THE OXBOW SITE: CHRONOLOGY AND PREHISTORY IN NORTHEASTERN NEW BRUNSWICK

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by

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ABSTRACT

Although a brief outline of events can be offered concerning our earlier prehistoric periods, the limited extent and somewhat biased nature of archaeological research in the Maritime provinces is reflected in the lack of an established chronological framework for our most recent prehistoric past. This scarcity of ordered information concerning the "ceramic period" is of major concern as it would appear that the greater number of our maritime sites from this time have already been completely erased by coastal submergence. Prior to attempting to unravel any specific anthropological problems pertaining to this most recent period, regional cultural chronologies must first be worked out.

During the summer of 1978 excavations were conducted on a deeply stratified multi-component occupation site located in the Miramichi River district of Northeastern New Brunswick. Analysis of the excavated information from the Oxbow site indicates a near continuous ceramic period occupation. Using the techniques of radiocarbon dating, ceramic seriation and stratigraphic examination, a 2800 year old chronological framework based on projectile point types and ceramic attributes, has been established. Although materials from an additional 1979 excavation season have not yet been studied in detail, important 1979 discoveries have been used to fortify the 1978 findings.

Using the Oxbow chronological framework as a basis for comparison archaeological collections from both the Maritimes and other adjacent Northeastern areas were examined. This spatial and temporal distribution study of projectile point types and ceramic attributes has offered some

explanations for the abrupt changes and the trends that are reflected at the Oxbow site.

Evidence suggests that "Vinette 1" does not begin the ceramic sequence in this area although a full-fledged ceramic utilization has begun prior to 2600 BP. Further, it can be suggested that New Brunswick received two actual population infiltrations from areas to the south and west at approximately 2600 BP and again at 2100 BP. Additionally it has been proposed that the peoples of the most recent infiltration are directly ancestral to the present day native populations of northeastern New Brunswick.

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CHAPTER I

ARCHAEOLOGICAL RESEARCH IN THE MARITIMES

The earliest archaeological endeavors in the Maritime provinces of Canada are well reflected in the masses of aboriginal antiquities which for the most part lie unattended in forgotten corners of our old and well established museums. During the late 19th and early 20th centuries a large number of persons, some individuals and some organized groups, became keenly interested in recovering the native artifacts which with little effort could be abundantly gathered from large, then basically undisturbed sites. As recently demonstrated Maritime artifacts collected during these early periods occasionally found themselves spread far and wide depending on the varying personal affiliations of the excavators (Turnbull 1979 a).

The most active and organized group of collectors in New Brunswick was formed in 1862. Centered in St. John the group was predominately composed of professional men whose occupations allowed them the time and money to follow such pursuits. Interested members of the Natural History Society of New Brunswick planned excursions for digging and compiled fairly accurate notes on what had been done and where. Reports of Society activities were often printed in the Bulletin of the Natural History Society of New Brunswick. Large scale excavations at two sites, the Keyhole on Grand Lake and a shell midden at Bocabec, New Brunswick were well reported and described. One member of the Society, the historian Dr. William F. Ganong, did extensive research into locating and recording New Brunswick historical sites. In 1899 he published

A Monograph of Historical Sites in New Brunswick, a work constituting the first general archaeological survey in the Maritimes using the historical record, informants and actual field reconnaissance techniques.

In Nova Scotia, the Nova Scotian Institute of Science developed on a parallel with the Natural History Society and published their findings in the Proceedings of the Nova Scotian Institute of Science. As with their New Brunswick counterparts members of the Nova Scotia group became attracted to the more physically evident sites and a large number of their expeditions were directed towards shell middens (Connolly 1977 a: 9-11).

During the early 20th century the Maritimes were sporadically visited by several individuals who located, excavated and occasionally reported their findings in published form. In 1922 Moorehead visited New Brunswick in search of "Red Paint" burial sites (Moorehead 1922). Smith and Wintemberg (1929) visited Nova Scotia for the National Museum of Man and published descriptive reports concerning shell midden excavations. Wintemberg also investigated discoveries being made by New Brunswick amateurs and conducted additional excavations in this province (1937). With few exceptions the discoveries made and the information gained by these visitors were not adequately recorded and can presently aid research with little other than large collections of unknown provenance.

Only within the past two decades have the Maritime provinces benefited from professional archaeological endeavors. As a result of a sudden realization that archaeological resources were non-renewable and that the information they could provide towards understanding our past could easily be destroyed, a number of salvage projects and several organized survey programs were initiated. Under a threat of destruction historic Fort LaTour and its underlaying prehistoric components were excavated by Russel Harper of the New Brunswick Museum (1956). Hasty surveys were conducted in the mid-upper St. John River valley in an effort to find sites in advance of flooding by the developing Mactaquac hydro-electric dam project. Salvage excavations were undertaken in an effort to locate historic Fort Meductic (Caywood 1969) and during this same time period Dr. George MacDonald excavated an early Paleo-Indian campsite near Debert, Nova Scotia (MacDonald 1968).

Following this sudden flurry of activity the National Museum of Man sponsored general surveys in New Brunswick and Prince Edward Island (Pearson 1966) and in 1967 an intensive survey and excavation program was initiated in Passamaquoddy Bay area (Sanger 1971 b) in cooperation with the provincial government. As the Atlantic Province's Archaeologist David Sanger also conducted survey work on the Tobique River system in northwestern New Brunswick. This survey resulted in the excavation of the Deadman's Pool Site. During the next few years a number of other survey projects were undertaken in both riverine and coastal areas of New Brunswick and Nova Scotia (Martijn 1968, Buxton-Keenlyside 1970, Lavoie 1971, Turnbull 1971, Preston 1974 a, b, Allen 1975, Burley 1976, Nash 1977, Allen and Turnbull 1977, Emin 1978).

In New Brunswick more salvage excavations were also conducted although with few exceptions the sites investigated proved to be heavily disturbed. In 1970 David Sanger excavated a large basically undisturbed Archaic cemetery at Cow Point (1973). In 1972 David Burley excavated a small disturbed campsite at the mouth of the Bartibog River (1974).

In the same year David Keenlyside, Atlantic Provinces Archaeologist for the National Museum of Man, excavated what remained of several sites on the Tracadie River system. With the exception of the Point à Tom site, a small fishing station, the other sites were badly eroded or disturbed (Keenlyside 1976). During 1972-73 Christopher Turnbull, New Brunswick's Provincial Archaeologist, excavated what remained of a large disturbed historic/prehistoric campsite at Old Mission Point near Campbellton. He later conducted excavations on an undisturbed, although not heavily utilized, stratified site on Fulton Island near Grand Lake (Turnbull, 1973, 1974 a, b).

In Nova Scotia the development of survey and salvage work was considerably slower. During the 1960s an amateur, J.S. Erskine, excavated a number of sites in cooperation with the Nova Scotia Museum and the National Museum of Canada. Large collections were gathered by inadequate data collecting techniques (Connolly 1977b:38). Following Erskine several surveys were conducted by trained archaeologists in Cape Breton and on mainland Nova Scotia river and coastal areas (Preston 1974 a, Davis 1974, Nash 1977). A number of the sites located during these surveys were partially excavated. However, as in New Brunswick, a great many of the sites were disturbed and dating of the assemblages was for the most part by comparison only.

Although the above record is not complete it does give some indication of the nature of the archaeological activities that have taken place in the Maritimes. It was primarily due to the 1970 appointment of a Provincial Archaeologist for the Province of New Brunswick that this Province has received greater archaeological attention. Since 1975 the better part of New Brunswick's archaeological energies have been directed towards the Red Bank/Sunny Corner area of the Miramichi River district.

Archaeological Research in the Red Bank/Sunny Corner of Northeastern New Brunswick

The Red Bank/Sunny Corner area has long been known to produce Indian "relics" and until the second half of this century several large locally known prehistoric campsites were literally mined for arrowheads by visiting sport fishermen.

One of the better known artifact producing sites was Hogan-Mullin. This site is located on a long narrow terrace on the north bank of the Northwest Miramichi about one kilometer upstream from its confluence with the Little Southwest Miramichi (Figure 1). In 1928 an early historic Micmac copper kettle burial was uncovered along the river bank near this site (Gorham 1928). In 1930 W. J. Wintemberg visited the same site, excavated several trenches and recovered an extremely large collection of lithic and ceramic artifacts as well as over 70,000 flakes (Wintemberg 1930). During this same visit Wintemberg examined a collection of red ochre coated triangular chipped points, a copper awl and slate "plates" that had been recovered by a local farmer from two possible cremation graves on a hillside location in Sunny Corner (Wintemberg 1937:206-207). Although Wintemberg relocated the area of the finds his excavations were unable to locate more burials.

During the period 1950-72 it would appear that only a few local people took an active interest in collecting artifacts from the Red Bank/Sunny Corner area. In 1972 Joseph M. Augustine, a resident of the

Red Bank Indian Reserve found a mound on the wooded terrace which separates the Northwest from the Little Southwest Miramichi rivers (Figure 1). When his shovel probings revealed human bones and artifacts Mr. Augustine made successful efforts to contact the provincial archaeologist about his finds. From 1975-77 Dr. C. J. Turnbull completely excavated the first known Adena related burial mound in the far Northeast (Turnbull 1976). Since its discovery this rather "foreign" cultural manifestation has raised many questions concerning the origins, lifestyles and external and internal cultural relationships of New Brunswick's more recent prehistoric populations.

In 1975 salvage excavations were conducted at the CfDk-2 Wilson site, one of the long known prehistoric campsite areas on the Northwest Miramichi. The site is located on a low terrace opposite the native community of Red Bank (Figure 1). The site proved to be almost as large as the Hogan-Mullin and also produced a wide range of lithic and ceramic artifacts. Having endured at least a century of agricultural operations, the compact prehistoric cultural deposits offered little towards understanding the history of the site or the area. Another site, the CfDk-4 Howe Site, was found just downstream from Wilson and produced a similar abudance of cultural materials although these again were thoroughly mixed by agriculture.

In conjunction with the ongoing 1975-77 Augustine Mound excavations, archaeological surveys were conducted in the immediate vacinity of Red Bank/Sunny Corner as well as in the surrounding areas. On the Red Bank Federal Indian Reserve Lands alone over 20 previously unrecorded sites were located. Approximately half of these received small scale test excavations (Emin 1978).

Maritime Prehistory

Having summarized the type and number of archaeological activities that have taken place in the Maritimes, the shortcomings of such efforts are easily recognized. The basic information upon which archaeological researchers draw in order to formulate ideas on our prehistoric past is still missing. Burley (1974:15) states that whereas Ritchie, Griffin, Rouse, Bullen and a number of others were early in establishing cultural chronologies and continuously refining them for areas like New York State and the southern New England coast, our Atlantic region is still basically devoid of such understandings. Sanger (1979:100) notes that one main reason for the scarcity of data pertaining to the ceramic period has been the heavy research interest in the "Red Paint" problem. Dr. Roscoe Wilmeth (1978:149-156) recently reported only sixteen dated sites from the combined provinces of New Brunswick and Nova Scotia. It is interesting to note that half of the dated sites are shell middens and that two others relate to easily recognized earlier cultural traditions.

Based on the information thus far accumulated, the following brief statement can be offered concerning our Maritime prehistory.

By 10,600 B.P. hunting bands occupied sites such as the one located at Debert, Nova Scotia (MacDonald 1968:53). From this time until approximately 5000 B.P. the evidence or lack of the same "suggests" a near non-occupation of the area. From approximately 5000-3700 years ago the Maritimes were occupied by an archaic population that was responsible for significant numbers of elaborate "Red Paint" burial sites. Sometime after 3700 B.P. a sudden disappearance of these distinctive cultural assemblages appears to take place and by 3400 B.P. more southerly recognizable burial traits and cultural assemblages begin to make scattered appearances. These evidences seemingly represent the first of many northeasterly moving bands, which in combination with influences from other adjacent areas, eventually contributed to the permanent populating of the Maritimes.

It would appear that by 3000 years ago the Maritimes were populated never again to be unpopulated and once the permanent population became established intrusions of foreign peoples and ideas could expect to become assimilated or assimilate the resident population only to give a broader expression of the previously established base.

This rather scanty presentation of prehistory and the general comment concerning the last 3000 years can be padded with a limited amount of information concerning cultural activities. The majority of this padding concerns the earlier years and can be drawn from the controlled excavations of isolated Maritime sites which display distinctive cultural assemblages that can be identified with certain cultural traditions on a broader regional scale. With the exception of several professionally excavated shell middens, the temporal and geographical range of which are limited, the latter stages of our Maritime prehistory remain basically undefined.

It would appear that the above situation exists principally due to the lack of an established temporal framework within which archaeologists can place individual diagnostic artifacts and their associated assemblages. Without the development of such a framework the contributions of Maritime archaeologists will continue to be limited and their identification of and approaches to any specific anthropological problems will be greatly delayed. The possibility of formulating a sequence of Maritime cultural development through the evaluation of many individual single component sites would not only be time consuming but would also be a rather hazardous venture considering the availability of Maritime data.

There can be no doubt that from very early times the coastal areas of the Maritimes played an important role in the lives of our native inhabitants. Unfortunately within the past 4000 years tidal amplification and water load subsidence, atmospheric and oceanographic elevation of sea level have produced an alarming 15 centimeters per century submergence rate for this area (Grant 1970). Presently New Brunswick sites of late coastal occupations are constantly being eroded and inland waterways, once salt free, are rapidly being drowned and exposed to salty tides (Keenlyside 1976). Recent survey work in northeastern New Brunswick indicates that even 19th century historic coastal sites have become submerged without a trace (Allen and Turnbull 1977).

It is indeed unfortunate that so many coastal sites have been lost to the sea. However, certain interior sites can offer some consolation. Well situated, large stratified sites located within tidal estuaries offer the best possible hope for the establishment of the temporal framework. If for the next few years Maritime archaeologists were to concentrate their efforts towards locating and researching such sites, a chronological framework for our area would soon be developed and discrepancies within the region where sub-areas have produced cultural reflections of their own would easily be recognized. While virtually erasing any evidence of prehistoric coastal adaptation, the rise in sea level has created more than favorable situations in estuary areas for the production of stratified sites (Turnbull 1974b:24).

The Red Bank/Sunny Corner area of the Miramichi River district of northeastern New Brunswick was one such area in which an undisturbed deeply stratified habitation site was recently located. Through the excavation of this one site a temporal framework can be suggested. It is the intention of this thesis to present this chronological ordering of artifact types and to examine potential regional cultural affiliations based on this established sequence.

CHAPTER II

THE MIRAMICHI RIVER DISTRICT

Geography and geology

The Miramichi River and its tributaries drain an area of approximately 1400 km^2. Short portages join these waterways to other principal rivers throughout the province of New Brunswick. The Nipisiquit, the Saint John, the Richibucto and the Miramichi are intricately connected by a number of their smaller branches.

The two main branches of the Miramichi, the Northwest and the Southwest, separate at Beaubear's Island just above the town of Newcastle. Below this point the main river flows eastward for approximately 20 kms. before it widens to form an inner bay. On the south bank of this inner sector marshlands prevail (Burley 1974:4). Beyond this rather protected estuary, the outer Miramichi Bay meets the Gulf of St. Lawrence.

At Red Bank, approximately 21 kms. upstream from Newcastle, the moderately rolling landscape begins to fade as the main Northwest branches with the Little Southwest. From this point, which also marks the head of tide for the Northwest, both channels make their way into the higher and more rugged country of their interior sources. While the lower regions of both the Northwest and the Little Southwest rivers are underlain by Carboniferous-Triassic sedimentary rocks their upper reaches are formed of Cambrian-Devonian highly deformed sedimentary and volcanic rocks (Loring and Nota 1973).

Recent reports suggest that the Wisconsin ice had begun its retreat from southwestern New Brunswick by about 13,200 B.P. (Mott 1974) and from northeastern New Brunswick by 12,900 B.P. (Karijaakko 1976: 33). By 11,500 - 11,000 B.P. the ice appears to have totally vanished from the latter area (Karijaakko 1976:33).

Deposits of glacial till moraine cover the Miramichi River valleys and large glacial outwash deposits are found in the region of Miramichi Bay (Philpott 1978:49). In the Red Bank/Sunny Corner area several terraces of glacial till exist, probably having been formed by glacial outwash (Jacques Thibault, New Brunswick Department of Natural Resources, personal communication). The exploitation of gravel deposits held in these terraces is presently a local industry for the communities of Red Bank and Sunny Corner.

The soils of the Miramichi River drainage area are mainly podzols developed from various glacial tills (Loring and Nota 1973:18). According to Rowe (1972:115) this includes 'humo-ferric' and 'ferro-humic' (strongly acid and may have an 'iron pan' accumulation in the organic materials). Lower portions of the river valleys are often composed of recent alluvial deposits (Rowe 1972:115). Most soil temperatures are cool to moderately cool and relatively moist although well drained (Philpott 1978:62).

Climate

Generally speaking New Brunswick lies within a humid continental climatic region. In a thirty year study from 1930 to 1961, the Department of Transportation station in Chatham, located approximately 31 kms downriver from the Red Bank/Sunny Corner area, gives a mean annual snowfall to 253 mms with an average yearly rainfall amounting to 742 mms (Burley 1974:13) The total yearly precipitation could generally be expected to reach 995 mms or more. Snow cover can be expected for at least five months of the year. January is the coldest month with a mean temperature of $-9.5^{o}C$ and July is the warmest with an average of $19^{o}C$ (Burley 1974:14).

> "The present winter freeze-up date in the Miramichi basin is generally December 15th but has occurred as early as December 3rd and as late as January 3rd. The beginning of ice deterioration is from March 12th to April 26th with an average date of April 10. The rivers are generally ice free about two weeks after this date" (Emin 1979:11).

Moderate flooding of river banks is not uncommon during spring freshets. Occasionally, an exceptionally fast thaw coupled with a heavy snow melt will cause serious flooding with severe erosional damage to river banks and terraces. Smaller meandering river channels may change their routes during such a flood. Freshets in the Red Bank/Sunny Corner locality have caused alluvial sediments to be deposited at the confluence of the rivers creating a number of islands (Jacques Thibault, New Brunswick Department of Natural Resources, personal communication).

Paleo-climatic information for the Province of New Brunswick can be interpreted from several pollen diagrams. Regional sub-climates presently do exist and this must be kept in mind when viewing any one diagram unless it specifically relates to the area under study. Recent studies by Korpijaakko (1976) reveal the following climatic information concerning the period following initial deglaciation of northeastern New Brunswick: 10,000 B.P. an initial warming period, 9000 B.P. a moist cooling trend, 8000 B.P. increasing warmth, 7000 - 5000 B.P. a dry maximum warmth, and 4000 - 1000 B.P. a cool moister period (Korpijaakko 1976:118).

Flora

Except for some west central highland areas, New Brunswick forms part of the Acadian Forest Region. This area has a mixed forest cover of both hardwood and softwood species. According to Rowe the Miramichi River district, or the better portion of it, is included in that section of this forest region known as the Eastern Lowlands. This section is predominately coniferous in character and good stands of black spruce, red spruce and balsam fir are most prevalent on the more level landforms with impeded drainage. A mixed forest in which these species are associated with eastern white pine, red maple, sugar maple, yellow birch and white birch often prevails in the better drained areas. In coastal locations white spruce is dominant (1972).

> "Widespread fires appear to have favored propagation of the coniferous species in the past, particularly black spruce, jack pine, and to a lesser extent eastern white pine and trembling aspen have also benefited. In older stands eastern hemlock is present to a limited extent" (Rowe 1972:115).

In areas of repeated cutting and burning Loucks notes that witherod and rhodora are the most common form of shrubs with sheep laurel, mountain-holly and speckled alder also being present. "Common smaller plants include wintergreen, gold-thread, naked miterworth, bunchberry, bristley clubmoss, sphagnum and Schriber's moss" (Loucks 1968:138).

Presently the vegetation of the Miramichi district provides several edible species of nuts and berries. Nuts which are available in this area today include: "The acorn from the red oak (Quercus rubra), beechnut (Fagus grandifolia), some butternut (Juglans cineria) and hazelnut (Corylus americana)" (Emin 1979:13). Fruits and berries from the same area include pin cherries, choke cherries, high-bush cranberries, serviceberries, gooseberries, blueberries, huckleberries, strawberries, raspberries, blackberries, high-bush blueberries and hawthorn berries (Emin 1979:12).

Another readily available wild food product which becomes abundant in New Brunswick for a short period each year is the fiddlehead.

> "The term "fiddlehead" is a name given by the people of New Brunswick to the tightly curled frond of the ostrich fern, as it emerges from the ground in early Spring ... in rich soil in swampy swales and in the valleys of rivers, which regularly overflow their banks every spring ... the fiddleheads grow large and fleshy and are very tasty when properly cooked" (Squires 1972:116).
> "Wild peas, shunk cabbage, lambs quarters and a number of other small edible plants and some tubers are also available for collection in New Brunswick" (Emin 1979:12-13).

According to information provided by pollen diagrams for two separate New Brunswick areas, the present forest cover and most likely other present day forms of vegetation began to exist, between approximately 3500 and 2500 years ago. During the last 1000 years New Brunswick has begun to return to a cooler, more moist climate as "indicated by an increase in spruce pollen and decline in hardwood and hemlock genera" (Mott 1974:287). In view of this information it would seem justifiable to suggest that for the past 2-3000 years New Brunswick's native populations have had access to all the above mentioned, if not more varieties of collectible wild foods.

Fauna

Presently New Brunswick supports a wide variety of mammals, birds and fish, most of which are also available in the other Maritime provinces and in the northern New England states. As a sub-region the Miramichi River district includes fauna of both a coastal/estuary habitat and an interior river/forest zone. A selective summary of the fauna available from the Miramichi River district during historic times is here presented. The summary is selective in that it examines mainly those species which appear to offer or to have offered resource potential towards providing food, clothing or other humanly usable products.

Mammals

The larger land mammals of New Brunswick which presently appear to offer variety resource potential are moose, deer, beaver and bear. Until the 1920's the woodland caribou was also available in the province.

The moose (Alces alces) is a large nonmigratory ungulate which frequents the forested interior and prefers poorly drained areas with aquatic vegetation. Historically this animal has "had a history of relative abundance and scarcity in New Brunswick" (Squires 1968:50). For the most part these fluctuations occured due to excessive hunting for both meat and hides (Squires 1968:50).

The white-tailed deer (Dama virginiana) is another nonmigratory ungulate which presently inhabits New Brunswick's forested regions. The deer prefer locales of secondary growth although frequently they gather in "yards" for winter feeding. Cedar swamps are a favourable locations for these winter browsing areas. Until recently it was presumed that deer were relative newcomers to the province, appearing sometime in the 19th century. This assumption is presently being questioned. The Passamaquoddy Bay prehistoric sites have yeilded deer remains (Emin 1979:45) and Squires cites early historical reports which mention deer in the northern part of New Brunswick.

The woodland caribou (Rangifer tarandus), a nonmigratory species, once ranged throughout New Brunswick in substantial numbers. The caribou were often found in "small groups of ten to fifteen individuals which during the winter inhabit upland evergreen forests" (Burley 1974:7). In spring and summer the caribou were found on a wider range, feeding on mosses, lichens, grasses etc.

> "By 1927 they were no longer sighted in the province. Remains of this mammal appear in the Passamaquoddy Bay shellheaps; Hoffman has them cited in his Micmac annual subsistence patterns; and game warden accounts up to 1914 reported them as being plentiful" (Emin 1979 : 46).

The beaver (Castor canadensis) is a mainly acquatic animal inhabiting the woodland waterways of New Brunswick. As with a number of other over exploited species, the beaver was nearly exterminated during the early 19th century (Squires 1968:17).

The common black bear (Euarctos americanus) has historically been and presently continues to be very common in New Brunswick's thickly wooded areas. The bear hibernates in a natural shelter during the winter months and spends the remainder of the year feeding on wild fruits, fish and small animals.

Small fur-bearing animals presently available in New Brunswick are muskrat, racoon, skunk, mink, marten, weasel, otter, fisher, woodchuck, fox and rabbit. With the exceptions of muskrat and otter which are mainly aquatic, the remainder of these smaller animals are terrestrial. As with beaver, "otter, fisher, marten and mink were overtrapped and the first three became scarce until a closed season came about in 1903" (Emin 1979:16). Recent fur export permits suggest that mink, skunk and weasel are more common than the former three today. Marten have increased; and red fox, muskrat, racoon and beaver pelts are presently amongst the chief exports (Natural Resources, Fisheries and Wildlife Branch, Province of New Brunswick). The porcupine has historically been abundant and presently continues to range unrestricted throughout the province (Squires 1968:34).

Sea mammals presently most often sited in the Miramichi estuary are harbour seal (Phoca vitualina), grey seal (Halichoerus grypus) and harbour porpoise (Phocaena phocoena). The hooded seal (Cystophora cristata) is occasionally reported.

> "During the contact period it was noted that seals were easily obtained when they were found by the hundreds sunning along the Miramichi estuary and near the rivers ... Porpoise was eaten by the Micmac and its oil was sold to the European settlers during the early historic period" (Emin 1979:18).

The walrus (Odobenus rosmarus), once known to be fairly abundant along New Brunswick's northeastern shores, was extirpated some two hundred years ago (Squires 1968:45). Although a whale population presently does exist off the coasts of the Miramichi Bay, most species are listed as rare.

Birds

The forested area of New Brunswick displays innumerable lakes, ponds, marshes, streams, and rivers. The coast of the province provides over 1500 kms of exposed beaches, river estuaries, sheltered bays and marshlands. With such varied natural environs New Brunswick offers excellent feeding grounds for both a resident bird population as well as for migratory species (Squires 1952:7). Only those species which appear to offer a significant contribution towards a subsistence economy will be discussed. For a more complete list of both migratory and resident bird species in New Brunswick Squires may be consulted (1952).

The interior forested regions of New Brunswick support two resident game bird populations. These are the Canada spruce grouse (*Canachites canadensis canace*) and the Canada ruffed grouse (*Bonasa umbellus togata*). American woodcock (*Philohela minor*) is a common summer resident and transient of the forested areas (Squires 1952:56). Presently closed hunting seasons have been established due to the scarcity of the above species (Emin 1979:16).

According to Squires (1956) the most common transient game birds which utilize sheltered New Brunswick marine areas and marshlands for spring and fall feeding are the common Canada goose (*Branta canadensis canadensis*) and the American brant (*Branta bernicla hrota*). Common transients and summer residents of these same areas are the black duck (*Anas rubripes*), green winged teal (*Anas carolinensis*), blue winged teal (*Anas discors*) and ring-necked duck (*Aythya collaris*). Other common transients and sometime winter residents are the American golden-eye

(Bucephala clangula americana), old-squaw (Clangula hyemalis), white-winged scoter (Melanitta deglandi), surf scoter (Melanitta perspicillata) and red-breasted merganser (Mergus serrator serrator) (Squires 1952:28-41).

The herring gull (Larus argentatus smithsonianus), although not presently taken as a game bird, is a very abundant year round resident. In late spring the herring gull produces hundreds of thousands of eggs on inshore island colonies.

The razor-billed auk (Alca torda torda) is presently a rare transient along New Brunswick's coasts. The great auk (Pinguinus impennis) was present in early historic times but is now extinct (Squires 1952:72). Denys described an "enormous flight of passenger pigeons on the lower Miramichi River in June about 1650" (Squires 1952:7). This species is also extinct.

Fish

The estuary and interior waterways of the Miramichi support a wide variety of fish species. Early historical accounts "stressed fish as a major resource for the Micmac, and the first Europeans in northern New Brunswick made the abundant fish a major export" (Emin 1979:17).

Within the estuary several salt water species are plentiful and inhabit coastal areas during their spawning periods. The smooth flounder (Liopsetta putnami) spawns near shore in early June and the winter flounder (Pseudopleuronictes americanus) is available near the inner bay shores during late May and June (Philpott 1978:185). The Atlantic herring (Clupea harengus) can also be found in abundance near shores of the inner bay during the spring of the year (Philpott 1978:183). Mackerel (Scomber scombrus) occasionally makes its way into the inner bay areas during the summer months (Philpott 1978:184).

The inner bay portion of the estuary also supports, although not abundantly, the softshell clam (Mya arenaria), the quahaug (Mercenaria mercenaria), the bar clam (Spisula colidissima), the mussel (Mytillis edulis), the oyster (Crassostrea virginea) and the lobster (Homarus americanus)(Philpott 1978:186-192). The scallop (Crassostrea virginea) is also available in the deeper waters of Miramichi Bay (Philpott 1978:192).

In the rivers of the Miramichi district a number of anadromous fish species are particularly abundant during spawning "runs" in the spring and early summer. Most noteworthy of these species are smelt, shad, striped bass, trout, gaspereau and the Atlantic salmon. Sturgeon was at one time also noted to have runs in the major branches of the Miramichi.

The major fish runs on the Miramichi begin sometime during the latter part of April or early May. The smelt (Asmerus sperlanus mordax) is the first to move up the rivers, often during the height of the spring freshet. This species is closely followed by shad (Alosa sapidissima), striped bass (Roccus saxatilis) and gaspereau (Alosa pseudoharengus). The "early run" of the Atlantic salmon (Salmo salar) occurs in late May and June. An additional "late run" frequently occurs during September/October and spawning takes place in the rivers during late fall (Leim and Scott 1966:111). Historically the salmon has proved to be of substantial economic importance to the Miramichi River district.

Other species of relative abundance in both the estuary and the rivers are the American eel (Anguilla rostrata), the tomcod (Microgadus tomcod) and the speckled trout (Salvelinus fontinalis). The eel is present in quiet or backwater river areas during summer and does not range far from the estuary shore during winter. The tomcod frequents the estuary during summer and travels up the rivers to spawn under the ice during winter (Philpott 1978:179). The speckled trout, a species whose whereabouts at any specific time is controlled by water temperatures, frequently ascends the rivers during the fall when spawning takes place (Leim and Scott 1968:116).

Apart from the anadromous fish New Brunswick supports about 25 species of strictly freshwater fish. Although none of these would compare favorably with the species mentioned above, they do present a minor subsistence potential. Freshwater species most commonly available in the Miramichi district at present are the white sucker, the creek chub, the lake chub and the brook trout.

Reptiles

Three varieties of turtle presently inhabit northeastern New Brunswick. These are the wood turtle (<u>Clemmys insculpta</u>), snapping turtle (<u>Chelydra serpentina</u>) and the painted turtle (<u>Chrysemys picta</u>). The wood turtle is terrestrial while the others are aquatic (Squires 1970: 13-15). A range of smaller reptiles such as snakes, frogs and salamanders are also available. The four most common frogs found in most areas of New Brunswick are the bull frog (<u>Rana catesbieana</u>), green frog (<u>Rana clamitans</u>), leopard frog (Rana pipiens) and the pickerel frog (Rana palustris) (Squires 1970:8-12). All frogs are mainly aquatic and both frogs and turtles hibernate during winter by digging into mud or river banks below frost zones. In early historic records turtles are noted as a Micmac food item.

CHAPTER III

THE OXBOW SITE

During the 1975-77 surveys in the Red Bank/Sunny Corner area, Mr. Joseph Augustine reported a site location on the Little Southwest Miramichi River. The site was the Oxbow. In 1977 testing found the site basically undisturbed and culturally stratified to a depth of over two meters. The Oxbow seemed to offer an opportunity to suggest a 2-3000 year chronological sequence for artifact types as well as an opportunity to collect data concerning the settlement and subsistence aspects of the lives of the prehistoric populations of the Miramichi River. In short, the site offered a chance to explore a number of culture history questions which although always present, were aroused by the discovery of the Augustine Mound.

The Oxbow site is situated on a low terrace which forms the inside curve on the first bend in the Little Southwest Miramichi River just above the community of Red Bank (Figures 1, 2). The site area is locally referred to as the "Oxbow" and according to the Borden system of site designation for Canada, the area is archaeologically identified as CfDl-1. The site property is owned by the Red Bank Indian Band, Northumberland County, New Brunswick.

Upon occasions of extremely high water the entire low terrace upon which the site is located becomes a river flood plain. During periods of average water level, the more westerly portions of the lower bend of the river provide an excellent salmon pool. A lesser depth of the same pool extends downriver for a distance of several hundred metres.

Upstream from the bend the water level is shallower and considerably more rapid (Figure 2). Presently the head of tide on the Little Southwest Miramichi is located near the lower bend at Oxbow.

Areas of the site adjacent to the river are at present covered by a thick tangle of alder and hawthorn bushes (Figure 4). Approximately 30 metres to the interior young poplar trees dominate while the odd spruce or pine tree also stands. The eastern sections of the site are covered with wild hay and clumps of low lying hawthorn bushes. To the west an overgrown woods road connects the lower terrace with higher ground to the north. This high terrace to the north of the site is currently being mined for gravel.

The Oxbow site area was farmed during the late 18th, 19th and 20th centuries (Hamilton 1979). Surface features on the eastern portions of the site include slight furrows caused by plowing. A shallow cart track which has fallen into disuse is also present. Heavy equipment has recently disturbed surface areas on the western portions of the site. On the northeast the site is bounded by a narrow strip of river backwater locally referred to as a "bogan" (Figure 3).

Archaeological approach

In the summer of 1975 some shallow testing was accomplished on the Oxbow site at the locations shown in Figure 3. The results of these efforts were not encouraging. In 1977 after a more in-depth archaeological reconnaissance of the area had been conducted, it was discovered that the 1975 test units had been situated in a location that had been disturbed (Figure 3). Further testing was decided upon.

During the summer of 1977 a two meter square, unit 77-1, located in an undisturbed area, was excavated in 10 cm arbitrary levels to a depth of over two meters. This test unit resulted in the identification of a deeply stratified occupation site which produced cultural materials in the form of pottery, chipping debris, stone tools, hearth features etc. to a depth of 168 cms. With these encouraging results, a 1978 field program was planned. It was decided that more extensive testing would first be conducted to define the horizontal and vertical limits of the site. Secondly, a more concentrated excavation effort in some areas could better define the nature of the site and cultural materials.

During the spring and early summer of 1978 nine two meter square excavation units, shown on Figure 3, were placed at varying distances from the river's edge, along and beyond a 200 meter length of an established East-West grid line (Figure 3). Due to the compact nature of most of the sand/silt layers, natural levels were found impossible to follow and all nine test units were excavated in 20 cm arbitrary levels. Vertical control was established through the use of a datum point located at the far eastern end of the site. A Parks Canada survey recently linked the Oxbow site grid pattern both horizontally and vertically to the provincial grid.

With one exception all nine test units produced prehistoric cultural debris while some also produced historic materials. All test units were excavated to a final depth of the 1978 June water level on the site.

Although not all cultural debris was horizontally plotted within each 20 cm level of the test units, materials recovered for each level were kept separate. All stone tools and ceramic fragments were accurately recorded. Features from the test units were sketched and their associated cultural remains were distinguished from other more general finds such as singular fire cracked rocks or lithic debris. The most productive areas tested displayed a concentration of chipping debris, pottery and features within the first meter and then produced scattered finds to depths of up to 220 cms.

Test units on the far eastern and northern sections of the site did not produce the depth or abundance of cultural material that was evident in the western and more central units. One unit which proved to have no cultural materials in association was located only a few meters north of the river bank at the western end of the site. In this unit thick upper layers of light sand were steeply inclined towards the river indicating a rather recent formation of this portion of the bank edge. At the western end of the site, another unit indicates a similar building out of the terrace towards the river. In this latter unit, however, the thick sterile layers of sediment occur near the base of the excavation and are overlain by more than a meter of alluvial/cultural deposits (Figure 5).

According to the information gathered by the excavation of the nine text units, the site was found to extend in an East-West direction for a distance of at least 200 meters and had a varying 40 to 80 meter width. The depths of the cultural deposits vary from less than 50 cms in the far easterly and northerly areas, to depths of approximately 130 cms on the far western end and to maximum depths of over 220 cms in the east central portions of the site.

Testing also revealed that the layering of the sand/silt deposits throughout the site was by no means uniform. Based on this knowledge and on the experience that horizontal following of the different natural levels was extremely difficult, it was decided that any larger excavation units should be excavated in more manageable 10 cm arbitrary levels and that the varying stratigraphy should be accurately recorded for each major unit.

Three areas were chosen in which to concentrate the remaining 1978 field time. Unit 78-10, a six by seven meter rectangular unit was located near the east end of the site (Figure 9), where according to test unit one, cultural deposits appeared concentrated within one meter of the surface although scattered finds had been recovered to a depth of approximately 140 cms. Unit 78-11 was placed on the western end of the site near test unit 78-4 which had yielded a large number of post moulds (Figure 6, 42) and distincitve hearth areas. Unit 78-11 was a five meter square (Figure 11) which produced an abundance of cultural materials within the upper meter with scattered finds occurring to 130 cms. Unit 78A was a one and a half by eight meter trench unit, placed along a North-South line in the east central site area. This location produced cultural materials to a depth of 220 cms, the level at which the water was encountered (Figure 7). Another five meter square unit, 78-12, was placed just north of 78A and expectations are that this unit also will produce cultural deposits to depths of over two meters.

An examination and comparison of the profiles from units 78A, 78-10 and 78-11 tends to support the test pit findings which indicated non-uniformity in the natural layers on the site (Figures 8, 10, 12). Of the total of 140 square meters of the site opened for excavation during the 1978 season, 115 square meters of the site were totally excavated. Due to a shortage of time, only the upper levels of unit 78-12 were completed.

Within each 10 cm level of the larger units, all cultural material found was plotted on a 1:20 scale graph according to its approximate position. Soil color and texture differences noted within each level were also drawn to scale (Figure 52-55). This procedure allowed for the identification of clusterings of cultural debris within the larger areas and for cultural associations to be made between features and their surroundings. Whenever possible during the excavation, features were isolated, photographed, drawn and excavated to their final depths and contours. Soil samples associated with features were collected and were examined by "flotation" for organic content. Carbon samples were taken whenever an adequate amount of carbonized material presented itself.

All excavation work at Oxbow was conducted by "shovel shining" except when a feature or concentration of material warranted the use of smaller implements. All excavated soil from the larger excavation units was sifted through a one quarter inch wire mesh screen before being discarded. A complete photographic record of the 1978 excavations was kept.

CHAPTER IV

EXAMINING THE EVIDENCE

This chapter involves a detailed technical analysis of the cultural remains which were recovered and/or recorded during the 1977-78 test and preliminary excavations at the Oxbow site. As was implied in the preceding chapter, soil conditions at Oxbow did not allow for the preservation of bone, wood, antler or other organic materials. Only when such substances were reduced to a carbonized state in a hearth or fire pit, could they then possibly be identified. The bulk of cultural materials recovered from Oxbow are therefore either lithic or ceramic. The few historic materials collected were treated on an equal basis with the prehistoric artifacts.

The lithic artifacts have been separated into categories according to form and probable function. Further, "diagnostic" artifacts of this nature have been sub-divided into "types" of tools which display particular clusterings of attributes. These attributes are defined and thus also is defined the specific sub-class or "type" within the artifact category. All other non-diagnostic lithic artifacts are described within their broader categories and according to their individual attribute combinations.

Over ninety percent of all lithic artifacts, and ninety-nine percent of all chipped lithic artifacts recovered from Oxbow were manufactured from cobble quartz. Due to the blocky hetrogenous cleavage of most quartz, difficulties in achieving controlled conchoidal flaking during tool manufacturing were quite evident. Within the chipped tool industry the remaining materials were mostly identified as rhyolite.

Sandstone, quartzite and granite cobbles composed most of the non-quartz materials from which the ground, pecked and ground, and chipped artifacts were manufactured. Geologist Dr. A. L. McAllister warns that his identification of the lithic materials from the Oxbow site was done visually without the aid of thin sections or other laboratory procedures.

A detailed presentation of the Oxbow ceramic assemblage is provided on the basis of vessel identification. Each ceramic vessel is individually described according to rim form and decoration while the ceramic assemblage as a whole is analysed according to a number of other pertinent attributes.

This chapter also includes other aspects of the cultural presence herein defined as "features". Features themselves are visually recorded non-material cultural evidence which may or may not possess artifactual attributes. An assessment of the characteristics or attributes which a feature displays, can often lead to suggestions concerning the purpose or use to which certain forms of features pertain.

Historical artifacts

Artifacts from the historic period were found within the plow zone throughout most of the tested site areas. Although only two areas of debris concentration were located, the eastern and central sections of the site appear to have received heavier utilization during historic times. Table 1 demonstrates the distribution of historic materials as they occurred in the test and larger excavation units.

