AN EXAMINATION OF THE LOCARNO BEACH PHASE AS REPRESENTED AT THE CRESCENT BEACH SITE, DqRr 1, BRITISH COLUMBIA.

by

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An Examination of the Locarno Beach Phase as Represented at the Crescent Beach Site, DgRr 1, British Columbia

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Abstract

Archaeological materials from excavations undertaken in 1976 and 1977 at the Crescent Beach site (DqRr 1) near the mouth of the Fraser River in British Columbia are described and analyzed, and placed in the local cultural sequence. The artifacts recovered are classified and the resulting types grouped into nine spatially defined artifact assemblages. Comparison of these assemblages to each other shows a high degree of similarity. This fact when combined with the close temporal clustering of the associated C-14 dates indicates that the assemblages all belong to a single cultural component. Comparison of this component with other similarly conceived units from other sites indicates that it belongs to the Locarno Beach Phase of cultural development extant in the lower mainland and in the offshore islands from approximately 1,000 to 500 B.C.

"The aim of science is to seek the simplest explanation of complex facts. We are apt to fall into the error of thinking that the facts are simple because simplicity is the goal of our quest. The guiding motto ... should be, seek simplicity and distrust it."

Whitehead, A.N. (1920:163)
The Concept of Nature

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Thanks are also extended to the field crews responsible for both years of excavation. These include Leonard Ham, Greg Monk, Sherrill Kautz, Valerie Patenaude, Michael Broderick and Sheila Robinson for the 1976 excavations and the entire 1977 U.B.C. Archaeological Field School with George Will for the 1977 excavations. Sections of the S.F.U. Field School were also

responsible for some excavation and their help was appreciated. The good humor of the crews contributed in no small way to the success of the project. A special note of thanks to Moira Irvine (University of British Columbia) for mapping the site and surveying in the baselines and datums.

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A Locarno Beach Phase Component From the Crescent Beach Site (DqRr 1)

I. INTRODUCTION

The objective of this study is to identify the cultural affiliation of archaeological materials excavated in 1976 and 1977 from the large shell midden, DqRr 1, located at Crescent Beach, British Columbia (Fig. 1). The thesis is that these remains belong to the Locarno Beach phase of cultural development which was extant on the lower mainland and in the offshore islands during the time period of approximately 1,000 to 500 B.C. This thesis is demonstrated in the following manner. Firstly, the excavations from which the artifacts were obtained are described in detail. This description includes the excavation and recording techniques which were employed, the nature and relative position of the physical strata observed at the site, associated features, and radiocarbon dates. Secondly, the artifacts found are classified and the resulting typed are described in detail. Thirdly, the artifacts are grouped into stratigraphically defined assemblages, and these assemblages are compared in order to determine their degree of similarity to each other. The similarity is such that it can be concluded that these assemblages all belong to the same phase of culture, although there is some differentiation into early and late

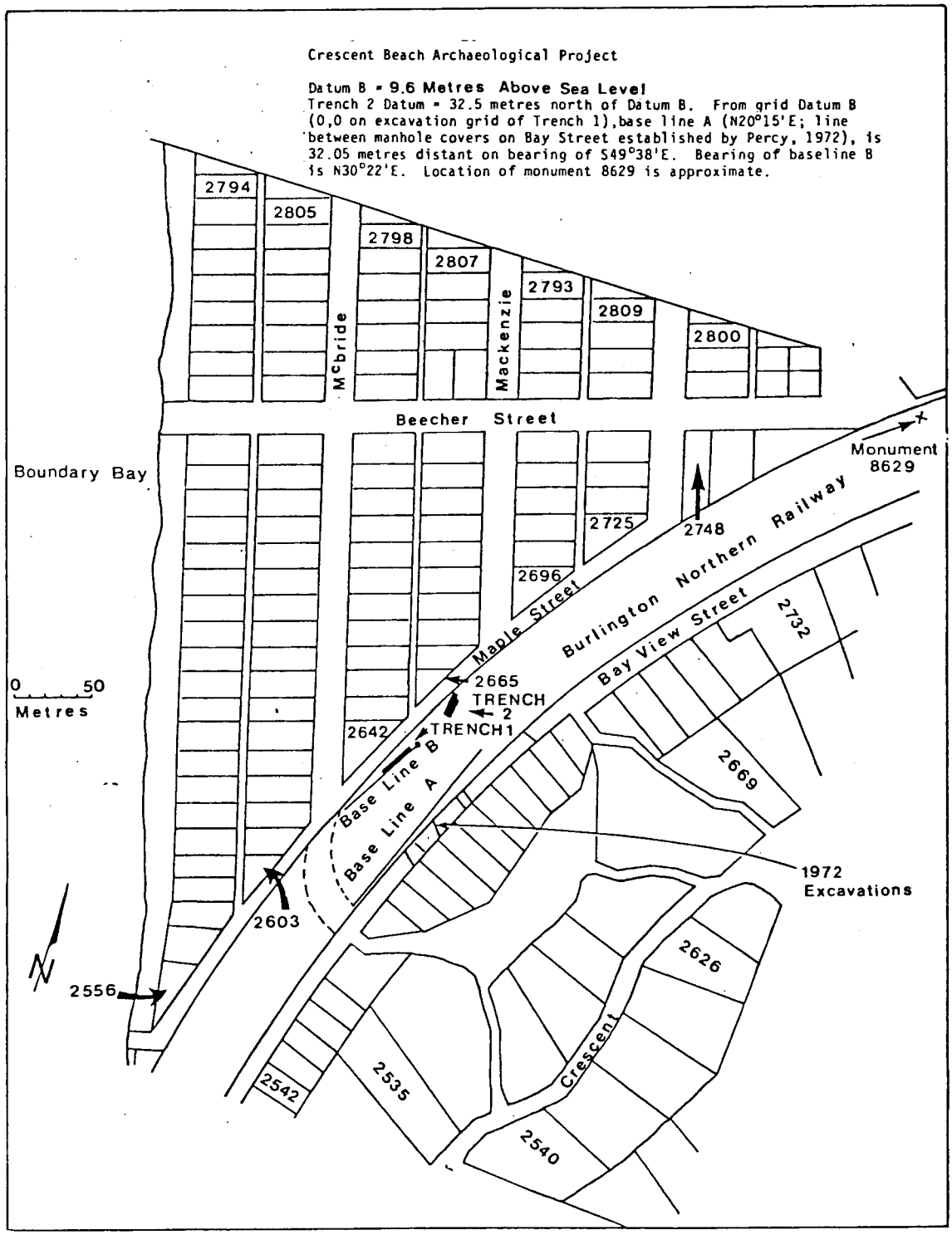


Figure 1. Location of Excavations at Crescent Beach, DgRr 1, British Columbia

portions of the phase. Fourthly, this component of culture is compared with similarily conceived units of culture content from the same region and it is concluded that this component belongs to the Locarno Beach phase. Lastly, some speculations on the content of Locarno Beach phase culture over and above mere artifaact types present are offered, along with suggestions for future research.

The site is located on the eastern shore of Mud Bay and Boundary Bay at the mouth of the Nicomekl River and is consequently in the historic territory of the Semiahmoo Band of Coast Salish (Fig.2). The site is in the municipality of Surrey, B.C. The environmental setting has recently been described by Percy (1974) and will not be repeated here.

Excavations were undertaken in both 1976 and 1977. The 1976 field project had two main objectives. The first was the salvaging of archaeological materials in the vicinity of the Great Northern right of way where the Minicipality of Surrey planned on excavating a series of drainage ditches. The second objective was to determine the nature of archaeological deposits in other areas of the site. A separate part of the project was to develop an overall research plan for the area which is faced with potential destruction in the future. This thesis is not

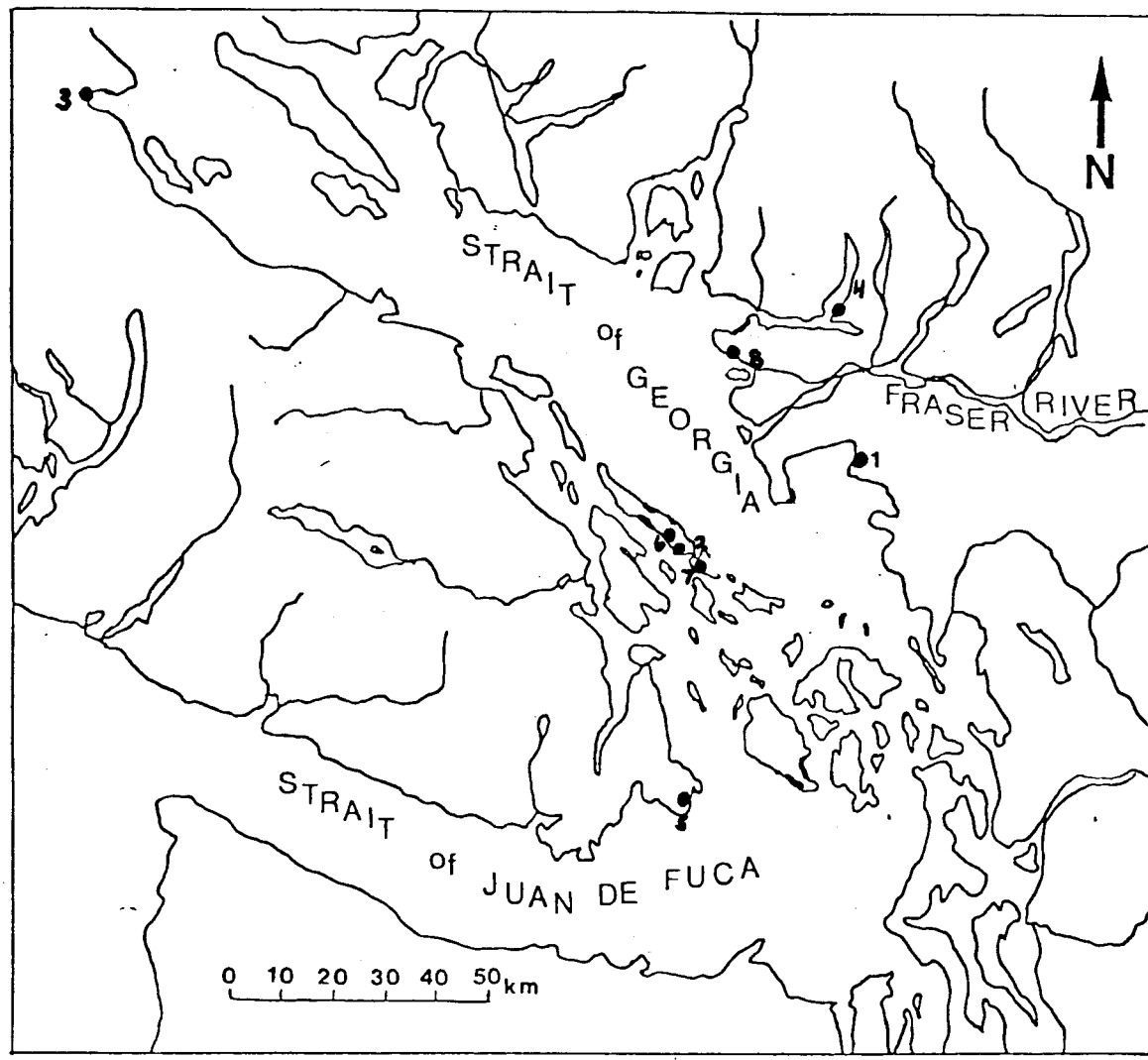


Figure 2. Spatial Distributions for possible Components of the Locarno Beach Phase

Locarno Beach Components used in Table 6 and Table 7

1 Crescent Beach 2

2 Georgeson Bay 1

3 Millard Creek

4 Belcara Park 1

5 Bowker Creek

6 Montague Harbour 1

7 Helen Point 1b

8 Musqueam Northeast

involved with that portion of the project. Trench 1 was excavated in 1976 and Trench 2 in 1977.

The Field Director in 1976 was Leonard C. Ham, a graduate student at the University of British Columbia, and the staff consisted of Greg Monks, Sherill Kautz, Valerie Patenaude, Sheila Robinson, Michael Broderick and myself. The volunteer coordinator for the project was Jim Garrison. The primary funding agency for the project was the Archaeological Sites Advisory Board but some additional funding was obtained from the Archaeological Society of British Columbia, University of British Columbia and Simon Fraser University. The field work began on June 115, 1976 and was finished at the end of August. The Trench 2 excavations were carried out under permit number 1977-8 which was jointly awarded to Mr. George Will and myself. The actual digging was perfrormed by members of the 1977 U.B.C. Archaeological field school, and by sections of the S.F.U. field school. George Will was responsible for the grading and assessment of the field school personnel. I was responsible for the overall research design, the field methods employed, and the analysis of the achaeological materials recovered.

Detailed analysis of faunal material was not possible. Twenty concentrations of assorted animal remains were found. This material was partly analyzed by comparisons with the U.B.C.

faunal collections. The species identified included Cervus elaphas (wapiti), Canis familiaris (dog), and Ursus americanus (bear). Some bones were found that belonged to either an eagle or a hawk, as well as some which were classed with unidentified small land mammal and unidentified large land mammal remains. A separate thesis could be written identifying this large collection.

A total of thirteen burials was recovered, but all are incomplete and in a poor state of preservation. Several are skull fragments only. Those that are more complete are seen to be flexed. Small clustering of beads are located near several of these burials. No other objects appear to be directly associated with the burials (Table 13 in Appendix).

II. THE EXCAVATIONS

The excavations were located very close to the area previously excavated by Percy (1976:3). We used Percy's permanent datum point. The centre of two manhole covers was used by Percy to establish his permanent baseline and our excavations are 10 degrees, 7 minutes west of a baseline parallel to these two manhole covers (Fig.1). The first manhole cover is in front of 2606 Bayview which is on the corner of Bayview St. and McBride Ave. and the second is in front of 2656

Bayview St. (Fig.1). The area of the site excavated was relatively flat and initially covered with dense underbrush. The deposits here were only slightly disturbed on the immediate surface due to construction of the adjoining railroad tracks. A contour map was drawn of the site prior to excavation.

Trench 1

Trench 1 consisted of 15 1.5 x 1.5 metre excavation units placed end to end, and directly followed the line of the municipal trench (Fig.3). At first, alternate excavation units were removed leaving 1.5 metre balks between them but these intervening units were removed as soon as detailed profiles were drawn of their north and south walls. All excavated material was screened using 4.76 mm. mesh screens. Excavation proceeded using combined arbitrary 10 cm. levels and natural strata by trowel. Fine brushed and dental picks were also employed when considered necessary. An arbitrary datum plane was established at the top of our main datum peg, and excavation proceeded in arbitrary 10 cm. levels toward the sterile deposits at the bottom. These arbitrary levels were dug in conjunction with the natural levels of the site by lettering these strata as they occurred starting with "A" and going toward "Z" (Fig.4). Where more than one natural layer occurred in one arbitrary level they were referred to as eg. A.L. 1A and A.L. 1B or A.L. 2A and A.L.

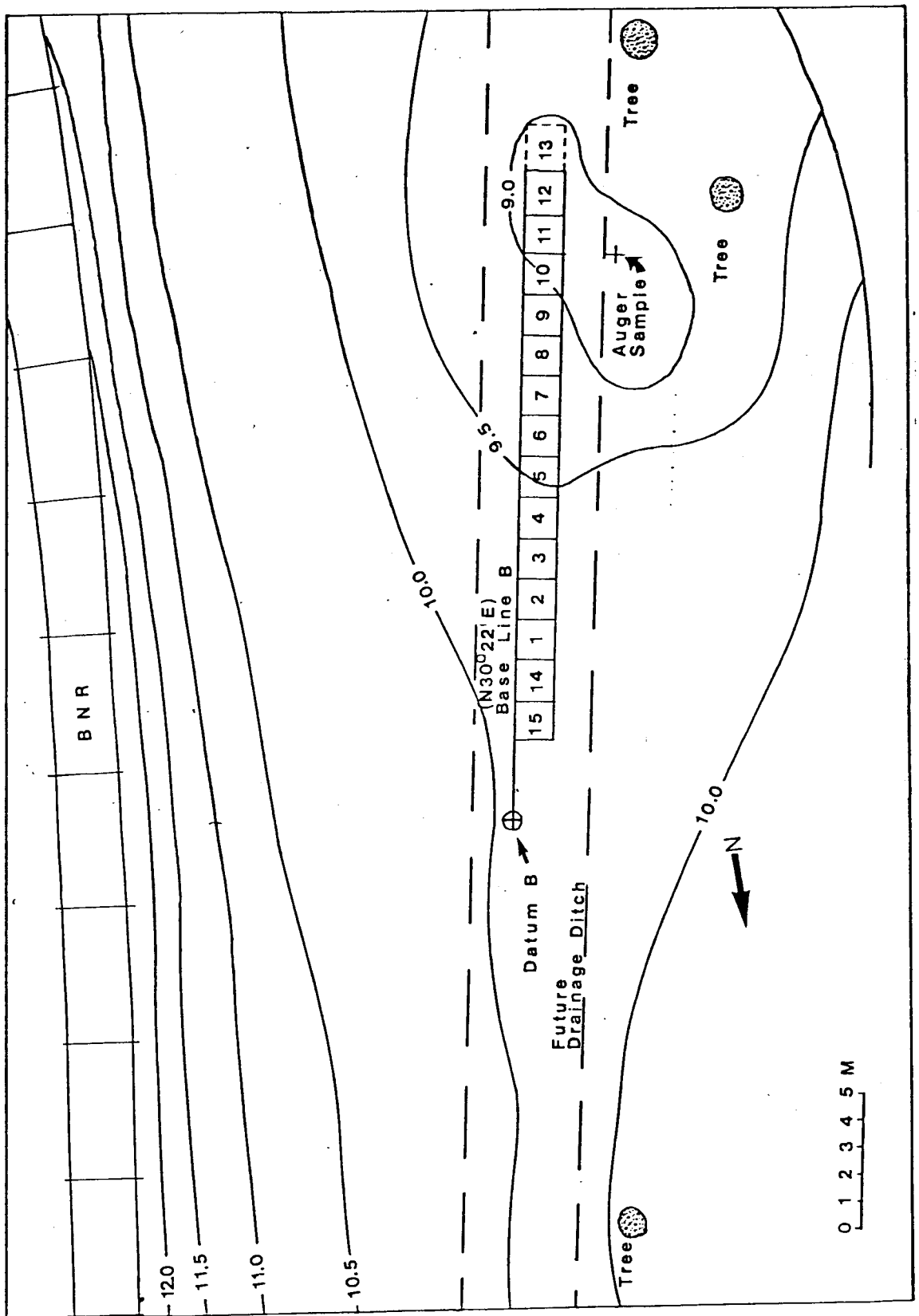


Figure 3. Contour Map of Trench 1.
Contour interval 0.5 m., Datum B 9.6 m. above Sea Level
Crescent Beach Archaeological Project, 1976 Excavations.

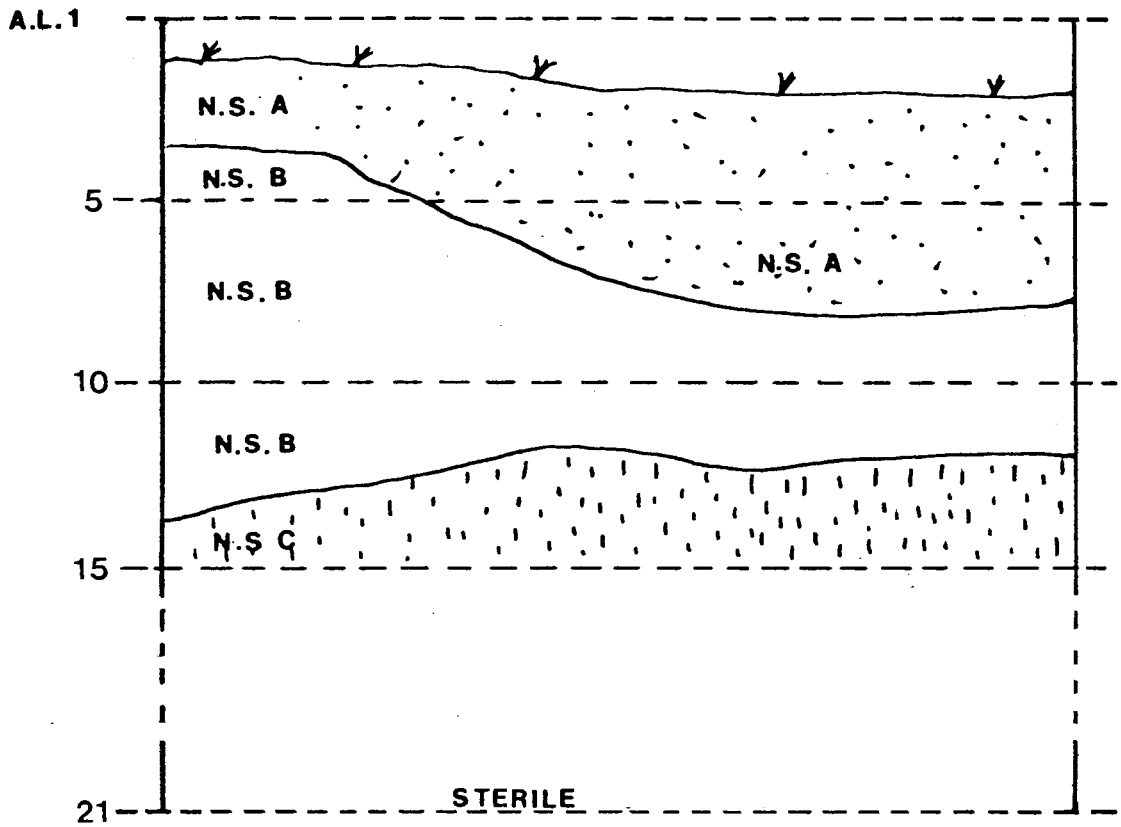


Figure 4. Nomenclature of Natural Strata within Arbitrary Levels as used in Trench 1 and Trench 2 at DgRr 1.

Natural Strata Lettered A-Z

Arbitrary Levels numbered from A.L. 1 down toward Sterile Deposits

Datum Plane located at Top of Main Datum

2B, etc. The natural layers were dug until the bottom of the arbitrary level occurred and a separate level bag was kept for each natural layer within each arbitrary level. Where a natural layer extended into a lower arbitrary level, a separate level bag was kept for it as well as separate level notes.

Our centre line was the centre line of the proposed drainage ditch on the east side of the railway tracks, but in order to prevent confusion, we decided not to measure 0.75 metre west and 0.75 metre east of the centre of the trench and instead arbitrarily decided that for the purpose of recording, we will call the 0.75 metre east line of stakes west 0.0 metre. This means that the east side of the trench is called west 0.0 m. and the west side of the trench is called west 1.5 m. (Fig.3). Excavation Unit 1 starts at 6 metres south of the main datum and goes to 7.5 metres south. This pattern is continued until the southern extent of the trench is reached at 24 metres south. This is the southern wall of Excavation Unit 12. There is one more unit farther south than this, Excavation Unit 13, but it remained unexcavated because of the very shallow nature of the cultural deposits at this end of the trench. Instead we added two further units to the north of E.U. 1 where the deposits were considerably deeper. These were labelled Excavation Units 14 and 15, respectively. This made the northern extent of the trench three metres south of the main datum. Datum pegs were

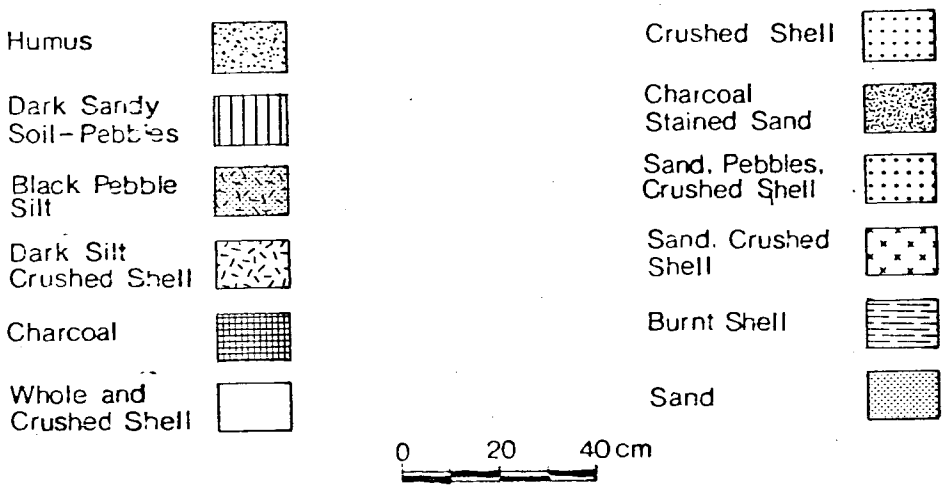
surveyed in to the east of every second unit down the entire length of the trench.

The depth of the cultural deposits in each excavation unit varied considerably but in the main the deposits were deeper at the northern end of the trench than they were at the southern end; we appeared to be excavating on the southwest fringe of the midden deposits. Because of this fact, our cultural deposits are on the whole shallower in depth and extent than those encountered by Percy in the 1972 excavation.

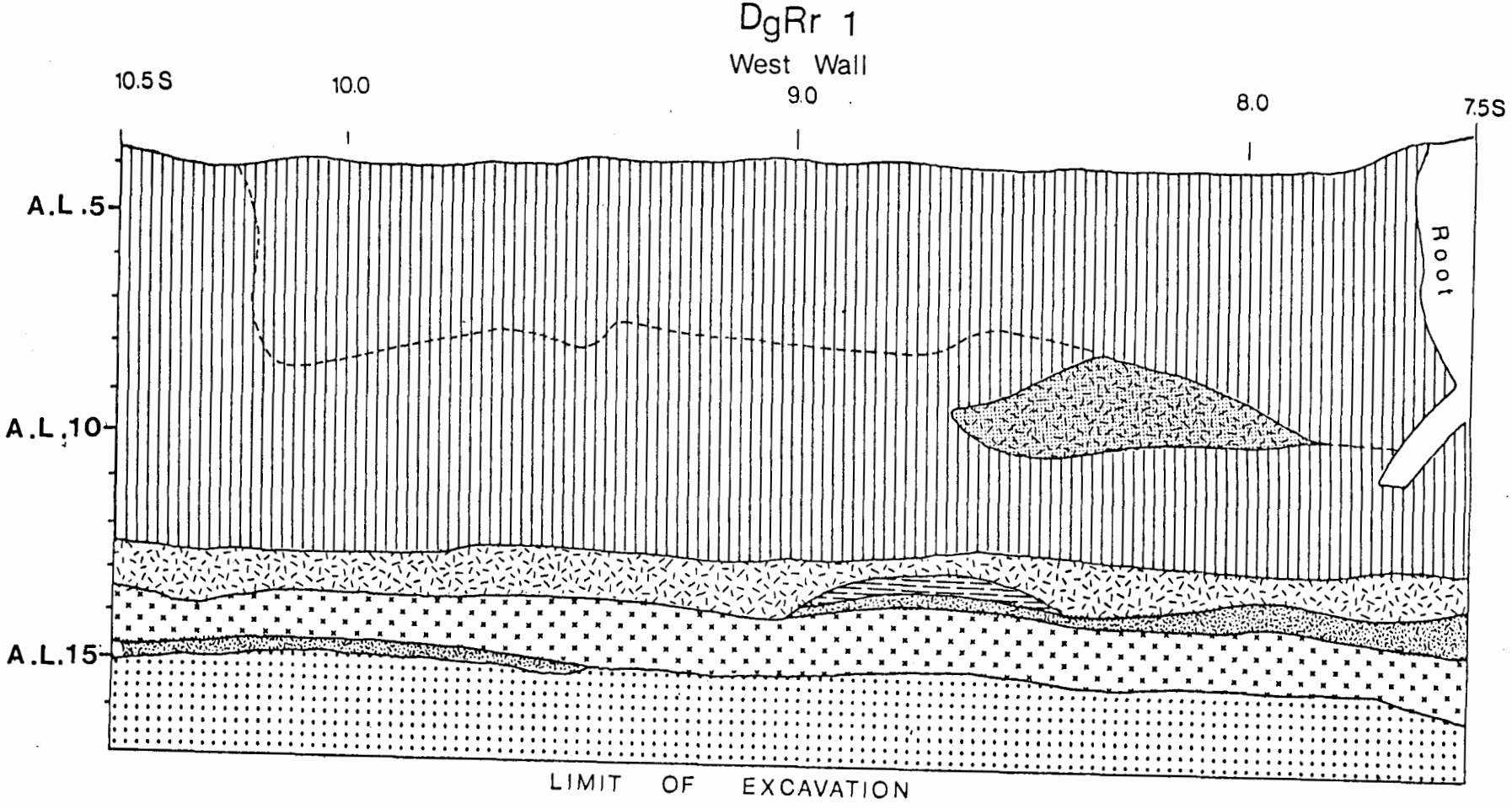
The stratication is relatively simple at the southern end of Trench 1, but gets progressively more complex the farther north one proceeds. Overlying the entire trench was a litter mat composed, for the most part, of common grass and general underbrush. This had to be carefully removed before any excavation could begin. The first natural stratum encountered was called N.S.A. This is a dark brown matrix containing a degree of sand, humus, and clay. The dry Munsell color is 5YR 2.5/2. It is relatively hard packed and contains a moderate amont of fire-cracked rock. It also contains a large amount of flake detritus and almost no shell. This natural stratum exists in all the pits excavated but varies in depth (Fig.5).

The second natural stratum encountered was a variation of

Figure 5 Trench 1 Profile West wall



12 b


DgRr 1
West Wall
10.5 S
10.0
9.0
8.0
7.5S
A.L .5
A.L .10
A.L.15
Root
LIMIT OF EXCAVATION

the first. We referred to it as N.S. A1 as it contained a high percentage of moderate to large sized pebbles. It contains more fire-cracked rock than N.S. A and is slightly blacker, sandier and looser in coomposition than N.S. A. The dry Munsell color of this stratum varies throughout the trench but generally lies between 7.5 YR 3/2 and 5 YR 2.5/1. No clear demarcation line between the two strata was encountered in the field. This strata could not be detected in every unit excavated but was present in the majority of them.

The third natural stratum was called N.S. B. This is a distinctly different stratum from overlying strata A and A1. It generally consists of finely crushed mussel shell in a 50% mix with some dark brown soil. Also present within this matrix are some remains of barnacle and clam. The shell is not burnt and contains a moderate amount of preserved bone, mostly fish but some land mammals. The texture is very loose and due to the nature of this strata, no Munsell color number could be assigned to it. Within this stratum, in some of the pits were small lenses of firmly packed silty sand. This material is orange-brown in color and is considered essentially sterile since there were no artifacts recovered from it, no shell present in it and no preserved bone. This material is referred to as N.S. B1.

Our next major distinction in the strata in this trench is N.S. C. This is a black, fairly greasy soil with some fire cracked rock and some very finely crushed shell thinly spread throughout. It also contains the odd large fragment of clam shell. The texture is firm and the strata contains a small amount of flake detritus. There is a small amount of preserved bone within it. This N.S. C. lies both over and under N.S. B in places in E.U. 3 and is fairly thin under N.S. B in E.U. 5. I believe that it could possibly be a charcoal stain that is leaching out of N.S. b. The dry Munsell color assigned to this material was 5YR 2.5/1. This material is somewhat blacker than the pebbly sandy matrix that underlies it in some of the pits.

The pebbly sandy matrix mentioned above is what we decided to label N.S. D. The transition from N.S. C to N.S. D is often difficult to see since it is basically a change in texture and degree of compactness of soil. The color is slightly lighter than that of N.S. C. This stratum varies from being very sandy in nature to quite black with a lot of rocks. It contains some faunal remains, mostly fish. It also contains a moderate amont of flake detritus and a low percentage of shell as well as a small relative amount of preserved bone. The dry Munsell color assigned to it is 5YR 2.5/1.

When excavating N.S. D, a point is reached where gradually

the amount of shell present increases quite substantially . This has been named N.S. D1 to distinquish it from N.S. D. This strata may be defined as a dark brown/black matrix with a high percentage of crushed shell interminqled randomly with it. Lenses of both are too sparse and inconsistent in E.U. 5 to separate but an attempt was made in E.U. 3 to separate it into N.S. D1 and D2. This was done because N.S. D1 was almost all burned and crushed shell here and the thin dark sandy lens underneath it could be separately discerned.

N.S. E follows the previous strata in the northern end of the trench but appears stratiqraphically higher in the southern end. This is a stratum of sand, light tan in color, loose in consistency and contains few artifacts. It contains little fire cracked rock or preserved faunal materials, and only a few fish and mammal bones. Some pebbles are present and a few very thin carbon stained lenses exist within it. The dry Munsell color for it is 10YR 3/2.

Immediately below N.S. E is a dark brown sand/silt matrix that contains some crushed shell. This layer is only 1-2 cm. thick in E.U. 5. For ease of distinction with the sandy matrix above it, we called it N.S. F. It contains a small amount of fire-cracked rock and flake detritus. There is a low percentage of shell present and some preserved fish remains. The dry

Munsell color is 5YR 2.5/1.

Underneath N.S. F may be found a strata known as N.S. F1. This strata is very similar to N.S. E in composition except that it contains some large pebbles and some large shell fragments. Usually N.S. F is above it and N.S. F1 is found below it. This N.S. F1 is basically a living floor stratum. It is a very narrow dark, greasy stratum usually located below N.S. E1. It is an extensively carbon stained layer of sand and consequently a carbon sample was obtained from it for dating purposes. The Munsell color is the same for all the carbon stained layers of sand that are present in the N.S. E type matrix which exists below N.S. D1 in this trench.

Underlying N.S. F1 is a sandy matrix which is much the same as N.S. E1 referred to earlier, except for the fact that it contains many more pebbles of generally smaller size than N.S. E1. Below this in some of the pits are a few more layers of these beach deposits composed of alternating layers of beach sand and thin carbon stained layers. It is my current opinion that these are nothing more than beach deposits laid down quite naturally, and any cultural remains present within them were deposited before this part of the site was extensively occupied.

This concludes the description of the stratigraphy

encountered during the course of the Trench 1 excavations. The stratigraphy encountered during the Trench 2 excavations is complex and only corresponds in part to the stratigraphy encountered earlier. We were excavating in much deeper cultural deposis in Trench 2 and so were forced to describe the stratigraphy in terms of more variations on the basic soil matrices.

Three radiocarbon dates were obtained for the Trench 1 deposits (Table 1). These dates are indicative of an early Locarno Beach time period for these deposits. The dates obtained range from 3260 ± 80 Radiocarbon years (WSU 1701) or approximately 1300 BC at the bottom of the deposits to 2980 ± 80 Radiocarbon years (WSU 1702) or approximately 1000 BC near the surface. A middle date was obtained which was 3030 ± 80 Radiocarbon years (WSU 1703). These dates were obtained using large uncontaminated samples of charcoal obtained from fire hearth features in the deposits. The dates quoted are based upon the Libby half-life of 5570 ± 30 Radiocarbon years. The date obtained from the middle of the deeper deposits in Trench 2 is indicative of late Locarno Beach time period.

During the course of the Trench 1 excavations, two concentrations of fire-cracked rocks were found and given a

Table 1 Radio-Carbon Dates

Laboratory Number	Age, B.P. (Before 1950)	Provienience
WSU 1702	2980 ± 80B.P.	Trench 1, E.U. 1, A.L. 6 Upper Assemblage 9
WSU 1703	3030 ± 80B.P.	Trench 1, E.U. 7, A.L. 12 Middle Assemblage 9
WSU 1701	3260 ± 80B.P.	Trench 1, E.U. 5, A.L. 18 Lower Assemblage 9
WSU 1948	2570 ± 90B.P.	Trench 2, E.U. 7, A.L. 9 Assemblage 4

feature number. These concentrations represent utilized cooking stones and attendant hearths. Two isolated post mold features and a clay lined depression were located. This depression was 3 cm. thick and located 1.35 m. below the Datum plane. A concentration of fish remains with crushed shell and ash was directly underneath this depression in E.U. 12.

Trench 2

The drainage ditch put in by the Municipality of Surrey exposed much deeper and more complex cultural stratigraphy than that which we had encountered in Trench 1 the year before. The datum of Trench 2 is approximately 29.5 metres north of the main datum from Trench 1. I chose to use a double trench composed of 1.5 x 1.5 metre excavation units side by side (Fig.6). The western side of the trench was composed of Excavation Units 1-7, of which Excavation Units 1,3,5, and 7 were removed first. This allowed us to get full profiles of all the walls before intervening units were removed. As with the previous year's excavation, I chose to excavate using combined natural strata and arbitrary levels, by trowel. This technique ensured that the material recovered could be placed into various assemblages and components with much more assurance than by just using arbitrary levels or just natural strata alone.

