THE PHYSICAL ANTHROPOLOGY OF THE LASANEN SITE--AN EARLY HISTORIC INDIAN POPULATION

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ABSTRACT

THE PHYSICAL ANTHROPOLOGY OF THE LASANEN SITE--AN EARLY HISTORIC INDIAN POPULATION

By

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The Lasanen Site is located on the north side of the Straits of Mackinac within the city limits of St. Ignace, Michigan. The site can be dated between 1670 and 1700, probably nearer the end of that period. Jesuit missionary activity had been in the area for between one and two generations but the burial method was not Christian as the pits were generally small, mass, secondary interments, with between one and thirteen individuals in each pit. The burial practice has similarities with the well-known Iroquois feast of the dead in Ontario. In addition to the presentation of the physical anthropology of the Lasanen burials, other Great Lakes area burial populations were reviewed with the hope that relationships both physical and cultural could be established. It was concluded that the burial practice found at the Lasanen

site is not an adaptation after the Iroguois method, rather, the Lasanen pattern was long established in the Straits of Mackinac area.

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I. INTRODUCTION

The Lasanen site (20 MA 21) is located on the property of the late W. C. Lasanen, M.D., who died as the result of an unfortunate automobile accident in July of 1968. The Lasanen property is within the city limits of St. Ignace, Mackinac County, Michigan, in the northeast quarter of section 18, T 40 N, R. 3 W. St. Ignace is located at the southern tip of the southernmost extension of land on the eastern portion of Michigan's upper peninsula, just east of the exit from the Mackinac Bridge. The Mackinac Bridge connects Michigan's upper peninsula to the lower peninsula and divides Lake Michigan and Lake Huron. Fort Michilimackinac and Mackinac City are at the south end of the bridge. The site lies on a 620-foot Nippissing beach terrace and overlooks Moran Bay and Mackinac Island in Lake Huron to the east.

The Lasanen site was first recognized by Dr. Lasanen as a result of a foundation excavation for a new house that now has been built on the property. Burial pits had been disturbed exposing long bones and artifacts.

Lyle M. Stone, who was supervising archaeological excavation during the summer at nearby Fort Michilimackinac, went to the site and immediately undertook salvage excavations for burial pits lying within the foundation boundary. Four pits were defined and completely excavated at this time, Pits A, B, D, and E.

Several weeks later, during the week of September 18-24, 1966, Dr. Charles E. Cleland of the Michigan State University Museum and a crew of nine anthropology students returned to the site to locate and excavate thirteen more burial pits. Artifacts excavated at this time were studied and returned to Dr. Lasanen but the skeletal remains described here were kept at the MSU Museum. A site report on the 1966 excavations will soon be available as a publication of the Michigan State University Museum Cultural Series. In August of 1967, Dr. Cleland returned to the Lasanen site with a crew of eleven students for two full weeks of work.

The adjacent undeveloped field to the northeast of the Lasanen house is owned by Mr. Prentice Brown, a former United States senator who resides in St. Ignace. Permission was obtained from Mr. Brown to excavate on this

property and the second stage of excavation at the Lasanen site was undertaken entirely on the Brown property. In the two weeks spent working on the Brown property, eight burial pits were excavated. These were numbered 1, 2, 3, 4, 5, 6, 7, and 9. The excavation of Burial Pit 5 was not completed and will not be discussed in this study. When work was stopped on Burial Pit 5, the unexcavated materials were covered with black vis-queen plastic for possible future excavation. The exposed materials suggest that this burial is very large and may represent more than one pit.

Portions of the overburden over the site had been disturbed by railroad activities early in the century. Few, if any, of the deep burial pits were disturbed by these activities but occasionally isolated human skeletal elements were found close to the surface of the ground. Perhaps these remains represent a burial pit or pits that were disturbed and the bones were scattered near the surface of the ground.

The beach terrance in which the burial pits were placed is very wide and flat, sloping gently upward from the steep ridge at the edge of the terrace. The ridge

drops abruptly almost thirty feet to a low terrace above the modern lake shore. The burial pits lie very close to the edge of the upper terrace and seem to be randomly distributed. The large vacant field had small patches of very green grass scattered all along the terrace running northwest from the Lasanen house and up to about fifty yards from the ridge. The hypothesis that the burial pits could be identified from these differences in flora was tested and proved to be accurate. The grasses were always more green and dense over the burial pits than surrounding grasses and more varieties of grasses as well as sweet clover were found in these small areas. All burial pits were excavated into undisturbed beach sand and gravels of the Nippissing beach terrace. Pit size and shape varied but they were usually rectangular and measured about three to five feet on a side. Burial pits were most frequently dug three to four feet below the present terrace surface. The sand-gravel soil of the site was very hard packed and very difficult to dig with hand tools. The 1967 digging was aided by the use of a back-hoe which scrapped off the top one to two feet of overburden exposing the dark organic soil of the

burial pits. Artifacts and bones were usually concentrated eight to ten inches thick. Burial Pit 3 was constructed with wood planks along its sides, but most of the remaining pits had rock liners or none at all. A brief description of each burial pit is included to acquaint the reader with the variety of burial methods and problems encountered in the excavation. The distribution of the burial pits is shown in Plate 1.

An examination of the artifacts found associated with the Lasanen burials leads Cleland (n.d.) to conclude that the burial pits excavated by the Museum date from 1670 A.D. to 1715 A.D. The reasoning is that the Lasanen artifacts are unlike the artifacts from Saint Marie which dates prior to 1670 and unlike Fort Michilimackinac which was built in 1715. The artifact assemblage is like those at the Bell Site, Fort Albany, and the Shiperdo, Whineym and Lamery sites which date between 1670 and 1700. It is unfortunate that the artifacts do not furnish evidence as to the ethnic identity of the Lasanen people. Also, the Jesuit mission at St. Ignace was built in 1670 and although there was occupation in the Straits of Mackinac area before the mission was built there was a large population after it was established.

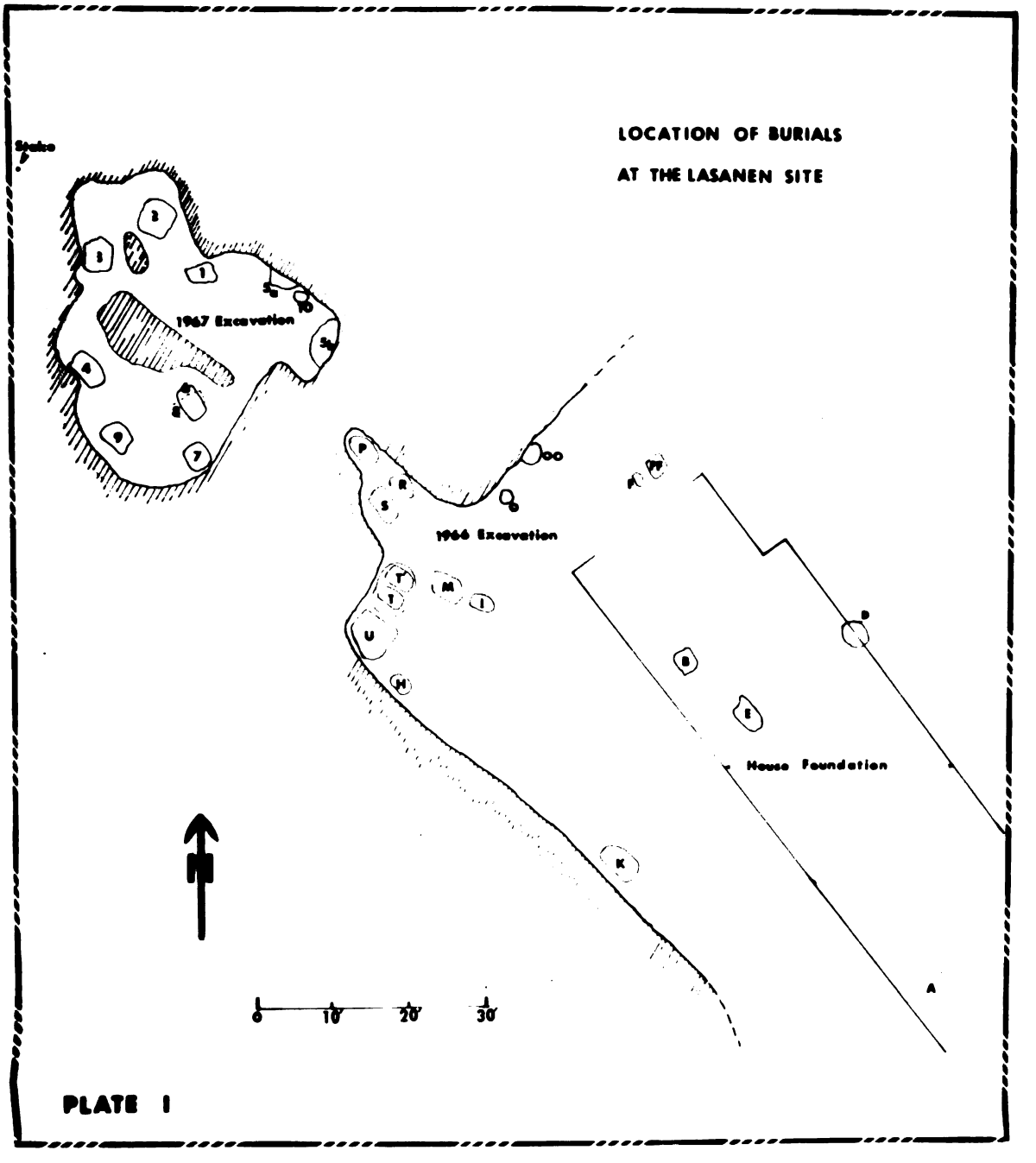

LOCATION OF BURIALS
AT THE LASANEN SITE
1967 Excavation
1966 Excavation
House Foundation
0
10'
20'
30'

PLATE I

The aim of this study is to present the physical anthropology of the Lasanen site. It is organized as a tool for comparative work. The anthropometry methods are from Hrdlicka (1952) except the section on dental measurements. Identification of paleopathologies, congenital anomalies, and the methods of calculating indicies are from various sources.

The Lasanen cemetery is important because it is a rather large population sample and a great deal of data is presented. It is also important because the site is so accurately dated in the later part of the seventeenth century in the Straits of Mackinac area which is an area of intensive occupation at that time. The area is also well documented historically in the seventeenth century. One of the major goals of this study is to establish the ethnic group identity of the Lasanen people from the evidence supplied by the physical anthropology. In this paper, the terms 'burial pit' and 'pit' are used to indicate the grave pits which contained the burials, the terms 'burial' and 'individuals' indicate the single human interments.

II. DESCRIPTION OF THE LASANEN BURIAL PITS

Burial Pit A: Number of Individuals--13
Size--60 x 60 inches
Lining--None
Condition--Disturbed by construction. The pit was difficult to interpret because of the number of individuals buried in the pit. Preliminary examinations produced estimates ranging from eight to nineteen individuals but a minimum of thirteen burials seems to be the most accurate estimate. (See Plate II)

Burial Pit B: Number of Individuals--4
Shape--Rectangular
Lining--Ceder bark (?)
Condition--Partially disturbed by construction though apparently not opened. Ceder bark could have lined the pit or have been used to wrap the burials.

Burial Pit D: Number of Individuals--6
Shape--Unknown
Lining--None

Condition--The pit was in direct line with the house foundation and was completely removed before it could be examined.

Burial Pit E: Number of individuals--2
Shape--Rectangular
Size--54 x 36 inches
Lining--Rock slab-partial
Condition--(See Plate II)

Burial Pit F: Number of individuals--1
Shape--Unknown
Size--Unknown
Lining--Unknown
Condition--Completely destryed by a bull-dozer.

Burial Pit FF: Number of individuals--4
Shape--Rectangular
Size--36 x 30 inches
Lining--Unknown
Condition--Partially destroyed by con-struction.

Burial Pit H: Number of individuals--2
Shape--Rectangular
Size--60 x 36 inches
Lining--Unknown
Condition--Largely destroyed by construc-tion, very few bones were recovered.

Burial Pit I: Number of individuals--3
Shape--Rectangular
Size--54 x 36 inches
Lining--None
Condition--All of the bones were concentrated in the south end of the pit.

Burial Pit K: Number of individuals--3
Shape--Rectangular
Size--50 x 38 inches
Lining--Rock lined
Condition--Some of the bones were articulated but no skulls were present.

(See Plate II)

Burial Pit M: Number of individuals--3
Shape--Rectangular
Size--60 x 40 inches
Lining--Rock lined
Condition--Several long bones from the individual that was represented by the most bones in the pit were distributed as though they were bundled and placed in the north end of the pit but the other bones were scattered throughout the burial pit. No skulls were recovered from this pit. (See Plate III)

Burial Pit O: Number of individuals--1
Shape--Unknown
Size--Unknown
Lining--None
Condition--The pit was shallow and ill-defined.

Burial Pit P: Number of individuals--1
Shape--Irregular
Size--Irregular
Lining--None
Condition--The cranium was lying on a piece of modern iron. The evidence suggests that the burial was discovered probably within the last fifty years and was reinterred a few feet west of the original grave fossa which was still definable at the time of excavation but contained very few bones. (See Plate III)

Burial Pit R: Number of individuals--2
Shape--Rectangular
Size--48 x 36 inches
Lining--Rock lined-partial
Condition--The long bones in this pit were alined with the long axis of the pit, which seems to be intentional. (See Plate III)

Burial Pit S: Number of individuals--1
Shape: Rectangular
Size--72 x 42 inches
Lining--None
Condition--The single individual represented seems to have been rearticulated as it was placed in the grave. The scapulae, clavicles, radii, and ulnae were nearly in correct anatomical arrangement but the sacrum was placed up-side-down between the hip bones. The long bones appear to have been bundled. (See Plate IV)

Burial Pit T and T': Number of individuals--4 and 2
Size--Both about 65 x 48 inches
Lining--Rock lined-partial
Condition--The twin pits were dug side-by-side probably at the same time. An infant and a young child were interred in the fill above the two pits but were listed as individuals from Pit T. In Pit T' the skull was placed on the condyles of the mandible and a femur was propped up against the northwest wall of the pit. Some of the elements

in Burial Pit T' were in good articulation suggesting that flesh was still on some of the bones at the time the burial was covered. (See Plate IV)

Burial Pit U: Number of individuals--2
Shape--Obscured by bulldozing.

The above burial pits were excavated in 1966 and were indicated by letters while those excavated in 1967 were indicated by numbers. The 1967 burial pits are:

Burial Pit 1: Number of individuals--4
Shape--Trapezoid
Size--45 x 28 inches at the approx. center
Lining--None discernable
Condition--The very straight sides suggest that wood planks may have been used to line the pit. Pit 1a was the actual burial pit although a burial designated '1b,' an adult female, was interred above the defined burial pit. (See Plate V)

Burial Pit 2: Number of individuals--7
Shape--Round
Size--95 (approx.) inches in diameter
Lining--None

Condition--Four skulls were placed on the south perimeter of the pit and two more were placed near the north perimeter. (See Plate V)

Burial Pit 3: Number of individuals--3
Shape--Pentagon (Rectangular)
Size--70 x 63 inches
Lining--Wood planks on two sides, and one rock wall.
Condition--One complete adult female skeleton was recovered from the pit but many bones of the other two burials were missing.

Burial Pit 4: Number of individuals--1
Shape--Rectangular
Size--90 x 60 inches
Lining--Rocks at the corners
Condition--A single complete adult male burial.

Burial Pit 6: Number of individuals--4
Shape--60 x 40 inches
Lining--Rock lined-partial
Condition--Two feet below the ground surface, a complete extended coffin burial of a five-year-old child was found; it was intrusive into an earlier multiple burial pit. The coffin burial is

thought to date from about 1800 or about one hundred years later than the lower burial pit.

Burial Pit 7: Number of individuals--2
Shape--Rectangular
Size--40 x 24 inches
Lining--None

Burial Pit 9: Number of individuals--1
Shape--Rectangular
Size--62 x 36 inches
Lining--Rock lined-partial
Condition--The floor was surfaced with rock slabs.

