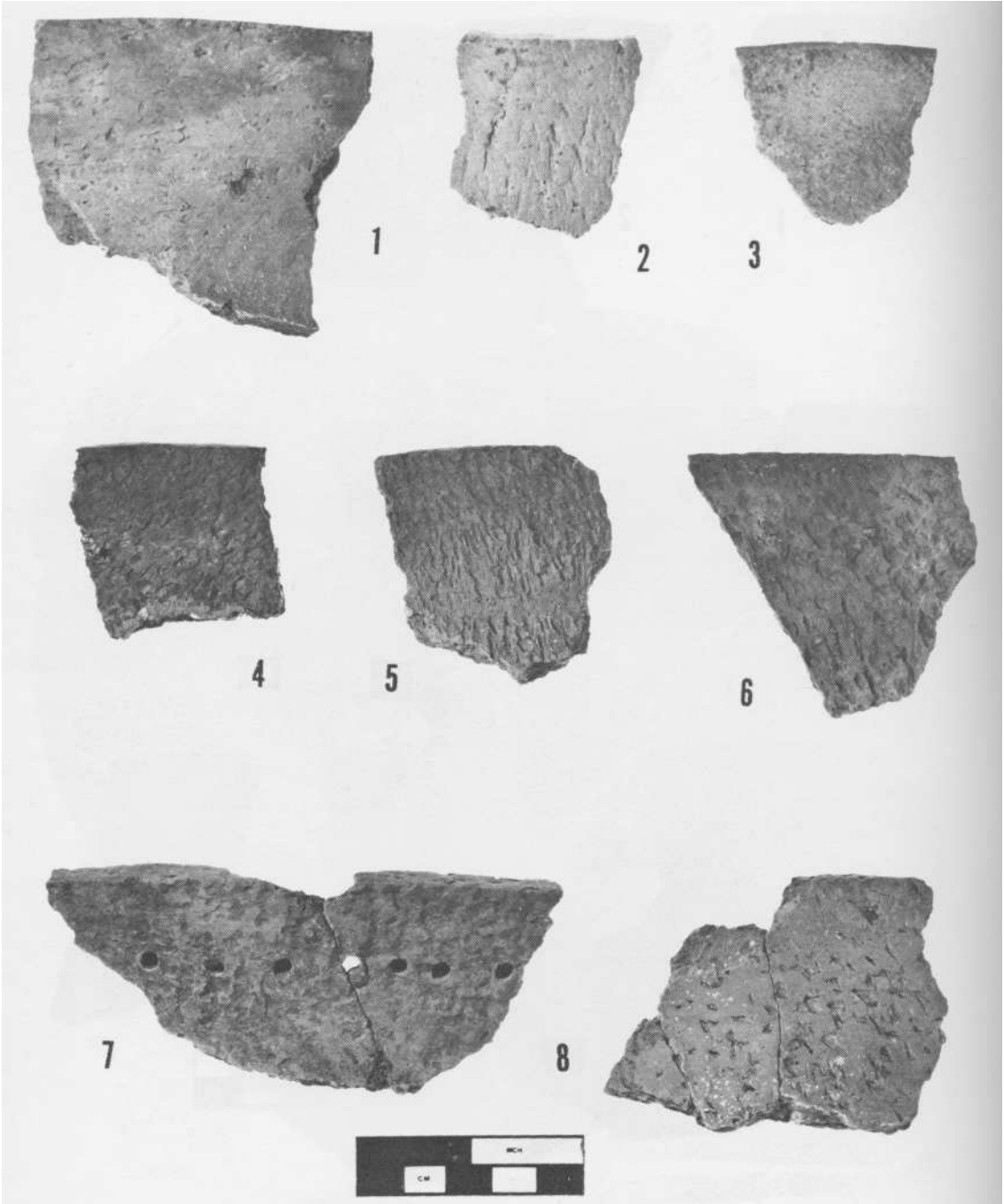


Figure 15. Van Besien Rim Sherds
1-3 - Plain; 4-6 - Cord malleated; 7-8 - Smoothed-over cord.