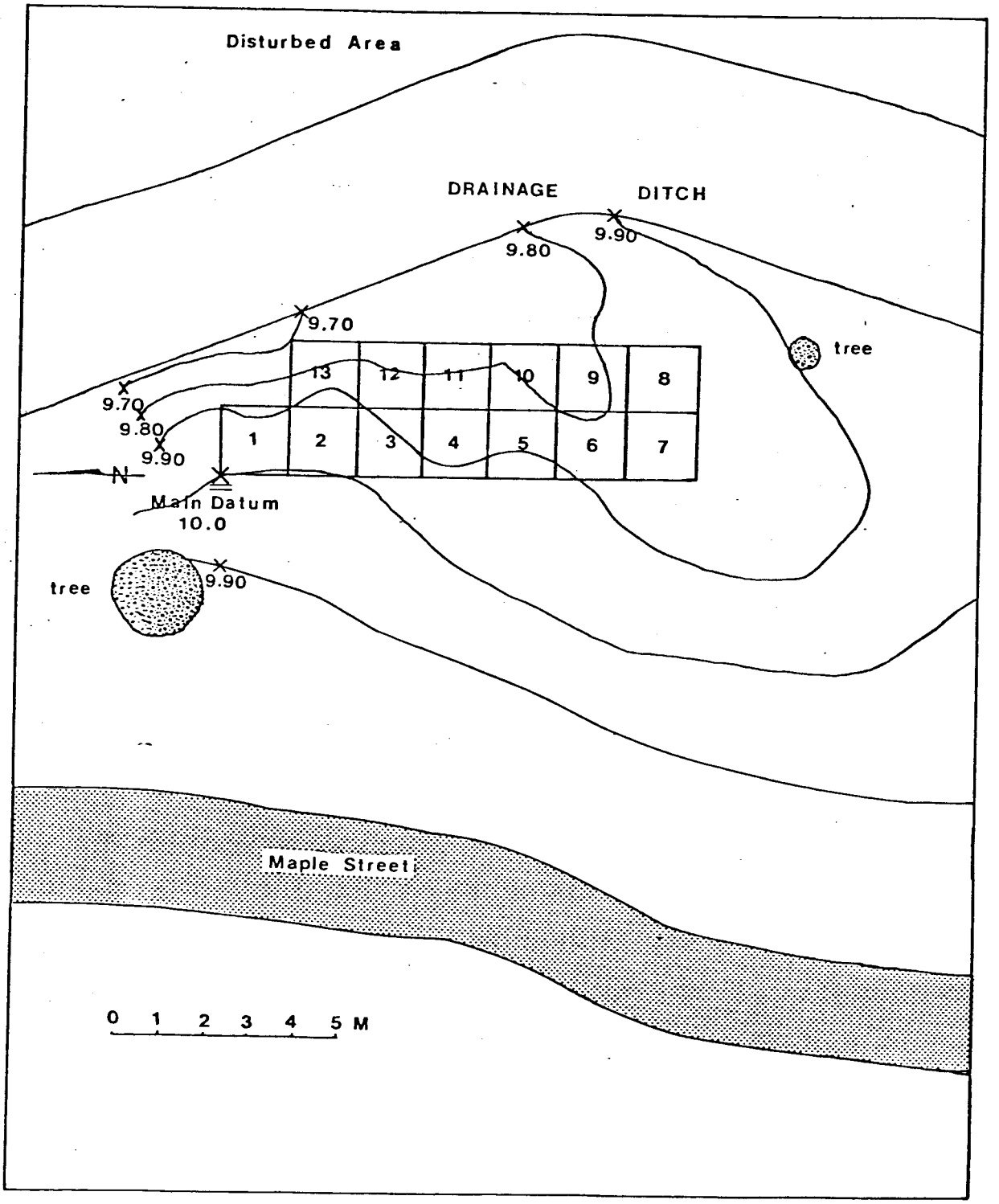
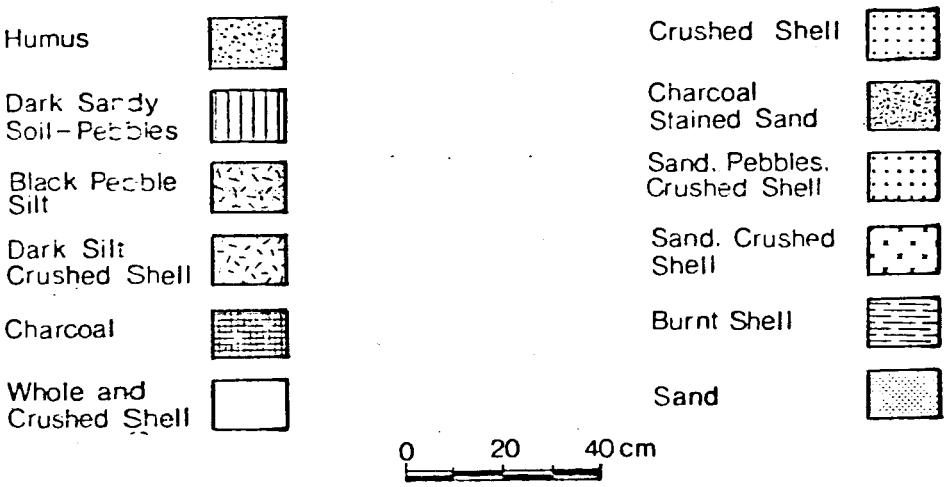


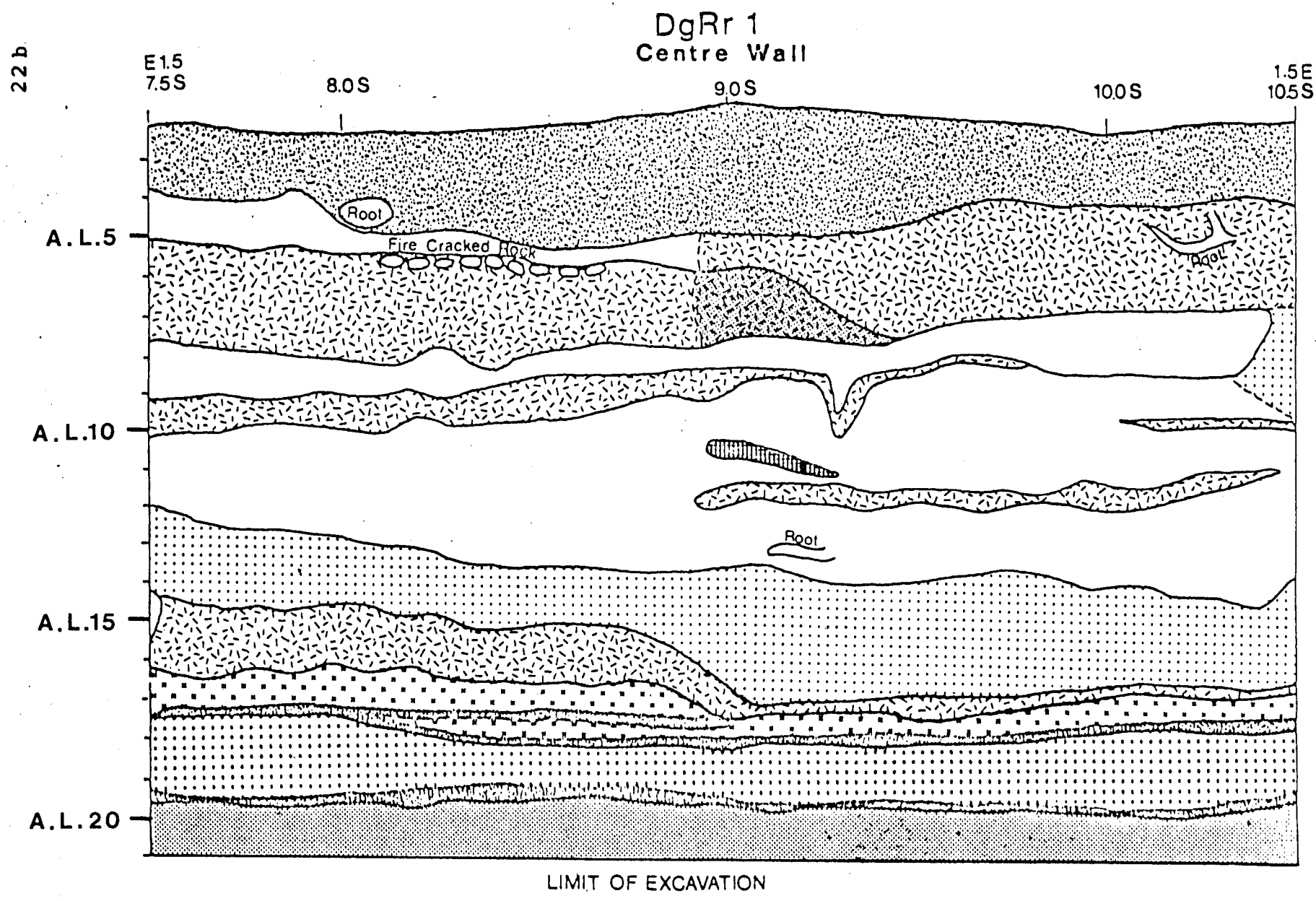
Figure 6. Contour Map of Trench 2.
Contour interval 0.10 m. above Sea Level.
Crescent Beach Archaeological Project, 1977 Excavations.

Once aqain, we established an arbitrary datum plane from the top of our main datum peq and excavated down in natural strata within arbitrary 10 cm. levels; startinq at Arbitrary Level 1 and workinq toward sterile deposits (Fiq.4). Separate level baqs and notes were kept for each natural strata within each arbitrary level. The elevation of all corner stakes were taken, to be used as secondary datums for each pit. The entire dimensions of the excavated area measured 10.5 metres south of the main datum and 3.0 metres east of it. In all, 13 excavation units were removed durinq the course of excavation and the 14th unit was left, due to its proximity to the edqe of the drainaqe ditch. E.U. 13 was only partially excavated, but all other units were excavated down several levels into the sterile beach sand deposits. The total depth of the cultural deposits was quite uniform averaqinq approximately two metres in depth, however the internal configuration varied quite widely.

The first cultural strata encountered in Trench 2 was N.S. A; a dark silt humus with pebble matrix that beqan at the surface and extended for the most part over the entire excavated area. This matrix varied considerably but for the most part was approximately 20 cm. thick (Fiq.7). This N.S. A blended qradually into N.S. B; a dark silt/humus with pebble matrix that contained a moderate amount of crushed shell. At the southwestern corner of Trench 2, N.S. B was 60 cm. thick and it

Figure 7 Profile Trench 2 Centre wall




DgRr 1
Centre Wall
22 b
E1.5
7.5S
8.0S
9.0S
10.0S
1.5E
10.5S
A.L.5
A.L.10
A.L.15
A.L.20
Root
Fire Cracked Rock
Root
Root
LIMIT OF EXCAVATION

gradually became thinner so that it is approximately 40 cm. thick at the northwestern corner of the trench. At 4.5 metres south of the main datum and 1.5 metres east it suddently slopes downward to the top of the beach sand deposits as it is displaced by a large shell lens. This large lens extends across the entire northern end of Trench 2 and represents a shell dump from nearby former dwellings.

The next major matrix encountered was called N.S. C1 and is composed of large shell fragments. This matrix generally undrlies the dark silt/humus matrix (N.S. B) from the centre of the trench eastwards and does not appear to exist in the western half of Trench 2 except for very thin isolated lenses. It does attain the maximum thickness of approximately 60 cm. at the southern end of the trench on the centre profile however and increases in thickness to approximately 80 cm. at 3.0 metres south and 1.5 metres east of the main datum where the large shell dump mentioned earlier overlaps it. N.S. C1 blends into a large shell/crushed shell matrix called N.S. C2 that for the most part underlies it in Trench 2. This N.S. C2 gradually blends into N.C. C3 which is a crushed shell matrix. N.S. C3 is approximately 45 cm. thick at the southwestern corner of Trench 2 and 40 cm. thick proceeding northwards along the centre and eastern wall profile until 7.5 metres south where it is displaced by three separate matrices on the east wall profile

and the centre wall profile. The uppermost matrix of these three is N.S. D1; a dark silt/humus/pebble and crushed shell matrix. This directly underlies the large shell/crushed shell matrix (N.S. C2) at this point in the trench. It in turn is underlain by a large shell matrix (N.S. C1) and under this is beach sand and crushed shell matrix (N.S. D2). All three of these matrices proceed northward until 4.5 metres south where they are displaced by the upper dark silt/humus/pebbles matrix (N.S. A) which extends from the top of the cultural deposits at this point.

The beach sand and crushed shell matrix (N.S. D2) underlies the finely crushed shell (N.S. C3) that it displaces at 7.5 metres south, right to the end of the trench at 10.5 metres south. At this point in the cultural deposits it extends westward so that it is present on the western profile at the southern end of the trench. A sand/pebbles matrix (N.S. E) which is intermixed with several thin lenses of carbon stained sand underlies the beach sand/crushed shell/pebbles matrix (N.S. D2). The layering of them indicated the various winter storms that are responsible for the deposition of overlying layers of sand. In these upper beach sand lenses is the earliest evidence of man's occupation of this portion of the site. A few concentrations of fire-cracked rock and charcoal are to be found

in these levels of the site. The very meager artifact assemblage associated with these levels may represent sporadic occupation before the intensive occupation of the site.

A single radiocarbon date was obtained from the middle deposits of Trench 2. Since these deposits overlap with those of Trench 1 which was dated to an early Locarno Beach phase time period, a continuum is thereby established. The Trench 1 cultural strata are very similar in composition and content to the lower deposits of Trench 2. Consequently a date obtained from the middle deposits of Trench 2 which corresponds to a later Locarno Beach phase time period fits well in the time continuum mentioned here. The radiocarbon date from these stratigraphically higher deposits being discussed here is 2540—140 Radiocarbon years (WSU 1948) which is approximately 600 BC. This date was run on a large uncontaminated sample of charcoal obtained from a fire hearth feature present in the middle deposits of Trench 2. The date quoted is based upon the Libby half-life of 5570—30 Radiocarbon years.

During the course of the Trench 2 excavations, a total of eighteen concentrations of fire-cracked rock were found and given a feature number. These concentrations of utilized cooking stones and attendant hearths were present throughout the entire excavated area, being more concentrated in the upper

levels. A clay mound 5 cm. thick and 50 cm. in diameter was noted 69 cm. below the datum plane in E.U. 9.

III. ASSEMBLAGES AND COMPONENTS

Artifact assemblages are composed of objects which are spatially associated. Components are made up of such assemblages at the same site which are similar in content. This usage follows that Carlson (1976) employed in analyzing the McNaughton Island material. The spatial units at Crescent Beach which incorporate the artifact assemblages are the previously defined stratigraphic units. The Trench 1 strata are fairly homogenous and are bracketed by C-14 dates which indicate they were deposited within a span of 300 years, so all material has been grouped as a single assemblage. In Trench 2, the situation is different; there are a number of strata present, and only one C-14 date. Where I felt justified by the similarity of the artifact classes and frequencies, I combined the assemblages of small lenses within major cultural strata with those of the major strata. After doing this, the following results were obtained. Assemblage 8 is comprised of those cultural materials recovered within the uppermost dark silt/humus with pebbles matrix (A). Assemblage 7 is from the dark silt/humus/pebbles with crushed shell matrix (B). Assemblage 6 originates from the large shell matrix (C1) while Assemblage 5 is from the large

shell/crushed shell matrix (C2) that for the most part underlies it in the cultural deposits excavated. Assemblage 4 is from the crushed shell matrix (C) and Assemblage 3 is from the dark silt/humus/pebbles/crushed shell and large shell matrix (D1) that is generally located under the various shell matrices above it. Assemblage 2 is from the beach sand/pebbles/crushed shell matrix (D2) and finally, Assemblage 1 is from the beach sand/pebbles marix (E) that underlies it, the deepest cultural stratum present in this section of the site. Artifacts listed by frequency, type, and assemblage are given in TAble 2. Type descriptions of the artifacts are presented in the Appendix.

Similarity among assemblages was assessed on a presence-absence basis. Comparisons of all Trench 2 Assemblages indicates that they are all basically similar in content, and comparison with Trench 1 excavated material indicates further basic similarity throughout. Consequently, all Assemblages can be combined as a single cultural component (Tabel 3). There are, however, minor groups of similarity within the Trench 2 Assemblages: Assemblages 1,2 and 3 in the first group, Assemblages 4 and 5 in the next group and finally Assemblages 6,7, and 8 in the last one. These groupings of similarity may reflect the slight changes in preferences of activity areas over time.

Table 2 Frequency of Artifacts by Assemblage and Type

Assemblages	(Trench 2, 1-8)						(Trench 1, 9)			
	1	2	3	4	5	6	7	8	9	Total
Category										
Chipped Stone										
Quartz Crystal Flakes									503	503
Edge-Damaged Quartz Crystal Flakes								1	27	28
Exhausted Bipolar Quartz Crystal Microcores									14	14
Quartz Crystal Microcores							1	1	16	18
Quartz Crystal Microblades									4	4
Obsidian Flake									1	1
Obsidian Flakes derived from Bipolar Cores									2	2
Edge-Damaged Flakes	10	1		3	4	1		11	95	125
Edge-Damaged Spalls									6	6
Unifacially Retouched Flakes		1		1					31	33
Bifacially Retouched Flakes									4	4
Cores					2		2	1	48	53
Chipped Slate Knives							1	2	7	10
Bifacially Retouched Stone Knives									4	4

Table 2 continued on page following

Table 2 Frequency of Artifacts by Assemblage and Type(con't)

	Assemblages								
	1	2	3	4	5	6	7	8	9	Total
Category Chipped Stone										
Unifacially Retouched Heavy-Duty Cutting And Scraping Tools		1							7	8
Split Cobble Tools				1					1	2
Pebble Chopper									1	1
Small Unifacially Flaked Cutting and Scraping Tools						1	1		2	4
Small Bifacially Flaked Cutting and Scraping Tools									5	5
Exhausted Bipolar Cores							1		2	3
Gravers		1							2	3
Burin								1		1
Lanceolate Unstemmed Points								2	10	12
Lanceolate Basally Thinned Point									1	1
Contracting Stem Points				2	1			1	9	13
Chipped Slate Contracting Stem Preform									1	1
Notched Flake					1					1
Miscellaneous Flaked Stone								2		2

Table 2 continued on page following

Table 2 Frequency of Artifacts by Assemblage and Type (con't)

	Assemblages									
	1	2	3	4	5	6	7	8	9	Total
Category Pecked Stone										
Cobble Stone Bowls									2	2
Hammerstones	1								1	2
Anvil Stone							1			1
Category Ground Stone										
Abrader Stones		2	1	1	1		3	3	15	26
Thick Ground Slate Knives	1								2	3
Large Ground Slate Point									1	1
Small Ground Slate Point			1				1			2
Ground Adze				1				4	2	7
Labrets			1						7	8
Earspool		1								1
Stone Pendants								1		1
Steatite Beads									7	7
Sandstone Beads									25	25
Slate Beads				1			2	2	161	166
Gulf Islands Complex Artifact								1		1
Miscellaneous Ground Stone									2	2

Table 2 continued on page following

Table 2 Frequency of Artifacts by Assemblage and Type(con't)

	Assemblages									
	1	2	3	4	5	6	7	8	9	Total
Category Ground Bone										
Ground Bone Points		2			1				14	17
Ground Bone Side-Notched Point									1	1
Stemmed Bone Point									2	2
Unilaterally Barbed Fixed Bone Point								1		1
Bipointed Bird Bone Fish Gorge			1							1
Birdbone Fish Hook Barbs									4	4
Sectioned Bone Awls		1			4				6	11
Splinter Bone Awls	1				2	1	1	1	6	12
Bone Gouge				1			1	1	5	8
Ground Bone Attachable Barb					1					1
Bone Adze								1		1
Bone Bead									2	2
Bone Ring									1	1
Bone Labret									1	1
Beaver Incisors									4	4
Sectioned Bone Fragments					1				5	6
Bear Tooth Pendant									1	1

Table 2 continued on page following

Table 2 Frequency of Artifacts by Assemblage and Type(con't)

	Assemblages									
	1	2	3	4	5	6	7	8	9	Total
Category Ground Bone										
Miscellaneous Ground Bone Fragments	1		3	1	3	1	2	1	5	17
Category Ground Antler										
Antler Point		1	1						1	3
Antler Punches		2								2
Antler Awl/Wedge							1			1
Antler Wedges	1	1					1	1	1	5
Antler Tine Plug									1	1
Antler Collar									1	1
Miscellaneous Ground Antler Tine				1				1		2
Adzed Antler Tine Fragments				1						1
Category Shell										
Shell Bead	2								13	15
Shell Pendant					1					1
Shell Ring					1					1
Category Minerals										
Ochre	1							1	2	4
	18	14	8	14	23	4	19	41	1104	1245

Table 3 Comparison of Trench 1 and Trench 2 Cultural Deposits

Category	Trench 1 Total	Trench 1 % of Total	Trench 2 Total	Trench 2 % of Total
Chipped Stone *	239	44.25	56	40.58
Ground Stone **	222	41.11	28	20.29
Pecked and Ground Stone	3	0.56	2	1.45
Ground Bone	57	10.56	34	24.64
Ground Antler	4	0.74	12	8.70
Shell	15	2.78	6	4.35
	540	100.0%	138	100.0%

* These figures reflect the removal of quartz crystal artifacts from totals due to presence of quartz crystal flaking station in Trench 1 reflected by 564 quartz crystal artifacts being discovered there versus 3 in Trench 2.

** These figures reflect presence of 197 stone beads counted individually in Trench 1 versus 5 recovered in Trench 2.

Within this first group, the types shared by Assemblages 1 and 2 include miscellaneous edge-damaged flakes, split bone awls and antler wedges. Assemblage 3 shares abrader stones with Assemblage 2 and miscellaneous ground bone fragments with Assemblage 1. As can be seen the categories represented in these early deposits include chipped stone, ground stone, ground bone, and ground antler.

Within the second group, the types shared by Assemblages 4 and 5 include miscellaneous edge-damaged flakes, long lanceolate contracting stem style flaked projectile points, abrader stones and miscellaneous ground bone fragments. The categories represented here include chipped stone, ground stone, and ground bone.

The third grouping of similarity exists between Assemblages 6,7 and 8. The types shared between Assemblages 6 and 7 include miscellaneous edge-damaged flakes, ground projectile points and split bone awls. Assemblage 8 shares miscellaneous edge-damaged flakes and miscellaneous ground antler tine with Assemblage 6 and cores, chipped slate knives, quartz crystal microcores, abrader stones, ground slate beads, miscellaneous ground bone fragments, and miscellaneous ground antler tine with Assemblage 7. Categories represented include chipped stone, ground stone,

ground bone, and ground antler.

A number of links combine these various assemblages into a unified whole. Assemblages 2 and 4 share miscellaneous edge-damaged flakes, and abrader stones. Assemblages 3 and 5 share abrader stones, and miscellaneous ground bone fragments. Assemblages 4 and 6 share miscellaneous edge-damaged flakes. Assemblages 5 and 6 share miscellaneous edge-damaged flakes, and miscellaneous ground bone fragments. Assemblages 5 and 7 share cores, abrader stones and miscellaneous ground bone fragments. It appears that many of the traits that are present in the earlier deposits are merely intensified as they change over time within this particular phase of cultural growth and development.

The Trench 1 material has been designated Assemblage 9 as it came from a small number of directly associated strata at the northern end of Trench 1. These strata compare very closely in composition and artifact content to the lower strata of Trench 2 where the Assemblages 1, 2 and 3 were combined. Of the thirty chipped stone artifact classes present, a total of twelve classes are shared. There were only four recovered in Trench 2 that were not in Trench 1 material. These types include burins, leaf- triangulate corner-notched projectile points, a notched flake and miscellaneous flaked stone. Edge-damaged quartz

crystal flakes, quartz crystal microcores, edge-damaged flakes, unifacially retouched flakes, cores, chipped slate knives (thick), unifacially retouched heavy duty cutting and scraping tools, small unifacially flaked cutting and scraping tools, exhausted bipolar cores, gravers, lanceolate unstemmed projectile points, and contracting stem projectile points were uncovered in both trenches. A number of other chipped stone artifact types were recovered in Trench 1 alone. These include quartz crystal flakes, exhausted bipolar quartz crystal microcores, quartz crystal microblades, unmodified obsidian flakes, obsidian flakes derived from bipolar cores, edge-damaged spalls, bifacially retouched flakes, bifacially retouched stone knives, slab chopper, pebble chopper, lanceolate basally thinned projectile point and chipped slate contracting stem projectile point preform.

There is a total range of thirteen artifact types in the ground stone category. Nine of these types are present in the Trench 1 material and eight of them are present in the Trench 2 material. They share a total of five types. Artifact types recovered in Trench 2 but not in Trench 1 include small ground slate projectile point, earspool, stone pendants, and a Gulf Islands Complex artifact. Shared classes include abrader stones, ground slate knives (thick), ground adzes, labrets (stone), and biconically drilled ground slate beads. Artifact

types recovered in Trench 1 and not in Trench 2 include large ground slate projectile point, steatite beads, sandstone beads, and miscellaneous ground stone.

Within the pecked and ground stone category there are a total of three types. Two types are present in either year and they share one type. The only artifact type recovered in Trench 2 in this category but not in Trench 1 is an anvil stone. They share the hammerstone artifact type but the cobble stone bowl type was recovered in Trench 1 alone.

Ground bone is a category that has a total range between the two trenches of seventeen artifact types. Fourteen of these types are found in the Trench 1 material and nine are found in the Trench 2 material. They share a total of five classes. Types found in the Trench 1 material but not in the Trench 2 material include unilaterally barbed fixed bone point, bipointed bird bone fish gorge, ground bone attachable barb and a bone adze. Types shared by both years' material includes ground bone points, sectioned bone awls, split bone awls, split bone gouges or chisels, and miscellaneous ground bone fragments. Types present in the Trench 1 material alone include ground bone side-notched projectile point, stemmed bone point, fish hook barbs, bone bead, bone ring, labret (bone), beaver incisors, and sectioned bone fragments.

There are eight ground antler types in total. Four types were found in Trench 1 and six types in Trench 2. Only two artifact types in this category came from both trenches. Those present in the Trench 2 but not in the Trench 1 include antler punches, antler awl/wedge, adzed antler tine fragments and antler wedges. Shared types include antler point and miscellaneous ground antler tine fragments. Those present in Trench 1 but not in Trench 2 include an antler tine plug(?), and a hafting collar.

A total of three shell artifact types was recovered in the two years' excavation. One type was recovered in Trench 1 and three were recovered in Trench 2. The types present in Trench 2 but not in Trench 1 include shell pendant and shell ring. Both years' material shares shell beads and there were no types present in Trench 1 that were not found in Trench 2 artifacts. Four peices of ochre were recovered in the course of the excavations.

In general the assemblages from the two trenches are very similar in composition (Table 2). Obviously the sample from Trench 2 is smaller than that recovered in Trench 1 but there were very few artifact types recovered in the second year of excavation that are not to be found in the first year's material. The cultural strata that the material was recovered

in are very similar, especially the lower strata. These facts added to the close proximity of the two years' material excavation areas and the radiocarbon dates leads me to combine the material into a single component.

The differentiation into earlier and latter portions of the Locarno Beach phase is not one that is very clean cut but rather a noticeable change through time in emphasis of the ground stone industry over the chipped stone industry. All the major traits associated with earlier deposits are still present in the latter ones but are seen to be elaborated and intensified in the upper Locarno Beach phase deposits at Crescent Beach. Using trenching as the sampling technique provides temporal control but prevents one from knowing the spatial distribution of all the site specific activity areas in a site. Consequently this can easily affect the number of artifacts found. The quartz crystal flaking station present in the northern end of Trench 1 is a good example of this fact.

I will now compare and contrast the combined excavated material from the 1976 and 1977 field seasons at DqRr 1 with the material previously excavated from the same site by Percy (1974). Since the area excavated by Percy yielded three components, I will compare the artifact types recovered in his excavations and my own material component by component.

The first part of this comparative analysis involved matching Percy's artifact types and my own. In several instances I had lumped where Percy had split and in others he had lumped where I had encountered diversity. There was also the problem of certain types encountered by him not having been found by myself and vice-versa. I have endeavored here to examine the artifact classes category by category and match the materials up as closely as I could. These comparisons and the equivalent types are in Table 4 and Table 5.

Percy (1974) found in his Component I a number of types not present in my excavations. These include cobble choppers types 1-4, cobble core rasps, cobble segment knives, chipped lunate blades, scrapers type 3, chipped tabular objects, bone wedges, barbed bone harpoon, dagger-like objects, bone pendants, small bone drill (?), toggle (?), birdbone formed awls, birdbone splinter awls, birdbone tubes, beads and fragments, hook, barbed antler harpoons, antler gouge, and a shell adze blade. Artifact types not found in Percy's Component I but recovered by us include contracting stem points, lanceolate basally-thinned point, chipped slate knives, unmodified obsidian flake, obsidian flakes derived from bipolar cores, miscellaneous flaked stone, small and large ground slate points, adze blades, Gulf Islands complex artifact, labrets, miscellaneous ground stone, stone pendant, earspool, thick ground slate knives, cobble stone

Table 4 Comparison of Artifact Types by Component at DgRr 1

Percy's 1972 Excavations	Components I	II	III	Total	Trace's 1976-77 Excavations	Total
Chipped Stone Artifact Types					Chipped Stone Artifact Types	
Projectile Points Type 1	22	3	1	26	Lanceolate Unstemmed Points	12
					Lanceolate Basally Thinned Point	1
Projectile Points Type 2	0	11	3	14	Contracting Stem Points	13
Projectile Point Fragments	0	0	4	4		
Unfinished Projectile Points	0	0	1	1		
Bifaces other than Points	3	3	0	6	Bifacially Retouched Stone Knives	4
					Chipped Slate Contracting Stem Preform	1
Chipped Preforms	4	4	8	16		
Cobble Choppers Type 1	11	5	1	17		
Cobble Choppers Type 2	19	5	2	26		
Cobble Choppers Type 3	4	2	1	7		
Cobble Choppers Type 4	1	0	2	3		
Small Unifacial Pebble Tools	9	0	2	11	Pebble Chopper	1
Split Cobble Implements	4	0	0	4	Split Cobble Tools	2

Table 4 continued on page following

Table 4 Comparison of Artifact Types by Component at DgRr 1 (con't)

Percy's 1972 Excavations Chipped Stone Artifact Types	Components I	II	III	Total	Trace's 1976-77 Excavations Chipped Stone Artifact Types	Total
Boulder Fragment Tools	4	2	0	6	Edge-Damaged Spalls	6
Cobble Core Rasps	4	3	0	7		
Cobble Segment Knives	11	2	2	15		
Gravers	14	4	6	24	Gravers	3
					Burin	1
Scrapers Type 1	15	10	7	32	Notched Flake	1
Scrapers Type 2	14	6	4	24	Small Unifacially Flaked Cutting and Scraping Tools	4
Scrapers Type 3	10	7	3	20		
Scrapers Type 4	6	1	0	7	Small Bifacially Flaked Cutting and Scraping Tools	5
Backed Scraper Knives	25	11	0	36	Unifacially Retouched H.D. Cutting and Scraping Tools	8
Chipped Lunate Blades	1	3	2	6		
Ulu-like Objects	0	3	2	5	Chipped Slate Knives	10
Chipped Tabular Objects	1	0	2	3		
Chipped Stone Wedges	19	5	2	26	Exhausted Bipolar Cores	3

Table 4 continued on page following

Table 4 Comparison of Artifact Types by Component at DgRr 1 (con't)

Percy's 1972 Excavations Chipped Stone Artifact Types	Components I	II	III	Total	Trace's 1976-77 Excavations Chipped Stone Artifact Types	Total
Quartz Crystal Implements and Microblades	5	0	0	5	Quartz Crystal Flakes	503
					Edge-Damaged Quartz Crystal Flakes	28
					Exhausted Bipolar Quartz Crystal Microcores	14
					Quartz Crystal Microcores	18
					Quartz Crystal and Obsidian Microblades	4
Blade-like Flakes	18	8	1	27		
Utilized Flakes	60	26	22	108	Edge-Damaged Flakes	125
Cores and Remnants	48	10	23	81	Cores and Remnants	53
Retouched or Worked Flakes	62	37	19	118	Unifacially Retouched Flakes	33
					Bifacially Retouched Flakes	4
					Unmodified Obsidian Flake	1
					Miscellaneous Flaked Stone	2

Table 4 continued on page following

Table 4 Comparison of Artifact Types by Component at DgRr 1 (con't)

Percy's 1972 Excavations	Components I	II	III	Total	Trace's 1976-77 Excavations	Total
Chipped Stone Artifact Types					Chipped Stone Artifact Types	
					Obsidian Flakes Derived from Bipolar Cores	2
Ground Stone Artifact Types					Ground Stone Artifact Types	
					Small Ground Slate Point	2
					Large Ground Slate Point	1
Adze Blades	0	2	1	3	Adze Blades	7
					Gulf Islands Complex Artifact	1
Labrets	0	1	6	7	Labrets	8
Flat Ring	0	0	1	1		
Unidentified Ground Slate Object	0	0	1	1	Miscellaneous Ground Stone	2
Stone Beads (Occurrences Only)	2	5	0	7	Slate Beads	166
					Steatite Beads	7
					Sandstone Beads	25
					Stone Pendants	1
					Earspool	1
					Thick Ground Slate Knives	3

Table 4 continued on page following

Table 4 Comparison of Artifact Types by Component at DgRr 1 (con't)

Percy's 1972 Excavations	Components I	II	III	Total	Trace's 1976-77 Excavations	Total
Ground Stone Artifact Types					Ground Stone Artifact Types	
Teardrop Abraders	2	0	0	2	Abrader Stones	26
Cornered Abraders	3	0	1	4		
Saw Abraders	2	2	0	4		
Hone Abraders	1	0	0	1		
Single-Faced Abraders	7	6	7	20		
Double-Faced Abraders	7	10	2	19		
Pecked Stone Artifact Types					Pecked Stone Artifact Types	
Cobble Anvil Stones	3	0	0	3	Anvil Stones	1
Hammerstones	10	9	9	28	Hammerstones	2
Notched Sinker Stone	0	1	0	1		
					Cobble Stone Bowls	2
Minerals					Minerals	
Ochre	7	1	0	8	Ochre	4
Ground Bone Artifact Types					Ground Bone Artifact Types	
Chisels and Gouges	24	5	5	34	Split Bone Gouges or Chisels	8
Leister Point	1	0	0	1		

Table 4 continued on page following

Table 4 Comparison of Artifact Types by Component at DgRr 1 (con't)

Percy's 1972 Excavations	Components I	II	III	Total	Trace's 1976-77 Excavations	Total
Ground Bone Artifact Types					Ground Bone Artifact Types	
Small Bone Gouge bits	0	0	2	2		
Wedges	6	2	0	8		
Awls Type 1	9	2	2	13		
Awls Type 2	16	4	2	22	Sectioned Bone Awls	11
Split Rib Awls	3	0	0	3		
Splinter Awls	14	3	1	8	Splinter Bone Awls	12
Ulna Implements	2	6	0	8		
Barbed Bone Harpoons	1	0	0	1		
Fixed Unilaterally Barbed Bone Points	2	0	1	3	Unilaterally Barbed Fixed Bone Point	1
Needles	3	0	0	3		
Small Single Pointed Items	1	2	3	6	Ground Bone Points (Frags)	17
Pointed Cylindrical Object	1	0	0	1		
Single Pointed Curved Side Barbs	2	1	0	3	Ground Bone Attachable Barb	1
Small Bone Bipoints	4	1	0	5		
End-Grooved Item	0	0	1	1		
Pendants	4	0	0	4		

Table 4 continued on page following

Table 4 Comparison of Artifact Types by Component at DgRr 1 (con't)

Percy's 1972 Excavations	Components I	II	III	Total	Trace's 1976-77 Excavations	Total
Ground Bone Artifact Types					Ground Bone Artifact Types	
Dagger-Like Objects	3	0	0	3		
Gorge	0	1	0	1	Bipointed Bird Bone Fish Gorge	1
Small Drill(?)	1	0	0	1		
Foreshaft	0	0	1	1		
Creaser	0	1	0	1		
Toggle(?)	1	0	0	1		
Unfinished Bone Objects	5	2	0	7		
Unidentified Bone Artifact Fragments	82	27	12	121	Miscellaneous Ground Bone Fragments	17
					Sectioned Bone Fragments	6
Tooth Pendants	6	1	1	8	Bear Tooth Pendant	1
Rodent Tooth Implements	2	0	4	6	Beaver Incisors	4
Turtleshell Object	0	0	1	1		
Birdbone Formed Awls	1	2	0	3		
Birdbone Splinter Awls	12	0	0	12		
Birdbone Tubes	1	2	1	4		

Table 4 continued on page following

Table 4 Comparison of Artifact Types by Component at DgRr 1 (con't)

Percy's 1972 Excavations	Components I	II	III	Total
Ground Bone Artifact Types				
Birdbone Beads and Spacers	1	1	0	2
Worked Birdbone Fragments	5	4	2	11
Trough-shaped Perforating Tool	0	1	0	1
Hook	1	0	0	1
Ground Antler Artifact Types				
Antler Zoomorphic Carvings	0	1	0	1
Barbed Antler Harpoons	2	1	0	3
Antler Gouge	1	0	0	1

Trace's 1976-77 Excavations	Total
Ground Bone Artifact Types	
Ground Bone Side-Notched Point	1
Stemmed Bone Points	2
Birdbone Fish Hook Barbs	4
Bone Labret	1
Bone Adze	1
Bone Bead	2
Bone Ring	1
Bear Tooth Pendant	1
Ground Antler Artifact Types	

Table 4 continued on page following

Table 4 Comparison of Artifact Types by Component at DgRr 1 (con't)

Percy's 1972 Excavations	Components I	II	III	Total	Trace's 1976-77 Excavations	Total
Ground Antler Artifact Types					**Ground Antler Artifact Types**	
Antler Projectile Points	1	0	2	3	Antler Points	3
Large Unbarbed Points	0	2	0	2		
Antler Flaking Tool	1	0	0	1	Antler Tine Punches	2
Antler Hafting Devices	0	0	2	2	Collar or Haft	1
Antler Beam and Tine Wedges	1	4	4	9	Antler Tine Wedges	5
					Antler Awl/Wedge	1
					Antler Tine Plug(?)	1
Worked Antler Fragments	4	3	3	10	Miscellaneous Ground Antler Tine	2
					Adzed Antler Tine Fragments	1
Shell Artifact Types					**Shell Artifact Types**	
Shell Beads	0	1	2	3	Shell Beads	15
Shell Pendants	1	0	1	2	Shell Pendant	1
Shell Flat rings	1	1	0	2	Shell Ring	1
Shell Adze Blade	3	0	0	3		
Miscellaneous Worked Shell	0	0	1	1		
	666	289	203	1158		1245

Table 5 Artifact Category Totals and Percentages by Component

Percy's Excavations

Category	Component I Total	Component I % of Total	Component II Total	Component II % of Total	Component III Total	Component III % of Total
Chipped Stone	394	59.70	171	59.17	120	59.11
Ground Stone	24	3.64	26	9.00	19	9.36
Pecked and Ground Stone	13	1.97	10	3.46	9	4.43
Worked Bone	214	32.42	68	23.53	39	19.20
Antler	10	1.52	11	3.81	11	5.41
Shell	5	0.76	3	1.04	5	2.46
*	660	100.0%	289	100.0%	203	100.0%

* Figures reflect corrected totals (after Percy 1974:Table LXXX)

Trace's Excavations

Category	Crescent Beach II Total	Crescent Beach II % of Total
Chipped Stone #	862	69.24
Ground Stone ##	250	20.08
Pecked and Ground Stone	5	0.40
Worked Bone	91	7.30
Antler	16	1.29
Shell	21	1.69
	1245	100.0%

Figure relects presence of 567 quartz artifacts and flakes recovered in Trenchs 1+2 whereas Percy excludes unmodified flakes from his artifact counts.

Figure relects presence of 202 stone beads counted individually whereas Percy only counts occurrences of beads.

bowls, birdbone hook barbs, sectioned bone fragments, ground bone side-notched projectile point, stemmed bone points, bone labret, bone adze bone head, bone ring, antler collar, antler awl/wedge, antler tine plug(?), and shell beads.