In total, 24 burial pits were excavated and all were secondary burial pits although some of the individual burials may have been primary interments. Although the burial pattern resembles the ossuary pattern, the Lasanen burials are not ossuaries because the pits generally contain only a few individuals, and some contain only one. The true ossuary burial is an interment of a large number of individuals, such as the Iroquois burials described by Anderson (1963) containing over 500 burials or the ossuaries described by Churcher and Kenyon (1960). The Fairty and Tabor Hill ossuaries are large mass burials

DIAGRAMS OF LASANEN BURIAL PITS

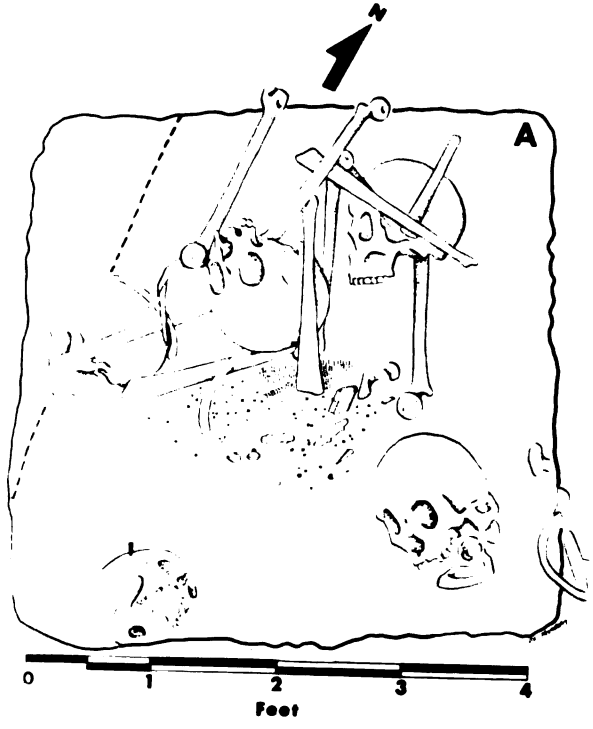


Fig. 1 Pit A

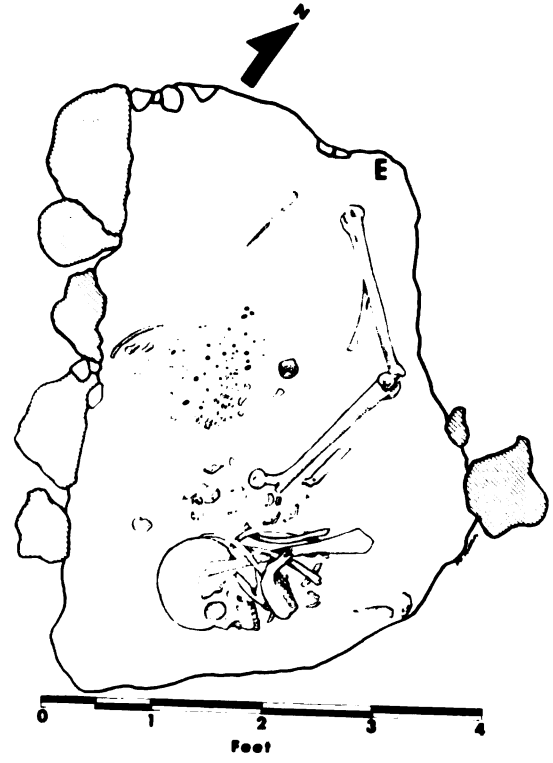


Fig. 2 Pit E

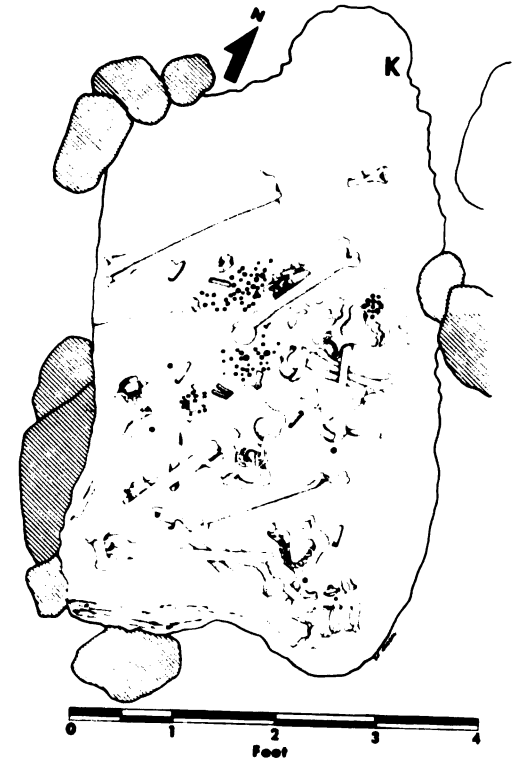


Fig. 3 Pit K

PLATE II

DIAGRAMS OF LASANEN BURIAL PITS

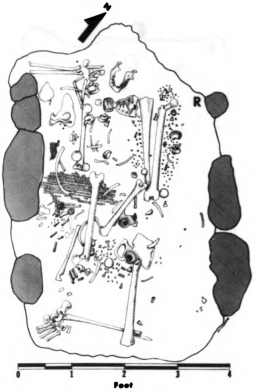


Fig. 4 Pit R

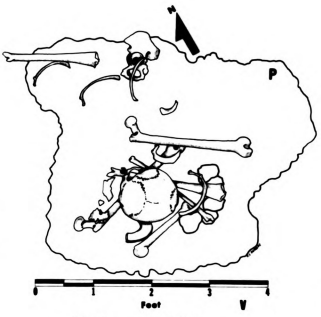


Fig. 5 Pit P

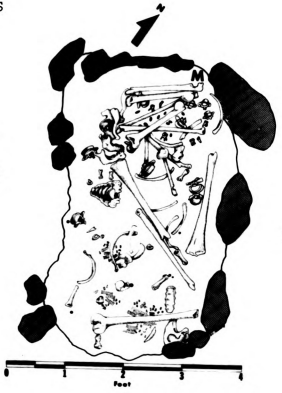


Fig. 6 Pit M

PLATE III

DIAGRAMS OF LASANEN BURIAL PITS

Fig. 7 Pit S

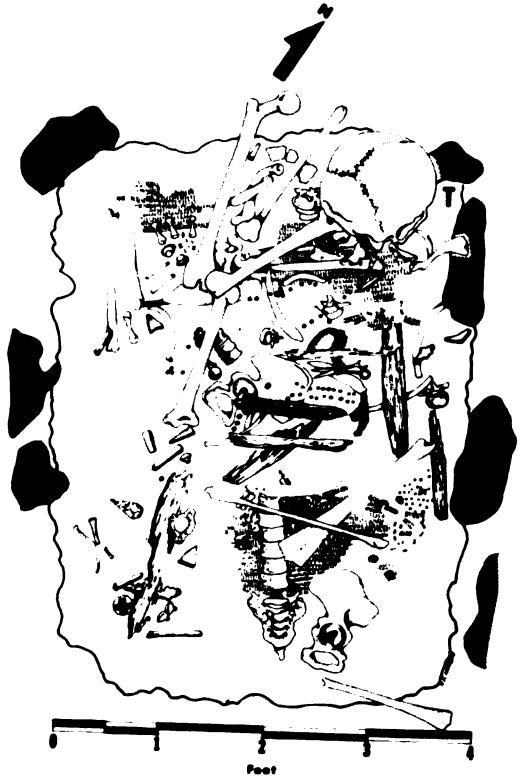


Fig. 8 Pit T

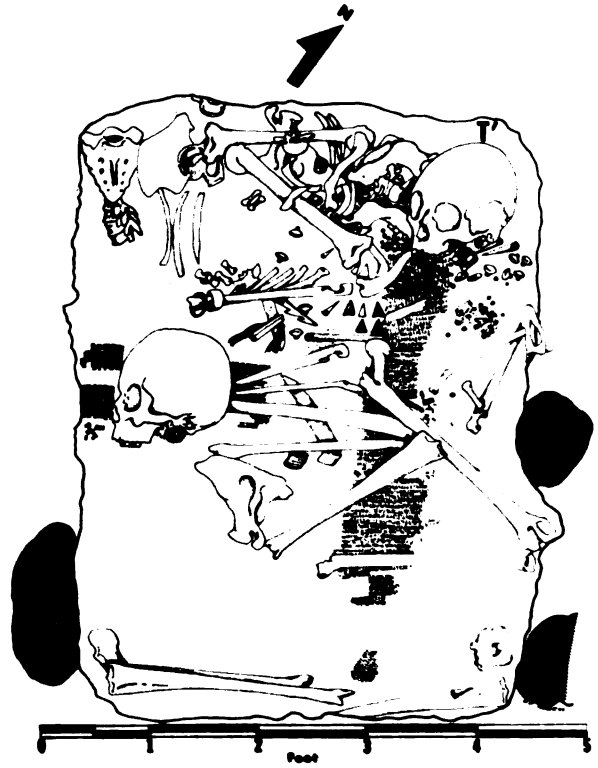


Fig. 9 Pit T'

PLATE IV

Fig. 10 Pit 1

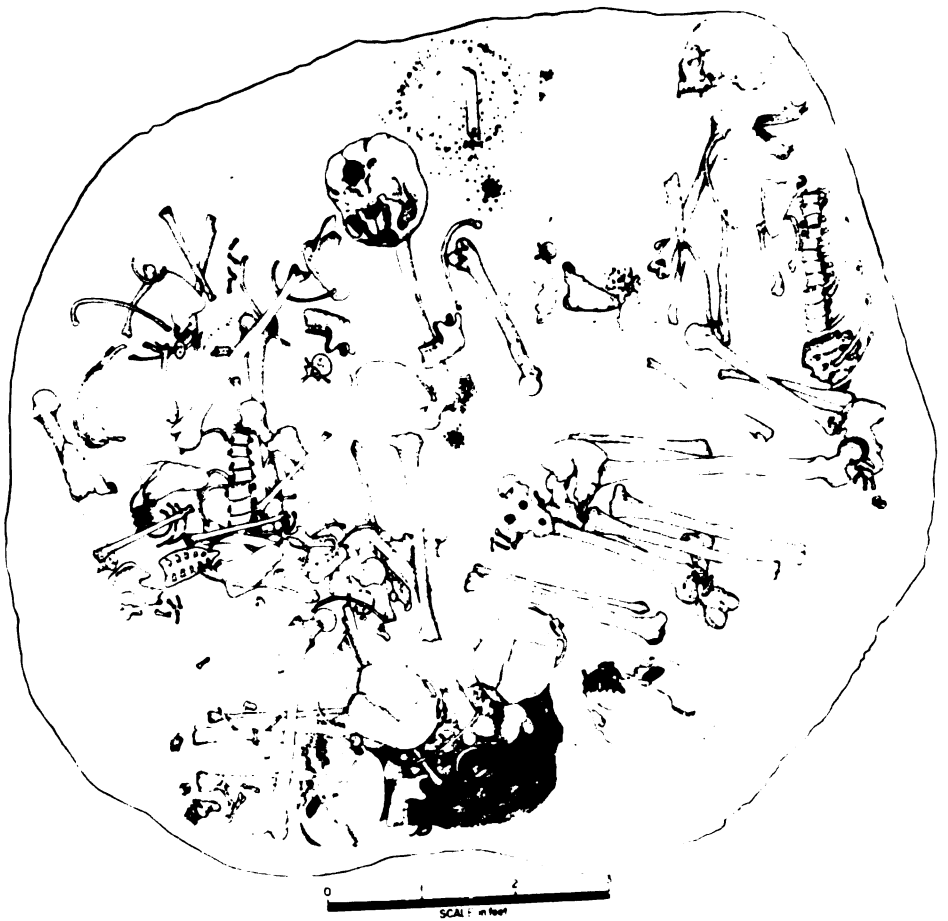


Fig. 11 Pit 2

PLATE V

DIAGRAMS OF LASANEN BURIAL PITS

interred at the celebration of the Iroquois 'Feast' or 'Festival of the Dead' (Kidd, 1953; Guta, 1958). At these 'festivals' large numbers of Iroquois participated in the mass interment of kinsman. Close relatives apparently managed the disinterment and recovery of temporarily interred bodies which were transported, usually as disarticulated skeletons to the scene of the festival ceremony. There they were buried in a common pit with Iroquois dead of other villages. Burial Pit A was the largest Lasanen pit containing a minimum of only thirteen burials though the actual number may have been a few more. There is little doubt that mistakes were sometimes made in assigning bones to a particular burial but thirteen burials can be considered a fairly accurate estimate of the individuals in Burial Pit A. Another possible problem is that not all the bones originally placed in the burial pits were recovered and brought to the Museum.

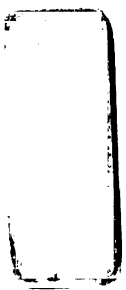
It remains that Burial Pit A is the largest burial pit excavated at the Lasanen site and it is not comparable in size with the Tabor Hill and Fairty ossuaries. Another difference between Lasanen burials and ossuaries is that some of them contain rather well articulated

skeletons suggesting that they were primary interments. Perhaps the Lasanen burial pattern can be described most accurately as 'ossuary-like' burials since they resemble the classic Iroquois ossuaries except for size and the tendency toward primary interments.

Burial Pit 2, which contained seven individuals was the second largest burial. Burial Pit D was next in size with six burials, Burial Pits 1, 6, B, FF, and T all contained four individuals. Pits 3, I, K, and M contained three burials, while Pits 7, E, H, R, T, and U contained two individuals. Six burial pits contained single individuals, these are Pits 4, 9, F, O, P, and S. Burial Pit O contained only the facial bones and the frontal bones of a nine or ten year old child; no other bones were recovered and no definite burial pit could be located. The burial is notable because of the traumatic perforation through the medial interorbital area into the brain case. Remaining single burials were mostly adults and none of the remains were articulated. It should be kept in mind that in the Burial Pits 1 and T, supplementary burials were made in the pit fill while Burial Pit 6 was actually two burials of different time periods. Only

larger multiple burial pits contained articulated skeletons, Burial Pit 2 is most notable in this regard since it contained two burials that were partially articulated.

I noted earlier that some of the skeletal elements from the pits which were exposed by construction work may not have been recovered by the Museum. Of the thirteen identified individuals in Pit A only one unbroken adult skull was received at the Museum although two other broken adult crania were also received. Burial Pit B which contained four individuals including two adults did not have any skulls in the pit either. Also Burial Pits K and M both produced three burials yet each contained two mandibles but no crania. Burial Pit 1 is the only pit excavated in 1967 that did not have skulls in the burial pit and it had very few recovered bones compared to the other 1967 burial pits, but Burial Pit 2 and every other burial pit excavated in 1967 under controlled conditions had every skull accounted for. This evidence leads me to believe that some bones were lost during dirt moving operations or left the site in an unexplained manner, especially from Burial Pit A, from the 1966 excavations. Another complication was the emergency of the salvage



operation which may have detracted from accuracy in the excavation procedure. The following year in August, 1967, only eight pits were excavated and one of these Pit 5 was not completed in the two weeks spent working at the site. Only four days were spent working in 1966. The slower pace in 1967 indicates the greater care that was taken during the second stage of excavation.

The difficulty encountered in examining Burial Pit A during the academic year 1966-67 stimulated an experiment in excavation technique in August, 1967. When Pit 2 was opened and it was assertained to be a large and complex burial pit a new technique was tested. Every major element from Burial Pit 2 was marked with a number before it was taken from the ground and each bone was then drawn on a grid plot and given the number indicated on the marked bone. The technique proved very helpful and probably did not add much to the time required to carefully excavate this large and complicated burial pit. The utility of the method proved itself in the time saved in the laboratory reassociating the skeletal elements of individual burials.