Table 1: Types and distribution of historic materials

excavation units	77-1	78-1	78-2	78-3	78-4	78-5	78-6	78-7	78-8	78-9	78-10	78-11	78-12	Trench A	Totals
clay pipe - bowl	0	4	2	0	0	1	0	0	0	0	0	0	0	0	7
- stem	0	1	2	0	0	0	0	0	0	0	0	0	0	0	3
lead shot	0	0	8	0	0	0	0	0	0	0	0	0	0	0	8
gunflint	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
buttons - porcelain	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
- metal	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2
beads	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
glass - bottle	19	0	0	1	0	0	0	0	0	0	15	0	0	2	37
- window	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
ceramics - earthenware	4	4	10	0	1	0	5	0	0	0	26	0	0	2	52
- creamware	0	0	2	0	0	0	0	0	0	0	1	0	0	0	3
- pearlware	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
metal - iron debris	2	1	0	1	0	0	0	0	1	0	0	0	0	0	5
- oxen shoes	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
- nails	7	0	2	0	0	0	0	0	0	0	0	0	0	3	12
- barrel hoop	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
- copper fragments	1	0	0	0	0	0	0	0	0	0	1	0	1	0	3
TOTALS	33	10	32	2	1	1	5	0	1	0	44	1	2	8	

TOTAL NUMBER 140

Although the origin of the historic artifacts recovered from the Oxbow site is uncertain, their wide distribution and fragmentary nature suggest their dispersal was by means of agricultural activities such as plowing. The majority of the excavated areas throughout the site were noted to have distinctive plow marks within the first 20 - 30 cms beneath the surface. The eastern and central sections of the site display surface features in the form of furrows which run in a North-South direction. These furrows are not evident in the more westerly areas although plow marks did occur beneath the surface in units 78-4 and 78-11.

The two areas in which concentrations of historic artifacts were discovered indicate that the site was historically utilized for other than just agricultural purposes. Feature 1, located in unit 77-1 near the center of the site (see Figure 3), is a combination of foundation log or sill stain and structural stones. This feature probably represents a small 19th century structure of some sort. Feature 10, located in unit 78-2 is an historic hearth area which occurs beneath the plow zone.

A few of the historic artifacts from CfDl-1 have their origin in the 18th century or possibly earlier. However, the majority relate to the 19th century and a few are the product of the 20th century. The articles belonging to the latter period will not be discussed. The following is a descriptive summary of all other historic items which occurred on the site.

Clay pipe fragments

There were a total of ten clay pipe fragments found. Four small undecorated stem fragments, two undecorated bowl fragments and four decorated bowl fragments were recovered. All fragments were too small to be indicative of any specific period.

Lead shot

Eight small pieces of lead shot, each 2-3 mms in diameter were recovered from the hearth area of Feature 10. One very small fragment of lead slag was also recovered from this same area.

Gunflint (Figure 30 a)

One small grey gunflint was recovered. It measures 15 mms square by 5 mms thick. The specimen was well battered on all edges.

Bead (Figure 30 f)

One glass tube bead was recovered from the area of Feature 10. The specimen is 3.5 mms in length by 2.5 mms in diameter. The bead has a dark red exterior and a green interior ring. A similar bead from the CfDk-4 Wilson site has been identified as having a date range of 1750 to 1830 (Karlis Karklins, Parks Canada, personal communication).

Buttons (Figure 30 c-e)

Two whole metal buttons and one fragmentary procelain button were recovered. The ceramic specimen, (Figure 30 e), would have been 10 mms in diameter and was a four holed variety. The first metal specimen,

(Figure 30 c), is of silver coated copper alloy manufacture with an off-centered eyelet attachment on the back. The specimen is 11.5 mms in diameter. The second metal specimen, (Figure 30 d), was manufactured from a white metal, has a broken eyelet centered on the back and has a diameter of 17.5 mms. According to South's typology, both metal specimens belong to the period between 1726 and 1776 (South, 1964).

Glass

Fragments of two 19th century bottles were recovered (Vienneau 1969). The first, represented by 17 fragments, is a molded light green liquor flask. The fragments of this specimen were found around the support stones of Feature 1. The second bottle is represented by some 15 fragments and was recovered from within the plow zone over the entire area of excavation unit 78-10. A single black wine bottle appears to have provided all 15 pieces.

Other glass fragments include a few sherds of clear window shatter and three pieces of brown bottle glass.

Ceramics (Figure 30 g-i)

The ceramic fragments recovered from CfDl-1 are for the most part very small sherds that, having probably originally been placed in some compost heap, were eventually deposited on the land during agricultural fertilization. Except for a few fragments of pearlware and creamware which may relate to the late 18th and early 19th century, the majority of fragments seem to be from the middle of late 19th and early 20th century (Noel Hume 1969). Table 2 gives a detailed descriptive summary of the CfDl-1 ceramics.

Table 2, Historical ceramic description and frequency of occurrence.

Description		Number of Fragments
Earthenware	- white glazed	22
	- brown glazed	11
	- red brown glazed	3
	- red with black glazed	2
	- blue banded glazed	2
	- brown banded glazed	1
	- red/yellow banded glazed	1
	- hand painted glazed	2
	- blue transfer glazed	3
	- black transfer glazed	5
Creamware	- yellow glazed	3
Pearlware	- white glazed	1
	- blue patterned glazed	1
	- green scalloped edge glazed	1
	Total	58

Metal

The majority of metal artifacts recovered from CfDl-1 were iron nails. Four of these specimens were identified as completely machine cut box head flooring nails (Figure 31 a), two were classed as having machine cut shafts and hand wrought heads, while one was identified as completely hand wrought with a rose style head (Figure 31 b). All specimens except the last can definitely be attributed to the 19th century (Nelson 1968).

One iron oxen shoe, spurred at both heels and measuring 96 by 46 mms was also recovered (Figure 31 c). With the exception of a portion of a 190 mms long by 35 mms wide riveted barrel hoop, the remainder of the iron metal scraps could not be identified.

Only two copper artifacts were recovered. The first is definitely a historic item. It is a small fragment of folded sheet copper. The second, although found near Feature 2 and within 30 cms of the surface could possibly be attributed to the prehistoric period. The specimen, a small pointed object, is 43 mms long, approximately two mms thick and tapers from eight to three mms in width. One lateral edge of the specimen is flattened while the opposing edge is rounded (Figure 30 b). This artifact may be a prehistoric awl or only a fragment of some historic item.

Lithic artifacts

Projectile points

This select category of stemmed and a few non-stemmed bifaces has been separated from the broader biface grouping by their suggested functional role. All specimens or portions thereof which are included in this grouping display attributes which suggest hafting as a prerequisite to utilization as a piercing implement. Only one specimen, from which tip and medial portions are missing may functionally belong in a classification for large stemmed bifacially chipped knives. Due to their rather limited size range the remainder of the specimens would appear to have been arrow tips.

In total fifteen complete specimens and fifteen fragmentary specimens with some diagnostic attributes were recovered. From the total several sub-groups or types have been defined according to specific combination of attributes. All specimens in the projectile point category have been individually described in Appendix A. Figure 13 gives a visual description of attributes discussed both in Appendix A and in the "type" descriptions. The following identifies groups of points from the Oxbow site according to certain attribute combinations.

Type A (Figure 14 a-i)

Nine specimens were placed within this projectile point group of straight to moderately contracting stemmed specimens. With one exception all points within this type are manufactured from quartz. The exception was produced from a rusty colored rhyolite (Figure 14 a). Although there appear to be two variants of form within this type, a short and wide variety and a longer and narrower variety, all specimens share common distinguishing attributes. All type A projectile points possess contracting blunt to convex bases, asymmetric or convex blade edges and wide rounded or wide angled shoulder forms.

Type A and B are separated primarily on the attributes of stem and base form and more generally on the more extensive measurements of type A specimens. Type A artifacts are on average 6 mms longer, 4.3 mms wider, 2.2 mms thicker and have a base width 5.6 mms narrower then the type B specimens.

Two nearly complete specimens were recovered with all but the distinguishing basal attributes. Based upon the available measurements of the specimens, one belongs within type A and the other within type B. The tips and blade edges of all intact type A specimens were pointed and sharp. Range and mean linear measurements for this group of artifacts are presented in the following table.

Table 3, Type A linear attributes (measurements in mms).

measurement	range	mean
length	32.0 - 51.0	42.4
width	20.0 - 28.5	22.9
thickness	6.0 - 13.5	8.4
maximum base width	7.0 - 11.5	9.2
neck width	11.0 - 16.5	13.4

Type B (Figure 14 j-p)

Seven small expanding stemmed projectile points were recovered during the Oxbow excavations. With one exception all specimens in type B have been manufactured from quartz. The exception is made from a grey chert (Figure 14 n).

The distinguishing attributes for type B specimens include an expanding stem form, either paired or asymmetric wide angled or wide rounded shoulders, basal thinning, a biconvex cross section and a straight base. In four of the five intact specimens blade edges were convex. Only one specimen did not totally comply with all the above mentioned attributes. This specimen had a slight basal concavity of 1.5 mms (Figure 14 k). This deviation could have been a natural result of basal thinning. Where tips and blade edges were present in type B points, three of the intact specimens had pointed tips and sharp edges while the remaining two had slightly blunted tips with sharp to dull blade edges. The range and mean of certain measurements for this type of point is presented in Table 4.

Table 4, Type B linear attributes (measurements in mms).

measurement	range	mean
length	33.0 - 41.0	36.4
width	16.4 - 24.0	18.6
thickness	5.5 - 7.0	6.2
neck width	10.0 - 15.5	13.1
base width	13.5 - 16.0	14.8
minimum neck width	10.1 - 15.0	12.7

Type C (Figure 15 c-f)

This group of bipointed projectiles contains five specimens. Three of the five are manufactured from quartz. One remaining specimen is made from a purple colored quartzite and the other was produced from a dark grey rhyolite (Figure 15 d). With the exception of one incomplete specimen, which was included in the group because of its direct association with a similar specimen, type C projectiles have several distinguishing attributes.

The stem form for type C is contracting pointed and consequently the base is also pointed and thinned. The stem begins to contract from wide rounded or wide angled shoulders and the specimens are all biconvex in cross section and appear neatly symmetrical. Where blade edges and tips of type C specimens are available, they present very sharp and pointed attributes respectively. The following table presents the range and mean of certain measurements within this group.

Table 5, Type C linear attributes (measurements in mms).

measurements	range	mean
length	52.0 - 64.5	57.8
width	18.5 - 23.5	21.5
thickness	6.5 - 8.0	7.5
neck width	14.0 - 17.5	15.6

Type D (Figure 15 a, b)

Two quartz and one mottled red and black rhyolite specimen have been placed in a separate category due to their straight stem form (having the neck width equal to the base width), straight base form and right to wide angled shoulder forms. All three specimens have some aspect of incompleteness about them. No specimen has a complete length available for comment. The two maximum widths available are 30.5 mms and 27 mms while base widths are 14 mms, 15 mms and 17 mms. The rhyolite specimen, (Figure 15 a), exhibits basal thinning while the others do not.

Type E (Figure 15 g)

One specimen was found to represent a type E small lanceolate formed point. The single complete specimen has a blunted base of 7 mms width, a maximum length of 38 mms, a body width of 16 mms and a maximum thickness of 7 mms. The specimen is manufactured from a dark purple rhyolite and exhibits a biconvex longitudinal and cross section as well as convex blade edges.

Type F (Figure 15 i)

The base of one triangular formed projectile point was recovered. The specimen is manufactured from quartz, has wide angled base corners, straight blade edges and a slightly concave base. Due to the poor flaking quality of the lithic material, the latter attribute may not have been the deliberate intention of the manufacturer. Both cross and longitudinal sections of this specimen appear biconvex. The maximum width of the specimen is 22.5 mms which is also the base width. The maximum thickness of the specimen is 7 mms.

Type G (Figure 15 h)

One incomplete specimen was recovered to represent this type. Only the medial and basal portions of this single quartz specimen are present. The specimen measures 26 mms in width and 8.5 mms in thickness. The maximum width across the base of the specimen is 22.5 mms. The other-wise straight base is interrupted by two 1.5 mm deep and 2.5 mm wide notches. The specimen is biconvex in both cross and longitudinal sections and the base is well thinned. This base may well be an incomplete version of a tightly corner-notched projectile point as shown in the upper right corner of Figure 57.

Type H (Figure 15 j)

Only the basal and a portion of the medial sections of one type H quartz specimen was recovered. The specimen is a large contracting stemmed probable lance tip. The artifact has a maximum width of 38 mms, a thickness of 9 mms, a neck width of 22 mms and maximum base width of 18 mms. The base form is rather bluntly convex and the shoulder form is wide rounded. Some slight attempts have been made towards basal thinning.

Scrapers

Fifty-eight tools of a complete or nearly complete form and exhibiting steep edge retouch were recovered. These tools are more commonly known as scrapers. Only four of the specimens from this total were produced from materials other than quartz. One specimen was manufactured from a bay colored flint, another form a mottled pink and beige flint, another from a smoky grey quartzite and the fourth from a mottled red and black rhyolite. Of the quartz specimens 53% displayed a portion of cobble cortex. A detailed attribute description of all individual specimens in this category can be found in Appendix B. Scraper terminology as well as angular and linear measurements are visually explained in Figure 16. Working edge angles on scrapers and bifaces were measured by use of an open angled reel edge calibrated to 10^{o} differences.

The following categories of scraping tools have been loosely defined according to which edge areas exhibit steep edge retouch for the purpose of tool application, according to tool form, manufacturing techniques and form of working edge.

Distal edge scrapers

Of the total specimens recovered 28 exhibited continuous steep edge retouch along only one edge, that which would be opposed to the hand of the user. Eight of the total were approximately rectangular forms. The worked edge on four of these specimens was moderately convex, three were only slightly convex, while another displayed a straight working edge. All but one specimen received some type of chipping on the dorsal surface of the tool but only four of the specimens had any modification to their ventral surfaces. Seven of the eight rectangular specimens were thick cortex flakes and in three of these cases the flake striking platform was opposed to the steep edge retouch.

Sixteen triangular or sub-triangular specimens were also placed in the distal edge scraper category (Figure 17 a-c). In all triangular specimens the width of the distally located steep edge retouch contracts towards a blunted proximal end. A rather thick cortex flake appears to have been favored in the production of this tool category. Eleven of the specimens displayed either a complete cortex dorsal surface or at least some portion of cobble cortex remaining. Ten of the triangular end scrapers presented a moderately convex blade edge while the remainder of the group had only slightly convex to straight areas of steep edge retouch. One third of all triangular end scrapers had neither dorsal nor ventral surfaces retouched. The remainder displayed either dorsal or ventral retouch or a combination of both. In 55% of the triangular forms the striking platforms had been removed, in 33% it was located along a longitudinal edge and in 13% it was available on the proximal end. A range and mean summary of linear and angular measurements for triangular and rectangular distal end scrapers can be examined in the following table.

Table 6, Rectangular and triangular distal edge scrapers (linear measurements in mms)

	rectangular		triangular	
	range	mean	range	mean
length	27 - 59	46	25 - 54	41
width	26 - 52	42	22 - 45	34
thickness	10 - 26	18	6 - 23	14
span	21 - 46	34	16 - 42	29
edge height	8 - 22	13	4 - 25	12
edge angle	70° - 90°	79°	70° - 100°	73°

Apart from the rectangular and triangular forms six other specimens had continuous steep edge retouch located only on their distal ends. Two of these specimens appear almost rounded in form (Figure 17 g, h) while the remainder are somewhat irregular (Figure 17 d-f). One round specimen was manufactured from a small cobble and retains cortex in all areas except where the edge is retouched (Figure 17 h). The other rounded specimen has no cortex or striking platform visible and has had both dorsal and ventral surfaces retouched (Figure 17 g). Both of the round specimens have a moderately convex working edge angle of from 70° to 80°.

Of the four irregularily shaped distal edge scrapers, three have cortex present on their proximal ends and one of these also retains a striking platform at this point. The fourth and smallest specimen has no cortex visible, has had both dorsal and ventral surfaces retouched and also has had the platform removed. This specimen has a straight working edge angle of 100° while the other three irregularily shaped tools have edge angles of approximately 70° to 80°. One of these had a straight working edge, another is moderately convex while the last has a slightly concave working edge.

Discontinuous multiple edge scrapers

Seven specimens displayed multiple areas of steep edge retouch which were separated by some portion of edge that was not similarly prepared. Six specimens had some cortex remaining on their dorsal surface. In four cases two opposing edges of the specimen were prepared. Three of these specimens were oval to round in outline (Figure 18 a, b, c) and a fourth was rectangular (Figure 18 e). In two, the oval cases, the opposing edge angles of both specimens were equal to 70^{o}. Another specimen has 90^{o} to 100^{o} opposing edge angles while the rectangular specimen has 70^{o} and 100^{o} edge angles. With the exception of a straight working edge on this last specimen, all cases had moderately to slightly convex working areas.

The remaining three specimens within the multiple, although separate edge, category have two and three edges prepared. These are the distal and left (Figure 18 b), and the distal, right and proximal edges respectively. All three rather thick specimens had cortex remaining on their dorsal surfaces. Two have proximally located striking platforms and the third has a longitudinal platform location. Except for the one specimen which has three edges prepared, edge angles do not vary significantly between separate edges of the same specimen. The only exception has separate edge angles of 60^{o}, 70^{o} and 80^{o}. Table 7 illustrates the variation and mean linear and angular measurements within this group.

Table 7, Discontinuous Multiple edge scrapers (linear measurements in mms)

7 specimens		range	mean
length		41 - 74	47
width		38 - 92	60
thickness		16 - 34	24
weight in grams		29 - 100	91
steep edge - distal			
	span	31 - 70	47
	edge height	11 - 23	17
	edge angle	$70^{\circ} - 90^{\circ}$	79°
steep edge - left			
	span	25 - 38	24
	edge height	12 - 13	9
	edge angle	90°	84°
steep edge proximal			
	span	15 - 48	31
	edge height	4 - 15	13
	edge angle	$70^{\circ} - 100^{\circ}$	90°

Continuous multiple edge scrapers (Figure 19 a-h)

Eleven scrapers were found to have adjacent edges retouched in a continuous fashion. Nine of these appeared to be complete specimens. Two specimens were rounded in outline, two were somewhat oval, four were rectangular and one was roughly triangular. One of the rounded specimens was manufactured from quartzite (Figure 19 g), one broken specimen was made from flint (Figure 19 d), one rectangular and one oval specimen were manufactured from rhyolites (Figure 19 b, e), and the remainder of the specimens were quartz. Only one scraper in this catagory exhibited any cobble cortex (Figure 19 f).

Of the complete specimens four had steep edge retouch on the distal and right edges, three had steep retouch on the distal and left edges, while two were retouched on the distal, right and left edges. In four specimens the striking platform was located on the proximal end. The platform had been removed from the other specimens during manufacture.

In six scrapers in this continuous multiple edge category, a visible angular distinction was made between adjacent retouched edges. In the remaining five the continuous retouch flowed from one edge to another along a smooth curve. In seven specimens the edge angles taken on each individual specimen varied only within a 10^{o} range. In the remainder of the specimens differences of 20^{o} were noted between adjacent edges.

Bifaces

Bifacially chipped tools, apart from those classed as projectile points or other specialized implements, constituted the predominant category of lithic artifacts recovered from the Oxbow site. A total of 51 complete or nearly complete specimens as well as 129 fragmentary portions were catalogued. Of the latter total ten to twelve appear to be either tip or base fragments of bifacially chipped projectiles. The remaining fragments can be sorted into three categories: 27 pointed or blunt pointed tips, 47 either oval, straight or blunted bases and 49 portions of longitudinal or bifacial cross sections. Less than 1.5% of the total artifacts in this class were manufactured from a material other than quartz. Nearly 60% of all intact or nearly complete quartz specimens retained some portion of cobble cortex.

Within the large group of complete bifaces several possible sub-groups can be tentatively identified with respect to form, size and acuteness of working edges. The degree of preparation which an artifact had received during manufacture was noted and thus sub-groups could be separated into probable finished tools as opposed to tool performs or blanks. The following is a descriptive presentation according to loosely defined sub-groups of the bifacially chipped tools recovered from Oxbow. All complete or nearly complete specimens have been exmained in detail and are individually described in Appendix C.

Small rectangular bifaces (Figure 20 a-g)

Nine small rectangular quartz bifaces weighing less than 30 grams were recovered. The specimens range between 31 and 55 mms in length, between 19 and 36 mms in width and between 6 and 18 mms in thickness. Four of the nine specimens have only one edge bifacially prepared. The working edge angles for these specimens cluster between 40° and 70° while the cross section of most specimens in this category is biconvex. Artifacts within this sub-group have traditionally been described by Maritime prehistorians as small knives (Burley 1974, Keenlyside 1976, Davis 1978).

Lanceolate bifaces (Figure 21 a-h)

Of the twelve specimens which are included in this sub-group, eleven are manufactured from quartz and one is of grey rhyolite. The specimens all have straight or blunted bases, convex blade edges, pointed or blunt pointed tips and are more than double the width in length. Five of the specimens are of a smaller variety and range from 35 to 49 mms in length, 17 to 23 mm in width and 8 to 13 mms in thickness. No small specimen weighs more than 13 grams. Their edge angles range between 50° and 80° and one blade is always more acutely angled than the other. The seven larger specimens display a similar characteristic although their edge angles are somewhat steeper and vary between 70° and 90°.

The larger specimens range in length between 51 and 65 mms, in width between 22 and 32 mms in thickness between 11 and 27 mms. All larger specimens weigh less than 26 grams. With three possible preform exceptions these lanceolates could easily have functioned as hand held or hafted knives. One preform gives the impression of having a wide straight stem (Figure 21 i).

Stemmed knives (Figure 22 a-c)

This sub-group of three specimens was distinguished from the projectile point category by the manner of edge preparation and in the orientation of the contracting stemmed appendages. The blade edges in two of the three cases are asymmetric although one of these edges is always convex and appears as a better prepared cutting edge. Edge angles range between 40° and 60°. One specimen (Figure 22 a) has a single convex blade edge bifacially prepared while the opposing edge remains thick and unaltered. The three specimens range in length between 36 and 52 mms, in width between 19 and 30 mms and in thickness between 7 and 9 mms. Weights range between 5.5 and 11.9 grams.

Triangular knife (Figure 21 m)

One small quartz specimen appears triangular in form with a base width of 41 mms and a maximum length of 48 mms. The specimen has both blade edges bifacially chipped and exhibits a 60° to 70° working edge angle.

Oval knives

Three specimens of an oval form have been selected for this subgroup. Two of the three have a continuous bifacially chipped cutting edge while the other has two separate edge areas prepared. All specimens vary greatly in edge angles at any given point. However, all have edge portions with an angle of less than 80°. The length of these specimens ranged between 54 and 68 mms, the width between 41 and 52 mms and the thickness between 16 and 24 mms. Weights varied between 45 and 79 grams.

Leaf shaped bifaces

Four leaf shaped quartz specimens, two small well formed knives and two larger possible preforms, were recovered. Three of the specimens had blunt pointed tips while all four had convex blade edges and bases. Edge angles on the smaller specimens ranged between 50° and 70° while the larger specimens edge angles ranged between 60° and 80°. The two smaller specimens have a sharp cutting edge. Length for the leaf shaped specimens ranged between 45 and 65 mms, width ranged between 20 and 39 mms and thickness varied between 8 mms in the smaller specimens to 23 mms in the preforms.

Large rectangular bifaces

Six large rectangular or nearly rectangular bifaces were recovered. In length the specimens range between 56 and 90 mms, in width between 34 and 60 mms, and in thickness between 19 and 32 mms. Working edge angles lie between 70° and 90°. Three of the six specimens are probably preforms. In two of these cases the bifacial chipping is restricted to the removal of large flakes. In the third case only one edge has been bifacially prepared. This single edge exhibits wear in the form of tiny crushed flake scars. The three remaining specimens, although roughly chipped, appear to be completed knife forms.

Large pointed tip bifaces (Figure 20 h-j)

Five complete large quartz bifaces appear to have functioned as large cutting tools. With tips pointed, bases straight and blade edges convex, these specimens possess working edge angles of between 60° and 80°. The lower range of angles appears to dominate. In four of the five cases the complete outline is bifacially worked. One specimen, almost triangular in form (Figure 20 h), exhibits a significant amount of wear along the blade edges. The specimens have a length range between 68 and 86 mms, a width range between 43 and 56 mms and a thickness range of between 16 and 25 mms. Weight for these specimens varies between 50 and 99 grams.

Irregular knife forms (Figure 21 j-l)

Six irregularily shaped quartz bifaces were recovered. Each specimen has at least one bifacially chipped convex blade edge and the angles on these edges ranged between 50° and 60°. Lengths on such specimens ranged between 42 and 48 mms, widths ranged between 35 and 44 mms, and maximum thickness ranged between 10 and 15 mms.

Wedge (Figure 22 f)

One small quartz rectangular biface may have functioned as a wedge or splitting tool (Figure 22 f). The implement is 39 mms by 19 mms and has a maximum thickness of 13 mms. The weight of the specimen is 11.2 grams. Both straight blade edges have been bifacially retouched and the artifact has both a biconvex cross and longitudinal section. Near the central portion in exact opposition to each other both blade edges appear rather crushed and for a distance of approximately 10 mms present at edge angle of 110°. This angle is an increase of up to 40° over the remaining sections of the blade edges. Such tools have traditionally been described by Maritime prehistorians as "wedges". (MacDonald 1968, Burley 1974, Turnbull 1974 b).

Awls (Figure 22 d, e)

By their form two small bifacially chipped quartz specimens are suggested to be awls. The first implement has a length of 40 mms, a width of 12 mms and a maximum thickness of 9.5 mms (Figure 22 e). The thickness of the specimen extends to the blunted base but is thinned towards the pointed tip. Lateral edges vary between 50° and 70°, the cross section is diamond shaped and the longitudinal section is biconvex. The first specimen weighs 4.1 grams.

The second awl type implement recovered measures 31 mms in length, 13 mms in width, and has a maximum thickness of 7.5 mms. The implement is completely bifacially chipped and forms edge angles of approximately 50°. One end of the specimen is bluntly pointed and the other is bluntly squared. In both cross and longitudinal sections the tool appears plano/convex (Figure 22 d).

Possible spokeshave (Figure 22 g)

One small completely bifacially chipped implement having two pairs of projecting arms was recovered. The rather odd shaped tool has each pair of arms joined by a central contracting body area while the edge areas between the individual arms of each pair also form concavities. The concavity between the two shortest arms appears crushed as also does the concavity between one of these arms and the central body of the implement. These crushed concave areas may have been utilized for spokeshave purposes. The longer projections could easily have provided a hafting element.

The maximum length and width measurements taken perpendicular to each other are 39 mms by 35 mms. The maximum thickness of the implement occurs on the central body and is 14 mms. The artifacts weighs 11.5 grams.

Unifacially formed knives

Two triangular, one lanceolate and one cresent shaped specimen were assigned to this category (Figure 23 a, f, g). Specimens appear to have at least one edge prepared for a cutting purpose. The lanceolate specimen was manufactured on an elongated cortex flake from a relatively fine grained reddish quartzite (Figure 23 f). Although unifacial chipping occurs on both convex blade edges, no attempt was made to thin the artifact to a finished knife form.

The small crescent shaped quartz specimen (Figure 22 a) has its single convex edge unifacially chipped to a 60° cutting edge. The two triangular knives have more acute cutting edge angles of 40° or 50° (Figures 23 g, h). Both specimens have unifacially chipped convex blade edges. One triangular form has a slightly concave base while the other is straight. Both bases have been left unmodified. A summary of measured attributes for this category of artifacts is provided on the following table. All linear measurements are given in millimeters, all weights are given to the nearest gram, and the term illustration refers to the text Figure number.

Table 8, Unifacially formed knives

catalogue no.		352	858	275	983	Range	Mean
length		55	41	42	69	41 - 69	52
width		47	32	21	31	21 - 47	33
thickness		21	5	6	22	5 - 22	11
weight		31	7	6	44	6 - 44	22
edge 1 retouch -	span	44	39	33	41	33 - 44	39
	height	6	2	7	7	2 - 7	6
	angle	70^o	40^o	60^o	60^o	40^o - 70^o	56^o
edge 2 retouch -	span	38	45	-	44	38 - 45	42
	height	5	2	-	7	2 - 7	5
	angle	50^o	40^o	-	80^o	40^o - 80^o	57^o
figure no. 23		(g)	(h)	(a)	(f)		

Unifacially retouched flakes (Figure 23 b-e)

Four irregularily shaped quartz flakes were unifacially retouched In all four cases one edge of the flake has been sharpened to an acute angle. In two cases this edge was convex and in two cases it was straight. The following table summarizes the measured attributes for these four specimens. All linear measurements are given in millimeters, weights are to the nearest gram and illustration refers to the text Figure number.

Table 9, Unifacially retouched flakes

catalogue no.	650	1227	970	720	Range	Mean
length	51	43	32	35	32 - 51	40
width	43	26	20	17	17 - 42	27
thickness	17	15	7	9	7 - 17	48
weight	36	12	4	4	4 - 36	14
edge - span	42	24	19	20	19 - 42	26
height	6	5	6	7	5 - 7	6
angle	70°	40°	50°	50°	40° - 70°	53°
illustration Figure 23	(e)	(d)	(c)	(b)		

Axes

Four complete axes, two incomplete bit portions and one axe preform were recovered during the Oxbow excavations (Figure 24 a-g). Each specimen will be described individually with reference to the bit or working edge, the body and the poll. It was necessary to arbitrarily choose a dorsal and ventral surface for each specimen.

CfD1-1:593 (Figure 24 g) is an intact specimen which has a bifacially chipped bit that provides a cutting edge angle of 60° to 80°. The working edge on this fine quartzite specimen has a span of 58 mms and an arc of 70 mms. The poll end, 44 mms in width, is bluntly bifacially chipped and appears crushed. The ventral surface exhibits flake scars while the dorsal surface is unaltered cortex. A longitudinal section of the specimen exhibits a biconvex form while the cross section appears plano/convex. The artifact gives the impression of dual purpose utilization, the bit as a cutting edge and the poll as a crushing or battering tool.

CfD1-1:828 (Figure 24 f) is another intact quartzite specimen which has a bifacially chipped bit providing a cutting edge angle of approximately 80^{o}. The working edge has a span of 41 mms and an arc of 45 mms. The poll is 22 mms wide, 16 mms thick and the area is somewhat battered. A few flakes have been removed from one of the lateral edges and these extend onto the dorsal surface. The ventral surface is unaltered. The longitudinal profile of this specimen is a wedge shape while the cross section is somewhat triangular. The cutting edge of the implement has been somewhat blunted through use.

CfD1-1:222 (Figure 24 a) is another intact specimen manufactured from quartzite. The tool is elongated in form and has a bifacially ground bit. The working edge has a span of 28 mms, an arc of 31 mms and an angle of 50^{o}. Small flake scars occur along the working edge as an indication of light use probably as a woodworking tool (Burley 1974). The poll of the specimen is 30 mms wide and 21 mms thick. The remainder of the artifact is completely unaltered except for slight evidence of wear on the central section of the ventral surface possibly indicating a hafting element. In longitudinal profile the artifact is wedge shaped and in cross section it appears biconvex.

CfD1-1:298 (Figure 24 b) is an intact quartzite specimen whose bit has been bifacially ground and then apparently chipped through rugged use. On the dorsal surface of the bit the initial grinding is still evident. On the dorsal surface the bit has been reworked by secondary grinding into the chipped area. The straight bit with a span 36 mms and an arc 36 mms forms a working edge angle of 80^{o}. The poll has an unaltered width of 31 mms and a thickness of 33 mms. Both dorsal and ventral body surfaces are slightly ground. A longitudinal section of the specimen appears wedge shaped while the cross section is rectangular.

CfD1-1:854 (Figure 24 c) is the bit portion of a broken axe. This specimen has also been manufactured from a fine quartzite. The bit is bifacially ground and polished to an angle of approximately 45°. The working edge span is 47 mms and the arc is 44 mms. From existing striations it would appear that the working edge has been resharpened by fine grinding. The maximum width of the extant portion is 47 mms and the maximum thickness is 12 mms.

CfD1-1:1412 (Figure 24 d), another bit fragment, has an edge span of 31 mms, an arc of 33 mms and a working angle of 60°. Both dorsal and ventral surfaces of the bit area have been ground, the dorsal side having first been chipped.

CfD1-1:405 (Figure 24 e) appears to have been in the process of manufacture when broken. The entire dorsal and ventral surfaces are roughly chipped. As is, the bit has a 55 mms span. The specimen, broken in cross section, measures 40 mms in width and was made from a fine light colored quartzite.

For the complete specimens in the axe tool category, the following table summarizes the information concerning linear measurements in millimeters and weight to the nearest gram. The specimens are listed by individual catalogue numbers.

Table 10, Axe measurements

no.	length	width	thickness	weight
828	115	45	25	168
222	81	33	21	79
298	112	38	23	156
593	89	65	41	239
range	81 - 115	33 - 65	21 - 41	79 - 239
mean	99.25	45.25	27.5	160.5

Abrasive stones

Fourteen abrasive stones or portions of the same were recovered from throughout the excavation areas and levels of Oxbow (Figures 25, 26, 27). The abrasive stone category includes all specimens which show surface wear due to the rubbing, grinding or drawing action of another implement.

With three exceptions all Oxbow abrasive stones were sandstone slabs or portions thereof. The first non-sandstone specimen was a small fine grained reddish colored rectangular rock which had one surface worn into shallow grooves. This specimen had a weight of 17.1 grams (Figure 25 c). The second exception was an elongated light colored fine quartzite specimen. Striations covered 40% of one surface of the implement which measured 86 mms by 19 mms by 7 mms thick (Figure 25 f). The third non-sandstone abrasive is a black roughly rectangular fine quartzite specimen (Figure 25 d). The stone measures 130 mms by 37 mms by 9 mms thick. It has a weight of 64.9 grams. Several deep narrow striations are oriented along the longitudinal axis of one surface while a few shorter shallower marks occur on the opposing face.

Six of the sandstone specimens were roughly rectangular in shape, two were triangular and the remaining four displayed irregular shapes. Because of the rough or broken edges on almost all the sandstone slabs, it is not clear whether small specimens are only broken fragments of larger ones or completely intact individuals (Figure 26, 27). Four of the twelve sandstone abrasives were utilized on one surface only. On six stones grinding was so extensive that one surface was entirely worn smooth. A few cases were ground to a slightly basin shapes or sometimes elongated smoothed hollow or groove. Two specimens exhibit heavy abrasion along a single edge area and two more specimens were found to be dual purpose anvil/abrasive stones. In the majority of cases the abrading which took place produced very smooth areas with few scratches or deep striations appearing on the utilized surface.

The following table summarizes the maximum linear measurements of the sandstone specimens in millimeters and the weight of the artifacts to the nearest gram. If the specimen has been illustrated, a Figure number is included with the table. The specimens are listed according to their individual catalogue numbers.

Table 11, Sandstone abrasive stones

no.	length	width	thickness	weight	figure no.
709	119	43	18	163	26c
949	35	33	13	21	-
791	100	60	35	207	26c
772	130	79	16	212	-
354	134	105	26	125	26e
138	192	147	25	948	-
753	152	90	36	837	26d
301, 312	290	180	80	4939	-
731	600	270	70	10,000-	-
902	270	160	80	4026	-
870	87	65	14	104	26a

Anvil stones

Four stones were found to have been utilized as anvils of some sort (Figure 27). Three of the four specimens were also utilized for other purposes. The exception is a roughly rectangular sandstone slab (Figure 27 b) that has pitting marks visible over approximately 40% of its flat surface. This specimen was approximately 121 by 97 by 40 mms thick and had a weight of 71 grams.

Two more irregularily shaped sandstone slabs were used both as anvil and abrasive stones. The first had pitting marks on approximately 40% of its flattest surface while the second (Figure 27 c) showed this quality over about 15% of one surface. The first stone measured 290 by 780 by 80 mms and weighed 4939 grams while the second measured 147 by 192 by 25 mms and weighed 948 grams.

The only other specimen in this category may have also been utilized as a cobble chopper (Figure 29 d). This specimen had pitting marks over 20% of its irregular surface and weighed 453 grams. The implement measured 108 by 79 by 39 mms.

Hammerstones

Nine specimens from the CfDl-1 collection were identified as hammerstones (Figure 28). Most specimens are medium sized rounded or oval granite beach cobbles (Figure 28 a-d). Two specimens exhibited rectangular shapes (Figure 28 e) while two others were totally irregular in form (Figure 28 f-g). Occasionally a grey or brown fine grained cobble was used rather than granite.

On both irregularly shaped cobbles the rounded somewhat projecting extremities received battering (Figure 28 f-g). On oval specimens the rounded contracting ends appeared as the battered points. Probably as the result of heavy use, several specimens exhibit one or more flake scars within their battered areas. Table 12 summarizes the descriptive details concerning the CfDl-1 hammerstones. All linear measurements are given in millimeters and the weights are provided to the nearest gram.

Table 12, Hammerstone descriptions

catalogue no.	1299	703	224	873	872	329	890	729	879
% surface used	10	30	20	25	20	30	15	25	20
length	82	112	98	72	71	122	136	89	73
width	63	63	64	61	60	105	76	71	72
thickness	52	35	33	36	48	72	58	41	54
weight	387	404	297	201	302	1217	949	301	340
figure no.	28b	-	28e	28a	28c	-	28g	28f	28d

Choppers

This category of artifacts includes those specimens whose weight and size combine with rough chipping and blunted edges to produce a tool that could have been utilized for heavy crushing, pounding or mashing (Figure 29 a-d). In all probability numerous quartz cores could have been utilized for a similar purpose but were not recognized during sorting.

Three of the five specimens placed in this catetory are somewhat elongated and almost wedge shaped (Figure 29 a-c). One of these tools (Figure 29 b) displays heavy battering along 125 mms of one of its lateral edges while the others (Figure 29 a, c) exhibit rough bifacial chipping and crushing upon their widest ends.

One irregularly shaped cobble (Figure 29 d) was sharpened by removal of large flakes but not to an extent that would enable it to be used as a cutting tool. This specimen was also used as an anvil stone. The last tool in the chopper category is a triangular portion of a sandstone cobble that has been unifacially chipped by the removal of large flakes along one convex edge.

The following table describes each tool individually with linear measurements provided in millimeters and weight provided to the nearest gram.

Table 13, Individual chopper descriptions

catalogue no.	330	1164	732	832	970	range	mean
length	230	171	108	271	140	108 - 230	184
width	160	69	79	118	65	65 - 160	98
thickness	68	29	39	54	28	28 - 68	44
weight	2067	606	453	2137	381	381 - 2137	1129
figure no.	29d	29b	-	29c	29a		

Miscellaneous Lithic Artifacts

Gaming disc (Figure 25 a)

Two small fragments of ground sandstone were found to fit together into a semi-circular form. It would appear that the specimen originally was completely circular and that only half of the artifact has been recovered. The specimen has a maximum thickness of 13 mms and a diameter of 74 mms. One flattened surface of the artifact is rough unaltered sandstone while the other is ground completely flat. The available portion of circumference is divided into five straight and equal sufaces making angles of 150^{o} between adjacent edges. The specimen has been classed as a gaming disc although it may have served another as yet unrecognized purpose.

Net sinker (Figure 25 b)

One roughly rectangular sandstone net or line sinker was recovered. The object, 76 mms long by 52 mms wide, has a maximum thickness of 10 mms. A contraction or neck with maximum width of 24 mms is present for 20 mms of the total specimen length. The sinker received slight grinding along its basal width and on three of the four rectangular corners. Two slightly abraded grooves add extra distinction to the base of the neck of one surface while only one groove rings the neck on the opposite face.

Cut stone (Figure 25 e)

Four small roughly rectangular fragments of dark grey shale were recovered from unit 77-1. This type of stone was not recovered from any other area of the site. The specimens deserve special mention because they appear to have been cut from a material and in a fashion that identifies them as a by-product of stone pipe manufacturing. A number of dark grey wedge shaped, cut and polished, sometimes decorated shale stone pipe fragments have been recovered from both the CfDk-1 Hogan-Mullin site and the CfDk-2 Wilson site.

Ceramics

Apart from the masses of quartz flakes, fragments of ceramic vessels formed the largest class of cultural debris recovered from the Oxbow site. Through a detailed examination, the total CfDl-1 ceramic assemblage has been separated into individual vessels or pots. The laboratory sorting process for vessel identification was assisted by field procedures which required that even small concentrations of sherds be kept separated within the assigned arbitrary levels of excavation units. From within these levels and concentrations, vessel numbers were assigned to single fragments, or as in most cases, to groups of fragments which displayed a strikingly similar combination of visual attributes (i.e.) temper, paste, decoration, etc. Adjacent levels within all excavations units were checked for possible vessel duplication and also adjacent excavation units were similarly cross examined. In total 194 vessels were identified. A summary of the division of rim and body sherds which have been assigned to each vessel is summarized in Appendix F. The following brief discussion is presented in an effort to clarify some of the terminology used in the description of CfDl-1 ceramic attributes.