Percy(1974) found in his Component II a number of types not present in my excavations. These include cobble choppers type 1-3, cobble core rasps, cobble segment knives, chipped lunate blades, scrapers type 3, notched sinker stone, bone wedges, creaser, birdbone formed awls, birdbone tubes, beads and fragments, trough-shaped perforating tool, antler zoomorphic carvings, barbed antler harpoons and shell labrets. Artifact types recovered in our Locarno Beach phase excavations and not in Percy's include lanceolate basally-thinned point, pebble chopper, slab chopper, quartz crystal implements and microblades, unmodified obsidian flake, obsidian flakes derived from bipolar cores, miscellaneous flaked stone, small and large ground slate points, Gulf Islands complex artifact, miscellaneous ground stone, stone pendants, earspool, thick ground slate knives, anvil stones, cobble stone bowls, sectioned bone fragments, beaver incisors, ground bone side-notched projectile points, stemmed bone points, birdbone fish hook barbs, bone labret, bone adze, bone bead, bone ring, antler tine punches, antler collar, antler awl/wedge, antler tine plug(?),

and a shell pendant.

Percy (1974) found in his Component III a number of types not present in my excavations. These include cobble choppers type 1-4, cobble segment knives, scrapers type 3, chipped lunate blades, chipped tabular objects, flat stone ring, end-grooved item, foreshaft, turtleshell object, birdbone tubes and fragments, shell labrets and miscellaneous worked shell. Artifact types recovered in my excavations but not in Percy's include lanceolate basally-thinned point, bifacially retouched stone knives, slab chopper, edge-damaged spalls, small bifacially flaked cutting and scraing tools, quartz crystal implements and microblades, unmodified obsidian flake, obsidian flakes derived from bipolar cores, miscellaneous flaked stone, small and large ground slate points, Gulf of Georgia complex artifact, stone beads, stone pendants, earspool, thick ground slate knives, anvil stones, cobble stone bowls, ochre, ground bone attachable barb, bipointed birdbone fish gorge, sectioned bone fragments, ground bone side-notched point, stemmed bone points, birdbone fish hook barbs, bone labret, bone adze, bone bead, bone ring, antler tine punches, antler awl/wedge, antler tine plug(?), and a shell ring.

After cross-matching artifact types, Percy's Component I contains 61 distinctive artifact types and my material contains

66 distinctive types. A total of 37 of Percy's types are similar to mine rendering a similarity of 61 %. His Component II possesses a total of 53 distinctive artifact types as compared to my 66 types. A total of 35 of Percy's types are similar to mine rendering a similarity of 66 %. Finally his Component III contains 47 distinctive types of which 31 of these are similar to mine thus rendering a similarity of 66 %. Since Percy's Component III contains very few classically diagnostic Marpole phase artifact types and since it bears such a high degree of similarity to his Component II and my excavated Locarno Beach phase material, it is proposed that Percy's Component III may be an extension of his Component II and not a separate component in the true sense of the work. Another possibility exists, however, and this is that his Component III is in fact a Marpole phase component with a lack of diagnostic artifact types due to sampling design and strategies. Since there is no radio-carbon date on Percy's Component III, it becomes impossible to confirm its initial placement as a Marpole phase component and leaves the option open as to its possible reassignment as an extension of his Locarno Beach Phase Component II.

IV CONCLUSIONS

The analysis of the archaeological materials excavated in 1976 and 1977 from the Crescent Beach site strongly indicates that a single component is represented here. This component now needs to be compared with similarily conceived units of culture content from the same region. Montague Harbour I (Mitchell 1968) was the first Locarno Beach phase component for which quantitification and full site data were given. Components from other sites have been described since. A total trait list for the Locarno Beach phase based only on the components in Table 6 lists 103 traits present in one or more of these components. This component from Crescent Beach exhibits 68 which shows 66 % similarity, a strong indicator of cultural affiliation. The Locarno Beach phase component that is most similiar is Montague Harbour I which bears a 61 % similarity to the total trait list. In descending order of similarity to this list is the Helen Point Ib deposits at 55 %, Georgeson Bay 1 at 51 %, Percy's Crescent Beach II deposits at 50 %, Bowker Creek at 46 %, Millard Creek at 41 %, Musqueam Northeast at 31 %, and Belcarra Park I at 27 %. All components discussed here contain diagnostic Locarno Beach artifact types which greatly assist in their space-time continuum placement. It is significant that from my deposits the associated C-14 dates fall in the time period of the other Locarno Beach phase components. In view of this affiliation, it seems appropriate to conclude this thesis

Table 6. Comparison of Locarno Beach Phase Components
X present
O No Comparison

CHARACTER	A	B	C	D	E	F	G	H	I
LEAF-SHAPED POINTS	X	X	X	X	X	X	X	X	X
CONTRACTING-STEM POINTS		X	X	X	X	X	X	X	
BARBED POINTS		X			X				X
SIDE-NOTCHED POINTS		X							X
STEMMED POINTS	X	X	X	X	X				
CHIPPED POINT FRAGMENTS		X			X	X	X		X
CHIPPED AND GROUND POINTS						X	X	X	
DRILLS						X			
MICROBLADES	X	X	X		X	X	X		X
MICROCORES		X					X		X
MACROBLADES	X	X						X	X
CHIPPED-SLATE KNIVES	X				X	X	X	X	X
CHIPPED-SHALE KNIVES	X					X			
GRAVERS							X	X	
CORTEX SPALLS					X	X	X	X	X
BURIN SPALL		X							
SPLIT-COBBLE TOOLS	X	X		X	X	X	X	X	X
PEBBLE CHOPPERS		X			X		X	X	
COBBLE CORES				X	X	X	X	X	X
COBBLE CORE TOOLS		X		X	X	X		X	X
MISC. BIFACES		X		X	X	X	X	X	X
EDGE-DAMAGED QUARTZ FLAKES	X						X		
OBSIDIAN AND QUARTZ FLAKES	X	X			X		X		X
EDGE-DAMAGED FLAKES	X	X	X	X	X	X	X	X	X
MISC. UNIFACES		X		X		X	X	X	X
EXHAUSTED BIPOLAR CORES	X	X					X	X	X
CORES		X		X	X	X	X	X	X
MISC. CHIPPED STONE	X			X	X	X	X		X
CHIPPED SLATE POINTS					X		X	X	
CHIPPED TABULAR OBJECTS								X	
GROUND STEMLESS POINTS	X	X	X	X	X	X	X		X
GROUND TRIANGULAR POINTS			X						X
GROUND STEMMED POINTS		X	X	X		X	X		X
BARBED GROUND SLATE POINTS			X						
SLATE POINT FRAGMENTS	X	X							X
GROUND SLATE KNIVES	X		X	X	X	X	X		X
STONE TUBULAR BEADS	X					X			X
STONE DISC BEADS	X	X	X				X	X	X
CELTS		X	X	X	X	X	X	X	X
SLATE AWLS					X	X			X
SLATE CHISEL FRAGMENTS									X
GULF ISLANDS COMPLEX	X		X		X	X	X		X
LABRETS		X	X		X	X	X	X	X
MISC. GROUND STONE	X	X		X		X	X		X
MISC. COAL	X		X						
HAMMERSTONES	X		X	X	X	X	X	X	X
PERFORATED STONES	X	X							X
CURVED NOTCHED STONES					X	X	X	X	X
GROOVED SINKER STONES		X			X	X			X
COBBLE MORTARS			X			X	X		X
HANDSTONES		X			X	X			X
STONE PENDANTS						X	X		
EARSPOOLS						X	X		
ANVIL STONES							X		
SAWS					X	X	X	X	X
ABRADERS	X	X	X	X	X	X	X	X	X
BAR ABRASIVES	X		X	X	X	X	X	X	
MISC. ABRASIVES	X	X	X		X	X	X	X	X
IRREGULAR ABRASIVES	X	X	X		X	X	X	X	
RED OCHRE		X			X	X	X	X	X
PERFORATED BONE OBJECTS					X				
BONE PENDANTS						X			
BARBED POINTS		X		X	X	X	X		
FACETED BONE POINTS			X	X		X	X	X	
WEDGE BASED BONE POINTS					X		X		
NEEDLES		X			X				X
BONE BLUNTS		X							
SECTIONED-BONE AWLS	X	X		X			X	X	X
SPLIT-BONE AWLS	X	X			X	X	X	X	
BIRD-BONE AWLS						X		X	
BIPOINTED BONE			X		X	X	X	X	
SMALL UNIPOINTS	X	X					X	X	X
BONE ATTACHABLE BARB							X	X	
ULNA TOOLS	X	X	X		X	X	X	X	X
CHISELS-WEDGES		X	X	X	X	X	X	X	
BONE BEADS							X		
BONE KNIVES		X				X			
BONE RINGS							X		X
GROUND CANINE TEETH			X						
BIRD-BONE BEADS	X					X		X	
BIRD-BONE WHISTLES	X					X			
MISC. WORKED BIRD-BONE							X	X	X
MISC. WORKED BONE	X	X		X	X	X	X	X	X
BEAVER INCISORS	X		X		X	X	X		
TOOTH PENDANTS	X					X	X	X	X
ANTLER-BARBED HARPOONS			X		X	X		X	
ANTLER-BARBED POINTS			X		X				
ANTLER POINTS					X		X	X	
ANTLER FORESHAFTS	X		X		X	X			
ANTLER SLEEVE HAFTS	X						X		
TOGGLING HARPOON VALVES			X			X			
ANTLER FLAKING TOOL TIPS	X					X	X		X
ANTLER WEDGES		X		X	X	X	X	X	
ANTLER PENDANTS					X				
ZOOMORPHIC OBJECTS					X			X	
MISC. WORKED ANTLER	X	X		X	X	X	X	X	X
SEA MUSSEL TOOLS		X			X	X			
SHELL DISC BEADS	X						X	X	
SHELL PENDANTS							X		
SHELL RINGS							X		
CLAY LINED DEPRESSION	O		O		X	X	X	X	O
FLEXED BURIALS	O	O	O	X	X	X	X	X	O
MIDDEN BURIALS	X	O	O	X	X	X	X	X	X

MILLARD CREEK (A), BOWKER CREEK (B), MUSQUEAM NORTHEAST (C),
BELCARRA PARK I (D), HELEN POINT Tb (E), MONTAGUE HARBOUR I (F),
CRESCENT BEACH 2 (G), PERCY'S CRESCENT BEACH 2 (H), GEORGESON BAY I (I)

with a review of content characteristic of the Locarno Beach phase above and beyond mere artifact types (Table 7). The range of cultural variation evident in this cultural phase of development is what is described in Table 7.

Early research by Franz Boas (1902, 1924, 1933), Hill-Tout (1895, 1948), and H.I. Smith (1903,1907) helped to lay the foundation for Charles Borden who in the 1950s performed the first large scale systematic archaeological excavations in British Columbia. This research led to the presentation of a temporal sequence based on stratigraphic position and assemblage content and to the formation of the concept of a Locarno Beach phase.

The concept of a Locarno Beach phase has undergone several major modifications during the course of its evolution. The concept originated with Borden, and was later modified and expanded by Mitchell. Borden (1950, 1951) originally referred to this unit of culture content as an "Eskimoid" or Early Maritime culture based on assemblages from the Locarno Beach site (DhRt 6) and Whalen Farm site (DfRs 3). He contended that the archaeological findings in the Fraser Delta fit in well with evidence from other sources "...that a strongly Eskimoid culture forms an early...and perhaps the earliest...culture stratum along the coast, at least as far south as the Gulf of Georgia region" (Borden 1951:44).

Table 7 Trait List of the Locarno Beach Phase

Chipped Stone Artifact Types	Ground Stone Artifact Types
Bifaces	Ground Triangular Points (Rare)
Macrocores	Earspools (Rare)
Leaf-Shaped Points	Slate Awls
Side-notched Point (Rare)	Barbed Ground Points (Rare)
Contracting Stem Points	Gulf Islands Complex Artifacts
Barbed Chipped Points (Rare)	Slate Chisel fragments (Rare)
Stemmed Points	Ground Stemless Points
Exhausted Bipolar Cores	Stone Pendants (Rare)
Chipped Point Fragments	Ground Stemmed Points
Misc. Unifaces	Slate Point fragments
Chipped and Ground Points	Thick Ground Slate Knives
Microcores	Stone Disc Beads
Drills (Rare)	Celts (Adzes)
Obsidian/Quartz flakes	Stone Tubular Beads
Cores	Labrets
Misc. Chipped Stone	Misc. Ground Stone
Microblades	Misc. Ground Coal
Chipped Slate Knives	Perforated Stones (Rare)
Chipped Shale Knives	Curved Notched Stone
Edge-Damaged Cortex Spalls	Sandstone Saws
Split Cobble Tools	Abraders
Cobble Cores (Rare)	Bar Abrasives
Edge-Damaged Flakes	Misc. Abrasives
Chipped Slate Points	Irregular Abrasives
Edge-Damaged Quartz Flakes	
Cobble Core Tools	
Pebble Choppers	
Chipped Tabular Objects (Rare)	
Burin Spalls (Rare)	
Cortex Spalls	

Ground and Pecked Stone Artifact Types	Ground Bone and Antler Artifact Types
Cobble Mortars	Facetted Bone Points
Hammerstones (No Mauls)	Perforated Bone Objects (Rare)
Handstones	Wedge-Based Bone Points (Rare)
Perforated Stones	Bone Pendants (Rare)
Anvil Stones	Needles
Grooved Sinker Stones	Bone Barbed Points

Table 7 continued on page following

Table 7 Trait List of Locarno Beach Phase (con't)

Ground Bone and Antler Artifact Types

Split Bone Awls
Bird-bone Awls (Rare)
Misc. Worked Bird-bone
Bone Beads (Rare)
Bird-bone Awls (Rare)
Bone Rings (Rare)
Small Bone Unipoints
Antler Points
Bone Chisels-Wedges
Antler Flaking Tool Tips
Bird-bone Whistles (Rare)
Toggling Harpoon Valves (Rare)
Beaver Incisors
Antler Barbed Harpoon
Antler Wedges
Sectioned Bone Awls (Rare)
Bone Blunts (Rare)
Bone Attachable Barb (Rare)
Sleeve Hafts (Rare)
Bone Knives (Rare)
Bipointed Bone
Ground Canine Teeth (Rare)
Ulna Tools
Antler Foreshafts (Rare)
Birdbone Beads
Antler Pendants (Rare)
Misc. Worked Bone
Misc. Worked Antler
Tooth Pendants
Antler Barbed Points (Rare)

Shell Artifact Types

Sea Mussel Tools
Shell Pendants (Rare)
Shell Disc Beads
Shell Rings (Rare)

Other Traits

Clay Lined Depressions
Red Ochre
Flexed Burials
Midden Burials
Zoomorphic Objects

Obvious Absences to Date

No Mauls
No Knife Hafts
No Birdbone Points
No Dentalia
No Clamshell Bowls
No Birdbone Needles
No Skull Deformation except one Possible Example

Table 7 continued on page following

Table 7 Trait List of Locarno Beach Phase (con't)

Locarno Beach Components used in Table 7

Crescent Beach 2	Georgeson Bay 1
Montague Harbour 1	Bowker Creek
Millard Creek 1	Helen Point 1b
Belcara Park 1	Musqueam Northeast

In a later revision of this model published in 1962, he did away with his "Eskimoid" derivation of Northwest Coast culture and instead saw many traits as appearing earlier on the Coast than in either the Aleutians or western Alaska. In this later model, the Eskimos become the receivers, rather than the donors, of the Siberian Mesolithic-Neolithic technology which Borden considered to have been passed down into northern North America by interior routes and then taken westward to the Northwest Coast (Willey 1966:385). His reformulation of the Fraser Delta sequence had the early period becoming the Locarno Beach phase, the intermediate period being split into the Marpole and Whalen II phases and the late period becoming the Stselax phase (Borden 1968,1970). No detailed site reports or data on artifact frequency were ever prepared, only the preliminary report (Borden 1951), and later trait lists (Borden 1970).

The next significant contribution to this concept came from Mitchell's (1968) report on excavations at Montague Harbour. He modified and expanded Borden's concept of a Locarno Beach phase by considering it a distinct cultural type that was part of a developmental sequence including two later culture types. The regional culture types that he has proposed are Lithic, Locarno Beach, Marpole, and Gulf of Georgia. He states that the last three culture types may be seen as part of a developmental sequence, with each succeeding form an outgrowth of its

predecessor (Mitchell 1968:1).

Other researchers such as McMurdo, Charlton, Capes and Percy have not modified the concept of the Locarno Beach phase or culture type significantly but rather have chosen to use the concept as presented and upgraded by Borden and Mitchell.

Mitchell has suggested that even though our present knowledge of the Locarno Beach culture type places its existence at the close of the post glacial thermal maximum, it could well have flourished centuries earlier during the altithermal period (Mitchell 1971:71). This would have the culture type adapting to drier, warmer conditions than at present. The probable presence of these climatic conditions is documented by oak pollen profiles along the Northwest Coast (Heusser 1960). A resulting increase in the size of the Gulf Islands biotic zone would have meant that food resources such as camas and other roots, acorns, deer, and wapiti would have been more widely distributed than they currently are. The medithermal shift to a cooler, moister climate could have altered the availability of these food resources and consequently forced a greater dependence on the variable fish runs. Shortly after the onset of these climatic changes, the Marpole culture type first appears. This would see the improvements in the fish catching and fish preservation technology associated with this latter

culture type as an attempt to even out the fluctuations in food resources (Mitchell 1971:71).

I agree with Mitchell that the Locarno Beach phase of cultural development exhibits strong evidence as a founding culture for the later cultures in the area. The improvements in fish catching and fish preservation technology associated with the Marpole phase of development could be directly responsible for the quickened development of the material culture and the resultant growth of social mechanisms like the potlatch. It would also account for the increased emphasis on social rank and status reflected archaeologically by grave goods in archaeological deposits on the Fraser Delta and surrounding offshore islands dating later than the Locarno Beach phase.

Several of the sites containing Locarno Beach phase components are located along the salt water approaches to the Fraser River from the south. Components directly attributable to this phase include the Helen Point Ib component from Mayne Island, the Montague Harbour I deposits from Galiano Island, the Belcarra Park I deposits near Ioco, the Musqueam Northeast deposits, the Bowker Creek and Millard Creek deposits, and the Crescent Beach II deposits (Fig.2). Other components such as Whalen Farm I, and Locarno Beach I and II are not included here due to a lack of published site and artifact data.

A comparison of all the artifact types based on a presence-absence character list of known Locarno Beach phase components reveals a number of cultural attributes of the subsistence technology (Table 7). These include a high incidence of chipped stone artifact types and a knowledge and use of microblades and microflakes. Experimental evidence (Flenniken 1980) indicates the latter serve very efficiently as fish knives. Chipped stone points and scrapers may well relate to land hunting activities. The recovery of ground stemmed and stemless points, thick ground slate knives, notched or grooved sinker stones and small well made celts provide evidence of large and small sea mammal hunting, a fishing industry and an early woodworking industry. Sea mussell shell knives were probably utilized for some of the butchering of birds, mammals and fish. Stone boiling or earth oven forms of cooking are suggested by the large numbers of fire cracked rocks recovered in the majority of the sites being discussed. Other tool types relating to an early woodworking industry include hammerstones, antler and bone chisels, wedges, sleeve hafts, crude cobble, split cobble and boulder spall implements. It becomes obvious from the presence of these artifact types that the splitting of planks for dwellings and the working of logs for watercraft was well within their range of technological capability. The use of basketry is attested to by the presence of split bone awls, sectioned bone awls, birdbone awls, and bone needles. Many

abraders of differing sizes and shapes have been recovered which would have been utilized in the making and resharpening of these tool types.

The resource base of this culture type is quite varied. Faunal remains noted in situ include land mammals, birds, fish, sea mammals, and shellfish. Borden has contended that the Locarno Beach phase represents an even greater dependence on marine resources than the culture types that followed it. Mitchell has held that Locarno Beach phase was no more marine oriented than the other phases were (Mitchell 1971:57). Diagnostic for the Locarno Beach phase are antler or sea-mammal bone foreshafts and various forms of toggling harpoons. These artifacts as well as the remains of sea lion, porpoise and seal would indicate that sea mammal hunting was engaged in (Borden 1950,1951,1970; Borden and Archer 1974a, 1974b, 1974c). It has been suggested by Dale Croes (1975) that some of the heavier gauge cordage from Musqueam Northeast (Borden 1976:249,250,Fig.11,12) could well have served as harpoon ropes, especially in view of the length of some of the fragments. He suggests that these lines could be "...from harpoons used in hunting seals that may have been attracted to the location by the net fishing" (Borden 1976:248). The recovery of net fragments and wrapped sinker stones from the Locarno Beach phase deposits at Musqueum Northeast would indicate that the people of

this phase possessed the technological capacity for net fishing (Borden 1976:249). The possibility also exists that these people hunted much larger marine game as the recovery of what appears to be the carefully fashioned distal portion of a rather massive harpoon (?) shaft (Borden 1976:250,Fig.a,b) from Musqueam greatly resembles those used by Nootka in recent times for hunting whales (1976:251). I am in complete agreement with Burley when he contends that "...there is little doubt that a full maritime adapted settlement subsistence pattern was in effect during the Locarno Beach time period" (Burley 1980:26).

The beginnings of elaboration in artwork on the Fraser Delta and offshore islands can be seen in the presence of earspools, beads, and labrets within Locarno Beach phase deposits. Another art object whose function is still unknown is the Gulf Islands Complex artifact. Drill holes produced by long thin drills of uniform diameter are exhibited by members of the Gulf Islands Complex which is "... comprised of well made soapstone, bone and coal artifacts produced in a variety of forms and tending to cluster into broad but definable types" (Duff:1956). Other drilling techniques utilized cruder flake drills producing conical perforations and many examples of biconically drilled stone beads and pendants have been recovered in Locarno Beach phase context.

The best way of examining possibilities of social organization is through the use of ethnographic analogy. The Coast Salish peoples have formed a cultural and social continuum from the northern end of Georgia Strait to the southern end of Puget Sound including the associated inland waterways (Suttles 1954:29). In terms of political organization however, this continuum had no real unity at all and no discrete discernable political units (Suttles 1954:29). The highest unit of common allegiance among the Salish was the extended family. The extended family normally lived in one large house, and the extended families or house groups, were the named units comprising winter villages. " Blood relationship was the primary factor uniting members of the extended family, and the more attenuated this became, the less likely it was to motivate common action" (Barnett 1955:241). The motivation for collective action in all cases derived from blood relationship; whenever all or any part of a village membership responded as a unit, it was because of interconnecting blood ties and not due to any sense of unity among the aggregate of extended families inhabiting a winter village (Barnett 1955:243). Members of the family nucleus including most fringe members were bound together, not only by descent, but by common traditions and associations and by important property interests with "...each family member ... liable to the rest of the community for the behaviour of every other member of his extended family; and the

claims of individual members were supported by the family group as a whole" (Barnett 1955:242). Class lines were not well defined and there was no point above which a man was of the aristocratic class, and below which he was a commoner. A continuous gradation of rank extended from the least esteemed to the most esteemed and the least distinguised of the upper-class members were scarcely to be separated from self-respecting and industrious common men. Rank depended on order of birth with any given family since the possession of valuable items and resources of wealth and of ceremonial prerogatives was an important criterion of status since, in general, all rights were inherited (Barnett 1955:247).

It is difficult to infer these patterns from Locarno Beach phase material. It is likely that feasts occurred but evidence for potlatching is absent. The burial pattern of the Locarno Beach phase does not suggest the great abundance of material wealth generally associated with potlatching. The earliest occurence on the coast of objects such as earspools, labrets and beads in any quantity at all is within the Locarno Beach phase. These ornamental objects could likely have been used as group definers to help denote differences in social prestige as this is the usage of these objects ethnographically.

Some inferences about belief systems based on the study of archaeological objects can be made. Ethnographic Coast Salish religion was based on a belief in spirits. The potential for deriving spiritual assistance from all natural phenomena existed with animal spirits being more common than other kinds (Carlson 1979:4). Most spirits can be grouped into the non-mutually exclusive categories of shamanic spirits, guardian spirits, secret society spirits and crest spirits (Carlson 1979:4). Possessors of shamanic spirits undertook curing of the sick whereas guardian spirits gave their possessor specialized power in activities other than curing. A belief in guardian spirits during the Locarno Beach cultural phase may possibly be indicated by the presence of tooth pendants. It is logical to infer that wearers of these pendants possessed guardian spirit power gained from supernatural encounters with the animals involved (Carlson 1979:8). There is some evidence in existence in Locarno Beach context of art forms similiar to those employed ethnographically in secret societies (Carlson 1979:23). Since considerable magic paraphernalia and masks were employed in secret societies, it is logical to consider a small bone effigy of a human skull from the Locarno Beach site (Borden 1970:Fig.30) as similiar to skull effigies of wood used in the Kwakiutl cannibal dances (Carlson 1979:21). Long beaked mythological bird masks also used in this dance greatly resemble a miniature bird head effigy dating from 500 B.C. found at the

Crescent Beach site during the course of the earlier excavations (Percy 1974). That these artifacts reflect belief systems unknown ethnographically from the Coast Salish must remain an enigma, at least for the time being. It can be clearly seen that within the Locarno Beach phase can be found many aspects of animism reflected in the artwork.

Other major early forms of ethnographic patterns present in the Locarno Beach phase include stone grinding, great use of antler and bone, signs of a developing woodworking complex and a dependence on land, intertidal, and riverine resources. A number of different forms of artifacts exist within Locarno Beach phase assemblages such as Gulf Islands Complex artifacts and the entire complex of chipped stone tools that cannot be found ethnographically. Also, the functional use of features such as clay-lined depressions and rock-slab outlines cannot be easily inferred from ethnographic analogy. Despite these differences, a continuity model of cultural development best fits the data so far recovered. The dividing of the space-time continuum into the cultural units described by Mitchell allows us the liberty of noting the differences between the Locarno Beach phase and what existed both earlier and later without obscuring the similarities. Therefore, I contend that the roots of Coast Salish ethnographic culture are likely to be found within the archaeological material remains of the Locarno Beach

phase of cultural development.

In conclusion, this component from the Crescent Beach site best fits into the cultural continuum as a representative of the Locarno Beach phase of cultural development.

Appendix: Artifact Type Descriptions

The artifacts described in the following appendix were excavated in 1976 and 1977 from the Crescent Beach Site. Frequency and measurements are given in Tables 8 through 12. Occurrence at other sites is given in Table 6. Coefficients of Variation have been calculated on artifact measurements. The C.V. is designed to express group variability in terms relative to the central tendency of that group. It is particularly well suited for comparing groups for which the relative homogeneity must be assessed independent of the respective sample means. The Standard Deviation is an adequate indicator of relative homogeneity as long as the sample means remain roughly equal. The C.V. is a "pure measure" since the result is expressed in percentages rather than in the absolute measurements of the S.D. The C.V. is calculated as the S.D. X 100 divided by the Sample Mean (Thomas 1976:83).

Artifact Category: Flaked Lithics

Quartz Crystal Flakes

The largest single class of artifacts in this category is quartz crystal flakes. A total of 564 quartz crystal artifacts were found during the course of the Trench 1 excavations at

Crescent Beach. Of these, 503 are unmodified flakes. This detritus was widespread throughout Trench 1, in all cultural levels, with a slight clustering evident at the northern end. These flakes are generally quite small, multifacetted and very clear in colour. No other generalities can be made about them, except to state that their location is highly indicative of a site specific activity area, namely a flaking station. They range in length from 6-20 mm., in width from 5-17 mm. and in thickness from 1-10 mm. (Table 8, Fig. 8).

Other classes of quartz crystal artifacts include 28 edge-damaged quartz crystal flakes, 14 exhausted bipolar quartz crystal microcores, four possible quartz crystal and obsidian microblades, 16 quartz crystal microcores. Quartz crystal artifacts as a whole comprise 70% of the entire cultural assemblage recovered from Trench 1. Quartz crystal flakes are common in Locarno Beach phase assemblages from other sites.

Current replicative experiments conducted by Dr. Jeff Flenniken of Washington State University have basically eliminated the nomenclature of "utilized" as valid in description of quartz crystal flakes exhibiting edge damage (Flenniken 1980). His studies have shown that edge damage usually attributed to hypothesized use-wear can only partly be reproduced by actual utilization of replicated tools and many

Table 8 Chipped Stone Artifact Class Measurements

Artifact Class	Number	Range mm	Mean	S.D.	C.V.
Quartz Crystal Flakes	503				
Length		6-20	12.22	5.14	42.08
Width		5-17	9.22	4.41	47.83
Thickness		1-10	3.33	3.21	96.4
Edge-Damaged Quartz Crystal Flakes	28				
Length		8-20	12.91	3.63	28.08
Width		7-19	9.86	3.95	40.06
Thickness		1-4	3.2	1.05	33.10
Exhausted Bipolar Quartz Crystal Microcores	14				
Length		9-20	13.7	3.28	23.93
Width		6-17	10.66	3.2	30.02
Thickness		2-4	2.91	0.99	34.23
Quartz Crystal Microcores	18				
Length		17-48	28.0	8.08	28.85
Width		10-22	16.58	3.65	22.04
Thickness		6-21	11.08	5.02	45.28
Quartz Crystal Microblades	4				
Length		9-17	12.5	3.7	29.57
Width		4-6	5.25	0.96	18.24
Thickness		1.5-3	2.0	0.71	35.35
Edge-Damaged Flakes	125				
Length		14-87	47.0	24.69	52.53
Width		11-69	33.58	18.70	55.68
Thickness		4-17	10.0	3.78	37.9
Obsidian Flake	1				
Length		15			
Width		6.0			
Thickness		4.0			
Obsidian Flakes Derrived From Bipolar Cores	2				
Length		16-19			
Width		11-13			
Thickness		4-7			
Edge-Damaaged Spalls	6				
Length		23-123	60.5	35.52	58.72
Width		21-88	48.5	24.24	49.98
Thickness		6-31	16.0	8.65	54.05

Table 8 Continued on Page Following

Table 8 Chipped Stone Artifact Class Measurements (con't)

Artifact Class	Number	Range	Mean	S.D.	C.V.
Unifacially Retouched Flakes	33				
Length		19-84	48.0	24.58	51.22
Width		17-66	30.8	17.78	57.71
Thickness		5-24	10.03	7.23	72.06
Bifacially Retouched Flakes	4				
Length		23-54	35.0	13.44	38.4
Width		13-37	25.75	10.81	41.99
Thickness		8-11	9.0	1.41	15.71
Cores	53				
Length		31-99	51.62	23.15	52.32
Width		16-65	36.85	19.02	51.61
Thickness		11-48	18.69	11.32	60.55
Chipped Slate Knives	10				
Length		54-111	69.86	18.88	27.03
Width		35-61	47.43	8.79	18.54
Thickness		7-14	9.71	3.55	36.52
Bifacially Retouched Stone Knives	4				
Length		27-54	44.0	11.80	26.82
Width		20-30	26.0	4.32	16.62
Thickness		7-11	9.25	1.71	18.46
Unifacially Retouched Heavy-Duty Cutting and Scraping Tools	8				
Length		53-112	77.38	17.57	22.71
Width		55-74	64.5	7.39	11.45
Thickness		17-39	23.5	7.13	30.35
Split Cobble Tools	2				
Length		120-152			
Width		93-105			
Thickness		37-69			
Pebble Chopper	1				
Length		142			
Width		110			
Thickness		61			
Notched Flake	1				
Length		123			
Width		89			
Thickness		21			

Table 8 continued on page following

Table 8 Chipped Stone Artifact Class Measurements (con't)

Artifact Class	Number	Range	Mean	S.D.	C.V.
Small Unifacially Flaked Cutting and Scraping Tools	4				
Length		62-78	67.25	7.27	10.81
Width		31-62	50.25	13.60	27.06
Thickness		13-47	27.5	15.29	55.59
Small Bifacially Flaked Cutting and Scraping Tools	5				
Length		56-85	66.8	10.83	16.21
Width		54-60	55.6	2.61	4.69
Thickness		17-26	19.8	3.7	18.69
Exhausted Bipolar Cores	3				
Length		30-76	46.67	25.48	54.6
Width		22-50	31.33	16.16	51.6
Thickness		9-26	15.0	9.54	63.6
Gravers	3				
Length		34-49	41.33	7.51	18.16
Width		20-48	29.67	15.88	53.54
Thickness		12-14	13.33	1.15	8.66
Burin	1				
Length		53			
Width		48			
Thickness		15			
Lanceolate Unstemmed Points	12				
Length		22-70	45.82	13.68	29.86
Width		14-24	18.55	3.75	20.22
Thickness		3-10	7.0	1.79	25.55
Lanceolate Basally Thinned Point	1				
Length		50.5			
Width		17			
Thickness		19			
Contracting Stem Points	13				
Length		34-82	52.6	15.44	29.35
Width		15-26	18.7	3.23	17.29
Thickness		4-9	6.5	1.72	26.39
Chipped Slate Contracting Stem Preform	1				
Length		72			
Width		31			
Thickness		5.5			

Table 8 continued on page following

Table 8 Chipped Stone Artifact Class Measurements (con't)

Artifact Class	Number	Range	Mean	S.D.	C.V.
Miscellaneous Flaked Stone	1				
Length		85			
Width		66			
Thickness		19			
Pecked Stone Artifact Class					
Cobble Stone Bowls	2				
Length		59-84			
Width		52-60			
Thickness		31-39			
Hammerstone	2				
Length		67-72			
Width		42-49			
Thickness		38-43			
Anvil Stone	1				
Length		107			
Width		64			
Thickness		36			

Figure 8

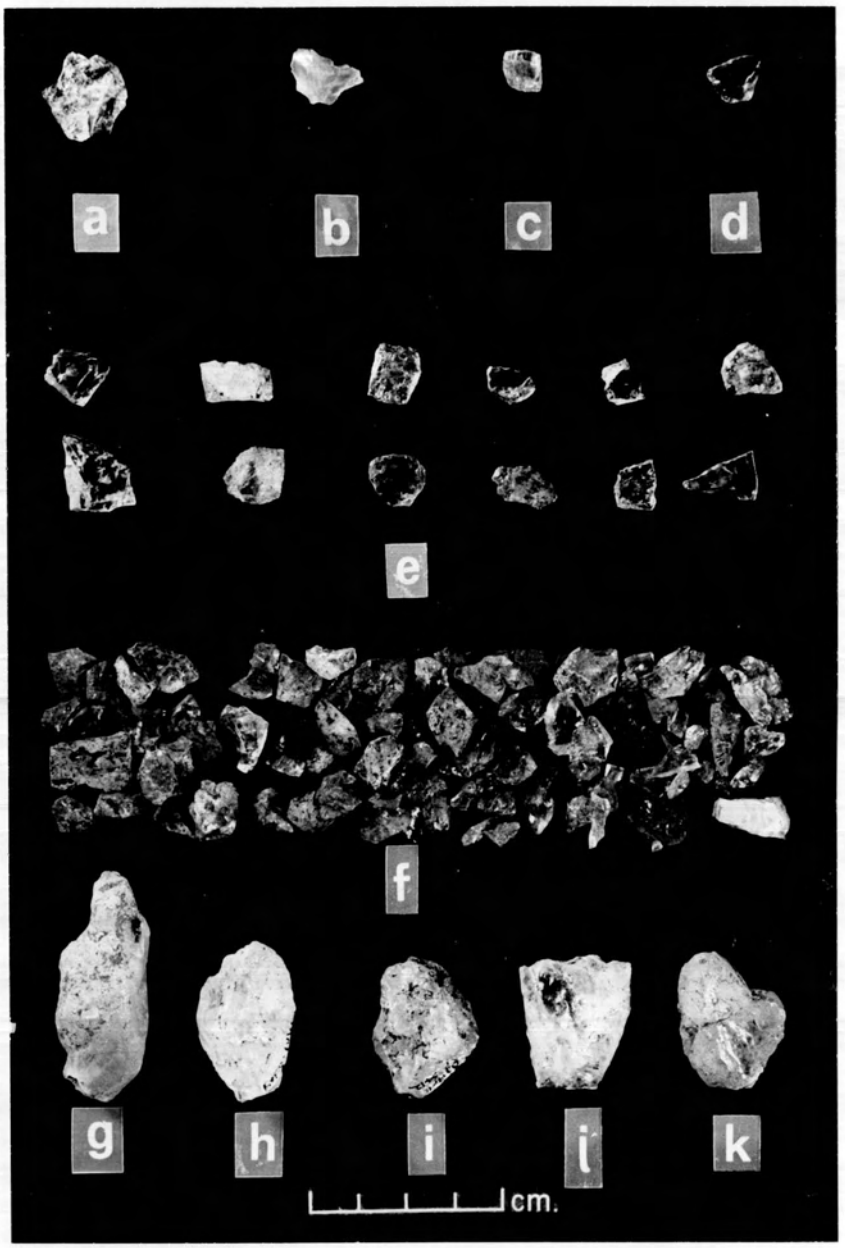
Retouched Quartz Crystal Flakes (A-D)

Edge-Damaged Quartz Crystal Flakes (E)

Quartz Crystal Flakes (F)

Quartz Crystal Microcores (G-K)

Trench 1 Assemblage 9 (A-K)


a
b
c
d
e
f
g
h
i
j
k
cm.

other factors exist that have possibly contributed to damage noted on archaeological specimens.

Edge-Damaged Quartz Crystal Flakes

These 28 quartz crystal flakes all exhibit a small to moderate amount of edge-damage along one face only. They range in length from 8-20 mm., in width from 7-19 mm., and in thickness from 1-4 mm. (Fig.8). All flakes are irregular in shape and multifacetted. The only difference between these flakes and the detritus previously described is the damage on a single edge.

Exhausted Bipolar Quartz Crystal Microcores

These microcores are generally larger than the edge-damaged and pristine quartz crystal flakes found in this site. There are 14 of them in this class. They range from 9-20 mm. in length, from 6-17 mm. in width and 2-4 mm. in thickness. Nine of them are ovoid in shape and the other five are more irregular in shape but all bear evidence of primary and/or secondary reduction by bipolar percussion. All of these microcores are multifacetted.