III. METHODOLOGY

A. Age and Sex

Age determination was derived by a variety of methods. Greatest reliability was given to dental eruption sequence as specified by Anderson (1962) although this aging technique is limited to the first twenty or twenty-one years of life. After the age of complete dentition, dental attrition was used with caution and was given increasingly less reliability as attrition increased. As a rule if the first molars showed no wear the individual was assigned an age in the early twenties and if the third molars had slight attrition the burial was aged twenty-five to thirty-five years of age. Beyond the age thirty-five and often for younger burials, dental attrition was used but long possible age ranges were assigned. As a rule, cranial suture closure was not used to age burials because of its low degree of reliability. Postcranial epiphisial closure was used for aging according to Anderson (1962) as was pubic symphisis aging criteria, also after Anderson.

Sexing of skeletons was done completely non-metrically with greatest reliability given to pelvic observations, mostly by the width of the sciatic notch. Secondary reliance was placed on cranial observations, a general appraisal of the ruggedness, size of the mastoid process development and sharpness of the orbit borders usually gave some impression of sex. Sexing of skeletons was often impossible because of the small number of bones that were recovered from a particular individual and only relatively mature individuals of fifteen years of age or older were assigned sex. In three instances sex was assigned on the basis of relative size of elements though I have stated that sexing was done non-metrically. Burials B-1 and M-1 were designated as males on the basis of the large size and masculine musculature of the bones. Likewise, Burial A-9 was designated as female because of the smallness of the bones.

Age was estimated for every identifiable individual (Table 1). It must be admitted, however, that some age assignments could be open to question. Often, the age estimate was only a minimum-maximum age bracket. Young individuals were especially troublesome to age when only

TABLE 1.--Age distribution of burials from the Lasanen site.

Burial	Male	Female	?	Burial	Male	Female	?
A-1	50+			M-1	25-35		
-2	18-20			-2			14-15
-3		18-21		-3			0
-4			12+	O			9-10
-5			8-9	P	25-35		
-6			8-12	R-1		22-25	
-7		35-45		-2			1-2
-8			25-35	S	40+		
-9		45+		T-1			3
-10		16-18		-2			0
-11			20+	-3		21-30	
-12		45+		-4			8-12
-13			0	T'-1		18-20	
B-1	21-25			-2	25-35		
-2			25+	U-1			25+
-3			8-12	-2			11-12
-4			-1	1a-1	25-26		
D-1		15-18		-2		20-25	
-2		18-21		-3			18-20 months
-3			12-16	1b		30-40	
-4			10-15	2-1	40+		
-5			2-3	-2	30-40		
-6			20-30	-3		25-30	
E-1		20-22		-4	20-22		
-2			25+	-5			3
F			6-8	-6			6
FF-1			25-30	-7			0
-2	50+			3-1		17-20	
-3		18-20		-2			6
-4			4-8	-3			20-24 months
H-1			8-14	4	35-40		
-2			25+	6-1			5
I-1	65+			-2		25-35	
-2			50+	-3		30-40	
-3			15-18	-4			12
K-1	50+			7-1			7
-2			10-15	-2			3
-3			0	9		25	
				TOTAL	15	19	42 = 76 Burials

a few non-diagnostic bones such as ribs were present. In these cases, relative size of the bones were sometimes the criteria used in assignment of age. Care was always taken to give a large range of possible age.

It is important that possibly some of those individuals that were represented by only a few bones in some burial pits could have had bones in other pits and were actually counted twice or perhaps more times. There could be no guard against this possibility.

B. Age at Death

Five categories were established. It can be seen that only 9 individuals or 12 percent of the total burials are below the age of two years. This figure may be low considering the burial practice used by the Lasanen people. The very young may sometimes have been treated differently than the adults since two infants were found in the back fill above Burial Pits T and T'. Also, manipulation and handling of the bones before secondary interment may have resulted in the loss of many bones. The number of infant bones recovered from the entire site

is only 5. The possibility that infants are inaccurately represented among the recovered bones is quite high. In the age category 40-plus, six males and only two females were included alone with one individual which could not be designated sex, it is safe to say that males lived longer than females. In the child-bearing years, which include the two age categories 12-18 and 18-40, 17 females but only 9 males were counted. The reasons for the differences could be various, such as males killed away from home and childbirth complications. There are also 17 questionable sex individuals in these two age groups; therefore, the male to female ratio could be changed radically (see Table 2).

C. Cranial Metric Data

The anthropometric methods used for the Lasanen site follow the guide presented by Hrdlicka (1952). Indices representation is patterned after the exampled used by William Bass (1964). The Tables of Cranial Measurements are presented in Tables 3 and 4, while mean indices of male and female crania are presented in Tables 5 and 6.

TABLE 2.--Age at death.

	B-2		2-12		12-18		18-40		40+		TOTAL	
	No.	% T.P.	No.	% T.P.	No.	% T.P.	No.	% T.P.	No.	% T.P.		
	9	11.8	17	22.3	9	11.8	32	42.1	9	11.8	76	99.8
Males	-		-		-		9		6		15	
%	-		-		-		28.1		66.7		66.7	
Females	-		-		2		15		2		19	
%	-		-		22.2		46.8		22.2		25.0	
Unknown	9		17		7		8		1		42	
%	100		100		77.7		25.0		11.1		55.2	

TABLE 3.--Male cranial measurements

	Pit 2 #1	Pit 2 #2	Pit 2 #4	Pit 4	Pit A #2	Pit 1 #1	Pit P	Pit S	Pit T' #2	No.	Mean
Maximum Length	178	185	185	185	189	177	186	185		8	183.75
Maximum Breadth		139	143	134	133	141	(144)	142		6	138.7
Basion-Bregma	133	133	133	133	130	140		135		7	133.8
Endobasion-Nasion	102	100	98	104	107	105		103		7	102.7
Endobasion-Alveolar Pt.	98		98	106	104	97		100		6	100.5
Endobasion-Gnathion	114		118					113		3	115.0
Porion-Bregma	114	118	127	118	118	123		118		7	119.4
Min. Frontal Breadth	90	93	96	88	91	95	100	96		8	93.6
Bizygomatic	133		136	130	131	135		144		6	134.8
Nasion-Alveolar Pt.	67		76	79	75		81	81		6	76.5
Nasion-Gnathion	113		124					(127)		2	118.5
Ext. Alveolar Length	50	54	53	56	57	(53)	62	55	54	8	55.1
Ext. Alveolar Breadth	53	63	64		70	(63)	67	(60)	64	6	63.5
Nasal Heighth	50		56	51	55	54	59	60		7	55.0
Nasal Breadth	24		26	26	27	27	30	28		7	26.9
Left Orbital Heighth	38	37	34	34	30	34	36	39		8	35.3
Left Orbital Breadth	38	42	44	39	40	40	41	42		8	40.8
Biorbital Breadth	94		99	98	96	98		99		6	97.3
Basion-Porion Heighth	20	16	13	15	16	18		17		7	16.4
Auricular Heighth	119	119	128	122	115	122		117		7	120.3
Porion-Nasion	92	94	102	96	101	97		94		7	96.6
Porion-Subnasale	98		101	100	103	100		101		6	100.5
Porion-Prothion	100		105	106	107			105		5	104.6
Porion-Gnathion	123		125					125		3	124.3
Symphysis Heighth	33	32	36	36	37			35	36	7	35.0
Bigonial Diameter	97	94	90		96			100	98	6	95.8
Bicondylar Diameter	114	126	112					120	127	5	119.8
Heighth Ascending Ramus	(66)	67	60	56	60			58	67	6	61.3
Corpal Length Go.-Gn.	(87)	88	93	92	88			97	88	6	91.0

TABLE 4.--Female cranial measurements.

Pit 1b	Pit 2 #3	Pit 3 #1	Pit 6 #1	Pit 9	Pit A #7	Pit A #9	Pit A #10	Pit D #1	Pit D #2	Pit E #1	Pit FF #3	Pit R #1	Pit T #3	Pit T' #1	No.	Mean
185	176		173	178				174	175	172	187		174		9	177.1
119	132		129	123				130	132	133	131		138		9	129.7
131	125		132	130				118	133	126	129		124		9	127.6
	100		101	110				97	99	96	101		91		8	99.4
	104		103	105				95	99	100	100		95		8	99.3
	108		119							116			113		4	114.0
116	108		116	112				107	118	113	114		114		9	113.1
89	86	88	87	93				90	88	89	90		87	94	11	89.2
	129		(124)					124	122				132		4	126.8
	78		68	68				66	66	69	71		68		8	69.3
	122		109							112			112		4	113.8
	58	55		53				55	57	53	54		51		8	54.5
	64	67		61			66	64	64	64	70		65	62	10	64.7
	54		53	51				50	48	49	53		48		8	50.8
	24	25	(26)	24				25	26	22	28		21		8	24.4
	36		35	36				35	33	35	35		34		8	34.9
	39		38	38				38	41	38	39		41		8	39.0
	94		90	93				94	92	95	98		95		8	93.9
	18		15	20				12	15	15	16		12		8	15.4
	111		117	113				108	117	115			115		7	113.7
94	93		92	98				91	92	90			87		8	92.1
	100		97	100				91	97	97			92		7	96.3
	109		102	104				96	103				100		7	102.4
	120		120							121			118		4	119.8
33	37	32	35	30	39	38	32	32		31		30	33	36	13	33.7
102	105	100	83	86	94	103	90					90	84	97	11	94.0
	124	120	117	117		116	117						117		7	118.3
56	55	52	57	56	56	64	56	50					59	55	11	56.0
101	96	87	90	94	88	94	83	83				92	96	89	12	91.1

TABLE 5.--Male mean cranial indices.

Indices	Pit 2 #1	Pit 2 #2	Pit 2 #4	Pit 4	Pit A #2	Pit I #1	Pit P	Pit S	Pit T #2	Freq.	Mean
Cranial	-	75.1	77.3	72.4	70.4	79.6	(77.4)	76.6		6	75.2
Cranial Module	-	152.3	153.7	150.7	150.7	152.7	-	154.0		6	152.4
Mean-Heighth	-	82.1	81.1	83.4	80.7	88.1	-	82.5		6	83.0
Length-Heighth	74.7	71.9	71.9	71.9	68.8	79.1	-	73.6		7	73.0
Breadth-Heighth	-	95.7	93.0	99.3	97.7	99.3	-	95.1		6	96.7
Perion Mean-Heighth	-	72.8	77.3	74.0	73.3	77.4	-	72.1		6	74.5
Fronto-Parietal	-	66.9	67.1	65.7	68.4	67.4	(69.4)	71.1		6	67.8
Upper Face	50.4	-	55.9	60.8	57.3	(48.5)	-	56.3		5	56.1
Total Face	85.0	-	91.2	-	-	-	-	(80.2)		2	88.1
Nasal	48.0	-	46.4	51.0	49.1	50.0	50.8	46.7		7	48.9
Orbital	100.0	88.1	77.3	87.2	75.0	85.0	87.8	92.8		8	86.7
Palatal	106.0	116.7	120.8	-	122.8	(118.9)	127.5	(109.1)	118.5	6	118.7
Flatness Crabase	15.0	12.0	9.8	11.3	12.3	12.9	-	12.6		7	12.3

TABLE 6.--Female mean cranial indices.

Indices	Pit 16	Pit 2 #3	Pit 3 #1	Pit 6 #3	Pit 9	Pit D #1	Pit D #2	Pit E #1	Pit FF #3	Pit T #3	Freq.	Mean
Cranial	64.3	75.0		74.6	69.1	74.7	75.4	77.3	70.1	79.3	9	73.3
Cranial Module	145.0	144.3		144.7	143.7	140.0	146.7	143.7	49.0	145.3	9	144.7
Mean-Heighth	86.2	81.2		87.4	86.4	77.6	86.6	82.6	81.1	79.5	9	83.2
Length-Heighth	70.8	71.0		76.3	73.0	67.8	76.0	73.3	69.0	71.3	9	72.1
Breadth-Heighth	110.1	94.7		102.3	105.7	90.7	100.7	94.7	98.5	89.9	9	98.6
Porion Mean-Heighth	76.3	70.1		76.8	74.4	70.4	76.9	74.1	74.1	73.1	9	73.7
Fronto-Parietal	74.8	65.2		67.4	75.6	69.2	66.7	66.2	68.7	63.0	9	68.5
Upper Face		60.5		54.8	-	78.2	72.1	-	-	51.5	5	63.4
Total Face		94.6		87.9	-	-	-	-	-	84.8	3	89.1
Nasal		44.4		(49.0)	47.0	50.0	54.2	44.9	52.8	43.8	7	48.2
Orbital		92.3		92.1	94.7	92.1	80.5	92.1	89.7	82.9	8	89.6
Palatal		110.3	121.8	-	115.1	116.4	112.3	120.8	129.6	127.5	8	119.2
Flatness Carabase		14.4		11.4	15.4	10.2	11.3	11.9	12.4	9.7	8	12.1

The Lasanen site produced a total of twenty-four skulls from which metric data could be collected, nine are males and fifteen are females. The skulls of seven males and eight females were complete or nearly complete and most measurements could be taken. For every measurement, the male mean is larger than the female mean. The largest difference was maximum cranial breadth and bizygomatic breadth, the males cranial bredth average nine millimeters wider than the females and the males bizygomatic breadth is eight millimeters wider than the female. With two exceptions, all cranial indices of male and female skulls are similar. The two exceptions, the cranial module and upper facial index are explainable since the two measurements showing the greatest sex difference, the maximum cranial breadth and bizygomatic breadth, are used to calculate these two indices. In addition, the cranial module is derived from the three measurements whose means are all substantially greater on the male crania.

The cranial index shows the males to be mesocranic (75.2) and the females to be dolichocranic (73.3). Both male and female length-heighth indices are orthocranic. The breadth-heighth index for male skulls is high

TABLE 7.--Classifications of Cranial Indices

Index	Male	Female
Cranial	Mesocranic	Dolichocranic
Length-Heighth	Orthocranic	Orthocranic
Breadth-Heighth	Metriocranic	Acrocranic
Mean-Heighth	Medium	Medium
Upper Face	Leptorene	Leptorene
Total Face	Mesoprosopic	Mesoprosopic
Nasal	Mesorrhine	Mesorrhine
Orbital	Mesoconchic	Mesoconchic

metriocranic at 96.7 and the female skulls are acrocranic at 98.6. Upper face index shows both sex's skulls to be narrow, the female mean index is 63.4 which may be considered hyperleptorene, but only three of the five skulls were higher than mesorene. The male facial index is 56.1. The total facial indices of only two males and three females were available but the same trend was observed for upper facial indices is repeated for the total facial indices, that is, the females have narrower faces than the males with a mean of 88.1 for females and 89.1 for males. Both male and female nasal apetures were mesorrhine and both sex's orbits were mesoconchic.

Male Skulls

A·2

1

5

2·1

2·4

4

Plate VI

Female Skulls

D·1

D. 2

E

FF·3

T·3

2·3

Plate VII

Female Skulls

6·1

9

Plate VIII

D. Postcranial Metric Data

A total of thirty-four burials have long bones from which measurements could be taken; thirteen are males and sixteen are females while five are of questionable sex. These are presented in Tables 8, 9, and 10. The technique used for measuring is after Hrdlicka (1952). Of the total, seven males and five female burials were represented by relatively complete long bone assemblages. Table 11 compares the mean calculations of the three separate tables.

E. Stature

Stature estimations were made for every individual from which measurements of long bones were available. Estimates were based on the Mongoloid formula of Trotter and Gleser (1958). Femur and tibia lengths were used wherever possible for estimation of stature. When neither femur or tibia were available the humerus was used. On one occasion a radius was used as it was the only long bone available. In all instances the left elements were

TABLE 8.--Lasanen male postcranial measurements.