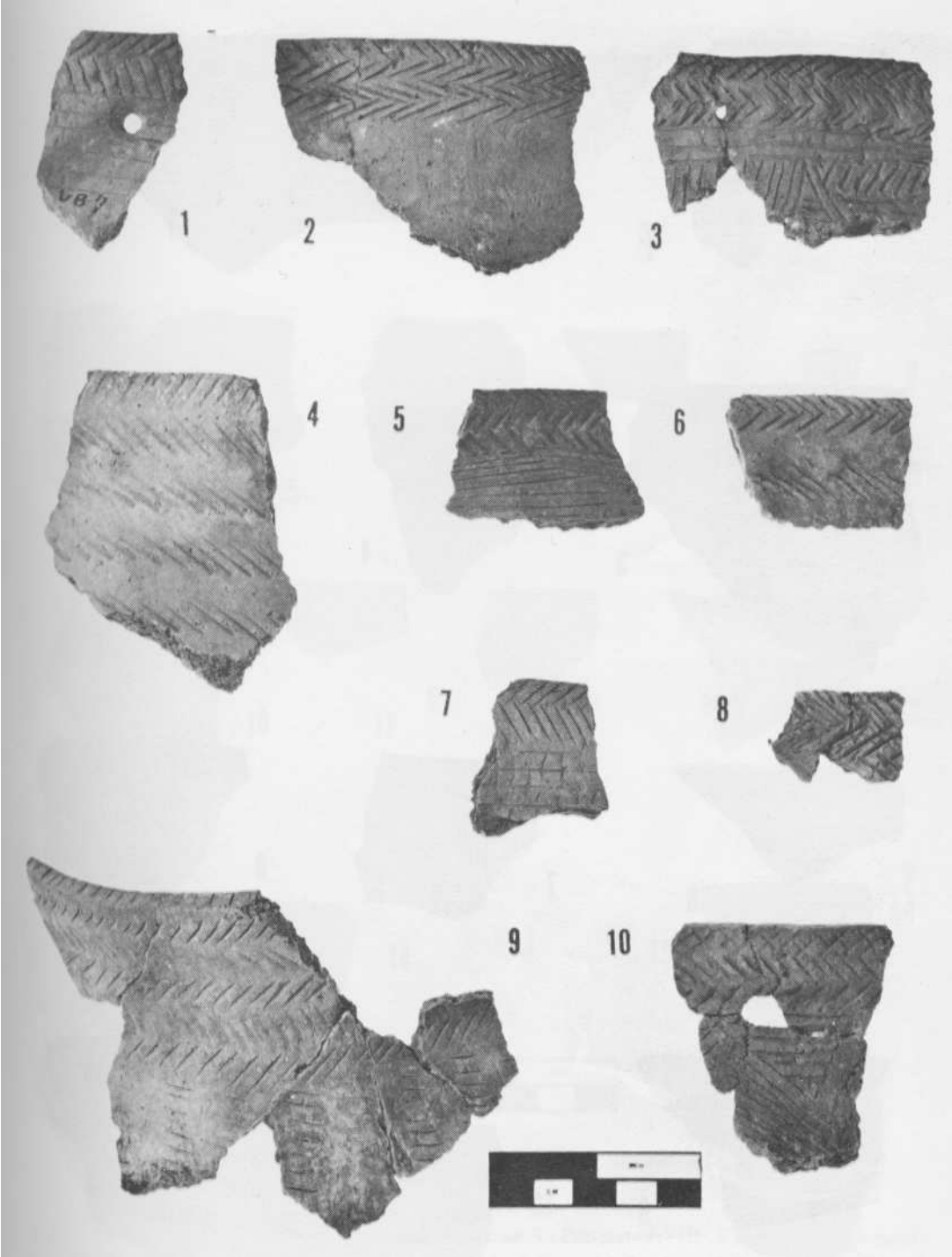


Figure 16. Linear-Stamped Rims

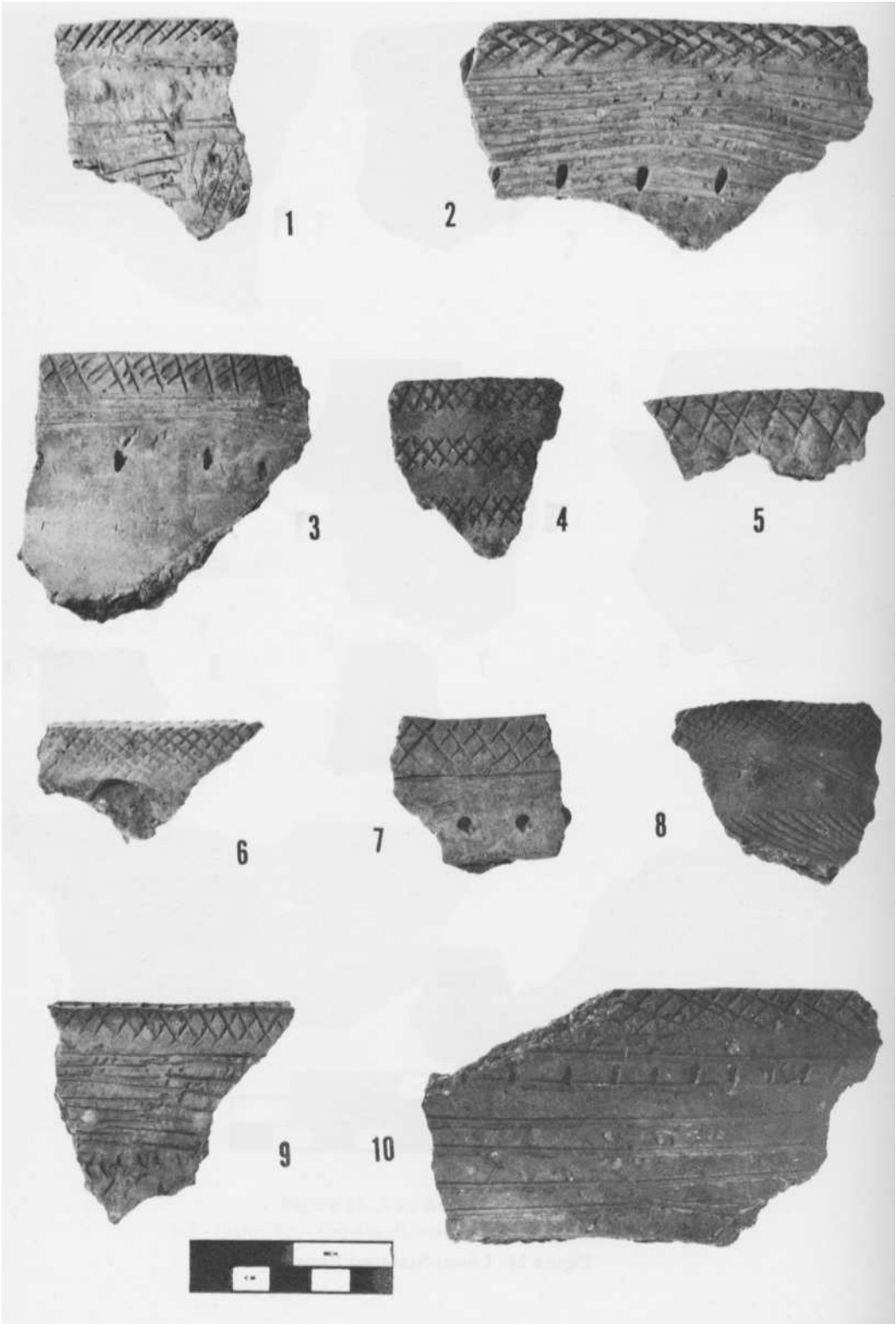


Figure 17. Linear-Stamped Rims

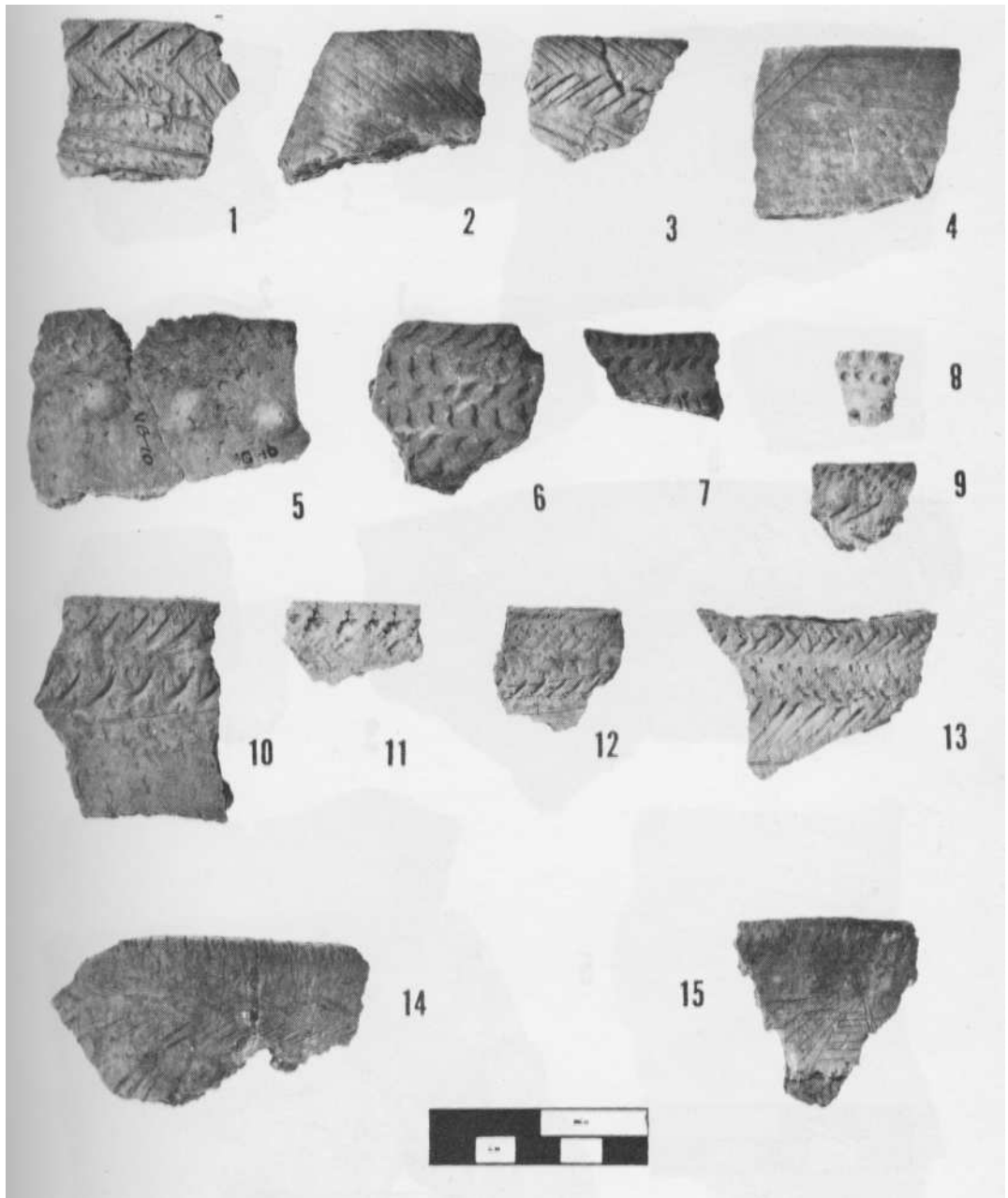


Figure 18. **Van Besien** Rim Sherds

1-4 - Incised; 5-7 - Crescent stamp variants; 8-9 - Punctated; 10 - Fingernail impressed; 11 - Corded punctate; 12 - Suture stamp; 13 - Incised above cord; 14-15 - Mixed cord malleated and incised.