Quartz Crystal Microcores

There were 18 pieces of quartz recovered that were classified as Quartz Crystal Microcores. All exhibit multiple flake scars but only one of them appears to have several of these scars parallel to one another. The others all appear to have had flakes struck off randomly over their entire surfaces. These cores are not symmetrical in the least but rather exhibit a somewhat formless multifacetted appearance to the observer. They range in length from 17-48 mm., in width from 10-22 mm., in thickness from 6-21 mm. Several of these specimens exhibit faces of the original crystal structure from which they were derived. This could possibly represent the beginnings of the microblade industry at this site since four microblade-like flakes were recovered at this portion of the site.

Quartz Crystal and Obsidian Microblades

All four of the specimens in this artifact class exhibit a number of attributes which lead me to place them in this class. They are all trapezoidal in cross-section, exhibiting longitudinal flake scars on the superior surface and the two lateral edges. All four of them are at least twice as long as they are wide. They all are slightly concave anterio-posteriorly. They range in length from 9-17 mm., in

width from 4-6 mm. and in thickness from 1.5-3 mm. Three of them are of clear quartz crystal and one is of obsidian. There is no evidence of edge-damage when examined under the scanning electron microscope. Percy has put all the above quartz crystal artifact classes into the class of quartz crystal implements and microblades.

Results of Scanning Electron Microscope Analysis of Quartz Crystal Flakes.

This research was undertaken to determine whether any degree of confidence could be extended toward the separation of quartz crystal implements by examining the edge-damage. Initial separation was done by utilizing the 16 power hand lens. I randomly selected a total of 30 examples of quartz crystal flakes that had been assigned to one of the following artifact tool classifications; quartz crystal flakes, edge-damaged quartz crystal flakes, exhausted bipolar quartz crystal microcores, and microblades. All specimens were mounted to laboratory slides and gold-plated to allow for complete electrical conductivity. The results obtained are representitive of several distinct patterns of edge damage which can be readily seen in the examples shown here (Fig.9-18). After examining all the edges for patterns of similiarity in edge damage, a few generalities can now be made. A series of 500 to 1000 micron diameter flake

Figure 9

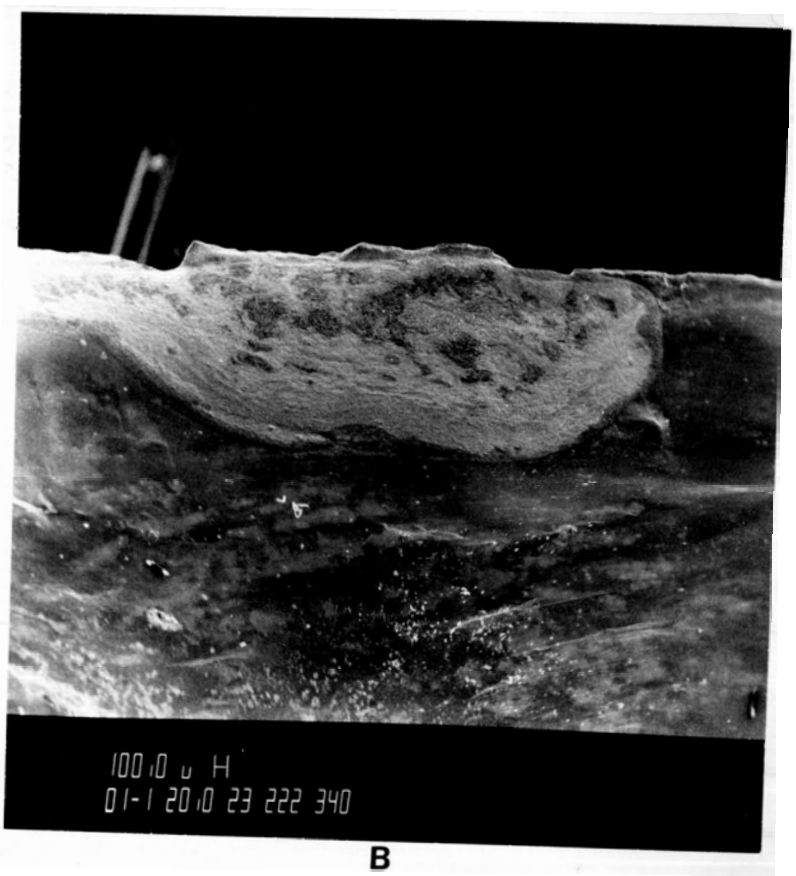
Undamaged Edge (A)

Battered Edge (B)

Quartz Crystal Flakes filmed on Scanning Electron Microscope

Trench 1 Assemblage 9 (A-B)

A



B

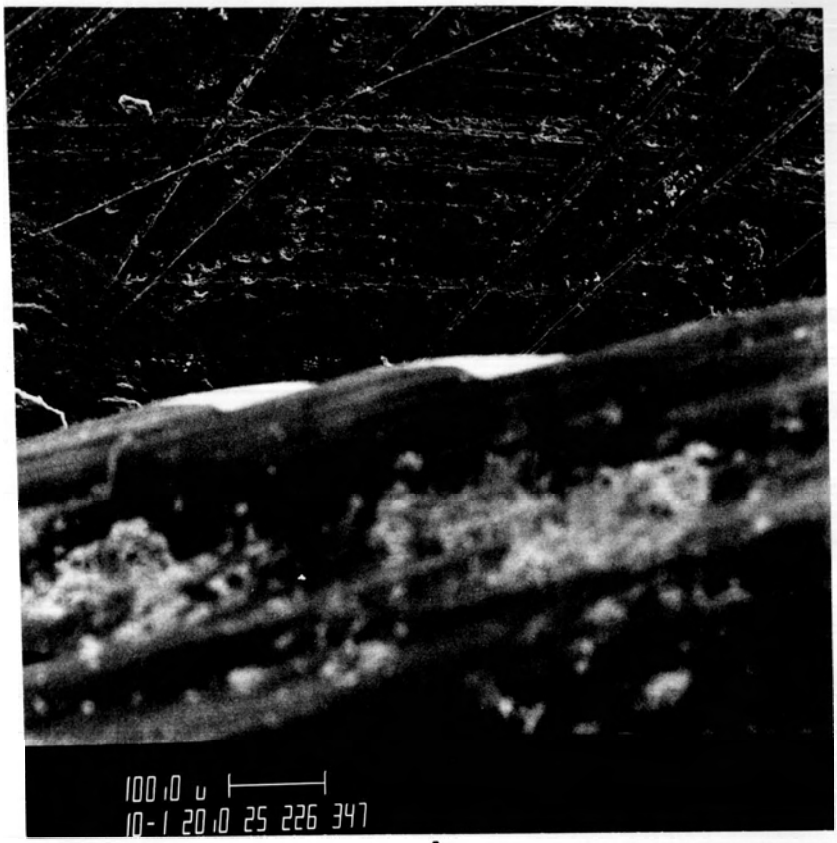
Figure 10

Undamaged Edge (A)

Battered Edge showing Minute Edge-Damage on Tip (B)

Quartz Crystal Flakes Filmed on Scanning Electron Microscope

Trench 1 Assemblage 9 (A-B)



A

B

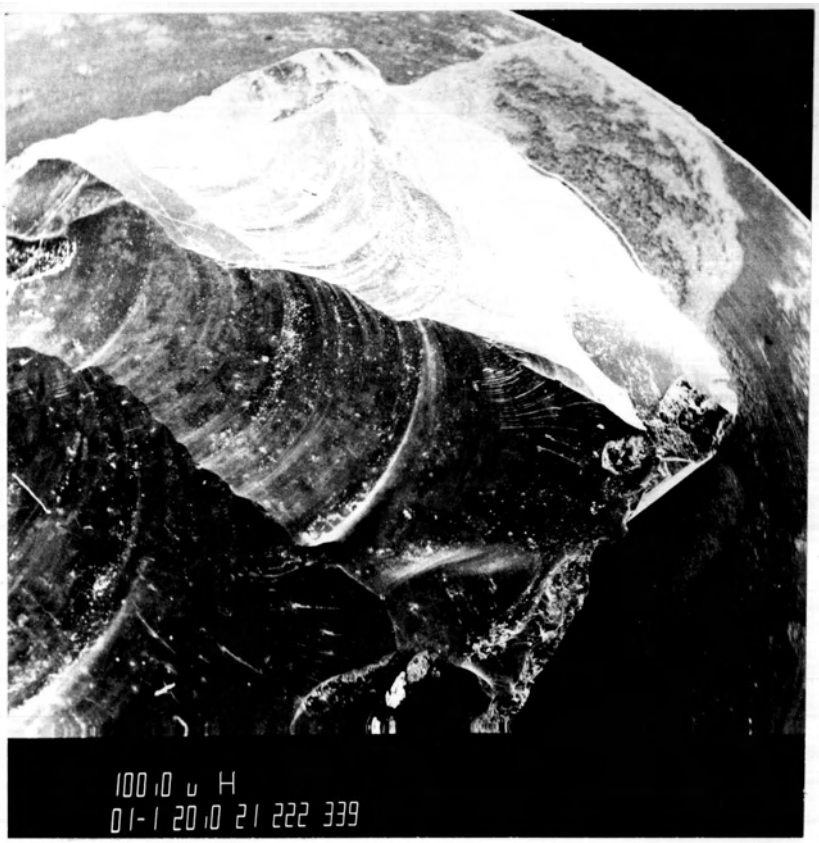
Figure 11

Battered Face (A)

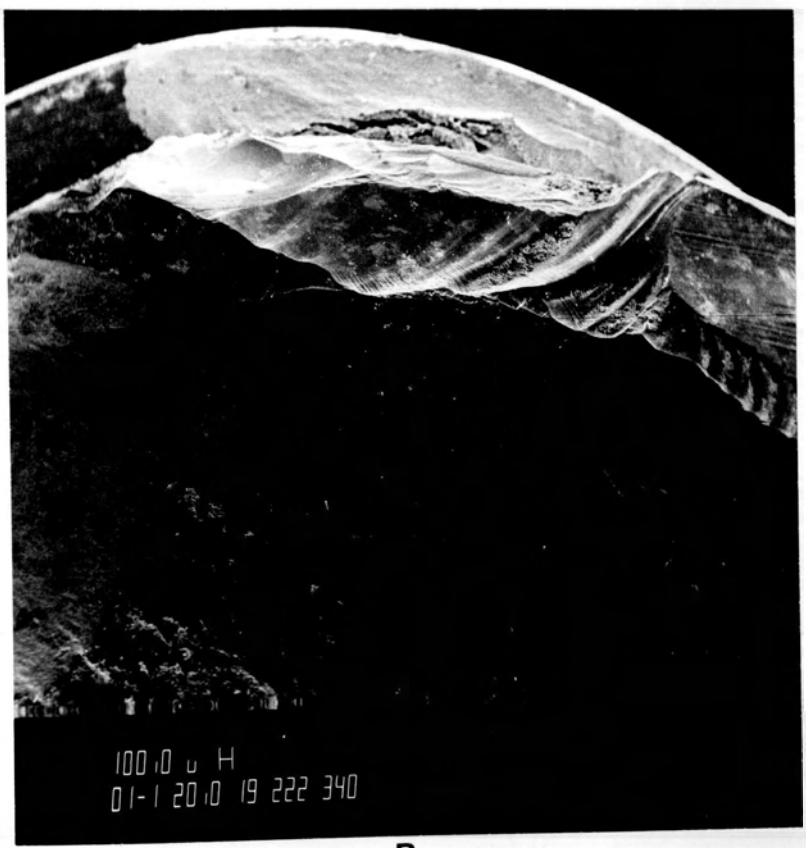
Battered Edge (B)

Quartz Crystal Flakes Filmed on Scanning Electron Microscope

Trench 1 Assemblage 9 (A-B)



A



B

Figure 12

Minute Edge Damage (A)

Minute Edge Damage (B)

Quartz Crystal Flakes Filmed on Scanning Electron Microscope

Trench 1 Assemblage 9 (A-B)

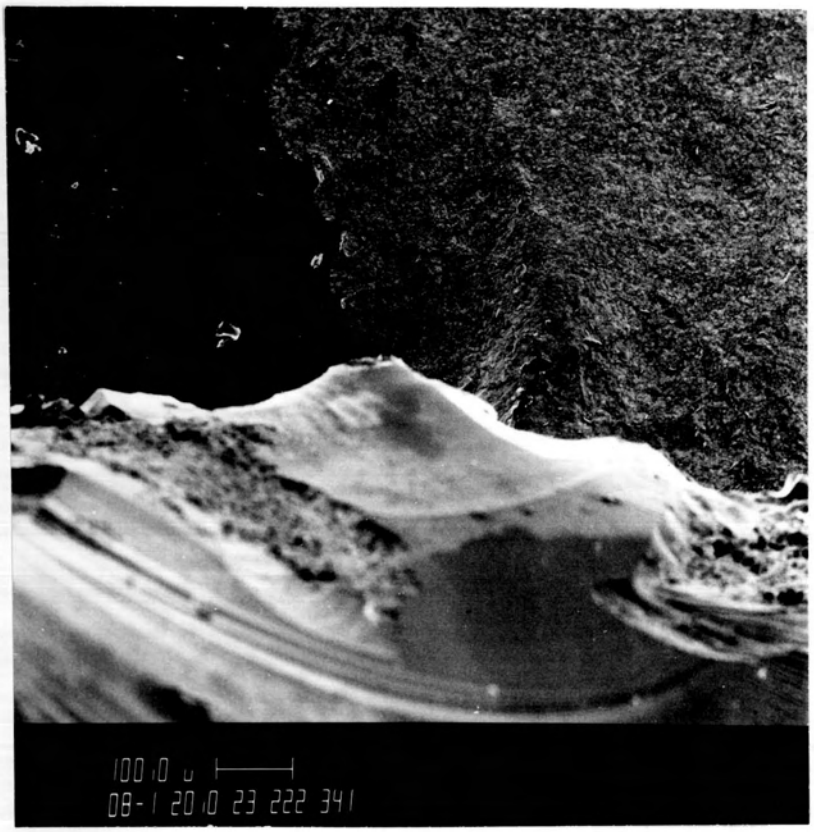
Figure 13

Minute Edge-Damage (A)

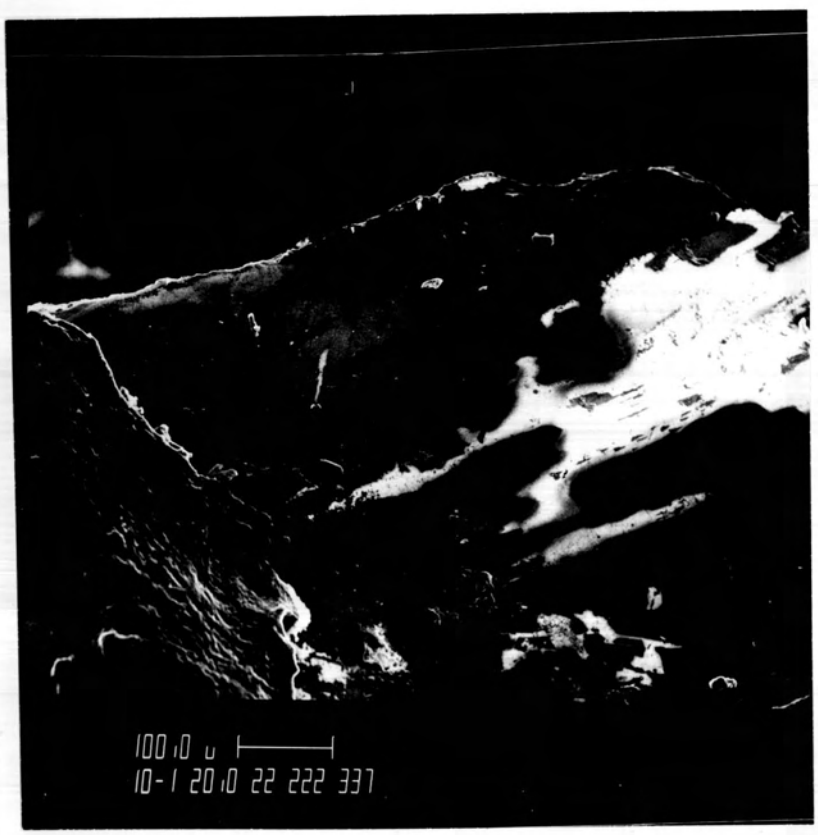
Minute Edge-Damage (B)

Quartz Crystal Flakes Filmed on Scanning Electron Microscope

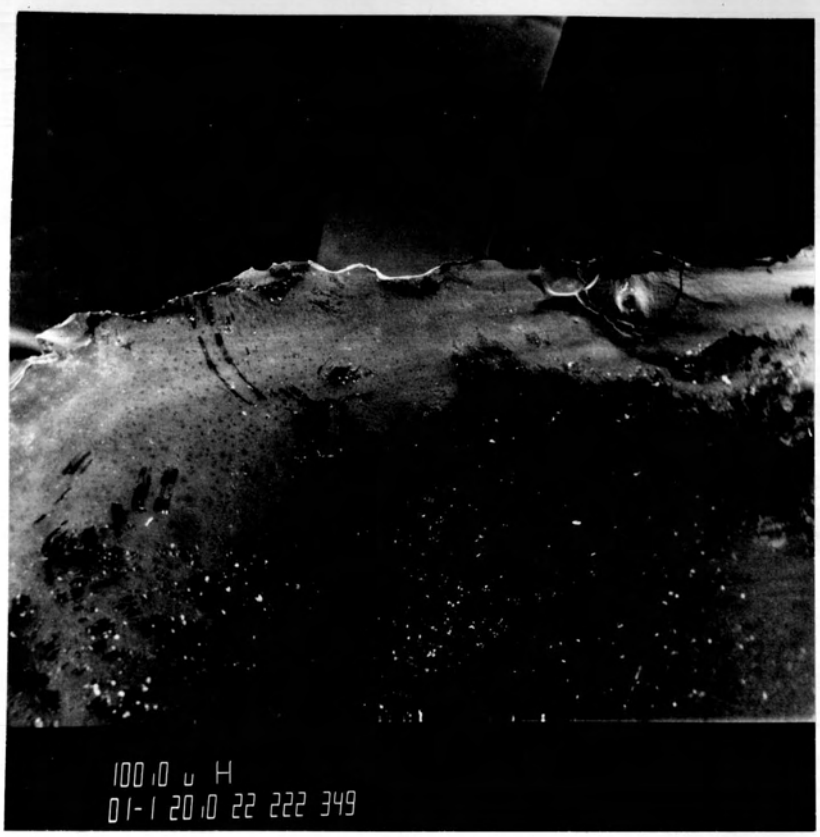
Trench 1 Assemblage 9 (A-B)



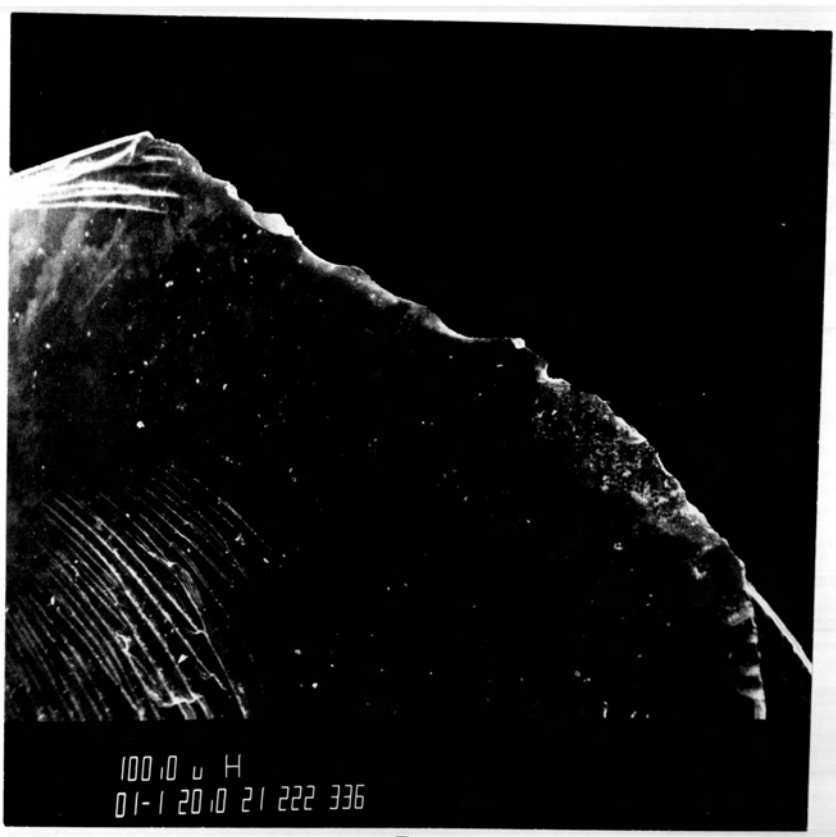
A



B



A



B

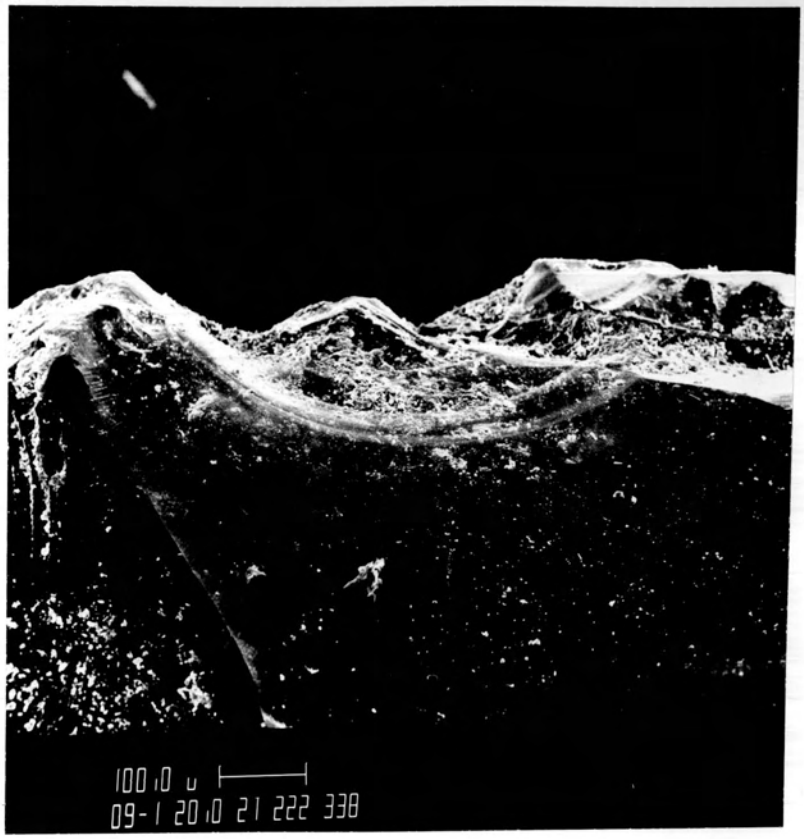
Figure 14

Battered Edge exhibiting Minute Edge-Damage (A)

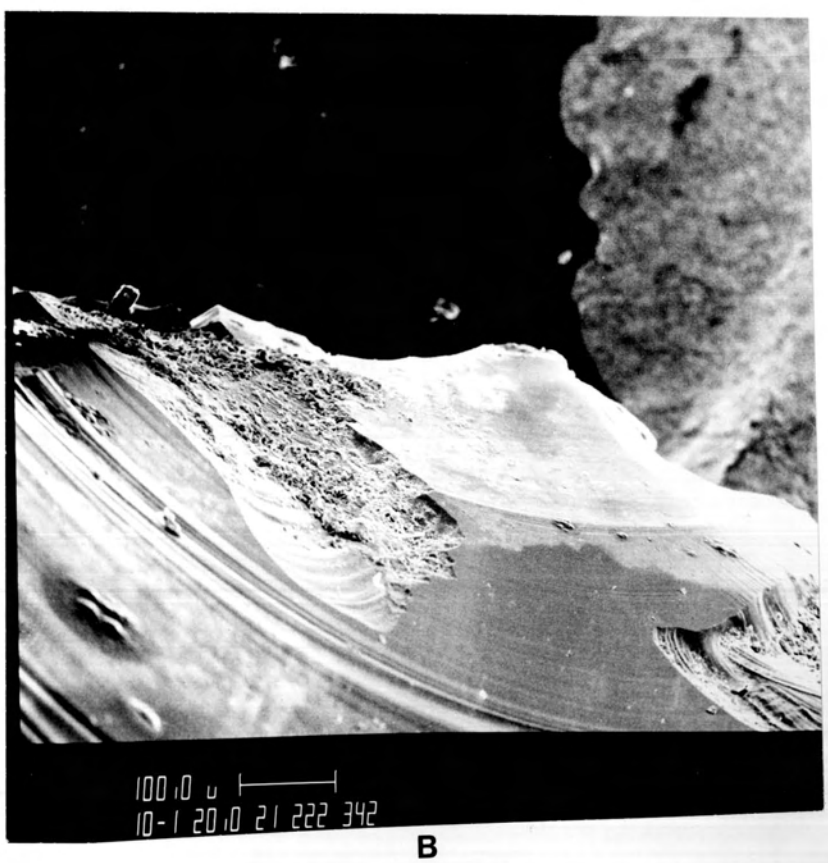
Minute Edge-Damage (B)

Quartz Crystal Flakes Filmed on Scanning Electron Microscope

Trench 1 Assemblage 9 (A-B)



A



B

Figure 15

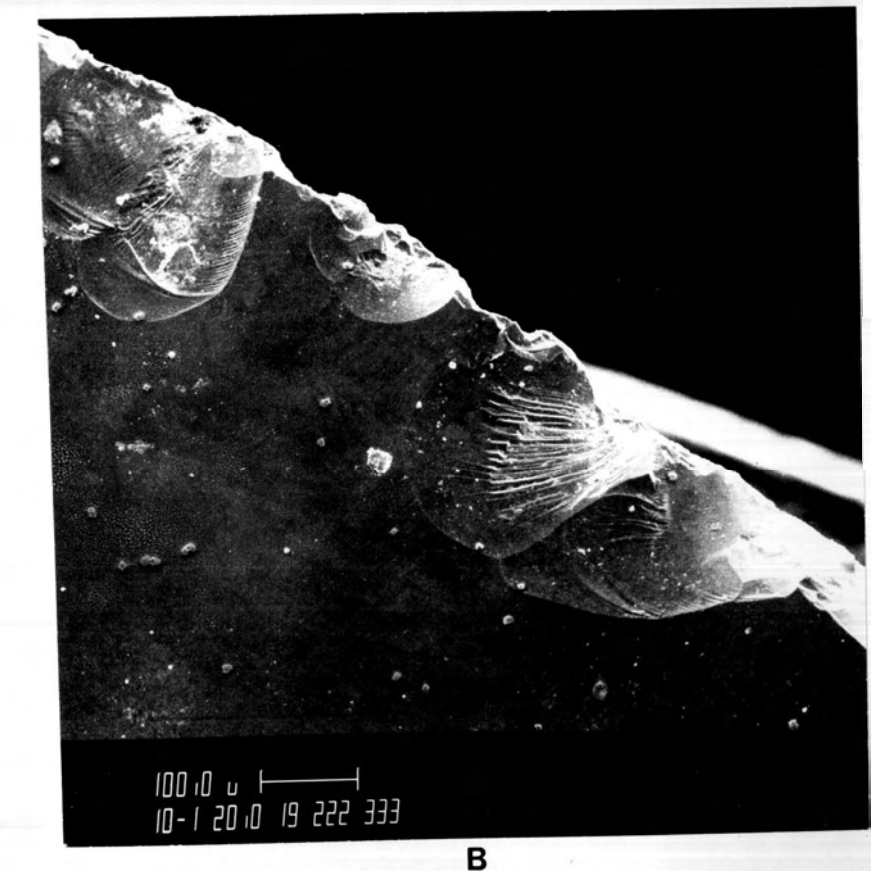
Minute Edge-Damage (A)

Minute Edge-Damage (B)

Quartz Crystal Flakes Filmed on Scanning Electron Microscope

Trench 1 Assemblage 9 (A-B)

A



B

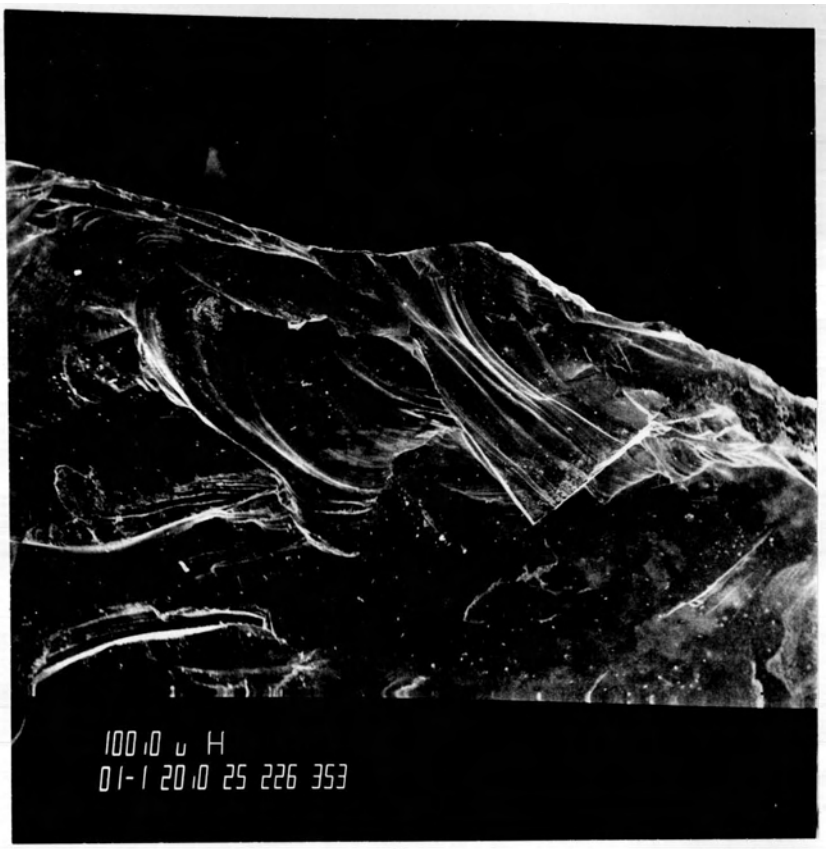
Figure 16

Battered Face and Edge (A)

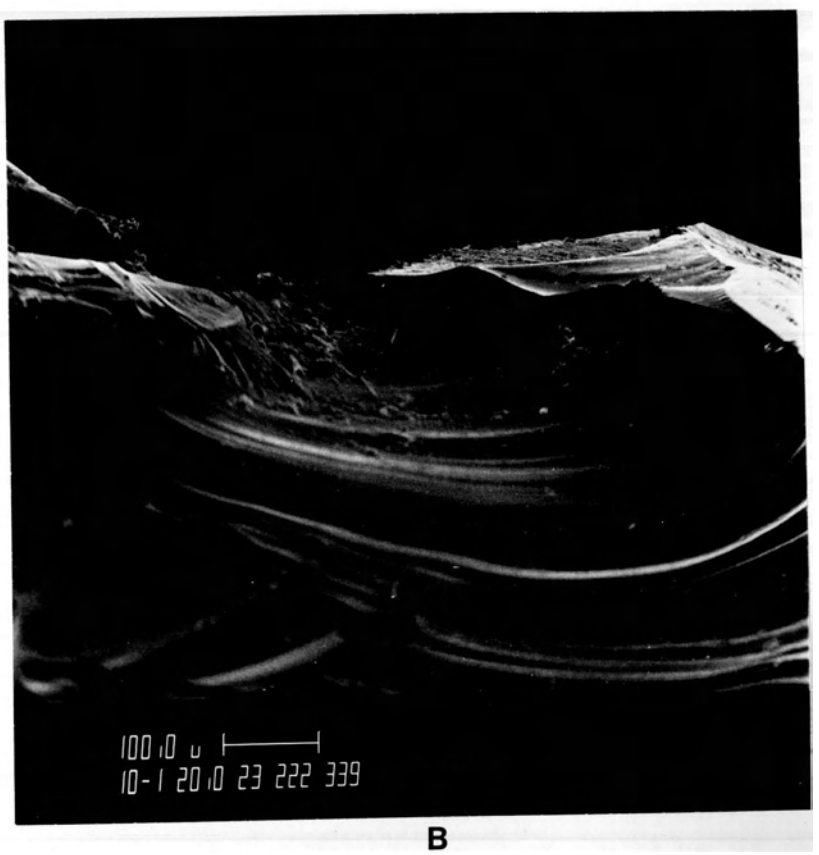
Battered Face (B)

Quartz Crystal Flakes Filmed on Scanning Electron Microscope

Trench 1 Assemblage 9 (A-B)



A



B

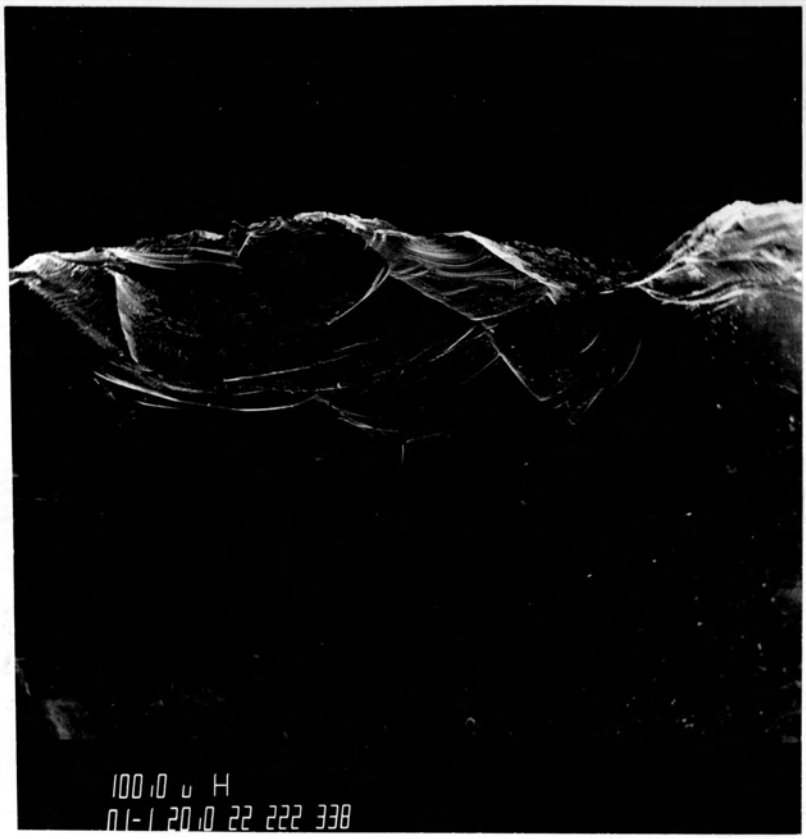
Figure 17

Battered Edge exhibiting Edge-Damage (A)

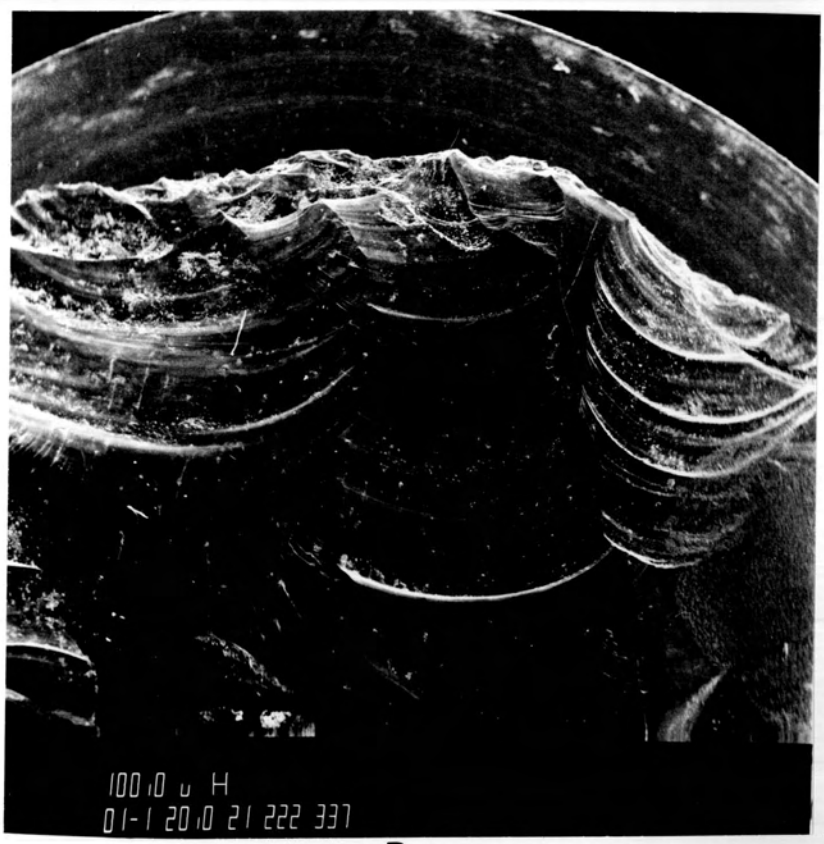
Battered Face and Edge exhibiting Minute Edge-Damage (B)

Quartz Crystal Flakes Filmed on Scanning Electron Microscope

Trench 1 Assemblage 9 (A-B)



A



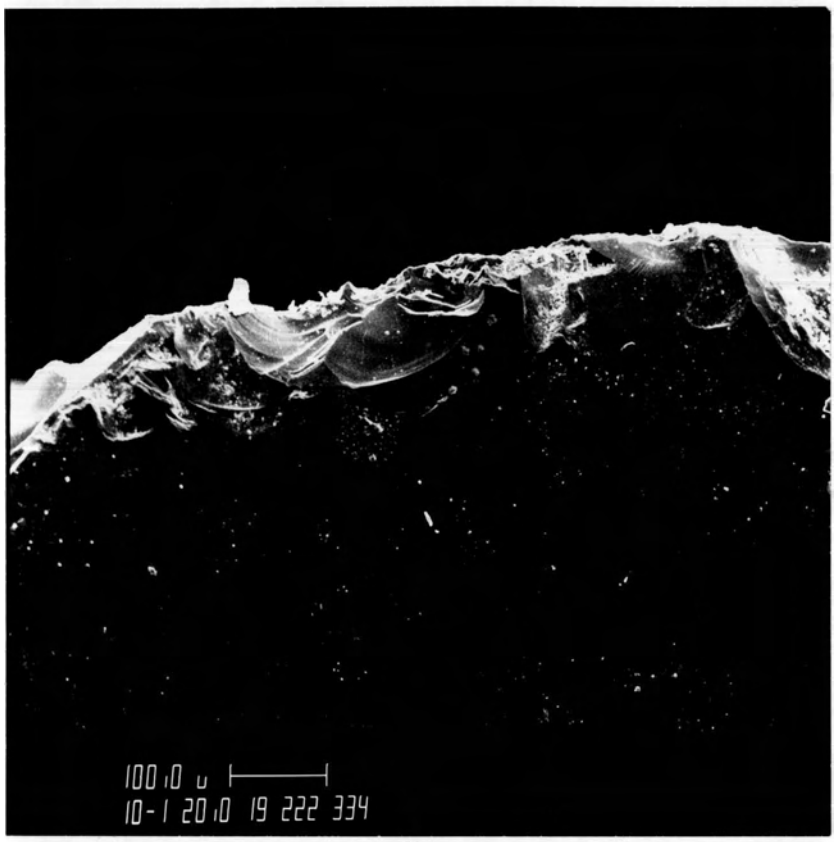
B

Figure 18

Minute Edge-Damage (A)

Quartz Crystal Flake Filmed on Scanning Electron Microscope

Trench 1 Assemblage 9 (A)



A

scars were present on most specimens and this was considered to be evidence of battering only. The other pattern of damage noted was that all edge-damaged quartz crystal flakes checked exhibited a pattern of 80-120 micron diameter flake scars along a damaged edge, but only a smooth surface on their undamaged edges. This is the classic "nibbling" that archaeologists have noted, on the edges of flakes usually considered utilized, for decades.