	Pit 1a #1		Pit 2 #1		Pit 2 #2		Pit 2 #4		Pit 4 #1		Pit A #1		Pit A #2		Pit FF #2		Pit K #1		Pit M #1		Pit P		Pit S		Pit T' #2	
	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
HUMERUS																										
Max. Morph. Len.				303	305	303	(334)	341	323		324	315							346	342					325	
Max. Diam. Mid. Shaft	23		23	23	23	23	25	25	24		25	24	25	24				23	26	26			25	22	24	
Min. Diam. Mid. Shaft	15			17	16	17	17	16	16		16	16	17	18				15	17	18			17	17	18	
Max. Diam. of Head				45	45	45		45	41	41	44	44						40	49	47			47	45	43	
Humero-Femoral Index								74.8	74.1		72.0	69.8							73.9	73.7						
CLAVICLE																										
Max. Length				155	139	146				139	150								145	157			151	132	148	
FEMUR																										
Max. Morph. Length	425			436				460	442	448	452	451			454				469	467		417	466	467		
Physiological Length	418							456	436	442	450	447			451				468	464		405	463	465		
Ant.-Post. Diam. Mid. Shaft	27		31	31	27	28	(29)	31	26	28	27	28	26	26	29				28	28		27	30	32	30	
Transverse Diam. Mid. Shaft	23		27	27	25	26	27	27	21	25	26	27	27	27	28				32	31		23	26	28	26	
Subtroch. Transverse				(32)	32	33	35	34	24	27	33	34	26	31	30				34	38		27	34	32	32	
Subtroch. Ant.-Post.				(27)	27	26	27	27	32	32	28	30	30	27	25				28	27		37	26	30	27	
Max. Diam. of Head	46		45	44	46	44		(44)	45		46	47	45		45				47	47		42	48	47		
Pilastric Index	117.4		119.2	114.8	108.0	107.7	107.4	114.8	123.8	112.0	103.8	103.7	96.3	96.3	103.6				87.5	90.3			115.4	114.3	115.4	
Meric Index				(84.4)	84.4	78.5	77.1	79.4	133.3	118.5	84.8	88.2	115.4	87.1	83.3				82.4	71.1			76.5	93.8	84.4	
TIBIA																										
Max. Morph. Len.				369	349	347		378			382				360	365		332	390	392			402			
Physiological Len.				353	333		(370)				368				346			319	370	374			385			373
Ant.-Post. Diam. Nut. Fora.			36	36	33	33	39	37			38				34	35	31	31	37	36			36			
Trans. Diam. Nut. Fora.			21	21	20	20	23	22			20				23	23	20	21	25	26			25			
Tibio-Femoral Index											81.8				76.7				79.1	80.6			83.2			
Cnemic Index			58.3	58.3	60.6	60.6	59.0	59.5			52.6				67.6	65.7		67.7	67.6	72.2			69.4			
RADIUS																										
Max. Length		272					255	260			251	256							261	260						261
Humero-Radial Index							76.3	76.2			77.5	81.3							75.4	76.0						
ULNA																										
Max. Length					249	257	277	280	271	271		278						247	279	278						
FIBULA																										
Max. Length		348									362	362							371	381						

TABLE 7.--Lasanen female postcranial measurements.

	Pit 1a #2		Pit 1b		Pit 2 #3		Pit 3 #1		Pit 6 #2		Pit 6 #3		Pit 9		Pit A #3		Pit A #7		Pit A #9		Pit A #12		Pit D #1		Pit D #2		Pit E #1		Pit R		Pit T #3	
	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
HUMERUS																																
Max. Morph. Len.				293			305		304					316						302		310	295	290					307	301		302
Max. Diam. Mid. Shaft			23	22	19	21	19	19	22	21			22	22	20	20		22		22		22	18	18			(19)		19	19		(19)
Min. Diam. Mid. Shaft			15	15	13	14	14	13	14	13			14	14	14	14		16		15		15	13	12			(14)		13	12		(14)
Max. Diam. of Head				41				39	40	40				43				40		41		41	40	40			42			38		40
Humero-Femoral Index				71.1					73.1					71.3						74.2									72.6	70.5		
CLAVICLE																																
Max. Length			140	141							137		136				148														126	
FEMUR																																
Max. Morph. Length			423	418	419	419		432	427				444	452						413					409				426	430		
Physiological Length			412	412	414	415		429	416				433	443						407									423	427		
Ant.-Post. Diam. Mid. Shaft			25	26	25	27	26	28	27				24	24	24	24				26			22	22	25	26			24	24		
Transverse Diam. Mid. Shaft			24	27	24	24	21	22	22				28	25	21	23				26			23	23	21	24			22	23		
Subtroch. Transverse			36	35	30	31	26	26	23				31	32	31	30				31			27			31			26	27		
Subtroch. Ant.-Post.			25	30	25	26	26	26	33				23	22	26	23				24			24						23	23		
Max. Diam of Head				41		41		41					45	47	41	41				42				42		40				42		
Pilastric Index			104.2	96.3	104.1	112.5	123.8	127.3	122.7				85.7	96.0	114.3	104.3				100.0					95.7	95.7	119.0	108.3	109.1	104.3		
Meric Index			69.4	85.7	83.3	83.9	100.0	100.0	143.5				74.2	68.8	83.9	76.7				77.4					88.9				88.5	85.2		
TIBIA																																
Max. Morph. Len.				335				353					359	364					370													
Physiological Len.			326	321				337					346	351			355		356						326	324			352	350		
Ant.-Post. Diam. Nut. Fora			31	30	30	30	31	32	31	30		28	31	30	32	32	32		31		389		32	29	27	27	30	31	340	340		
Trans. Diam. Nut. Fora.			20	19	23	21	19	19	21	20		25	23	21	23	23	22		21		37	32	20	22	22	24	24	27	28		
Tibia-Femoral Index			79.1	77.9				78.6	67.7	66.7			79.9	79.2							24	20							19	20		
Cnemic Index			64.5	63.3	76.7	73.3	61.3	59.4				89.3	74.2	70.0	71.9	71.9	68.8		67.7		64.9	62.5	69.0	81.5	86.5	80.0	77.4	80.4	79.6	70.4	71.4		
RADIUS																																
Max. Length	225		227	222									254	243																		
Humero-Radial Index																																
ULNA																																
Max. Length	242		249	242					256					261						238									251	246		
FIBULA																																
Max. Length													347						370*	370					323							

TABLE 10.--Lasanen unknown sex postcranial measurements.

	Pit A #8		Pit A #11		Pit B #1		Pit B #2		Pit FF #1	
	R	L	R	L	R	L	R	L	R	L
HUMERUS										
Max. Morph. Len.									322	
Max. Diam. Mid. Shaft	19				21				21	
Min. Diam. Mid. Shaft	14				14				14	
Max. Diam. of Head					40				45	
Humero-Femoral Index									75.2	
CLAVICLE										
Max. Length										
FEMUR										
Max. Morph. Length		440					382		432	434
Physiological Length		434					378		428	428
Ant.-Post. Diam. Mid. Shaft		27	24	24			25		29	29
Trans. Diam. Mid. Shaft		28	24	24			24		26	27
Subtroch. Trans. Diam.		34	30	32			27		31	30
Subtroch. Ant.-Post. Diam.		25	23	22			27		25	29
Max. Diam. of Head		43					38		45	
Pilastric Index		96.4	100.0	100.0			104.2		111.5	107.4
Meric Index		73.5	76.7	68.8			100.0		80.6	96.7
TIBIA										
Max. Morph. Len.									364	364
Physiological Len.									350	250
Ant.-Post. Diam. Nut. Fora.		28							37	34
Trans. Diam. Nut. Fora.		23							27	30
Tibio-Femoral Index									81.8	81.8
Cnemic Index		82.1							73.0	88.2
RADIUS										
Max. Length	244	240						216		
Humero-Radial Index										
ULNA										
Max. Length	264						236			
FIBULA										
Max. Length										

TABLE 11.--Mean postcranial calculations.

	Male				Female				Undetermined			
	Right		Left		Right		Left		Right		Left	
	Freq.	Mean	Freq.	Mean	Freq.	Mean	Freq.	Mean	Freq.	Mean	Freq.	Mean
HUMERUS												
Max. Morph. Len.	5	324.6	5	320.8	4	302.5	7	302.0	1	322.0		
Max. Diam. Mid. Shaft	10	24.3	8	23.8	8	20.3	11	20.7	3	20.3		
Min. Diam. Mid. Shaft	9	16.4	8	16.8	8	13.8	11	13.9	3	14.0		
Max. Diam. of Head	6	44.3	8	44.0	3	40.7	10	40.3	2	42.5		
Humero-Femoral Index	3	73.3	3	72.8	2	72.9	4	71.8	1	75.2		
CLAVICLE												
Max. Length	5	146.6	5	145.8	5	137.4	1	141				
FEMUR												
Max. Morph. Length	6	451.3	7	448.6	6	424.7	6	427.3	2	407.0	2	437.0
Physiological Length	6	447.7	6	446.5	5	419.6	6	422.2	2	403.0	2	431.0
Ant.-Post Diam. Mid. Shaft	10	28.1	9	28.8	9	24.7	9	25.2	3	26.0	3	26.7
Trans. Diam. Mid. Shaft	11	26.2	9	26.8	9	22.9	9	24.1	3	24.7	3	26.3
Subtroch. Trans. Diam.	9	31.1	8	32.0	8	28.8	8	31.0	3	29.3	3	32.0
Subtroch. Ant. Post. Diam.	9	27.8	8	29.5	8	25.6	7	24.9	3	25.0	3	25.3
Max. Diam. of Head	9	45.9	6	45.2	2	43.0	9	41.9	2	41.5	1	43.0
Pilastric Index	11	108.9	8	106.7	9	108.7	9	104.9	3	105.2	3	101.3
Meric Index	9	91.3	7	88.1	8	91.5	7	82.5	3	91.1	3	79.7
TIBIA												
Max. Morph. Len.	5	376.6	6	363.8	3	360.3	4	350.5	1	364.0	1	364.0
Physiological Len.	5	360.4	4	354.8	6	341.5	6	343.6	1	350.0	1	350.0
Ant.-Post. Diam. Nut. Fora.	8	35.5	6	34.7	12	30.4	12	30.3	1	37.0	2	31.0
Trans. Diam. Nut. Fora.	8	22.1	6	22.2	12	21.4	12	21.6	1	27.0	2	26.5
Tibio-Femoral Index	4	80.2	1	80.6	4	76.8	5	76.4	1	81.8	1	81.8
Cnemic Index	7	62.2	6	64.0	11	70.9	11	71.9	1	73.0	2	85.2
RADIUS												
Max. Length	3	255.7	5	261.8	3	235.3	2	232.5	1	224.0	2	228.0
Humero-Radial Index	3	76.4	3	77.8								
ULNA												
Max. Length	4	269.0	6	251.8	4	249.5	4	246.8	2	250.0		
FIBULA												
Max. Length	2	366.5	3	363.7	3	346.6	1	370				

used in preference to the right. Metric conversion to the English system was made at the ratio of 1 inch:2.52 cm.

Statures of the Lasanen burials are generally quite large. The mean male stature is estimated to be 5 foot 7 inches and the female mean is 5 foot 4.9 inches.

TABLE 12.--Stature estimations.

Burial	Elements Used	Stature	English
MALE			
1a-1	R. Fem.	163.94	5' 5.1"
2-1	L. Fem.-Tib.	169.58	5' 6.9"
2-2	L. Tib.	164.83	5' 5.5"
2-4	L. Fem.-Tib.	172.61	5' 8.5"
4	L. Fem.	168.89	5' 7.0"
A-1	R. Fem.-Tib.	172.12	5' 8.3"
FF-2	R. Fem.-Tib.	169.68	5' 7.3"
K-1	L. Tib.	160.80	5' 3.8"
M-1	L. Fem.-Tib.	175.17	5' 9.5"
P	L. Fem.	162.23	5' 4.4"
S	R. Fem.-Tib.	176.27	5'10.0"
T'-2	R. Hum.	170.29	5' 6.7"
Mean	(#12)	168.79	5' 7.0"
FEMALE			
1a-2	R. Rad	159.62	5' 3.3"
1b	L. Fem.-Tib.	162.23	5' 4.4"
2-3	L. Fem.	162.66	5' 4.6"
3-1	L. Fem.-Tib.	166.14	5' 5.9"
6-2	R. Fem.	164.37	5' 5.2"
9	L. Fem.-Tib.	169.92	5' 7.4"
A-9	L. Fem.	161.37	5' 4.0"
A-12	L. Hum.	166.27	5' 6.0"
D-1	L. Hum.	160.82	5' 3.8"
D-2	R. Fem.	160.51	5' 3.7"
R	L. Fem.-Tib.	165.53	5' 5.7"
T-3	L. Hum.	164.13	5' 5.1"
Mean	(#12)	163.58	5' 4.9"
UNDETERMINED			
A-8	L. Fem.	167.17	5' 6.3"
B-2	R. Fem.	154.47	5' 1.3"
FF-1	L. Fem.-Tib.	167.73	5' 6.6"
Mean	(#3)	163.12	5' 4.7"

IV. CONGENITAL ANOMOLIES

A. Septal Apeture

Observations were made on only adult humerii. Of 18 male humerii, three exhibit septal apetures, two of the apetures were from the same individual, therefore, two (22.0%) of the nine males have septal apetures. A total of nineteen female humerii were available, twelve (63.0%) had septal apetures. Eight (62%) of the thirteen females have septal apetures. Individuals of unknown sex had two humerii representing two individuals neither of which had the apeture. (See Table 13)

Calculating all adult humerii together, ten (42%) of the twenty-four individuals are represented by humerii with the apeture in one or both humerii. Of the thirty-nine total humerii, fifteen (38%) have the apeture. Comparing all right and left humerii shows that five of nineteen (26%) right humerii have a septal apeture while ten (50%) of twenty left humerii have an apeture.

TABLE 13.--Septal apeture.

	2-1		2-2		2-4		4		A-1		A-2		FF-2		M-1		P						Total	
	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L					R	L
Male																								
None	x	x	x	x	x		x	x	x	x	x	x			x	x	x	x					8/9	7/9
Pin Point																							0/9	0/9
Small																							0/9	0/9
Medium														x									0/9	1/9
Large						x							x										1/9	1/9
Multiple																							0/9	0/9

	1b		2-3		3-1		6-2		9		A-3		A-9		A-12		D-1		E-1		R-1		T-3		T-2		Total	
	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
Female																												
None					x	x	x	x											x				x		x		4/8	3/11
Pin Point																											0/8	0/11
Small									x					x													1/8	1/11
Medium				x						x																	0/8	2/11
Large											x	x				x	x	x			x	x					3/8	4/11
Multiple		x																									0/8	1/11

	A-8		FF-1	
	R	L	R	L
Undetermined				
None	x		x	
Pin Point				
Small				
Medium				
Large				
Multiple				

2/2

B. Cranial Observations

A list of observations following the example used by Bass (1964) was used as a check list for the Lasanen crania. This list (Tables 14, 15, and 16) include pre-pubertal and adolescent burials as well as adults. Table 17 compares the observations according to sex.

1. Supra-Orbital Foramina

The frequencies of single foramen is approximately equal for male, female, and questionable sex or immature individuals. The males have a much lower frequency of supra-orbital notches than do the females or the questionable sex skulls. This is especially true in the case of the right supra-orbital. Multiple foramina were quite frequent for all three categories, seventeen of sixty observable supra-orbitals or 28% have multiple foramina or multiple notches. Of all observable supra-orbital margins, 10% have no foramina.

As a matter of convenience, skulls with multiple foramina were also listed in the 'yes' category.

TABLE 14.--Lasanen male cranial observations.