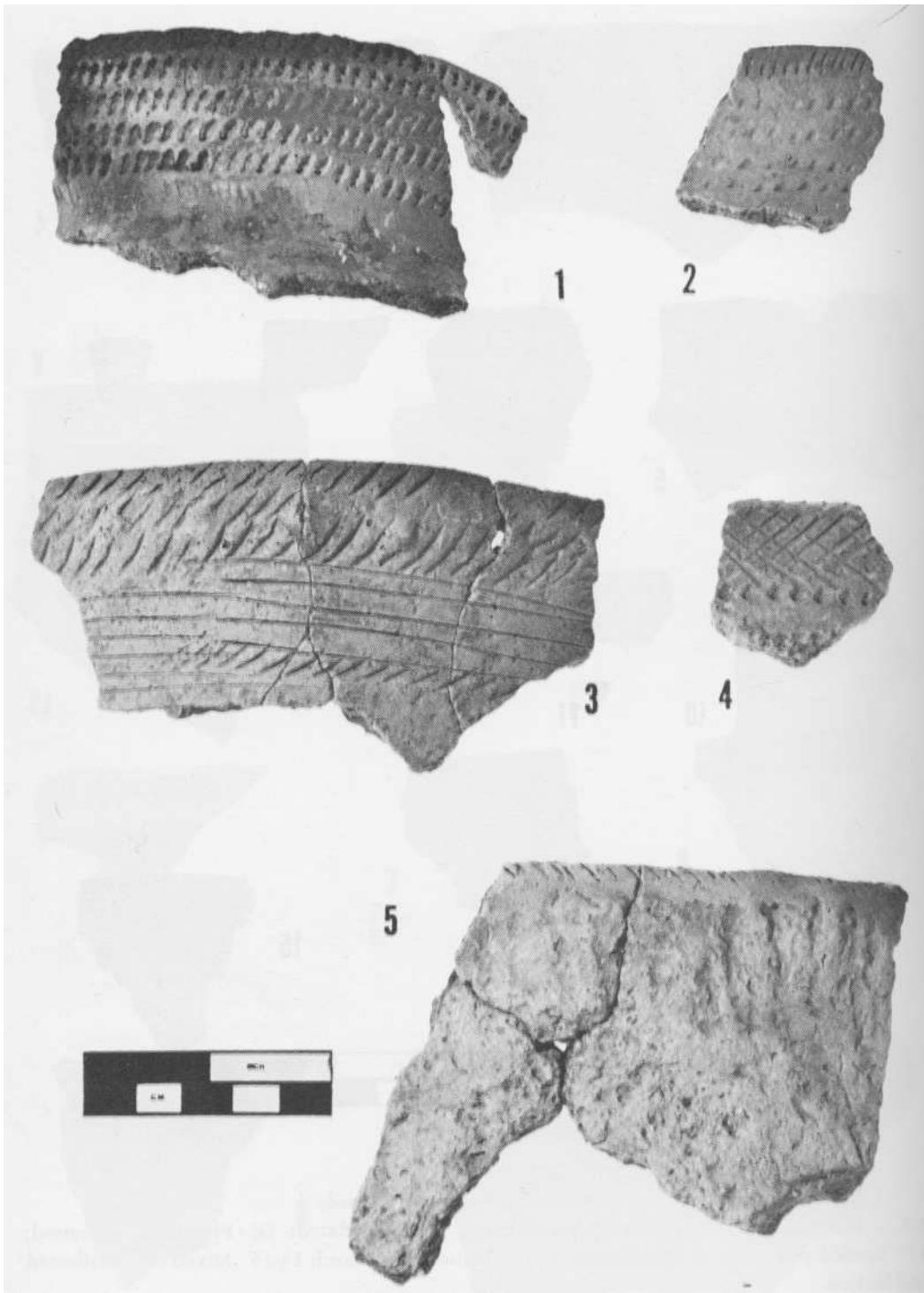


Figure 19. Van Besien Rim Sherds

1 - Dentate punctate stamp; 2 - Incised above smoothed punctated dentate; 3 - Fingernail impressed over incising; 4 - Incised above cord punctates; 5 - Incised above smoothed-over-cord.