Unmodified Obsidian Flake

There was one unmodified obsidian flake found. It is an irregularly shaped flake, and measures 15 mm. X 6 mm. X 4 mm.

Obsidian Flakes derived from Bipolar Cores

There were two such obsidian flakes recovered. The first, shows a clear bulb of percussion and the scars of two flakes removed from the opposite side of this bulb. It is roughly triangular in shape. The other flake is smaller. It appears to be semi-circular at one end and proceeds to a sharp point at the other. It exhibits bifacial flake scars along the semi-circular edge. They range from 16-19 mm. in length, 11-13 mm. in width and 4-7 mm. in thickness.

Edge-damaged Flakes

The 125 artifacts in this class are very broadly defined as those flakes found exhibiting no deliberate unifacial or bifacial retouch but possessing some evidence of edge-damage. No patterns of shape or size could be detected under examination. They appear to be merely flakes that were broken off during the course of manufacturing some other item. Most are made of coarse basalt but a few are made from quartzite and chert. They range in length from 14-87 mm., in width from 11-69 mm. and in thickness from 4-17 mm. (Fig.19). Percy's class is utilized flakes.

Edge-damaged Spalls

There were six such spalls found. Five of them are made of basalt and are discoidal in shape. These artifacts show edge-damage along a portion of their long curved edge. The last specimen in this class is made from agate and appears to be beaked. Damage is evident on the tip of the beak and along the edge adjacent to the beak. They range in length from 23-123 mm., in width from 21-88 mm. and in thickness from 6-31 mm. (Fig.20). This artifact class fits best with Percy's split cobble implements.

Figure 19

Edge-Damaged Flakes (A-G)

Trench 1 Assemblage 9 (A-G)

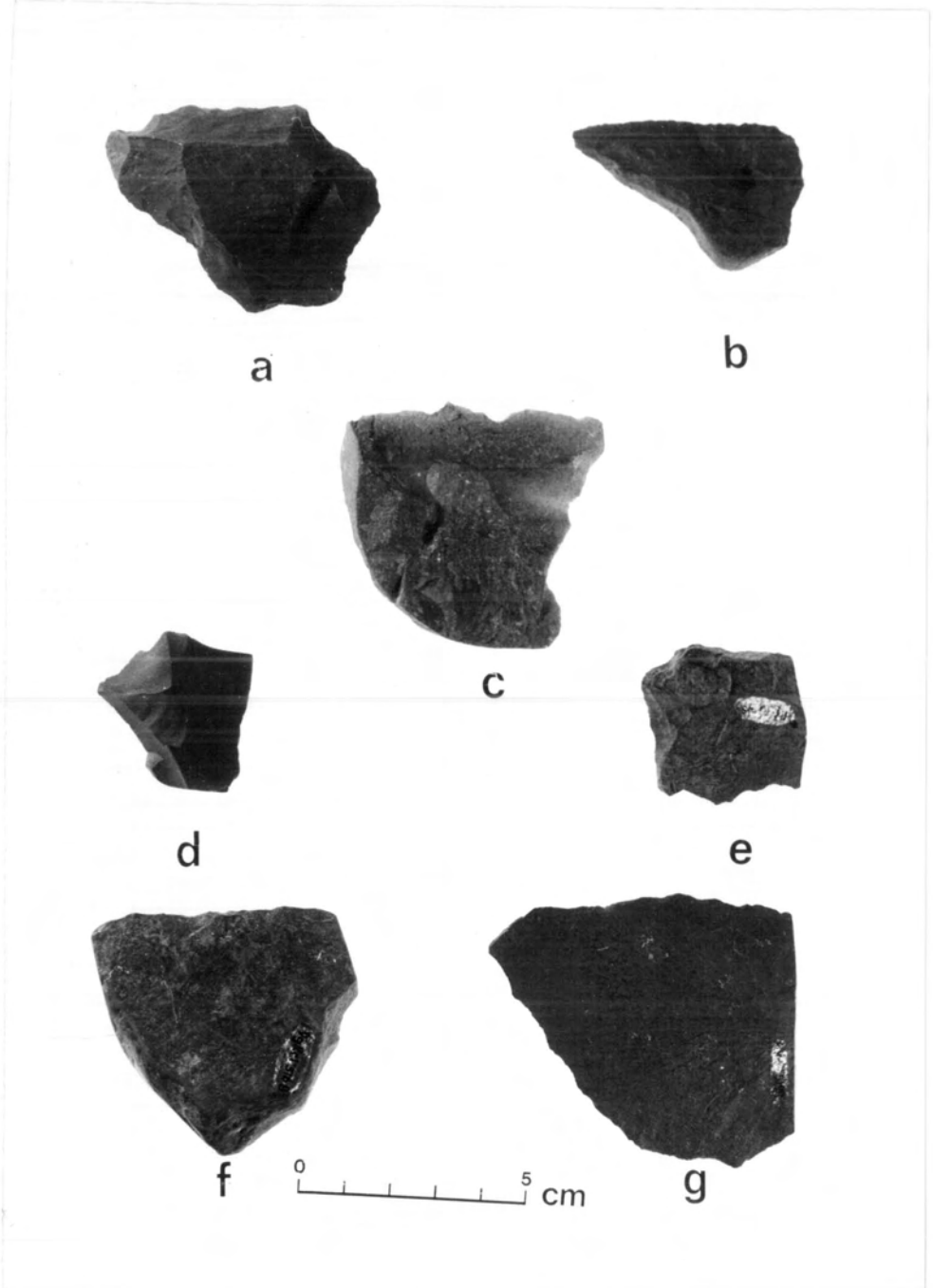
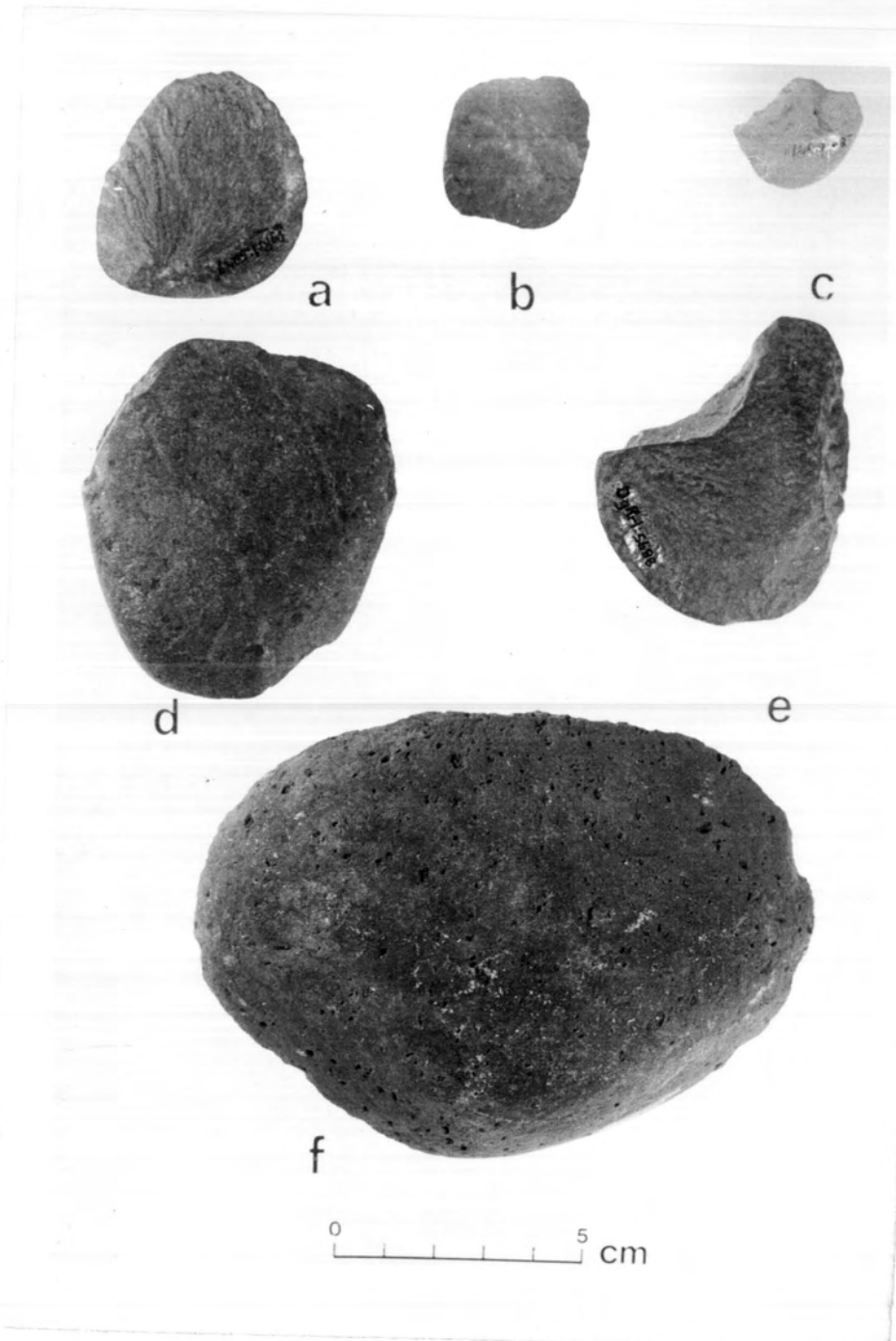

a
b
c
d
e
f
g
0
5
cm

Figure 20

Edge-Damaged Spalls (A-F)

Trench 1 Assemblage 9 (A-F)


a
b
c
d
e
f
0
5
cm

Unifacially Retouched Flakes

These 27 artifacts all exhibit a minimum of two flake scars resulting from unifacially removed flakes. Three artifacts appear to be end-struck small pebbles with several flakes removed from each end. They range from 19-84 mm. in length, 17-66 mm. in width, and in thickness from 5-24 mm. Seven probable scrapers are unifacially retouched on the side and are quite large. Three flakes are triangular in outline and appear to be unifacially retouched along their longest edge. All three show multiple flake scars. One flake shows unifacial retouch along both of its long curved sides. Another is thicker and shows evidence of unifacial retouch along one face only. Two artifacts in the artifact class of Unifacially Retouched Flakes are spall fragments exhibiting retouch on a portion of their edges only. Both are semicircular in shape. There is one specimen which is an irregularly shaped flake possessing a single curved edge on which several flakes have been removed. The artifact could have seen use as an end scraper. All the artifacts in this class are made from basalt except four. The first is an edge-damaged obsidian flake. It is rectangular in outline and shows damage along one face only. The second is lanceolate in outline with a flat base. It is made from light brown chalcedony and exhibits four unifacially removed flakes along one face only. Below these flake scars can be seen the

remains of the bulb of percussion caused when the primary flake was removed from its core. Two others are made from chert. A further ten artifacts exhibit unifacial retouch along one face only but do not fit in any of the above classes due to their irregular shape(Fig.21).

Bifacially Retouched Flakes

There are four artifacts which I have classed as bifacially retouched flakes present in the total assemblage. All are quite small and made of basalt. They range from 23-54 mm. in length, 13-37 mm. in width, and 8-11 mm. in thickness. Two exhibit several flake scars on one side and a single flake scar on the other side. No apparent edge-damage is evident on either of them. The other two exhibit several flake scars, evidence of bifacial retouch along a single edge (Fig.22). This class and the one just previously described fit best with Percy's retouched or worked flake class.

Cores

A total of 53 items recovered were catalogued as cores or core remnants. They range in size from those which have been so systematically reduced that no futher useful flakes could be removed to fist sized specimens on which several flakes have

Figure 21

Unifacially Retouched Flakes (A-I)

Trench 1 Assemblage 9 (A-I)

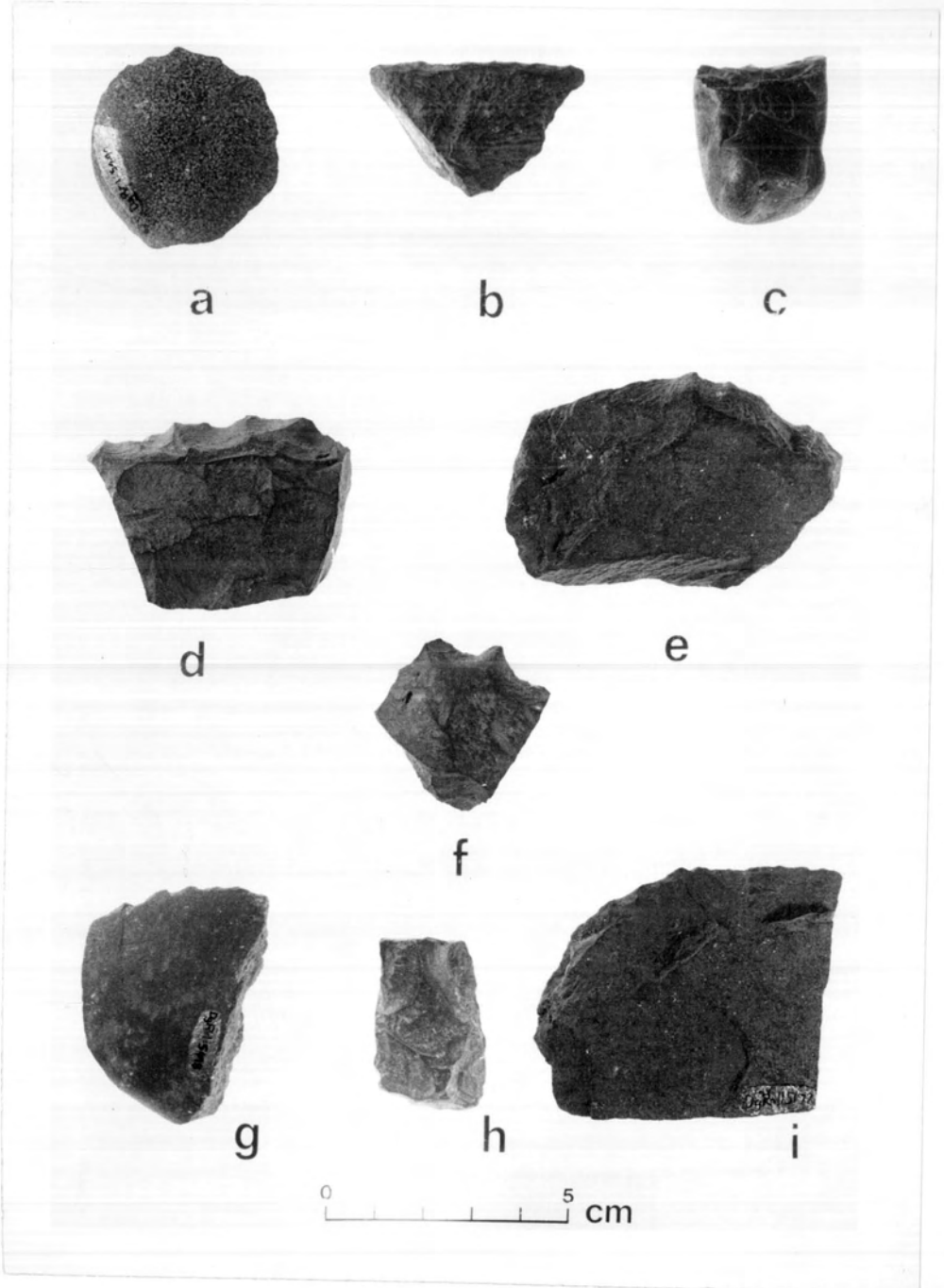

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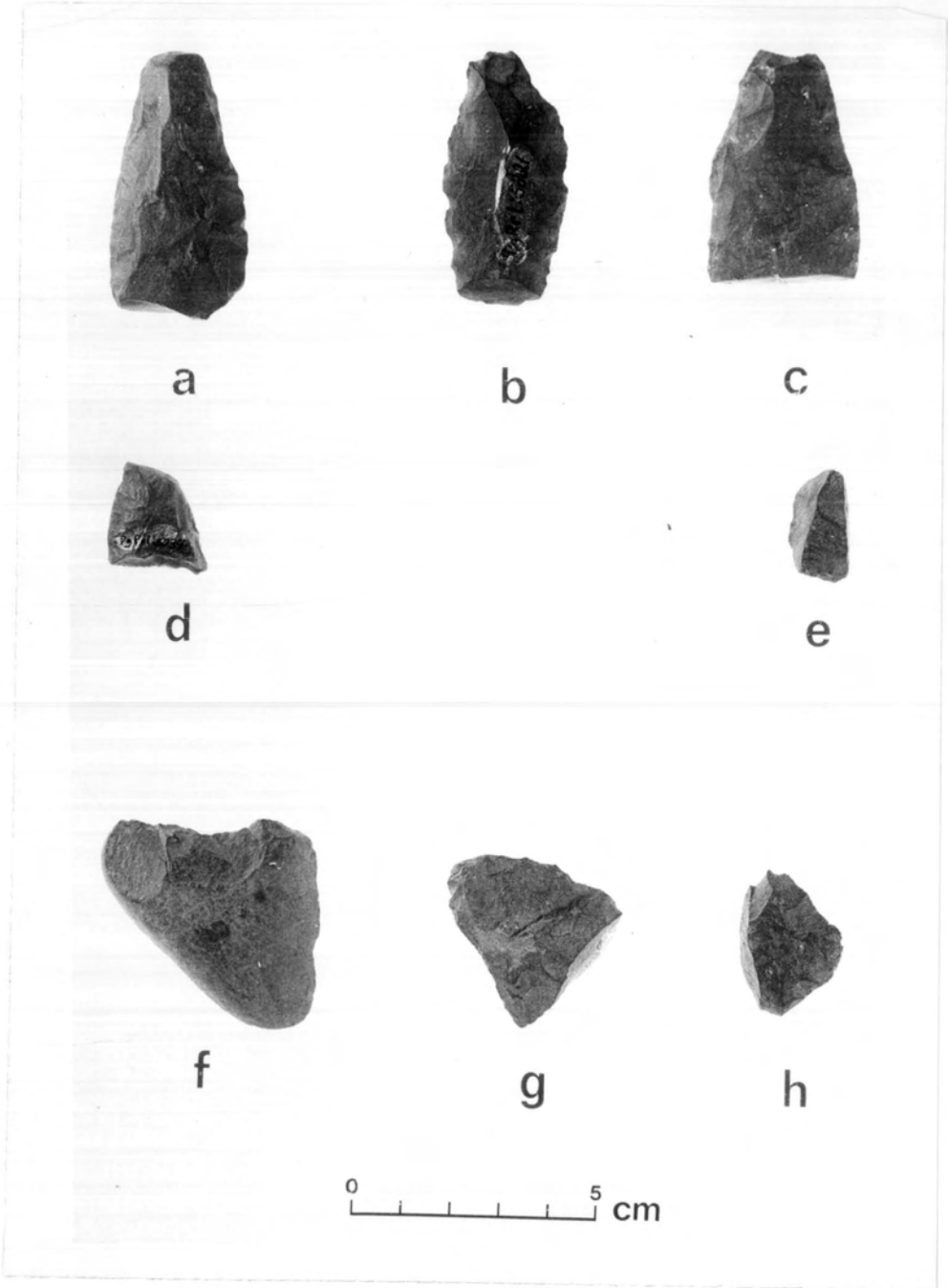
Figure 22

Bifacially Retouched Stone Knives (A-D)

Bifacially Retouched Flakes (E-H)

Trench 1 Assemblage 9 (A-H)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been removed. None appears to have been used as tools and no apparent pattern of flaking is evident on them. They vary greatly in shape and several different materials are represented also. These include both coarse grained and fine grained basalt of several shades, as well as a few examples of chert, quartzite, agate, and jasper. They range in length from 31-99 mm., in width from 16-65 mm., and in thickness from 11-48 mm. (Fig.23). Percy refers to this class as cores also.

Chipped Slate Knives

There were ten chipped slate knives recovered. Nine of them are discoidal in shape. The last specimen is ovoid in shape. All of these artifacts are made from slate and all show extensive battering around their edges. They range in length from 54-111 mm., in width from 35-61 mm., and in thickness from 7-14 mm. (Fig.24). Percy's equivalent type is ulu-like objects.

Bifacially Retouched Stone Knives

This class contains four specimens, all of which are leaf-shaped in cross section and all exhibit both primary and secondary flaking on both long sides. None of the four is complete and lack the extremities in all cases. Some of the secondary retouch is the result of deliberate pressure flaking

Figure 23

Cores (A-F)

Trench 1 Assemblage 9 (A-F)

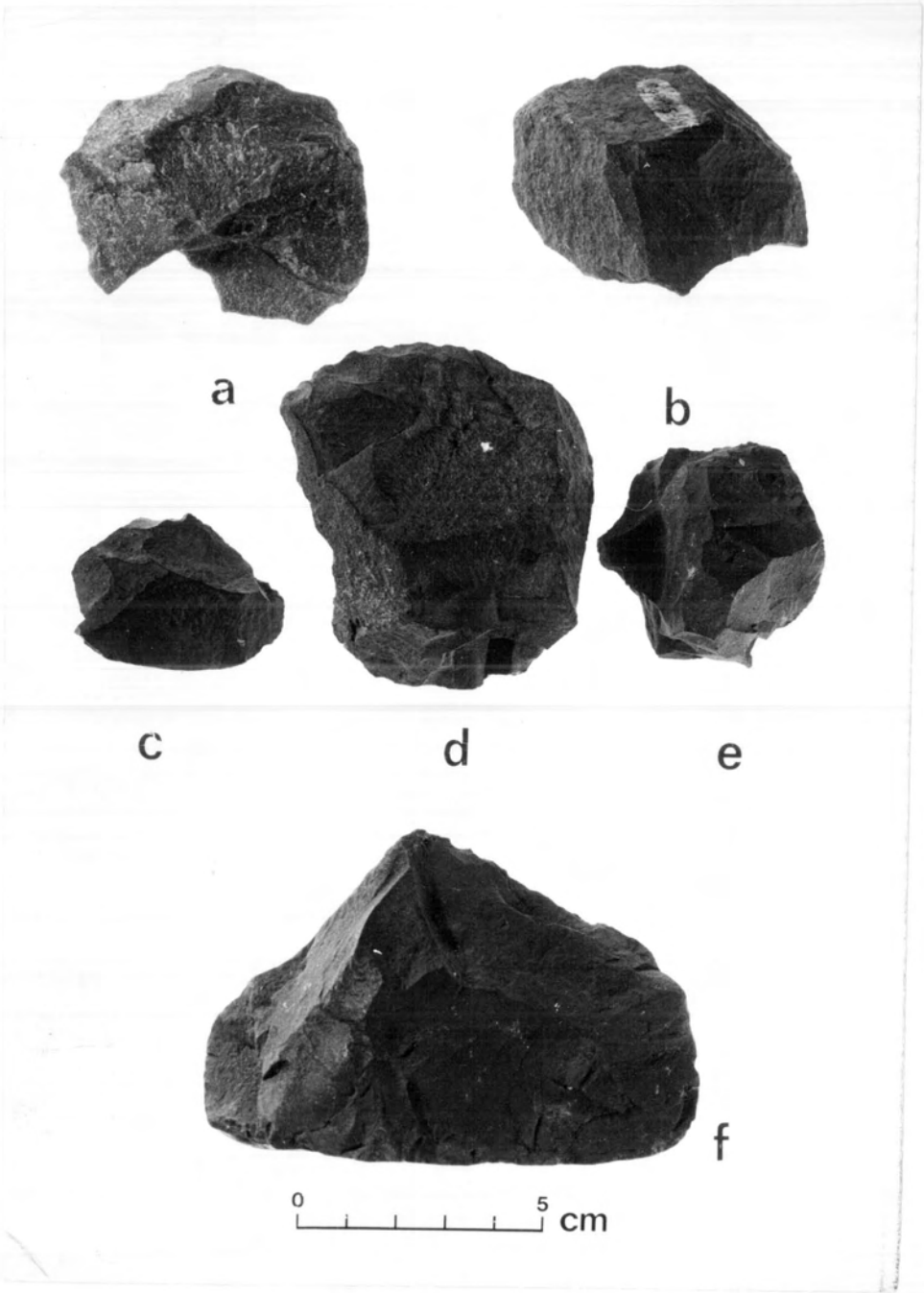
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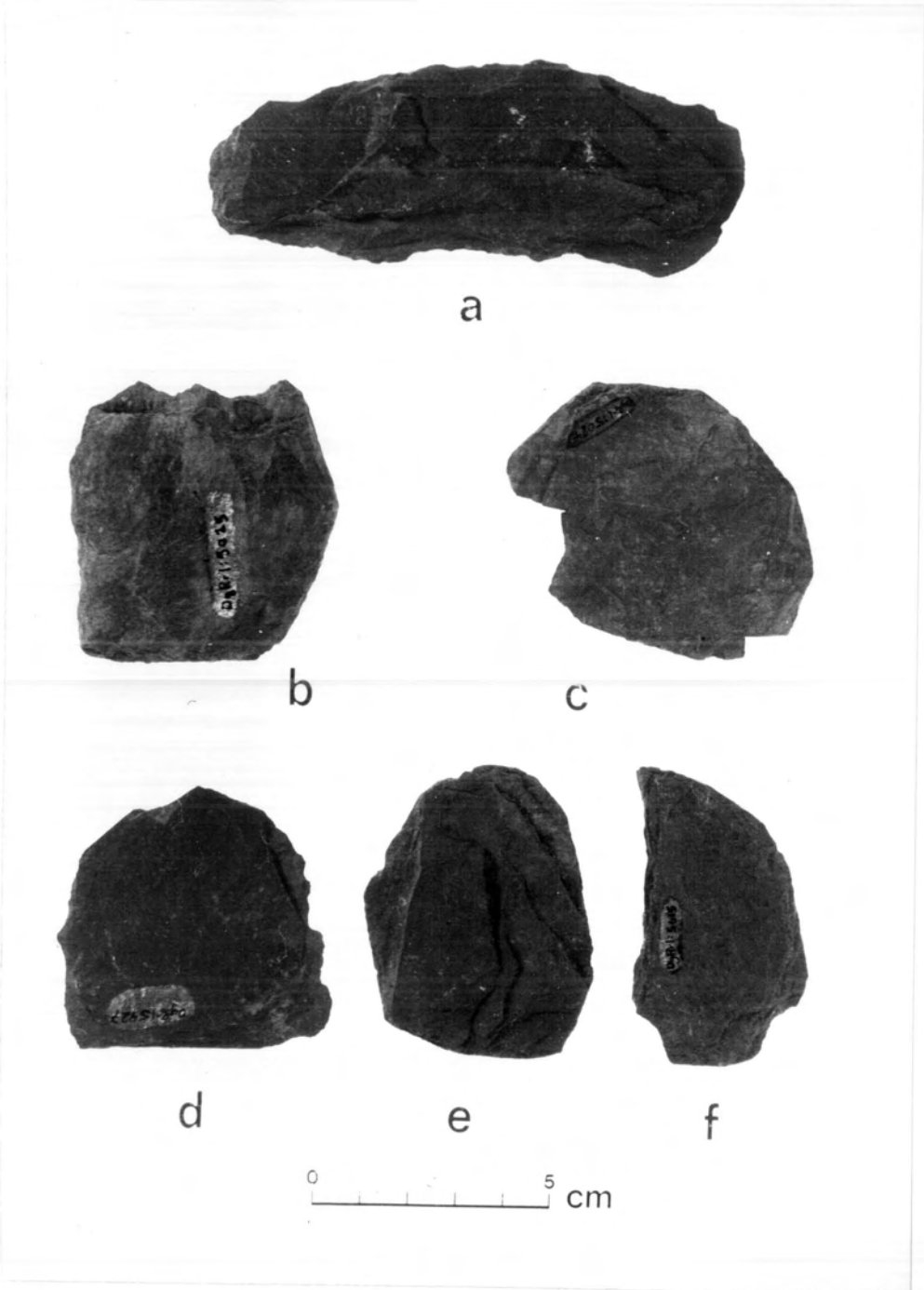
Figure 24

Chipped Slate Knives (A-F)

Trench 1 Assemblage 9 (A-F)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while some is the result of use-retouch (Fig.22). This differs from edge-damage in that it is considerably smaller diameter flake scars. They range from 27-54 mm. in length, 20-30 mm. in width and 7-11 mm. in thickness. Percy refers to this type as bifaces other than points.

Unifacially Retouched Heavy Duty Cutting and Scraping Tools

Eight specimens of this type are present. All, except two are made from coarse basalt. One of these two exceptions is composed of quartzite and the other of chert. Five are discoidal in shape. Three are more rectangular in outline and exhibit unifacial retouch along one edge only. They range in length from 53-112 mm., in width from 55-74 mm. and 17-39 mm. in thickness(Fig.25). Percy's equivalent type is backed scraper knives.

Split Cobble Tools

Two split cobble tools were found. They are made of basalt and range from 120-152 mm. in length, 93-105 mm. in width and 37-69 mm. in thickness. The first is roughly triangular in outline and shows several flakes bifacially removed from both faces (Fig.26). The other one is roughly rectangular in shape and shows several flakes removed unifacially (Fig.27). Percy's equivalent type is split cobble implements.

Figure 25

Unifacially Retouched Heavy-Duty Cutting and Scraping Tools (A-E)

Trench 1 Assemblage 9 (A-E)

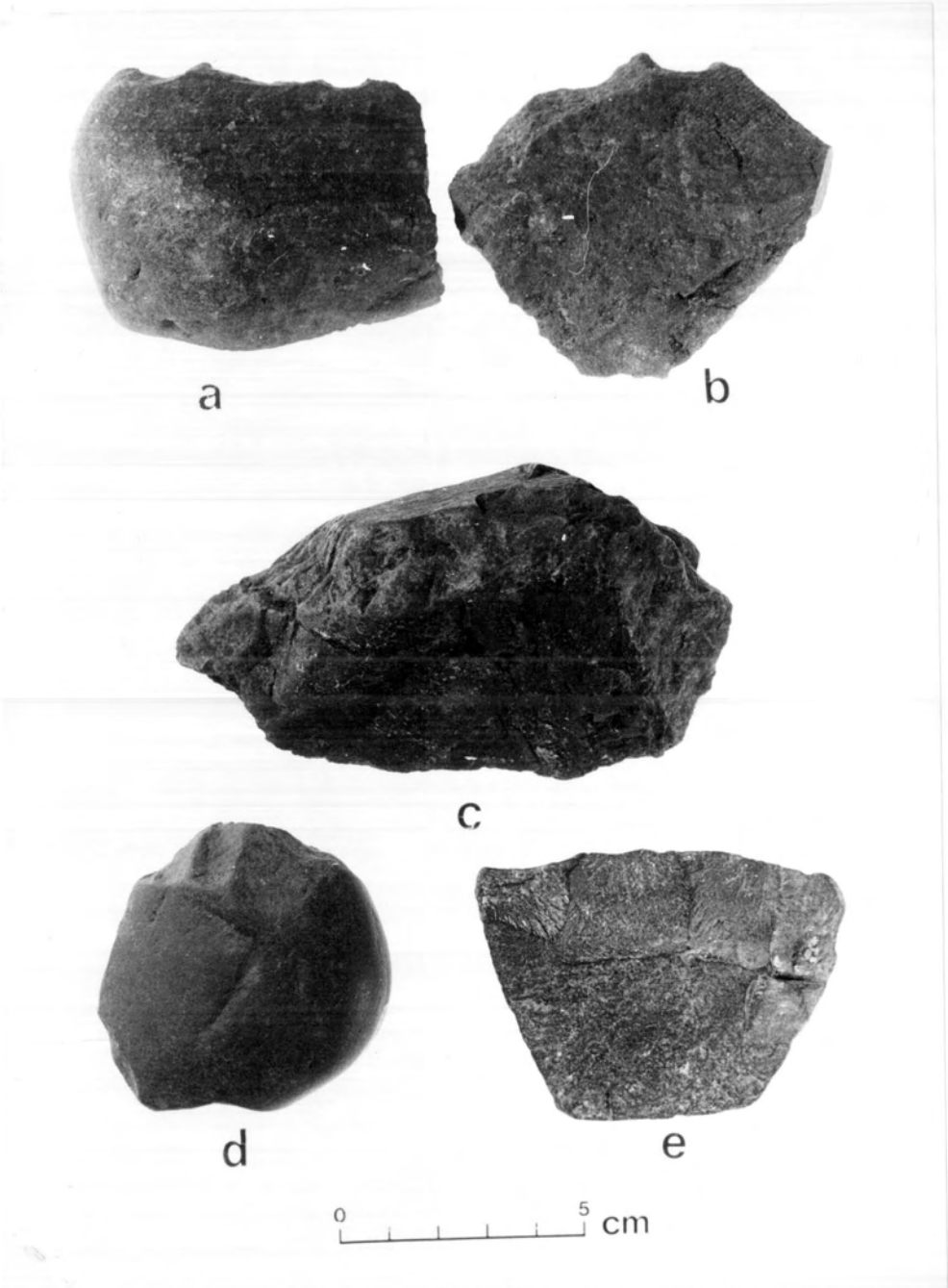
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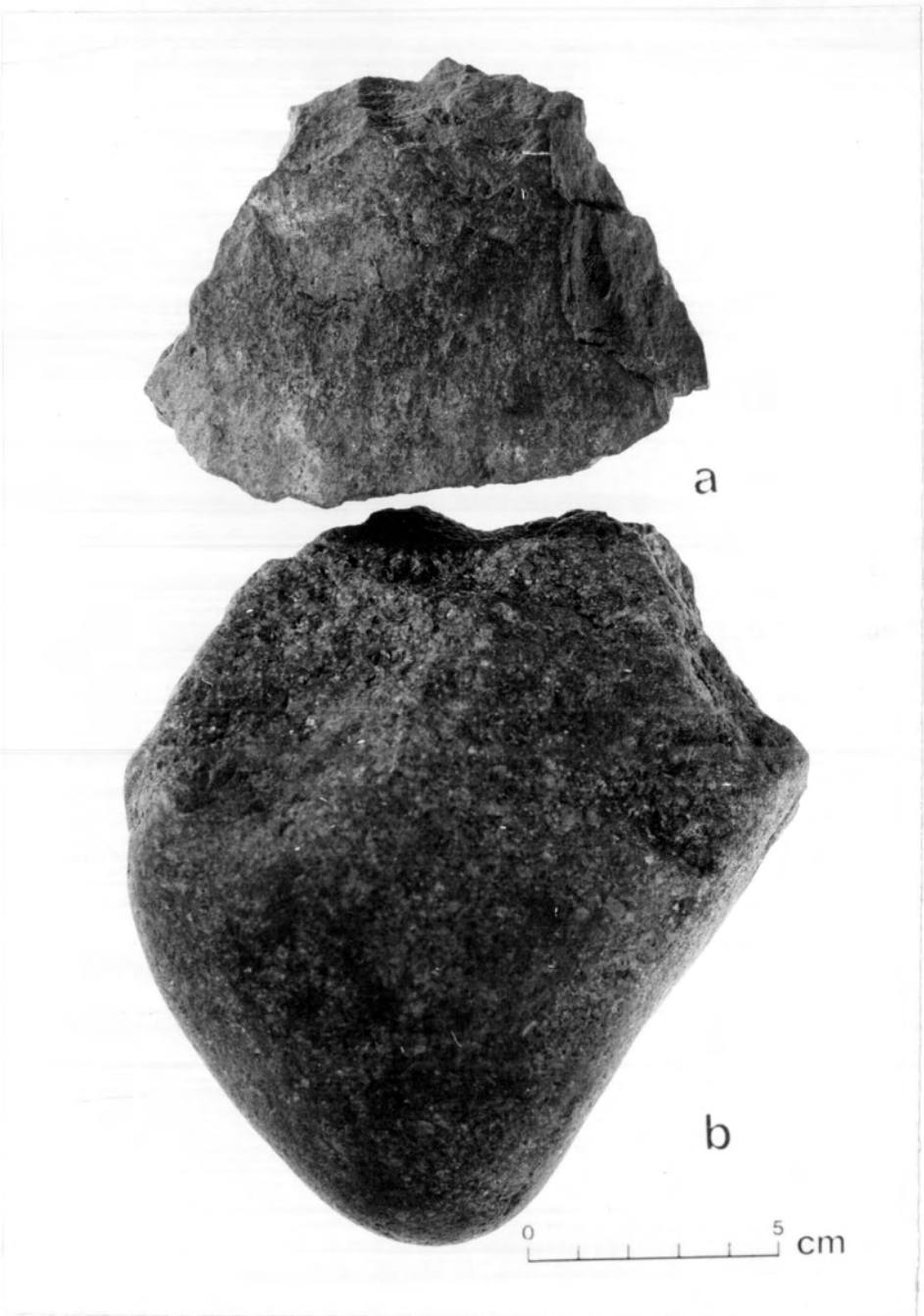
Figure 26

Split Cobble Tool (A)

Pebble Chopper (B)

Trench 1 Assemblage 9 (A-B)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cm

Figure 27

Split Cobble Tool (A)

Trench 2 Assemblage 4 (A)

a

0 5 cm

Pebble Chopper

One artifact was recovered which has been categorized as a pebble chopper. A large fire spall exists on one side of it. Several flakes have been removed opposite the fire spall. It measures 142 mm. in length, 110 mm. in width and 61 mm. in thickness. Percy's type is small unifacial pebble tools.