		2-1		2-2		2-4		4		A-2		I-1		P		S		T'-2		Total	
		R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
Supra-orbital furamen	yes	x	x	x		x	x	x	x	x	x	x		x	x			x	x	8/9	6/9
	notch				x											x	x			1/9	2/9
	multiple	x	x	x		x	x	x												4/9	2/9
	no												x							0/9	1/9
Suture into infra-orb. fora.	yes													x	x					1/9	1/9
	no	x	x	x	x	x	x	x	x	x	x	x	x			x	x	x	x	8/9	8/9
Sutures in Pterion Region	wide H			x	x	x	x	x	x	x	x			x	x	x	x			6/7	6/7
	narrow H											x	x							1/7	1/7
	K																			0/7	0/7
	X																			0/7	0/7
Sutural Bones	Coronal															x				1/9	0/9
	Bregma	NONE				NONE		NONE		NONE		NONE						NONE		0/9	0/9
	Inca			x	x															1/9	1/9
	Wormian													x		x				2/9	
Dehiscences Tympanic Element	present																			0/9	0/9
	absent	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	8/8	9/9
Mylo-hyoid Bridge	yes					x	x											x		2/5	1/6
	no	x	x	x	x				x	x	x								x	3/5	5/6
Parietal Notch Bone	yes		x	x	x															1/8	2/9
	no	x				x	x	x	x	x	x	x	x		x	x	x	x	x	7/8	7/9
Ear Exostoses	none	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	8/8	9/9
	slight																				
	medium																				
	pronounced																				
Parietal Fora.	yes		x		x										x					0/9	3/9
	no	x		x		x	x	x	x	x		x	x	x		x	x	x	x	9/9	6/9
Metopic Suture	yes								x											1/9	
	no		x		x		x				x		x		x		x			8/9	
Pharangeal Fossa	yes				x		x				x								x	4/9	
	no		x						x				x		x		x			5/9	

TABLE 15.--Lasanen female cranial observations.

		1a-2		1b		2-3		3-1		6-3		9		A-10		D-1		D-2		E-1		FF-3		T-3		T'-1		Total	
		R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
Supra-orbital foramen	yes	x	x			x	x	x				x	x	x	x	x	x		x					x	x		x	7/13	8/13
	notch			x	x					x	x							x		x	x					x		5/13	3/13
	mult.	x	x			x	x						x			x	x							x				4/13	4/13
	no								x													x	x					1/13	2/13
Suture into infra. orbital fora.	yes									x			x				x			x	x				x	x	3/10	4/9
	no					x	x				x	x		x	x	x		x	x			x	x	x				7/10	5/9
Suture in Pterion Region	wide H					x	x					x	x			x	x	x	x	x	x	x	x					6/8	6/8
	nar. H									x	x													x	x			2/8	2/8
	K																											0/8	0/8
	X																											0/8	0/8
Sutural Bones	Corunal																												
	Bregma									NONE		NONE				NONE		NONE						NONE				5/11(None)	
	Inca																												
	Wormian		x		x		x														x		x				x	6/11	
Dehiscences Tympanic Element	present	x	x			x		x	x			x	x	x	x						x			x	x			6/13	6/12
	absent			x	x		x			x						x	x	x	x	x		x	x			x	x	7/13	6/12
Mylo-hyoid Bridge	yes					x																				x	x	2/8	1/8
	no						x	x	x	x	x	x	x	x	x					x	x			x	x			6/8	7/8
Parietal Notch Bone	yes					x	x								x										x		x	1/10	4/10
	no			x						x	x	x	x			x	x	x	x	x	x	x	x	x		x		9/10	6/10
Ear Exostoses	none			x	x	x	x	x	x	x		x	x			x	x	x	x	x	x	x	x	x	x	x	x	11/11	10/11
	slight																											0/11	0/11
	med.																											0/11	0/11
	pronouc.		x																									0/11	1/11
Parietal Foramen	yes					x				x			x			x	x					x						4/12	2/12
	no	x	x	x	x		x	x	x		x	x						x	x	x	x		x	x	x	x	x	8/12	10/12
Metopic Suture	yes																											6/13	
	no		x		x		x		x		x		x		x		x		x		x		x		x			13/13	
Pharangeal Fossa	yes																							x				1/10	
	no		x		x		x		x		x						x		x		x							9/10	

TABLE 16.--Lasanen unknown sex cranial observations.

		2-5		2-6		3-2		6-11		6-4		7-1		A-5		F		I-2		O		Total	
		R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
Supra-orbital foramen	yes		x	x		x	x					x			x		x			x	x	4/8	5/8
	notch	x						x	x				x	x								3/8	2/8
	mult.					x	x								x							1/8	2/8
	no									x	x											1/8	1/8
Suture into infra. orbital fur.	yes	x	x	x	x															x		3/7	2/7
	no							x	x	x	x	x	x	x	x						x	4/7	5/7
Suture in Pterion Region	wide H	x	x	x				x	x					x	x					x	x	5/5	4/4
	nar. H																					0/5	0/4
	K																						
	X																						
Sutural Bones	Corunal																						
	Bregma																						
	Inca							NONE		NONE				NONE								3/7(None)	
	Wormian		x		x		x						x									4/7	
Dehiscences Tympanic Element	present	x		x	x	x	x	x	x	x			x				x					5/7	5/7
	absent		x									x		x	x							2/7	2/7
Mylo-hyoid Bridge	yes																					0/7	0/7
	no	x	x	x	x	x	x	x	x	x	x			x	x			x	x			7/7	7/7
Parietal Notch Bone	yes			x																		1/5	0/4
	no	x	x					x	x	x	x			x	x							4/5	4/4
Ear Exostoses	none	x	x	x	x	x	x	x	x	x	x			x	x							6/6	6/6
	slight																					0/6	0/6
	med.																					0/6	0/6
	pronouc.																					0/6	0/6
Parietal Foramen	yes			x	x				x		x			x								2/7	3/7
	no	x	x			x	x	x		x					x	x	x					5/7	4/7
Metopic Suture	yes																					0/8	
	no		x		x		x		x		x				x		x				x	8/8	
Pharangeal Fossa	yes																					0/4	
	no		x				x		x		x											4/4	

TABLE 17.--Sex comparison of Lasanen cranial observations.

		Male		Female		Undetermined	
		% R	% L	% R	% L	% R	% L
Supra-orbital foramen	yes	88	66	54	62	50	63
	notch	11	22	38	23	38	25
	mult.	44	22	31	31	13	25
	no	0	11	8	15	13	13
Suture into infra. orbital for.	yes	11	11	30	44	43	29
	no	89	89	70	56	57	71
Suture in Pterion Region	width	86	86	75	75	100	100
	notch	14	14	25	25	0	0
	K	0	0	0	0		
	X	0	0	0	0		
Sutural Bones	corunal	11	0				
	bregma	0	0	(None .45)		(None .45)	
	inca	11	11				
	wormian	22		55		57	
Dehiscences	present	0	0	46	50	71	71
Tympanic Element	absent	100	100	54	50	29	29
Mylo-hyoid bridge	yes	40	17	25	13	0	0
	no	60	83	75	87	100	100
Parietal Notch bone	yes	13	22	10	40	20	0
	no	87	78	90	60	80	100
Ear Exostoses	none	100	100	100	91	100	100
	slight			0	0	0	0
	med.			0	0	0	0
	pronounc.			0	9	0	0
Parietal Foramen	yes	0	33	33	17	29	43
	no	100	67	67	83	71	57
Metopic Suture	yes	11		0		0	
	no	89		100		100	
Pharangeal Fossa	yes	44		10		0	
	no	56		90		100	

2. Sutures into Infra-Orbital Foramen

Significantly more female than male crania have sutures into the infra-orbital foramen. Of the nine male crania observed, all nine had both orbits preserved, only the skull of Burial P shows sutures into the infra-orbital foramen. Both orbits of nine female crania could be observed and the right side of a tenth female was also available. Symmetry was not the rule in the case of the females as four of the nine complete faces had sutures into the foramen on only one side. Three of the four were on the left side, one burial had sutures on both sides, four had no sutures on either side, and the tenth had a suture on the right side which was the only side observable.

The questionable burials have seven faces, two with bilateral sutures into the infra-orbital foramina and four without, the seventh face has the suture on the right side only.

3. Sutures in Pterion Region

Both sides of all observable crania were considered as one unit since the sutures in the pterion region are symmetrical in pattern. Of the seven male skulls with features observable, six had a wide 'H' pattern while the seventh had a narrow 'H' pattern. Eight females were observable, six had a wide 'H' and two had narrow 'H's. Five questionable sex skulls all had wide 'H's. The population total is seventeen wide 'H', three narrow 'H', with no other patterns present.

4. Sutural Bones

With the exception of a single example of Inca bones and a coronal sutural bone the sutural bones of the Lasanen crania are limited to Wormian bones. One male, Burial 2-2, has large Inca bones and another male, Burial S has a small sutural bone on the left side of the coronal suture. Burial S also has wormian bones as does Burial P. Of the nine male burials with skulls preserved, one has Inca bones and two have wormian bones, while six have no sutural bones.

A significantly greater number of female crania exhibit sutural bones. Eleven female crania could be observed. Six (55%) of them have wormian bones while they were present in only 22 percent of male crania. Seven crania of questionable sex were observable and four (57%) had wormian bones.

Considering all crania together, a total of 27 were available with 8 having wormian bones or 29 percent and only one with Inca bones. The evidence suggests that there may be more females than males in the questionable sex categories.

5. Tympanic Dehiscences

No male crania had tympanic dehiscences, but 6 (46%) of the female crania had dehiscences in the right tympanic plates and six (50%) of twelve left tympanic plates have dehiscences. Five of seven right and five of seven left, or 71 percent of questionable sex tympanic plates also have tympanic dehiscences. Like the much high percentages of female and questionable sex wormian bone frequencies, the female and questionable sex

tympanic dehiscences also suggest that more female than male individuals are in the questionable sex category.

6. Mylo-Hyoid Bridge

Both ascending ramii of five male mandibles were observed. The right side of one mandible exhibited a bridge while the left did not; three mandibles exhibit no bridges while one mandible has bridges on both sides. Eight female mandibles were recovered, six of which did not have bridges, one which did have bridges on both ramii and one which has a bridge on only the right side. None of the seven questionable sex mandibles have bridges and no differences in mylo-hyoid bridge frequencies between sexes were found.

It is perhaps of some significance that the right ramus of male and female mandibles had 40 percent and 25 percent frequencies of mylo-hyoid bridges respectively, while the left ramii had only 17 percent and 13 percent respectively.

7. Parietal Notch Bone

Nine male crania were observed, one (11%) exhibited bilateral parietal notches while another exhibits a notch on the left side only. All other male crania lacked notches. Both crania with parietal notches were from Burial Pit 2. Both parietals of nine female crania were preserved and two others had just one parietal present. Of the nine bilateral pairs six show no notch bones while one had a notch or assessory bone on both sides. In twin Burial Pits T and T' a female crania from each pit exhibits the bone on the left side but not on the right. Two other female burials had only one side observable. Burials 1b and A-10, the former had a notch bone on the left, the latter does not have the assessory bone. Four questionable sex crania with both parietals present did not have notch bones but the fifth, Burial 2-6, which had only the right side present did have parietal notch bone.

No sex difference is present but four of the seven individuals that had parietal notch bones were from Burial Pit 2, and two were from the twin Burial Pits T and

T'. This fact also suggests genetic relationships between the individuals in the respective burial pits.

8. Ear Exostoses

Nine male crania have no occurances of ear exostoses. Twelve female crania were recovered of which ten have bilateral sides; one cranium had only the right external auditory meatus observable and the twelfth has only the left, this skull, Burial la-2, has a pronounced exostoses--the only one observed. there were six unsexed crania.

9. Parietal Foramen

While there probably is no sexual difference in the total frequency of parietal foramen, there may be a sex difference associated with the side on which the foramen occurs. Nine of nine male crania have no foramen on the right parietal but three (33%) were observed on the left. Of twelve female crania, four (33%) exhibit a foramen on the right parietal but only two crania (17%)

have a foramen on the left parietal. Seven questionable sex crania have two right parietals with a foramen and three left parietals with a foramen.

10. Pharangeal Fossa

A sexual difference was evident for the occurrence of pharangeal fossae. Four of nine males (44%) have the fossae, while only one of ten females (10%) have it. None of the four questionable sex crania have a fossa.

11. Metopic Suture

Nine male, thirteen female, and eight crania of unknown sex were observed. One male from Burial Pit 4 has a remnant of a metopic suture near the glabella.

C. Postcranial Observations

A few postcranial observations of congenital anomolies were noted and might best be presented in the form of a table. (See Table 18) Six anomolies occurred

TABLE 18.--Lasanen postcranial observations.

	A-1	A-2	A-5	A-10	D-1	D-5	FF-3	I-1	M-1	M-2	R-1	S	T'-1	T'-2	1b	2-3	2-4	3-1	6-1	6-2	7-1	9
Anomolus Condyles					x							x										
Unfused arch of Atlas																				x		
Craniosynostosis		x																	x			
Sacral Hiatus			x																			
Dub. Mental Foramen				x													x					
Irr. Ossifica. Sternum						x			x	x												
Palatine Toris							x															
Perimastoid Tubercule								x														
Cervicle Rib											x											
Lumbarization of Sacrum										x				x								
Spinabifita														x								
Dlb. Trans. Foramen													x					x				
Irr. Ossifica. of Vert.															x							
Rotated Mandible Molar																x						
Foramen in Occipital																					x	
Bone Spur on Tibia																						x
Sternal foramen	x																					

more than once, double transverse foramina of the cervicle vertebrae, occurring twice on female vertebrae from thirty possible burials with cervicle vertebrae present. Lumbarization of the S-1 sacral segment occurred twice, once from a male and once from an individual of questionable sex, from sixteen observed sacra. Irregular ossification of the sternum occurred three times, the irregularity had different forms, one, for example, had only one side of a sternabrae formed. I have previously suggested that the Lasanen burials are lineage burial pits. Further support for this proposition is from the frequency of irregular ossification of the sternum. Of three irregularly formed sterna, one is from Burial Pit D but two are from the same small Pit M. Burial Pit M had three individuals, a male 25 to 35, an adolescent of questionable sex and an infant. The two older burials have the anonoly.

Two incidences of premature cranial suture closure were presented in the collection. (Fig. 13) A recent study by Bennett (1967) at the University of Arizona indicates that premature suture closure, or craniosynostosis, results from a malformation of the cranial base. Bennett

found that most often the sagittal suture will close while the other sutures are patent, but a variety of patterns can occur. The five undeformed skulls showing craniosynostosis Bennett had in his sample were all highly dolichocranic, averaging 72.8 and ranging from 69.3 to 75.9. Burial A-2, an eighteen to twenty year old male is dolichocranic at 70.4 and has the greatest maximum length of any skull from the Lasanen sample, 189 millimeters. The sagittal suture is completely fused. Burial 6-1 is a five year old child, the age is based on the skull's dental eruption sequence, the sagittal is also fused except 25 millimeters at the bregma. Unlike the A-2 skull and the dolichocranic skulls in Bennett's sample, the 6-1 skull is very round in shape.

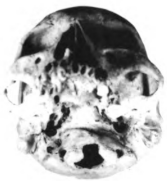
Sacral Hiatus is described by Anderson (1963:48); perimastoid tubercule is also described by Anderson (1962: 16) as a down growth from the jugular process just medial to the mastoid process. Anderson (1963:44) describes spinabifida as the condition when the right and left neural arches of an altas fail to fuse with each other.

One individual, Burial 2-3, has a mandible with a third molar rotated about 90 degrees in the alveolar.

(Fig. 16). Also, one individual Burial A-1 has a sternal foramen (Fig. 20).

There are two individuals whose skulls have occipital condyles which have developed irregularly (Fig. 12). Burial D-1, a female of 15 to 18 years of age, exhibits condyles which have developed asymetrically as one condyle has developed to a lesser inferior plain than the other condyle. Burial S, a 40-plus year old male shows the same asymmetrical development but also has the atlas fused to the occipital condyles, a condition known as platabasia (Hagie, 1968). The fusion may be due to pathological condition or it may be a result of the abnormal occipital condyle development.