A visual description of vessel form attributes as they apply to CfDl-1 vessels, can be viewed in Figure 32. The point of maximum constriction beneath the lip is defined as the "neck" and the point of maximum expansion beneath the neck is defined as the "shoulder". Shoulder and neck zones encompass the contracting and expanding zones on either side of these defined points (Keenlyside 1978:328-334). The entire area from the lip through shoulder is referred to as a "rim". For the purpose of this report the area located between the neck and the lip is referred to as the "upper rim". One hundred thirty-six or 70% of the Oxbow vessels had at least some upper rim portions available for study. The remaining vessels are represented by individual or concentrations of body and base sherds. Since the results of a number of relevant Northeastern ceramic studies have been based on the analysis of rim sherds only, the major portion of this study, for comparative purposes, deals only with those vessels having "upper rims" present.

Ceramic attributes

This section defines and summarizes the information pertaining to the ceramic attributes which were recorded, where possible, for each Oxbow vessel. Vessel records also contained basic information such as a single catalogue number or combination of catalogue numbers which represent each vessel, the portions of each vessel available for study, the units and levels in which these were found, as well as whether or not a vessel was associated with any specific feature.

Lip thickness or width was recorded in mms. This measurement involved the straight line distance from one lip edge to another. Oxbow vessels exhibited two types of lip form, rounded as illustrated by Figure 37 and flattened as illustrated by Figure 38. Rounded lips lacked an angled meeting with interior or exterior lip edges. Flattened lips exhibited an angled joint with the exterior and interior rim walls. Where several lip fragments were available for one vessel the mean of three thicknesses was recorded. In rounded lip specimens a maximum measurement was taken across the bulbous portion of the lip. The 95 flat lipped specimens displayed a three to seven mms range with a mean lip width of 4.7 mms. The forty-one rounded lipped specimens ranged from three to eight mms and had a mean lip width of five mms.

A rim thickness measurement was recorded in mms for all 136 rim sherd vessels. When several fragments were available for one vessel this attribute was recorded as the mean of several measurements. The rim thickness measurement was always taken at a point one centimeter below the lip edge. In the majority of cases this uniform procedure avoided the widest portion of an expanding or bulbous lip. One hundred thirty-six vessels were eligible for this measurement. The measurement range fell between four and ten mms. The mean thickness for the collection was 6.5 mms.

When an adequate portion of an intact upper rim was available, an approximate interior mouth diameter was geometrically estimated for individual vessels. Only thirteen vessels were judged to display an adequate portion of rim which allowed this calculation. The mouth diameters ranged between 130 and 276 mms. Only two vessels, one of which is illustrated on Figure 38, exhibited mouth diameters over 200 mms. The mean diameter for the total was 178 mms. Excluding the two wide mouth specimens the mean was 162 mms.

The nature and size of the temper was noted for each vessel. Of the 194 vessels five were purely organically tempered, two had a combination of organic and grit temper and the remainder were manufactured using pure grit temper. Three vessels of this latter class exhibited extremely finely crushed or ground grit. The substance(s) used in the seven totally or partially organically tempered vessels remains unidentified. The cavities left by the departed substance were for the most part small and irregularly shaped (Figure 39 h). The sherds of the purely organically tempered vessels have a very light laminated texture. All grit tempered vessels exhibited extremely small ($<$ 1 mm) grit particles, in combination with larger fragments. The larger fragments ranged between one and 10 mms in diameter although the mean was only 2.8 mms. The majority of the grit temper appears to be crushed granite. Crushed white quartz was also used.

The presence or absence of carbonized material adhering to the interior surfaces of vessels was noted. Of the 136 vessels which exhibited some rim sherd portions, 41% or 57 of these vessels exhibited some degree of clinging carbonized remains. Eleven of the remaining 58 non-rim sherd vessels have similar material on body or base sherds. Of the 194 vessel total, approximately 35% displayed the presence of this attribute. It would thus appear that a significant number of vessels on the site were utilized for cooking containers. The remaining vessels would appear to have been utilized for other purposes such as storage.

Of the 194 vessels, only nine, or 4%, exhibited sufficient portions of the vessel base for analysis. Three forms of base were defined. The first is a pointed cone shape, the second is wide rounded, somewhat egg shaped, and the third is also a cone form with a small "nipple" like addition. Fragments of three pointed, four rounded and two nipple shaped bases were recovered. Figure 37 displays a base of the pointed variety. Whether or not this pointed base blends into a more round bottomed vessel is not clear due to the lack of other basal portions of this pot. Figure 36 illustrates a rounded base.

A castellation, as indicated in Figure 32, is a deliberately raised portion of the upper rim. Of the 136 rim sherd vessels, only eight or 5% were noted to have castellations. Four of these present a rounded form (Figure 41 c) and one presents an inverted V pointed form (Figure 41 a). The remainder are represented by sherds which do not exhibit a full castellation and thus cannot be classed. One of the rounded types had its thickness pinched near the apex.

For each vessel with an adequate portion of upper rim available, a rim form was recorded. This attribute refers to the general orientation of the rim to the remainder of the vessel. The three rim forms recorded were vertical, outflaring and inflaring. Of the 134 available specimens, 57% exhibited a vertical form, 28% provided some extent of outflaring and 15% were slightly inflared.

A rim shape attribute was also recorded for each rim sherd vessel. This attribute defined the profile of each rim noting a parallel, contracting or expanding thickness of the rim sherd when viewed from neck to lip. Forty-eight percent of all Oxbow rim sherd vessels exhibited a parallel rim shape, 37% were slightly contracting while a mere 13% showed some expansion towards the lip.

Each vessel which possessed an upper rim sherd had a rim profile recorded on transparent plastic film. All recorded profiles were compared on the basis of rim form, rim shape, lip shape and according to the interior and exterior surface curvature displayed. Of the 136 possibilities, 45 slightly different rim profiles were defined for the CfDl-1 ceramic assemblage. Figure 33 displays the variations of CfDl-1 profiles. Table 14 records the defining attributes for each profile and the frequency and percentage of occurrence of any one profile amongst the 136 vessels examined.

Profiles coded c and x occurred most frequently within the 45 profile variations. In each of these profiles a vertical form with a flattened lip shape occurred. The profiles are separated by the attributes of rim shape, one was parallel while the other is contracting, by interior curvature, one being plano and the other being slightly convex and by

Table 14 Attributes of CfDl-1 profile variations
(s) indicates a slightness of the attribute

Figure 36 Profile Code	rim form	rim shape	lip shape	interior curvature	exterior curvature	frequency	%
a	vertical	expanding	rounded	concave/convex	concave/convex	1	.7
b	vertical	contracting	flat	plano	s. convex	2	1.5
c	vertical	parallel	flat	plano	s. concave	17	12.5
d	out flaring	contracting	flat	convex	concave/convex	4	3.0
e	out flaring	parallel	flat	convex	s. concave	1	.7
f	vertical	contracting	rounded	plano	plano	5	3.7
g	vertical	contracting	flat	s. convex	concave/convex	2	1.5
h	out flaring	parallel	flat	convex	concave	2	1.5
i	vertical	expanding	flat	plano	plano/concave	4	3.0
j	in flaring	parallel	flat	concave/plano	convex/plano	7	5.2
k	out flaring	expanding	flat	plano/convex	plano/concave	1	.7
l	vertical	parallel	rounded	plano	plano	2	1.5
m	vertical	parallel	flat	s. convex	plano	1	.7
n	vertical	parallel	flat	plano	plano	6	4.4
o	vertical	parallel	flat	s. convex	s. concave	2	1.5
p	out flaring	contracting	rounded	convex	s. concave	2	1.5
q	out flaring	contracting	rounded	plano	concave	2	1.5
r	out flaring	parallel	rounded	convex	concave	3	2.2
s	vertical	parallel	flat	plano	concave/plano	2	1.5
t	vertical	parallel	rounded	convex	concave	5	3.7
u	in flaring	parallel	flat	plano/convex	plano/concave	3	2.2
v	out flaring	expanding	rounded	convex	concave	1	.7
w	out flaring	contracting	rounded	plano/convex	convex/concave	3	2.2
x	vertical	contracting	flat	s. convex	plano	10	7.4
y	vertical	parallel	rounded	plano/convex	plano/concave	1	.7
z	out flaring	parallel	flat	biplano	biplano	2	1.5
aa	outflaring	expanding	flat	plano	plano/concave	1	.7
bb	out flaring	contracting	rounded	biplano	concave	5	3.6

(cont.)

Table 14 Attributes of CfDl-1 profile variations
(s) indicates a slightness of the attribute

Profile Code	rim form	rim shape	lip shape	interior curvature	exterior curvature	frequency	%
cc	in flaring	contracting	flat	s. concave	plano/s. convex	3	2.2
dd	in flaring	parallel	rounded	plano	plano	7	5.2
ee	vertical	contracting	flat	plano	plano	5	3.7
ff	vertical	parallel	flat	plano	plano	1	.7
gg	vertical	parallel	rounded	plano	plano	1	.7
hh	vertical	contracting	rounded	plano	plano/s. concave	3	2.2
ii	out flaring	parallel	rounded	biplano	biplano	1	.7
jj	vertical	expanding	rounded	plano	plano	1	.7
kk	vertical	parallel	flat	plano	plano	5	3.7
ll	vertical	parallel	flat	biplano	biplano	1	.7
mm	out flaring	parallel	flat	plano	plano	1	.7
nn	in flaring	parallel	rounded	s. concave	s. convex	1	.7
oo	out flaring	contracting	flat	biplano	plano/concave	3	2.2
pp	out flaring	contracting	rounded	biplano	plano/concave	1	.7
qq	out flaring	contracting	flat	s. convex	s. convex/concave	2	1.5
rr	out flaring	contracting	flat	convex	plano/concave	1	.7
ss	out flaring	contracting	rounded	biplano	biplano	2	1.5
					Total	136	100%

exterior curvature, one being slightly concave and the other being plano.

Decoration

Decorative attributes of the Oxbow vessels were noted on four vessel areas; the lip surface, the exterior and the interior of the rim sherd, and the body (Figure 32). The attributes included motif or design, the technique of application and the tool used.

Decorating tools

Individual CfDl-1 vessels were generally decorated by the use of only one tool, although this implement may have seen two or more different methods of application on the same vessel. A single tool may have been used as an oblique stamp, a direct stamp or as a punctating implement while a notched edge, a plain edge or the end of the same tool was employed as the decorating attribute. Occassionally more than one tool may have been utilized on a single vessel.

One small black shale multiple side-notched rectangular implement from an unknown New Brunswick site is located in the collections of the New Brunswick Museum in St. John. This tool was probably manufactured as a ceramic decorating implement. The implement creates a fine linear dentate impression when applied to plasticine. With the lack of any similar stone tools at Oxbow it would appear that at this site such tools were manufactured from perishable materials such as wood, bone and/or antler. An implement, classed as a decorated bone "comb", was recovered during excavations at Meductic, New Brunswick (Wylie 1967). Unless the teeth of this "comb" were extremely evenly broken, its present form could suggest another New Brunswick decorative stamp tool. Three decorative tools from the Cellar's Cove site near Halifax, Nova Scotia were manufactured from long thin bones, a natural ridge on the bone being easily notched and leaving small projecting barbs along the ridge edge. I recently examined these specimens at St. Mary's University, Halifax. A similar decorating tool was recovered from the Minister's Island midden site in Passamaquoddy Bay, New Brunswick. This tool was viewed by myself in the Archaeological Survey of Canada collections, Ottawa.

The decorating tools used on the CfDl-1 vessels include both stamping and drawing implements. A "stamp" tool is impressed into the clay while a "drawn" tool is pulled or dragged across the clay surface.

A linear dentate implement was found to have been used in the rim decoration of 54 or 40% of the 136 rim sherd vessels available for study. "This type of stamp was made by cutting a series of notches directly across a long thin linear object to produce a toothed implement" (Finlayson 1977:89). This tool type could only be identified correctly when the prepared edge was directly applied as is illustrated in Figure 40 b. When applied obliquely the tool would produce an imprint of an alternately notched tool.

An alternately notched linear implement was prepared in a similar manner to that of the dentate stamp, the difference being that the notches of this tool were never cut across the full width of the implement and alternated from one side of the tool edge to the other. This type of tool was used to decorate the rims of some 45 or 33% of the 136 rim sherd vessels. Alternately notched tools have been referred to as producing a "zig-zag" or "pseudo scallop shell" imprint (Figure 39 c). One vessel represented only by body sherds, displayed a very thin alternately notched line which could be attributed to a true scallop shell.

Another stamp implement used in the decorative process was the linear plain tool. The working edge of this tool was unaltered and straight. Only five vessels or 3% of the vessel rims displayed use of this tool type.

Although in most cases punctations would appear to have been made by the direct or obliquely applied ends of the dentate, alternately notched or cord wrapped stick tools that were used in the overall decoration of a vessel, there is always the possibility that these decorative impressions were manufactured by separate tools. Fifty-three or 39% of the 136 rim sherd vessels exhibited some type of decorative punctations and/or perforations.

Punctations probably caused by the directly applied ends of stamp tools produced circular, oval, rectangular and centrally pinched oval impressions or perforations. Obliquely applied tool ends when associated with linear dentate or alternately notched implements usually left an impression of the tool edge within the produced cavity (Figure 40 d). Perforations were occasionally made after the firing of the vessel had taken place. Such perforations could have been for mending purposes and often appear drilled (Figure 39 g).

One vessel displayed the use of a unique punctation tool. The randomly applied one mm diameter circular punctations were probably created by using a single cross cut porcupine quill or several similar quills being held at once (Figure 39 a). Experimentation with cross cut quills has produced very similar effects. Another exclusive punctation tool used on one juvenile vessel appears to have been a fingernail.

Table 15, Available data concerning decorative tools
(all linear measurements are in millimeters)

Tool	tool length		impressions per cm.		tool width	
	range	mean	range	mean	range	mean
linear dentate	12 - 27	27	3 - 9	5.4	-	-
alternately notched	10 - 33	24	3 - 6	4.3	-	-
cord wrapped stick	-	-	3 - 5	4	2 - 3	2.5
trailing	-	-	-	-	1.5 - 2.5	2
incised	-	-	-	-	.5 - 2	1.3
punctations	impressions per cm.		width of imprint		length of imprint	
	range	mean	range	mean	range	mean
oval	3	3	1.5 - 3	1.75	4 - 10	4.2
circular	3	3	2.5 - 3	2.5	2.5 - 3	2.5
rectangular	3	3	1 - 2	1.5	3 - 4	3.5
notched	2 - 5	3	2	2	3 - 8	5
crescent	4	4	1	1	3.5	3.5

The only Oxbow decorative stamping tool that was composed of more than one element was the cord wrapped stick. Four vessels or 3% of the rim sherd vessels exhibited the use of such a tool (Figures 40 c, 39 h, 37).

The drawing tools which decorated 14 or 11% of the 136 rim vessels were both sharp and narrow (Figure 39 e) as well as dull and broad (Figure 39 f). A porcupine quill, a simple flake or narrow stick end would have served as excellent drawing tools.

Where available, information concerning dimensions and the specific nature of the decorative tools is presented in Table 15.

Techniques

As previously mentioned all vessels were first prepared in such a manner that an even surface was created. Designs were then manufactured by utilizing a tool on the wet clay surface. Following Keenlyside (1978), the techniques of decorating were divided into two main categories, stamping and drawing. A third technique, dragged stamping, combines the first two techniques. Drilling of perforations was present on 2.5% of the Oxbow rim sherd vessels.

Two main techniques of stamping were present on the Oxbow vessels. These methods are simple stamping and rocker stamping. Simple stamping implies that a tool edge or end was impressed into the clay with a single and direct application of force and the imprint produced is separate and distinct from other impressions. Linear dentate, alternately notched, linear plain, cord wrapped stick and the total variety of Oxbow punctation tools were applied in this manner. Rocker stamping is a continuous application of a tool edge by using a rocking motion and thus creating a zig-zag pattern. This technique was also used in the application of linear dentate, alternately notched, linear plain and the cord wrapped stick tools.

Eleven percent of all rim sherd vessels were decorated exclusively by rocker stamping while 28% exhibited a combination of both rocker and simple stamping techniques. The technique of dragged stamping was applied to only 2 % of Oxbow vessels and in all cases was combined with simple or rocker stamping techniques. This technique involves a simple stamp impression which is not totally distinct from similar adjacent impressions. The more distinct impressions are joined by the dragged tool edge before the next impression is made (Figure 40 e). Such a technique often produces a "ribbon-like" band of decoration (Wright 1967:12).

Drawing, the other major technique of application is a method which involves either cleanly cutting or "incising" into the surface of the wet clay or dragging or "trailing" an implement through the clay. The incised technique is illustrated in Figure 39 e and examples of the trailing technique are illustrated in Figure 39 f. Distinguishing characteristics between the two types of drawing techniques are explained by Keenlyside. "The incised impression is much sharper, usually narrower, deeper and "v" shaped in cross section" (Keenlyside 1978:331). Trailed impressions tend to be broader, shallower and leave overflow ridges on either side of the impression. Two percent of all Oxbow vessels exhibited incising as a decorative technique. Six percent exhibited use of trailing although in all but one case this technique was combined with simple stamping.

Motifs

The artistic composition or design which results from the use of decorative tools, in single or combined techniques of application, is known as the motif. The various motifs produced on the exterior rims and lips of individual CfDl-1 rim sherd vessels are presented on Figure 34. Table 16 defines each motif according to decorative tool and technique of application. The following key defines the various codes used in that table.

Key pertaining to decorative motif Table 16

1	tool
2	technique
3	orientation
(j)	juvenile vessel
*	perforation rather than punctation
?	unknown
-	portion unavailable
" "	blank space means not applicable
Fig.	the report Figure on which this vessel rim can be viewed
V	indicates the assigned vessel number

tools (1)

ld	linear dentate
an	alternately notched
lp	linear plain
d	drawing implement
cws	cord wrapped stick

orientation (3)

ie	interior edge
ee	exterior edge
eie	interior and exterior edges
v	vertical
h	horizontal

<u>tools</u> (1) cont.

ss	scallop shell
po	punctation oval
pc	punctation circular
pr	punctation rectangular
ppo	punctation pinched oval

<u>techniques</u> (2)

sm	smoothed
ss	simple stamped
rs	rocker stamped
ds	dragged stamped
i	incised
t	trailed

<u>orientation</u> (3) cont.

hl	horizontal linear
r	random
l	oblique left
or	oblique right

Table 16, Decorative motifs defined (decorated vessels only)

V	Fig.	lip 1	lip 2	lip 3	upper rim 1	upper rim 2	upper rim 3	neck area 1	neck area 2	neck area 3	shoulder area 1	shoulder area 2	shoulder area 3	body 1	body 2	body 3
1	36	?	sm		an	rs	or	an	rs	or	an	rs	or	an	rs	or
2	37	cws	ss	or	cws	ss	v	cws	ss	v	cws	ss	v	cws	rs	?
								pc	ss	hl						
3	38	an	ss	v	an	ss	v	an	rs	v	an	rs	v	an	rs	v
4	39g	ld	ss	ee	ld	rs	h	ld	rs	ol	ld	rs	h	ld	rs	h
					ps	ss	-	ld	ss	ol	ld	rs	ol			
											ld	ss	ol			
5	35d	Id	ss	ee	?	sm		ld	rs	h	ld	rs	h,v	ld	rs	v
8	-	an	ss	ee	an	ss	or	an	rs	or	-	-	-	an	rs	?
9	-	?	sm		lp	ss	v	lp	ss	h	-	-	-	-	-	-
					lp	ss	h	lp	ss	v						
10	-	?	sm		an	ss	or	an	ss	or	-	-	-	-	-	-
11	-	?	sm		po	ss	hl	lp	rs	h	lp	rs	h	-	-	-
12	-	pn	ss	ee	pn	ss	h	an	rs	or	an	rs	or	-	-	-
								po	ss	or						
13	-	?	sm		ss	ss	or	ss	ss	ol	ss	ss	or	ss	ss	?
					pc	ss		pc	ss							

(cont.)

Table 16, Decorative motifs defined (decorated vessels only)

		lip			upper rim			neck area			shoulder area			body		
V	Fig.	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
14	-	pn	ss	hl	an	ss	or	an	ss	h	an	ss	h	-	-	-
15	-	?	sm		an	rs	h	an	rs	h	an	rs	ol	-	-	-
16	-	?	sm		an	rs	h	an	rs	h	an	rs	h	-	-	-
17	-	?	sm		po	ss	hl	ld	ss	v	ld	rs	h	-	-	-
					po	ss	ol									
18	-	?	sm		an	ss	ol	an	ss	ol	-	-	-	-	-	-
20	-	?	sm		ld	rs	h	ld	rs	h	-	-	-	-	-	-
21	-	?	sm		an	ss	ol	an	ss	ol	an	ss	or	an	rs	?
22	-	?	sm		ld	ss	h	d	t	v	-	-	-	-	-	-
23	-	?	sm		?	sm		ld	rs	h	-	-	-	-	-	-
24	-	?	sm		pn	ss	v	an	ss	h	-	-	-	-	-	-
								on	ss	ol						
25	-	pn	ss	eie	po	ss	hl	ld	rs	h	-	-	-	ld	rs	?
					pn	ss	hl									
26	-	an	ss	or	?	sm		an	rs	v	an	rs	v	-	-	-

(cont.)

Table 16, Decorative motifs defined (decorated vessels only)

		lip			upper rim			neck area			shoulder area			body		
V	Fig.	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
27	-	an	ss	v	?	sm		pn	ss	v	ld	rs	ol	ld	rs	?
					pn	ss	v									
28	-	ld	ss	ol	ld	ss	or	po	ss	hl	-	-	-	an	rs	?
		ld	ss	or	d	t	h	an	rs	h						
29	-	?	ss	or	?	ss	or	pn	ss	hl	-	-	-	?	ds	-
33	-	?	sm		?	sm		ld	rs	h	-	-	-	ld	ss	?
34	-	?	sm		?	sm		d	t	h	pc	ss	v			
35	-	?	sm		ld	ss	v	ld	rs	h	ld	rs	v			
36	-	ld	ss	or	?	sm		pc	ss	hl	?	sm		ld	rs	-
37	-	?	sm		ld	ss	or	po	ss	v	ld	ss	or	ld	ss	or
38	-	?	sm		ld	ss	or	-	-	-	-	-	-	-	-	-
39	-	ld	ss	ee	ld	ss	h	po	ss	hl	ld	rs	or	-	-	-
					ld	rs	v	ld	ss	h	ld	ss	or			
											pc	ss				
41	39a	?	sm		pc	ss	r	?	sm		?	sm		?	sm	
								pc	ss	r	pc	ss	r			

(cont.)

Table 16, Decorative motifs defined (decorated vessels only)

		lip			upper rim			neck area			shoulder area			body		
V	Fig.	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
43	-	pr	ss	hl	?	sm		?	sm		?	sm		-	-	-
44	-	?	sm		d	i	v	ld	rs	h	-	-	-	-	-	-
								ld	rs	v						
45	-	pn	ss	ee	pn	ss	h	d	t	or	d	t	or	d	t	or
					d	t	or	d	t	ol	d	t	ol	d	t	ol
					d	t	ol									
46	-	?	sm		?	sm		d	i	or	-	-	-	-	-	-
								d	i	ol						
47	-	an	ss	v	an	ss	v	-	-	-	-	-	-	-	-	-
48	-	?	sm		d	i	v	d	i	v	d	i	v	d	i	?
					d	i	or	d	i	or	d	i	or			
49	-	an	ss	ee	an	ss	or	an	rs	h	an	rs	h	-	-	-
					an	rs	h									
50	-	?	sm		ppo	ss	hl	ld	ss	ol	ld	ss	ol	-	-	-
					ld	ss	h	ppo	ss	hl						
51	-	pn	ss	ee	pn	ss	hl	ld	rs	h	ld	rs	h	-	-	-
					pn	ss	hl									
52	-	?	sm		?	sm		ld	ss	v	-	-	-	-	-	-
					ld	ss	v	po	ss	hl						

(cont.)

Table 16, Decorative motifs defined (decorated vessels only)

V	Fig.	lip 1	lip 2	lip 3	upper rim 1	upper rim 2	upper rim 3	neck area 1	neck area 2	neck area 3	shoulder area 1	shoulder area 2	shoulder area 3	body 1	body 2	body 3
53	-	pn	ss	ee	pr	ss	hl	ld	rs	h	ld	rs	h	ld	rs	?
54	-	an	ss	v	po	ss	hl	ld	rs	ol	ld	rs	or	ld	rs	?
55	-	?	sm		?	sm		ld	ss	h	-	-	-	ld	rs	?
					ld	ss	or									
56	-	pn	ss	ee	d	t	or	d	t	ol	d	t	ol	-	-	-
					d	t	ol	an	ss	or	an	ss	or			
57	-	?	sm		an	ss	or	an	ss	or	an	rs	h	-	-	-
								an	rs	h						
58	-	?	sm		ld	rs	h	ld	rs	ol	-	-	-	-	-	-
59	-	pn	ss	ee	pn	ss	hl	ld	rs	h	ld	rs	h	-	-	-
					ld	rs	h	ld	rs	v	ld	rs	v			
					ld	rs	v	ld	rs	or	ld	rs	or			
					ld	rs	or									
60	-	d	i	h	d	i	h	d	i	r	d	i	v	-	-	-
											d	i	h			
61	-	?	sm		pn	ss	hl	ld	rs	h	-	-	-	-	-	-
62	-	pn	ss	ee	pn	ss	h	ld	rs	h	-	-	-	-	-	-

(cont.)

Table 16, Decorative motifs defined (decorated vessels only)

		lip			upper rim			neck area			shoulder area			body		
V	Fig.	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
63	-	pn	ss	ee	pn	ss	h	ld	rs	h	ld	rs	v	ld	rs	?
					?	sm		pc*	ss	r	ps	ss	r			
					ld	rs	h									
64	-	?	sm		ld	rs	h	ld	rs	h	-	-	-	-	-	-
65	-	?	sm		ld	rs	h	ld	rs	h	-	-	-	-	-	-
66	-	?	sm		pn	ss		po	ds	ol	ld	ss	h	-	-	-
					po	ds	ol	ld	ss	h						
					ld	ss	h	ld	ss	or						
					ld	ss	or									
67	-	d	i	v	?	sm		?	sm		?	sm		-	-	-
68	-	?	sm		?	sm		an	rs	h	-	-	-	-	-	-
					an	rs	h									
71	-	pn	ss	ee	pn	ss	h	ld	rs	h	ld	rs	ol	-	-	-
					ld	rs	h	ld	rs	ol						
72	-	?	sm		d	i	v	an	ss	h	an	ss	h	an	ss	?
					d	i	h									
73	-	?	sm		?	sm		d	t	h	?	as	v	-	-	-
								?	ss	v						

(cont.)

Table 16, Decorative motifs defined (decorated vessels only)

		lip			upper rim			neck area			shoulder area			body		
V	Fig.	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
74	-	?	ss	or	pr	ss	h	pr	ss	h	pr	ss	h	-	-	-
75	-	an	ss	or	d	t	v	an	ss	or	-	-	-	-	-	-
					an	ss	or	an	ss	ol						
					an	ss	ol									
76	-	?	sm		an	ss	or	an	ss	h	-	-	-	-	-	-
77	-	?	sm		an	ss	or	-	-	-	-	-	-	an	rs	?
78	-	?	sm		pr	ss	v	an	rs	h	an	rs	h	-	-	-
79	-	?	sm		an	ss	h	an	ss	h	-	-	-	-	-	-
81	-	?	sm		ld	ss	v	ld	ss	h	ld	ss	h	-	-	-
82	35a	?	sm		po	ss	h	po	ss	h	po	ss	h	ld	ds	?
											ld	ss	h			
83	-	ld	ss	or	ld	ss	or	ld	ss	h	ld	ss	h	-	-	-
					ld	ss	h									
84	35c	ld	ss	or	pn	ss	h	ld	ds	h	-	-	-	-	-	-
		ld	ss	h												
85	-	cws	ss	or	lp	ss	or	lp	ss	or	-	-	-	-	-	-
								cws	ss	h						

(cont.)

Table 16, Decorative motifs defined (decorated vessels only)

V	Fig.	lip 1	lip 2	lip 3	upper rim 1	upper rim 2	upper rim 3	neck area 1	neck area 2	neck area 3	shoulder area 1	shoulder area 2	shoulder area 3	body 1	body 2	body 3
86	-	?	sm		?	rs	h	?	rs	h	?	rs	h	-	-	-
					?	sm		?	sm		?	sm				
87	41c	pn	ss	ee	pn	ss	h	ld	rs	h	ld	rs	ol			
								pc*	ss	r						
88	-	pn	ss	eie	pn	ss	h	ld	rs	h	-	-	-	-	-	-
89	-	pn	ss	ee	pn	ss	h	ld	rs	h	ld	rs	r	-	-	-
					ld	rs	h	ld	rs	v						
90	-	pn	ss	ee	d	t	ol	d	t	ol	d	t	ol	-	-	-
					d	t	or	d	t	or	d	t	or			
91	-	pn	ss	ee	pn	ss	h	?	sm		?	sm		-	-	-
92	-	an	ss	or	ld	ss	or	d	t	h	-	-	-	-	-	-
					d	t	h	pn	ss	hl						
93	-	?	sm		cws	ss	h	cws	ss	h	cws	ss	h	-	-	-
											cws	ss	v			
94	-	sn	ss	ol	?	sm		an	rs	ol	an	rs	ol	-	-	-
					po	ss	h									

(cont.)

Table 16, Decorative motifs defined (decorated vessels only)

		lip			upper rim			neck area			shoulder area			body		
V	Fig.	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
95	-	?	sm		?	sm		an	rs	h	-	-	-	-	-	-
					an	rs	h									
96	-	?	sm		an	ss	or	an	rs	h	an	rs	h			
					an	rs	h	pc*	ss	r						
97	-	?	sm		an	ss	or	an	ss	v	an	ss	r	an	ds	?
98	-	pn	ss	ee	pn	ss	h	an	ss	ol	-	-	-	-	-	-
					an	ss	ol									
99	-	pn	ss	ee	pn	ss	h	?	sm		?	sm		-	-	-
102	-	an	ss	or	ld	ss	ol	pr	ss	hl	ld	ss	h	-	-	-
								ld	ss	h						
105	-	pn	ss	ee	an	ss	v	an	ss	h	-	-	-	-	-	-
					an	ss	h	an	ss	ol						
					an	ss	ol									
106	-	?	sm		?	sm		?	sm		?	sm	-	-	-	-
					pr	ss	hl									
107	40b	pn	ss	ee	pn	ss	h	ld	rs	h	-	-	-	ed	rs	?
					ld	rs	h	ld	rs	ol						

(cont.)

Table 16, Decorative motifs defined (decorated vessels only)

		lip			upper rim			neck area			shoulder area			body		
V	Fig.	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
112	-	pn	ss	ee	pn	ss	h	ppo	ss	hl	ld	rs	h	an	rs	-
					ld	ds	ol	ld	rs	h						
124	-	lp	ss	or	pn	ss	h	pn	ss	h	-	-	-	ld	rs	-
129	-	?	ss	or	?	ss	v	?	rs	v	-	-	-	-	-	-
					po	ss	hl									
131	-	pn	ss	ee	pn	ss	h	?	ds	v	-	-	-	-	-	-
132	-	pn	ss	ee	pn	ss	h	ld	ss	h	-	-	-	-	-	-
134	-	ld	ss	ol	po	ss	hl	ld	rs	ol	-	-	-	-	-	-
					ld	rs	ol									
135	-	ppo	ss	h	?	sm		?	sm		-	-	-	-	-	-
136	-	po	ss	h	?	sm		?	sm		-	-	-	-	-	-
142	-	?	sm		an	ss	or	an	ss	h	an	ss	h	-	-	-
143	-	pn	ss	ee	pn	ss	h	ld	rs	ol	ld	rs	ol	ld	rs	?
					ld	rs	h				pc*	ss	r			
145	-	ld	ss	v	an	ss	or	-	-	-	-	-	-	-	-	-
146	-	pn	ss	ie	?	sm	-	?	sm	-	-	-	-	-	-	-
151	-	?	sm		an	ss	ol	-	-	-	-	-	-	an	ss	?

(cont.)

Table 16, Decorative motifs defined (decorated vessels only)

		lip			upper rim			neck area			shoulder area			body		
V	Fig.	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
152	-	?	sm		pn	ss	h	-	-	-	-	-	-	?	rs	?
153	-	pn	ss	ee	pn	ss	h	an	ss	or	-	-	-	an	ss	?
					an	ss	or									
165	-	ld	ss	or	an	ss	or	an	ss	or	-	-	-	-	-	-
170	-	pn	ss	ee	pn	ss	h	-	-	-	-	-	-	ld	rs	?
					po	ss	r									
175	-	?	sm		an	ss	or	an	ss	or	-	-	-	an	rs	?
														pn	ss	?
176	-	?	sm		ld	ss	h	ld	ss	h				ld	ds	?
					pn	ss	hl									
179	-	?	sm		an	rs	h	an	rs	h	an	rs	ol	po	ss	?
														an	rs	?
180	41a	?	sm		an	ss	v	an	ss	h	an	ss	h	ld	rs	?
183	-	pn	ss	ee	ld	ss	v	ld	rs	h	ld	rs	h	-	-	-
184	-	an	ss	or	an	ss	or	ld	ss	h	ld	ss	h	ld	ss	?
					ld	ss	h									
185	-	?	sm		an	rs	h	an	rs	h	-	-	-	-	-	-

(cont.)

Table 16, Decorative motifs defined (decorated vessels only)

		lip			upper rim			neck area			shoulder area			body		
V	Fig.	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
186	-	an	ss	v	an	ss	v	an	ss	h	-	-	-	-	-	-
187	-	?	sm		ppo	ss	hl	?	sm		-	-	-	-	-	-
193	-	pn	ss	h	an	ss	or	-	-	-	-	-	-	-	-	-

Twenty-two rim sherd vessels or 16% of the CfDl-1 ceramic assemblage received no decoration although all these vessels did exhibit evenly smoothed surfaces (Figure 41 b). Seven additional vessels displayed undecorated interior and exterior rim surfaces but did exhibit some type of decorative alteration to the lip surface or the lip edge. Only six vessels were found to have interior rim decoration. Three of these are illustrated (Figure 35 a-c), while the decorative attributes of all six are recorded on the following table.

Table 17, Interior rim decoration information summary
(?) means the impression is not clear

vessel	tool	technique	orientation
74	oval punctate	simple stamp	horizontal band
82	linear dentate	dragged stamp rocker stamp (?)	horizontal band/ overlapping obliques
84	linear dentate	dragged stamp	2 horizontal bands
102	linear dentate	simple stamp	1 oblique band
124	rectangular punctate	simple stamp	1 horizontal band
129	linear dentate (?)	simple stamp	1 oblique band

Ceramic manufacturing wastes

Several lumps of untempered fine textured clay were recovered during the excavations. One irregular cylinder shaped fragment is smoothed to an almost glossy finish on its most projecting surfaces.

"Juvenile" ceramics

Fragments of three small crudely manufactured and decorated vessels were identified from within the Oxbow ceramic collection. Following Wright (1966:32), vessels 34, 60 and 90 are considered to be of "juvenile" construction. All three include some rim sherd portions, are grit tempered, have lip thicknessess of less than four mms and appear to have been hand molded rather than coiled. Individual vessels display a criss-cross trailed motif, a lightly trained linear motif combined with simple stamped fingernail like impressions (Figure 39 i) and lastly, interconnecting uneven lines of simple stamped, sharp punctations of some sort (Figure 39 d).

Stephen Davis of Saint Mary's University reports that sites on the Shubinacadie River in Nova Scotia have produced numerous tiny vessels. These vessels do not, however, exhibit "junevile" characteristics (Stephen Davis, personal communication). At Oxbow no such tiny vessels manufactured by adult construction methods were encountered.

Method of manufacture

Excepting the "juvenile" ceramics, only one method of manufacture was noted amongst the Oxbow vessels. This method was coiling. Several vessels, especially those that were organically tempered and almost laminated in texture, broke easily and evenly along coil joints (Figure 37). After manufacture vessels were further prepared and strengthened by smoothing the coiling ridges into one another forming a uniform surface. Occasionally extra clay was molded onto the central area of the base where it added support strength. The finer textured harder vessels from Oxbow appeared to break at random rather than on coiling lines. Bourque (1971:196) suggests that such vessels were manufactured by a paddle and anvil technique. No "anvil marks" as such were noted on the interior of Oxbow vessels.

Faunal remains

With the exception of one moose femur which may date to the historic period, all faunal remains recovered from Oxbow were calcined. These calcined fragments were found in association with hearth areas which exhibit red staining, a probable consequence of a concentrated application of heat. The fact that only those bones which "happened" to make it into the fires were preserved, certainly suggests that the present sample should not be taken as representative of the fauna actually consumed on the site.

Most of the calcined bone was fragmentary and often these pieces were minute in size. All but extremely small pieces were collected by using tweezers during the excavation. Smaller pieces were collected by "flotation". Laboratory sorting determined that approximately one third of the fragments offered identification potential. These pieces were selected and delivered to Frances L. Stewart for analysis. The results of this study are attached as Appendix E.

The following animals have been identified from hearth associated samples from throughout the site: bear, beaver, moose, muskrat, and dog. The bird family is represented by the remains of only one duck. Although a number of fish ribs and vertebral fragments were recovered, only two species have been identified as Atlantic sturgeon and possible catfish. The Atlantic or sea sturgeon is an anadromous species which only frequents fresh water for spawning in the months of May and June (Leim and Scott 1966: 82). All remaining species identified from Oxbow may have been taken at any time of the year.

Only one calcined bone of a large mammal was found to display a cutting or butchering mark. Stewart also noted that mammal bones show a disproportionately high number of foot elements for the beaver and bear remains but most of the specimens not identified beyond the class Mammalia might be pieces of long bone shafts and in part these would balance the many foot bones (Frances Stewart personal communication).

Features

During the Oxbow excavations certain areas were, by appearance, designated as "features". Feature areas did not necessarily contribute material remains to the site registry although many combined their non-material cultural reality with the more physical aspects of the cultural presence. These special areas often held data important to the interpretation of various aspects of site occupation and utilization.

Seventy-four features were identified, separately recorded, drawn, photographed and excavated. Not all post moulds or plow marks were given individual feature numbers although the presence of every feature of this type was recorded within level drawings and notes compiled for each excavation unit.

During the initial stages of excavation concentrations of lithic debris were assigned separate feature numbers. When it became apparent that there were numerous areas of such concentrations and that these areas often occurred in combination with more readily definable features, the concentrations themselves were assigned catalogue rather than feature numbers. The greater number of tool manufacturing areas have therefore either been incorporated as portions of the more materially productive features or are recorded as completely separate deposits.

In appendix D, all features have been indivudally described according to a variety of traits or attributes as well as according to their provenance on the site. Within the total number of features recorded there appear to be several varieties or forms which can be defined according to a combination of traits. The following discussion concerns the number and kinds of features that were excavated at the Oxbow site. A few features are described in detail as examples of a particular type of feature or as individual contributors to the site interpretation.

Historic features

For the most part the historic period utilization of the site was reflected by the presence of plow marks. Long narrow strips of dark soil often paralleled each other within the upper levels of individual excavation units. These features were easily identified near the transition zone between the darker humus/root layer and the lighter layers of sand/silt which on average began within 20 or 30 cms of the surface. Occasionally plow marks contained historic debris but rarely did they cut deep enough to disturb the underlying prehistoric occupation zones. Two historic features other than plow marks were also recorded at Oxbow and these are individually described.

Feature number one was located in unit 1-77 near the central portion of the site and occurred between 24 and 45 cms of the surface. The feature is described as a somewhat rectangular shaped dark brown silt stain which contained two large sandstone slabs. Removal of the stain presented a shallow trench in which the sandstone slabs rested.

Fragments of a 19th century green liquor flask were recovered from beneath and around the largest slab. A fragment of native pottery was found within the trench indicating that this 19th century feature had disturbed underlying prehistoric deposits. The feature possibly represents sill and foundation stone evidence for some type of 19th century occupation on the site.