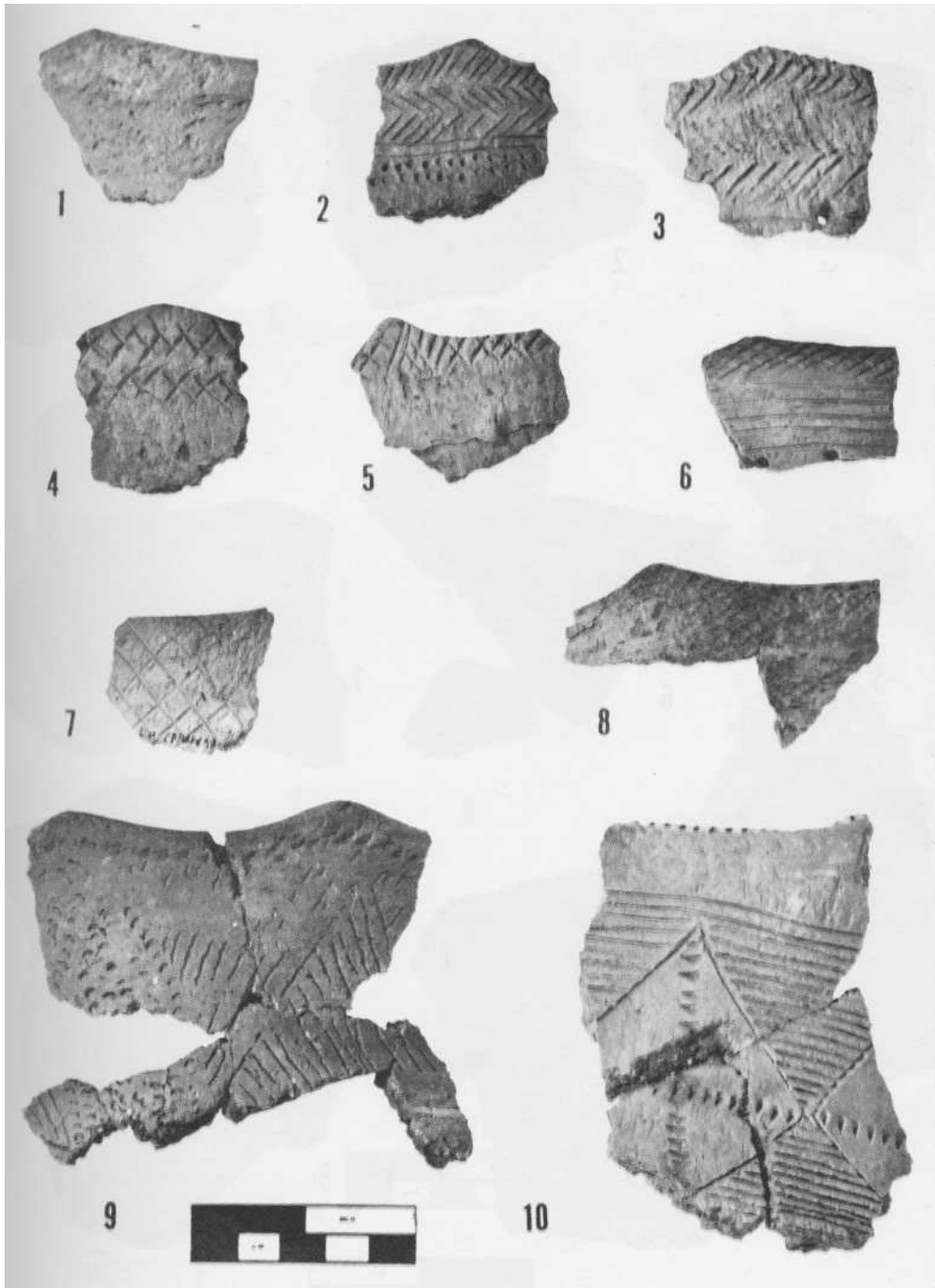


Figure 20. Simple Pointed Castellations

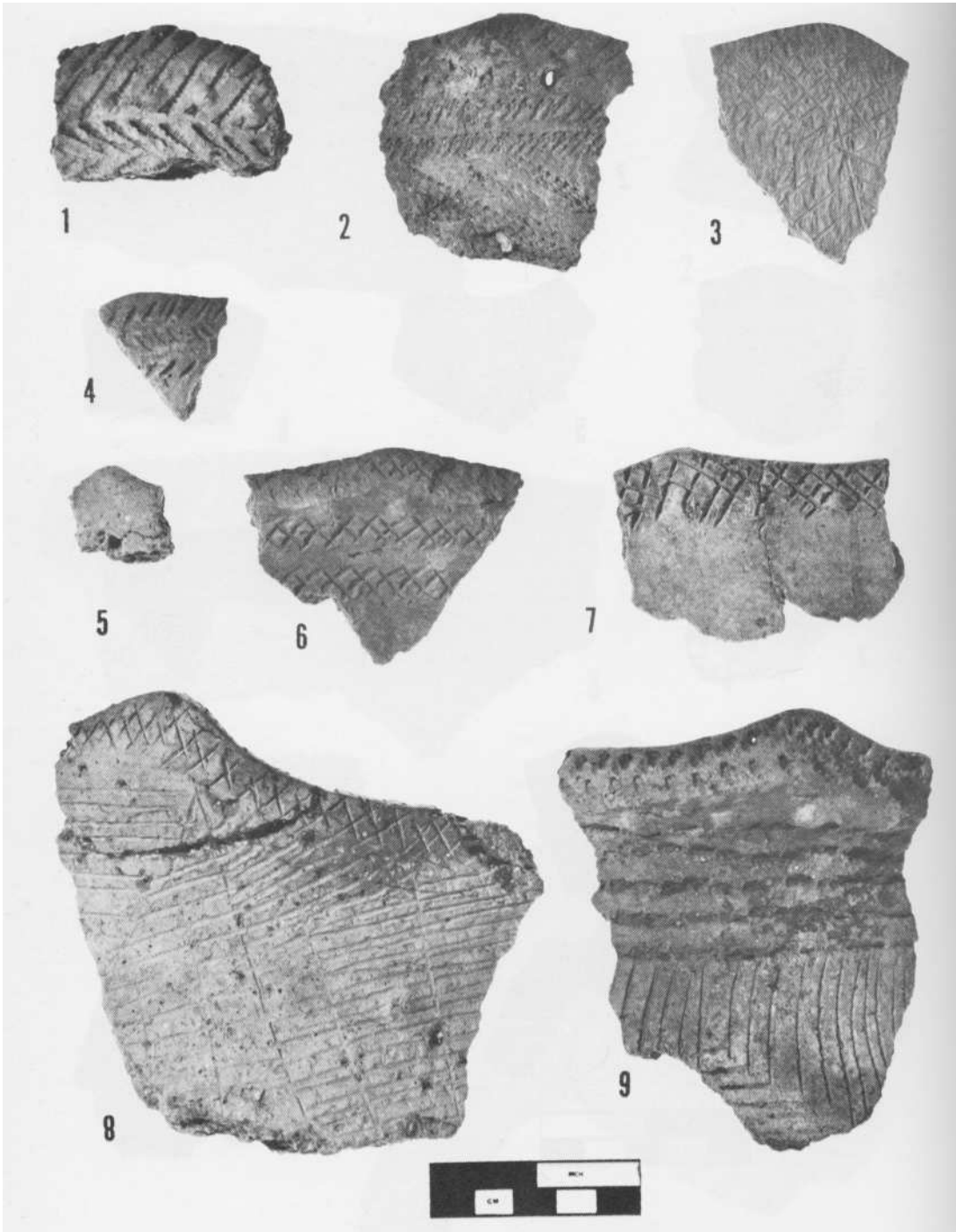


Figure 21. Simple Rounded Castellations

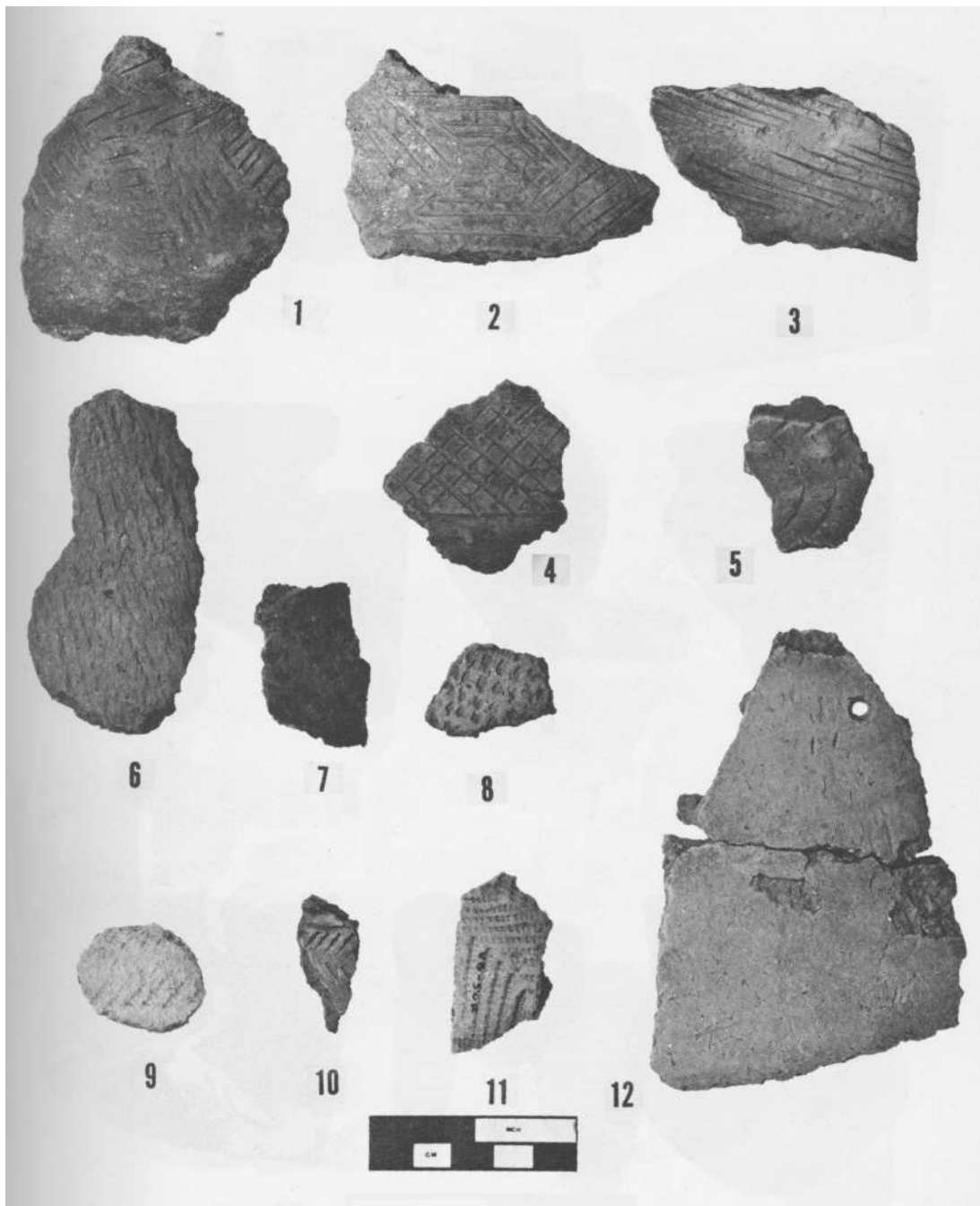


Figure 22. Van Besien Neck Sherds
1-4 - Incised; 5 - Fingernail impressed; 6 - Fabric impressed; 7-8 - Punctate; 9 - Cord-stick; 10 - Suture stamp; 11 - Dentate stamp; 12 - Plain with mending hole.

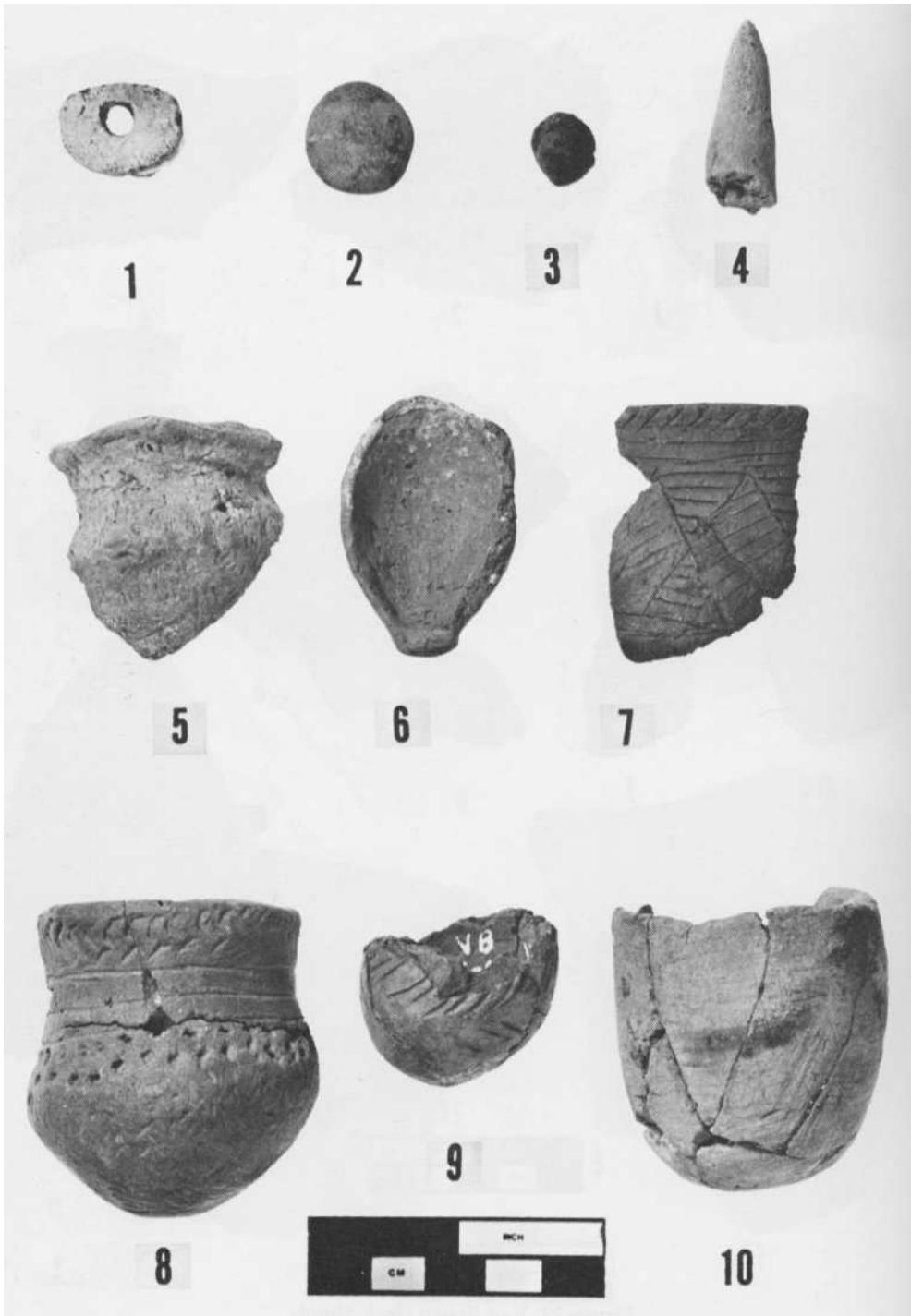


Figure 23. Gaming and Juvenile Ceramics

1 - Perforated pendant; 2 - Gaming disc, Pit 115, House 1; 3 - Clay marble; 4 - Pointed clay object; 6 - Clay spoon?; 5, 7-10 - Juvenile pots.



Figure 24. Van Besien Pipes

1 - Steatite bowl; 2-3 - Vasiform pipe bowls; 4 - Complete pipe, Pit 109, House 1; 5-6 - Plain barrel pipes; 7 - Miniature pipe; 8 - Punctate barrel pipe; 9-11 - Round pipe stems; 12-13 - Dorsally flattened D-shaped pipe stems.

APPENDIX A

Van Besien Pits

Pit	Diameter	Depth+	Shape+	Contents	Remarks
1	14" x 13"	8h"	Oval	Red-brown soil; flecks of pottery	Round bottom.
2	13" x 9"	4"	Oval	Grey-brown soil	Sterile.
3	9"	5"	Circular	Grey-brown soil	Sterile; round bottom.
4	18"	5"	Circular	Grey-black soil; 2 chert flakes, 1 body sherd.	Round bottom.
5	8 1/2"	6"	Circular	Grey-black soil with charcoal flecks	Round bottom.
6	34" x 21"	13"	Oval	Dark black soil; chert flakes, rough core	6 small posts through centre. Round bottom.
7	27" x 15"	13"	Oval	Fire-reddened sand & ash in bottom overlain by dark black humic sand. Fish bone, pottery, split long-bone.	
8	39" x 16"	6"	Oval	Grey ash, charcoal, deer & turtle bone, pottery, chert flakes, clam shell, red ochre lump, core tablet.	
9	18" x 9"	5"	Oval	Black soil	Sterile.
10	14"	5"	Circular	Grey-black soil	
11]	10"	2"	Circular	Black soil	
12	18"	4"	Circular	Black soil	

Note: • Depth below surface of subsoil.