Congenital Anomolies



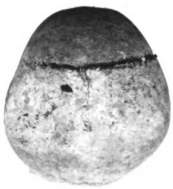
S

D-1

Fig. 12

Anomolus Condyles

A-1



G-1

Fig. 13
Craniósynostosis

Plate IX

Congenital Anomolies

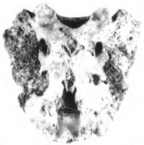


Fig. 14 Sacral Hiatus A-5

Fig. 15 Cervicle Rib R-1

Fig. 16 Rotated Molar 2-3

Fig. 17 Septal Apeture A-3

Fig. 18 Wormian Bones 2-1

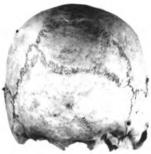


Fig. 19 Inca Bones 2-2

Plate X

V. PATHOLOGIES

A. Rhumatoid Arthritis

The proximal condyle surface of a tibia from Burial FF-1 has signs of rhumatoid arthritis.

B. Osteoarthritis

Seven incidences of osteoarthritis were noted but only two were well developed. The two most severe cases were both males; Burial A-1 is a 50-plus year old and had by far the most extensive development (Fig. 20-22). The atlas and axis are fused as were vertebrae T-6 through T-12. Extensive vertebrae body destruction has produced severe forward arching of the whole spinal column including the fused segment; this phenomenon is called Marie-Strumbell disease or poker-spine (Hagge, 1968). This individual also shows arthritic involvement at all articulating joints, with the most extreme development at the

knee and elbow. Also, two ribs are joined by an exosis bridge which has a pseudoarthrosis; the two ribs appear to have been broken and healed forming the bridge at that time. The other advanced development of osteoarthritis is Burial 2-2, a male between 30 and 40 years of age at death. The development was most severe on the lower thorasic and lumbar vertebrae but to a much lesser degree than Burial A-1.

The other incidences of osteoarthritis were observed in two males, two females, and one individual of unknown sex. The youngest individuals with arthritis are a female of 25 to 35 years and an individual of undetermined sex over 25 years of age.

C. Syphilis

Burial A-2 has evidence of the beginning stage of tertiary syphilis on the skull and on several other bones.

D. Periostitis

Periostitis or osteitis was observed on five individuals, two males and two females and one individual of unknown sex. The youngest burial was an 18 to 20 year old female that has signs of infection on one femur and on the cranium. Burial FF-2, a male of 50-plus years has extensive osteoporosis and bone degeneration of the vertebrae and several compression fractures of the vertebrae bodies, one thorasic vertebrae body is only 3 millimeters thick. Also, the cortex of several long bones is deformed (Fig. 23). The bones of Burial 1b, a female of 30 or 40 years are very light weight; the cortex of the left femer is so thin it has nearly disintegrated at the distal end. Burial FF-1 could not be sexed but is over 45 years old, only long bones were recovered from this burial and a tibia which has considerable anterior bowing has a moderate development of periostitis. The muscle incertions are marked and there is heavy clacification of the patellar ligament incertion.

E. Apparent Fracture

Two males show simple bone fractures. Burial FF-2 has a healed rib fracture and Burial S, a 40-plus year old male has a healed fracture of the right clavicle. When the clavicle broke, the ends overrode and fused in that position (Fig. 24). This clavicle is eighteen millimeters shorter than the left clavicle.

F. Benign Tumor

Burial P, a 25 to 35 year old female, has a benign tumor on a fourth or a fifth rib.

G. Orbit Trauma

Burial O is represented by only the frontal bone and the facial bones of a 9 to 10 year old child. A perforation is through the lateral side of the right sinus and part of the right orbit roof and enters the brain case. There is no evidence of healing (Fig. 25).

H. Mastoiditis

Burial D, a female of 18 to 21 years has a large draining sinus on the right mastoid process which seems to indicate mastoiditis.

I. Compression Fracture

Three burials have vertebrae which have compression fractures. Two of these, Burials FF-2 and 1b have ostietis. The compression fracture from Burial FF-2 was described previously, Burial 1b, a female of 30 to 40 years has a lumbar and a lower thorasic vertebrae with some compressioning. Burial 4, a 35 to 40 year old male, has two throasic vertebrae, one 3 millimeter thick, as well as two other lumbar vertebrae which have some compressing. No other vertebrae from Burial 4 show any noticeable compression.

J. Skull Trauma

It is notable that the two skulls which show injuries such as might be caused by a blow to the head are

both females. Burial 6-2 has a depression at the approximate middle of the left parietal about 45 millimeters in diameter and may have been made by a flat instrument. The effects of this blow can be seen on the interior of the skull. The injury was probably early in the life of the 25 to 35 year old female. The other skull from Burial 9 is a 25 year old female, the left temporal is depressed as if struck by a direct blow on the squamouus suture at the most superior point on the arc of the suture. The squamous is flattened if not somewhat concave. The only apparent fracturing at the time of the injury is a crack along the stephanion about 30 millimeters in length at the back corner of the parietal. Apparently as the skull dried after it was excavated a separation crack opened continuing from the original crack all the way anteriorally along the stephanion line to the coronal suture. The temperol-occipital suture also separated perhaps at the time of the injury. The injury could have caused the death of the individual.

TABLE 19.--Pathologies

Pathologies	A-1	A-2	B-2	D-2	FF-1	FF-2	FF-3	O	P	S	T'-1	1b	2-2	4	6-2	9
Rhumatoid arthritis					x											
Osteoarthritis	x		x						x			x	x	x		x
Syphilis		x														
Periostitis					x	x				x	x	x				
Apparent Fracture						x				x						
Benigh Tumer									x							
Orbit Trauma																
Mastoiditis				x												
Compression Fracture						x						x		x		
Skull Trauma-Depression															x	x

PATHOLOGIES

Fig. 20
Exosis Bridge and Pseudoarthrosis A-1

Fig. 21
The A-1 Sternum

Fig. 22
Poker Spine A-1

Fig. 23
Osteitis FF-2

Fig. 24
Clavicle Fracture S

Fig. 25
Orbit Trama 0

Plate XI

VI. DENTITION

A. Dental-Metrics

Mesial-Distal and Buccal-Lingual measurements were taken. The sample is quite small because so many teeth were lost postmortum, but a few interesting notes can be made. All the mean mesial-distal calculations for mandibular teeth are larger for females than males, indeed, even the crown-module mean calculations shows that only mandibular canines are smaller in females than in males; all other female mandible teeth are larger. Female maxillary teeth, however, except third molars are smaller than male teeth or are about the same size. Male incisors, canines, and first molars are larger but premolars and second and third molars have about the same crown-module size.

Also, female mandibular third molars are larger than both first and second molars by a sizable margin, and the sample is quite large.

TABLE 20.--Dental measurements--male.

	Mesio--Distal			Bucial--Lingual			Crown--Module		
	Range	Freq.	Mean	Range	Freq.	Mean	Range	Freq.	Mean
				Maxilla					
I1	7.4- 8.3	3	7.83	6.7- 7.5	3	7.10	7.45- 7.90	3	7.92
I2	6.6- 7.4	5	7.02	6.1- 9.6	5	7.14	6.70- 8.35	5	7.08
C	7.6- 8.6	7	8.10	8.0- 9.0	7	8.41	7.80- 8.80	7	8.23
P1	6.5- 7.6	8	7.09	8.7- 9.8	7	9.33	7.80- 8.80	7	8.18
P2	6.0- 7.8	10	6.86	8.4- 9.8	9	9.20	7.50- 8.80	9	8.03
M1	9.5-11.6	10	10.81	11.0-12.4	11	11.79	10.40-12.00	10	11.30
M2	9.7-11.9	10	10.42	10.1-12.2	10	11.44	9.90-11.75	10	10.93
M3	7.3-10.6	7	9.17	7.7-11.5	7	10.14	8.45-10.75	7	9.66
				Mandible					
I1	3.5- 5.4	5	4.32	4.5- 5.6	5	5.16	4.45- 5.30	5	4.74
I2	4.7- 6.0	6	5.35	5.3- 6.3	7	5.71	5.30- 5.80	6	5.55
C	6.0- 7.7	7	6.78	7.3- 8.0	6	7.60	6.85- 7.85	6	7.18
P1	6.4- 7.3	9	6.82	7.5- 8.2	10	7.80	6.95- 7.75	9	7.30
P2	5.9- 7.3	7	6.77	6.5- 9.0	7	7.51	6.95- 7.75	9	7.20
M1	10.5-11.7	5	11.06	10.1-10.4	5	10.24	10.40-10.90	5	10.65
M2	9.3-12.7	7	11.04	9.1-11.3	7	9.99	9.30-12.00	7	10.51
M3	8.5-11.9	5	10.54	9.0-11.6	5	10.22	8.75-11.75	5	10.38

TABLE 21.--Dental measurements--female.

	Mesio--Distal			Bucial--Lingual			Crown--Module		
	Range	Freq.	Mean	Range	Freq.	Mean	Range	Freq.	Mean
				Maxilla					
I1	8.0- 8.6	6	8.18	6.2- 7.1	8	6.68	7.10- 7.80	6	7.41
I2	6.1- 7.6	8	7.01	5.3- 7.7	8	6.11	5.90- 7.50	8	6.56
C	7.0- 8.1	10	7.70	7.3- 8.8	10	7.94	7.55- 8.40	10	7.82
P1	6.4- 7.2	9	6.95	8.0-11.4	9	9.41	7.20- 9.30	9	8.18
P2	6.3- 7.2	11	6.85	8.3-10.4	11	9.25	7.30- 8.65	11	8.04
M1	9.8-12.0	16	10.63	10.4-12.7	16	11.41	10.30-12.00	16	11.02
M2	9.7-11.7	14	10.70	9.2-12.8	14	11.30	9.45-12.25	14	11.00
M3	8.6-10.3	6	9.60	9.8-12.0	6	10.85	9.20-11.15	6	10.24
				Mandible					
I1	4.8- 5.4	8	5.06	4.5- 7.6	9	5.43	4.90- 6.30	8	5.31
I2	5.5- 7.0	10	6.05	5.2- 6.9	10	5.97	5.60- 6.70	10	6.01
C	6.5- 7.6	10	6.87	5.6- 8.2	10	7.14	6.05- 7.90	10	7.01
P1	6.7- 7.9	11	7.23	6.9- 8.8	11	7.73	6.80- 8.15	11	7.46
P2	6.8- 7.7	8	7.10	7.4- 9.5	9	8.06	7.10- 7.90	8	7.45
M1	9.8-12.3	17	11.36	9.7-12.1	16	10.59	10.05-12.00	16	10.96
M2	10.1-12.2	13	11.29	9.8-11.8	13	10.47	10.45-11.55	13	10.88
M3	10.3-13.6	8	11.71	9.0-13.4	8	11.08	9.95-12.80	8	11.39

TABLE 22.--Dental measurements--unknown sex.

	Mesio--Distal			Bucial--Lingual			Crown--Module		
	Range	Freq.	Mean	Range	Freq.	Mean	Range	Freq.	Mean
				Maxilla					
I1	9.0- 9.1	3	9.03	7.2- 7.5	3	7.33	8.10- 8.30	3	8.18
I2	7.6- 7.8	2	7.70	6.4- 6.7	2	6.55	7.00- 7.25	2	7.13
C		6	11.						
P1									
P2									
M1	11.1-12.7	6	11.87	11.6-12.8	6	12.03	11.35-12.45	6	11.95
M2									
M3									
				Mandible					
I1	5.0- 6.7	8	5.78	4.5- 6.7	8	5.69	4.80- 6.70	8	5.73
I2	5.6- 7.0	6	6.02	5.8- 6.5	5	5.98	5.75- 6.30	5	5.91
C	6.6- 7.3	4	6.90	7.1- 8.4	4	7.63	6.85- 7.85	4	7.26
P1	6.0- 7.4	7	6.57	6.7- 8.8	7	7.51	6.50- 8.10	7	7.04
P2	5.7- 8.9	5	7.04	7.3- 8.5	5	7.82	6.55- 7.60	5	7.03
M1	10.0-13.5	12	11.82	10.0-11.5	12	10.71	10.50-12.40	12	11.29
M2	10.9-11.2	5	11.04	9.7-10.3	5	10.10	10.50-10.75	5	10.63
M3									

B. Dental Pathologies

Tables 23 and 24 list dental pathologies in the categories. Total Possible (TP) teeth, or every tooth that could be examined, and Total Possible X (TPX) representing the total number of teeth present and in good condition, however, some of these teeth have been damaged since the burials were excavated but none exhibit pathologies. Teeth that were lost anti-mortim (AM) could have been lost for any number of reasons such as an abscess, trauma, or perhaps even extraction though it is not known that teeth were extracted by the Indians of the Straits of Mackinac area. Abscesses (A) include teeth that have large crown abscesses or alveolar abscesses which extend into the root area of the tooth. Abscessed-Missing (AbM) includes teeth that are missing from the alveolar which has signs of infection. A Protostylid (P) category is included on the mandible table as there are two examples of Protostylids, both from females. All crown caries are listed under one category (C). Only seven maxillary and twelve mandibular caries were observed from all the teeth recovered from the Lasanen site. The last category from which the comparative percentages of other categories

TABLE 23.--Dental pathologies--Maxilla

	Male								Female								Undetermined							
Left	TP	TP-X	TA-O	MA	MP	A	AM	C	TP	TP-X	TA-O	MA	MP	A	AM	C	TP	TP-X	TP-O	MA	MP	A	AM	C
M3	8	3	6	1	1	-	1	1	13	4	9	4	1	-	-	1	7	-	-	3	-	-	-	-
M2	8	5	7	1	-	-	1	-	13	5	12	4	1	-	1	2	7	2	2	3	-	-	-	-
M1	8	5	7	1	-	-	1	-	13	7	12	4	1	-	-	1	7	6	6	1	-	-	-	-
P2	8	5	8	-	-	2	-	-	13	5	8	2	4	-	-	1	7	3	3	3	-	-	-	-
P1	8	6	8	-	-	-	1	1	13	6	9	1	4	2	-	-	7	4	4	2	-	-	-	-
C	8	4	5	-	-	-	1	-	13	9	10	1	3	-	-	-	7	4	4	1	-	-	-	-
I2	8	3	4	-	-	-	-	1	13	7	8	1	5	-	-	-	7	3	3	3	-	-	-	-
I1	8	2	4	2	2	-	-	-	13	7	7	0	6	-	-	-	7	3	3	3	-	-	-	-
Right																								
I1	8	4	6	1	1	-	1	-	13	7	7	-	6	-	-	-	7	4	4	3	-	-	-	-
I2	8	4	5	-	3	-	1	-	13	8	8	-	5	-	-	-	7	2	2	4	-	-	-	-
C	8	5	6	-	2	-	1	-	13	8	9	-	4	-	1	-	7	2	2	4	-	-	-	-
P1	8	4	6	-	2	2	-	-	13	9	11	1	3	-	-	-	7	3	3	3	-	-	-	-
P2	8	6	8	-	-	-	1	1	13	6	8	1	5	-	1	-	7	2	2	4	-	-	-	-
M1	8	5	8	-	-	-	1	1	13	8	13	3	-	-	-	2	7	6	6	1	-	-	-	-
M2	8	5	7	1	-	-	-	-	13	7	13	3	-	-	2	1	7	2	2	2	-	-	-	-
M3	8	3	4	1	3	-	-	-	13	2	8	4	1	-	-	1	7	-	-	5	-	-	-	-