Feature ten was located in unit 78-2 and occurred between approximately 40 and 60 cms depth. The feature consisted of a bright orange stain covered by an intermittent layer of ashes and a few charcoal flecks. The area concerned was approximately 60 cms in diameter and extended in a somewhat conical shape to a maximum depth of 21 cms. The interior of the cone contained a dark brown stain surrounded on all sides by a bright orange belt. A number of fire cracked rocks, calcined bone fragments, pieces of lead shot and a historic glass bead were recovered from within or directly adjacent to the feature area. The bead, found near the central portion of the feature, loosely dates this hearth to the latter half of the 18th century (Karlis Karklins, personal communcation). This hearth indicates that at least a portion of the site was occasionally used as a historic period camp area prior to the utilization of the land for agricultural purposes.

Prehistoric features

Hearths

The most common feature form which relates to the prehistoric occupation on the site is the hearth. Hearths were defined as certain areas where a concentration of heat had caused soil discoloration. Most often the fires also left some organic residue in the form of tiny pieces of charcoal. Hearths varied according to dimensions, associated cultural materials and general appearance. The following descriptions distinguish between a number of hearth forms that were present on the site.

Form A

The typical hearth feature of this variety was concentrated within a limited area of less than one meter. In cross section this form was a shallow basin shaped pit with an upper platform of fire cracked rocks and a charcoal stain surrounding the rock concentration. This type of feature occasionally contained a few burned bone fragments but most times contributed little in the way of other cultural debris. Form A hearths could have been utilized as roasting racks of some sort. The profile of one feature indicates that the rocks were probably placed into a burning fire. The basin of coals beneath the rock platform would then provide the heat necessary to cook. Figures 44 and 45 exhibit hearth 65, a form A feature which was excavated from the third and fourth levels of unit 78A. A similar feature from the more westerly sections of the site had organically tempered pottery sherds in association.

Form B

Form B was the most abundant variety of hearth feature identified throughout the most productive levels of the site. A typical feature of this type presented a charcoal stained area which was usually accompanied by a patch of red stained soil. The red area of the feature would often be the thickest portion of the hearth and usually covered about one-third of the feature area. Typically form B features were, at any one point in the feature area, less than 15 cms thick and were confined to areas of less than two meters. Occasionally the charcoal stain spread over a slightly larger area. The cross section of the form B feature was shallow and rather basin shaped. Feature shapes were occasionally circular or oval but more generally were irregular or undefined.

Form B features almost always produced more cultural debris than was evident in the surrounding area. Chipping debris was almost always present and sometimes was in abundance. Charred bone fragments were always present within the red stained area. Charred fruit or vegetable matter was also occasionally present within this area and whole or fragmentary portions of lithic artifacts and pottery sherds could also be expected to be found. Fire cracked rocks were generally scattered throughout the entire feature area. Occasionally large unburned rock slabs, abrasive and/or anvil stones or beach cobbles were also found in association. Some 34 features from Oxbow present almost all of the aforementioned attributes in some manner of combination. A typical feature of this type from unit 78-12 is illustrated in Figure 46. Three features presented most of the form B attributes but lacked the red stained area.

Form B features were associated with post moulds in 35% of all cases. Although only a few features exhibited any particular patterns, three features were found to display a pair of post moulds which in cross section lean towards the central portion of the hearth (Figures 12, 48). In unit 78-11 several overlapping or perhaps one large form B feature appeared to lie within the circular configuration of post moulds referred to as Feature 74. Other unit 78-11 form B features may have been positioned within similar structural confines. Excavation limits did not allow for complete identification of these structures. Unit 78-10 was so heavily charcoal stained throughout the most productive levels that post moulds were difficult to define.

Features of form B appear to have hosted a variety of activities within or directly adjacent to their central areas. The combination of different types of cultural debris and the activities which these seem to represent would indicate that these hearths were utilized more than once and by both sexes.

The activities most obviously represented by form B hearths are those of a domestic nature with food preparation involving use of cooking fires to prepare both animal and vegetable products. The abundant amount of chipping debris that was present in some features would also suggest a focal point for lithic tool manufacturing. Large abrasive stones found near several form B hearths could indicate an area for preparation of bone and antler tools as well. The gaming disc found in association with feature 47 and the presence of small red ochre nodules in and about other form B features could be taken to indicate areas of general congregation. The following individual feature descriptions are presented as examples of the form B hearths.

Feature 66 was an oval shaped area of charcoal and red stained soil. The feature covered an area of approximately 1.5 metres and was some 13 cms thick in a basin shaped cross section. The area contained a number of calcined bone fragments, 32 small fire cracked rocks, an abundance of quartz flakes, two projectile point tips and some charred seed remains.

Feature 62 was represented by a small reddish area surrounded by a charcoal stain containing some fire cracked rocks and some larger non-fire cracked cobbles. Small pieces of pottery, calcined bone fragments, a hammerstone and an abundance of quartz flakes were recovered from the area. The flakes appeared to be concentrated within a sandy patch that was located near the central portion of the feature (Figure 47). The maximum thickness of the feature is only 6 cms and it provides a shallow basin cross section.

Feature 50 presents an elongated, somewhat oval, basin shaped hearth that was lined with charcoal staining (Figure 47). The western end of the two meter long basin displayed a deep reddish stain which contained fine calcined bone fragments. A number of larger and a few smaller fire cracked rocks were scattered throughout the feature. A large number of quartz flakes and a few non-quartz flakes were recovered from within the hearth area. Just north of the feature lay a few small red ochre stains. Three post moulds were also noted within the feature area. Two of these, located on the western end of the feature, were only a few centimeters apart and had no particular slant. A third post mould sloped southwards from its more easterly position within the basin.

Form C

Three irregularly shaped but concentrated charcoal stained areas were noted to have a central area of red staining similar to that of the form B features. The physical dimensions of these features are similar to those of form B and they also exhibit a shallow basin cross section. The form C features do not contain any cultural material. This complete lack of refuse may suggest a very short term use for some undefined purpose which did require a concentrated application of heat.

Form D

The features here represented were initially defined as irregularly shaped moderately stained charcoal patches. One of the three displayed an area of red staining while all features in this category had both fire cracked and non-fire cracked rocks in association (Figure 45, Feature 47). Two of the features contained some lithic debris while one of these also contained a few pottery sherds.

Within the charcoal stained areas of the form D features, a confined area of less than 50 cms diameter was found to extend to depths which surpassed the five to ten cms thickness of surrounding stain. Maximum feature depths within these deep areas were 62, 35 and 25 cms. All three of the "pit" areas were cylinder shaped and were filled with the charcoal stained silt which defined the upper more extensive portions of the features. The base of one pit produced some small pebbles and contained a few pottery sherds. Another pit contained a few quartz flakes. The pit areas of the features did not contain any fire cracked rocks. Although the pits were filled with charcoal stained silt they do not give the appearance of being cooking pits (Figure 49).

Form E

In unit 78-10 a pit hearth was defined (Figure 50). The feature is somewhat cone shaped being approximately 50 cms wide at the mouth and approximately 30 cms in depth. The feature profile suggests the pit manufacturers took advantage of a previously dug cone shaped pit depression that had been partially filled with very lightly charcoal flecked silt. The pit dips from a slightly charcoal stained surface area and charcoal lines the pit sides. The base of the pit hearth displayed several fire cracked rocks. The interior of the cone of this feature is partially filled with charcoal, pottery sherds, ash and quartz flakes.

During excavation this feature and an underlying pit were accidently excavated as a portion of a classic form B feature. This feature was located directly above the pit hearth. It would appear that the slight hollow or basin shaped depression left by the only partially filled pit was also used as a convenient location for a form B hearth feature.

The form E pit hearth would appear to have performed a specialized function as a baking or cooking pit. The fire cracked rock base and charcoal lining of the pit suggest that the central portion of the cone was probably occupied by a vessel that was being heat treated on at least three sides. The cultural debris within the central portion was probably shuffled in from areas adjacent to the mouth of the pit. As with form B features, a number of activities and a more than one time use could be suggested for this hearth.

Form F

Twelve charcoal stains of varying shapes were placed in this rather loosely defined form F category of features. The stains generally covered areas in excess of one meter but most often had their actual dimensions undefined due to their proximity to excavation limits (Figure 42). Excavation beyond the restricted limits to include the complete stain area may indeed have changed the actual categorization of these features. It was also noted that the charcoal staining in a number of these features was quite thin and it appeared as if the charcoal fragments themselves may have been lifted from their original positions and redeposited in their recorded positions by water action. The thickness of form F features rarely exceeded 15 cms and their profiles exhibited no regular contours. All form F features contained some fire cracked rocks although in all but two cases the amount of lithic debris and occasionally pottery sherds did not distinguish the feature from the surrounding floor. Two of the form F features did contain an abundance of quartz chipping debris as well as numbers of formed or partially completed lithic artifacts (Figure 51).

In summary, the form F feature combines a rather widespread thin charcoal stained layer with occasionally fire cracked rocks. Only once were post moulds found in the immediate vicinity of one of these features (Figure 42). The evidence would seem to suggest a hearth that was manufactured with less than deliberate planning. The hearth's heat was never intense or concentrated enough to produce a red stained area. In only two instances does the area appear to have been utilized for tool manufacturing. With the general lack of other cultural debris perhaps it could be suggested that such features served mainly as convenience fires of short term usage. The following is a description of a form F feature as it was recorded.

Feature 59 was located within level 10 of unit 78-11. A one meter wide charcoal stain extended from the east wall of the excavation limit for a distance of approximately 2.5 meters. The stain contained a few small fire cracked rocks and a small number of quartz flakes. The thickest portion of this irregularly contoured feature was nine cms. A few natural cobbles were found in the immediate vicinity. The rather flowing edge of this charcoal stain gives the impression that perhaps the charcoal flecks had been washed into position from an adjacent more heavily burned area.

Remaining features

With few exceptions not worthy of mention, the following is a descriptive summary of the remaining individual features which were identified during the Oxbow excavations. Firstly, comments will be made concerning four pit features that were not recorded as such during the excavation. Due to their almost camouflaged nature several pits remained unnoticed until detailed profile drawings were made of the walls of units 78-10 and 78-11. With the absence of hearth or cooking pit attributes or any distinctive fill, these four pits would appear to have served as storage or holding pits of some sort. The West wall of unit 78-11 produced a somewhat cube shaped, 30 cms wide, 30 cms deep lightly charcoal stained pit (Figure 12). Three cone shaped pits were recognized in 78-10, one along the North wall, another along the East wall and yet another on the West (Figure 50).

The 78-10 West wall pit has already been discussed as a basal portion of the type E pit hearth feature. This feature had a maximum depth of approximately 40 cms and was 30 to 35 cms wide at the mouth. This pit was partially filled with a 10 cms thick layer of lightly charcoal stained silt before it was utilized as a convenient location for the type E hearth. The pit displayed on the North wall of 78-10 was refashioned three different times. The first 15 cm deep pit took advantage of a slight natural depression. This feature was next partially filled by a layer of charcoal stained living deposit and then after a slight cleaning was reused, this time with the depth of the pit increased to 20 cms. The last use of this feature occurred after a 10 cm thick layer of slit had been deposited filling the previous pits. From the top of this layer a 90 cm wide shallow depression was excavated having a central 25 cms deep pit that exhibited a 20 cm wide neck opening. In turn this last pit was naturally filled by a coarse sand deposit. The pit feature along the East wall of this same unit was approximately 30 cms deep with an approximately equal mouth diameter.

Rock formation

Feature 24 was a configuration of large cobbles and sandstone blocks that was uncovered approximately 50 cms beneath the surface on the fourth floor level of unit 78-5. Two main clusters of these rocks occurred along the North and West walls. Charcoal staining occurs on the pit floor next to the rocks but not amongst them. Only a few flakes were recovered from the feature area. The maximum thickness of this rocky deposit was 26 cms. Although the deposit is definitely not natural, an adequate cultural explanation for the presence of this formation is lacking.

Circular structure

Feature 74 (Figures 53, 56) was not identified in the field although the clues to its subsequent identification were adequately recorded amongst field notes, level records and level drawings. Further information pertaining to feature 74 was provided by form B hearth areas 38, 39 and 40.

Feature 74 is composed of a circular configuration of post moulds which appear to surround two small hearth areas, features 39 and 40. The posts have fairly uniform diameters of four or five centimeters and generally ranged in depth from 10 to 30 cms. Distance between the 22 moulds which form the pattern vary between a few cms and a wide westerly opening of almost one meter (Figure 56).

The structure which feature 74 represents had its beginning in level five, some 50 to 60 cms below the surface of excavation unit 78-11. Due to the heavy charcoal staining produced by hearth features 38, 39, and 40, only a few post moulds were recorded at this level (Figure 52). A floor plan drawing of level five indicates that a concentration of fire cracked rocks, flakes and pottery sherds occurred within the area of hearths 39 and 40 (Figure 52). Immediately beneath the hearth area and within the upper portions of level six, a layer of light colored sand appeared (Figure 12). From the surface of this sand layer most of the charcoal stained silt filled post moulds which contributed to the feature 74 circular pattern were recorded (Feature 53). The concentration of debris from feature 39 and 40 of level five appears to fall within this 240 by 260 cm post mould boundary (Figures 52, 53).

Another form B feature, 38, is positioned on the same level as the enclosed features 39 and 40 but is located just south of the aforementioned opening on the west of the post mould circle. The charcoal stained outline formed by the maximum excavated extent of features 38, 39 and 40 also appears to flow from this westerly opening (Figure 52).

Level six floor plans revealed several other partial lines and curves of post patterns on the exterior of feature 74 (Figure 53). Within the feature some thirteen other moulds of approximately the same size as the feature 74 posts were noted. A rather regular line of four of these posts is located north of the enclosed hearth features. The remainder of the interior moulds appear individually or clustered in twos or threes within the structure (Figure 53).

From the evidence it would seem fair to conclude that feature 74 was a fairly stable circular structure of approximately 2.5 meters diameter. It was associated with interior and exterior hearth features of a form which indicate a varied activity center. A regular line of posts opposite the interior hearths could perhaps indicate a heat reflector or drying rack. Unfortunately not all post moulds were cross sectioned so there suggestions are of course tentative.

Only one Maritime reference to a similar configuration of post moulds was found (Caywood 1969). In the 1964 excavations at Meductic, on the upper St. John River, Caywood excavated some 18 post moulds which formed an irregular circle some 13 feet in diameter. All moulds except one slanted slightly towards the center of the circle. The structure contained a small off-centered hearth feature. Caywood refers to the post moulds as the remains of a "wigwam". Unfortunatety no reference is made towards artifactual remains from within this struoture and the period to which it dates remains unknown (Caywood 1969:16).

CHAPTER V

OXBOW CHRONOLOGICAL FRAMEWORK

The establishment of a chronological framework for the various components represented within the Oxbow site has been accomplished through the ordering of two specific classes of artifacts - ceramics and projectile points. Although comments can be made concerning the chronological positioning of other specific cultural evidence at Oxbow, the lack of discrete cultural levels, the difference in stratigraphy across the site and the scarcity of relevant data within the units which could be compared dissuaded the researcher from attempting to formulate trends within other less diagnostic aspects of the cultural assemblage.

The first of the three techniques used in constructing the Oxbow framework was radiocarbon dating. In most cases the samples chosen for radiocarbon assay were associated with the differing types of Oxbow projectile points. Approximate dates could then also be applied to the ceramics found within the arbitrary levels from which the dated sample was taken. Charcoal recovered from the lowest levels of the 1978 Oxbow excavation units was insufficient to gain an absolute date for the initial site occupation.

The second technique used in the chronological ordering was ceramic seriation. Percentages of various vessel attributes were considered within each arbitrary level of the larger and more productive excavation units. The findings were subsequently arranged in order from the base to the surface of each unit and trends within several vessel attributes were identified by this method.

The third and perhaps most beneficial method of chronological ordering at Oxbow was stratigraphy examination. Careful consideration of the differing stratigraphy within the units and across the site provided additional information which sometimes clarified conflicting results of the two above mentioned techniques. Occasionally, as in the case of unit 78-10, examination of stratigraphy meant deleting large amounts of data from the chronological ordering effort. Although 50 rim sherd vessels were recovered from unit 78-10, the information derived from this unit could not be used for seriation purposes because forty-three or 86% of the vessels were concentrated within a 20 cm depth range between levels six and eight of that unit. In other units similar consideration of unit stratigraphy allowed individual artifacts of presumed earlier origins to be positioned in an arbitrary level that was vertically above specimens of a presumed later period. To draw such conclusions the horizontal and vertical coordinates of each diagnostic cultural item were examined with reference to the nearest stratigraphic drawing. Once this had been accomplished, solutions to difficulties within the evolving framework could more easily be recognized.

Projectile point sequence

Eight radiocarbon dates have thus far been established for Oxbow. Appendix G may be consulted for individual summary descriptions of the samples and their observed cultural associations. All Oxbow samples submitted were dated using the half-life 5730 years. Only one of the eight dates, 2980 ± 80 BP (S-1654) was not deemed acceptable due to its incorrect stratigraphic positioning with regard to another seemingly good date from the same excavation unit. The remainder of the dates range between 2640 ± 50 BP (S-1605) and 1675 ± 50 BP (S-1607). In all but one case these seven dates were associated with one or another of the Oxbow projectile point types (Figure 57).

The Oxbow projectile point sequence begins in the lowest and as yet non-radiocarbon dated levels. The rather large, straight and parallel stemmed Type D forms are the earliest point styles represented at the site (Figure 15 a, b). Although two of the three 1978 specimens were recovered from the culturally disturbed compact levels of unit 78-10, the distinctive attributes of this point type made it a likely candidate for an early position in the sequence. The 1979 excavations proved conclusively that this point type stratigraphically lies beneath the expanding stemmed specimens to which the earliest site date of 2640 ± 50 BP had been applied. Considering the vertical distance between this date and the 1979 Type D specimen, a suggested date of at least 2800 BP could be offered for the earliest occupation at the site.

In comparing the stratigraphy drawings of unit 78A and unit 78-12, it would seem safe to suggest that the single Type H point base belongs in a position slightly above the Type D specimens. This large, somewhat lobate stemmed specimen with wide rounded shoulders should therefore date somewhere between 2800 and 2600 BP (Figure 15 j).

Two radiocarbon dates of 2600 ± 60 BP (S-1650) and 2640 ± 50 BP were received on charcoal from separate unit 78-11 features each of which had a small expanding stemmed point in association. With one exception these Type B projectile points had straight bases and enough expansion of the stem to possibly be termed "wide side-notched" (Figure 14 j-p). Type B points represented 23% of the entire number of projectile points excavated in 1978, a percentage only surpassed by the later Type A specimens. This relative state of abundance and the wide site distribution of this form suggest a relatively long, perhaps 400 year period of use for this particular point form.

The next most recent radiocarbon dates were received from the adjacent yet separate 78A and 78-12 excavation units. The dates, 2145 ± 65 BP (S-1606) and 2120 ± 60 BP (S-1652), were found to have projectile points of a bipointed form in close association. These Type C group points had both wide angled shoulders contracting to a sharply pointed base and wide rounded shoulders also contracting to a sharply pointed base (Figure 15 c-f).

Although no dates are available for a specific specimen, a subtle transition from the bipoint into the most recent form A projectile point could have easily taken place. Most Type A projectiles have contracting stems with wide rounded or wide angled shoulders and convex bases (Figure 14 a-i). Charcoal samples submitted from the separate excavation units, 78-11 and 78-10, returned dates of 1745 ± 70 BP (S-1651) and 1675 ± 50 BP and both dates have the Type A, the most abundant type of projectile point on the site, in good association. The 1675 ± 50 BP date is the most recent absolute date presently received for the Oxbow projectile point sequence. Sometime between this date and approximately 400 BP the last projectile point form can be added to the Oxbow sequence. This form, a precursor of which could be illustrated in the single Type G point base, is tightly corner notched and exhibits a convex base (Figure 15 h). One point having these attributes was recovered from the 19th century plow zone during the 1979 Oxbow excavations. Information recovered during these most recent excavations suggest that the gap for the addition of this last point type could be narrowed considerably to possibly between 1000 BP and 400 BP. This final addition to the sequence would have been the type of projectile point being used by the Miramichi Micmac during the time of European contact.

Ceramic Seriation

A ceramic seriation for various rim attributes of the Oxbow vessels was accomplished for two separate areas of the site. At the western end of the site units 78-11 and 78-4 were examined as one study area while near the central portion of the grid units 78A and 78-12 were combined as a second study area. Units 78-11 and 78-4, designated area A for easy reference, offered 23 rim sherd vessels spread throughout seven levels. Unit 78A and 78-12, designated area B, offered 13 rim sherd vessels throughout 17 levels of excavation. At the commencement of this section I wish to warn readers that the most reliable ceramic data from Oxbow constituted a rather small sample of 36 vessels. The trends that are noted in the following text and in Figures 58-62 according to seriation analysis may therefore be subject to change with the addition of any new data.

Rim sherds of vessels from both areas A and B were examined according to percentages of attribute variation in three fields; the exterior finish of the vessel including 1) tool use 2) the methods of tool application and 3) motifs produced; the variation of the rim profile including 1) rim shape 2) lip shape and 3) rim form; and variation in the decorative treatment of the lip areas including 1) lip surface and 2) lip edges, exterior and interior.

The results of the seriation were first examined for each individual area and then, secondly as a combination of both areas. For the most part trends identified in one area supported trends recognized in the other. A combination of results from both areas occasionally provided clarification of previously unrecognized trends (Figure 62). Through an examination of both the stratigraphy and radiocarbon dates it was estimated that arbitrary level seven of area A was the approximate equivalent of level 12 from area B.

Several attributes of rim, body and base sherds were not included in the seriation process. Observations on such attributes can be offered with regard to individual or combinations of finds and their relationship to the site as a whole. Comments on these observations shall follow the presentation of the seriation results.

Exterior rim treatment

Tools

Considering the exterior finishing of area A vessel rims, the seriation suggests that the dentate stamp was, at a ratio of 66% to 33%, the preferred decorative tool in the earlier levels (Figure 61). A decrease in popularity came about as a result of a marked increase in the use of the alternately notched stamp, from 30% to 100% over four levels (Figure 61). Following this the dentate stamp appears to achieve a gain in popularity once again. Also, as a separate consideration, the use of punctation type tools appears to decrease slightly from 40% in level nine to 29% in level six.

In area B (Figure 59), the alternately notched tool shows a 100% occurrence in three of the four lowest levels. By levels eight and nine, alternately notched tools show a marked decline to 30% while the use of the dentate stamp predominates at 60%. Above these levels there appears to be an equal distribution of each tool type until, in the upper levels, the cord wrapped stick replaced both to gain 100% usage (Figure 59). The use of punctation tools appears to fluctuate throughout all area B levels.

In combining the seriation results from both areas A and B, the following tool trends can be suggested (Figure 62). The earliest undated levels of the site produced a 66% to 33% ratio in favor of the dentate stamp over the alternately notched stamp. From this time until approximately 2100 BP the use of the alternately notched tool grew in popularity at the expense of the dentate stamp. From 2100 BP the use of the alternately notched tool declined until approximately 1700 BP when both tools equally shared in vessel decoration. Shortly after this time both of the above decorative stamps are replaced by the use of the cord wrapped stick. The use of punctation as a decorative technique appears to have two heights of popularity, one at approximately 2100 BP and another in the most recent ceramic period marked by the use of the cord wrapped stick.

Techniques

Techniques of tool application were reviewed for both areas A and B (Figures 59, 61). One technique, rocker stamping, does show a decrease from 66% to 33% from the lowest to the upper levels of area A. A corresponding increase from lower to upper is noted in the combined rocker/simple stamping techniques. Simple stamping appears to increase generally through time, with the exception of a decrease in popularity in levels eight and nine of area B. This decrease appears as a result of the scatterd appearances of the dragged and incising techniques within these levels. Rocker stamping makes an appearance but is not continuously represented in the area B sample.

The combined seriation results (Figure 62) suggest that rocker stamping is a preferred technique of application during the earliest ceramic levels. As the use of rocker stamping decreases through time the use of the combined simple and rocker method of application increases until approximately 1700 BP after which neither of the above applications are preferred. Simple stamping holds a fairly high percentage of the technique total throughout the sequence. The frequency of occurrence for this method of application appears lowest between approximately 2100 and 1700 BP. This decrease would appear to be a direct result of a general shift to alternative techniques of application including dragged stamping, incising and punctation.

Motifs

Two motifs produced on the exterior rims of area A vessels were found to demonstrate recognizable trends while a third can be suggested (Figure 61). The occurrence of horizontals as a singular means of decoration was fairly prominent at 66% in the earliest levels, decreased to 40% in the middle levels and increased once again to 60% in the upper levels. The case of obliques over horizontals displays a battleship curve from a 33% use in early levels, to 66% in middle levels and finally to 50% in the upper levels. Also in area A, the occurrence of horizontals over obliques tends to increase slightly through time while the presence of verticals over horizontals makes a brief middle level appearance.

The examination of area B demonstrated two trends in motifs and suggested a third. The strict use of horizontals as a singular method of decoration appears strong in the earlier levels and gradually weakens through time. The obliques over horizontals motif is most dominant in the lowest levels and is reduced to 25% in the upper levels. The use of verticals in the rim area as a singular means of decoration does not occur until the middle to upper levels of area B and becomes prominent during the most recent ceramic levels. It was also evident that where verticals acted as the superior portion of a combined motif, these motifs only occur during the middle to upper levels of the area.

A combination of the motif seriation results (Figure 61) produced identifiable periods of popularity for one motif or another. These do not however indicate any well defined trends. Both horizontals and obliques over horizontals display an initial popularity followed by a steady although marked lower occurrence in the more recent ceramic period. From approximately 2100 BP onwards the use of horizontals over obliques increases as does the tendency to use verticals in a superior motif position.

Rim profiles

Rim shape

Area A demonstrates one distinct trend with regard to rim shape

(Figure 60). With the exception of the time period represented by levels eight and nine, the contracting rim shape has a steady increase in popularity from 33% to 100% over six levels. Parallel rim shape appears to have a higher frequency of occurrence in the earlier levels and then tends to fluctuate. The expanding rim shape makes only one weak appearance in the middle levels of this area.

Area B (Figure 58) demonstrates a popularity for a contracting shape in earlier levels and a decrease in this attribute for the remaining time period. The parallel rim shape is present in the earlier levels and gains 100% occurrence in the most recent levels.

The combination of results concerning rim shape display two supporting trends (Figure 62). Initially parallel rims have a high frequency of occurrence although they decline towards 2000 BP. Correspondingly the contracting rim shape initially has a low percentage of occurrence and rises to a height of popularity at approximately 2100 BP. From this time onwards contracting rim shapes decrease in the shadow of a once again popular parallel rim. The expanding rim shape is never really popular but does occur in one unit prior to 2100 BP.

Lip Shape

Two different lip shapes, rounded and flat, were considered during the seriation of both site areas. Area A (Figure 60) demonstrated an increasing trend in percentages for the rounded lip while, with a one level exception, the flattened lip displayed a corresponding decrease in occurrence through time. In area B (Figure 58) the flat lip appeared very popular until the middle levels where it shared equal occurrence with the rounded lip which following these levels has 100% occurrence.

In considering the combined seriation results (Figure 62), an increasing trend in the use of the rounded lip is well supported. Sometime shortly after 1675 BP flat lipped vessels no longer occur. The flat lip would appear to have had a height of popularity at approximately 2600 BP and again at approximately,2100 BP.

Rim form

Area A results (Figure 60) concerning changes in the rim form were not dramatic. A vertical form tended to persist through time with slight fluctuations during the earliest and middle levels when the "in flaring" and "out flaring" forms made an appearance. "In flaring" tends to increase from 33% to 50% from the earliest to middle levels of area A.

Area B (Figure 58) results indicate a 100% popularity for the vertical form in early to middle levels with a decrease to 50% in the upper levels. "In flaring" rim forms tend to show a corresponding increase from a 25% occurrence in the middle levels to 100% occurrence in the most recent levels.

In combination (Figure 62) the results from A and B suggest one restricted temporal indicator as well as two mutually supportive trends. Firstly, all indications suggest that an "out flaring" rim form could be used as a fairly early, 2600-2100 BP temporal indicator. Secondly, although the vertical form keeps a high profile through time it does weaken at approximately 2100 BP. At this time the "in flaring" form, which is present to a limited extent throughout the entire sequence, makes a more pronounced appearance at 50%. From 2100 BP onwards the vertical form once again gains its initial popularity while the "in flaring" form decreases.

Lip Treatment

Lip surfaces

Lip surfaces were examined to discover if any trends could be identified with respect to decorative treatment. Area A (Figure 60) suggests that plain surfaces were most prominent during the earliest levels of the site and that this popularity prevailed until approximately 2100 BP when a decline of this attribute began. The decline was paralleled by an increase in popularity of obliquely applied decorative tools.

The results from area B (Figure 58) show a decrease in plain lip surfaces from 100% in the earliest levels to a 50% occurrence in the middle to upper levels. Oblique decorations on lip surfaces showed an initial popularity which decreases through time. Both applications of vertical or horizontal markings occur in small percentages during the period of the obliques' popularity.

The combined results from areas A and B (Figure 62) indicate an initial strong tendency towards plain lip surfaces until approximately 2000 BP. At this time the use of obliques became considerably more popular and this trend continued into the most recent ceramic periods at the site.

Lip edges exterior/interior

During the initial technical examination of the Oxbow ceramics, a number of vessels were noted to have decorative notching applied to their interior and/or exterior lip edges. Site area A (Figure 60) demonstrated that such notching on both the lip edges was only present in earlier levels. Exterior edge notching was most popular in level nine with an 80% occurrence decreasing to a 33% occurrence in level eight. Interior edge notching was only present in level eight with a 16% occurrence. Only one vessel from a middle to upper level of area B (Figure 58) was found with exterior edge notching. If this one instance of occurrence can be ignored, area A would strongly indicate that notching of either lip edge is an early temporal indicator dating to approximately 2600 BP.

Observations on the Oxbow ceramic sequence

A number of ceramic attributes were only slightly represented or entirely absent from the areas studied by the seriation technique. Three attribute fields, interior rim decorations, castellations and vessel size were very poorly represented across the site. Two of the total six vessels which did possess some interior surface decoration had been dragged stamped. From the seriation results this technique ranged in popularity between the earliest levels and approximately 2000 BP. No comments can be offered concerning the evolution of castellations or vessel size.

The type of temper used in the Oxbow ceramics deserves some comment. With only one exception pure organic or a combination of organic and grit temper were utilized in manufacturing vessels that were to be decorated with a cord wrapped stick. One vessel so tempered was left undecorated. According to the temporal position of the cord wrapped stick, the use of organic temper would appear to be a late, post 1700 BP, technical innovation. Although no trends can presently be suggested for entirely plain vessels, a combination of 1978 and 1979 data may reveal both very early and very late temporal placements for such vessels. One major 1979 discovery places a straight stemmed type D projectile point in direct association with fragments of an undecorated, grit tempered, slightly "out flaring" vessel rim. This association was uncovered in one of the deepest Oxbow levels and this undecorated grit tempered vessel presently holds the earliest position in the Oxbow ceramic sequence.

Several excavation units at Oxbow were examined to formulate a statement concerning rim and lip thicknesses through time. Throughout the sample no significant differences were noted in the thickness of vessel rims. In most cases fluctuations were greater within levels then between levels. The same type of occurrence held true for lip thickness although there did appear to be a tendency towards a one to two mm increase of this attribute in upper levels. This increase is probably a direct result of the popularity of the rounded lip shape in the latter stages of the sequence.

Base sherds allowing a judgement of the "form" attribute were also poorly represented. Of the five bases identified as to form within the units 78-11 and 78-12, two pointed specimens came from upper levels possessing cord wrapped stick decorated sherds. The remaining three bases were wide rounded and were recovered from lower levels, all of which held a combination of dentate and alternately notched decorated sherds. From this observation it is possible to suggest that wide rounded vessel bases are earliest in the sequence and that pointed base forms follow 1700 BP.

As a final observation it may be worthy to note that the Oxbow site supports existing evidence from other New Brunswick sites which suggests that the use of ceramics in this province had been completely abandoned by the time of the arrival of the first Europeans (Turnbull 1974b:14).

Other datable aspects of the Oxbow assemblage

As noted in the introduction to this chapter, no attempts were made towards establishing trends within the less "diagnostic" aspects of the CfDl-1 assemblage. A few individual or groups of artifacts or features can however be assigned approximate dates of occurrence. The following statements refer to the temporal placement of some of these additional aspects of the Oxbow cultural assemblage.

Lithics

A distribution study of all scraping tools, regardless of type, revealed that the majority of scrapers, 84%, occurred between the arbitrary levels six and eight of the larger excavation units 78-11 and 78-10. This observation allows for the suggestion that, on the whole, scrapers were a far less popular tool during both the earliest and most recent periods of site occupation. The scarcity of this type of tool in either of these times could indicate either a less intensive, possibly seasonal use or a more specialized, possibly fishing or plant collecting, use of the site.

The gaming disc recovered from level seven of excavation unit 78-11 should date somewhere near 2100 BP while the net or line sinker recovered from level eight of the same unit could date nearer 2500 BP. Following an examination of the ceramic decorative tendencies within the arbitrary levels of unit 77-1, four fragments of cut shale could be assigned a date prior to 2100 BP. As previously mentioned such shale fragments appear to be related to a pipe manufacturing industry.

Features

One type of feature, the form A "roasting platform" was noted not only to have a very low frequency of occurrence but also to be restricted to the upper levels of the site. One of these features had organically tempered plain vessel sherds in association and the other bearing no pottery, was found just beneath the 19th century plow zone. In view of their contents and stratigraphic positioning, the very distinctive "roasting platform" type of feature would appear to be of rather recent prehistoric vintage at the Oxbow site.

Presently no comments can be made concerning the time span of use for features such as the one 2.5 m diameter circular structure identified at Oxbow. The single structure dates to approximately 1675 BP. Hearth features of the type identified from the interior of the structure began to occur by 2600 BP. These earlier hearths do not, however, have a circular configuration of post moulds surrounding them.

Summary

In summary the Oxbow site contains six distinctive point types which have been arranged in chronological order by radiocarbon dating and stratigraphic considerations (Figure 57). Although two of these point forms, Type H and Type G, are not well represented on the site, evidence does exist which allows for their positioning within the sequence.

The combination of attributes present in the earliest Oxbow projectile points suggests general Northeastern chronological cultural terms such as "Late Archaic" or "Transitional". At Oxbow these points have been tentatively assigned a date of near 2800 BP. These earliest point forms, which after the 1979 excavations appear fairly well represented in the lowest levels of the site, are followed by one large lobate stemmed point base. By approximately 2600 BP the small Type B expanding stemmed points become most popular. Presently there is no evidence to suggest an easy transition between the earliest Type D points and these later Type B specimens. This is also the case between the Type B points and the bipoints which make an appearance at approximately 2200 BP.

The bipoints are followed by an abundance of small stemmed Type A points at approximately 1700 BP. In this case there does seem to be a transition between these two types. The small stemmed points are finally replaced between 1000 to 400 BP by the most recent tightly corner-notched points. The lack of any transitional evidence between these two most recent types may be a result of scarcity of information at Oxbow. A singular find of the most recent point type may indicate a decreased utilization of the site from 1000 BP onwards. This suggestion is supported by much more scattered appearances of all cultural debris in the uppermost levels at Oxbow suggesting a possible shift in settlement subsistence patterning at this time.

The ceramic seriation of 36 Oxbow rim sherd vessels has exposed a lengthy sequence of ceramic development for northeastern New Brunswick. This study in combination with several general observations of the Oxbow ceramic industry has suggested several trends and/or temporal indicators for the sequence which has a possible temporal span of 2000 years.

Significant trends concerning the manufacture and decoration of vessels are recognized in six different attribute fields (Figure 62). Applying approximate temporal terms of early, middle and late to the sequence span, the following trends can be identified: 1) The vessel rim is primarily divided between parallel and contracting shapes. The parallel shape is initially popular, declines during the middle period and becomes popular again in the most recent late period. The contracting shape is initially only present in limited percentages, it is popular in the middle period and declines in the latter stages of the sequence; 2) Vessel lips are divided between rounded and flat shapes. Rounded lips are intially only slightly present, by the middle period are more popular and in the late period dominate. Flat lips are prominent throughout the early and middle portions of the sequence but become scarce in the late period; 3) Vessel rims demonstrate three attributes of form. The vertical form is most popular throughout the sequence although it does diminish during the middle period with an expansion of the always slightly present "in flaring" form. "Out flaring" of the rim can be taken as an indicator of the early period; 4) Lip surfaces are predominantly plain during the early period but are considerably less popular in the middle and later periods. During the two most recent time periods, the use of oblique decorations on lip surfaces has a very high percentage of occurrence. Notching of lip edges can be taken as a relatively early temporal indicator; 5) The cord wrapped stick tool is a late temporal indicator while dentate and alternately notched stamps demonstrate hourglass and battleship curves through time respectively. The dentate stamp is initially popular, declines and then is relatively popular once again. The use of an alternately notched tool is initially only present, has a dominant position in the middle period and fades once again in the later period; 6) The two major techniques of application observed on Oxbow vessels were simple and rocker stamping. Rocker stamping in the rim area is initially quite popular but its occurrence virtually disappers in the middle to late periods. Simple stamping has a fairly high, consistent frequency throughout the sequence and totally dominates the rim decoration of the late period ceramics.

By using the three separate techniques of radiocarbon assay, seriation and stratigraphy examination, the above 2800 year old chronological cultural framework has been established for the Red Bank/Sunny Corner area of northeastern New Brunswick. When the examination of the additional 1979 excavation information is complete, the results of this sequence can be refined and possibly expanded upon. Presently the framework here established can be put to considerable use.

CHAPTER VI

CULTURAL RELATIONSHIPS

Problems

As noted in Chapter I there are a number of problems inherent in the present state of archaeology in the Maritimes. To this point most of our archaeological energies have been directed towards the location and assessment of sites, towards the salvage of disturbed or partially destroyed sites or towards research goals concerning temporally or culturally known site types. In addition Burley (1974:27) notes that quartz, the material from which a very high percentage of northeastern New Brunswick lithic artifacts are manufactured, has very poor flaking qualities and it is suspected that many artifacts of identical conception have a great number of varying attributes. These factors, combined with the loss of many coastal sites, do not produce an ideal archaeological situation within which to conduct comparative studies. Further, difficulties can also be encountered when information in adjacent regions has not been recorded in a similar analytical fashion. For example, a ceramic "type" defined by certain distinguishing attributes is difficult to compare to a sequence that lacks the specific type but possesses the related attributes in varying percentages.

Keeping in mind the above difficulties, suggestions concerning possible cultural relationships for the various components within the Oxbow framework can now be offered. At Oxbow the artifact categories of projectile points and ceramics were considered most useful in defining possible cultural relationships.

Origins of the earliest Oxbow occupants

The earliest occupations at Oxbow are represented by a straight stemmed point complex most probably ancestral to Late Archaic or Transitional types. Two wood charcoal samples closely associated with these point forms have been submitted for radiocarbon analysis since the 1979 excavations. Presently on the basis of stratigraphic association and later dated levels, a date of 2800 BP has here been tentatively assigned to the earliest Oxbow occupations.

Prior to a discussion concerning the spatial distribution of the earliest Oxbow occupants, some speculation as to the origins of the "straight stemmed" point complex can be offered.

On the basis of the descriptive attributes offered by Kinsey, the earliest Oxbow points closely resemble the Type A points which dominate the frequency of projectile point types at the stratified Kent-Hally Site located in the lower Susquehanna River Valley, Pennsylvania (Kinsey 1959:115). Ritchie defines similar "Bare Island" and more slender "Poplar Island" points from eastern and southern New York and the southern New England region as a part of the dominating Late Archaic Sylvan Lake complex representing "a movement of new people and culture into the Northeast, which assimilated and submerged the resident groups of the Laurentian tradition" (Ritchie 1965:xxi). New York and southern New England dates for this complex begin by approximately 4100 BP. On Martha's Vineyard in southern New England the Squibnocket complex, a coastal variant of these Late Archaic cultures, has been identified as occupying a similar time period.

In his assessment of the close cultural relationships demonstrated throughout the far Northeast between 4400 and 3700 BP, Bourque notes that "stemmed projectile points" are one of the easily recognized technological constituents of the Moorehead phase (1976). A recently excavated 4295 $\pm$ 95 year old assemblage from the Hirundo site in Maine possesses a large number of side notched "Otter Creek" points as well as a winged bannerstone fragment (Sanger 1979:45). Such elements are recognized as being highly diagnostic of the Vergennes phase of the Laurentian tradition (Ritchie 1965:86). Dated a few hundred years later, chipped stemmed points recovered from the Maritime Archaic assemblages of Cow Point and the Turner Farm sites display attributes very similar to the New York "Poplar Island" points. At another site near Brooklyn, Maine, Bourque reports small stemmed points and a fragment of a slate cresent possibly relating to Ritchie's Squibnocket complex occurring with what may be the lower portion of the Moorehead phase occupation dated at 3930 BP (Bourque 1971:80).