+ Subsoil surface configuration.

Pit	Diameter	Depth+	Shape+	Contents	Remarks
13	14"	4h"	Circular	Black soil	
14	11"	2h"	Circular	Black soil	House 2
15	22" x 14"	8"	Oval	Black soil	House 2
16	14"	3"	Circular	Black soil	House 2
17	19" x 12"	4"	Oval	Black soil	House 2
18	17"	5½"	Circular	Black soil	House 2
19	15"	8"	Irregular	Dark black soil and flecks of charcoal	House 2
20	13"	6"	Circular	Black soil	House 2
21	26" x 16"	5"	Oval	Black soil	House 2
22	15"	3"	Circular	Black soil	House 2
23	9"	6"	Circular	Black soil	House 2
24	9"	4"	Circular	Black soil	House 2, near hearth
25	15"	6"	Circular	Black soil	House 2, near hearth
26	12"	4"	Circular	Black soil	House 2
27	9"	3"	Circular	Black soil	House 2
28	14"	5"	Circular	Black soil	House 2
29	12"	6"	Circular	Black soil	
30	10"	2h"	Circular	Black soil	House 2
31	10"	3"	Circular	Black soil	House 2
32	12"	7"	Circular	Mixed black soil, grey ash & charcoal. Bone, pottery & chert flakes	House 2, refuse pit

Pit	Diameter	Depth-	Shape-f	Contents	Remarks
33	7h"	3"	Circular	Black soil	House 2
34	7"	4"	Circular	Black soil	House 2
35	10"	2"	Circular	Black soil	House 2
36	16"	6"	Circular	Charcoal, burned bone, chert flakes	House 2. C-14 date of 940A.D.+90 (I-6847) refuse pit
37	15"	4h"	Circular	Black soil	House 2
38	12"	3"	Circular	Black soil	House 2, near hearth
39	12"	4"	Circular	Black soil	House 2, near hearth
40	8"	7"	Circular	Black soil	House 2
41	16" x 12"	7"	Oval	Black soil, pottery	House 2, refuse pit
42	16" x 8"	4"	Oval	Black soil	House 2
43	7"	3"	Circular	Black soil	House 2
44	31"	11"	Circular	Dark black humic soil, 7 pieces of fire- broken rock	House 2, refuse pit
45	11" x 6"	7"	Oval	Black soil	House 2
46	13"	10"	Circular	Black soil	House 2
47	13"	6"	Circular	Black soil	House 2
48	17"	3"	Circular	Black soil	House 2
49	12"	7"	Circular	Black soil	
50	31" x 18"	6"	Oval	Black soil	
51	18"	4"	Circular	Core tablet	
52	15"	9"	Circular	Black soil	

Pit	Diameter	Depth+	Shape+	Contents	Remarks
53	20"	3"	Circular	Black soil	
54	9"	3"	Circular	Black soil	Within a hearth.
55		5"	Irregular	Black soil	
56	30" x 26"	5"	Oval	Charcoal, 4 body sherds, 1 piece of bone	House 2 refuse pit.
57	22"	6"	Circular	Black soil	House 2.
58	54" x 26" x 14"	13"	Irregular	Black soil	
59	14"	5"	Circular	Black soil, charred walnut, chert flakes	House 3 refuse pit.
60	7"	5"	Circular	Black soil, Levanna point	House 3 refuse pit.
61	9 1/2"	7"	Circular	Black soil	House 3
62	24" x 8"	11"	Oval	Black soil	House 3
63	15"	6"	Circular	Black soil, 1 body sherd, fire-broken rock, bone, shell	House 3 refuse pit.
64	27" x 16"	5"	Oval	Black soil	
65		9"	Irregular	Dark black ashy sand, many body sherds, bone, chert flakes, 2 irregular flake scrapers, 1 Levanna point.	
66	20"	13"	Circular	Dark black ashy soil, charcoal, 1 socketted antler point, pottery, chert flakes, bone, corn kernel, 2 irregular flake & 2 Glen Meyer stemmed snubnose scrapers	

Pit	Diameter	Depth	Shape+	Contents	Remarks
67		8"	Oval	Black soil, chert point, deer bone, awl, juvenile ceramics, 2 Glen Meyer stemmed snubnose scrapers, 1 bipolar piece, 1 rough core, 1 side-notched point.	
68	18" x 9"	3"	Oval	Black soil	Sterile.
69	28"	13"	Circular	Black soil, pottery, fire-broken rock, fish spines, bone fragments, charcoal flecks, chert flakes, side-notched point, 1 Levanna point, 1 celt.	Flat bottomed.
70	14"	3h"	Circular	Black soil	
71	11"	4"	Circular	Black soil	House 1.
72	16"	15"	Circular	Black soil	
73	18"	10h"	Circular	Pottery, fire-broken rock, charcoal, fish bone, antler, 2 bivalve shells, deer bone, chert flakes.	House 1, Refuse pit.
74	12"	2h"	Circular	Black soil	House 1.
75	10"	11"	Circular	Black soil	House 1.
76	19"	6"	Circular	Black soil	
77	14"	3h"	Circular	Black soil	
78	11"	4"	Circular	Black soil	House 1.
79	12"	7"	Circular	Black soil	House 1.
80	10h"	3h"	Circular	Black soil, profuse pottery, complete pipe stem, chert flakes.	House 1, Refuse pit.

Pit	Diameter	Depth+	Shape+	Contents	Remarks
81	16"	7½"	Circular	Black soil, pottery, elk antler, fire-broken rock, charcoal flecks, chert flakes, 2 rough cores.	House 1, Refuse pit.
82	21" x 14"	9"	Oval	Black soil, pottery, bone, fire-broken rock, juvenile pot, flake side-scraper, chert flakes.	House 1, Refuse pit
83	14"	7"	Circular	Black soil	House 1.
84	36" x 21"	8"	Irregular	Black soil, pottery, rims, charcoal, ash, fire-broken rock, bone awl, bone, 1 water snail, bone, 2 irregular scrapers.	House 1, Refuse Pit.
85	6 1/2"	2"	Circular	Black soil	House 1.
86	10"	4"	Circular	Black soil	House 1.
87	12"	9"	Circular	Compacted grey ash & charcoal, pottery & chert fragments.	House 1, Refuse pit.
88	29" x 12"	4"	Oval	Black soil, pottery, deer bone, 1 irregular & 1 glen Meyer stemmed snubnose scraper, 1 rough core.	House 1, Refuse pit.
89	16"	4"	Circular	Black soil	House 1.
90	27" x 15"	12"	Oval	Black soil, chert flakes, 3 rough cores.	House 1, Refuse pit.
91	17"	3"	Circular	Black soil	House 1.
92	34" x 23"	8½"	Oval	Black soil	House 3.

Pit	Diameter	Depth+	Shape+	Contents	Remarks
93		9"	Irregular	Black soil, snail shells.	House 3, Refuse pit flat bottom.
94	11"	12"	Circular	Black soil	House 3, near hearth.
95	12"	3"	Circular	Black soil	House 3, near hearth.
96	9h"	3h"	Circular	Black soil	House 3.
97	29"	15"	Circular	Grey-brown sandy soil with charcoal flecks, 1 irregular scraper, 1 net sinker, 1 castellation, 2 body sherds, 1 triangular point, 1 fire-broken rock, 1 rough core, 1 Levanna pt.	House 3, refuse pit.
98	14"	3h"	Circular	Black soil	House 3.
99	10"	7"	Circular	Black soil	House 3.
100	27"	7h"	Circular	Grey-brown fill with charcoal flecks, pipe stem, 1 irregular scraper, body sherds, 1 pce. watersoaked bone.	House 3, refuse pit.
101	21"	13"	Circular	Black soil	House 3.
102	9"	14"	Circular	Black soil	House 3.
103	8"	5"	Circular	Black soil	House 3.
104	19" x 10"	2h"	Oval	Black soil, sparse charcoal	House 3, C-14 date of 775A.D.+140(I-6848)
105	15" x 10"	1h"	Oval	Black soil.	
106	26"	2"	Circular	Black soil	Post in pit.
107	20"	6"	Circular	Black soil, 2 body sherds	House 1, refuse pit.