TABLE 24.--Dental Pathologies--Mandible

	Male									Female								Undetermined								
Left	TP	TP-X	TP-O	MA	MP	A	AM	C	P	TP	TP-X	TP-O	MA	MP	A	AM	C	P	TP	TP-X	TP-O	MA	MP	A	AM	C	P
M3	7	1	3	1	3	-	-	1	-	13	4	9	4	1	-	-	1	-	7	-	-	3	-	-	-	-	-
M2	7	3	4	1	2	-	-	-	-	13	5	12	4	1	-	1	2	-	7	2	2	3	-	-	-	-	-
M1	7	2	4	1	2	1	1	-	-	13	7	12	4	1	-	-	1	-	7	6	6	1	-	-	-	-	-
P2	7	4	4	1	2	-	-	-	-	13	5	8	2	5	-	-	1	-	7	3	3	3	-	-	-	-	-
P1	7	5	6	1	1	-	-	-	-	13	6	9	1	4	2	-	-	-	7	4	4	2	-	-	-	-	-
C	7	5	5	-	2	-	-	-	-	13	9	10	1	3	-	-	-	-	7	4	4	1	-	-	-	-	-
I2	7	3	4	1	3	-	-	-	-	13	7	8	1	5	-	-	-	-	7	3	3	3	-	-	-	-	-
I1	7	2	2	-	4	-	-	-	-	13	7	7	-	6	-	-	-	-	7	3	3	3	-	-	-	-	-
Right																											
I1	7	3	3	-	3	-	-	-	-	13	7	7	-	6	-	-	-	-	7	4	4	3	-	-	-	-	-
I2	7	5	5	-	2	-	-	-	-	13	8	8	-	5	-	-	-	-	7	2	2	4	-	-	-	-	-
C	7	3	4	-	3	-	-	-	-	13	8	9	-	4	-	1	-	-	7	2	2	4	-	-	-	-	-
P1	7	5	6	1	1	-	-	-	-	13	9	11	1	2	-	-	-	-	7	3	3	3	-	-	-	-	-
P2	7	3	5	1	2	1	-	-	-	13	6	8	1	5	-	1	-	-	7	2	2	4	-	-	-	-	-
M1	7	4	5	1	2	-	-	-	-	13	8	13	3	-	-	-	2	-	7	6	6	1	-	-	-	-	-
M2	7	3	5	1	2	1	-	-	-	13	7	13	3	-	-	2	1	-	7	2	2	2	-	-	-	-	-
M3	7	3	5	1	1	-	-	-	-	13	2	8	4	1	-	-	1	1	7	-	-	5	-	-	-	-	-

TABLE 25.--Percentage of frequencies of dental pathologies--Maxilla

	Male							Female							Undetermined	
	TA-O	TP-X	MA	MP	A	AM	C	TA-O	TA-X	MA	MP	A	AM	C	TA-O	TA-X
M3	6	50	17	12	-	17	17	5	40	40	38	-	-	20	0	-
M2	7	71	14	-	-	14	-	10	70	20	23	-	-	10	0	100
M1	7	71	14	-	-	14	-	13	85	15	-	-	-	-	3	-
P2	8	62	-	-	25	-	-	8	88	13	23	-	-	-	0	-
P1	8	75	-	-	-	13	17	6	83	17	54	-	-	-	0	-
C	5	80	-	-	-	20	-	9	100	-	31	-	-	-	0	-
I2	4	75	-	-	-	-	25	6	100	-	54	-	-	-	1	-
I1	4	50	50	25	-	-	-	7	86	14	46	-	-	-	2	-
I1	6	67	17	12	-	17	-	6	100	-	54	-	-	-	2	100
I2	5	80	-	38	-	20	-	5	100	-	61	-	-	-	1	100
C	6	83	-	25	-	17	-	8	100	-	38	-	-	-	0	-
P1	6	67	-	25	-	-	-	7	100	-	46	-	-	-	0	-
P2	8	75	-	-	33	13	13	7	100	-	46	-	-	-	0	-
M1	8	64	-	-	-	13	13	10	100	-	23	-	-	-	3	100
M2	7	71	14	-	-	-	-	9	89	-	31	-	-	-	0	-
M3	4	75	25	38	-	-	-	4	100	-	38	-	-	-	0	-

TABLE 26.--Percentage of frequencies of dental pathologies--Mandible.

		Male								Female								Undetermined						
		TA-O	TP-X	MA	MP	A	AM	C	P	TA-O	TP-X	MA	MP	A	AM	C	P	TA-O	TP-X	MA	MP	A	AM	C	P
M3	3	33	33	43	-	-	33	-	9	44	31	8	-	-	11	-	0	-	43	-	-	-	-	-	
M2	4	75	25	29	-	-	-	-	12	42	31	8	-	8	17	-	2	100	43	-	-	-	-	-	
M1	5	40	20	29	20	20	-	-	12	58	31	8	-	-	8	-	6	100	14	-	-	-	-	-	
P2	5	80	20	29	-	-	-	-	8	63	15	38	-	-	13	-	3	100	43	-	-	-	-	-	
P1	6	83	17	14	-	-	-	-	9	67	8	31	22	-	-	-	4	100	29	-	-	-	-	-	
C	5	100	-	29	-	-	-	-	10	90	8	23	-	-	-	-	4	100	14	-	-	-	-	-	
I2	4	75	25	43	-	-	-	-	8	88	8	38	-	-	-	-	3	100	43	-	-	-	-	-	
I1	2	100	-	57	-	-	-	-	7	100	-	46	-	-	-	-	3	100	43	-	-	-	-	-	
I1	3	100	-	43	-	-	-	-	7	100	-	46	-	-	-	-	4	100	43	-	-	-	-	-	
I2	5	100	-	29	-	-	-	-	8	100	-	38	-	-	-	-	2	100	57	-	-	-	-	-	
C	4	75	-	43	-	-	-	-	9	89	-	31	-	11	-	-	2	100	57	-	-	-	-	-	
P1	6	83	17	14	-	-	-	-	11	82	8	15	-	-	-	-	3	100	43	-	-	-	-	-	
P2	5	60	20	29	20	-	-	-	8	75	8	38	-	13	-	-	2	100	57	-	-	-	-	-	
M1	5	80	20	29	-	-	-	-	13	62	23	-	-	-	15	-	6	100	14	-	-	-	-	-	
M2	5	60	20	29	20	-	-	-	13	54	23	-	-	15	8	-	2	100	29	-	-	-	-	-	
M3	5	60	29	29	-	-	-	-	8	25	31	8	-	-	13	13	0	-	71	-	-	-	-	-	

were calculated is the Total Observable-Accountable number of teeth (TOA). This category includes all teeth that were present in the alveolar and observable or teeth that were not observable for an accountable reason, such as postmortum lose.

The Lasanen people had very good teeth. A total of nineteen caries, nine alveolar and crown abscesses and sixteen abscess-missing teeth were noted for a total of forty-four decayed or diseased teeth from 501 observable teeth.

VII. ADDITIONAL DISCUSSION

One of the most important aspects of the Lasanen site is the burial pattern and composition. In summary description, the burial pits are secondary interments and are usually multiple interments. However, not all of the burial pits are multiple burials nor are all the burials secondary interments. Many of the burial pits contained very definitive artifacts that indicate that the burial pits were made very close to the same time, between the years 1670 and 1715. Also, no burial pits had been dug intrusively into another burial pit except the coffin burial dug over Burial Pit 6, but the coffin burial is about 100 years later in time than the deeper Burial Pit. This suggests that the burial pits were made near enough in time so that the ground surface indicated the earlier burial pits. If the pits were marked on the surface by artificial means, no evidence or markers were discovered. Twin Burial Pits T and T' were definitely made at the same time.

While the Lasanen burials are in many ways reminicient of the large feast of the dead ossurary burials described be early missionaries and adventures among the Huron and other Iroquois they also deviate from this pattern in some respects. They are of course much smaller in size and contain many fewer burials.

At the present time no accurate estimate can be made as to the length of time the Lasanen method of burial was used in St. Ignace, only a small part of what appeared to be the entire cemetery was excavated. Conversation with a local home owner whose house is 150 to 250 yards to the southeast indicated the cemetery may have extended that far since human bones were discovered by the neighbor when his house was built several years before the Lasanen site was discovered.

Perhaps an answer to the question of why the burial pits were dug separately may be indicated in the physical anthropological evidence. Several genetically determined anomolies present a pattern which suggest that individuals within burial pits are closely related genetically. Septal apeture incidences from Burial Pit A support this as all female burials in the pit have

apetures. By itself, septal apeture occurrences could suggest that female kinsmen were interred in this pit though septal apeture incidences are high among females throughout the population. The evidence from parietal notch bone frequencies also suggests genetic association within individual burial pits, of the seven individuals that exhibit parietal notch bones, four are from Burial Pit 2 and two more are from twin Burial Pits T and T'. Both males in the population that have the notch bones are in Pit 2 while one female from Burial Pit 2 also has the assessory bone. One other anomoly offers additional support for the hypothesis that close relatives are buried within a single burial pit, there are three occurrences of irregular ossification of the sternum and two are from Burial Pit M. Further evidence is found in the craniometry of the Lasanen site. Burial Pit 2 contained three adult males two of which have the same maximum cranial length and all three have the same Basion-Bregma Height, two have the same Endobasion-Alveolar point length and two have the same auricular height.

If the individual burial pits are 'family' burial pits, an explanation of why the pits are so varied in the

number of individuals each pit contained is offered. If the festival of the dead was celebrated at regular or at particular intervals and some families had only one death in the family since the last celebration, just one individual was included. In fact, when a single individual was found it was greatly disarticulated indicating a lone past death. Only the large pits, such as Burial Pit 2 had naturally articulated burials, Pit 2 had two well articulated individuals.

VIII. INTERPRETATION AND CONCLUSIONS

Several historical records from about 1615 to 1700 are available which describe the feast of the dead ceremony practiced by The Hurons and their allies in the territory then called lower New France. Indeed, one of the last descriptions was by Cadillac quoted here from Kinietz (1965:283-4), but written in 1695 while Cadillac served as commedant of Fort DuBaud at St. Ignace.

> They erect a hut about one hundred and twenty feet long, with new bark which never has been used before. They set up a maypole at each end and another in the middle, taller than the others. These poles are oiled, greased, and painted: at the top of each is a prize, which belongs to the person who can first reach it and touch it with his hand. They then enter this new hut, in which there are several tiers, and bring the bones of their relatives, in small bags or wrapped very neatly in strips of bark. They set them out, from one end to the other, and heap gifts upon them of all their finest and best possessions, and generally whatever they have got together in the previous three years. Meanwhile, the cooking pots are constantly on the fire, full of meat, for anyone to eat who likes. They make a continual noise, night and day, with drums or by striking the pots or the strips of bark with sticks. They go out from time to time and surround the hut, firing muskets and howling until

> the whole air quivers; then they re-enter, bedaubed with black. Finally, the same tumult goes on for three days and three nights; but, before the time has quite expired, they make presents to those who have been invited to the feast of all that belong to the dead, that is, all the booty with which the bones were covered. When this has been distributed they go out for the last time and surround the hut, uttering great howls; they fall upon it with heavy blows with sticks and poles, making a desperate clatter, and break all the bark in pieces. When that is done, the women are ready with faggots of fir-branches, and they put a layer of them on the ground from one end to the other of the place where the hut was. At the same time they kill a large number of dogs, which are to them what sheep are to us, and are valued by them more than any other animal, and make a feast of them. But, before eating, they set up two great poles and fasten a dog to the top of them, which they sacrifice to the sun and the moon, praying to them to pity and to take care of the souls of their relations, to light them on their journeys, and to guide them to the dwelling place of their ancestors. This idea proves that they believe in the immortality of the soul. The feast being thus concluded, each takes the bones of his relations; they carry them all in their hands and take them to stony places, hollow, rugged, and unfrequented; they leave them there and that is the end of the ceremony. After that, the dead whose feast they have held are never spoken of again in any way, and they remain in perpetual oblivion.

Other detailed accounts of the festival that are available always describe large single ossuary interments. The Jesuit priest Jean de Brebeuf describes a ceremony to which he had been invited (1636:279-305). The description

is quoted by Kenneth E. Kidd (1953:372-375) and by W. Vernon Kinietz (1964:105-117). The Ontario Huron were Brebeuf's hosts. Brebeuf reported that the festival was held every twelve years, and the burial pit was about ten feet deep and thirty feet in diameter and was surrounded by a platform scaffold about nine to ten feet high.

> . . . ten or twelve were in the pit and were arranging the bodies all around it, one after another. They put in the middle of the pit three large kettles, which could only be of use for souls; one had a hole through it, another had no handle, and the third was of scarcely more value. I saw very few Porecelain collars; it is true they put many on the bodies . . . the pit was full within about two feet; they turned back over the bones the robes which bordered the edge of the pit, and covered the remaining space with mats and bark. They heaped the top with sand, poles and wooden stakes, which they threw in without order. (Brebruf, 1636:297-9)

Brebeuf's account indicates that many objects of value were placed in the burial pit and much was exchanged between the people attending the festival. He also makes a statement which indicates that the same burial technique is not always used by the Huron but the meaning of the statement is not clear:

> Now usually there is only a single feast in each Nation: all the bodies are put in a common pit. I say usually, for this year, which has happened to be the feast of the dead, the kettle has been divided; and five Villages of the part where we are have acted by themselves, and put their dead into a private pit. (Kinietz, 1965:110)

If what Brebeuf described was only one village's burials the combined nations burial pit would have been incredibly large, much larger than any yet discovered by modern archaeology since the description is of a burial pit thirty feet wide by ten feet deep and almost filled with bodies and bones.

In 1615, Champlain reported a Huron burial ceremony. It was his understanding that the ceremonies took place every eight to ten years. Like Brebeuf, Champlain reported that kinsmen took responsibility for the bones

> . . . they dig a great pit ten fathoms square in which they place those said bones with the necklaces, wampom chains, tomahawks, kettles, sword-blades, knives and other trifles, which are of no small value among them . . . (Kinietz, 1965:99)

The adventurer Sagard in 1632 also reported the frequency of the feast as about every ten years:

> The pit is made outside the city, very large and deep, and capable of containing all the bones, furnishings, and pitls dedicated

> for the deseased. A high scaffold is erected along the edge, to which they carry all the sacks of bones; then they line the pit everywhere, on the bottom and the sides, with new beaver-skins and robes; then they put in a layer of hatchets, next of kettles, beads necklaces, and bracelets of porcelain, and other things given by the relatives and friends. That done, the chiefs from the height of the scaffold empty and pour out all the bones from the sack into the pit among the merchandise, which they cover again with other new skins, then with bark, and afterward they throw the earth back on top and some large pieces of wood. To mark their respect for the place they drive wooden posts in the ground all around the pit and make a covering over it which lasts as long as it can. Then they feast once again, take leave of one another, and return whence they came, very joyous and pleased that the souls of their relative and friends will have plenty to take from and to make them rich that day in the other life. (Kinietz 1965:104)

It may be important that differential treatment is accorded some bodies or bones by relatives as reported by Sagard:

> I admired the tenderness of one woman toward her father and children; she is the daughter of a Chief who died at an advanced age, and was once very influential in the Country; she combed his hair and handled his bones, one after the other, with as much affection as if she would have desired to restore life to him; she put beside him his Atsatonewai, this is his package of Council sticks which are all the books and papers of the Country. As for her little children, she put on their arms bracelets of Porcelain and glass beads, and bathed their bones with her tears; (Kinietz, 1965:104)

This sort of irregular treatment may account for the deliberate attempt at the Lasanen site to rearticulate burial S.

Nicolas Perrot, the French commendant in the Northwest described two methods by which Ottawa buried their dead sometime within the period of 1680 to 1718 (Blair, 1911:78-88). One method was the feast of the dead as described from the Huron, although Perrot does not describe the mass burial. It is possible, however, that the single burial he describes is only the primary burial antecedent to the secondary mass burial at the time of the feast. A third method was reported by Rasles (Kinietz, 1965:282) who said that one of the three groups of Ottawa cremated their dead. Perrot noted that one tribe celebrated the feast every year but that no celebration, except for a few villages, had been held for several years (Blair 1911:88). Raudot (Blair 1911:282) states that the interval between feast observances is three years, both he and Perrot were probably referring to Ottawa ceremonies.