With the present lack of an acceptable parent point complex for the Moorehead phase point type, it could perhaps be suggested that the adoption of such stemmed points came about due to an early northward diffussion of traits from the Late Archaic Sylvan Lake and/or related complexes.

In southern New England and New York it is with both the above mentioned cultures that the later Susquehanna tradition peoples interact. The appearance of this tradition in these areas did not "wipe out" the existing cultures but, as is evident in the projectile point continuum of Martha's Vineyard, continued to coexist with the resident population for some time (Ritchie 1969:218-223)

At the Turner Farm site near Blue Hill, Maine, a 4400 BP Moorehead/Maritime Archaic occupation is overridden by a 3600 year old Susquehanna occupation. No connections in material culture between the two occupations are apparent. The dates received from Turner Farm suggest an extremely close temporal relationship between late Moorehead/Maritime Archaic sites and the Susquehanna occupation (Bourque 1979:53). At the Portland Point site in Saint John harbour Susquehanna points again lie above "Red Paint" Maritime Archaic burials (Harper 1956:8-15).

By 3700 BP it would appear that the best known aspect of our resident Maritime Archaic population, their mortuary/religious cult, was in a state of gradual deterioration (Sanger 1973:131). Whatever the cause of this cultural instability, the arrival of small bands of Susquehanna peoples may have offered a perhaps depleted resident population a new, less specialized way of life. Bourque mentions that in Maine "Snook Kill" points are found in relative abundance and that straight stemmed varieties vastly out number those with expanding or notched bases (Bourque 1971:55). Although cultural exchanges between the two groups of stemmed point users have not yet been adequately demonstrated, this writer believes that through mutual assimilation the Maritime Archaic and Susquehanna cultures could easily emerge as the source of the straight stemmed complex identified at the base of the Oxbow cultural sequence. Until new and convincing data is uncovered however, this belief cannot be justified.

The early period (2800 BP - 2200 BP)

Information concerning the spatial distribution for points similar to the Oxbow straight stemmed type from Maine and the Maritimes can be drawn from survey reports, private collections, as well as from salvage and some research excavations. In Nova Scotia a number of similar specimens have been recorded in the Nova Scotia Museum collections (D'Entremont and Moore 1977:38). In New Brunswick the type appears fairly prominent on the Northwest Miramichi River, in the Miramichi Bay area as well as along the east central coast. Judy Buxton-Keenlyside reported three sites on the Tracadie River system from which medium sized straight stemmed points were surface collected. At two of the sites this point type was the only one found. At the third site, CiDf-3, on the Tracadie Lagoon, a near complete range of the Oxbow types were present (Buxton-Keenlyside 1970:78). When Martijn surveyed the adjacent Pokemouche River, two sites were found to have the early Oxbow type points in association (Martijn 1968:46-48). In 1971 Jacques Lavoie surveyed the Kouchibouguac Park area of the east coast. A large number of sites were discovered and three of these located on the Richibucto River also produced medium sized straight stemmed points (Lavoie 1972:166-167).

As previously mentioned two large non-stratified disturbed occupation sites are located in the Red Bank/Sunny Corner area on the north bank of the Northwest Miramichi. The Hogan-Mullin (CfDk-1) and the Wilson (CfDk-2) sites display the complete range of Oxbow projectile points as well as additional types. Straight stemmed square based points are present in both the excavated and private collections from this area (Allen 1974:23-24).

One especially important northeastern New Brunswick site which relates to the early portion of the Oxbow sequence is located less than one kilometer away from Oxbow at the confluence of the Northwest and the Little Southwest Miramichi rivers. The Augustine site (CfDl-2) is a highly organized burial mound with a strong degree of Adena affinities (Turnbull 1976:50). A number of dates have been returned on samples associated with burial pit fill from within the mound itself. The dates range between 2330 BP and 2950 BP. Within this same fill several straight stemmed points of the early Oxbow type were found.

A number of coastal sites from the south shore of New Brunswick and adjacent Maine have also produced assemblages containing this type of point. When found in a shell midden context, the stemmed points were located "within a few centimeters of the marine clay which underlies the shell deposits" (Davis 1978:29). In his Teacher's Cove report Davis notes several New Brunswick/Maine shell midden sites which possess a similar horizon. Attention is also drawn to the Moose Island site near Eastport, Maine, where excavations in 1951 revealed a single component non-shell bearing occupation whose assemblage possessed 25 "straight stemmed" points (Davis 1978:79).

Considering the above, one tends to receive the impression of a fairly well established population inhabiting the river and coastal areas of New Brunswick by, according to Oxbow, at least 2800 BP. With the exception of the Oxbow and Augustine Mound sites, straight stemmed points do not appear to be associated with ceramics.

Concerning the temporal placement of the Augustine site, Turnbull feels that most of the dates "appear too early for our present state of understanding of events during this portion of Eastern North American prehistory. If they are acceptable they would suggest at least 300 to 700 years of use for the mound and establish Augustine as one of the earliest "Woodland" burial mounds on the continent" (Turnbull 1979 b:1). Turnbull does note that one burial containing a large "turkey-tail" point may well be of earlier origin. Although they are by no means a prominent type, several ovate-based, tapered-stemmed "Adena" points have been found at nearby occupation sites. Dragoo notes that this form constitutes the dominant early-middle Adena blade form (Dragoo 1963:206).

When compared with the herein defined local sequence, the Augustine Mound middle date of 2600 BP would seem more than acceptable. The type H Oxbow point base, similar specimens of which appear as actual grave goods in some Augustine burials, appears to date very near 2600 BP. It is also at approximately this date that the small expanding stemmed points become popular at Oxbow. A single point of this nature was found within the second level of mound fill at the Augustine site.

The Rosenkrans site, a New Jersey related Adena/Middlesex burial site, possessed a cache of nine quite similar small corner notched or expanding stemmed points within a burial feature. In the opinion of Herbert Kraft this is the type of point that was made and used by the Middlesex culture (Kraft 1976:32). Also at Rosenkrans mixtures of earlier local Archaic point types were found in the graves. A near similar situation exists at the Augustine site where Oxbow straight stemmed points are found in pit fill. Kraft suggests "that these people, like others, may have had individual preferences with respect to stemmed or corner-notched points and that they are probably contemporary" (Kraft 1976:15). During the 1979 Oxbow excavations, a straight stemmed point was found within the same 10 cm level that produced an expanding stemmed point in an adjacent 1978 excavation unit. It is therefore not impossible that both forms here coexisted for a short period. Rounding out Kraft's "Adena-like sites" chart with more recently uncovered Augustine traits, the Augustine and Rosenkrans sites, with the exception of the mound feature, appear quite similar. A single date of 2560 $\pm$ 120 BP (y-1384) has been returned from a Rosenkrans burial (Kraft 1976:12).

The distribution of small expanding stemmed points similar to the Type B excavated at Oxbow appears spread, although not heavily, throughout the Maritimes. The relatively early (2600 BP) temporal position of such points has hitherto not been recognized. A restricted distribution and/or earlier temporal placement of this type is reinforced by Maine ceramic period shell middens for which Bourque reports only two projectile point types. The attributes of neither his Eaton corner-notched or Wiesenthal side-notched types correspond to the Oxbow expanding stemmed type (Bourque 1971:170).

Collections from two sites on the south shore of Nova Scotia possessed a few Oxbow type B points. At one site located slightly inland at Rafter Lake (BeCx-3), a few small expanding stemmed points were found in a mixed assemblage which also included Archaic stemmed points, a copper awl and a large broad stemmed point very similar in form to those recovered from some Augustine Mound burials. On Merigomish harbour off the Northumberland Strait of Nova Scotia a shell midden produced only two Oxbow type B points within a multiple point type assemblage (Smith and Wintemberg 1929:137 Pl. IV, nos. 16, 17). The limited numbers of such points throughout the province of Nova Scotia is reinforced by the recent study of Nova Scotia Museum and the National Museum of Man collections from that province. On viewing the 13 Nova Scotia projectile point "groups" defined by D'Entremont and Moore (1977), no specific group appears to display the Oxbow type B attribute combination.

Along the southwest coast of New Brunswick a few Passamaquoddy Bay shell middens (BgDs-6, 10; BgDr-5, 8) have also produced the occasional point of type B nature. This point type has not, however, been found in the deeply stratified Fulton Island site (BlDn-12) located within the lower Saint John River lake system.

In northeastern New Brunswick the Wilson, Howe and Hogan-Mullin sites from the Red Bank/Sunny Corner area have produced large numbers of this type while on the Miramichi Bay only one site, Point de l'isle East (CkDf-3) has contributed similar points (Keenlyside 1970). Still further in the northeastern corner of New Brunswick, a few more of these points were found in a large mixed assemblage at the Old Mission Point site (ClDq-1) near Atholville (Turnbull 1973, 1974 a).

From this presently available information, the spatial distribution of the Oxbow small expanding stemmed points appears somewhat limited to the Maritimes area. Concentrations of this point type appear to occur in the large surface and excavated collections from the sites located at the confluence of the Northwest and Little Southwest Miramichi rivers.

The high frequency of occurrence at this location as opposed to that of adjacent areas could be a result of inadequate archaeological sampling or coastal submergence. An alternative explanation however, could reflect a concentration of expanding stemmed point users in the northwestern sections of New Brunswick's Miramichi River district. This limited area presently corresponds with the two known locations of Adena related burial sites.

The most interesting aspect of the initial Oxbow occupation pertains to the use of ceramics having begun in this area prior to 2600 BP. Because pottery occurs in a variety of cultural contexts in the Northeast, William Ritchie (1965:208) suggests that the use of ceramics probably diffused as a single trait rather than as a part of a complex. In New York, Early Woodland times are marked by the Meadowood phase and the estimated 3000 BP appearance of Vinette 1 wares (Ritchie 1965:181). In Massachuttes, Dincauze (1968:88) estimates a 3000 BP date for a small aceramic Meadowood assemblage at the Mansion Inn site while on Martha's Vineyard Ritchie found Vinette 1 sherds in association with a number of local point types (Ritchie 1969:232). At the Donaldson site in southwestern Ontario, Vinette 1 sherds have been radiocarbon dated at 24-2550 BP (Finlayson 1977:495) and in southern Quebec, Wright reports a Meadowood assemblage with Vinette 1, pseudo scallop decorated and plain pottery at the Batiscan site (1967:130). Due to overlapping dates concerning the presence of Vinette 1 wares with regard to locally evolving Middle Woodland ceramic complexes, Wright (1967:130) suggests that the use of this Early Woodland pottery probably lasted longer in some areas than in others depending on the proximity of outside cultural influences.

Similarily he also notes that the use of Vinette 1 ware is not a necessary prerequisite to an early Middle Woodland ceramic base.

In the Tobique River region of northwestern New Brunswick, a non-radiocarbon dated aceramic site containing medium sized slightly expanding stemmed projectile points has been located. On the basis of their distinctive assemblages, Deadman's Pool (CgDt-3) and several similar sites from the immediate area have been designated as the Shield Archaic related Tobique complex (Sanger 1971). From one of the related sites, the Everette Site (CgDt-2), a small number of pottery sherds were collected. Presently held in storage at the National Museum of Man, Archaeological Survey of Canada, these sherds were recently examined by myself. Apart from a few "pseudo scallop" decorated pieces, the remaining sherds from the collection appeared cord malleated. In view of the absence of any recognized "Vinette I" pottery from New Brunswick, these sherds are worth mentioning. If the sherds are actually "Vinette I" ware, Tuck's speculation that these Shield Archaic materials in the Maritimes might actually pertain to some "phase" of the Maritime Archaic tradition dating to around 3,000 years ago may not be a completely invalid suggestion (Tuck 1975:134).

As stated above there appears to be little evidence for the use of "Vinette I" pottery in the Maritimes. From the Wilson, Howe and the Hogan-Mullin sites a significant number of typically Meadowood projectile points have been recovered. Amongst the large ceramic assemblages from these sites no "Vinette 1" sherds have been recognized.

One possible piece of positive evidence for the assimilation of a Meadowood contingent by a locally evolving Late Archaic culture is found in two burials from the Tozer site (CfDk-21) in the Sunny Corner area. In 1928 two cremation burials were uncovered from a hill side overlooking the Northwest Miramichi River. The burial assemblage included 20 thin triangular points, a copper awl, a stemmed projectile point and fragments of two thin ground slate "plates". Wintemberg notes these blunt edged plates were "in process of manufacture, probably into gorgets, when they became broken, although gorgets are rarely found in New Brunswick" (Wintemberg 1937:207). All grave inclusions were coated with a thick layer of powdered red ochre. Of the projectile point included in grave Wintemberg reports that this "shouldered and stemmed point in figure 19 is of a type commonly found in early sites in the Maritimes. Shorter and wider points of this same type were found in old camp sites on the shore of the river about a half mile further north" (Wintemberg 1937:207, Pl. 1).

Without the recognizable Late Archaic stemmed point, these Tozer site burials and the associated assemblage could easily duplicate typical New York Meadowood phase burials as defined by Ritchie (1965). The suggestion therefore stands that the infiltrating Meadowood presence was easily influenced by the local population and that Vinette 1 wares, if introduced by the local peoples, did not make a profound impression.

As previously noted, during the 1979 Oxbow excavations, an undecorated thin to medium walled, grit tempered vessel was found in direct association with one of the early Oxbow stemmed points. Stratigraphically beneath this vessel in another unit, several very small unanalyzable sherds in a poor state of deterioration were found.

Several grit tempered plain rim sherds belonging to one small pot were recovered by Mr. Augustine during his initial digging in the central burial pit area of the Augustine Mound. This pottery appears identical to that recently recovered from the lower levels of Oxbow and similar sherds, with one fragment having a trailed triangular motif, were found at the McKinlay site (Christopher Turnbull, personal communication). Although Dragoo sees "Adena Plain" pottery as a relatively late Adena temporal indicator, I believe he also recognizes the possibility that his defined "late" traits may have a wider temporal range than previously estimated (Dragoo 1963:291).

From the above evidence, the writer suggests that the full-fledged utilization of ceramics in northeastern New Brunswick occurred as direct result of an Adena related cultural influence in the area. Speculation as to the basis of this cultural connection can now be offered.

The more complex cultural relationships suggested by the presence of the Augustine Mound are yet to be unravelled. Scattered finds of other possible Adena/Middlesex related burial goods are reported from Dartmouth, Nova Scotia, possibly from the base of a shell midden in Passamaquoddy Bay, New Brunswick and from another Red Bank site known as McKinlay (Christopher Turnbull, personal communication). The nearest known Adena related assemblage outside the Maritimes was found in Sillery, Quebec (Clermont 1978).

Turnbull (1976:61) and others suggest that some type of exchange network for goods and ideas may have been practiced between local populations and Adena related populations in Ohio. The question remains as to what our far northeastern populations would have contributed to such a system. As yet no concrete evidence on which to base possible suggestions has been recognized.

The alternative explanation for the Augustine Mound and other Maritime related finds lies in the possibility that an actual movement of Adena/Middlesex people took place. Ritchie and Dragoo once suggested that small bands of Adena related peoples carrying both strong religious ideas and ceremonial objects, filtered into the northeast when Hopewellian peoples began to make use of the Ohio Valley (Ritchie and Dragoo 1960:63). Presently few reliable dates have been received for the initial presence of Ohio Hopewell (Dragoo 1963:288-291). Considering the small but rather overpowering presence of the Augustine Mound, I believe an amended migration theory could provide an acceptable explanation for its existence.

At first few in number, Adena related peoples using the classic "Adena" lobate stemmed points flitered into the Maritimes. While planting the seeds of Adena mortuary ceremonialism plus the knowledge of ceramics, these people, few in number, soon adopted the straight stemmed hunting implements of the resident population. Later as a Hopewellian presence began to be felt in Ohio, a stronger influx of Adena related peoples moved northward carrying supplies of ceremonial objects and deep religious /mortuary convictions (Ritchie 1965:202). It is further suggested that these later peoples had a strong preference towards the use of small wide corner notched or expanding stemmed points similar to those found at Rosenkrans and Oxbow (Kraft 1976:32). Once this later contingent imposed themselves on the local residents of northeastern New Brunswick, mutual assimilation probably took place (Ritchie 1965:202). As an adjustment to the cultural impact the local population swayed towards the adoption of the wide corner-notched hunting implements and ceramic decorative techniques of Hopewellian influence. Concerning the continued use of Adena related mortuary ceremonialism, the writer agrees with Dragoo in concluding that once stocks of the prized ceramonial objects had expired, the religious ideas which rationalized their use would soon also perish (Dragoo 1963:287).

The presence of decorated vessels at Oxbow immediately follows or may perhaps even be contemporary with the "plain" pottery discussed above. The ceramic seriation at Oxbow also suggests an early influence from areas south and west. Both the use of a dentate tool and the rocker stamping technique of application initially have high frequencies of occurrence at Oxbow (Figure 62). From Wright's comparative study of four defined Northeastern ceramic complexes, the traits of rocker and dentate stamping were found to be good indicators of strong Hopewell connections (Wright 1967:122-123). Additional evidence of a similar kind for New Brunswick can be drawn from an apparently high number of dentate/rocker stamped vessels in the lower levels of the stratified Fulton Island site (Ellen Foulkes, personal communication).

The middle period (2200 BP - 1200 BP)

Proceeding with an examination of the Oxbow projectile point sequence, the bipoint makes an initial Oxbow appearance sometime between 2200 and 2100 years ago. As previously mentioned the occupation of the Oxbow site appears to have been "continuous", that is, the most distinct cultural levels at the site were always loosely connected by less well defined layers of cultural debris. Because the bipoints bear little resemblance to the previously utilized expanding stemmed forms, the probability that local residents were once again subject to strong external influences must be considered.

In both New Brunswick and Nova Scotia, the distribution of smaller bipointed bifaces suitable for projectile point purposes appears approximately equal to that of the preceding expanding stemmed specimens. The bipoint frequency of occurrence, however, in general collections and from specific sites, appears somewhat higher than that of its precursor.

In Nova Scotia bipoints are represented in a mixed ceramic assemblage from the south shore Cellar's Cove site (BdCx-1), from collections of several sites on the Shubenacadie river system (Preston 1974 a, b) and in a limited number at a Merigomish harbour shell midden (Smith and Wintemberg 1929:137, Pl. IV). D'Entremont and Moore found enough bipoints in their examination of museum collections to assign this type to a specific "group" (D'Entremont and Moore 1977:51). Ronald Nash also reports that bipointed forms exist in Cape Breton assemblages (personal communication).

In New Brunswick bipoints are found throughout the Miramichi River district including Miramichi Bay. The Red Bank/Sunny Corner area occupation sites have produced significant numbers of this type. On the Pokemouche River the Maltampec Brook site (CkDt-15) produced four such points (Martijn 1968) and several more were recovered from sites (CiDf-3, 4) surveyed on the Tracadie River (Keenlyside 1970).

Reinforcement for the accurate temporal placement of the bipoint is found within the stratified Fulton Island site. A date of 2075 $\pm$ 45 BP has been returned on a sample located just above the location of the base of a bipointed projectile (Ellen Foulkes, personal communication). Further southwest, bipoints appear to be found in relatively significant numbers in shell middens (BgDs-6, 10 and BgDr-11) whose assemblages infer a lengthy period of occupation (Davis 1978:31). Why the bipointed form was adopted is certainly open to speculation?

For the New York and New England areas Ritchie has defined two bipointed forms, Lagoon and Rossville, which at times appear identical (1971). According to Ritchie the Rossville type pertains to very late Archaic, Transitional and Early Woodland periods. The points occur on the lower levels of certain New York shell heaps with and without ceramics in association and have been recognized throughout much of southern New England specifically on the stratified midden sites of Martha's Vineyard. At the Peterson's site, a date of 2310 BP was associated with Rossville, Lagoon and Wading River points as well as with "Vinette 1" and some "early forms of Middle Woodland pottery" (Ritchie 1969:224). At the Vincent site a later date of 2130 BP was reported for Rossville points in association with "early facies" of the

Middle Woodland stage, with grit tempered pottery of simple and common varieties (Ritchie 1969:162). Although Vinette 1 sherds occurred on the same level, one could postulate a "cultural lag" for this trait at Martha's Vineyard. Of the subsistence of the bipoint users Ritchie states that "in addition to hunting, the people of the Lagoon complex were extensively dependent on shellfish" (Ritchie 1969:87).

Considering the New York/New England spatial and temporal distribution of the Lagoon/Rossville point complex as well as their suggested subsistence activities, the following suggestion can be offered regarding the presence of the bipoint type in the above mentioned Maritime assemblages.

At approximately 2300 years ago from regions to the south and west, small bands of Lagoon and/or Rossville point users slowly moved northeastward along the coast taking advantage of previously unused shell fishing locations. Such northeastward shifts in settlement could perhaps have been caused by overgathering on established shellfishing locations or "because of changing topographic or climatic conditions" (Ritchie 1969:234). Having reached the Maritime penninsula these peoples interacted with the resident populations and introduced them to the use of an additional food resource which had not been extensively exploited prior to this time. By 2100 BP this influence from the south and west was such that the bipoint appears as the dominant form of lithic hunting implement on both coastal and interior Maritime sites.

In considering the Oxbow ceramic seriation it would appear that the far Northeast was being influenced by two separate areas. The people of northeastern New Brunswick appear to be accepting not only new hunting implement ideas from the south but at the same time are welcoming a new ceramic decorative technique from areas to the northwest.

During the period 2200–2100 BP, Oxbow witnesses an unprecedented high frequency of use for the alternately notched or pseudo scallop decorative stamp. In New York use of this stamp tends to keep a low profile throughout the Point Peninsula 2 ceramic development (Wright 1967: 121).

When compared with the southwestern Ontario Saugeen ceramic seriation demonstrated by the Thede and Donaldson sites (Finlayson 1977), the 2200 BP to 1600 BP portion of the Oxbow ceramic seriation looks remarkably similar with regard to the trends in pseudo scallop and dentate stamp usage. Both sites display an initial high frequency of pseudo scallop which decreases through time and a low initial frequency for dentate stamping which correspondingly increases. Although dates are not available from Pointe du Buisson 3 on the south shore of the Saint Lawrence, the ceramic seriation for this Québec site indicates a similar trend with regard to pseudo scallop. At this site however, a number of decorative techniques, including a minor representation of dentate stamping, increase through time (Clermont et Chapdelaine 1978).

According to Wright (1967:121) a high frequency of pseudo scallop decorated ceramics is a reflection of close proximity to the Laurel tradition. This cultural manifestation does not, needless to say, lie in close proximity to the Maritimes. The presence, however, of intervening Saugeen and Ontario/Quebec Point Peninsula 2 sites with similar pseudo scallop trends, appears to bridge the spatial gap to the Laurel influence.

On the basis of the above discussion it is suggested that at approximately 2200 BP a rather quick eastward diffusion of the pseudo scallop decorative stamping trait took place. From this time until the most recent prehistoric period the Oxbow ceramic seriation indicates no major trends which can be attributed to external influences. A similar situation is reflected in the local projectile point sequence. The bipointed forms of 2200 BP appear to gradually change until eventually their attribute blend constitutes the small stemmed point forms that are present by 1675 BP (Figure 57).

In A Series of Prehistoric Sites On the Miramichi River, Burley (1974:21) discusses among others a single component site (CgDi-1) at the mouth of the Bartibog River. Excavations at this small site uncovered an aceramic assemblage containing "small stemmed points" very similar to those type A forms found at Oxbow. The lack of ceramics at this site was reasonably explained due to the seasonal hunting camp nature of the site and its probable short term use. Upon examining the spatial distribution of the small stemmed points, Burley concluded that:

> "CgDi-1 materials have a fairly compact spatial distribution in northeastern New Brunswick with few, if any outside affiliations ... Survey collections are a general mixture of artifacts similar to both those at Bartibog and a later period characterized by corner-notched points" (Burley 1974:103).

Burley emphasized the Miramichi river estuary as a prime location for finds of this point type and additional strength for this observation has been added by the Oxbow excavations and my recent review of other collections from the Red Bank/ Sunny Corner area. One possible exception to the lack of outside affiliations for this point type was suggested by the presence of small stemmed points in the Pointe aux Buisson 3 assemblage (Burley 1974:113).

Since Burley's analysis, additional information concerning the spatial distribution of the small stemmed points has come to light. Recently another site on the St. Lawrence south shore produced similar small points and a date of 1670 ± 100 BP (Dumais 1978:72). In central New Brunswick at the Fulton Island site a small, straight stemmed, wide rounded shouldered point was found in association with a charcoal sample dated at 1680 BP (Ellen Foulkes, personal communication). Both the projectile points dated and the dates from Fulton Island and Québecs' Cap-à-l'Orignal appear completely compatible with the Oxbow sequence. At Oxbow and Fulton Island the small stemmed point type appears derived from the earlier bipointed form. Since dates on the points from both sites appear compatible, a similar progression in projectile point development is suggested for all of New Brunswick from approximately 2200 BP until at least 1700 BP.

In Passamaquoddy Bay, the Sandy Point shell midden (BgDs-6) returned a date of 1900 ± 100 BP (Pearson 1970). When comparing the contracting stemmed specimens from Sandy Point to the Oxbow sequence. a state of transition between the Oxbow bipoints and Oxbow stemmed points could be suggested. The Sandy Point date of 1900 BP could therefore easily be applied to the suggested New Brunswick sequence development and to an earlier stage of occupation at this site. At Teacher's Cove (BgDr-11) Davis describes a few contracting stemmed points as belonging to "Group 1" (Davis 1978:19-20). Although it is agreed that all the "Group 1" inclusions predate those of "Group 2", Oxbow strongly suggests that not all "Group 1" stemmed points belong to the same or even an adjacent temporal position. Given a temporal position as immediate predecessor of the narrow corner notched forms, Preston's rather controversial "stemmed points" and house pit association on the Shubenacadie River in Nova Scotia would seem more acceptable (Preston 1974 b:19).

Since Burley's Bartibog analysis, a few sites have also been excavated on the south shore of Nova Scotia. Both Cellar's Cove and Rafter Lake have produced small straight to contracting stemmed points in addition to other types. The recent inventory by D'Entremont and Moore has defined two groups, 10 and 13 A, both of which could qualify as the Bartibog/Oxbow small stemmed points (D'Entremont and Moore 1977: 52-58).

On the basis of the above, the writer believes that Burley's initial statement concerning the spatial distribution of the small stemmed point complex can be reassessed to include most areas of the Maritime peninsula. During the investigations pertaining to this reassessment Burley's observation concerning the high density of this point form in northeastern New Brunswick has been confirmed. Perhaps the abundance of this point form can be explained through a longer duration of use for this point type.

The late period (1200 BP - European contact)

At Oxbow the most recent period of occupation is marked by the introduction of organically tempered ceramics having either plain or cord wrapped stick impressed surfaces. From the Savoie site (CiDf-11) on the Big Tracadie River a date of 1025 $\pm$ 120 BP has been received in association with very similar ceramic sherds (David Keenlyside, personal communication). The general impression gathered during the 1979 Oxbow excavations was that the manufacture of pottery possessing the above mentioned late attributes overlapped somewhat with the use of the small stemmed point complex and was used exclusively in the even more recent prehistoric period.

The second late temporal indicator is the narrow side or corner-notched point type. Only one point of this nature, located within the 19th century plow zone, was recovered from Oxbow. In northeastern New Brunswick it would appear that this point type was adopted by approximately 1000 B.P.

A late temporal position for the varying forms of the narrow corner or side-notched point has been recognized for some time. The spatial distribution for such points includes eastern Maine (Bourque 1971, Sanger 1979), New Brunswick (Burley 1974, Sanger 1977, Davis 1978), Nova Scotia (Smith and Wintemberg 1929, D'Entremont and Moore 1977, Nash 1977), as well as Newfoundland (Tuck 1976) and Labrador (McGhee and Tuck 1975). In eastern Maine and the Maritimes the use of the tightly corner or side-notched point type appears to correspond with the heavy utilization of shellfish. Further west and south of this area a preference for the

New York defined triangular forms of Levanna and Madison points is indicated (Bourque 1971).

In the southern New Brunswick and Maine areas Sanger believes these corner-notched points to be derived from earlier expanding stemmed variants which through time become increasingly narrowly notched (Sanger 1971b:113). Although this may be the case in Passamaquoddy Bay, a similar progression is not evident at Oxbow. In Newfoundland, Tuck suggests a possible similar evolution from Maritime Archaic points to the later Beothuk point forms (Tuck 1976:68). This suggestion may be strengthened for the Newfoundland area by the realization that the earlier dates reported from the Cape Freels site, which contains Beothuk notched points, predate the continued use of the small stemmed point complex in New Brunswick.

In Nova Scotia a notched point from the Horne site has been found in association with a sample dated 540 BP (Stephen Davis, personal communication) while similar points from the Reid site date 600 BP (Wilmeth 1978:156). New Brunswick shell middens containing narrow corner and side-notched points have produced a range of dates from 1720 BP to 410 BP. From the Saint John River valley Sanger has obtained a date of 1260 BP for notched point associations (Wilmeth 1978:154). A date for narrow corner or side-notched points has yet to be received from northeastern New Brunswick.

Bourque notes that the most recent ceramic type from coastal Maine displays the attributes of the thick, heavy, cord wrapped stick decorated, shell or grit tempered "Grindle Ware" that is dated from 1090 BP to 820 BP (Bourque 1971:201). This ceramic type can be closely identified with sherds from middens in the Passamaquoddy Bay area of southwestern New Brunswick (Davis 1978:28) and also with vessels found in the Saint John River valley at the Fulton Island site. On the south shore of Nova Scotia at the Brown site (BeCx-3) and Cellar's Cove site, the ceramic assemblages possess a combination of "Grindle Ware" type sherds and sherds similar to the most recent Oxbow ceramics. The Brown site displays exclusive use of the tightly corner-notched point.

With the exception of the use of the cord wrapped stick as a decorative tool and the occassional use of shell temper, "Grindle Ware" is extremely different from the light textured, organically tempered, thin, plain or cord wrapped stick ceramics represented in the more recent Oxbow levels. Although sherds which possess "Grindle Ware" attributes are occassionally found in northeastern New Brunswick collections, the vast majority of cord wrapped stick decorated vessels identified from these same collections have traits similar to the ceramics of the late Oxbow sequence. From the one date available on late Oxbow-like sherds, a temporal placement roughly equivalent to that of "Grindle Ware" is indicated.

One possible explanation for the presence of these considerably different late Oxbow ceramics is suggested in Sanger's note that "in the waning years of the Ceramic Period a very fine, thin ceramic spreads eastward along the coast from a suspected southern New England source" (Sanger 1979: 113). Further information concerning this later ceramic influx was unavailable. In Nova Scotia, however, one does receive the impression that "Grindle Ware" is replaced by the late Oxbow type. At Oxbow where the thick, heavy pottery was never in vogue, shell tempering and the use of a cord wrapped stick were easily accepted.

In view of the above information the following suggestions can be offered concerning the cultural relations of northeastern New Brunswickers during the most recent stages of our prehistory. By 1650 or 1500 BP the peoples of southwestern New Brunswick had become heavily involved in the exploitation of shellfish. "In the north such an adaption was impossible due to the lack of extensive clam beds" (Burley 1974:110). For northeastern New Brunswick the subsistence pattern of the previous centuries, whatever its nature, probably continued until 1000 BP with little interference from areas south and west. As a consequence the small stemmed point continued to be utilized for a longer period as also did the Middle Woodland ceramics types.

Research indicates that sometime prior to European contact a substantial shift in the subsistence of the shellfishing peoples took place (Davis 1978:31). By approximately 950 BP it is proposed that conditions on the south shore became such that relocation was necessary for at least a portion of the shellfishing population. It is further suggested that at this point, as some bands began their search for alternative ways of making a living, the northeastern portion of New Brunswick was effectively introduced to the use of corner and side-notched points. As mentioned earlier, Oxbow clearly indicates that this point type was the one being used at the time of European contact.

Conclusions

Based on the established projectile point sequence and the Oxbow ceramic seriation, significant changes within the temporal limits of the site were identified and assessed. Using these two diagnostic aspects of the Oxbow cultural assemblage as comparative tools, I have attempted to offer suggestions concerning possible cultural relationships of the Oxbow site occupants. I must stress that all suggestions are indeed speculative.

To briefly summarize, it is suggested that the first Oxbow occupants were descendants of the amalgamated Susquehanna and Maritime Archaic cultures. Although these earliest occupants probably had contact with a small contingent of Early Woodland Meadowood peoples, these migrants from the south apparently had little effect on the resident population. Later, a small number of Adena related people found their way of this northeastern location and introduced ceramics. By 2600 BP a larger number of Adena/Middlesex people infiltrated the area and assimilated the resident population. The resultant peoples flourished, accepting outside influence by diffusion, specifically from Hopewellian centers.

Although initially not a popular industry, by 26-2500 BP the manufacture and use of ceramics played an important role on the local domestic scene. The adoption and subsequent heavy use of ceramics presently cannot be explained beyond the popularity of a new idea during a time of both social and cultural change.

By 2100 BP a dramatic change in the Oxbow artifactual record takes place. Once again the writer suggests the resident population is displaced and/or assimilated by intruders from the south. At this same time cultural connections with areas to the northwest of the Maritimes are also evident.

The new resident population became well adapted to northeastern New Brunswick and participated in social interaction with other peoples in the regionally restricted area of the Maine/Maritime peninsula. In the most recent prehistoric period descendants of this same population were changing their artifact inventory as a matter of preference for trends that were being felt throughout the far Northeast. At the time of European contact the writer believes that the antecedents of the Micmac people of northeastern New Brunswick had resided in this area, with little outside interference for slightly more than 2000 years.

Although the speculative nature of the above suggestions must be stressed, the archaeological framework established at Oxbow has permitted an examination of the evolution of northeastern New Brunswick prehistory within the most recent 2800 year period. Ceramic period sites need no longer be lumped as one cultural/temporal block and areas for future research have been delineated.

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APPENDIX A

INDIVIDUAL DESCRIPTIONS CfD1-1 PROJECTILE POINTS

APPENDIX A

CfDl-1 Projectile Points - Attribute Descriptions and Code

Key An * denotes a restored specimen. Attributes concerned with edge serration, barbs and basal, stem or edge grinding were omitted due to the absence of these traits on CfDl-1 specimens. Figure 13 illustrates projectile point terminology as it was applied to the CfDl-1 specimens.

catalogue number: refers to the number assigned to the artifact from the field catalogue.

portion: refers to the portion of the artifacts which remains available for study. w whole, t tip, m medial, b basal. A "-" refers to an attribute or measurement that cannot be observed or taken due to broken specimens. When only one portion of a paired aspect, i.e. shoulder form, of a specimen is present, the one portion is recorded with a number "1" preceeding.

haft type: refers to the design of the artifact with regard to hafting onto the shaft. s stemmed forms with basal width smaller than shoulder width, n notched forms that have a basal width approximately equal to or greater than shoulder width, tr a triangular form with no specialized hafting element, bip a bipointed form with no discrete shoulder stem attachment area, l an elongated lanceolate shaped specimen with no particular hafting element.

tip shape: refers to the shape of the distal end of the specimen. p pointed, sr slightly rounded or blunted, wr widely rounded.

blade edge shape: refers to the outline form of the blade edges. _cx_ both edges convex, _st_ both edges straight, _cv_ both edges concave, _rc_ both edges recurved, _as_ asymmetric plus a code for each edge.

blade edge retouch: refers to the type of retouch that is present on blade edges. _bi_ completely bifacial, _pbi_ partially bifacial, _ui_ unifacial.

stem form: refers to the shape of the hafting element on stemmed points _cbl_ contracting blunt, _cp_ contracting pointed, _st_ straight, _ex_ expanding.

shoulder form: refers to the form either angular or rounded, which is produced between the blade edge and its contact with the hafting element. _oa_ obtuse angle, _aa_ acute angle, _ra_ approximate right angle, _or_ obtuse rounded, _ar_ acute rounded, _rr_ right angle rounded, _as_ asymmetric plus a code for each individual shoulder.

base form: refers to the shape of the proximal end of the specimen: _cx_ convex, _st_ straight, _cv_ concave, _p_ pointed, _bl_ blunt.

basal thinning: refers to the chipping process by which the thickness of the base is lessened to better facilitate the usefullness of the specimen. _bi_ bifacial thinning, _ui_ unifacial thinning, _ab_ absent.

cross section: refers to the shape of the outline formed by the dorsal and ventral surfaces of the specimen when viewed from the tip through the body to the proximal end. bicx biconvex, bipl biplano, cx-cv concave convex, plcx plano convex, d diamond.

longitudional section: refers to the shape of the outline formed by the dorsal and ventral surfaces of the specimen when viewed through one blade edge from tip to base. bicx biconvex, bipl biplano, cxev concave convex, plcx plano convex.

total length: refers to the maximum length in millimeters of a complete specimen from tip to the most proximal point.

maximum width: refers to the maximum width in millimeters of a complete specimen or one which provides shoulder areas on which this measurement may be taken.

maximum thickness: refers to the total maximum thickness of the specimen in millimeters.

neck width: refers to the minimum width of the stem in millimeters.

base width: refers to the maximum width in millimeters across the lateral edges of the proximal section of the specimen.

material: refers to type of lithic material from which the artifact was manufactured. Rh rhyolite, Qz quartz and Ch chert.

illustration: refers to the figure number and letter by which an individual specimen can be viewed in this report.

Table 18 , Projectile Point Descriptions/Attributes Summary

catalogue no.	415	1353	281	216 275	993 992	847	765
portion	w	w	w*	w*	w*	w	w
haft type	s	l	s	bip	bip	s	s
tip shape	p	p	p	p	p	p	sr
blade edge shape	cx	cx	as cx st	cx	cx	cx	cx
blade edge retouch	bi	bi	bi	bi	bi	bi	bi
stem form	ex	cdl	cp	cp	cp	ex	ex
shoulder form	or	or	pa	or	or	oa	oa
base form	cx	st	p	p	p	st	st
basal thinning	bi	ui	bi	ui	bi	bi	bi
cross section	bicx	bicx	bicx	bicx	bicx	bicx	bicx
longitudinal section	plcx	bicx	bicx	plcx	bicx	bicx	cxcv
total length	51	38	57	52	64.5	36.5	41
maximum width	21	16	21	18.5	23	18	19
maximum thickness	8.5	7	7.5	18	8	6.5	6
neck width	10	-	-	-	-	12.5	10
base width	10.5	7	-	-	2	15	14
material	Rh	Rh	Qz	Qz	Qz	Qz	Qz
illustration	14a	15g	15c	15f	15e	14m	14j

(continued)

Table 18 , Projectile Point Description/Attributes Summary

catalogue no.	437	1178	889	736	1365	721	782
portion	b,m	b,m	m,t	m,t	b,m	w	w
haft type	s	s	s	s	s	s	s
tip shape	–	–	p	sr	–	sr	p
blade edge shape	as – –	–	st	cx	–	cx	cx
blade edge retouch	bi	bi	bi	bi	bi	bi	bi
stem form	cbl	ex	–	–	cbl	ex	ex
shoulder form	as ra or	as oa or	as oa aa	ra	as rr or	or	or
base form	bl	st	–	–	cx	st	st
basal thinning	bi	ui	–	–	bi	bi	ui
cross section	bicx	bicx	bicx	bipl	plcx	bicx	bicx
longitudinal section	bipl	bicx	bicx	cxcv	–	bicx	plcx
total length	–	–	–	–	–	36	33
maximum width	21.5	24	19	26	38	17.5	16.5
maximum thickness	6	6	4.5	6.5	9	7	5.5
neck width	6	15	–	–	19	13.5	11
base width	6	16	–	–	18	16	13.5
material	Qz	Qz	Qz	Qz	Qz	Qz	Ch
illustration	14e	140	14r	14q	15j	141	14m

(continued)

Table 18, Projectile Point Description/Attributes Summary

catalogue no.	897	1155	730	886	869	734	937
portion	w	w	w	w	w	w	b,m
haft type	s	s	s	s	s	s	s
tip shape	sr	sr	p	p	p	wr	-
blade edge shape	cx	as st cx	as st cx	as cx rc	as cx st	cx	-
blade edge retouch	bi	bi	pbi	bi	pbi	bi	bi
stem form	ex	cbl	cbl	ex	cbl	st	cp
shoulder form	or	ov	oa	as or oa	as aa or	oa	lor
base form	cx	st	cx	cv	bl	st	p
basal thinning	ui	ab	ab	bi	ab	ui	bi
cross section	bicx	plcx	bicx	bicx	bicx	plcx	bipl
longitudinal section	bicx	plcx	bicx	bicx	bicx	bicx	bicx
total length	44.5	32	38	35.5	45.5	50	-
maximum width	28.5	21.5	23.5	16.5	20	30.5	-
maximum thickness	9	7	10	6.5	9	8	6.5
neck width	-	8.5	10	12	10	17	1
base width	10	8.5	10	14	10	17	1
material	Qz	Qz	Qz	Qz	Qz	Rh	Rh
illustration	14c	14l	14d	14k	14b	15a	15d

(continued)

Table 18 , Projectile Point Description/Attributes Summary

catalogue no.	1036	275	431	990	901	882	962
portion	b,m	b	b	b,m	b,m	b,m	t,m
haft type	s	s	s	s	s	s	-
tip shape	-	-	-	-	-	-	sr
blade edge shape	-	-	-	-	cx	-	cx
blade edge retouch	bi	-	-	bi	pbi	-	bi
stem form	st	ex	cbl	cbl	cbl	cbl	-
shoulder form	loa	loa	-	as oa or	as ra -	or	oa
base form	st	st	bl	bl	st	bl	-
basal thinning	ab	bi	ui	ab	ab	ab	-
cross section	bicx	bicx	-	bicx	bicx	bicx	bicx
longitudinal section	bicx	-	-	-	bicx	-	bicx
total length	-	-	-	-	-	-	-
maximum width	-	-	-	21	27	26.5	23.5
maximum thickness	12	-	6	7	9	13.5	8
neck width	14	15.5	11	7.5	15	16.5	16
base width	14	18.5	11	7.5	15		-
material	Qz	Qz	Qz	Qz	Qz	Qz	Qzi
illustration	15b	14p	14i	14g	-	-	-

(continued)

Table 18 , Projectile Point Description/Attributes Summary

catalogue no.	314	942
portion	b	b,m
haft type	tr	tr
tip shape	-	-
blade edge shape	st	as
blade edge retouch	bi	bi
stem form	-	-
shoulder form	ra	-
base form	st	cx
basal thinning	bi	bi
cross section	bicx	bicx
longitudinal section	bicx	bicx
total length	-	-
maximum width	22	26
maximum thickness	7	8.5
neck width	-	12
base width		12
material	Qz	Qz
illustration	15i	15h

APPENDIX B

INDIVIDUAL DESCRIPTIONS CfDl-1 STEEP EDGE UNIFACES/SCRAPERS

APPENDIX B

CfD1-1 Steep Edge Uniface /Scraper Attribute Descriptions and Code

This category of artifacts includes all steep edge uniface specimens. Note that a "-" on the attribute table pertaining to this class simply means that this attribute does not apply to a certain specimen.