Small Unifacially Flaked Cutting and Scraping Tools

Present in this class are four specimens. They have flakes removed unifacially from the edge of a naturally flat surface. They range from 62-78 mm. in length, 31-62 mm. in width, and 13-47 mm. in thickness. One example is oval in outline and exhibits flake scars from retouch on its long curved edges. Three are made of basalt and one of quartzite (Fig.28).

Small Bifacially Flaked Cutting and Scraping Tools

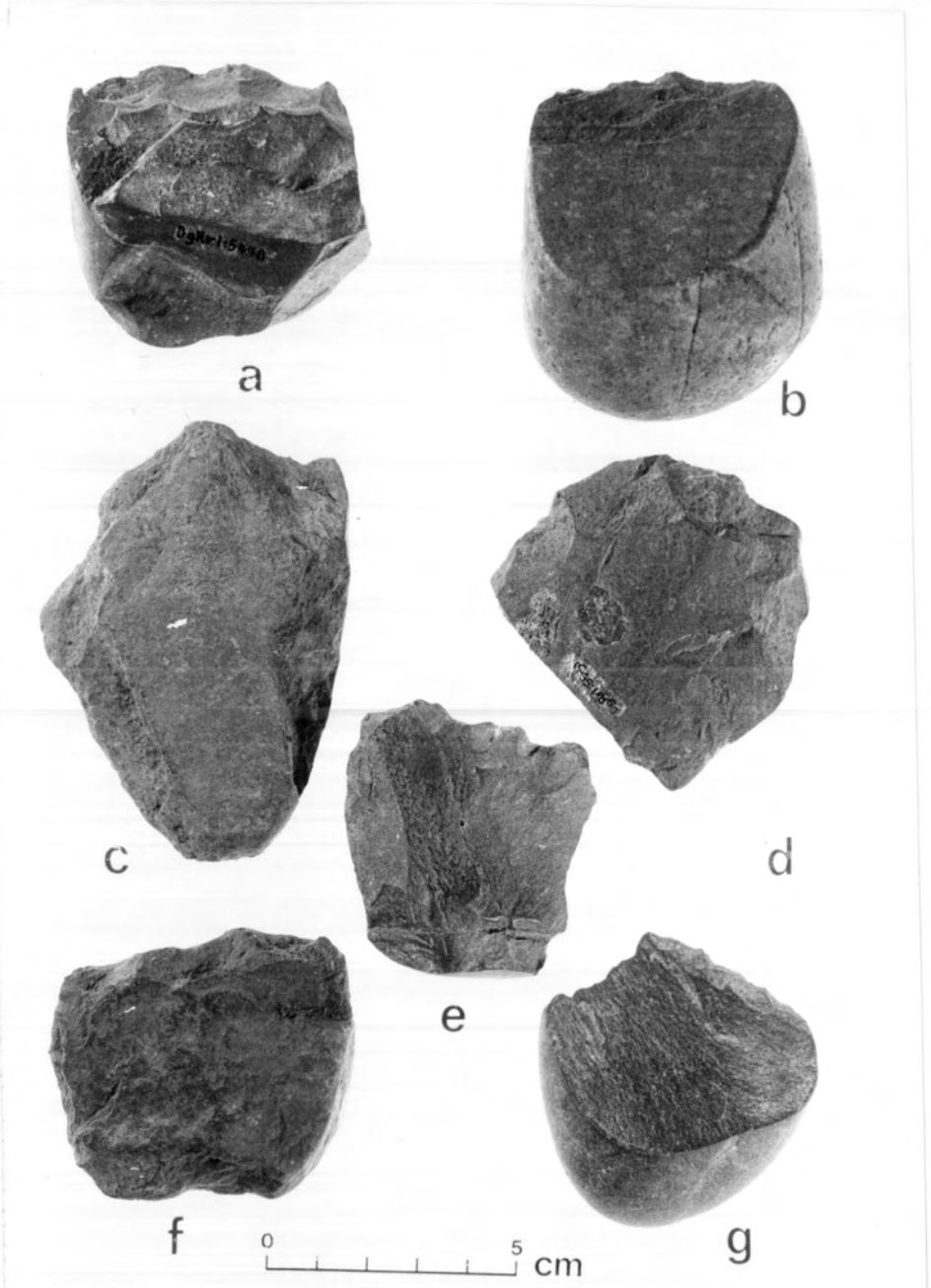
All five artifacts within this class exhibit several flake scars removed bifacially from one of their edges. All five cases are beaked in the centre and taper off to the sides. None of these tools is very large and range in length from 56-85 mm., in width from 54-60 mm., and in thickness from 17-26 mm. All are made of dark basalt, except one which is made of a green basalt. This type and the one just described above best fit with Percy's retouched or worked flake type (Fig.28).

Figure 28

Small Unifacially Flaked Cutting and Scraping Tools (A-B)

Small Bifacially Flaked Cutting and Scraping Tools (C-G)

Trench 1 Assemblage 9 (A-G)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Exhausted Bipolar Cores

There are three examples of small exhausted cores exhibiting evidence of bipolar percussion. All are small and two are made of basalt, and one of gabbro. They range from 30-76 mm. in length, 22-50 mm. in width and in thickness from 9-26 mm. The one made of greenish gabbro is largest. Numerous flakes have been removed bifacially from the ends by the technique of bipolar percussion (Fig.29). Percy's equivalent type is chipped stone wedges.

Gravers

One artifact was classed as a graver because of its sharp beaked shape and the fact that the edges of the beak show evidence of damage. A number of small flakes are removed from the sides of the beak and the tip is also missing (Fig.29:C). This artifact is made from dark green fine grained basalt and measures 49 mm. in length, 48 mm. in width and 14 mm. in thickness. A very small beaked, bifacially flaked agate pebble was recovered. This artifact exhibits unidirectional wear on the tip of the beak. It has several flake scars on both sides

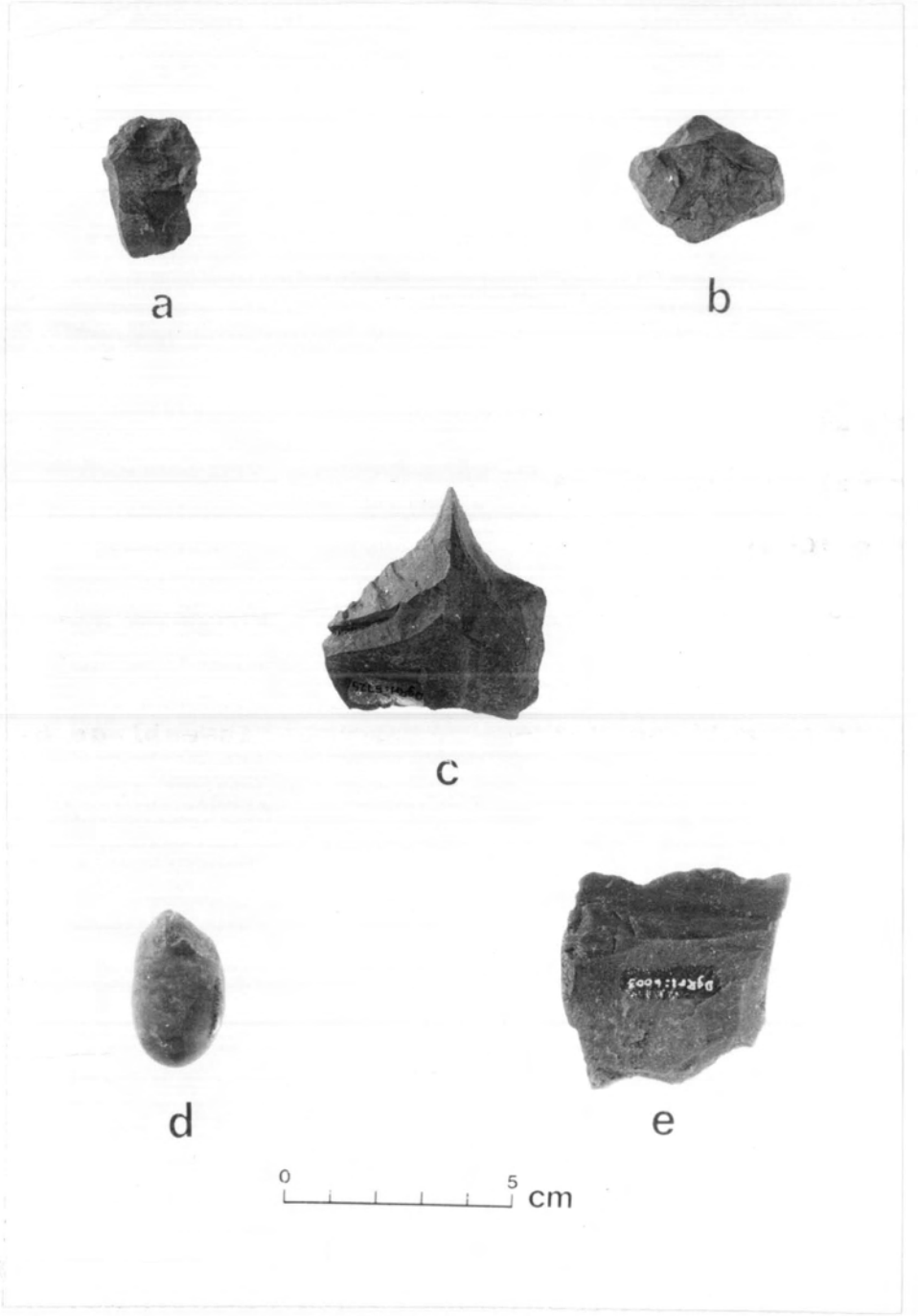
Figure 29

Exhausted Bipolar Cores (A-B)

Gravers (C-D)

Burin (E)

Trench 1 Assemblage 9 (A-D) Trench 2 Assemblage 8 (E)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of the tip which has consequently left the tip quite dull and rounded. The wear pattern takes the form of minute flake scars in one direction from the damaged point. There is no evidence of side wear to indicate use as a puncturing tool. An example of quartz crystal exhibits a single rounded and dulled tip also. A single burin-like flake has been removed from the tip but the rest of the crystal appears to be in its natural state. These range from 34-41 mm. in length, 20-21 mm. in width and 12-14 mm. in thickness (Fig.29).

Burin

A large flake of serpentine has had a corner utilized as a burin. A single large burin spall has been removed and the tip is dulled and rounded. It bears evidence of unifacial flaking along the edge perpendicular to the burin blow. Along this same edge is a notch. This artifact measures 53 mm. X 48 mm. X 15 mm. deep (Fig.29). This type and the one above are classed as gravers by Percy.

Lanceolate Unstemmed Points

A total of eight complete and four fragmented points were classified as Lanceolate Unstemmed Points. The criteria for classification was the presence of a leaf-shape and convex blade edges. The bases were round on five of the points. A large

point was missing its base altogether. The largest point had a roughly diamond shaped outline. The four projectile point fragments were classified due to the similarity of the portions present with the complete points. Two of the fragments were medial portions only. The other two fragments contained the tip also. They ranged from 22-70 mm. in length, 14-24 mm. in width, and from 3-10 mm. in thickness. The materials used include black fine-grained basalt for six of them, white chert for a further two, and finally one each of jade and red jasper (Fig.30). Percy's equivalent type is projectile points type 1.

Lanceolate Basally Thinned Point

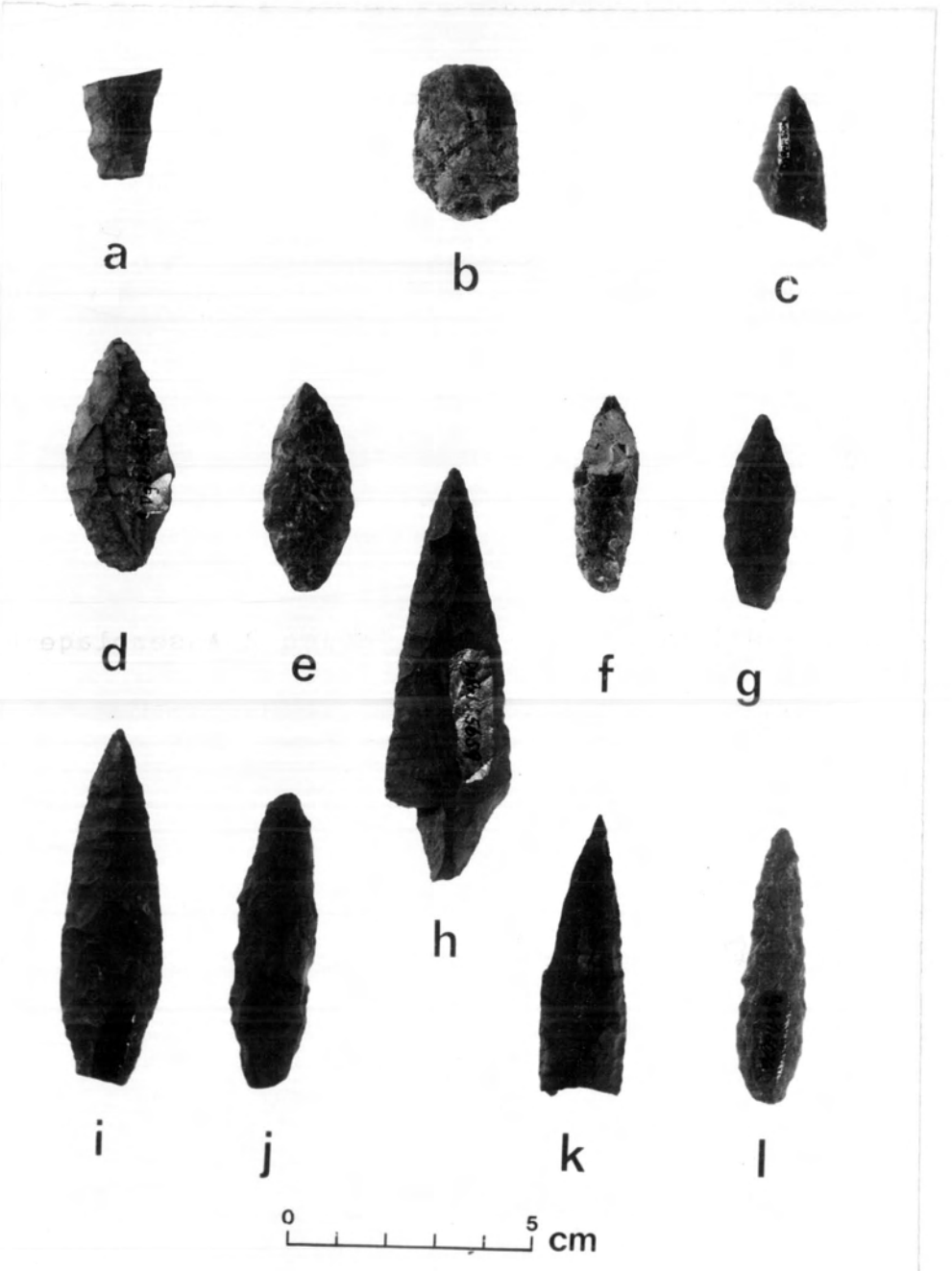
This point is distinctive from the other lanceolate points discussed above because it posesses a basally thinned flat base. It is made from black fine-grained basalt and measures 50.5 mm. long, 17 mm. wide, and 19 mm. thick (Fig.31).

Contracting Stem Points

Thirteen chipped stone contracting stem points were located. eleven of them could be described as possessing keystone-shaped stems. The sides of these stems are slightly convergent with flat or round bases. The shoulders are sometimes small and rounded but there are several examples

Figure 30
Lanceolate Unstemmed Points (A-L)

Trench 1 Assemblage 9 (A-F,H-K) Trench 2 Assemblage 8 (G,L)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cm

Figure 31

Chipped Slate Preform (A)

Small Ground Slate Points (B,C)

Corner Notched Point (D)

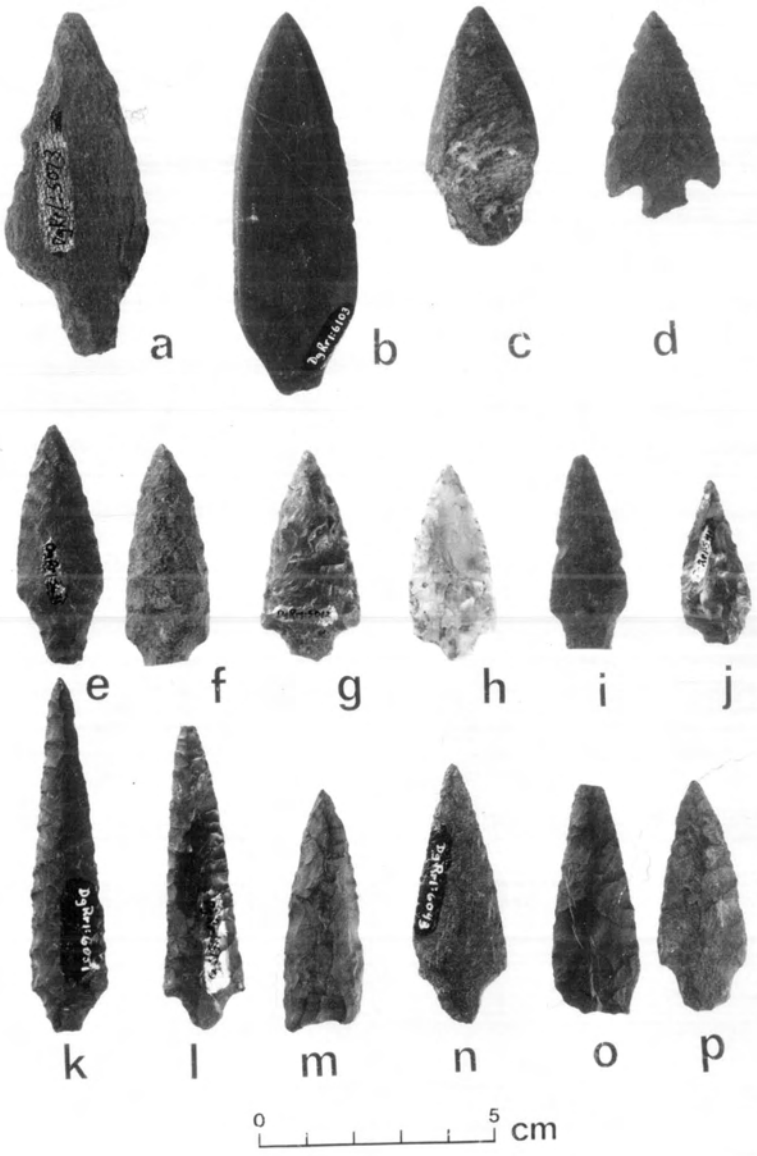
Contracting Stem Points (E-L,N-P)

Lanceolate Basally Thinned Point (M)

Trench 1 Assemblage 9 (A,E-J,L,M,O) Trench 2 Assemblage 3 (C)

Trench 2 Assemblage 4 (K,P) Trench 2 Assemblage 5 (N)

Trench 2 Assemblage 7 (B) Trench 2 Assemblage 8 (D)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possessing quite pronounced shoulders. In all eleven cases, the blades tend toward being parallel on their inferior portions and convex toward their tips. They range in length from 34-82 mm., in width from 15-26 mm., and in thickness from 4-9 mm. (Fig.31,32).

Two points could be called stemmed leaf-triangulate points since they are triangular in shape and possess a contracting stem projecting below the baseline. They range from 43-63 mm. in length, 18-24.5 mm. in width and 4-7 mm. in thickness. One is corner-notched (Fig.31). One final contracting stem point has a partially absent incipient stem with barely definable shoulders and slightly convex sides. The material used in the construction of these five points includes red jasper for two, black basalt for five, and four of multi-colored chalcedony. Percy' equivalent type is projectile points type 2.

Chipped Slate Contracting Stem Preform

An unfinished projectile point was found which is roughly triangular in form. It has slightly convex sides to its stem and a flat base. The shoulders are quite rounded. Its measurements are 72 mm. long, 31 mm. wide and 5.5 mm. thick. It appears to have been deposited just prior to its final manufacturing step, that of grinding the edges to the desired shape (Fig.31). Percy's equivalent type is chipped preforms.

Figure 32

Large Lanceolate Contracting Stem Point (A)

Small Lanceolate Contracting Stem Point (B)

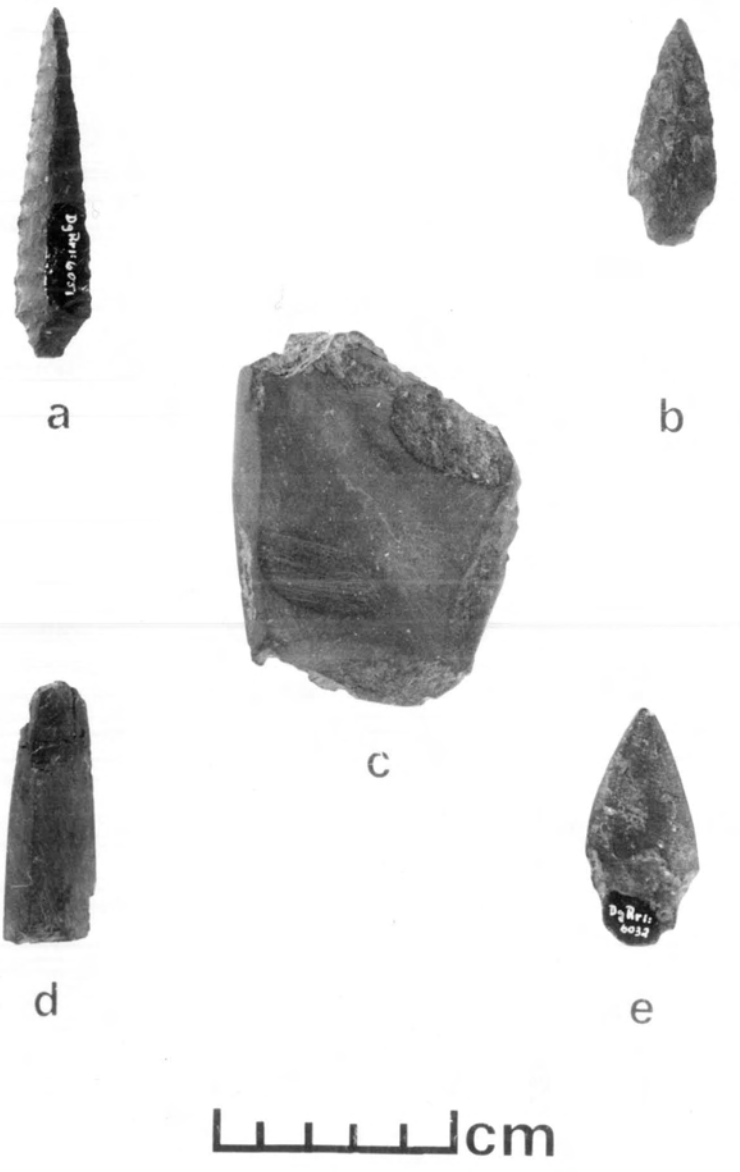
Thick Ground Slate Knife (C)

Large Ground Slate Point (D)

Small Ground Slate Point (E)

Trench 1 Assemblage 9 (D) Trench 2 Assemblage 1 (C)

Trench 2 Assemblage 3 (E) Trench 2 Assemblage 4 (A-B)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Notched Flake

A single example of this class was recovered. A large notch has been unifacially placed along one edge. The artifact itself is a large spall fragment of serpentine, irregular in outline and overall shape. This artifact measures 123 mm. long, 89 mm. wide and 21 mm. thick (Fig.33). Percy's equivalent type is scrapers type 1.

Miscellaneous Flaked Stone

A single spall fragment of serpentine was recovered that possessed two unifacial flake scars. No evidence of utilization was evident and so the specimen was classed as an example of miscellaneous flaked stone. It measures 85 mm. long, 66 mm. wide and 19 mm. thick (Fig.33).

Artifact Category: Pecked and Ground Stone

Cobble Stone Bowls

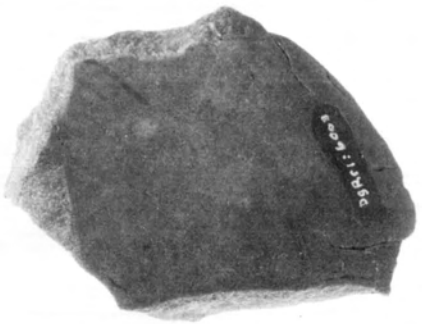
Two small examples of cobble stone bowls were recovered. The first is a small natural beach cobble that has had an ovoid depression measuring 42 mm. X 43 mm. X 8 mm. deep pecked into one surface. The surface opposite the depression is naturally

Figure 33

Miscellaneous Flaked Stone (A)

Notched Flake (B)

Trench 2 Assemblage 5 (B) Trench 2 Assemblage 8 (A)



a

b

0 5 cm

flat so that the bowl is stable when placed on a flat surface. The other example is somewhat trapezoidal in outline when placed with either one of its flat sides downward. Both sides exibit an ovoid depression. Its largest depression measures 50 mm. X 41 mm. X 7 mm. deep. The depression on the opposite side is very shallow and measures 31 mm. X 32 mm. X 3 mm. deep. Both bowls are made of dark basalt and range from 59-84 mm. in length, 52-60 mm. in width and 31-39 mm. in thickness (Fig.34).

Hammerstone

Two small crude hammerstones were recovered. Both are naturally formed ovoid pebbles with a number of small flake scars detached on both ends through utilzation. The material is dark basalt. They range in length from 67-72 mm., in width from 42-49 mm., and in thickness from 38-43 mm. (Fig.34). Percy refers to this type as hammerstones also.

Anvil Stone

This artifact was classified as an anvil stone because it bears evidence in the form of a 23 mm. diameter area of battering on one of its long sides. It is an oval beach pebble that also bears several large flake scars on one end through its

Figure 34

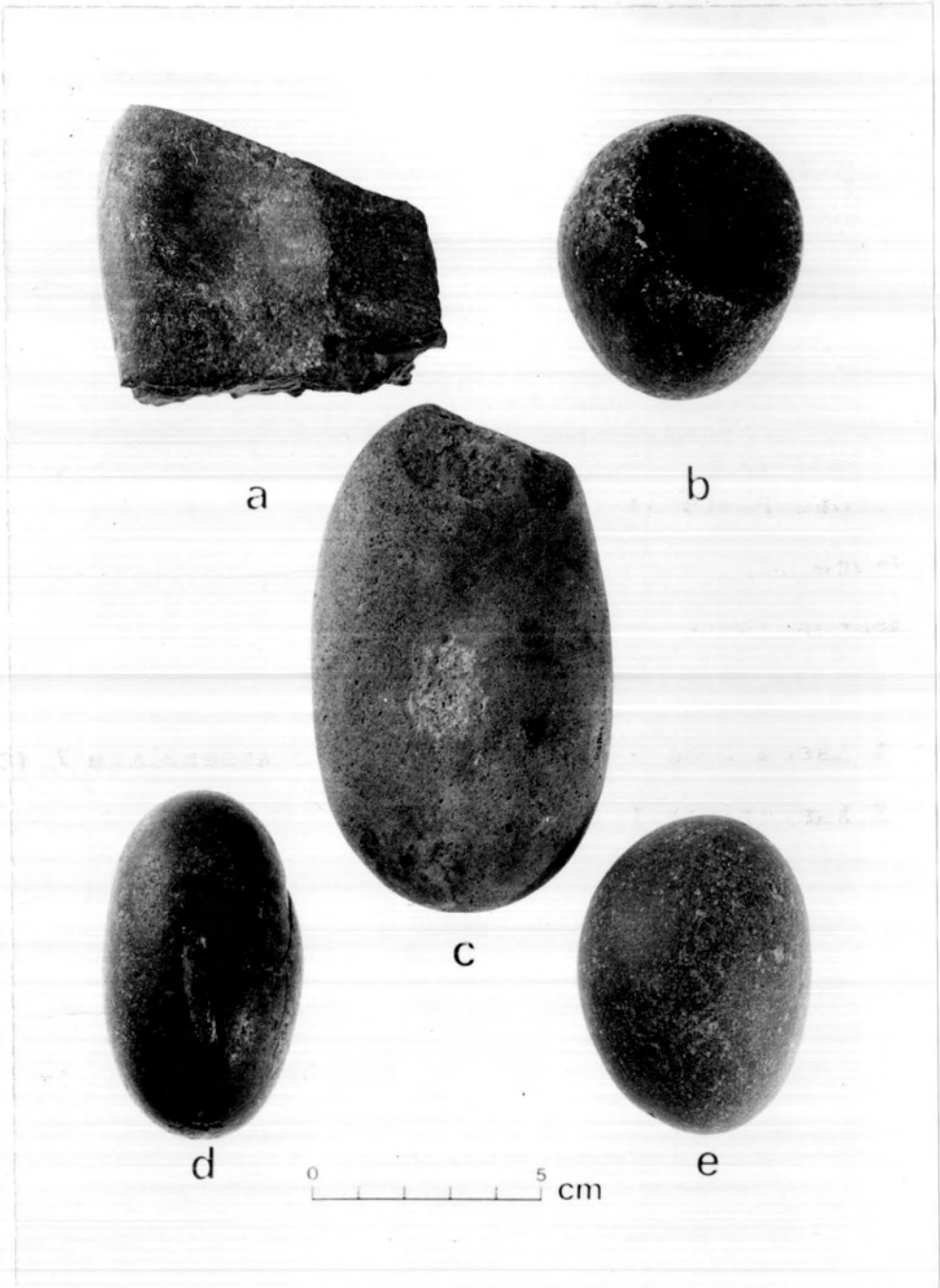
Cobble Stone Bowls (A-B)

Anvil Stone (C)

Hammerstones (D-E)

Trench 1 Assemblage 9 (A,B,D) Trench 2 Assemblage 7 (C)

Trench 2 Assemblage 1 (E)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temporary use as a hammerstone. It measures 107 mm. long, 64 mm. wide and 36 mm. thick (Fig.34). The presence of anvil stones based on beach or river cobbles has been noted by Percy.

Artifact Category: Ground Stone

Abrader Stones

26 specimens of abrader stones were recovered. 21 bear evidence of abrasion on one surface only. These items are generally quite small and highly irregular in their overall outline. Most are quite thin. None shows any evidence of deliberate shaping The material for all is sandstone, with several composed of a coarser grade than others (Fig.35,36) . Two artifacts could be described as bar abraders. The first is roughly rectangular in shape with the ends being quite round. The other is a triangular bar abrader showing abrasion on three distinct facets. They range in length from 29-119 mm., in width from 21-79 mm., and in thickness from 4-52 mm. (Table 9). The thinnest specimen appears to have been utilized as a sandstone saw. It possesses two convex facets on its sides and an edge that shows considerable abrasion. Percy has split this type into teardrop abraders, cornered abraders, saw abraders, hone abraders, single-faced abraders and double-faced abraders.

Table 9 Ground Stone Artifact Class Measurements

Artifact Class	Number	Range mm	Mean	S.D.	C.V.
Abrader Stones	26				
Length		29-119	66.6	34.4	51.66
Width		21-79	42.3	20.14	47.62
Thickness		4-52	17.8	14.35	80.67
Ground Slate Knives	3				
Length		37-108	75.33	35.84	47.57
Width		18-61	42.0	21.93	52.22
Thickness		5-14	10.0	4.58	45.8
Large Ground Slate Projectile Point (frag)	1				
Length		55			
Width		20			
Thickness		5			
Small Ground Slate Projectile Points	2				
Length		50-80			
Width		24-27			
Thickness		3-4			
Ground Adze Blades	7				
Length		44-102	62.4	24.48	39.23
Width		16-56	34.2	14.6	42.69
Thickness		8-19	11.4	4.51	39.52
Labrets	8				
Length		25-51	33.75	8.19	24.27
Width		11-37	19.75	9.30	47.09
Thickness		7-20	13.00	4.31	33.15
Earspool	1				
Length		42			
Width		42			
Thickness		9.5			
Stone Pendant	1				
Length		19			
Width		18			
Thickness		12			
Steatite Beads	7				
Length		9-12	10.0	1.15	11.54
Width		9-12	10.0	1.15	11.54
Thickness		2-4	2.64	0.85	32.29
Sandstone Beads	25				
Length		4-8	6.85	1.56	22.84
Width		4-8	6.3	1.25	19.87
Thickness		1-3	1.96	0.68	35.18

Table 9 continued on page following

Table 9 Ground Stone Artifact Class Measurements (con't)

Artifact Class	Number	Range mm	Mean	S.D.	C.V.
Slate Beads	166				
Length		4.5-8	6.68	1.25	18.72
Width		4.5-8	6.32	1.10	17.43
Thickness		2-3.5	2.45	0.52	21.32
Gulf Islands Complex Artifact	1				
Length		29			
Width		13			
Thickness		7			
Miscellaneous Ground Stone	2				
Length		31-37			
Width		25-28			
Thickness		9-10			

Figure 35

Abrader Stones (A-G)

Trench 1 Assemblage 9 (A-G)

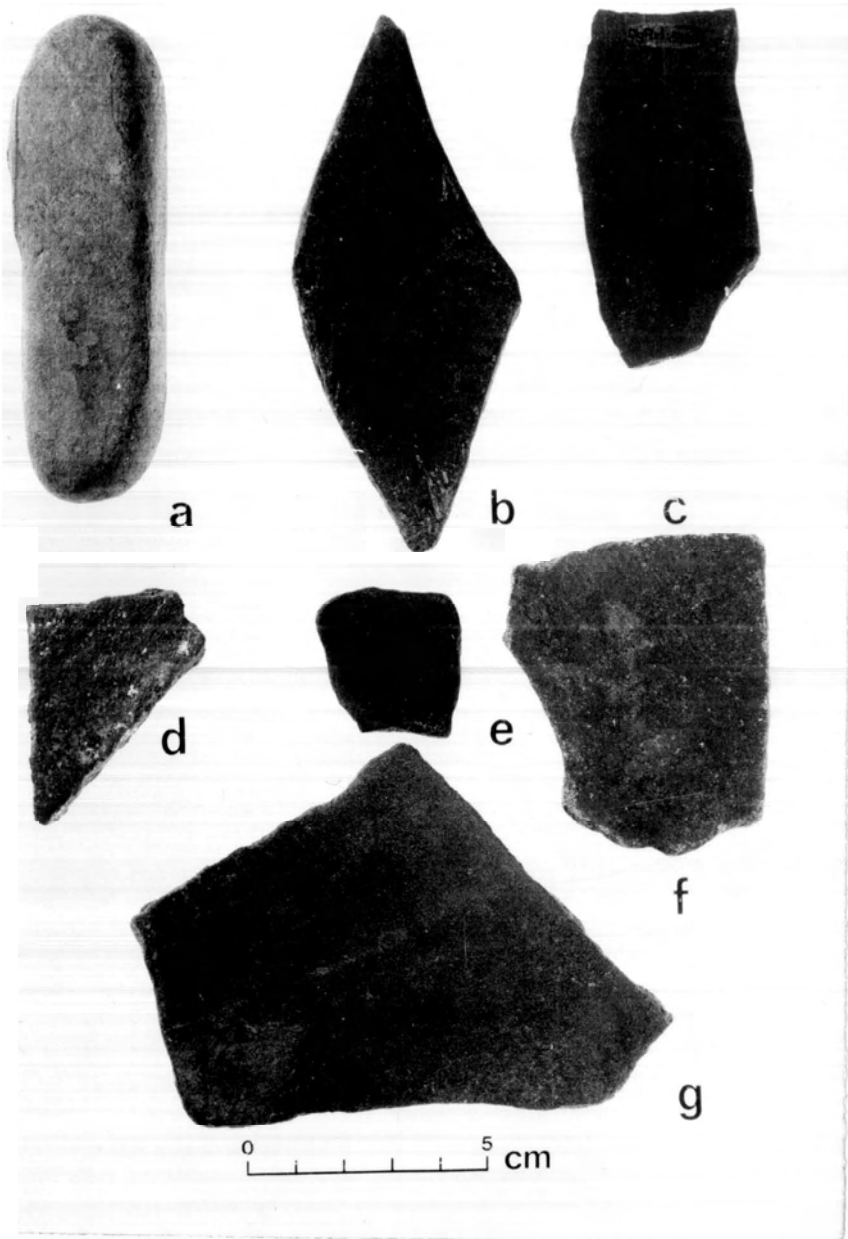
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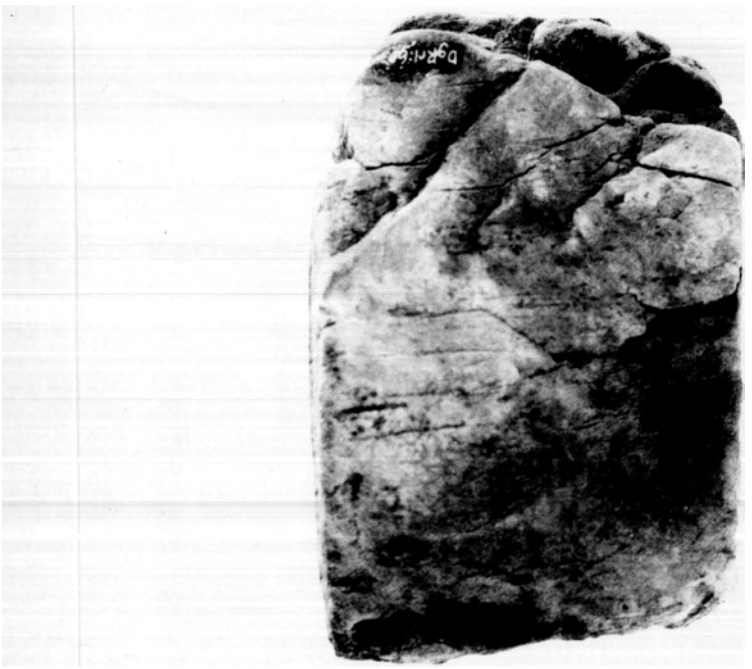
Figure 36

Rectangular Abrader Stone (A)

Trench 2 Assemblage 8 (A)



a

0 5 cm

Ground Slate Knives

Three bifacially bevelled ground slate knives were found. One item was ground smooth on both its faces. The second specimen was only partially ground smooth on both faces. The working edges of both artifacts show a high degree of wear polish. The third is an oddly shaped fragment of a very thick bifacially ground slate knive. Its superior surface exhibits several wide grooves which have been ground into the surface giving it a very contoured appearance. These knives range from 37-108 mm. in length, 18-61 mm. in width and 5-14 mm. in thickness (Fig.33,37).