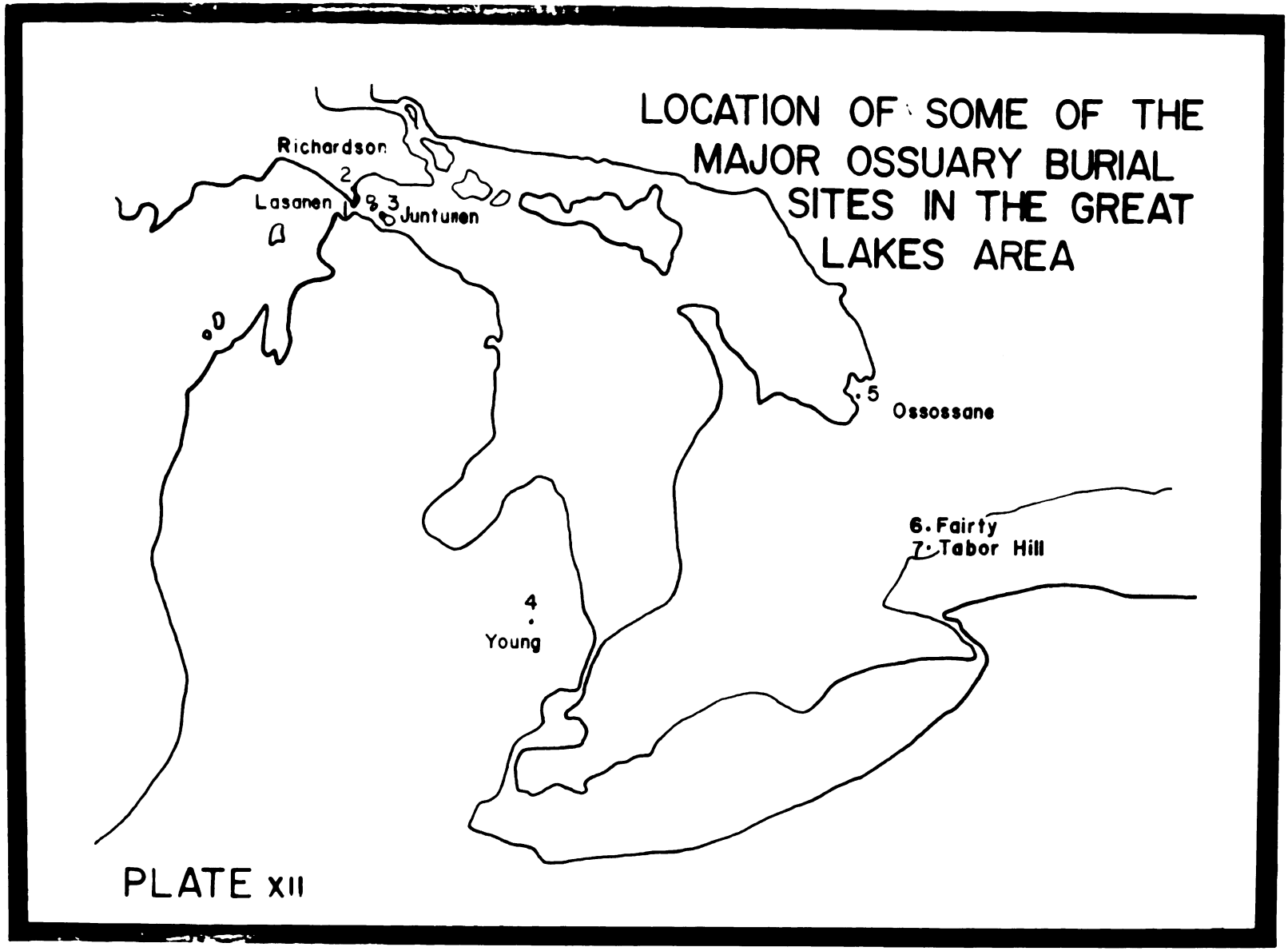
Kinietz (1965:283) feels that the ceremony of the feast of the dead was adopted by the Algonquian Ottawa

from their Huron neighbors and that practically every tribe of the Upper Great Lakes adapted the ceremony. He also states:

> It is interesting to note that after the description by Cadillac, which probably applied to both Huron and Ottawa at Mackinac about 1695, there is no record of this ceremony having been performed by the Huron. (Kinietz, 1965:117)

While later festivals may have occurred the one described by Cadillac must have been one of the latest since the Indians of the Upper Lakes were fast being converted by the Jesuit priests who discouraged the burial practice.

In Ontario, near Toronto (Plate XII), both the Fairty (Anderson, 1963:28) and The Tabor Hill ossuaries (Churcher and Kenyon, 1960:259) have been tentatively dated at AD 1400 and AD1200 respectively. These exhibit many similarities such as size, method of burial, and abscence of associate burial artifacts. In Lapeer County, Michigan, another burial complex was found at the Young site (Greenman, 1937). Seventy-four burials were recovered from the site and seven different burial methods or positions were noted including, extended, flexed bundled, torso, cremated, fragmentary, and single unassociated crania. At least three of these types, flexed,


LOCATION OF SOME OF THE MAJOR OSSUARY BURIAL SITES IN THE GREAT LAKES AREA
Richardson
2
Lasanen
1
3
Juntunen
0
5
Ossossane
6. Fairty
7. Tabor Hill
4
Young
PLATE XII

fragmentary, and single unassociated crania, and perhaps bundled were found at the Lasanen site. At the Young site, as at Lasanen, large numbers of the burials were secondary interments. Four extended young burials were secondary reburials that had been reassembled in nearly correct anatomical order; this practice was also noted at the Lasanen site. Fitting (1966:738) dates the Young phase of the Young tradition between AD 900 and AD 1100. Only a few non-diagnostic artifacts were directly associated with the burials at the site.

The Juntunen site on Bois Blanc Island provides additional examples of four mass burials from the 14th century and also presents a multiple burial associated with a Laurel occupation of the first century AD. A radio carbon date AD 50± 120 was obtained on skeletal material (M-1392; Crane and Griffin, 1965). Eight fully flexed to partially flexed burials were placed in the early burial pit but these were not secondary burials (McPherron, 1967).

In addition to the Lasanen site in St. Ignace there was a cemetery on property owned by Mr. Earl Richardson; 52 burials were alledgedly placed in a single burial pit. This site (dated by Greenman, 1958:28) at

about 1660 is very important to the interpretation of the Lasanen site located only one and one half miles away. Several differences between the two sites are apparent, the Richardson cemetary has dog burials included in the pit which leads Greenman to believe the burial pit was made prior to the building of the Mission at St. Ignace in 1670 because the Jesuits discouraged the practice of including dogs in human burials. A more important difference is the large size of the single Richardson burial pit which is more in the fashion of the classic Iroquois ossuaries.

Another large ossuary burial which is associated with the Huron by Kidd (1953:359-378) is near Ossossane, Ontario. The single burial pit may have contained as many as 1000 burials and has many historic artifacts similar but earlier than those found at Lasanen, including in part, catlinite beads, clasp knives, discoidal wampam and ploychrome glass beads. Kidd dates the ossuary between 1624 and 1636 and is convinced the site is the feast of the dead ceremony Brebeuf visited in May 1636.

Six burial sites were reviewed for differences and similarities with the Lasanen site. Three sites

including Lasanen have European artifacts associated with the burials. The earlier large ossuaries had no artifacts but the smaller ossuary-like burials in Michigan at the Young and Juntunen sites have a few artifacts but these are probably personal items rather than grave contributions. The earliest burial is an eight burial interment from the Juntunen site on Bois Blanc Island in the Straits of Mackinac and though the burials are primary interments, similarities link the burial method to later 14th century Juntunen site burials and the still later 17th century Lasanen burials.

Five of the six site reports reviewed have anthropomorphic data available, male craniometry data is presented in Table 27. Four or five hundred years and approximately 250 miles separate the Young and Lasanen sites but the similarities of cranial morphology is remarkable especially the calva. The Lasanen crania have the highest Auricular heighth represented but is only 0.6 millimeters higher than the Juntunen crania. The Lasanen faces are significantly narrower than any of the others as the biyzgomatic diameter is 3.8 millimeters narrower than the next closest population from the

TABLE 27.--Comparison of male craniametry from other populations.

Male	Fairty	Tabor Hill	Younge	Richardson*	Juntunen**	Lasanan	Mean
Cranial length	186.2	184.5	183.3	(192.8)?	180.0	183.3	183.6
Cranial Breadth	143.3	144.3	138.0	141.0	139.1	138.7	140.7
Basion-Bregma	141.0	136.2	134.9	132.0	135.2	133.8	135.5
Auricular-Heighth	118.3			118.0	119.7	120.3	119.1
Endobas-nasion			104.6	101.2	100.4	102.7	102.2
Endobas.-Alv. Pt			101.4	95.8	97.1	100.5	98.7
Bizygom.-Diam.	142.0	140.6	138.7	138.6	139.3	134.8	139.0
Nasion Alv. Pt.			68.7	71.5	72.0	76.5	72.2
Nasal Heighth			49.6	52.4	52.7	55.0	52.4
Nasal Breadth			28.2	27.0	25.5	26.9	26.9
Left orbit. length			33.7		34.5	35.3	34.5
Left orbit. Breadth			41.5		40.1	40.8	40.8
Ext. Palate Length			56.2		54.8	55.1	55.4
Ext. Palate Breadth			64.5		64.6	63.5	64.2
Cranial index	77.3	78.2	75.2	(89.8)?	77.4	75.2	76.7
Cranial Module	156.6	155.0	151.9		151.2	152.4	153.4
Heighth-Len. Index	75.8	73.9	73.8	(82.3)?	74.8	73.0	74.3
Heighth-Brdth. Index	97.4	94.4	97.7	(91.7)?	94.5	96.7	96.1
Mean-Heighth Index					84.4	83.0	83.1
Upper Facial Index	55.2	52.7	49.8	50.9	51.3	56.1	53.0
Nasal Index	52.2	50.2	57.0	51.5	49.4	48.9	51.5
Total Facial Index						88.1	--
Fronto-Parietal Index			68.2	(65.6)?	69.4	67.8	68.5
Palatal Index			115.4		117.8	118.7	117.3
Orbital Index			81.2		85.5	89.6	84.4

*After Eyman (n.d.)
**After Eyman and Betteral (n.d.)

Richardson cemetery and 7.2 millimeters narrower than the Fairty people. Also, the upper facial heighth of the Lasanen population is much longer than the other populations, but only the sites from Michigan have the figures available. It follows that the nasal height is also higher. The upper facial index of the Lasanen crania is the most Leptorene. Metrically, the Lasanen crania are most similar to the 14th century Young site while the postcranial skeleton is most like the Juntunen burials, but not significantly different than the Young burials.

Of the burial populations reviewed only the People of Fairty by Anderson had detailed account of congenital anomolies with which to compare with the Lasanen data and some of the calculations are very similar. For example, the total occurrences of tympanic dehiscenses from both sites is 39 percent of total temporals observed, and multiple supra-orbital foramina also from both sites is 28 percent. There was 6 percent occurrence of Inca at Fairty but only 3 percent at Lasanen. Mylo-hyoid bridge frequencies were 12 and 14 percent respectively at Fairty and Lasanen. Another close comparison is septal apeture frequencies at Fairty, the right humerii had 29 percent

TABLE 28.--Congenital anomolies from other populations.

	Fairty	Tabor Hill	Younge	Richardson	Juntuner	Lasanen
	%	%	%	%	%	%
Tympanic Dehiscences	39					39
Multiple Supra-orb. furamen	28					28
Wormian Bones	16		17			44
Inca Bones	6					3
Mylo-hyoid Bridge	12					14
Lumbarization	22					12
Septal Apeture	29/40					26/50

TABLE 29.--Postcranial morphology from other populations.

		Fairty	Tabor Hill	Younge	Richardson	Juntuner	Lasanen
Radius			262.6	261.7		258.6	261.8
Humerus			327.0	331.3	309.9	318.6	320.8
Tibia			383.5	388.1	357.3	379.9	363.8
Femur			450.8	458.7	433.6	442.4	448.6
Ptatymeric Index		75		74.2	77.3	78.6	88.1
Platycnemic Index		60		63.3	82.8	66.9	64.0
Radio-Humeral						78.5	77.8
Mean Stature (inches)	Male	(66.7)				66.	67.
	Female					64.	65.

occurrences compared to 26 percent at Lasanen and left humerii had 40 percent at Fairty and 50 percent at Lasanen.

The greatest similarities in burial methods between the Lasanen site and the other sites just discussed can be found at the Juntunen site. Both the Juntunen and the Lasanen burial pits are small or relatively small except one Juntunen burial pit, Feature 11, which contained 35 individuals. The other Late Woodland burial pits, Feature 18 had 6 individuals, Feature 34 had eight burials, and Feature 43 had 6 individuals (or skulls). The earlier 1st century Laural period Feature 45 had 8 individuals but was unlike the later Juntunen burial pits in that the burials are primary-flexed interments. The later Woodland burial method is similar to the Lasanen method as many are secondary reburials. Therefore, it is my belief that although there are similarities in elements of the Iroquois feast of the dead with the pattern at Lasanen, the Lasanen pattern is not directly derived from the Iroquois pattern, rather the burial methods at the Lasanen site had been practiced for many centuries in the Straits of Mackinac area. In addition to the

evidence supporting the antiquity of the burial method in the Michigan, the similarity in cranial morphology between the Lasanen and Young sites could indicate a genetic relationship between the two populations.

The total evidence shows that the Lasanen site is probably a representation of one of the final if not the final Indian observance of a burial practice that had been used for several centuries in the Straits area and the Lasanen population is probably the same genetic stock that used the method for those centuries. The Lasanen population is most likely Alqonquian, and the burial practice is not derived directly after the spectacular Iroquois feast of the dead described by many adventurers.

Quimbe (1960:108-9) believes that the northern lower peninsula of Michigan in 1600 was occupied by Pottawatomi on the west side and Ottawa on the east side, including the territory of the Young site. He also places Chippewa in the northern peninsula at that time. Kinietz documents the history of the Huron after they were attacked and driven out of Ontario by the Iroquois in 1649.

> The villages of the Huron proper were first to be attacked. In 1649 some Huron sought safety with the Tionontati, other among the Neutrals, and another group on St. Joseph Island. After the attacks on the Tionontati and the subsequent destruction of the Netural villages, the survivors who escaped captivity fled by way of Mackinac Island to the northwest shore of Lake Michigan. Hereafter these combined groups of refugees will be called Huron. A rendezvous with various Algonquian tribes was reported in 1653 to be taking place three days, journey south of Sault Ste. Marie. A year or so later the Huron and Ottawa had their village on an island, according to Peter Radisson and Nicolas Perrot. This was probably Washington Island at the mouth of Green Bay, formerly known as Huron Island. On the approach of a party of Iroquois they retreated to the mainland and built a fort near the Potawatomi village of Mechingan, where, according to Perrot, they successfully withstood a siege for two years. They then retreated further inland and in 1658 were reported by Druillettes to be six days' journey southwest of Lake Superior, where they were visited by Radisson and Groseilliers. Difficulties with the Sioux, upon whose territory they were encroaching, required another move. Chaquamegon on the southern shore of Lake Superior was their next abode. They lived there near the Ottawa until 1670. The Ottawa then removed their residence to Manitoulin Island and the Huron to Mackinac (St. Ignace).
>
> Cadillac persuaded the Huron to settle near the fort which he built at Detroit in 1701. He reported in 1703 that only about twenty-five remained at Mackinac. (1965:2-3)

In Michigan between 1670 and 1700, the major population was composed of Algonquian speaking peoples and a small reminant of Huron at St. Ignace. It is quite safe

to assume that the population at the Young and Juntunen sites were Algonquian peoples. It is possible that the Lasanen burials could be the burials of the generation that made the 52 burial interment at the Richarson cemetery, but anthropometric evidence does not support this hypothesis. The relatively small number of burials in the Richardson cemetery could represent the dwindling population of the migrating Huron who were still using the techniques of the Iroquois-Huron feast of the dead but with a small population. Until further evidence is available, the Lasanen burials most strongly suggest old genetic roots in the central Great Lakes as Algonquian genetic stock, indeed, the Lasanen burials could be the St. Ignace Ottawas who were Cadillac's hosts at a feast of the dead in 1695.

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