Concerning terminology the distal end of the specimen is the portion away from the user. The proximal end is the portion next to the user. The ventral surface is the side of the flake next to the core. The dorsal surface is the exposed surface of a core prior to the striking of the flake. Retouch refers to secondary flaking.

Key

catalogue number: refers to the number assigned to the specimen from the field catalogue.

portion: refers to the portion of the artifact which is available for study: w whole, lo longitudinal fragment split through the working edge or d distal fragment split across leaving the working edge present.

outline: refers to the outline of the artifact viewed through the dorsal surface. In some cases the shape is not particularly clear and so this attribute may possibly change with the eye of the beholder: ci circular, ov oval, re rectangular, tr triangular, or ir irregular.

working edge: refers to the presence of a continuous or a discontinuous application of steep unifacial retouch. A specimen may have a c continuous working edge or a dc discontinuous working edge that has two or more separate steep edges.

steep edge retouch: refers to which edge areas have been prepared for steep edge use. _op_ opposed, _dl_ distal and left, _dr_ distal and right, _c_ complete on all sides, _drp_ distal, right and proximal, _dlp_ distal, left and proximal, _d2_ distal right and left or _d_ distal.

platform location: refers to the location of the platform relative to the distal end. The location may be _p_ proximal, _d_ distal, _l_ longitudinal, _uk_ unknown or _mc_ the specimen may be a modified cobble rather than manufactured on a flake.

surface retouch: refers to additional flaking other than the steep edge retouch. The surface retouch may occur on the: _do_ dorsal, _v_ ventral, _dov_ dorsal and ventral or _ab_ absent.

other marginal retouch: refers to additional flaking of a non-steep edge form along marginal areas. _lr_ longitudinal right, _ll_ longitudinal left, _p_ proximal, _plr_ proximal longitudinal right, _l2_ longitudinal right and left, _pl2_ proximal longitudinal left and right, or _ab_ absent.

cross section: refers to the outline shape protrayed by the artifact when viewed through the a) distal, b) proximal, c) right or d) left margins. The cross section shapes formed by any one of these viewing positions may be: _1_ biconvex, _2_ plano convex, _3_ biplano, _4_ concave/convex, _5_ plano/triangular, _6_ convex/triangular, _7_ plano/concave or _8_ triangular/concave.

cortex: refers to the presence or absence of a fragment of cobble surface. _p_ present or _ab_ absent.

length: refers to the maximum measurement taken in mms along the longitudinal axis on complete specimen. _ab_ indicates the specimen was not complete.

width: refers to the maximum measurement taken in mms at right angles to the length on complete specimens. _ab_ indicates the specimen was not complete.

thickness: refers to the maximum thickness along the longitudinal axis of complete specimens. _ab_ indicates the specimen was not intact enough for this measurement to be taken.

weight: refers to the weight of the intact specimen to an accuracy of .1 gm. _ab_ refers to the presence of an incomplete specimen.

edge span: refers to the distance in mms between the limits of the steep edge retouch along the a) distal, b) proximal, c) right and d) left edges.

edge height: refers to the maximum height in mms of the actual edge retouch. This measurement may vary between the a) distal, b) proximal, c) right and d) left locations.

edge angle: refers to the angle taken at the point of maximum steep edge retouch height in increments of 10 degrees. When applicable this attribute measurement may be taken on the a) distal, b) proximal, c) right or d) left locations.

material: refers to the lithic material from which the specimen is manufactured. Specimens in this category of implements were manufactured from Qz quartz, Qzi quartzite and Rh rhyolite.

illustration: refers to the figure number and letter by which an individual specimen can be viewed in this report.

Table 19, CfD1-1, Steep Edge Uniface Scraper Attribute Summary

catalogue no.	933	772e	1104	554	227	321
portion	d	w	w	w	w	w
outline	ir	ir	ov	re	re	ir
working edge	c	dc	c	dc	dc	c
steep edge retouch	d2	d	d2	dr	d	d2
platform location	uk	uk	uk	p	uk	uk
surface retouch	dov	dov	ab	do	ab	do
other marginal retouch	12	ab	12	ir	ab	12
cross section a)	5	2	1	2	3	2
b)	2	5	2	1	3	2
c)	1	2	3	2	2	2
d)	2	2	3	4	3	2
length	ab	22	28	34	26	33
width	ab	19	39	21	19	24
thickness	10	7	10	11	6	15
weight	-	2	13	9	4	10
edge span a)	28	12	39	20	16	24
b)	ab	-	-	-	-	-
c)	ab	-	28	25	-	19
d)	ab	-	25	-	-	27
edge height a)	4	3	10	6	4	13
b)	ab	-	-	-	-	-
c)	ab	-	7	12	-	11
d)	ab	-	8	-	-	14
edge angle a)	80°	100°	80°	80°	70°	50°
b)	ab	-	-	-	-	-
c)	60°	-	70°	80°	-	70°
d)	80°	-	70°	-	-	70°
cortex	ab	ab	ab	ab	p	ab
material	-	Qz	Qz	Qz	Qz	Qz
illustration	-	-	19c	-	-	19a

(continued)

Table 19 , CfDl-1, Steep Edge Uniface Scraper Attribute Summary

catalogue no.	235	330	322	688	1095	1023
portion	w	w	w	w	w	w
outline	ov	tr	re	tr	ci	ci
working edge	dc	c	dc	dc	dc	c
steep edge retouch	dl	d	op	d	op	d
platform location	p	d	1	uk	1	mc
surface retouch	do	-	v	dov	dov	v
other marginal retouch	p12	-	12	1r	p	11
cross section a)	6	-	2	2	2	3
b)	1	-	1	2	2	1
c)	4	-	1	2	2	1
d)	2	-	1	2	1	3
length	41	28	47	67	72	66
width	24	27	92	40	76	53
thickness	10	7	24	18	34	35
weight	8	5	127	53	200	139
edge span a)	24	21	70	43	67	51
b)	-	-	16	-	48	-
c)	-	-	-	-	-	-
d)	41	-	-	-	-	-
edge height a)	3	5	23	9	23	28
b)	-	-	15	-	11	-
c)	-	-	-	-	-	-
d)	5	-	-	-	-	-
edge angle a)	50°	60°	70°	80°	90°	80°
b)	-	-	100°	-	100°	-
c)	-	-	-	-	-	-
d)	60°	-	-	-	-	-
cortex	ab	ab	p	p	p	p
material	Rh	Qz	Qz	Qz	Qz	Qz
illustration	19b	-	18e	-	18d	17h

(continued)

Table 19, CfDl-1, Steep Edge Uniface Scraper Attribute Summary

catalogue no.	1208	1262	664	1043	930	1178
portion	w	w	w	w	w	w
outline	re	tr	ir	tr	re	ir
working edge	c	dc	dc	dc	c	c
steep edge retouch	d	dl	d	d	d	d
platform location	p	p	uk	uk	p	uk
surface retouch	do	v	do	ab	do	do
other marginal retouch	lr	ll	ab	lr	ab	ab
cross section a)	5	6	6	5	5	2
b)	5	6	6	5	5	2
c)	2	2	4	3	2	3
d)	2	2	2	2	3	3
length	57	74	40	29	36	41
width	52	56	48	45	26	45
thickness	26	26	20	21	10	11
weight	77	103	30	29	12	20
edge span a)	37	49	35	40	23	21
b)	–	–	–	–	–	–
c)	–	–	–	–	–	–
d)	–	38	30	–	–	–
edge height a)	20	14	14	21	8	11
b)	–	–	–	–	–	–
c)	–	–	–	–	–	–
d)	–	13	23	–	–	–
edge angle a)	80°	90°	70°	80°	70°	80°
b)	–	–	–	–	–	–
c)	–	–	–	–	–	–
d)	–	100°	70°	–	–	–
cortex	p	p	p	p	p	ab
material	Qz	Qz	Qz	Qz	Qz	Qz
illustration	–	18c	17f	–	–	–

(continued)

Table 19, CfD1-1, Steep Edge Uniface Scraper Attribute Summary

catalogue no.	1096	d 125	v 125	400	322	795
portion	lo	w	w	w	w	w
outline	-	ir	ir	tr	re	re
working edge	c	c	c	c	c	c
steep edge retouch	d	d	d	d	d2	d2
platform location	p	1	1	uk	uk	uk
surface retouch	ab	do	-	do	dov	dov
other marginal retouch	ab	p	lr	p	12	12
cross section a)	3	4	1	2	2	1
b)	3	4	1	6	1	1
c)	3	3	4	6	1	3
d)	3	3	4	8	1	3
length	52	46	54	54	68	51
width	64	52	54	42	50	55
thickness	18	12	14	23	21	15
weight	109	32	32	43	78	47
edge span a)	36+	30	34	35	49	45
b)	-	-	-	-	-	-
c)	-	-	-	-	52	23
d)	-	-	-	-	57	37
edge height a)	13	16	8	14	8	8
b)	-	-	-	-	-	-
c)	-	-	-	-	16	10
d)	-	-	-	-	12	9
edge angle a)	70°	60°	70°	90°	80°	60°
b)	-	-	-	-	-	-
c)	-	-	-	-	80°	70°
d)	-	-	-	-	80°	70°
cortex	p	ab	ab	ab	p	ab
material	Rh	Qz	Qz	Qz	Qz	Qz
illustration	-	-	-	17c	-	-

(continued)

Table 19 , CfDl-1, Steep Edge Uniface Scraper Attribute Summary

catalogue no.	1126	1066	1088	1100	1191	637
portion	w	w	w	w	w	w
outline	re	re	re	re	re	tr
working edge	dc	c	c	c	c	dc
steep edge retouch	d	dr	op	d2	d	d
platform location	p	uk	1	uk	d	1
surface retouch	ab	do	do	dov	ab	do
other marginal retouch	11	12	lr	12	lr	11
cross section a)	-	1	2	-	3	1
b)	-	1	4	-	1	2
c)	-	2	2	-	8	1
d)	-	3	2	--	5	2
length	49	33	31	68	50	47
width	25	44	44	50	35	37
thickness	12	16	17	21	15	19
weight	18	32	28	79	30	35
edge span a)	24	39	37	49	25	34
b)	-	-	-	-	-	-
c)	-	27	-	52	-	--
d)	-	-	-	57	-	-
edge height a)	11	13	23	8	9	17
b)	-	-	-	-	-	-
c)	-	9	-	16	-	-
d)	-	-	-	12	-	-
edge angle a)	60°	80°	100°	80°	100°	80°
b)	-	-	-	-	-	-
c)	-	70°	-	80°	-	-
d)	-	-	-	80°	-	-
cortex	p	ab	p	p	p	p
material	Qz	Qz	Qz	Qz	Qz	Qz
illustration	-	-	-	-	-	-

(continued)

Table 19, CfDl-1, Steep Edge Uniface Scraper Attribute Summary

catalogue no.	1128	1049a	d 910	v 910	1051	853
portion	w	w	w	w	w	w
outline	tr	tr	re	re	re	re
working edge	dc	dc	c	c	c	dc
steep edge retouch	d	d	d	d	dr	c
platform location	uk	1	d	1	uk	1
surface retouch	dov	dov	ab	ab	v	do
other marginal retouch	12	p12	ab	ab	ab	plr
cross section a)	2	–	3	3	2	2
b)	1	–	2	3	2	4
c)	3	–	1	3	2	1
d)	2	–	1	3	2	2
length	41	35	41	43	47	46
width	41	47	44	41	49	44
thickness	20	20	19	17	26	19
weight	32	37	45	45	79	47
edge span a)	28	46	42	27	48	31
b)	–	–	–	–	–	26
c)	–	–	–	–	–	29
d)	–	–	47	–	19	–
edge height a)	10	16	7	10	27	17
b)	–	–	–	–	–	5
c)	–	–	–	–	–	4
d)	–	–	7	–	15	–
edge angle a)	80°	80°	60°	70°	100°	70°
b)	–	–	–	–	–	80°
c)	–	–	–	–	–	90°
d)	–	–	90°	–	80°	–
cortex	p	p	ab	ab	p	p
material	Qz	Qz	Rh	Rh	Qz	Qz
illustration	–	18b	–	–	19f	18a

(continued)

Table 19 , CfD1-1, Steep Edge Uniface Scraper Attribute Summary

catalogue no.	966	912	790	1049b	210	1048
portion	w	w	w	w	w	w
outline	re	re	ci	ci	tr	ir
working edge	c	c	c	dc	dc	c
steep edge retouch	d	dr	op	dl	d	d
platform location	p	p	uk	p	uk	l
surface retouch	dov	do	dov	do	dov	do
other marginal retouch	12	lr	p12	11	lr	ab
cross section a)	1	2	3	2	5	1
b)	1	1	2	1	1	1
c)	2	2	1	2	4	1
d)	4	4	1	2	4	1
length	58	46	51	46	47	42
width	42	45	52	52	42	33
thickness	26	20	21	21	19	10
weight	62	54	64	62	33	17
edge span a)	39	43	50	49	42	23
b)	-	-	15	-	-	-
c)	-	45	-	-	-	-
d)	-	-	-	25	-	-
edge height a)	22	13	15	15	25	7
b)	-	-	19	-	-	-
c)	-	12	-	-	-	-
d)	-	-	-	12	-	-
edge angle a)	90°	90°	90°	90°	60°	80°
b)	-	-	80°	-	-	-
c)	-	70°	-	-	-	-
d)	-	-	-	80°	-	-
cortex	p	ab	ab	p	p	p
material	Qz	Rh	Qzi	Qz	Qz	Qz
illustration	-	19e	19g	18b	-	-

(continued)

Table 19 , CfD1-1, Steep Edge Uniface Scraper Attribute Summary

catalogue no.	772a	177	644	772b	d 1097	v 1097
portion	w	w	w	w	w	w
outline	tr	re	tr	tr	ov	ov
working edge	c	c	c	c	dc	dc
steep edge retouch	d	d	d	d	dr	d
platform location	uk	d	1	uk	p	1
surface retouch	ab	dov	dov	dov	dov	dov
other marginal retouch	p12	p12	12	lr	lr	p
cross section a)	6	1	2	5	1	1
b)	1	1	2	1	1	1
c)	1	1	4	1	1	1
d)	3	1	1	1	1	1
length	32	27	44	40	43	34
width	28	38	42	27	34	39
thickness	12	14	13	12	15	16
weight	9	15	22	10	21	21
edge span a)	25	23	30	26	29	33
b)	-	-	-	-	-	-
c)	-	-	-	-	17	-
d)	-	-	-	-	-	-
edge height a)	13	9	16	6	13	14
b)	-	-	-	-	-	-
c)	-	-	-	-	5	-
d)	-	-	-	-	-	-
edge angle a)	70°	80°	50°	60°	70°	80°
b)	-	-	-	-	-	-
c)	-	-	-	-	60°	-
d)	-	-	-	-	-	-
cortex	ab	p	ab	p	p	p
material	Qz	Qz	Qz	Qz	Qz	Qz
illustration	17d	-	17f	17d	-	-

(continued)

Table 19 , CfDl-1, Steep Edge Uniface Scraper Attribute Summary

catalogue no.	772c	176	408	1187	1183	750
portion	w	w	w	w	w	w
outline	ir	tr	tr	ir	re	ir
working edge	c	c	c	dc	dc	dc
steep edge retouch	d	d	d	op	d	dl
platform location	p	p	l	uk	p	p
surface retouch	dov	dov	do	dov	ab	dov
other marginal retouch	lr	lr	ab	plr	ab	ab
cross section a)	2	1	5	2	2	5
b)	2	5	4	1	1	5
c)	3	1	4	1	1	5
d)	5	1	4	2	2	5
length	30	48	47	47	43	31
width	35	31	35	38	48	58
thickness	12	14	12	16	18	12
weight	9	17	19	29	39	19
edge span a)	18	19	28	32	40	32
b)	-	-	-	15	-	-
c)	-	-	-	-	-	-
d)	-	-	-	-	-	12.4
edge height a)	5	8	10	18	8	5.6
b)	-	-	-	4	-	-
c)	-	-	-	-	-	-
d)	-	-	-	-	-	5.6
edge angle a)	70°	70°	70°	70°	70°	60°
b)	-	-	-	70°	-	-
c)	-	-	-	-	-	-
d)	-	-	-	-	-	60°
cortex	p	p	ab	ab	p	ab
material	Qz	Qz	Qz	Qz	Qz	Qz
illustration	17d	17a	17b	19H	-	-

(continued)

Table 19, CfDl-1, Steep Edge Uniface Scraper Attribute Summary

catalogue no.	d 1193	v 1193	772d	1092	757	973
portion	w	w	w	w	w	w
outline	ov	ov	tr	ir	tr	ci
working edge	c	c	c	c	c	c
steep edge retouch	d	d	d	d	d	d
platform location	1	1	uk	1	uk	uk
surface retouch	dov	dov	v	dov	v	dov
other marginal retouch	ab	ab	ab	p	p	11
cross section a)	2	1	1	2	1	1
b)	1	2	1	2	3	1
c)	1	1	1	5	2	6
d)	1	1	1	1	4	6
length	19	19	24	28	34	41
width	38	38	22	45	63	42
thickness	7	7	8	11	12	15
weight	5	5	6	12	21	24
edge span a)	32	27	20	22	45	37
b)	-	-	-	-	-	-
d)	-	-	-	-	-	-
d)	-	-	-	-	-	-
edge height a)	6.1	7.4	4.5	5	6.7	14.7
b)	-	-	-	-	-	-
c)	-	-	-	-	-	-
d)	-	-	-	-	-	-
edge angle a)	70°	60°	80°	80°	40°	70°
b)	-	-	-	-	-	-
c)	-	-	-	-	-	-
d)	-	-	-	-	-	-
cortex	ab	ab	ab	p	ab	ab
material	Qz	Qz	Qz	Qz	Qz	Qz
illustration	-	-	17d	17e	-	17g

(continued)

Table 19 , CfD1-1, Steep Edge Uniface Scraper Attribute Summary

catalogue no.	748
portion	w
outline	ov
working edge	dc
steep edge retouch	op
platform location	1
surface retouch	v
other marginal retouch	p
cross section a)	2
b)	2
c)	6
d)	5
length	41
width	65
thickness	35
weight	67
edge span a)	34
b)	17
c)	-
d)	-
edge height a)	11
b)	6
c)	-
d)	-
edge angle a)	70°
b)	70°
c)	-
d)	-
cortex	p
material	Qz
illustration	-

APPENDIX C

INDIVIDUAL DESCRIPTIONS CfDl-1 BIFACES

APPENDIX C

CfDl-1 Formed Bifaces Attribute Description and Code

This category of artifacts includes all formed bifaces of a complete or near complete composition that have not been included in the projectile point grouping. This includes some specimens which may have been blanks for smaller biface forms.

Key

Catalogue number: refers to the number assigned to the artifact from the field catalogue. Some intact specimens may have more than one catalogue number as they were reconstructed from two broken fragments.

Portion: refers to the portion of the artifact which is available for study. The specimens listed in the summary table are either C complete or NC nearly complete.

Outline: refers to the outline formed by the margins of the artifact when viewing through one surface to the opposing surface. The general outline may be roughly l leaf, re rectangular, ci circular, tr triangular, ov oval, ir irregular, la lanceolate, elongated with convex blade edges and straight or rounded base. Stemmed specimens receive an s behind the appropriate outline code.

Blade edges: refers to the nature of the curvature of the blade edges. The edges may be basically cx convex, st straight, cv concave, re recurved, or as asymmetric.

Tip form: refers to the shape of the most contracting end of the specimen. The tip may be po pointed, sq squared or ro rounded.

Base form: refers to the shape of the end of the specimen which opposes the tip. The base may be roughly po pointed, cx convex, st straight, cv concave or ir irregular.

Cross section: refers to the shape of the outline formed when viewed in a section from the base through the tip. This section may be approximately bc biconvex, bp biplano, cc concave/convex, pc plano/convex, di diamond shaped, ptr plano/triangular, or ctr convex/triangular.

Longitudinal section: refers to the shape of the outline formed when viewed through one longitudinal edge to the opposing edge. This section may be described as being approximately bc biconvex, bp biplano, cc concave/convex, pc plano/convex.

Surface retouch: refers to retouch on the surfaces other than that involved with the bifacial edge. The specimen may have only 1 one surface retouched, 2 both surfaces retouched or ab surface retouch absent.

Edge retouch: refers to that retouch involving the formation of the final working edge. This retouch may be bi bifacial-bifacial, biu bifacial-unifacial, uu unifaced-unifacial, ul unifacial one edge, bl bifacial one edge, or au alternately unifacial.

Platform location: refers to the location of the striking platform if it can be identified. b base, t tip, m margin or un unrecognizable.

Cortex: refers to the p presence or ab absence of this raw surface on any portion of the specimen.

Stem form: refers to those specimens which may have a stem appendix. This attribute may be ex expanding, ct contracting or st straight. For specimens to which this attribute does not apply a "-" is coded.

Edge angle: Refers to the angle formed by the edges of the specimen at the tip, base and margins taken on both the right and left sides. This measurement is given in increments of 10°. A "-" is used to indicate that this attribute does not apply to a particular portion of the specimen.

Maximum length: refers to the maximum length in millimeters of complete specimens from tip to base.

Maximum width: refers to the maximum width in millimeters at right angles to the length axis of complete specimens.

Maximum thickness: refers to the maximum thickness in millimeters on any complete or nearly complete specimen.

Weight: refers to the maximum weight of the specimen taken to the nearest .1 gram.

Material: refers to the lithic material from which the specimen is manufactured: <u>Rh</u> rhyolite or <u>Qz</u> quartz.

Illustration: refers to the Figure number and letter by which an individual specimen can be viewed in this report.

Table 20: CfDl-1 Formed Biface Description and Attribute Summary

Catalogue No.	896	328	1419	772	927	1038	841
portion	C	NC	C	C	C	C	C
outline	1	1	irs	ir	re	1	ir
blade edges	as	cx	as	as	as	as	as
tip form	po	-	sq	po	sq	po	ro
base form	cx	cx	st	ir	st	po	ir
cross section	bc	bc	bc	bc	ptr	bc	pc
longitudinal section	bc	pc	bp	bc	cc	bc	cc
surface retouch	2	2	1	2	ab	1	1
edge retouch	biu	bi	bi	bl	ul	bl	bl
platform location	ur	ur	ur	ur	b	ur	ur
cortex	ab	ab	ab	ab	p	p	ab
stem form	-	-	ct	-	-	-	-
right edge angle tip	60°	-	80°	30°	60°	-	-
right edge angle margin	50°	50°	-	50°	-	-	-
right edge angle base	50°	50°	60°	50°	-	-	-
left edge angle tip	100°	-	50°	40°	60°	40°	-
left edge angle margin	100°	50°	60°	-	-	70°	60°
left edge angle base	100°	50°	60°	-	-	-	70°
maximum length	60	-	41	47	49	36	42
maximum width	26	20	30	20	24	19	24
maximum thickness	11	7.5	7	7	14	8	10
weight	14.8	-	8.9	6.3	16.2	5.5	9.5
material	Rh	Qz	Qz	Qz	Qz	Qz	Qz
illustration	21g	-	22b	20j	20d	22a	-

(continued)

Table 20: CfDl-1 Formed Biface Description and Attribute Summary

Catalogue No.	448	751	1026	630	1178	707	827
portion	C	C	C	NC	C	C	C
outline	re	la	re	re	re	re	tr
blade edges	st	cx	st	cx	st	as	as
tip form	sq	ro	sq	sq	sq	sq	sq
base form	cx	st	cx	cv	cx	st	st
cross section	bc	bc	pc	bc	pc	bc	bc
longitudinal section	bc	bc	bp	pc	pc	bc	bc
surface retouch	2	2	1	ab	ab	2	2
edge retouch	bi	bi	bl	bi	bi	bi	bl
platform location	b	ur	ur	ur	t	ur	ur
cortex	ab	ab	p	ab	p	ab	ab
stem form	-	-	-	-	-	-	-
right edge angle tip	110°	70°	70°	90°	50°	40°	50°
right edge angle margin	110°	60°	50°	50°	60°	50°	70°
right edge angle base	90°	50°	80°	50°	40°	60°	-
left edge angle tip	80°	50°	60°	60°	50°	50°	50°
left edge angle margin	110°	60°	60°	60°	-	40°	50°
left edge angle base	70°	50°	-	50°	50°	40°	-
maximum length	39	38	38	41	52	42	34
maximum width	19	17	34	33	31	28	33
maximum thickness	13	8	11	13	12	10	12
weight	11.2	5.2	19.3	14.8	19.3	11.5	12.6
material	Qz	Qz	Qz	Qz	QZ	Qz	Qz
illustration	22f	21b	20e	20c	20f	20g	21j

(continued)

Table 20: CfD1-1 Formed Biface Description and Attribute Summary

Catalogue No.	274	417 434	289	1104	1418	673	1026
portion	C	C	C	C	C	C	NC
outline	tr	l	re	re	re	re	re
blade edges	as	cx	as	as	st	cx	as
tip form	po	ro	ro	sq	sq	sq	sq
base form	st	cx	ir	st	st	st	cv
cross section	ptr	bc	bc	bp	bc	bc	bc
longitudinal section	pc	pc	bc	bp	bc	pc	bc
surface retouch	1	1	ab	2	1	2	ab
edge retouch	bi	bi	bl	bi	biu	bi	bl
platform location	ur	b	m	ur	ur	t	m
cortex	p	p	p	ab	ab	ab	p
stem form	-	-	-	-	-	-	-
right edge angle tip	70°	70°	90°	50°	70°	60°	60°
right edge angle margin	60°	50°	80°	50°	60°	60°	70°
right edge angle base	-	70°	60°	50°	70°	50°	80°
left edge angle tip	70°	70°	80°	60°	70°	50°	-
left edge angle margin	60°	70°	-	50°	70°	60°	-
left edge angle base	60°	60°	-	60°	80°	90°	-
maximum length	48	83	74	31	33	42	45
maximum width	41	51	49	19	25	31	30
maximum thickness	17	21	29	6	12	12	15
weight	28.9	78.8	102.9	3.8	10.1	15.4	22.5
material	Qz	Qz	Qz	Qz	Qz	Qz	Qz
illustration	21m	23i	-	20z	-	20b	-

(continued)

Table 20: CfD1-1 Formed Biface Description And Attribute Summary

Catalogue No.	759	341	781	1027	156	1097	445
portion	C	C	C	C	C	C	C
outline	las	l	tr	ir	la	tr	ls
blade edges	cx	cx	as	st	cx	as	cx
tip form	po	po	po	sq	ro	po	po
base form	st	cx	st	st	st	st	cx
cross section	pc	bc	bc	bp	cc	bc	bp
longitudinal section	bc	pc	pc	bc	bc	bc	cc
surface retouch	1	1	1	ab	2	1	2
edge retouch	bi	biu	bl	bi	biu	uu	bi
platform location	ur	ur	b	ur	ur	b	ur
cortex	ab	p	p	p	ab	p	ab
stem form	st	–	–	–	–	–	ct
right edge angle tip	80°	70°	70°	80°	80°	50°	60°
right edge angle margin	–	80°	80°	90°	90°	50°	60°
right edge angle base	60°	80°	–	90°	90°	70°	60°
left edge angle tip	70°	60°	–	70°	60°	60°	80°
left edge angle margin	60°	110°	–	80°	70°	80°	60°
left edge angle base	80°	70°	–	110°	90°	80°	60°
maximum length	70	67	57	56	45	35	52
maximum width	36	39	40	38	21	29	27
maximum thickness	16	23	19	19	13	9	9
weight	34.8	57.7	45.0	79.2	13.5	5.4	11.7
material	Qz	Qz	Qz	Qz	Qz	Qz	Qz
illustration	21i	23c	–	–	21e	21a	22c

(continued)

Table 20: CfD1-1 Formed Biface Description and Attribute Summary

Catalogue No.	881	876	976	899	775	811	733
portion	C	C	C	C	C	C	C
outline	la	la	ir	ov	l	tr	la
blade edges	as	cx	cx	cx	cx	st	cx
tip form	po	po	ir	ro	po	po	ro
base form	ir	st	cx	cx	cx	st	cv
cross section	di	cc	po	ctr	bc	pc	bc
longitudinal section	bc	pc	st	bc	bc	pc	bc
surface retouch	2	ab	1	2	2	2	2
edge retouch	bi	bi	biu	bi	bi	bi	bi
platform location	ur	m	b	t	ur	b	ur
cortex	ab	p	p	p	p	ab	ab
stem form	-	-	-	-	-	-	-
right edge angle tip	80°	50°	90°	100°	70°	60°	90°
right edge angle margin	70°	-	70°	70°	80°	60°	80°
right edge angle base	60°	40°	90°	60°	60°	60°	80°
left edge angle tip	50°	50°	70°	130°	70°	70°	80°
left edge angle margin	60°	60°	80°	120°	60°	60°	60°
left edge angle base	60°	-	80°	70°	80°	50°	60°
maximum length	49	45	54	68	66	77	62
maximum width	23	21	30	44	39	45	38
maximum thickness	11	11	27	24	21	16	22
weight	11.0	9.6	26.4	75.7	43.8	50.0	54.0
material	Qz	Qz	Qz	Qz	Qz	Qz	Qz
illustration	21c	21d	-	23g	23d	23h	20h

(continued)

Table 20 : CfD1-1 Formed Biface Description and Attribute Summary

Catalogue No.	895	909	750	1027	722	969	449
portion	C	C	C	C	C	C	C
outline	ov	l	l	ir	re	la	la
blade edges	cx	cx	cx	cx	st	cx	cx
tip form	ro	ro	po	po	sq	po	po
base form	cx	cx	cx	cx	st	ir	st
cross section	pc	bc	bc	bc	bc	bc	bc
longitudinal section	pc	bc	bc	bc	bc	bc	cc
surface retouch	2	2	2	1	1	1	2
edge retouch	biu	biu	bi	bi	biu	bi	bi
platform location	b	ur	ur	b	t	ur	b
cortex	p	p	p	p	p	p	p
stem form	-	-	-	-	-	-	-
right edge angle tip	50°	70°	90°	-	60°	90°	80°
right edge angle margin	-	80°	70°	90°	80°	70°	70°
right edge angle base	-	100°	80°	110°	60°	100°	70°
left edge angle tip	60°	90°	60°	80°	-	90°	70°
left edge angle margin	70°	80°	70°	90°	70°	100°	70°
left edge angle base	-	90°	90°	90°	-	80°	70°
maximum length	54	111	86	61	87	51	65
maximum width	41	67	56	50	60	26	28
maximum thickness	21	41	25	23	32	16	13
weight	45.8	286.8	99.7	79.2	152.0	20.0	23.0
material	Qz	Qz	Qz	Qz	Qz	Qz	Qz
illustration	23e	-	-	-	-	21f	-

(continued)

Table 20: CfD1-1 Formed Biface Description and Attribute Summary

Catalogue No.	1004	327
portion	C	C
outline	1a	1
blade edges	as	as
tip form	po	ro
base form	po	cx
cross section	ctr	pc
longitudinal section	bc	pc
surface retouch	2	1
edge retouch	ul	biu
platform location	b	ur
cortex	ab	p
stem form	-	-
right edge angle tip	70°	70°
right edge angle margin	70°	70°
right edge angle base	70°	50°
left edge angle tip	-	70°
left edge angle margin	-	50°
left edge angle base	-	50°
maximum length	57	45
maximum width	22	26
maximum thickness	14	10
weight	13.9	9.5
material	Qz	Qz
illustration	-	23b

APPENDIX D

INDIVIDUAL CfD1-1 FEATURE DESCRIPTIONS

APPENDIX D

CfDl-1 Feature Attribute Descriptions and Code

The following is an explanation of certain factors or attributes which may or may not pertain to individual features as they were recorded during the CfDl-1 excavations. The attribute descriptions and codes for the same are here presented that the most pertinent information concerning each CfDl-1 feature may be summarized in tabular form. For any attribute an "x" indicates that specimens of this nature were recovered but a specific number is unknown. A "+" indicates that more than the listed amount was recovered.

Key

Feature: refers to the identification number assigned in the field to any excavation area which by appearance was deemed to offer more than usual in terms of site interpretation. Feature numbers were assigned in consecutive order according to the discovery of the features on the site. Feature numbers 8 and 9 are na not assigned. Feature numbers 72 and 73 were inc incomplete. Features 2 and 3 were upon first recording kept separate. They were later joined and their combination treated as one intact feature.

Unit: refers to the assigned number of the excavation unit in which an individual feature was discovered.

Level: refers to the arbitrary level number in the unit in which the feature was first recognized. Except for the larger excavation units 78-10, 78-11, 78-12, and 78A, which were excavated in increments of 10 centimeters, all other units were excavated in 20 centimeter arbitrary levels. In the case of feature number 74, the numbers shown indicate that evidence for this feature first occurred in level 5 but continued through to level 8.

Affiliation: refers to the cultural affiliation of a feature as it pretains to the h historic period, ph prehistoric period, phd prehistoric period with evidence of disturbance, or of a uk unknown origin.

Outline: refers to the general outline formed by the boundaries of the feature when viewed from above. This attribute could be approximately r rectangular, ir irregular, ov oval, el elongated, c circular, elov elongated oval, or uk unknown.

Dimensions: refers to the maximum dimensions of the outline of the feature in centimeters.

Depth: refers to the maximum depth of the feature in centimeters. In some instances the depth may not have been determined nd.

Charcoal extent: refers to the amount of charcoal that was noted within the feature area. The amount may have been l low with only light charcoal staining, m moderate with staining and charcoal flecks, h high with good sized charcoal fragments or ab having no charcoal present.

Red staining: refers to the p presence or ab absence of this attribute which refers to a concentrated application of heat upon the soil within a feature area.

Soil differences: refers to the p presence or ab absence of various types of soil discolorations and/or textures within the feature other than those that have already been noted by the two previous attributes.

Historical artifacts: refers to the p presence or ab absence of artifactual material dating from the historic period within the feature.

Calcined bone: refers to the p presence or ab absence of this commodity within the feature.

Fresh bone: refers to the p presence or ab absence of this commodity within the feature.

Copper: refers to the p presence or ab absence of any of this element from within the feature.

Vegetable remains: refers to the p presence or ab absence of this commodity within the feature as recorded on the site. This does not include matter that was later extracted from floatation samples.

Ochre: refers to the p presence or ab absence of even the slightest area of ochre staining or ochre nodule from within the feature.

Burned rocks: refers to the p presence or ab absence of burned or fire cracked rocks within the feature boundaries.

Unburned rocks: or cobbles may be p present or ab absent with regard to any feature.

Post moulds: refers to the p presence or ab absence of this type of cultural disturbance within the general area of the feature outline.

Quartz flakes: refers to the number of quartz flakes that were recovered from within the boundaries of specific feature.

Other flakes: refers to the number of flakes recovered from within the boundaries of a specific feature that are manufactured from a lithic material other than quartz.

Cores: refers to the number of specimens of this type of lithic debris found within any one feature.

Pottery sherds: refers to the number of individual specimens of this kind found within any one feature.

Lithic artifacts: refers to the number of formed whole or fragmentary lithic specimens either ground, pecked and/or chipped, which are found within any one feature.

Rim sherds; refers to the number of individual specimens of this type which were recovered from any one feature.

Illustration: refers to the Figure number within the text on which a photograph or drawing of a specific feature can be viewed.