Large Ground Slate Projectile Point

One medial portion of a large ground slate projectile point was found. Due to the fact that it was split down the centre, the thickness measurement would reflect only half of its complete thickness during use. The cutting edges are straight and bifacially ground. The body of the artifact shows three distinct facets, all ground quite flat. Its measurements are 55 mm. long, 20 mm. wide and 5 mm. thick (Fig.33,40).

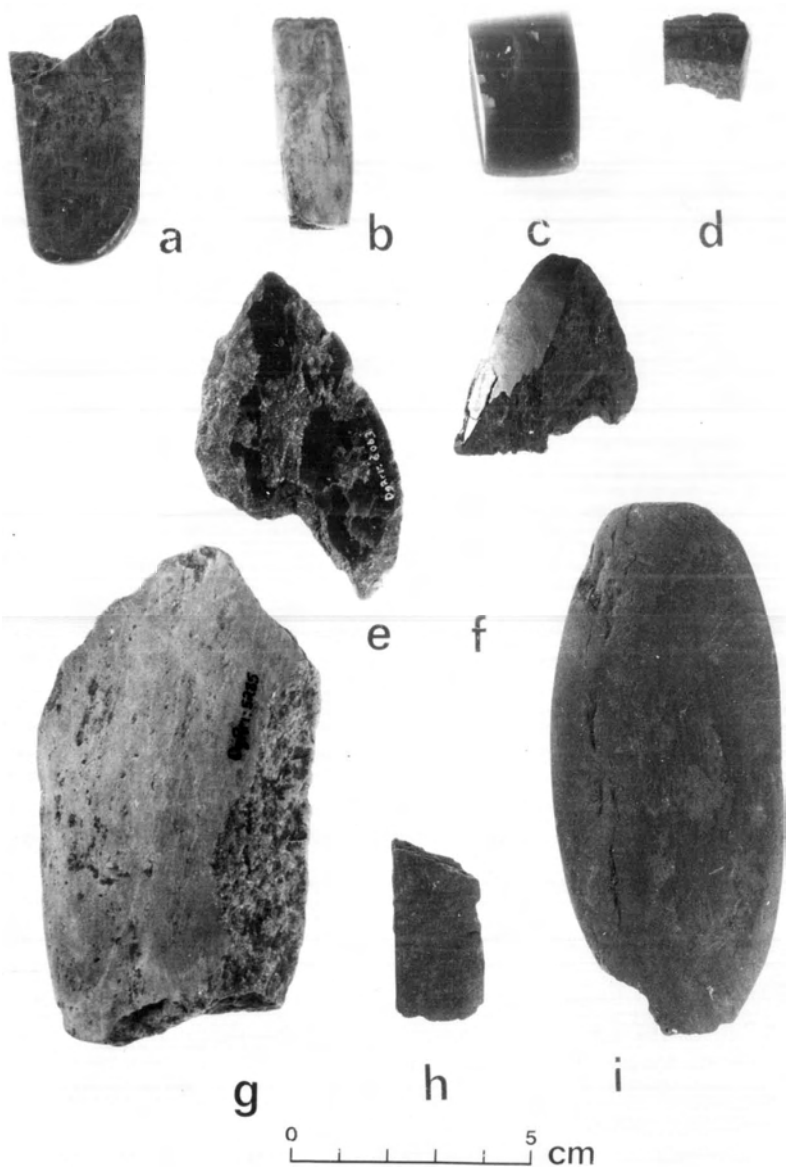
Figure 37

Ground Stone Adze Blades (A-G)

Ground Slate Knives (H-I)

Trench 1 Assemblage 9 (D,G-I) Trench 2 Assemblage 4 (E)

Trench 2 Assemblage 8 (A-C,F)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Small Ground Slate Projectile Point

Two small ground slate projectile points were recovered. Both are quite thin and exhibit bifacially ground facets along their converging edges. Both have contracting stems whose edges have been ground flat with rounded bases. The base of the larger one also appears to have been basally thinned unifacially. They range from 50-80 mm. in length, 24-27 mm. in width and 3-4 mm. in thickness (Fig.32,33).

Ground Adze Blades

Seven artifacts were catalogued under this class due to their overall shape, and multiple ground facets. One adze is not completely finished and its two large flat surfaces are only partially ground. The bit has not been ground as yet either. The second example is a fragment of a bit facet which contains a portion of one of the lateral edges. It is heavily ground on both facets present. Two small examples are complete and very finely made. The last three are fragments. The material used is nephrite for three, serpentine for three and fine-grained vitreous basalt for the last one. They range in length from 44-102 mm., in width from 16-56 mm. and in thickness from 8-19 mm. (Fig.37). Percy's refers to this type as adze blades also.

Labrets

A total of eight labrets and fragments was recovered. Two of the items are parts of composite labrets and the rest appear to be portions of protruding cylindrical labrets, one of them curving downwards. Seven are made of greenish-black serpentine and one of coarse-grained black basalt. One of the flanges of the largest labret is broken off along with a portion of the main body. The distal end of the main body is also absent. A number of grinding facets are evident on the squared sides of the body causing it to be somewhat ovoid in appearance. The proximal surface of the labial flange is smoothly polished. The second large labret is only a portion of the body and its two flanges. The ends of both flanges are absent with the vast majority of the body absent also. The third fragment could easily have been a part of the missing cylindrical body of the largest one. The fourth labret is complete and entire. It is a small, very well finished artifact. Its body is cylindrical and tapering. The end of the body is flat and bears a few striations as does the rest of the body and flanges. The proximal side of the labial flanges is quite highly polished and a number of minute parallel striations are evident. These are quite likely the result of tooth wear. The fifth labret is also entirely complete. The overall finish of this labret is quite dull and rough. This includes the labial flange area where no

depressions caused by tooth wear are evident. The body is curved downwards aproximately ninety degrees, and is squarish in cross section. The sixth labret is the complete body of a cylindrical composite labret. The tip is angled back sharply, ending in a small protuberance. The top of this protuberance has been drilled to accept a dowelled inset piece. The seventh labret is damaged, with one flange partially absent. It posesses a protruding oval stud as its body which has also been centrally drilled to receive an inset. A single small, well finished labret is the eighth specimen. Tooth wear is evident on the proximal side of the labial flanges. A protruding oval stud is present. A number of striations are present on both the body and the flanges. These labrets and fragments range from 25-51 mm. in length, 11-37 mm. in width and from 7-20 mm. in thickness (Fig.38). Percy refers to this type as labrets also.

Earspool

This particular artifact is circular, biconically drilled through its centre, and possesses a deep groove around its entire edge. The material is a coarse grade of sandstone. The edges of its centre do not present any evidence of wear which would have occurred if the object had been used as a pendant. The thickness of the artifact is 9.5 mm. and the width of the groove is a uniform 7 mm. This does not leave a very thick edge

Figure 38

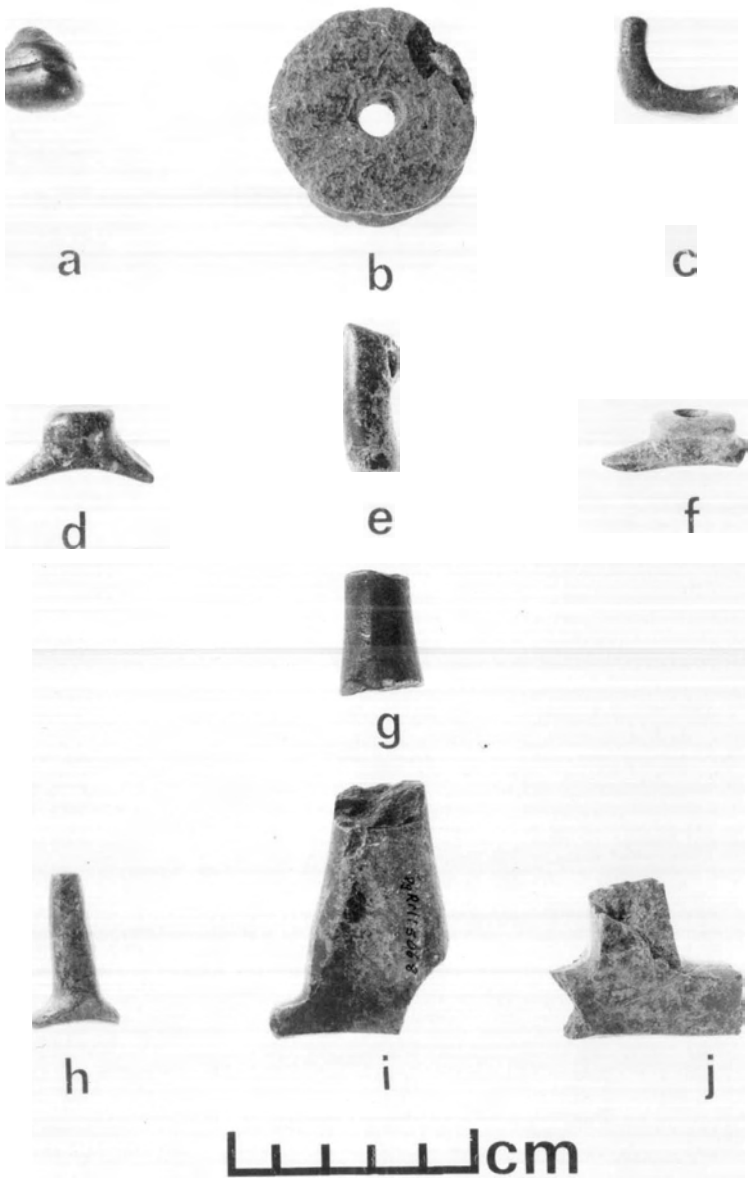
Stone Pendant (A)

Earspool (B)

Labrets (C-J)

Trench 1 Assemblage 9 (C,E-J) Trench 2 Assemblage 2 (B)

Trench 2 Assemblage 3 (D) Trench 2 Assemblage 8 (A)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on either side of the circumventing groove. This edge on both sides has been rounded and the final depth of the groove from these rounded edges is 3.5 mm. The diameter of its biconically drilled hole is 9.5 mm. to 11 mm. and the diameter of the entire artifact is 42 mm. Both sides of the object are ground flat (Fig.38).

Stone Pendants

The only specimen in this class is a small pebble with an encircling groove ground into its surface. The pebble is basalt and no other alterations have been done to it. Its measurements are 19 mm. X 18 mm. X 12 mm. thick (Fig.38).

Steatite Beads (Biconically Drilled)

All seven artifacts in this category are larger in diameter and thickness than the more common ground slate beads recovered. They are all circular in outline, flat on two faces and have been biconically drilled. They range from 9-12 mm. in diameter and 2-4 mm. in thickness. They are all made of steatite (Fig.39).

Figure 39

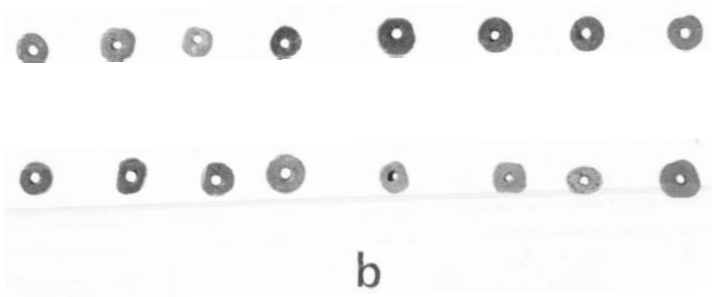
Slate Beads (A)

Sandstone Beads (B)

Steatite Beads (C)

Trench 1 Assemblage 9 (A-C)

a



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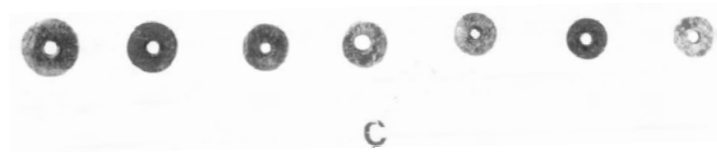

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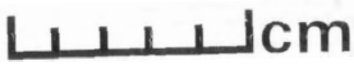


Sandstone Beads (Biconically Drilled)

Twenty-five sandstone beads were recovered. Several of these beads are incomplete, but again, all are circular in outline, flat on two sides and biconically drilled. They range in diameter from 4-8 mm. and in thickness from 1.5-3 mm. (Fig.39).

Slate Beads (Biconically Drilled)

A total of one hundred and sixty-six ground slate beads were recovered. These beads exhibit the same characteristics as the sandstone beads, except that the material is slate. They range from 4.5 mm. to 8 mm. in diameter and 2 mm. to 3.5 mm. in thickness. Some of them have not been completely ground round and still exhibit squarish edges (Fig.39). Percy's lumps the proceeding three types into stone beads and notes occurrences only.

Gulf Islands Complex Artifact

This small object is rectangular in outline and bears a deep double grooved depression on one of its sides which runs the entire length of that side. The resulting parallel ridges on its edges curve around its underside smoothly so that no flat facets are present on the opposite side from the depression.

The material appears to be a whitish chalcedony and the entire surface is weathered. It measures 29 mm. long and 13 mm. wide. Its thickness in the centre of the depression is 4 mm. and on the edges is 7 mm. (Fig.40).

Miscellaneous Ground Stone

Two ground stone fragments were classified as miscellaneous fragments. This was due to their irregular shape and evidence of grinding facets on one or more faces. Both pieces were quite small. It is roughly triangular in cross-section and outline. The other piece shows evidence of grinding on a single face only. It also is triangular in cross-section but roughly rectangular in outline. They range from 31-37 mm. in length, 25-28 mm. in width and 9-10 mm. in thickness (Fig.40). Percy's equivalent type is unidentified ground slate object.

Artifact Category: Ground Bone

Ground Bone Points

Seventeen artifacts have been classified as ground bone points. Only one is totally complete and the rest are shaft and tip fragments. These points do not present the evidence of wear polish usually found on awls, nor do they present evidence of

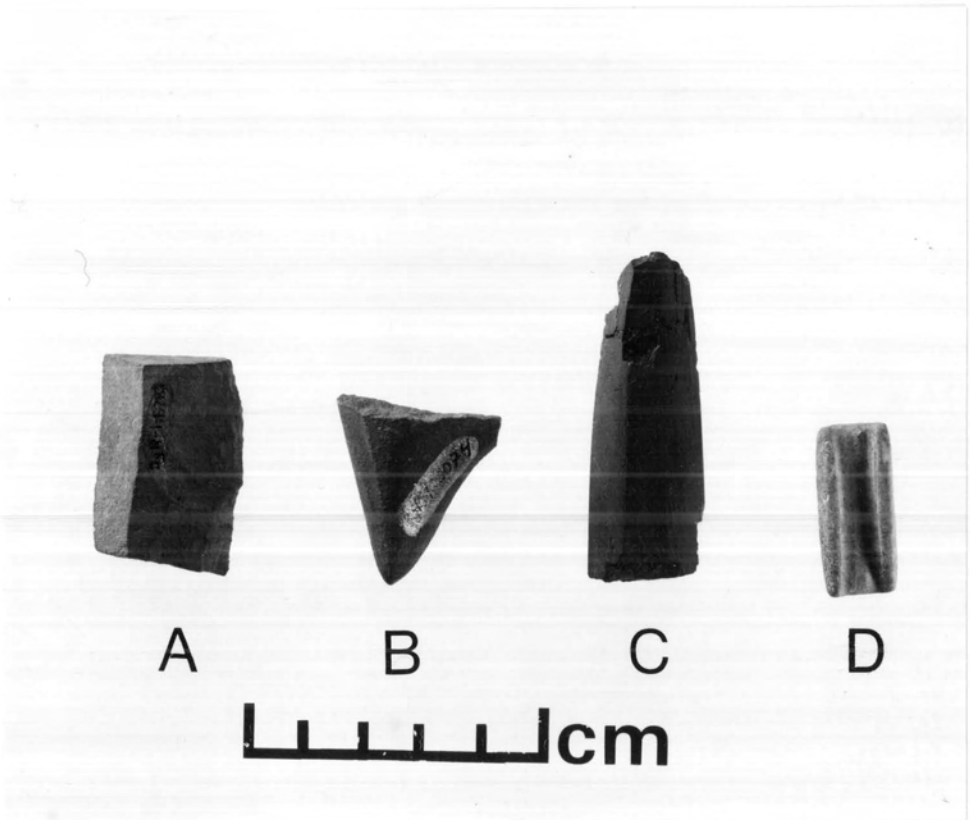
Figure 40

Miscellaneous Ground Stone (A-B)

Large Ground Slate Projectile Point (C)

Gulf Islands Complex Artifact (D)

Trench 1 Assemblage 9 (A-C) Trench 2 Assemblage 8 (D)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use as a chisel or gouge. These are sharp, ground, cylindrical bone objects whose functions may well have included those known ethnographically in the native fishing industry. They range in length from 10-142 mm., in width from 3-22 mm., and in thickness from 1.5-8 mm. All show grinding striations over their entire surfaces (Table 10,Fig.41). Percy's equivalent type is small single pointed items.

Ground bone Side Notched Projectile Point

This artifact possesses parallel sides that only converge close to the tip. Both edges are bifacially ground and bear many grinding striations. The base of the artifact has two concave notches ground into it. The measurements are 70 mm. X 10 mm. X 5 mm. thick (Fig.42).

Stemmed Bone Points

These two points are both diamond-shaped in outline, possessing long tapering bases. Both are quite small. They range in length from 42.5-48 mm., in width from 8-10 mm., and in thickness from 3-6 mm. Both bear multiple grinding striations over their entire surfaces. The larger specimen is concave on its entire inner surface. They could possibly have been arming tips for composite harpoon heads (Fig.42).

Table 10 Ground Bone Artifact Measurements

Artifact Class	Number	Range	Mean	S.D.	C.V.
Ground Bone Points	17				
Length		10-142	51.38	37.2	72.4
Width		3-22	9.23	5.82	63.04
Thickness		1.5-8	4.69	1.70	36.29
Ground Bone Side-Notched Projectile Point	1				
Length		70			
Width		10			
Thickness		5			
Stemmed Bone Points	2				
Length		42.5-48			
Width		8-10			
Thickness		3-6			
Unilaterally Barbed Fixed Bone Point	1				
Length		114			
Width		26			
Thickness		10			
Birdbone Fish Hook Barbs	4				
Length		15-48	29.75	15.1	50.78
Width		4-17	4.75	1.71	35.95
Thickness		1.5-4	2.25	1.19	52.9
Bipointed Birdbone Fish Gorge	1				
Length		45			
Width		2			
Thickness		2			
Sectioned Bone Awls	11				
Length		22-163	105.2	42.9	40.79
Width		8-16	11.8	2.39	20.29
Thickness		4-14	8.25	3.17	38.46
Splinter Bone Awls	12				
Length		53-106	75.33	20.29	26.94
Width		8-24	14.11	5.60	39.69
Thickness		3-17	8.33	4.80	57.57
Bone Gouges or Chisels	8				
Length		44-239	95.57	67.39	70.51
Width		6-36	18.0	9.2	51.12
Thickness		4-14	8.29	3.35	40.43

Table 10 continued on page following

Table 10 Ground Bone Artifact Measurements (con't)

Artifact Class	Number	Range	Mean	S.D.	C.V.
Ground Bone Attachable Barb	1				
Length		58			
Width		11			
Thickness		4			
Bone Adze Blade	1				
Length		33			
Width		21			
Thickness		8			
Ground Bone Beads	2				
Length		8			
Width		8			
Thickness		2			
Ground Bone Ring	1				
Length		18			
Width		18			
Thickness		3			
Bone Labret	1				
Length		51			
Width		7			
Thickness		4			
Beaver Incisors	4				
Length		28-32	30.75	1.89	6.16
Width		7-8	7.75	0.5	6.45
Thickness		3-8	5.25	2.22	42.24
Miscellaneous Ground Bone Fragments	17				
Length		25-117	62.0	27.23	43.91
Width		10-32	15.54	6.73	43.29
Thickness		4-13	8.69	4.11	47.30
Sectioned Bone Fragments	6				
Length		39-156	87.29	38.76	44.41
Width		6-24	14.0	6.19	44.22
Thickness		3-11	6.71	2.63	39.16
Bear Tooth Pendant	1				
Length		41			
Width		11			
Thickness		7			

Figure 41

Ground Bone Points (A-Q)

Trench 1 Assemblage 9 (A-L, N, P) Trench 2 Assemblage 5 (M, O, Q)

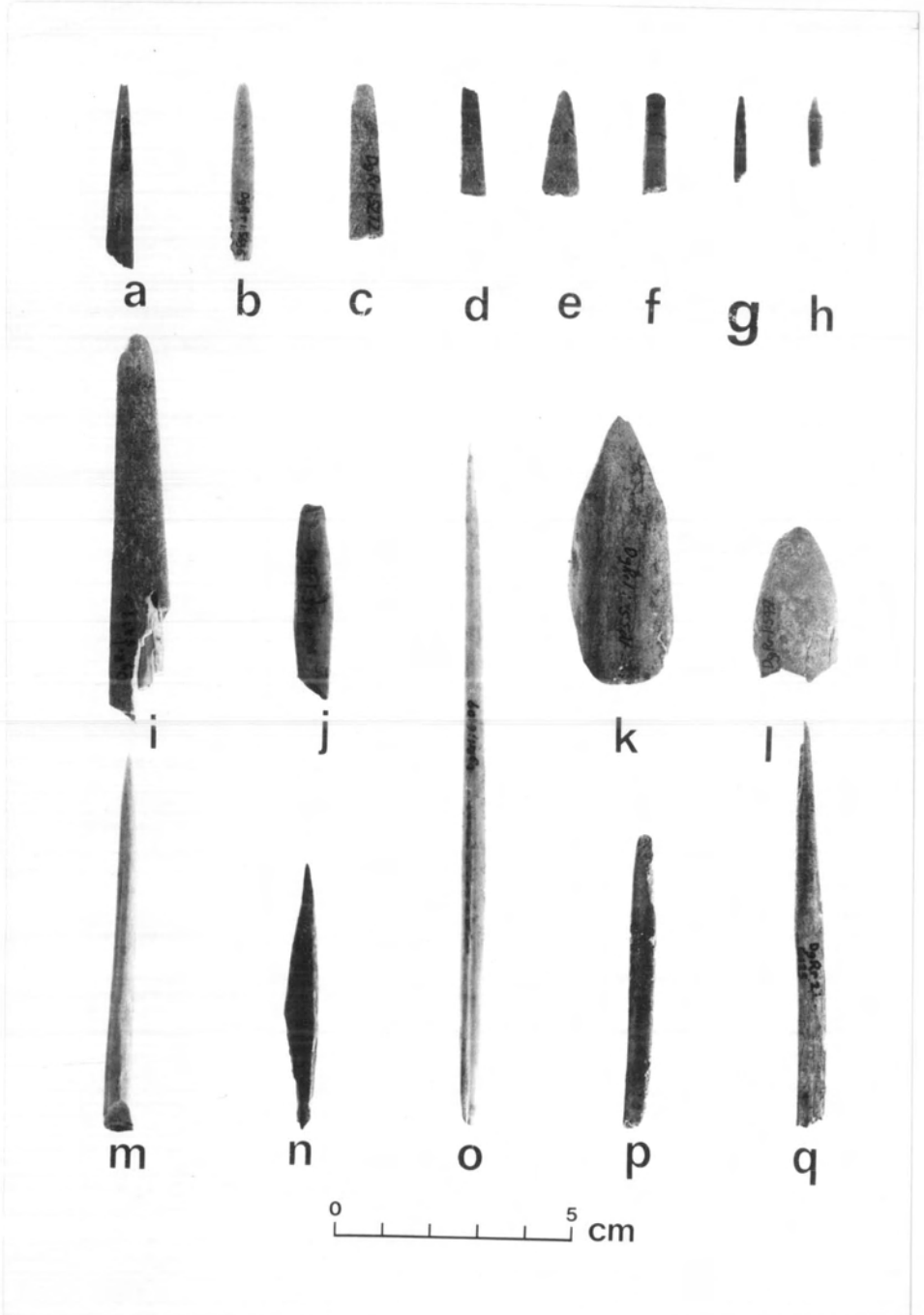
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Figure 42

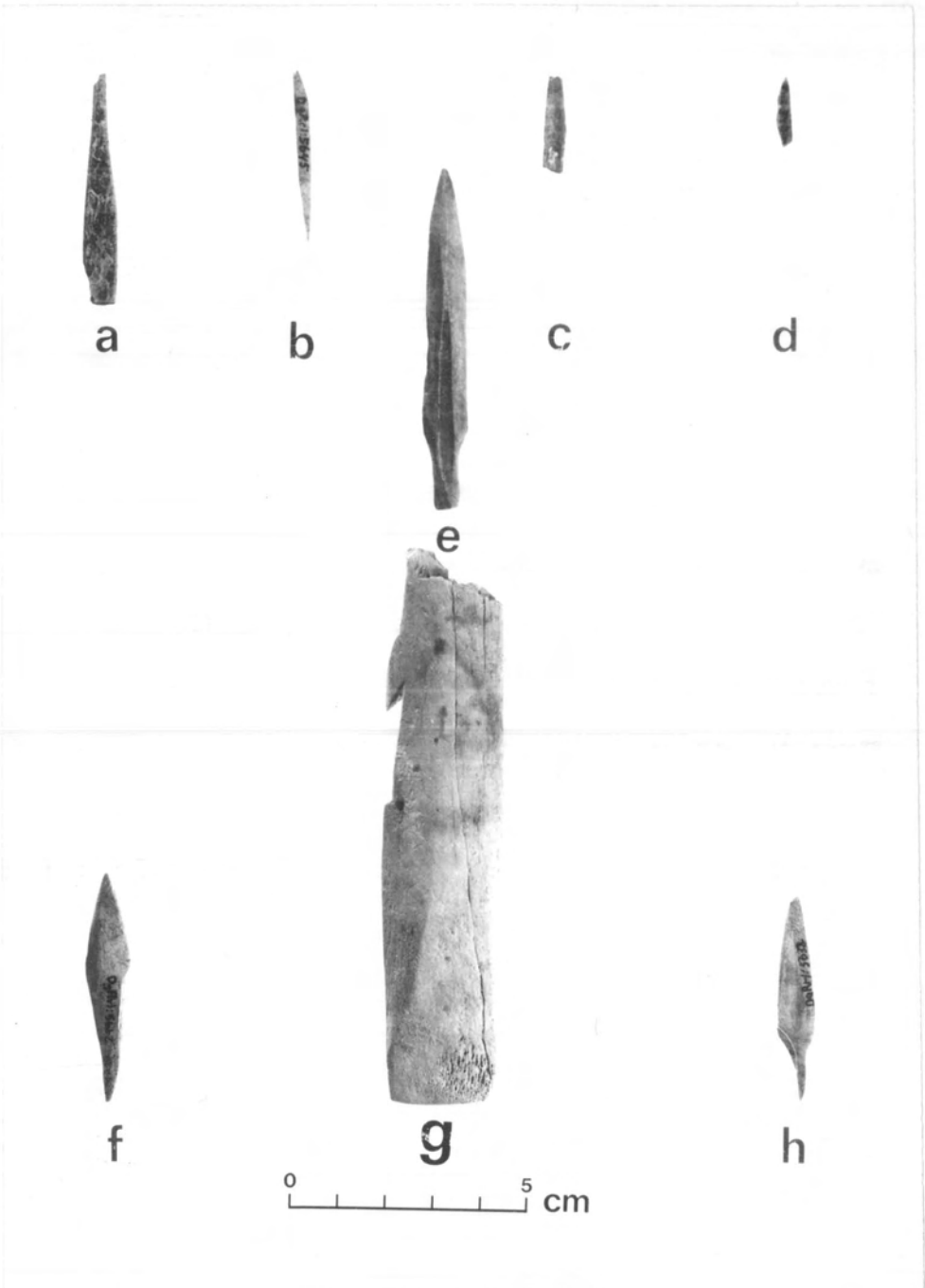
Birdbone Fish Hook Barbs (A-D)

Ground Bone Side-notched Projectile Point (E)

Stemmed Bone Points (F,H)

Unilaterally Barbed Fixed Bone Point (G)

Trench 1 Assemblage 9 (A-F,H) Trench 2 Assemblage 8 (G)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Unilaterally Barbed Fixed Bone Point

Only the base and part of the shaft of this artifact have survived. One complete barb and a portion of a second higher one can be found on the shaft. Immediately below the lower barb is a notched line haft. The artifact itself, has been manufactured out of a sectioned large mammal bone. The base has been unilaterally thinned by grinding. What remains of the artifact measures 114 mm. X 26 mm. X 10 mm. thick (Fig.42). Percy's equivalent type is fixed unilaterally barbed bone points.

Birdbone Fish Hook Barbs

These four artifacts are in possession of a single-pointed ground end. Two are portions of base and shaft only. The convergence of the sides can be seen to infer the absence of the pointed tip. The other two possess bases and stems, as well as ground tips. The bases have one side more acutely ground than the others, thus giving them an offset triangular outline. They are all made from split birdbone. They range in length from 15-48 mm., in width from 4-7 mm., and in thickness from 1.5-4 mm. (Fig.42).

Bipointed Birdbone Fish Gorge

A single bipointed fish gorge made of birdbone was recovered. It is complete and bears grinding striations along its entire surface. It measures 45 mm. in length, 2 mm. in width and 2 mm. in thickness (Fig.43).

Sectioned Bone Awls

Eleven sectioned bone awls were recovered. Three are complete specimens. Seven of them are shaft and tip fragments and one is a portion of base and tapering shaft only. All specimens bear evidence of heavy wear polish on both their tips and shafts. All appear to have been manufactured from large sectioned land mammal bones. They range in length from 22-163 mm., in width from 4-14 mm., and in thickness from 4-14 mm. (Fig.43). Percy's equivalent type is awls type 2.

Splinter Bone Awls

Twelve splinter bone awls were recovered. All bear wear polish on the tips and part of their shafts. They range in length from 53-106 mm., in width from 8-24 mm., and in thickness from 3-17 mm. All appear to be fragments of split land mammal bones that have had the tip ground and used (Fig.44). Percy refers to this type as splinter awls.

Figure 43

Ground Bone Attachable Barb (A)

Bipointed Birdbone Fish Gorge (B)

Bone Labret (C)

Sectioned Bone Awls (D-M)

Trench 1 Assemblage 9 (C,E-G,I,L-M) Trench 2 Assemblage 3 (B)

Trench 2 Assemblage 5 (A,D,H,J-K)

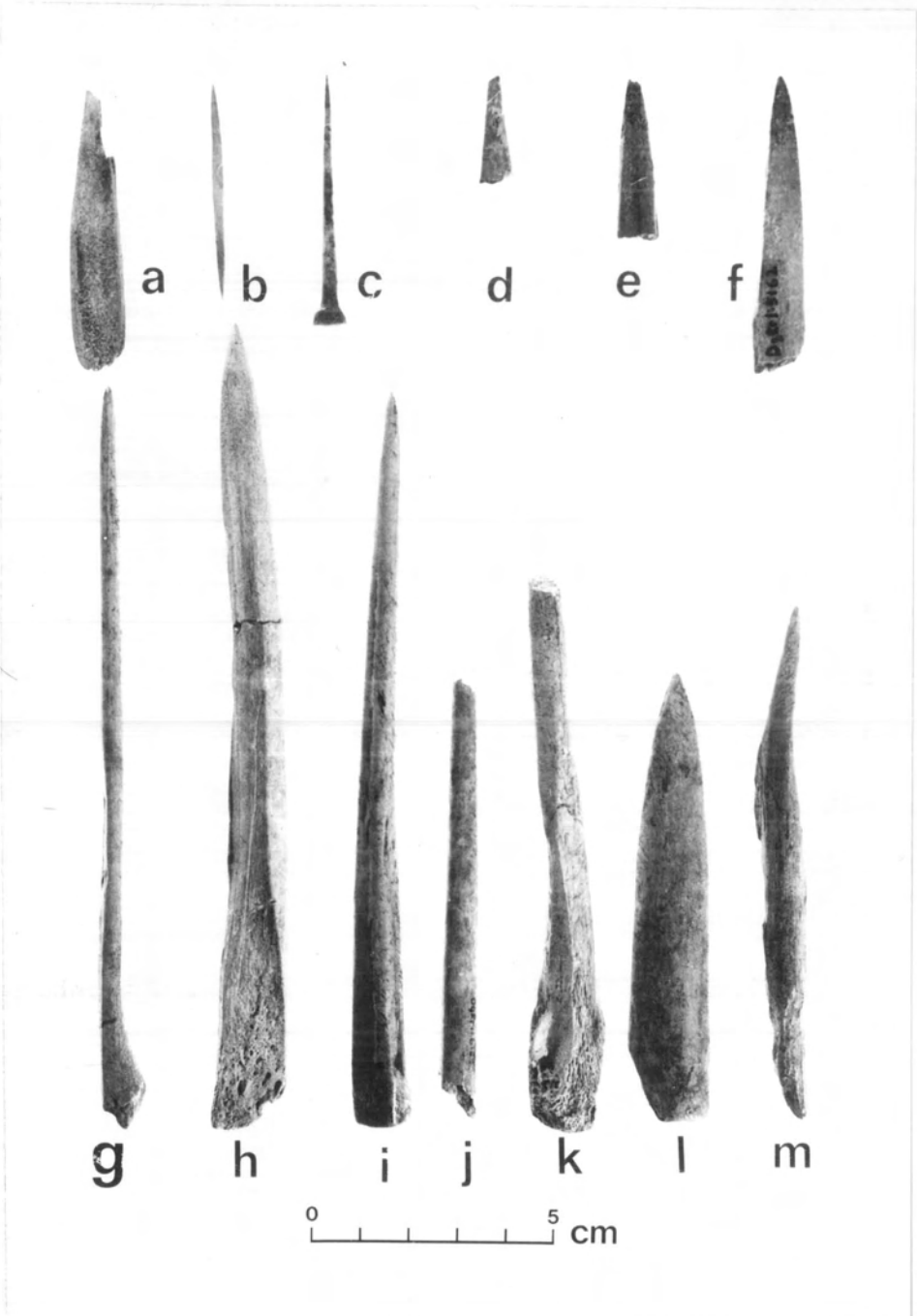
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Figure 44

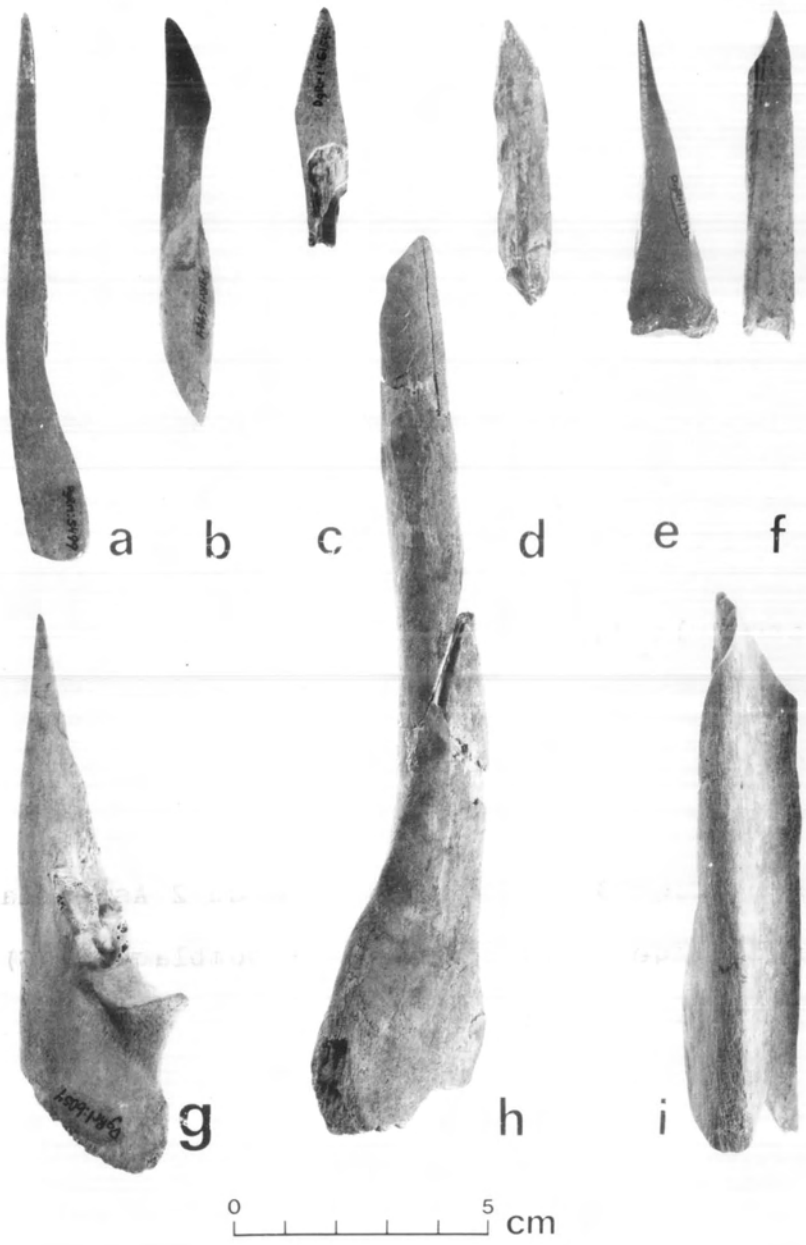
Splinter Bone Awls (A-F,H-I)

Ulna Awl (G)

Trench 1 Assemblage 9 (A-B,D-E,I) Trench 2 Assemblage 1 (F)

Trench 2 Assemblage 2 (H) Trench 2 Assemblage 6 (G)

Trench 2 Assemblage 7 (C)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Bone Gouges or Chisels

These artifacts were classified as chisels or gouges on the basis of their flat, broad blades and distinct lack of wear polish on their edges. The bits generally exhibit some grinding striations and several small flake scars as the result of utilization. Eight tip and shaft fragments and one complete specimen were recovered. They range in length from 44-239 mm., in width from 6-36 mm., and in thickness from 4-14 mm. All have been manufactured from sectioned large land mammal bone (Fig.45). Percy also refers to this type as chisels and gouges.

Ground Bone Attachable Barb

This small attachable barb has been made from a split small land mammal bone so its inner surface is concave. It is wider at the curved base than its partially absent tip, thus giving it a teardrop outline. The base is also flared outwards by the unifacial grinding on its inner surface at and near the base. The artifact measures 58 mm. X 11 mm. X 4 mm. thick. Percy's type is single pointed curved side barbs (Fig.43).