Pit	Diameter	Depth+	Shape+	Contents	Remarks
108	22" x 17"	18"	Oval	Mixed charcoal, ash & sand, deer bone & teeth, chert flakes, nearly complete fabric impressed pot, 1 rough core.	House 1, flat bottom, refuse pit.
109	9"	7"	Circular	Light brown soil with charcoal flecks, 1 irregular & 1 flake side-scraper, 1 complete elbow pipe.	House 1, refuse pit.
110	10"	5"	Circular	Black soil	House 1, near hearth.
111	20"	4"	Circular	Black soil	House 1, near hearth.
112	9h"	4h"	Circular	Ash & charcoal	House 1, Ash pit.
113	10"	3"	Circular	Black soil	House 1.
114	24" x 17"	5h"	Oval	Black soil	House 1, post in pit.
115	15"	15"	Circular	Black soil, rim & shoulder sherd, 1 pc. split bone, chert flakes, clay gaming disc.	House 1, refuse pit.
116	27" x 18"	6"	Oval	Black soil	House 1.
117	15"	5"	Circular	Black soil	House 1.
118	22"	4"	Circular	Black soil	
119	17" x 10"	3"	Oval	Black soil	
120	78" x 18"	16"	Irregular	Black soil, pottery & chert flakes.	
121	72" x 24"	9h"	Irregular	Black soil	
122	24" x 16"	5"	Oval	Black soil	
123	40"	18"	Circular	Black soil, deer bone, pottery, fire-broken rock, 1 irregular	House 1, refuse pit.

Pit	Diameter	Depth+	Shape+	Contents	Remarks
				scraper, 1 socketted antler projectile.	
124	15"	9"	Circular	Charcoal, pottery, slate, 1 irreg. scraper chert flakes, core tablet.	House 1, flat bottom refuse pit.
125	20"	9"	Circular	Black soil, some pottery, fish bone.	House 1, refuse pit.
126	14h"	7h"	Circular	Black humic fill, 1 worked chert pc.	House 1, bell-shaped cross-section.
127	23"	6h"	Circular	Black humic fill, rare pottery, deer bone, 1 irregular scraper, chert flakes, 2 human bones.	House 1, flat bottom refuse pit.
128	16"	4"	Circular	Black soil, 2 irregular scrapers, rim sherd, fish bones & scales, projectile, beaver incisor, chert flakes.	House 1, refuse pit.
129	12"	2"	Circular	Black soil.	House 1.
130	19"	4"	Circular	Black soil, 1 irregular scraper.	House 1, refuse pit.
131	15"	3"	Circular	Grey ash	House 1, ash pit.
132	12"	6"	Circular	Grey ash	House 1, ash pit.
133	11"	16"	Circular	Black soil, 2 irregular scrapers.	House 1, refuse pit.
134	33" x 18"	6"	Oval	Black soil, 4 body sherds	House 1, refuse pit.
135	9"	9"	Circular	Black soil	House 1, near nearth.

Pit	Diameter	Depth+	Shape+	Contents	Remarks
136	15"	3"	Circular	Black soil	House 1.
137	10"	8"	Circular	Black soil	House 1.
138	9"	8"	Circular	Black soil, 1 Glen Meyer stemmed snub-nose scraper.	House 1, refuse pit.
139	16"	8"	Circular	Black soil, 1 irregular scraper.	House 1, refuse pit.
140	9"	13"	Circular	Black soil	House 1.
141	8"	10"	Circular	Black soil	House 1.
142	17"	9½"	Circular	Black soil	House 1.
143	8"	11"	Circular	Black soil	House 1.
144	9"	3½"	Circular	Grey ash	House 1, ash pit.
145	8"	9"	Circular	Grey ash	House 1, ash pit.
146	10"	2"	Circular	Black soil	House 1.
147	51" x 20"	9"	Oval	Black soil	House 1.
148	12"	3"	Circular	Black soil	House 1.
149	13"	3"	Circular	Black soil	House 1.
150	8½"	11"	Circular	Dark black soil, beaver incisor, antler rod, 1 rough core, juvenile pot.	House 1, refuse pit.
151	12"	2"	Circular	Black soil	House 1.
152	7"	5"	Circular	Black soil	House 1.
153	14"	5"	Circular	Black soil	House 1.

pit	Diameter	Depth	Shape	Contents	Remarks
154	22" x 18"	3"	Oval	Black soil	House 1.
155	37" x 16"	4"	Oval	Black soil, 1 side-notched scraper.	House 1, refuse pit.
156	14"	2"	Circular	Black soil, 1 irregular scraper.	House 1, refuse pit.
157	16" x 9"	17"	Oval	Black soil	House 1.
158	24"	6"	Circular	Black soil, 1 irregular scraper.	House 1, refuse pit.
159	9h"	6h"	Circular	Black soil	House 1.
160	11"	3h"	Circular	Black soil	House 1.
161	10"	7"	Circular	Grey ash	House 1, ash pit.
162	14"	8"	Circular	Black soil	House 1.
163	16"	3"	Circular	Black soil	House 1.
164	12"	2"	Circular	Black soil	House 1.
165	8"	9"	Circular	Black soil	House 1.
166	8"	2h"	Circular	Black soil	House 1.
167	13"	7"	Circular	Grey ash	House 1, ash pit.
168	14"	4"	Circular	Grey ash	House 1, ash pit.
169	15"	3h"	Circular	Grey ash	House 1, ash pit.
170	8"	7"	Circular	Black soil	House 1.
171	14h"	2"	Circular	Black soil	House 1.
172	14"	6"	Circular	Black soil	House 1.
173	15"	15h"	Circular	Black soil	House 1.

Pit	Diameter	Depth+	Shape+	Contents	Remarks
174	9"	8"	Circular	Black soil	House 1.
175	18"	8"	Circular	Black soil, 1 irregular scraper, 1 bone awl, 1 Levanna point.	House 1, refuse pit.
176	29" x 24"	10"	Oval	Black soil, 1 bone awl	House 1, refuse pit.
177	27"	15"	Circular	Black soil	House 1, near hearth
178	16"	4"	Circular	Black soil	House 1.
179	13"	2"	Circular	Black soil	House 1.
180	13"	6"	Circular	Black soil	House 1.
181	12"	7"	Circular	Black soil	House 1.
182	12"	18"	Circular	Black soil	House 1.
183	19"	9"	Circular	Black soil	House 1.
184	9"	7"	Circular	Black soil	House 1.
185	9"	2"	Circular	Black soil, 1 thumbnail scraper, core tablet.	House 1, refuse pit.
186	17" x 8"	13"	Oval	Black soil	House 1.
187	15"	3"	Circular	Black soil	House 1.
188	13"	3"	Circular	Black soil	House 1.
189	26" x 16"	5"	Oval	Black soil	House 1.
190	16"	9"	Circular	Black soil, 7 water snails.	House 1, refuse pit.
191	15" x 12"	6"	Oval	Black soil	House 1.
192	51" x 20"	17"	Irregular	Black soil	C-1
193	23" x 12"	3"	Oval	Black soil	