Table 21: CfDl-1 Feature Descriptions

Feature	1	2	3	4	5	6
unit	77-1	77-1	77-1	77-1	77-1	77-1
level	3	4	4	6-7	7	7
affiliation	h	ph	ph	ph	ph	ph
outline	r	ir	ir	ir	uk	uk
dimensions	60x70	140x150	140x150	100x60	20x25+	50x20+
depth	21	27	27	14	nd	nd
charcoal extent	ab	h	h	m	m	m
red staining	ab	ab	ab	p	p	p
soil differences	p	p	p	p	ab	ab
historical artifacts	p	ab	ab	ab	ab	ab
calcined bone	ab	p	p	p	ab	ab
fresh bone	ab	ab	ab	ab	ab	ab
copper	ab	ab	ab	ab	ab	ab
vegetable remains	ab	p	p	ab	ab	ab
ochre	ab	ab	ab	p	ab	p
burned rocks	ab	p	p	p	ab	ab
unburned rocks	p	p	p	p	p	ab
post moulds	ab	ab	ab	ab	ab	ab
quartz flakes	0	x	x	x	1	x
other flakes	0	2	2	0	0	x
cores	0	5	5	x	0	0
pottery sherds	0	x	x	x	0	x
lithic artifacts	0	4	4	0	0	0
rim sherds	0	1	1	1	0	0
illustration	-	-	-	-	-	-

(continued)

Table 21: CfD1-1 Feature Descriptions

Feature	7	8na	9na	10	11	12
unit	77-1			78-2	78-1	78-1
level	10			3	2	3
affiliation	ph			h	h	ph
outline	uk			ov	el	el
dimensions	$200^{+}\times200^{+}$			100×70	100×200	$20\times200^{+}$
depth	4-5			30	9	24
charcoal extent	m			1	ab	m
red staining	ab			p	ab	ab
soil differences	p			p	p	p
historical artifacts	ab			p	ab	ab
calcined bone	ab			p	ab	ab
fresh bone	ab			p	ab	ab
copper	ab			ab	ab	ab
vegetable remains	ab			ab	ab	ab
ochre	ab			ab	ab	ab
burned rocks	p			p	ab	p
unburned rocks	p			ab	ab	ab
post moulds	p			ab	ab	ab
quartz flakes	1			0	0	166
other flakes	0			0	0	9
cores	0			0	0	2
pottery sherds	0			0	0	5
lithic artifacts	0			0	0	0
rim sherds	0			0	0	0
illustration	-			-	-	-

(continued)

Table 21: CfDl-1 Feature Descriptions

Feature	13	14	15	16	17	18
unit	78-1	78-2	78-4	78-4	78-4	78-2
level	3	4	3	3	4	5
affiliation	phd	ph	ph	ph	ph	ph
outline	uk	uk	uk	el	uk	ov
dimensions	100×200+	145×86+	200×200+	180×70	200×200+	45×30
depth	9	16	33	8	6	5
charcoal extent	m	h	m	m	m	ab
red staining	ab	ab	p	p	p	ab
soil differences	p	p	p	ab	ab	p
historical artifacts	ab	ab	ab	ab	ab	ab
calcined bone	p	p	p	ab	p	ab
fresh bone	ab	ab	ab	ab	ab	ab
copper	ab	ab	ab	ab	ab	ab
vegetable remains	ab	ab	p	ab	ab	ab
ochre	p	ab	ab	ab	ab	ab
burned rocks	p	p	p	p	p	ab
unburned rocks	ab	p	p	ab	ab	ab
post moulds	ab	ab	p	ab	p	ab
quartz flakes	611	16	208	60	25	13+
other flakes	8	2	0	0	0	0
cores	18	0	10	2	5	2+
pottery sherds	19	0	2	3	11	0
lithic artifacts	3	0	4	0	0	0
rim sherds	2	0	0	1	0	0
illustration	–	–	–	–	–	–

(continued)

Table 21: CfD1-1 Feature Descriptions

Feature	19	20	21	22	23	24
unit	78-2	78-1	78-4	78-2	78-5	78-5
level	6	5	5	7	2	4
affiliation	ph	ph	ph	ph	ph	ph
outline	ov	uk	uk	uk	c	uk
dimensions	30x70	30x40	200x200+	140x30+	100x155	200x200
depth	18	8	16	20	30	26
charcoal extent	1	1	m	1	m	1
red staining	ab	p	p	ab	p	ab
soil differences	ab	ab	ab	p	ab	p
historical artifacts	ab	ab	ab	ab	ab	ab
calcined bone	ab	ab	ab	ab	ab	ab
fresh bone	ab	ab	ab	ab	ab	ab
copper	ab	ab	ab	ab	ab	ab
vegetable remains	ab	ab	ab	ab	ab	ab
ochre	ab	ab	ab	ab	ab	ab
burned rocks	ab	ab	ab	ab	p	p
unburned rocks	ab	ab	p	p	p	p
post moulds	ab	p	p	ab	ab	ab
quartz flakes	85	5	93	63	4	0
other flakes	0	0	3	0	1	0
cores	2	0	3	0	0	0
pottery sherds	0	3	35	0	0	0
lithic artifacts	0	0	1	0	0	0
rim sherds	0	0	1	0	0	0
illustration	-	-	-	-	-	-

(continued)

Table 21: CfD1-1 Feature Descriptions

Feature	25	26	27	28	29	30
unit	78-7	78-8	78-7	78-7	78-10	78-11
level	2	4	4	7	3	2
affiliation	ph	ph	ph	ph	ph	ph
outline	uk	uk	uk	uk	ir	el
dimensions	-	30x70+	100x40+	100x100+	160x85	100x150
depth	10	62	12	7	4	10
charcoal extent	1	m	1	m	m	m
red staining	ab	p	ab	p	ab	p
soil differences	p	ab	p	ab	p	ab
historical artifacts	ab	ab	ab	ab	ab	ab
calcined bone	ab	ab	ab	ab	p	ab
fresh bone	ab	ab	ab	ab	ab	ab
copper	ab	ab	ab	ab	ab	ab
vegetable remains	ab	ab	ab	ab	ab	ab
ochre	ab	ab	ab	ab	ab	ab
burned rocks	p	p	ab	ab	p	p
unburned rocks	p	p	p	ab	p	p
post moulds	ab	ab	ab	ab	ab	ab
quartz flakes	14	0	1	0	3	42
other flakes	0	0	0	0	0	1
cores	2	0	0	0	0	3
pottery sherds	6	0	0	0	0	0
lithic artifacts	1	0	0	0	0	0
rim sherds	0	0	0	0	0	0
illustration	-	-	-	-	-	-

(continued)

Table 21 : CfD1-1 Feature Descriptions

Feature	31	32	33	34	35	36
unit	78-11	78-11	78-11	78-11	78-11	78-10
level	2	2	3	4	4	4
affiliation	ph	ph	ph	ph	ph	ph
outline	el	el	uk	uk	uk	ov
dimensions	130×95	75×80	70×80+	190×130+	120×140	110×120
depth	16	2	9	11	35	29
charcoal extent	h	m	l	m	m	l
red staining	ab	ab	ab	p	ab	p
soil differences	ab	ab	p	ab	p	p
historical artifacts	ab	ab	ab	ab	ab	ab
calcined bone	ab	ab	ab	ab	ab	p
fresh bone	ab	ab	ab	ab	ab	p
copper	ab	ab	ab	ab	ab	p
vegetable remains	ab	ab	ab	ab	ab	ab
ochre	ab	ab	ab	ab	ab	ab
burned rocks	p	ab	p	p	p	p
unburned rocks	p	ab	ab	p	p	p
post moulds	ab	ab	ab	ab	ab	ab
quartz flakes	x	1	35	13	93	915
other flakes	0	0	0	0	0	529
cores	4	0	1	1	0	16
pottery sherds	0	0	x	1	3	57
lithic artifacts	0	0	0	0	0	4
rim sherds	0	0	0	0	0	21
illustration	–	–	–	–	–	64

(continued)

Table 21: CfD1-1 Feature Descriptions

Feature	37	38	39	40	41	42
unit	78-10	78-11	78-11	78-11	78-10	78-11
level	4	5	5	5	5	6
affiliation	ph	ph	ph	ph	ph	ph
outline	ir	ov	ir	ov	ir	ir
dimensions	80×100	220×100	80×95	50×65	175×150	400×250
depth	25	14	10	12	6	15
charcoal extent	m	l	m	h	m	m
red staining	ab	ab	p	ab	ab	ab
soil differences	p	p	ab	p	p	p
historical artifacts	ab	ab	ab	ab	ab	ab
calcined bone	ab	p	p	ab	ab	ab
fresh bone	ab	ab	ab	ab	ab	ab
copper	ab	ab	ab	ab	ab	ab
vegetable remains	ab	ab	ab	ab	ab	ab
ochre	ab	ab	ab	ab	ab	ab
burned rocks	p	p	p	p	p	p
unburned rocks	p	ab	p	p	p	p
post moulds	ab	p	p	ab	ab	p
quartz flakes	32	13	129	20	983	30
other flakes	0	0	1	10	2	0
cores	0	0	0	1	8	7
pottery sherds	x	3	6	0	64	0
lithic artifacts	0	0	1	1	5	2
rim sherds	x	0	1	0	4	1
illustration	57	60	65	65	-	-

(continued)

Table 21: CfD1-1 Feature Descriptions

Feature	43	44	45	46	47	48
unit	78-11	78-10	78-11	78-11	78-11	78-10
level	6	5	6	7	7	6
affiliation	ph	ph	ph	ph	ph	ph
outline	uk	uk	ir	ov	ir	uk
dimensions	200x120+	60x200+	ud	180x140	255x225	153x120
depth	11	15	15	7	9	20
charcoal extent	m	1	m	m	m	1
red staining	ab	p	ab	p	p	p
soil differences	ab	p	p	ab	p	p
historical artifacts	ab	ab	ab	ab	ab	ab
calcined bone	ab	p	ab	p	p	p
fresh bone	ab	ab	ab	ab	ab	ab
copper	ab	ab	ab	ab	ab	ab
vegetable remains	ab	ab	ab	p	ab	ab
ochre	ab	ab	ab	p	p	ab
burned rocks	p	p	p	p	p	p
unburned rocks	p	p	p	p	p	p
post moulds	p	ab	p	ab	p	ab
quartz flakes	x	400	x	215+	99	461+
other flakes	0	0	0	0	1	33
cores	-	11	x	0	5	11
pottery sherds	x	306	x	4	12	104
lithic artifacts	0	8	0	1	2	6
rim sherds	0	2	0	0	0	5
illustrations	-	-	-	67	67	-

(continued)

Table 21 : CfD1-1 Feature Descriptions

Feature	49	50	51	52	53	54
unit	78-11	78-11	78-10	78-11	78-11	78-11
level	7	8	6	8	8	8
affiliation	ph?	ph	ph	ph	ph	ph
outline	ov	elov	ir	uk	uk	uk
dimensions	50×90	95×180	85×112	130×160+	100×60+	120×135+
depth	7	17	6	17	10	8
charcoal extent	m	m	m	h	ab	h
red staining	ab	p	p	ab	p	p
soil differences	p	p	p	ab	p	ab
historical artifacts	ab	ab	ab	ab	ab	ab
calcined bone	p	p	p	ab	p	p
fresh bone	ab	ab	ab	ab	ab	ab
copper	ab	ab	ab	ab	ab	ab
vegetable remains	ab	ab	ab	ab	ab	ab
ochre	ab	p	ab	ab	ab	p
burned rocks	p	p	p	p	p	p
unburned rocks	p	p	p	p	ab	p
post moulds	p	p	ab	ab	p	p
quartz flakes	29	271	236	23	6	54+
other flakes	2	12	4	0	0	2
cores	1	0	2	0	3	0
pottery sherds	15	39	13	x	1	32
lithic artifacts	0	3	3	0	1	1
rim sherds	0	3	1	1+	0	2
illustration	-	59	-	-	68	68

(continued)

Table 21: CfDl-1 Feature Descriptions

Feature	55	56	57	58	59	60
unit	78-11	78-10	78-11	78-11	78-11	78-11
level	9	7	10	10	10	10
affiliation	ph	ph	ph	ph	ph	ph
outline	ir	uk	uk	uk	uk	uk
dimensions	60×135	200×70+	100×90+	130×100+	90×240+	110×120+
depth	7	27	3	7	9	4
charcoal extent	1	h	h	1	m	1
red staining	p	p	ab	ab	ab	ab
soil differences	ab	p	ab	ab	ab	p
historical artifacts	ab	ab	ab	ab	ab	ab
calcined bone	p	p	ab	ab	ab	ab
fresh bone	ab	ab	ab	ab	ab	ab
copper	ab	ab	ab	ab	ab	ab
vegetable remains	ab	ab	ab	ab	ab	ab
ochre	p	ab	ab	ab	ab	ab
burned rocks	p	p	p	p	p	ab
unburned rocks	ab	p	ab	p	p	ab
post moulds	ab	ab	ab	ab	ab	p
quartz flakes	23+	101+	0	11+	5+	5
other flakes	0	16	0	0	0	0
cores	1	0	0	x	1	0
pottery sherds	0	53	x	1	2	2
lithic artifacts	0	5	0	2	0	0
rim sherds	0	3	0	0	0	0
illustration						

(continued)

Table 21 : CfDl-1 Feature Descriptions

Feature	61	62	63	64	65	66
unit	78-10	78-11	78-10	78-10	78A	78A
level	7	10	7	7	3	6
affiliation	ph	ph	ph	ph	uk	ph
outline	ir	uk	ov	uk	ov	ov
dimensions	170×240	120×180	40×50	50×35	60×65	90×93+
depth	9	6	4	5	13	13
charcoal extent	l	m	m	ab	m	m
red staining	p	p	p	p	p	p
soil differences	p	p	ab	ab	ab	p
historical artifacts	ab	ab	ab	ab	ab	ab
calcined bone	p	p	p	ab	p	p
fresh bone	ab	ab	ab	ab	ab	ab
copper	ab	ab	ab	ab	ab	ab
vegetable remains	ab	ab	ab	ab	ab	p
ochre	ab	ab	ab	ab	ab	ab
burned rocks	p	p	ab	ab	p+	p+
unburned rocks	p	p	ab	ab	ab	ab
post moulds	p?	ab	ab	ab	ab	ab
quartz flakes	141+	40+	11	0	0	351+
other flakes	6	0	1	0	0	1
cores	4	0	0	0	0	0
pottery sherds	106	x	5	0	0	0
lithic artifacts	1	1	0	0	0	2
rim sherds	4	0	0	0	0	0
illustration	-	59	-	-	56 57	-

(continued)
Table 21: CfD1-1 Feature Descriptions

Feature	67	68	69	70	71	72 inc
unit	78A	78-12	78-12	78-12	78-12	78-12
level	11	4	4	5	5	7
affiliation	ph	uk	uk	ph	ph	ph
outline	uk	ir	ir	uk	uk	uk
dimensions	150x320	100x110+	120x70	90x50+	160x180+	500x500+
depth	28	5	14	11	21	4
charcoal extent	h	m	m	m	m	h
red staining	p	p	p	p	p	ab
soil differences	p	ab	p	ab	p	p
historical artifacts	ab	ab	ab	ab	ab	ab
calcined bone	p	ab	ab	p	p	p
fresh bone	ab	ab	ab	ab	p	ab
copper	ab	ab	ab	ab	ab	p
vegetable remains	p	ab	ab	ab	p	ab
ochre	p	ab	ab	ab	ab	p
burned rocks	p	ab	ab	p	p	p
unburned rocks	p	ab	ab	p	p	p
post moulds	ab	ab	ab	ab	ab	ab
quartz flakes	216	0	0	22+	221	627+
other flakes	91	0	0	1	0	9+
cores	5	0	0	1	2	21+
pottery sherds	x	0	0	0	7	158+
lithic artifacts	4	0	0	0	1	5
rim sherds	3	0	0	0	2	8+
illustration	-	-	-	-	-	-

(continued)

Table 21 : CfDl-1 Feature Descriptions

Feature	73 inc	74
unit	78-12	78-11
level	9	5-8
affiliation	ph,	ph
outline	ir	c
dimensions	173x167	240x260
depth	nd	30
charcoal extent	h	m
red staining	p	p
soil differences	p	p
historical artifacts	ab	ab
calcined bone	p	p
fresh bone	ab	ab
copper	ab	ab
vegetable remains	ab	ab
ochre	p	ab
burned rocks	p	p
unburned rocks	p	p
post moulds	ab	p
quartz flakes	664+	162
other flakes	83+	11
cores	5+	1
pottery sherds	6+	9
lithic artifacts	1	2
rim sherds	0	1
illustration	-	66

APPENDIX E

ANALYSIS OF THE FAUNAL SAMPLE FROM THE CfDl-1 OXBOW SITE

by

FRANCES L. STEWART

APPENDIX E

Table 22, Summary of the Faunal Remains from the CfDl-1, Oxbow Site

COMMON NAME	SCIENTIFIC NAME	SKELETAL ELEMENTS REPRESENTED	NOTES
FISH			
Possible sturgeon	Acipenseridae	approximately 25 scutes or skull bone portions	1. to be further identified 2. by range distribution these are from the Shortnosed or Atlantic Sturgeon
Possible catfish	Ictaluridae	2 left dentary portions and 1 articular bone portion	1. by range distribution these are from Brown Bullhead
BIRD			
Small duck	possibly from Anas genus	right ulna shaft portion	1. not oldsquaw, harlequin duck or eider - closest to green-winged teal in my limited collection. 2. no evidence of human alteration
MAMMALS			
Beaver	Castor canadensis	28 hind and fore foot bones	1. both right and left hind foot elements 2. right front foot elements 3. by size and non-duplication may all be from one individual
Beaver	Castor canadensis	1 foot bone	
Beaver	Castor canadensis	1 hind foot bone	
"	"	1 ulna and 1 femur portion	
likely beaver		12 phalanges fragments	
Muskrat	Ondatra zibethicus	1 fused tibio-fibula 2 caudal vertebrae 4 foot bones	
Domestic dog	Canis familiaris	left lower incisor	1. cusp only slightly worn: young dog
Black Bear	Ursus americanus	9 foot bones	1. right fore and hind foot bones 2. likely from one bear by size and non-duplication 3. no cut marks
Bear sp.	Ursus sp.	9 foot bones	1. likely black bear and may be from same bear as one above
likely bear		11 foot bones 1 skull fragment	
Moose	Alces alces	1 left femur shaft portion; 2 fitted pieces	1. not checked with cow 2. not calcined 3. no evidence of human working
Moose, cow or horse		many skull portions	
large mammal, possibly moose		rib shaft portion	

APPENDIX F

DISTRIBUTION OF BODY AND RIM SHERDS AMONGST INDIVIDUAL CfD1-1 VESSELS

APPENDIX F

Table 23, Distribution Summary of Body and Rim Sherds Amongst Individual CfD1-1 Vessels

Key: v - vessel, r - rims, b - body sherds

v	r	b	v	r	b	v	r	b	v	r	b	v	r	b
1	13	112	21	3	34	41	3	4	61	1	-	81	1	-
2	10	218	22	1	-	42	2	1	62	2	1	82	4	127
3	15	21	23	1	-	43	4	15	63	2	-	83	1	-
4	1	67	24	1	-	44	1	10	64	1	-	84	1	-
5	7	77	25	1	35	45	2	1	65	2	4	85	2	-
6	1	18	26	1	3	46	1	-	66	2	4	86	1	-
7	1	-	27	1	51	47	1	-	67	1	-	87	1	-
8	1	4	28	1	23	48	2	6	68	1	-	88	1	-
9	1	-	29	1	4	49	3	-	69	2	-	89	2	-
10	2	-	30	1	6	50	1	-	70	1	-	90	1	-
11	2	-	31	1	-	51	1	-	71	1	-	91	1	-
12	1	-	32	1	10	52	1	-	72	-	1	92	1	-
13	2	3	33	2	19	53	1	-	73	2	1	93	1	1
14	1	3	34	2	1	54	1	-	74	1	-	94	1	1
15	2	-	35	2	-	55	3	66	75	1	-	95	1	2
16	3	1	36	9	304	56	1	-	76	3	-	96	4	-
17	1	-	37	6	143	57	1	-	77	3	3	97	12	85
18	1	-	38	2	17	58	1	-	78	1	-	98	1	-
19	1	-	39	1	-	59	3	-	79	1	-	99	1	-
20	1	-	40	1	-	60	8	9	80	1	-	100	1	-

Table 23, Distribution Summary of Body and Rim Sherds Amongst Individual CfDl-1 Vessels

Key: v - vessel, r - rims, b - body sherds

v	r	b	v	r	b	v	r	b	v	r	b	v	r	b
101	1	-	121	1	6	141	-	56	161	-	3	181	-	39
102	3	10	122	-	3	142	2	2	162	-	1	182	-	1
103	-	15	123	1	-	143	3	12	163	-	57	183	1	-
104	6	140	124	1	3	144	1	-	164	-	7	184	4	250
105	3	122	125	1	3	145	1	5	165	1	1	185	1	-
106	1	87	126	-	9	146	1	-	166	-	1	186	1	-
107	3	94	127	-	2	417	1	-	167	1	-	187	1	-
108	-	4	128	-	5	148	-	2	618	-	5	188	-	5
109	-	15	129	1	-	149	-	4	169	-	2	189	-	3
110	-	2	130	-	10	150	-	5	170	-	22	190	-	1
111	-	67	131	1	1	151	2	36	171	-	1	191	2	-
112	1	68	132	1	-	152	1	10	172	-	3	192	-	78
113	-	1	133	1	1	153	3	1	173	-	3	193	1	2
114	1	41	134	2	2	154	1	22	174	-	15	194	1	-
115	-	6	135	1	-	155	-	2	175	1	35			
116	-	9	136	1	1	156	-	19	176	1	31			
117	-	38	137	-	12	157	1	30	177	3	76			
118	2	233	138	1	-	158	-	33	178	-	4			
119	-	1	139	-	66	159	2	19	179	6	88			
120	-	76	140	2	2	160	-	1	180	4	18			

APPENDIX G

RADIOCARBON DATES FROM THE CfD1-1

OXBOW SITE

APPENDIX G

Radiocarbon Dates From The CfDl-1 Oxbow Site

During the past two years a total of eleven wood charcoal samples from the Oxbow site have been submitted for radiocarbon analysis. The samples were and presently are being analyzed by the Radiocarbon Dating Laboratory, Saskatoon, Saskatchewan. At the present time the following eight dates have been received.

1675 ± 50 BP field no. 416 S-1607

The charcoal was recovered from a datum depth of A/1025 - A/1030 of Unit 78-11. The sample was associated with a small straight stemmed rhyolite projectile point and a hearth/pit feature. The sample was taken from the same level as a 2.5 meter diameter circular configuration of over 20 post moulds with interior hearth area. Pottery within this level was organically tempered and plain. The level just beneath at A/1030 - A/1040 contained one organically tempered sherd of cord wrapped stick decoration. The date is considered satisfactory.

1745 ± 70 BP field no. 921 S-1651

The sample was selected from feature 61 hearth area, from Unit 78-10 and had a datum depth of A/1028 - A/1030. The sample is also associated with a small contracting stemmed point as well as with fragments of a grit tempered vessel that is decorated with fine round punctations. The date is considered satisfactory.

1995 ± 50 BP field no. 439 S-1636

The sample was recovered from Unit 78-11 and from the datum depth A/1050 - A/1053. The sample is associated with feature 45, a hearth area occurring beneath the circular house feature. The date is considered satisfactory.

2120 ± 65 BP field no. 966 S-1652

The sample was recovered from Unit 78A from a datum depth of A/1109. The sample is associated with hearth feature 67 which produced grit tempered pottery of simple and rocker dentate stamp decoration as well as a projectile point of a bipoint form. The date is considered satisfactory.

2145 ± 65 BP field no. 991 S-1606

The sample was recovered from Unit 78-12 and had a recorded datum depth of A/1058 - A/1060. The sample is associated with grit tempered pottery having a dentate stamp decoration. The sample is also associated with a quartz projectile point of a bipointed form. The date is considered satisfactory.

2600 ± 60 BP field no. 725 S-1650

The sample was taken from Unit 78-11 and had a datum depth of A/1059 - A/1062. The sample was associated with a charcoal stained area designated feature 49 and this feature contained a grit tempered plain rim sherd and a small expanding stemmed projectile point. The date is considered satisfactory.

2640 ± 50 BP field no. 758 S-1605

The sample was taken from Unit 78-11 and had a datum depth of A/1060 - A/1079. The charcoal was recovered from the basin portion of a long oval hearth area designated feature 50. The hearth contained a small expanding stemmed quartz projectile point and grit tempered pottery of pseudo scallop and dentate stamped decoration. Both vessels identified from this feature were also decorated with punctations. The date is considered satisfactory.

2980 ± 80 BP field no. 764 S-1654

This sample was recovered from Unit 78-10 and had a datum depth of A/1011. The sample is associated with a small stemmed "squat" projectile point and with a number of grit tempered vessels of varying decorations. Prehistoric cultural disturbance was very heavy in this unit. When compared with the other date from the unit and the stratigraphy, the date appears unacceptable.

Map of Red Bank/Sunny Corner Area

Figure 1 **Map of Red Bank/Sunny Corner area of Northumberland County, New Brunswick. Oxbow and other sites in the area are indicated.**

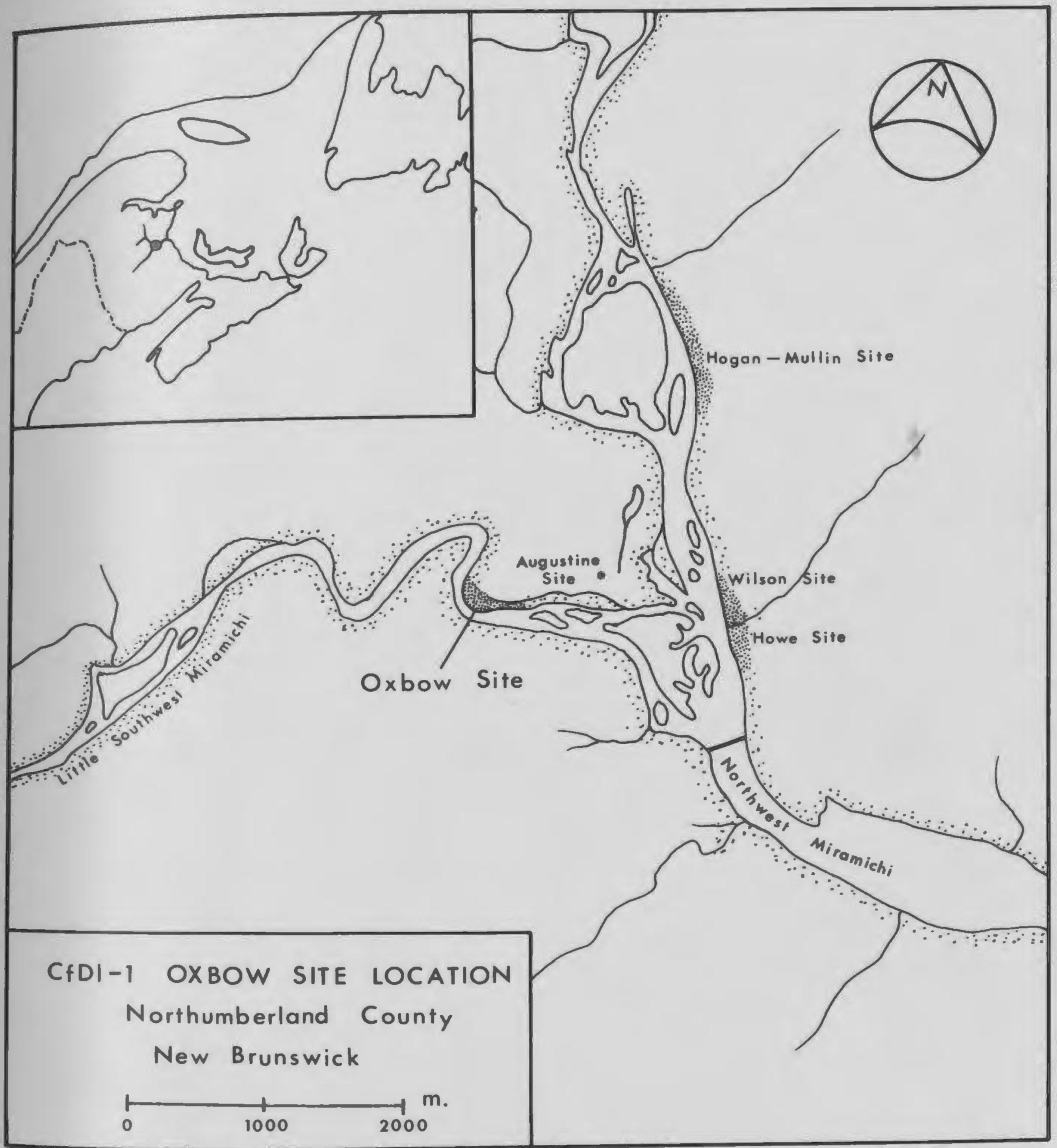
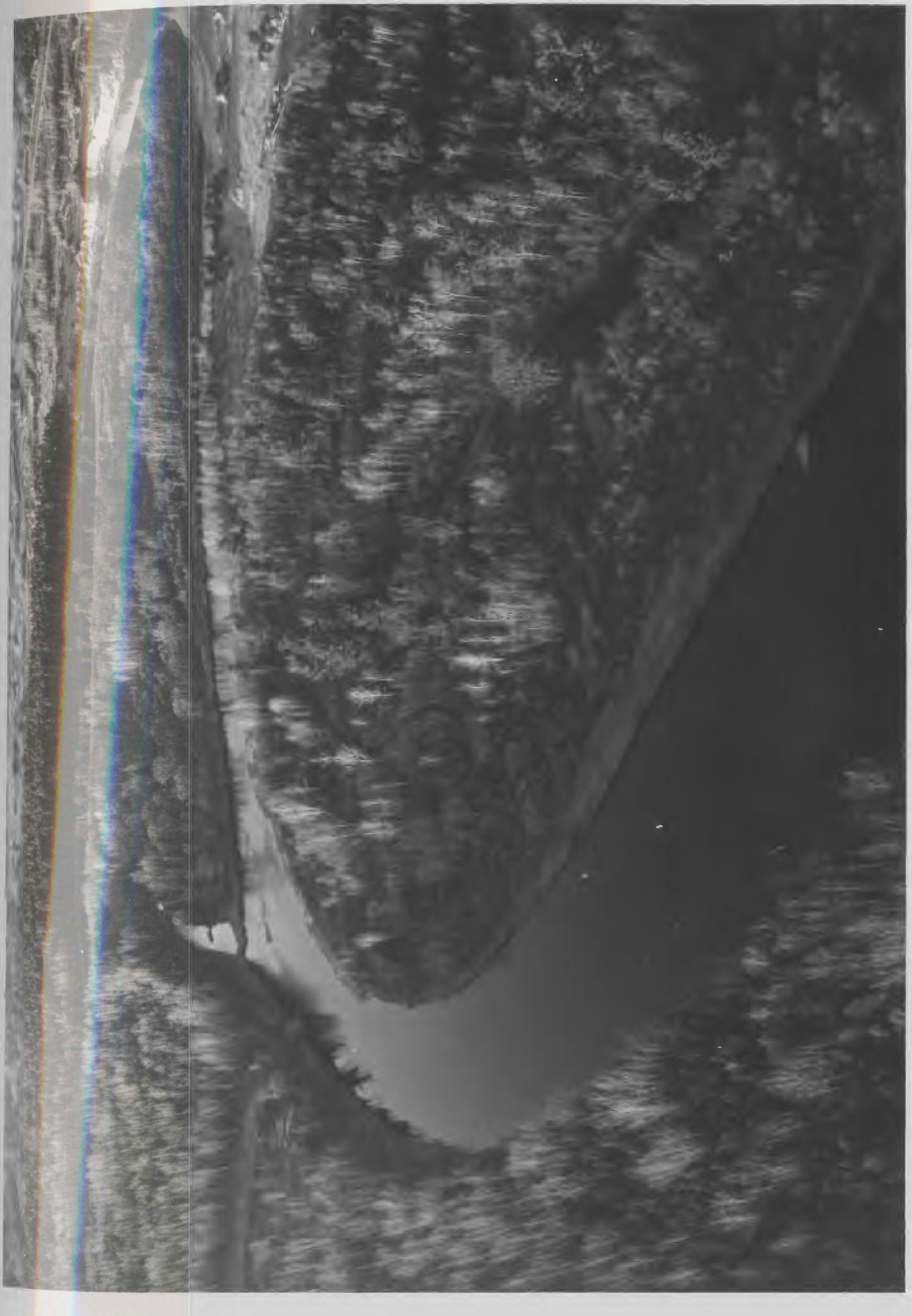

Hogan — Mullin Site
Augustine Site
Wilson Site
Howe Site
Oxbow Site
Little Southwest Miramichi
Northwest Miramichi
N
CfDl-1 OXBOW SITE LOCATION
Northumberland County
New Brunswick
m.
0
1000
2000

FIGURE 1

Aerial Photograph of the Oxbow site

Figure 2 Aerial photograph of Oxbow site area looking upstream on the Little Southwest Miramichi River. Site located on right bank from the foreground of the photograph to the upper shallow water position of the first bend.



The 1978 Oxbow Site Map

Figure 3 Oxbow site map indicating the 1978 grid system and all tested and excavated areas (see folder at rear of text).

Present natural setting at Oxbow

Figure 4 Looking East along Oxbow site North 60 grid line.

Note the present dense hawthorn bush vegetation.

East wall photograph, unit 78-1

Figure 5 Test unit 78-1. Stratigraphy profile of East wall showing extra thickness of bands on the lower right side of the unit. This would seem to indicate a one time gradual slope to the river which lies 30 metres to the right of this profile. Scale: two metres.

South wall profile, unit 78-4

Figure 6 Test unit 78-4. Stratigraphy profile drawing of South wall. Note the length of post moulds.

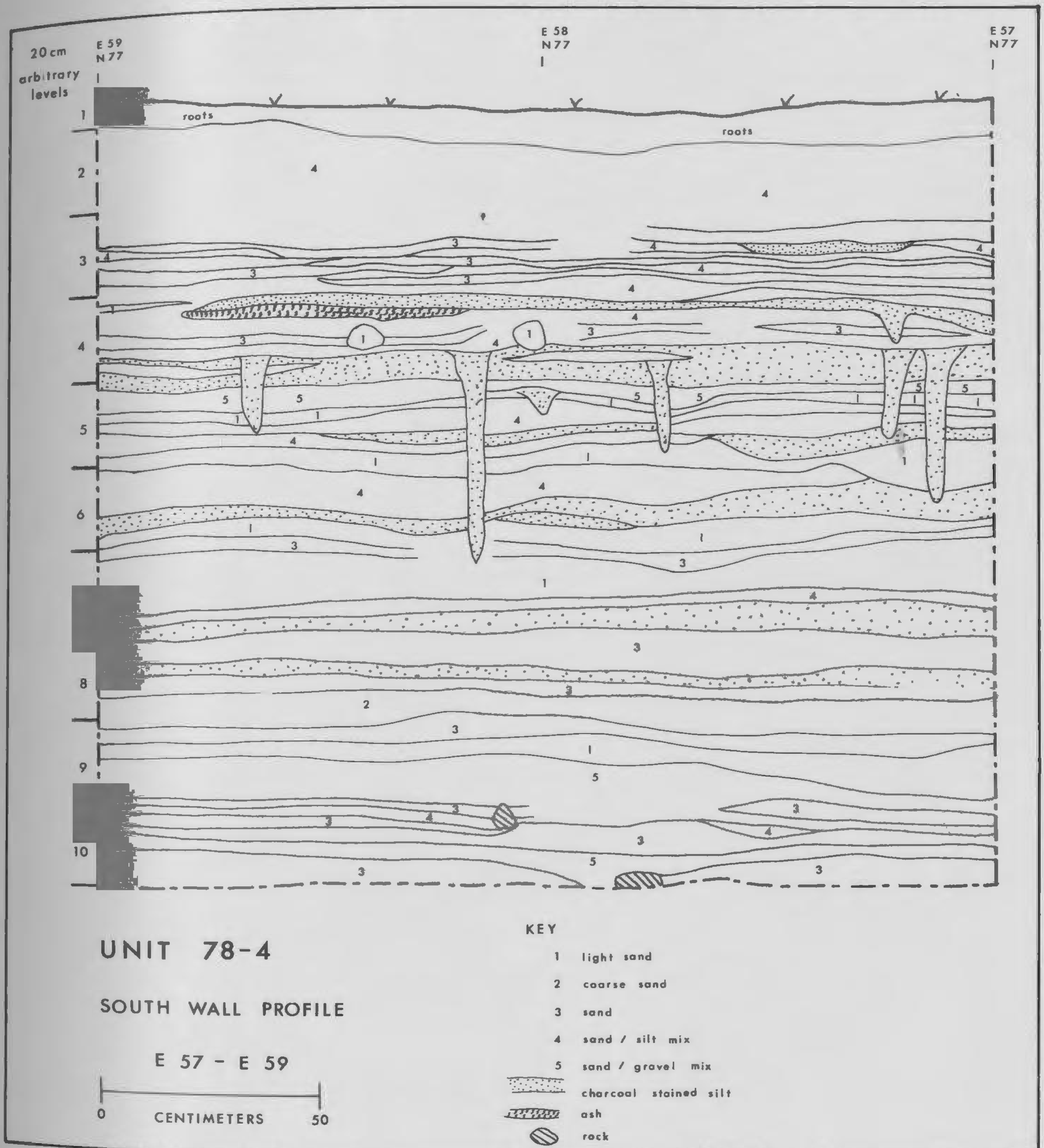

20 cm arbitrary levels
E 59 N77
E 58 N77
E 57 N77
roots
UNIT 78-4
SOUTH WALL PROFILE
E 57 - E 59
0 CENTIMETERS 50
KEY
1 light sand
2 coarse sand
3 sand
4 sand / silt mix
5 sand / gravel mix
charcoal stained silt
ash
rock

FIGURE 6

West wall photograph, unit 78A

Figure 7 Trench unit 78A. Stratigraphy profile of West wall, N51 to N59, looking towards river. Scale: two metres.

West wall profile, unit 78A

Figure 8 Trench unit 78A. Stratigraphy profile drawing of West wall, N51 to N59 (see folder at the rear of text). Note the gradual slope towards the river of most natural layers. Profile drawings such as this greatly assisted in the chronological placement of projectile point "types" within each unit.

Unit 78-10, level 13 floor

Figure 9 Unit 78-10, looking North at the base of level 13. The cultural levels in this area of the site were very compact and often mixed by cultural activities. Scale: one metre by one metre.

West wall profile, unit 78-10

Figure 10 Unit 78-10, West wall stratigraphy profile drawing (see folder at the rear of text). Note the gradual slope of natural bands from North to South and towards the river. Most cultural materials in this unit were recovered from levels six through nine.

Excavation unit 78-11

Figure 11 Unit 78-11, looking South towards the lower Oxbow bend in the river. Layers of naturally deposited sand/ silt do not appear as frequently in this western area of the site. Scale: one metre by one metre.

West wall profile, unit 78-11

Figure 12 Unit 78-11, West wall stratigraphy profile drawing.

(see folder at rear of text).

Projectile point attributes

Figure 13 Attributes of projectile point form and measurement utilized in individual description of CfDl-1 projectile points.

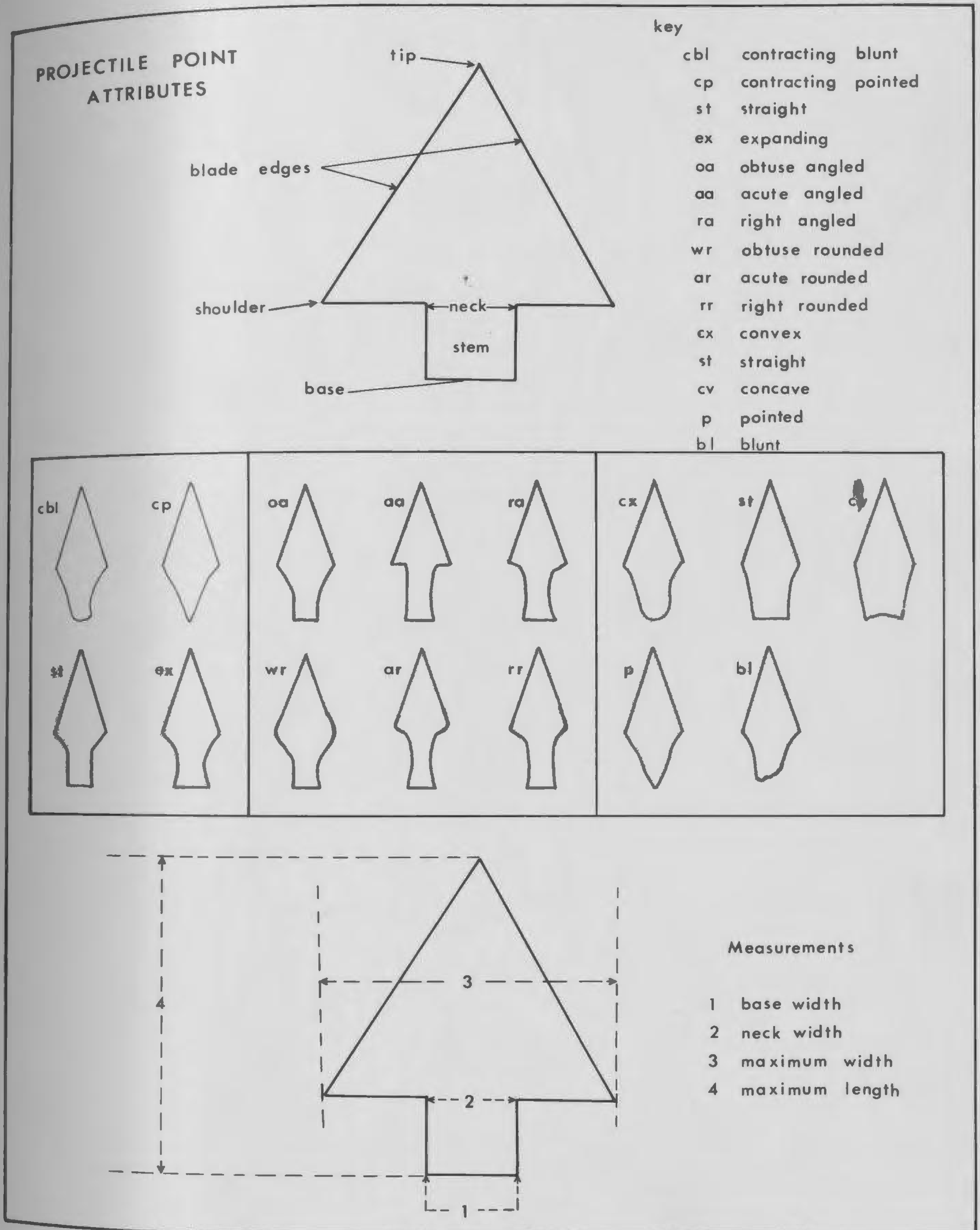

PROJECTILE POINT ATTRIBUTES
tip
blade edges
shoulder
neck
stem
base
key
cbl contracting blunt
cp contracting pointed
st straight
ex expanding
oa obtuse angled
aa acute angled
ra right angled
wr obtuse rounded
ar acute rounded
rr right rounded
cx convex
st straight
cv concave
p pointed
bl blunt
cbl
cp
oa
aa
ra
cx
st
st
ex
wr
ar
rr
p
bl
3
4
2
1
Measurements
1 base width
2 neck width
3 maximum width
4 maximum length

FIGURE 13

Figure 14 CfD1-1 Oxbow site projectile points

a-i) type A

j-p) type B

k) type B with concave base

q-r) either type A or B

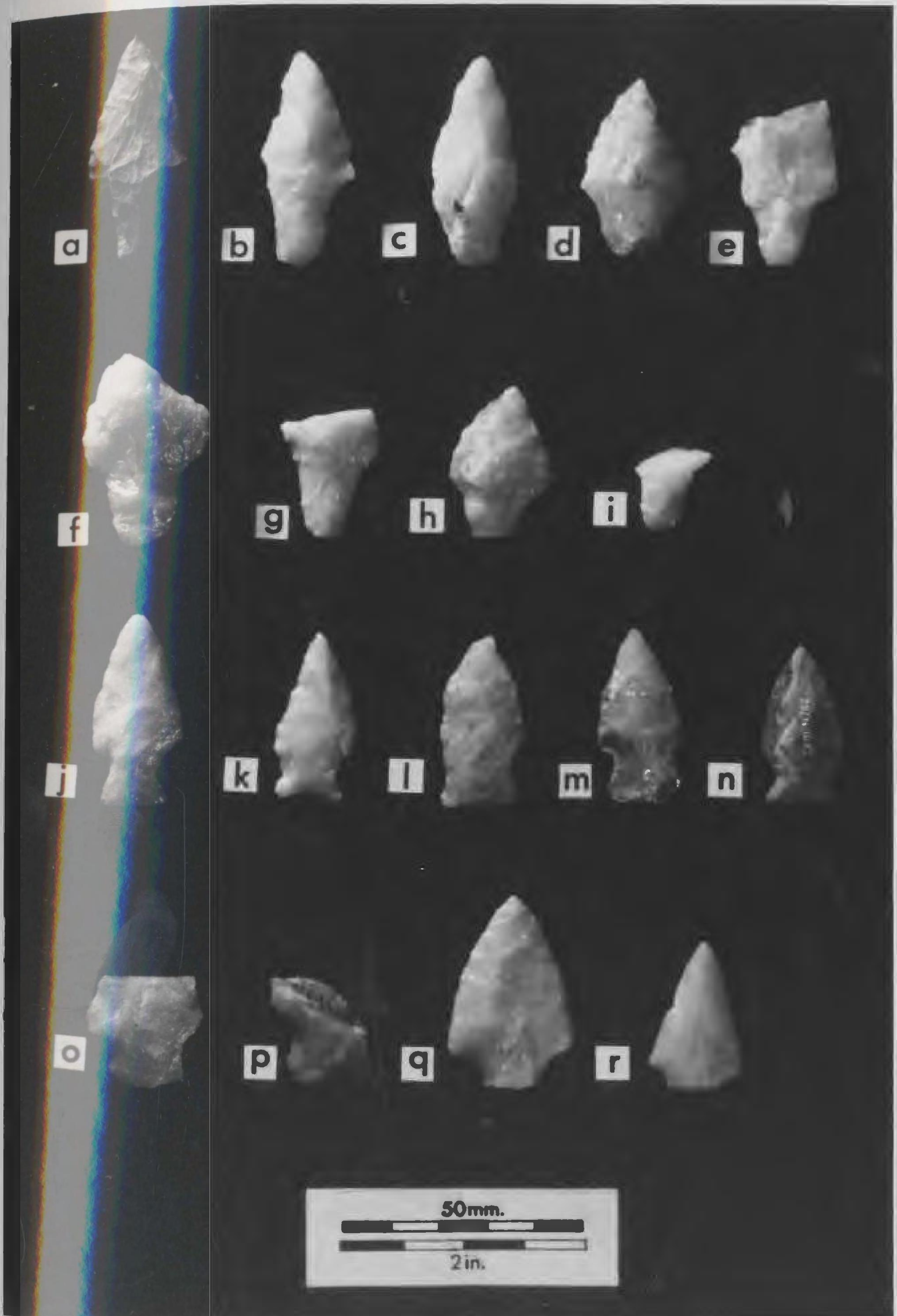

a
b
c
d
e
f
g
h
i
j
k
l
m
n
o
p
q
r
50mm.
2 in.