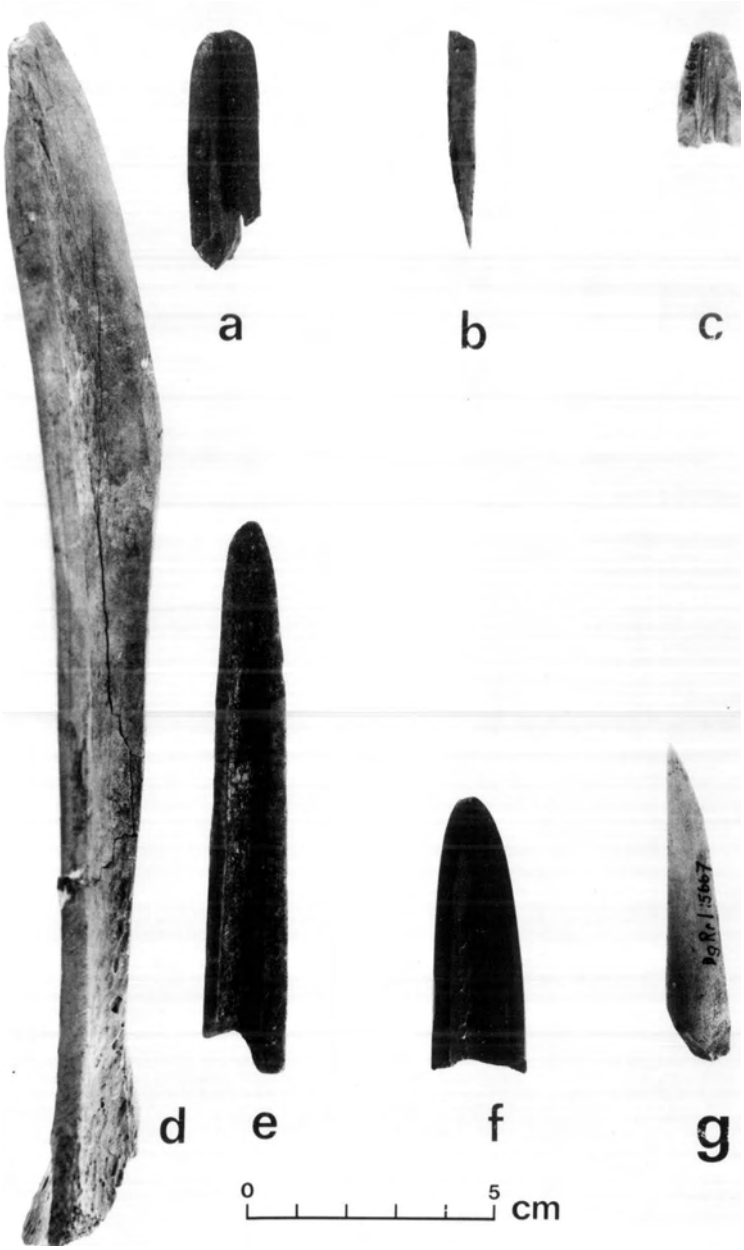
Bone Adze Blade

Approximately half of the bit and blade of a bone adze

Figure 45

Bone Gouges or Chisels (A-G)

Trench 1 Assemblage 9 (A-B,D-G) Trench 2 Assemblage 7 (D)
Trench 2 (C) From Wall Trimmings, Provienience Unknown.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blade was recovered. It bears bifacially ground facets on both the bit and on the side that is present. The inner surface is concave since it was made from a sectioned large land mammal bone. Heavy wear polish is evident on both ground faces of the bit. It measures 33 mm. X 21 mm. X 8 mm. thick (Fig.46).

Ground Bone Beads (biconically drilled)

Two small bone beads were found. Both are ground circular and are biconically drilled. They both measure 8 mm. in diameter and 2 mm. thick. The diameter of the biconically drilled holes range from 2-2.5 mm. The flat side of both are ground smooth and bear a few grinding striations (Fig.46).

Bone Ring

A small circular bone ring was recovered that bears a single notch in its outer edge. The centre of this ring is oval shaped and is in alignment with the notch. The diameter of the ring is 18 mm. while the centre measures 7 mm. X 10 mm. The thickness of the ring is 3 mm. (Fig.46).

Bone Labret

The single bone labret recovered possesses a set of very

Figure 46

Bone Adze Blade (A)

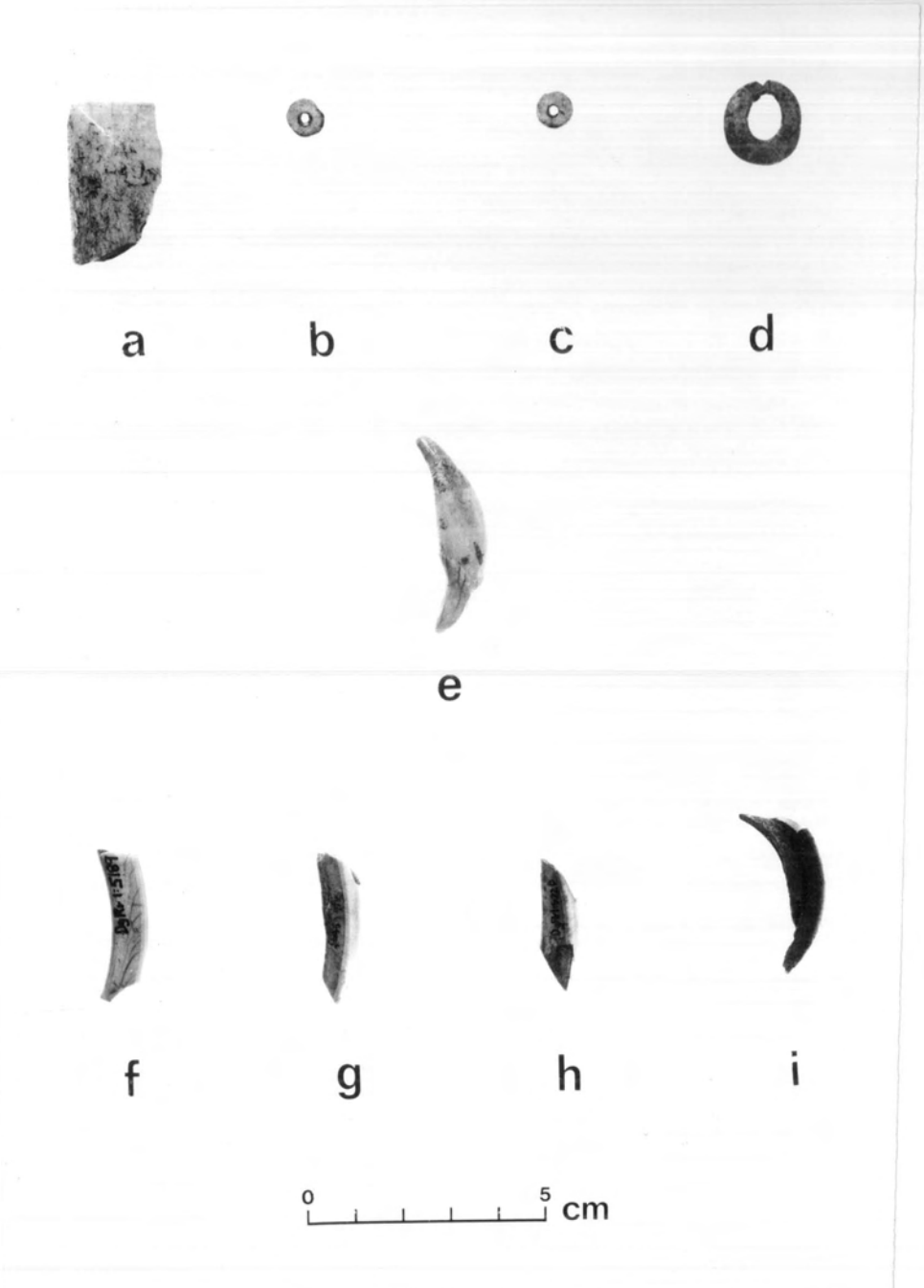
Bone Beads (B-C)

Bone Ring (D)

Bear Tooth Pendant (E)

Beaver Incisors (F-I)

Trench 1 Assemblage 9 (A-I)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small labial flanges and a long tapering cylindrical body. It bears multiple fine grinding striations over its entire surface. The artifact is complete and very finely made. It measures 51 mm. long, 7 mm. wide accross its flanges and 4 mm. wide at the base of its body (Fig.43).

Miscellaneous Ground Bone Fragments

Seventeen ground bone fragments were recovered during the two years excavation at Crescent Beach. All, except one piece, are highly irregularly shaped pieces of broken bone possessing a few grinding striations on a single surface only. They range from 25-117 mm. in length, from 10-32 mm. in width and 4-13 mm. in thickness. The exception to the above description is a broken rectangular stem bearing grinding striations on all four sides. It also possesses a squared base. It measures 50 mm. X 10 mm. X 6 mm. thick. Percy's equivalent type is unidentified bone artifact remains (Fig.47).

Beaver Incisors

Portions of three split beaver incisors, and one piece of an unsplit beaver incisor were found. Remains of the natural cutting edge exist on only one of the split pieces as well as the unsplit piece. Since this edge is naturally ground and

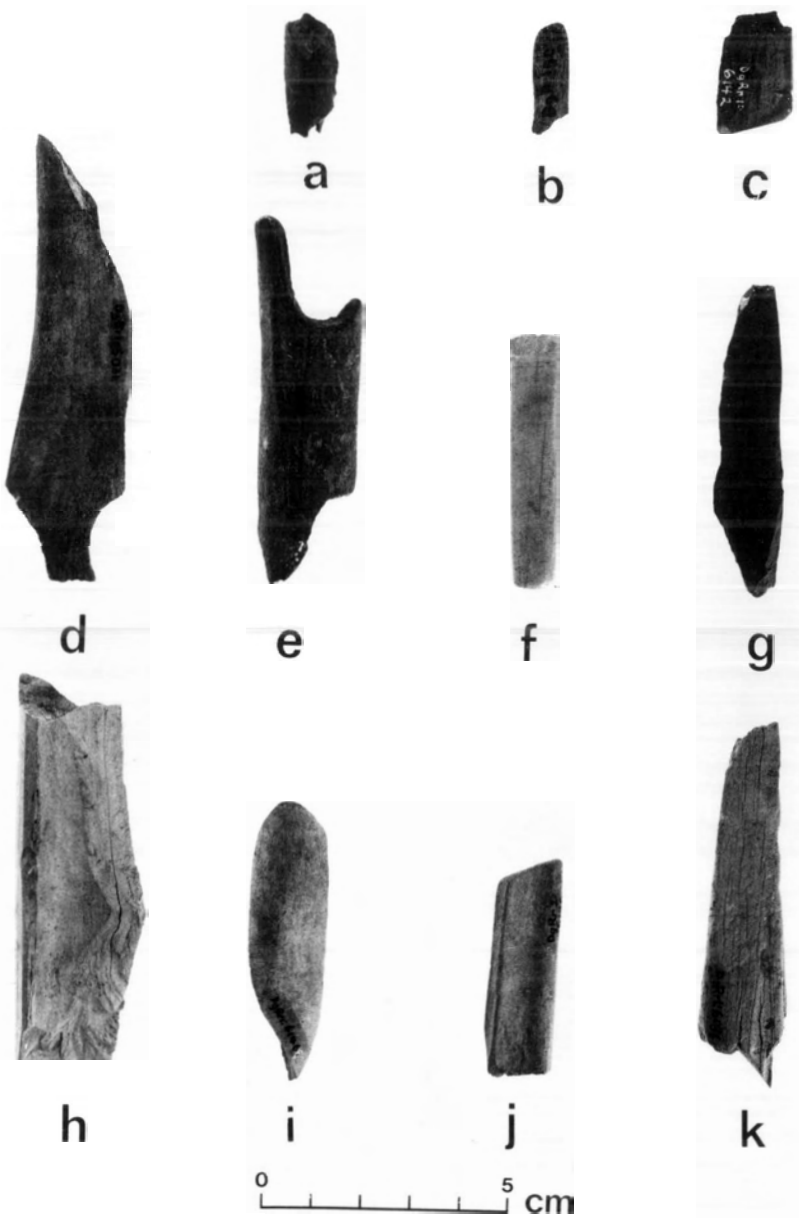
Figure 47

Miscellaneous Ground Bone Fragments (A-K)

Trench 1 Assemblage 9 (B,D,G) Trench 2 Assemblage 3 (E,I-J)

Trench 2 Assemblage 5 (C,F,H) Trench 2 Assemblage 6 (K)

Trench 2 Assemblage 7 (A)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possesses a high degree of wear polish, it is impossible to discern whether the pieces in question were used or not. They range in length from 28-32 mm., in width from 7-8 mm., and in thickness from 3-8 mm. (Fig.46). Percy's equivalent type is rodent tooth implements.

Sectioned Bone Fragments

Six fragments of sectioned bone were placed in this class since they could not be definitely placed with the gouges, chisels, awls, or points due to their lack of bases or tips. All appear to be shaft fragments only. They range in length from 39-156 mm., in width from 6-24 mm., and in thickness from 3-11 mm. (Fig.48).

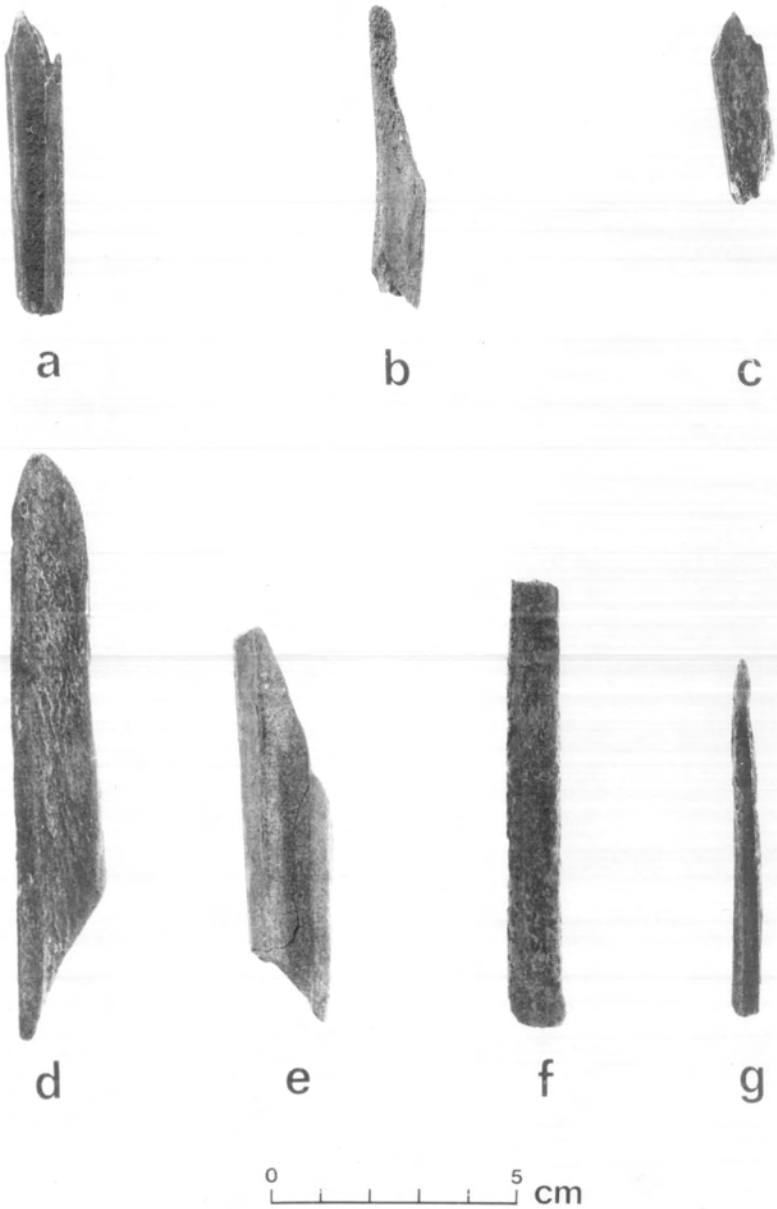
Bear Tooth Pendant

A single canine tooth exhibiting notching around its root section was recovered. No other visible signs of working are evident. It measures 41 mm. in length, 11 mm. in width, and 7 mm. in thickness (Fig.46).

Figure 48

Sectioned Bone Fragments (A-G)

Trench 1 Assemblage 9 (A-G)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Artifact Category: Ground Antler

Antler Points

Three small ground points made of antler were placed in this artifact type since none of them bears any wear polish on it's tip or along it's shaft. The first has flat converging sides and the other two possess curved converging sides. All bear multiple grinding striations over their entire surface and only one is complete. The first one is also unifacially thinned at the tip by the grinding of a flat facet. They range in length from 44-70 mm., in width from 11-13 mm., and in thickness from 4-6 mm. (Table 11,Fig.49). Percy's type is antler projectile points.

Antler Tine Punches

Two pieces of naturally curved antler tine were recovered that bear evidence of grinding on their narrower ends. The ends, themselves, have been rounded. It is probable that these two artifacts were used as punches for pressure flaking. They range from 105-127 mm. in length, 26-31 mm. in width and 14-26 mm. in thickness (Fig.49). Percy refers to this type as antler flaking tools.

Table 11 Ground and Adzed Antler Artifact Measurements

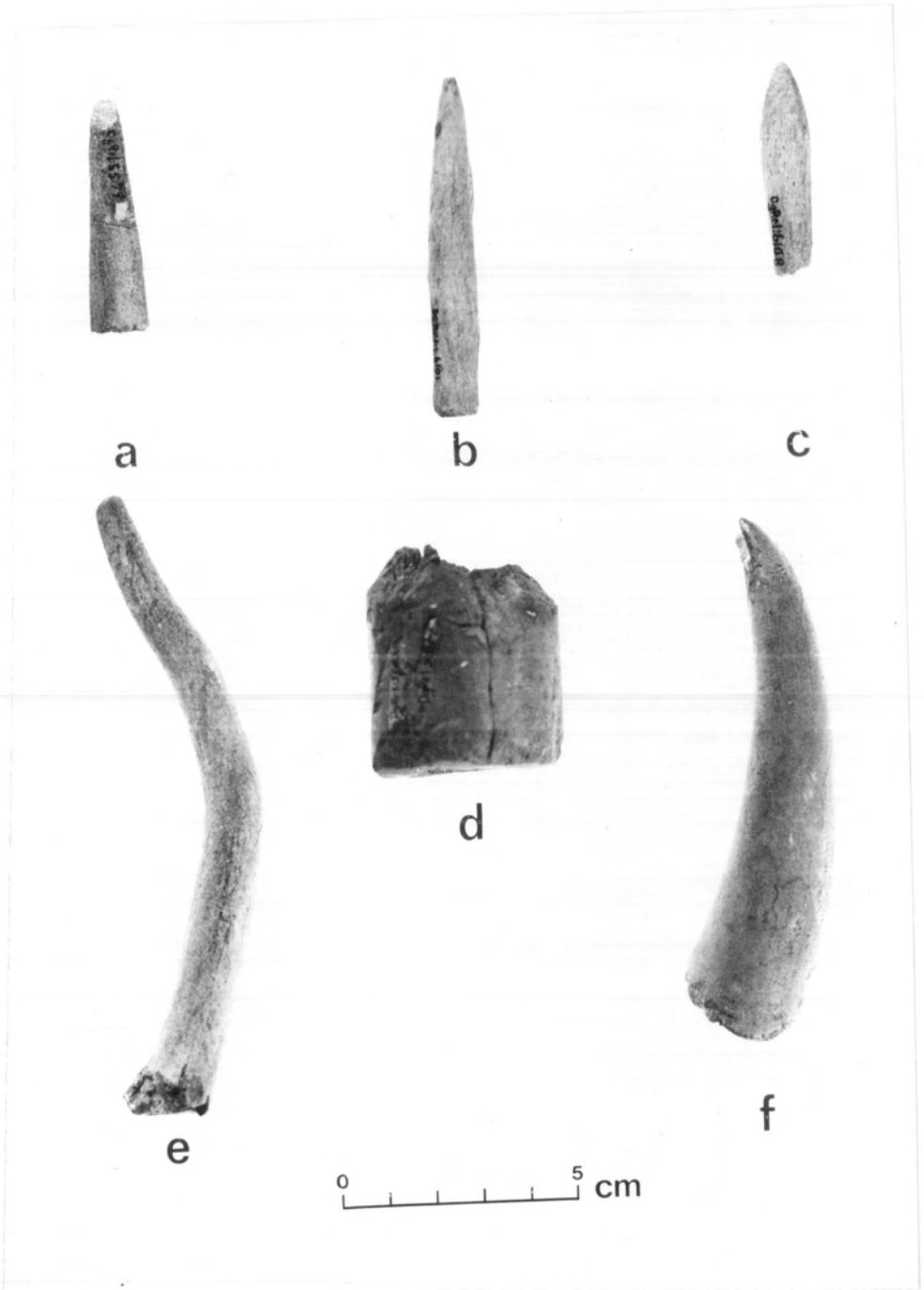
Class	Number	Range	Mean	S.D.	C.V.
Antler Points	3				
Length		44-70	54.0	14.0	25.93
Width		11-13	11.67	1.15	9.89
Thickness		4-6	5.33	1.15	21.66
Antler Tine Punches	2				
Length		105-127			
Width		26-31			
Thickness		14-26			
Composite Antler Awl/Wedge	1				
Length		71			
Width		19			
Thickness		12			
Antler Collar or Haft	1				
Length		46			
Width		42			
Thickness		37			
Antler Tine Wedges	5				
Length		38-122	69.8	40.06	57.40
Width		17-35	26.8	7.56	28.22
Thickness		9-15	11.4	2.3	20.19
Antler Tine Plug	1				
Length		74			
Width		22			
Thickness		22			
Miscellaneous Ground Antler Tine	2				
Length		50-79			
Width		14-40			
Thickness		8-17			
Adzed Antler Tine Fragment	1				
Length		121			
Width		23			
Thickness		12			

Figure 49

Antler Points (A-C)

Antler Collar or Haft (D) Side View

Antler Tine Pressure Punches (E,F)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cm

Antler Awl/Wedge

This small artifact has first seen service as a wedge until the shaft splintered. The jagged break has left one piece protruding which has been ground round and bears evidence of heavy wear polish along its tip and shaft. The artifact measures 71 mm. X 19 mm. X 12 mm. (Fig.50).

Collar or Haft

This artifact is made from a piece of antler tine that has been hollowed out and is oval in cross-section. One end is flat and bears striations made when it was sawed from the original piece of tine. The opposite end has been bevelled toward the centre around its entire circumference. It was originally found in six pieces and reconstructed in the laboratory. It measures 46 mm. X 42 mm. X 37 mm. thick. The width and thickness of the hollowed out portion is 27 mm. X 14mm. Its most likely function was that of a haft or collar for the holding of a cutting blade or bit of unknown purpose (Fig.49,51). Percy's equivalent type is antler hafting devices.

Antler Tine Wedges

Two complete specimens as well as the tips of three other

Figure 50

Antler Awl/Wedge (A)

Antler Tine Wedges (B-C, E-F)

Antler Tine Plug (?) (D)

Trench 1 Assemblage 9 (D,F) Trench 2 Assemblage 1 (C)

Trench 2 Assemblage 2 (B) Trench 2 Assemblage 7 (A,E)

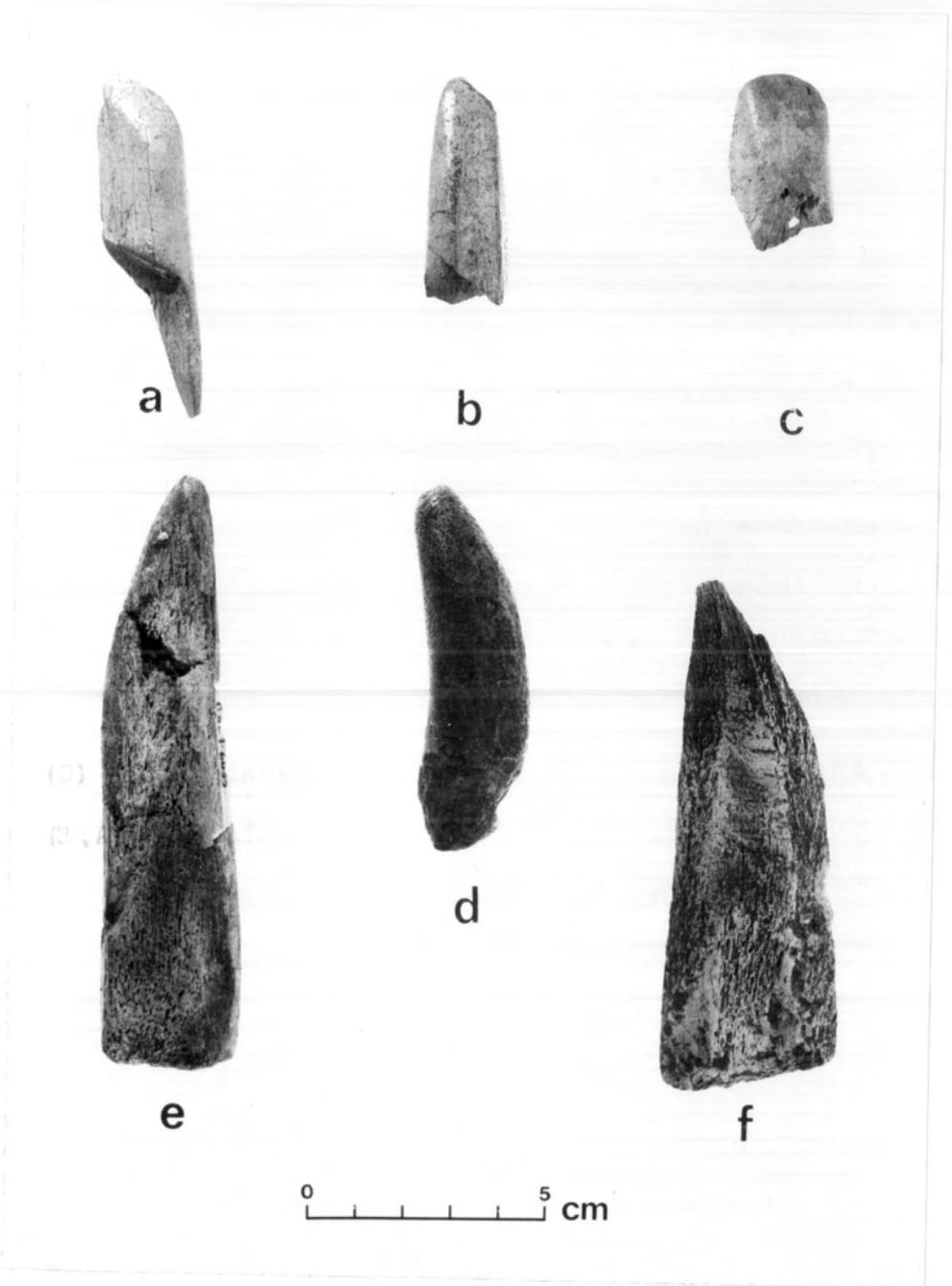

a
b
c
d
e
f
0
5
cm

Figure 51

Antler Collar or Haft (A) End View

Trench 1 Assemblage 9 (A)

a

0 5 cm

antler wedges were recovered. All possess two flat broad sides and slightly curved tips. The end of the tip of one of them is partially absent. The sides of the blades are curved. Fine grinding striations exist on all. They range in length from 38-122 mm., in width from 17-35 mm., and in thickness from 9-15 mm. (Fig.50). Percy's equivalent type is antler beam and tine wedges.

Antler Tine Plug (?)

This artifact bears, for the most part, the shape of a naturally curved piece of antler tine. Near its base, a large notch is prominent on the outer curve of the tine. Immediately below this notch, the tine is carved to a blunt point. This artifact could have been used as a plug in a sealskin float. It measures 74 mm. long, 22 mm. in width, and 22 mm. in thickness (Fig.50).

Miscellaneous Ground Antler Tine

Two broken pieces of antler bearing some evidence of grinding were recovered and placed in this class. Both natural tips of tine with the first of these bearing some very fine grinding striations and the second exhibiting evidence of extensive grinding on its tip and shaft. They range in length

from 50-79 mm., in width from 14-40 mm., and in thickness from 8-17 mm. (Fig.52). Percy refers to this type as worked antler fragments.

Adzed Antler Tine fragments

The piece of split antler tine recovered possesses evidence of adzing in the form of a unifacially thinned end and several worked areas. Its length is 121 mm., its width is 23 mm. and it is 12 mm. thick (Fig.52).

Artifact Category: Shell

Shell Beads

A total of 15 biconically drilled shell beads was recovered during both years of excavation. Several are quite a bit larger than the rest, but all lie within the range of 4-10 mm. in diameter, and 1-2 mm. in thickness. The edges of most of them are slightly irregular. In two cases, the biconically drilled hole is noticeably off centre. The edges of the biconically drilled holes range from 2-3.5 mm. in diameter (Table 12,Fig.53). Percy refers to this type as shell beads also.

Table 12 Shell Artifact Measurements

Class	Number	Range	Mean	S.D.	C.V.
Shell Beads	15				
Length		4-10	6.42	1.83	28.54
Width		4-10	6.17	1.75	28.35
Thickness		1-2	1.63	0.38	23.12
Shell Pendant	1				
Length		61			
Width		9.5			
Thickness		7			
Shell Ring	1				
Length		23			
Width		22			
Thickness		5			
Mineral					
Ochre	4				
Length		6-51	26.25	18.71	71.29
Width		4-39	20.25	14.57	71.94
Thickness		3-21	9.75	7.89	80.92

Figure 52

Miscellaneous Ground Antler Tine (A-D)

Adzed Antler Tine Fragments (E-G)

Trench 1 Assemblage 9 (D) Trench 2 Assemblage 7 (A-C)
(Three Parts of one Artifact)

Trench 2 Assemblage 4 (E-G) (Three Parts of one Artifact)

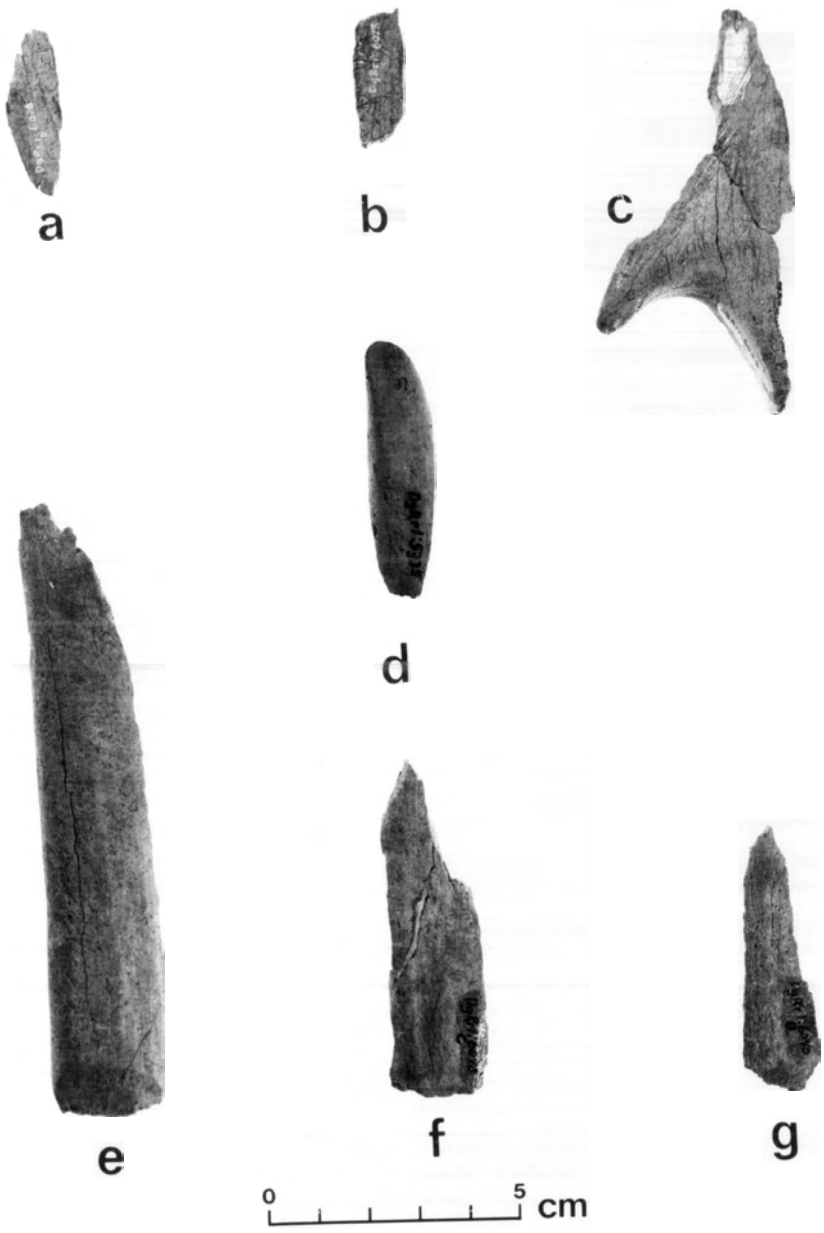

a
b
c
d
e
f
g
0
5
cm

Figure 53

Shell Ring (A)

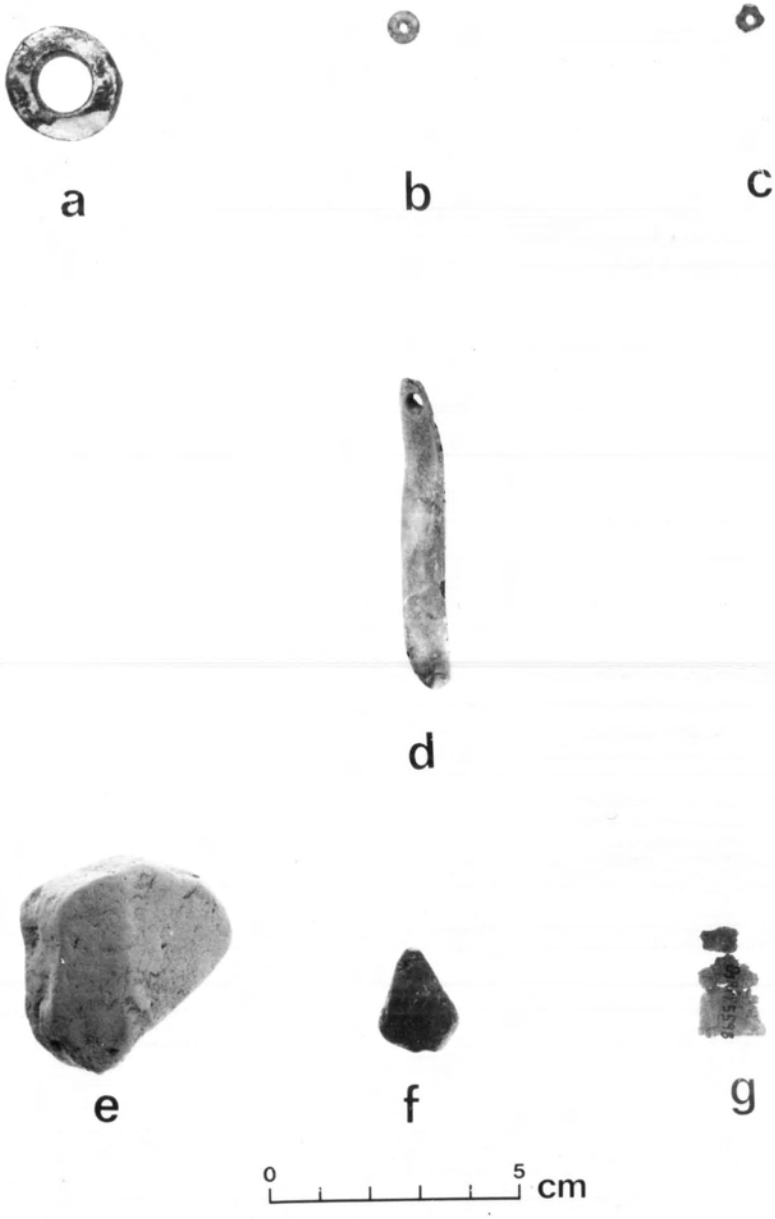
Shell Beads (A)

Shell Pendant (D)

Ochre (E-G)

Trench 1 Assemblage 9 (E-G) Trench 2 Assemblage 1 (B-C)

Trench 2 Assemblage 5 (A,D)


a
b
c
d
e
f
g
0
5
cm

Shell Pendant

This long, slightly curved pendant has been made from a polished purple hinged rock scallop. It bears a biconically drilled perforation at one end, and numerous small holes and depressions caused by some small marine organism on one of its long flat sides. It measures 61 mm. X 9.5 mm. X 7 mm. thick at its slightly bulbous base. All edges are rounded and highly polished (Fig.53). Percy has a shell pendant type also.

Shell Ring

A beautifully made decorative shell ring of oyster shell was recovered. It is very close to being completely round and the biconically drilled hole is even closer to being a perfect circle. The upper surface ofthe artifact bears several undulations, but its lower surface is very flat. All edges have been rounded and polished. The diameters of the outer edge range from 22-23 mm. The diameter of its biconically drilled hole is 12 mm., while its thickness is 5 mm. (Fig.53). Percy has a shell flat ring type that is equivalent.

Ochre

Four pieces of ochre were found. All are highly irrregularly shaped, and quite small in size. Two of the pieces are salmon-coloured, and one is dark red. The fourth piece is dark tan in coloured. They ranqe in lenqth from 6-51 mm., in width from 4-39 mm., and in thickness from 3-21 mm. (Fiq.53). The same type is used by Percy.

Table 13 Human Skeletal Material Recovered in Trench 1 and Trench 2 at DqRr 1, Crescent Beach, BC.

Trench 1

Burial #	Sex	Age
B101	?	?
B102	?	Infant
B103	?	?
B104 *	Male	Adult
B105 **	?	?
B106	?	Adult
B107 **	Male	Adult (ca. 36 yrs.)
B108 **	Female	Young Adult (ca. 21 yrs.)
B109 **	Female	Young Adult (ca. 18 yrs.)

Trench 2

B201	?	Adult
B202	?	?
B203	?	Adult
B204	Male	Adult (ca. 35 yrs.)

* number assigned to incomplete burial salvaged from municipality of Surrey sewer line excavations.

** numbers assigned to burials recovered in Test Pit B, not associated with portion of project analyzed in thesis.

Analysis of Burials by Dr. Owen Beatie of S.F.U. using Standardized Anthropometric Techniques

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