Pit	Diameter	Depth+	Shape+	Contents	Remarks
194	19"	7"	Circular	Black soil	House 1.
195	12"	11"	Circular	Black soil	House 1.
196	11"	3"	Circular	Black soil	House 1.
197	8"	2h"	Circular	Black soil	House 1.
198	72" x 27"	4h"	Irregular	Black soil	
199	31" x 16"	6"	Oval	Black soil, 1 irregular scraper	House 1, refuse pit.
200	33" x 12"	7"	Oval	Black soil, 2 irregular & 1 flake side-scraper	House 1, refuse pit.
201	11h"	8"	Circular	Grey ash, thumbnail scraper	House 1, near hearth Ash pit.
202	18"	4"	Circular	Black soil	House 1.
203	13"	6"	Circular	Grey ash	House 1, near hearth Ash pit
204	12"	7"	Circular	Grey ash	House 1, ash pit.
205	16"	3"	Circular	Black soil	House 1.
206	17"	4"	Circular	Black soil	House 1.
207	18"	4"	Circular	Black soil	House 1.
208	15"	5"	Circular	Grey ash	House 1, near hearth Ash pit.
209	15"	17"	Circular	Grey ash	House 1, near hearth Ash pit
210	24" x 15"	5h"	Oval	Black soil	House 1.
211	8h"	4"	Circular	Black soil	House 1, near hearth

Pit	Diameter	Depth+	Shape+	Contents	Remarks
212	32" x 24"	7"	Oval	Black soil	House 1, near hearth.
213	7½"	2"	Circular	Black soil	House 1.
214	15"	7"	Circular	Black soil	House 1.
215	10 1/2"	3"	Circular	Black soil	House 1.
216	9"	2½"	Circular	Black soil	House 1.
217	8"	6"	Circular	Black soil	House 1.
218	17"	9"	Circular	Black soil	House 1.
219	9"	5"	Circular	Black soil	House 1.
220	7"	3"	Circular	Black soil	House 1.
221	45" x 24"	7"	Oval	Black soil	House 1.
222	15"	9"	Circular	Grey ash	House 1, ash pit.
223	30" x 22"	10"	Oval	Black soil, 1 irregular scraper	House 1, refuse pit.
224	16"	20"	Circular	Black soil	House 1
225	17"	2"	Circular	Black soil	

APPENDIX B

Seasonality, Habitat and Distribution of the
Van Besien Fish and Avifauna

James A. Burns

TABLE VIII - Spawning, Habitat, and Relevant Distribution of Fish (After Scott, 1967)

Species	Spawns	Habitat and Distribution	Comments
Lake Sturgeon	spring, early summer; shallow lake waters or ascends streams.	large lakes and rivers; includes Great Lakes.	20-year old may weigh 15-20 lbs.; record over 300 lbs.
Longnose Gar	spring, May-June; shallows in vegeta- tion or stony shoals.	shallow, weedy bays and backwaters; Great Lakes; primarily southern fish.	seldom caught by angling; no known value.
Bowfin	spring.	shallow, weedy bays and inlets; Great Lakes' ex- cept Superior.	may reach 10 lbs.; average 2-3 lbs.; angled or netted.
Lake Trout	fall, October-Novem- ber; inshore shallows.	deep, cool waters of large lakes; Great Lakes except rare in Erie.	may be inshore from spawning till after spring break-up; therefore available?
Whitefish cf. Coregonus	November-December; shallows of lakes; may ascend streams inland.	Great Lakes and large in- land lakes to Hudson Bay.	angled through ice in winter; some spe- cies to 20 lbs.; often 2-3 lbs.
Northern Pike/ Muskellunge	spring, after break- up; shallow, weedy waters.	Pike: summer-shallows; fall-depths. Musky: oppo- site; not present in open Great Lakes.	Pike: to 4 lbs., some to 20 or more. Musky: to 20 lbs., some to 40 or more.
Sucker sp.	spring	lakes and rivers; Great Lakes and inland lakes.	various species from 1-5 lbs.
Catfish cf. Ictalurus	spring; small lakes and sometimes ascend rivers.	quiet, weedy, mud-bottomed lakes; Channel Cats in clearer, cooler waters; Great Lakes and inland.	Bullheads to 1 lb.; Channel Cats from 2- 30 lbs. or more.
Burbot	January-March; rivers and rocky lake bottoms.	deep, cool water in sum- mer; Great Lakes and deep lakes to Hudson Bay.	ugly but edible; to 5 lbs. and more; yields quality liver oil; kin to cod.

TABLE VIII - continued

Species	Spawns	Habitat and Distribution	Comments
Bass sp. cf. Micropterus	late spring, early summer.	Smallmouth: clear, rocky lakes; Largemouth: warm, weedy waters. All of sou- thern Ontario; Great Lakes drainage.	average 2 lbs.; Largemouth to 8 lbs.
Rock Bass	late spring, early summer.	rocky shallows of lakes; Great Lakes and north; abundant in L. Ontario.	smallish, 1/2 lb. avge.; found with smallmouth and pump- kinseed.
Pumpkinseed	spring.	weedy ponds, lakes, slow rivers; Ontario north to Soo, including Great Lakes.	fine flavour but small; often caught by seine-netters.
Pickerel/Sauger	spring, after thaw; ascends streams.	lakes and large rivers; throughout Ontario.	Pickerel: 3-5 lbs.; Sauger: smaller; re- tire deeper in sum- mer.
Yellow Perch	April-May.	shallow lakes, espec. Great Lakes drainage; essentially a lake fish.	4-10 oz. average; to 1 lb. in Great Lakes.
Freshwater Drum	After July 1.	shallow waters of large lakes or rivers.	average 1-2 lbs.; to 10 lbs. in Great Lakes.

TABLE IX - Seasonal Data on the Avifauna at Van Besien (after Godfrey, 1966)

Species	Relevant Status in Ontario	Residency Period at Van Besien
Common Loon	Breeds throughout Ontario; uncommon winter resident on lower Great Lakes, usually south.	spring to fall
Canada Goose	Breeds far north; winters in extreme southern Ontario, and south.	spring and fall
Bufflehead	Breeds north and west; winters on lower Great Lakes and south.	spring and fall
Old Squaw	Breeds far north; winters on open Great Lakes and on east coast.	winter(?)
Hooded Merganser	Breeds north of S.W. Ontario; winters occasionally on lower Great Lakes.	spring and fall(?)
Common Merganser	Breeds in most of Ontario; winters on lower Great Lakes.	year-round
Red-shouldered Hawk	Breeds throughout southern Ontario; winters south but may stay (winter records for Toronto, Hamilton, and Pelee).	spring to fall
Ruffed Grouse	Breeds throughout Ontario; non-migratory.	year-round
Wild Turkey	Extirpated; bred in S.W. Ontario; non-migratory.	year-round
Sandhill Crane	Extirpated; bred along west side of Hudson Bay and on Lake St. Clair; presently rare transient in southern Ontario.	spring to fall(?)
Passenger Pigeon	Extinct; bred throughout Ontario; wintered south of Great Lakes.	spring to fall

TABLE IX - continued

Species	Relevant Status in Ontario	Residency Period at Van Besien
Barred Owl	Breeds widely in Ontario; non-migratory.	year-round
Yellow-shafted Flicker	Breeds throughout Ontario; winters in Toronto-Hamilton area and south.	year-round