Figure 15 CfDl-1 Oxbow site projectile points

a-b) type D

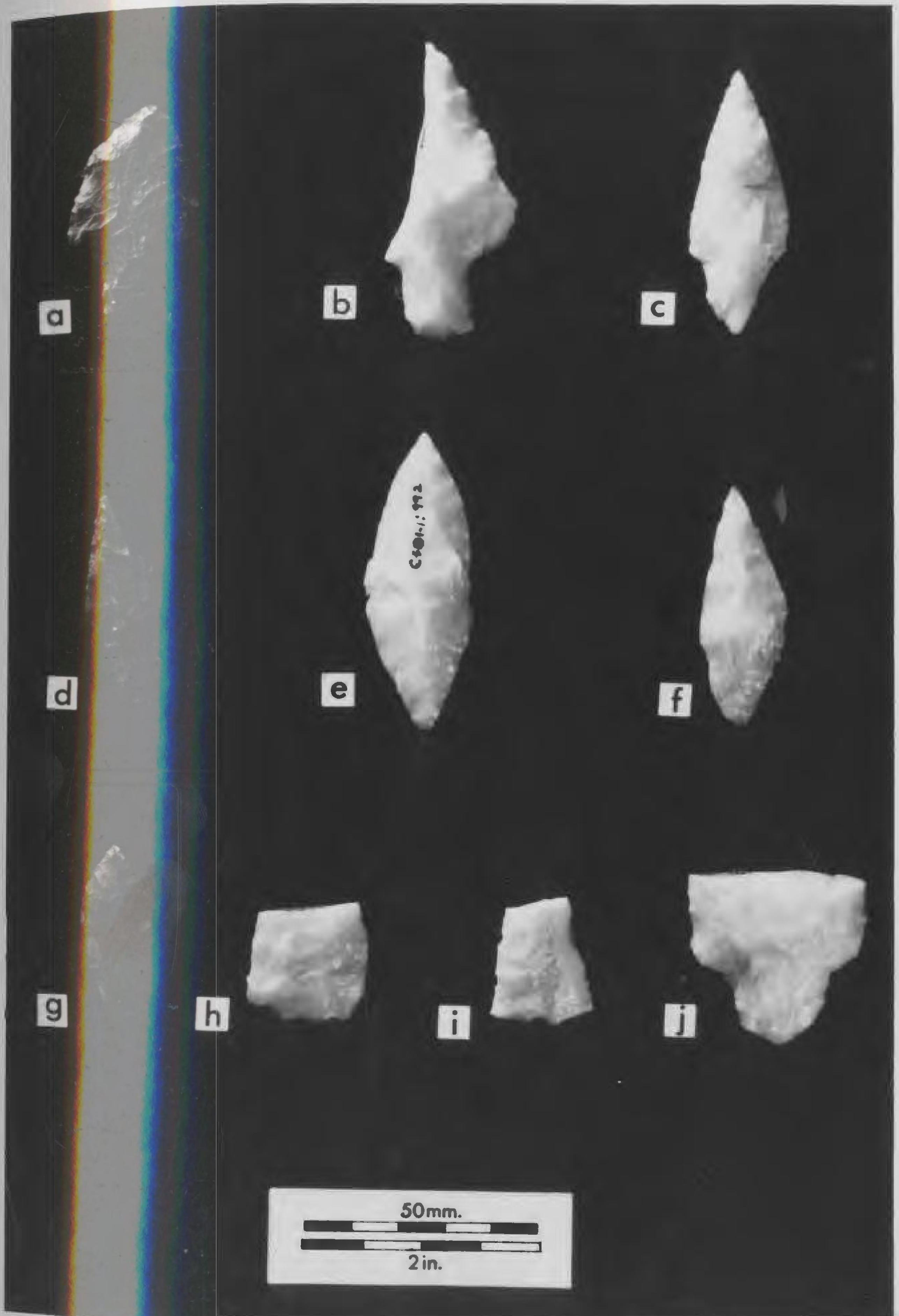
c-f) type C

g) type E

h) type G

i) type F

j) type H


a
b
c
d
e
f
g
h
i
j
50mm.
2 in.

CfD1-1 scraper attributes

Figure 16 Steep edge uniface/scraper attributes of form and measurement as applied to CfD1-1 scrapers.

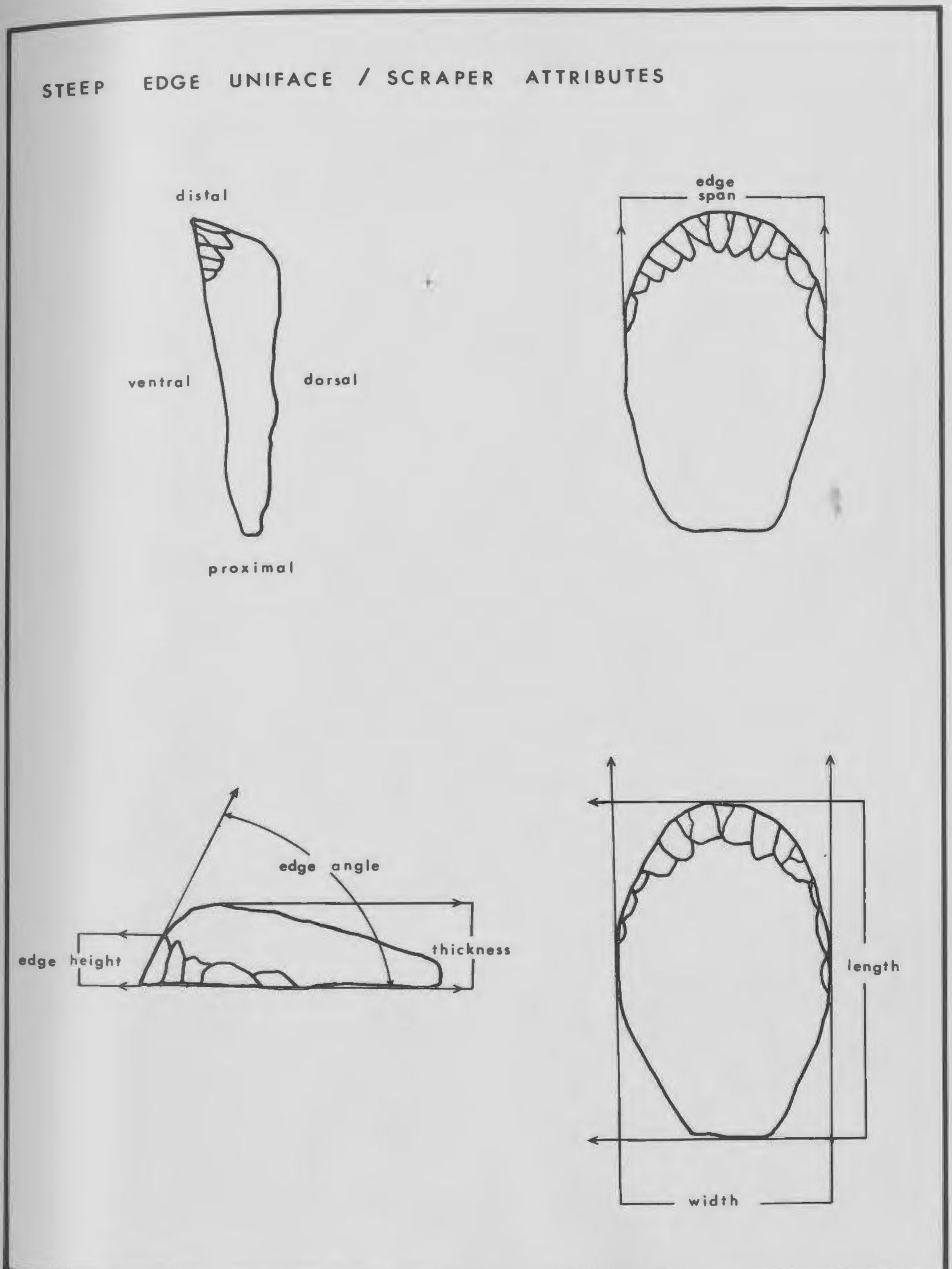

STEEP EDGE UNIFACE / SCRAPER ATTRIBUTES
distal
ventral
dorsal
proximal
edge span
edge angle
edge height
thickness
length
width

FIGURE 16

Figure 17 Distal edge scrapers (actual size)

a-c) triangular form

d-f) irregular form

g-h) rounded form

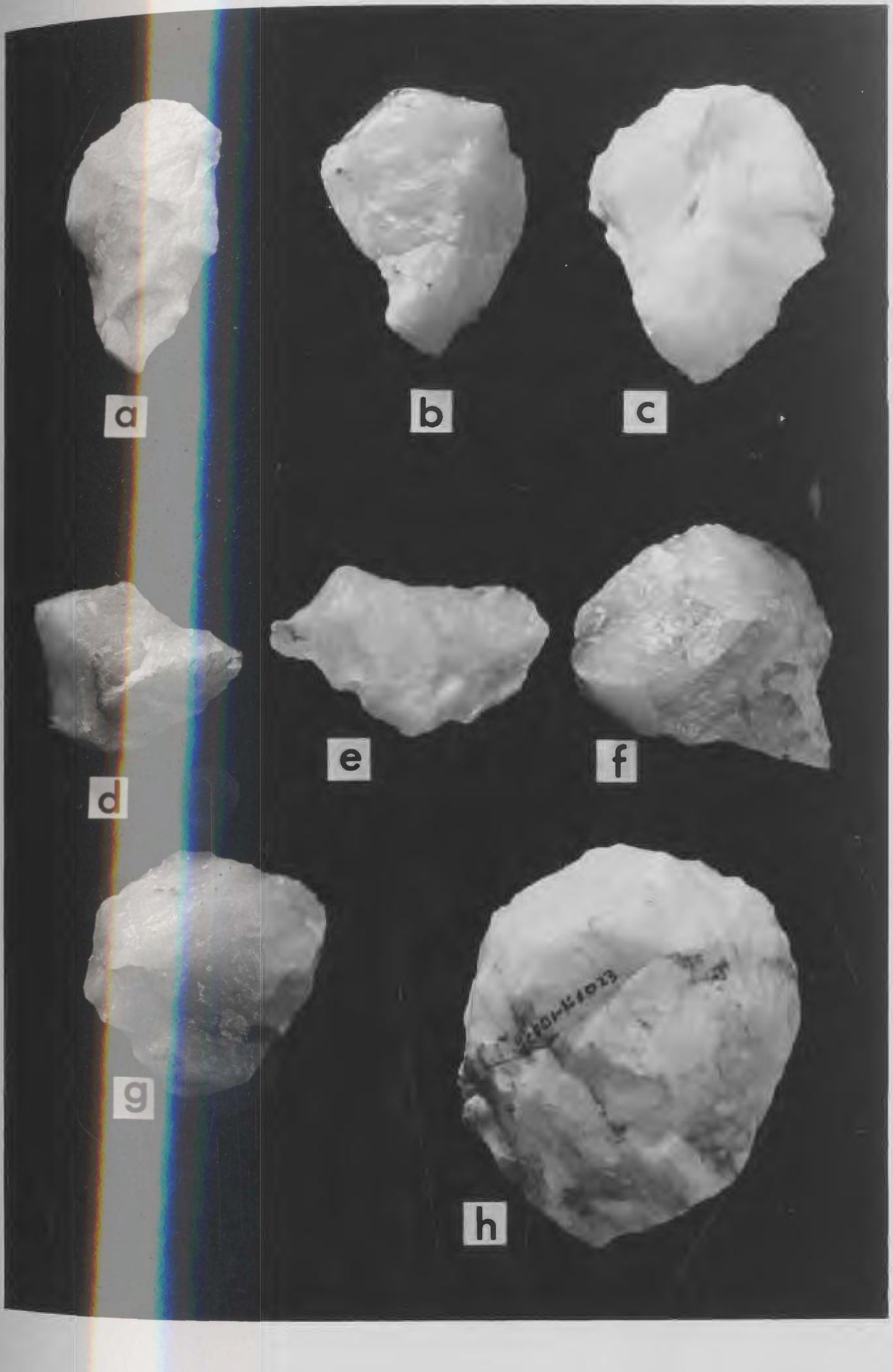

a
b
c
d
e
f
g
h

Figure 18 Discontinuous multiple edge scrapers (actual size)

a-c) oval to round form

d) triangular form

e) rectangular form

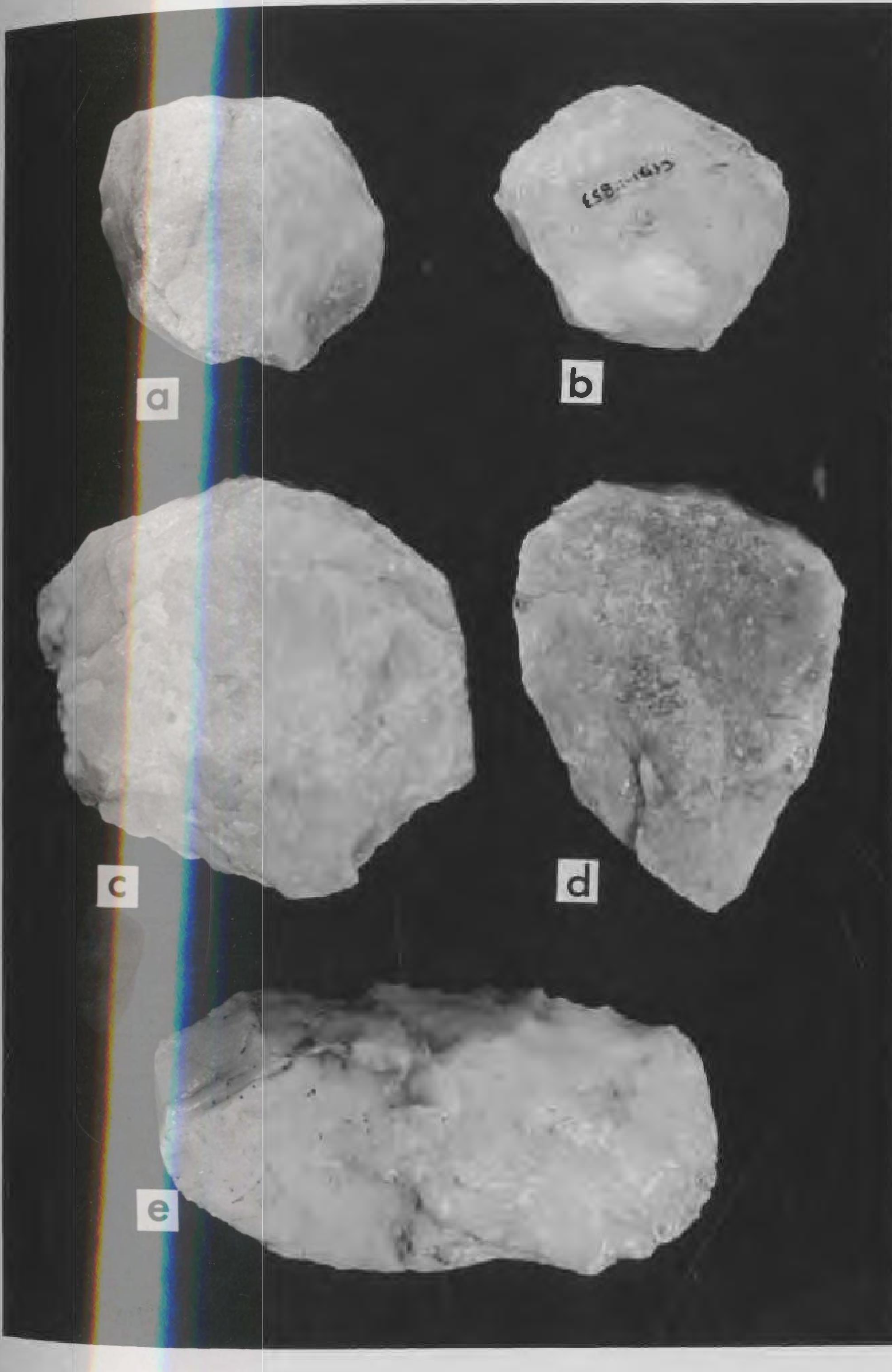

a
b
c
d
e

Figure 19 Continuous multiple edge scrapers (actual size)

a, h) roughly triangular quartz specimens

b) oval rhyolite specimen

c) rectangular quartz specimen

d) broken flint specimen

e) rectangular rhyolite specimen

f) rounded quartz specimen

g) rounded quartzite specimen

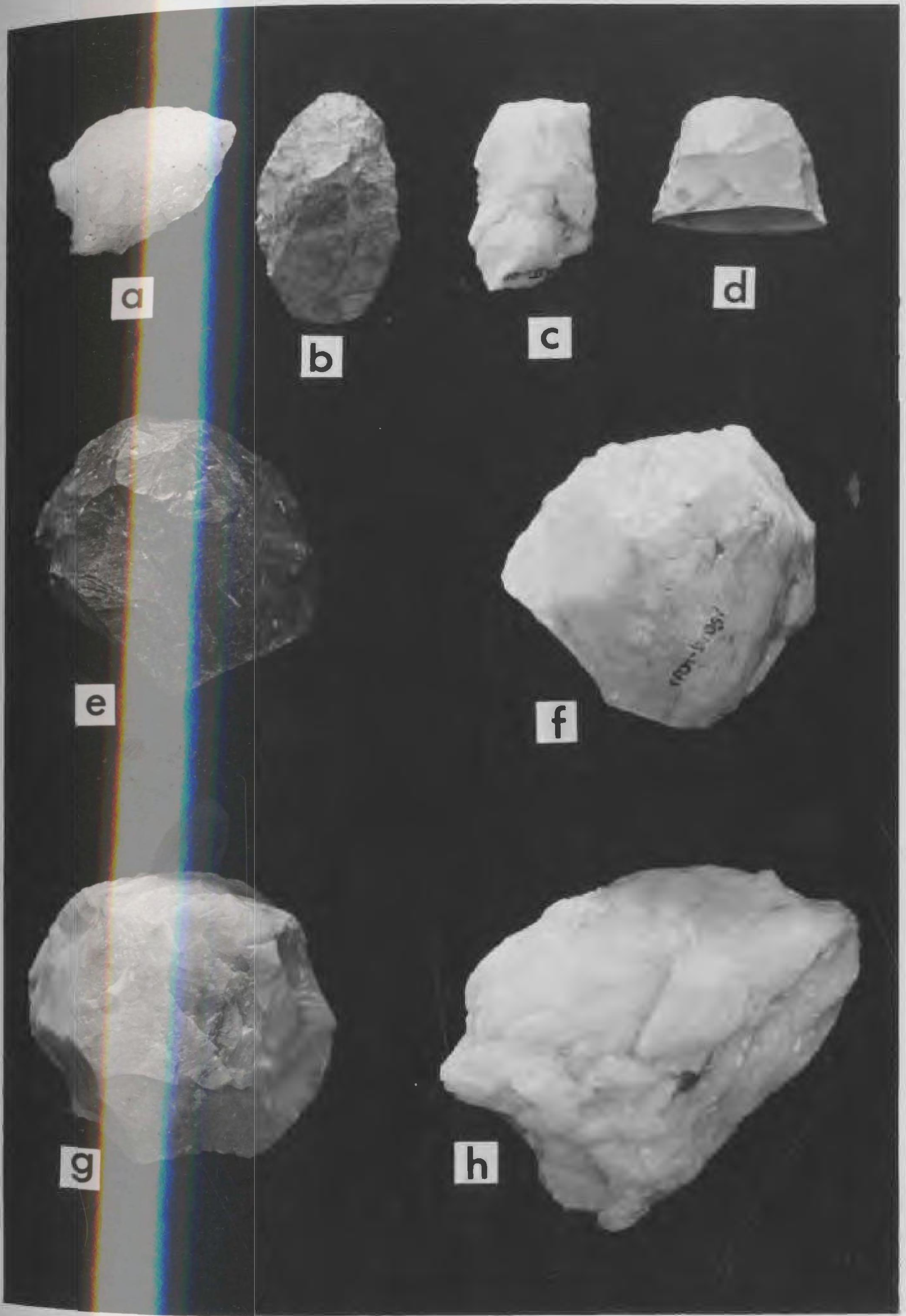

a
b
c
d
e
f
g
h

Figure 20 Rectangular bifaces (actual size)

a-g) small category

h-i) large rectangular bifaces

j) rectangular biface preform

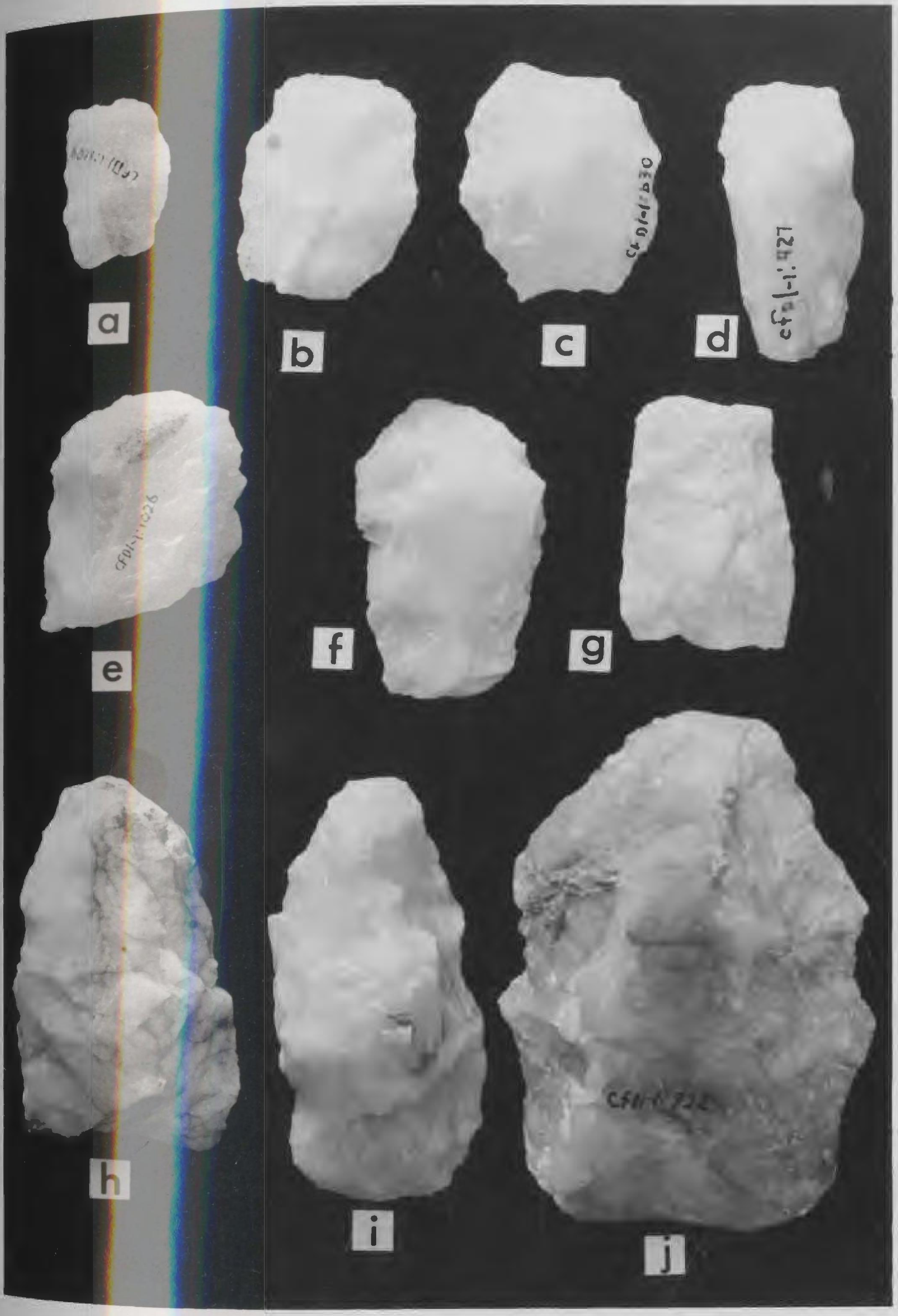

a
b
c
d
e
f
g
h
i
j

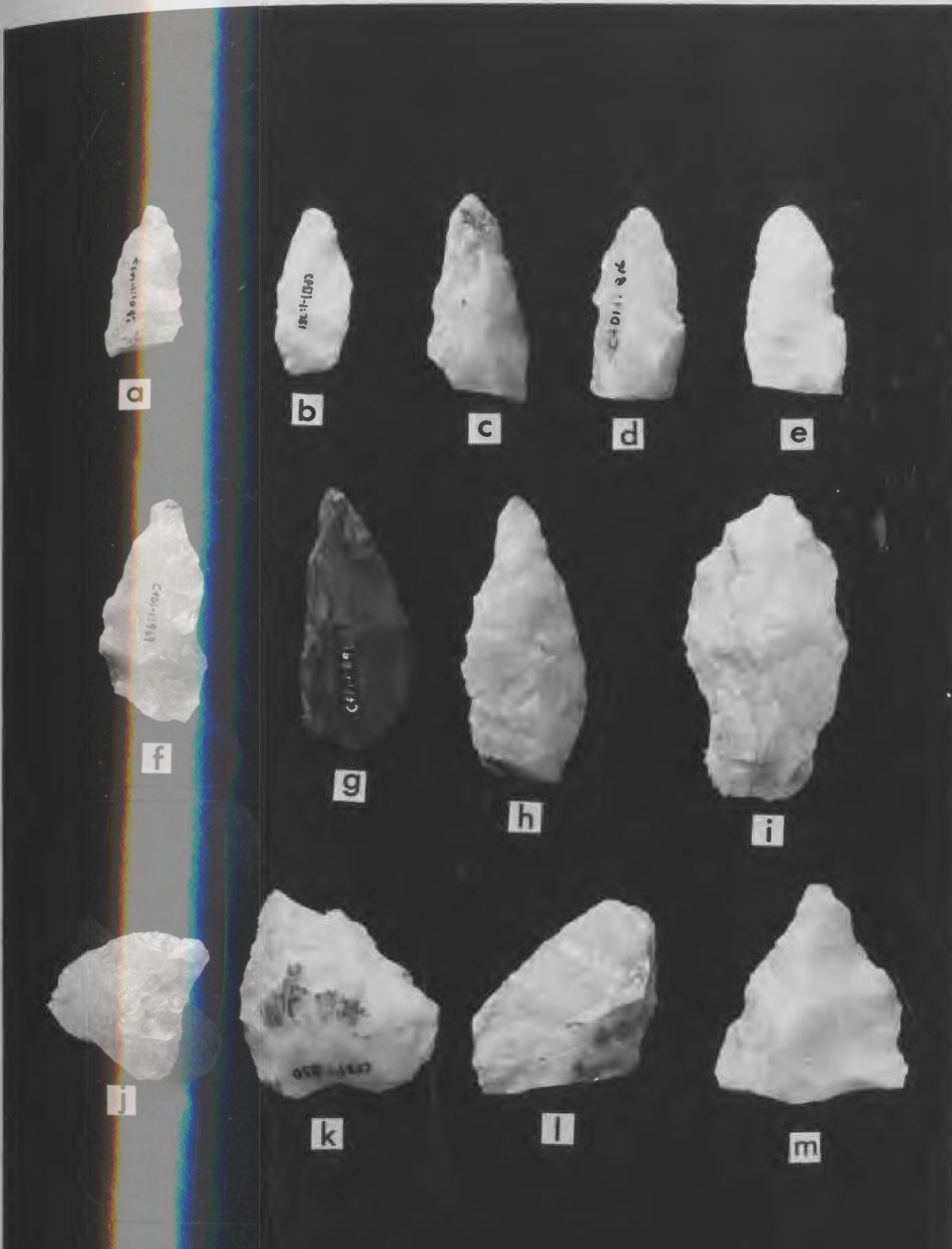
Figure 21 Bifaces (one half actual size)

a-h) small lanceolate bifaces

i) preform for stemmed knife

j-l) irregular form with one bifacial edge

m) triangular preform


a
b
c
d
e
f
g
h
i
j
k
l
m

Miscellaneous bifaces

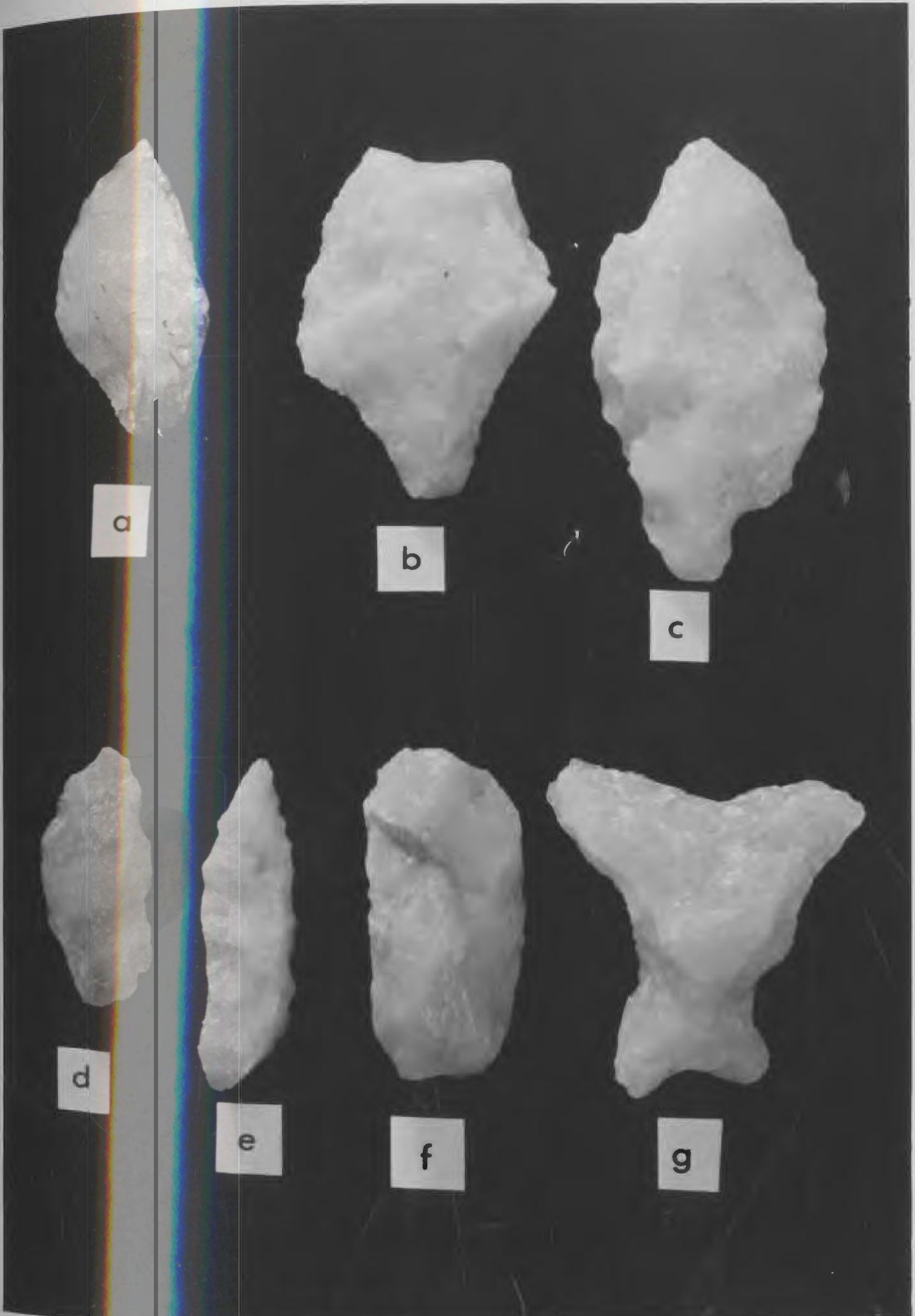
Figure 22 (twice actual size)

a–c) bifacially chipped stemmed knives

d–e) possible bifacially chipped awls

f) possible bifacially chipped rectangular wedge

g) bifacially chipped multiple edge spokeshave


a
b
c
d
e
f
g

Unifaces

Figure 23 a, f-h) unifacially formed knives

b-e) unifacially retouched flakes

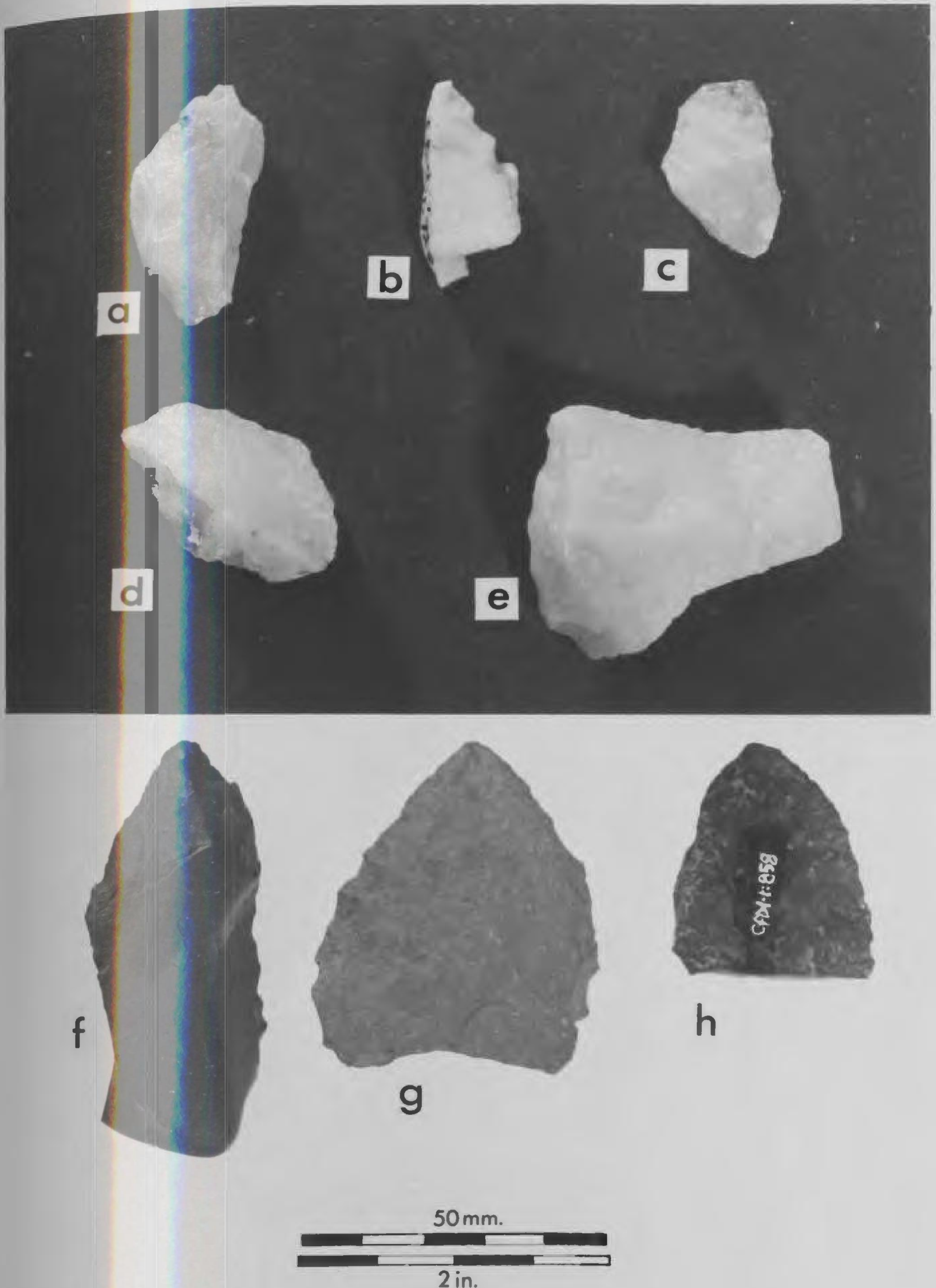

a
b
c
d
e
f
g
h
50 mm.
2 in.

Figure 24 Axes

a) CfD1-1:222

b) CfD1-1:298

c) CfD1-1:854

d) CfD1-1:1412

e) CfD1-1:405

f) CfD1-1:828

g) CfD1-1:593


a
b
c
d
e
f
g
50 mm
2 in

Miscellaneous ground stone artifacts

Figure 25 a) portion of a ground sandstone disc with angled circumference

b) sandstone net or line sinker with abraded line grooves

c) small abrasive stone

d) small non-sandstone abrader

e) four fragments of cut shale

f) small non-sandstone abrader


a
b
c
d
e
f
50mm.
2 in.

Figure 26 Abrasive stones

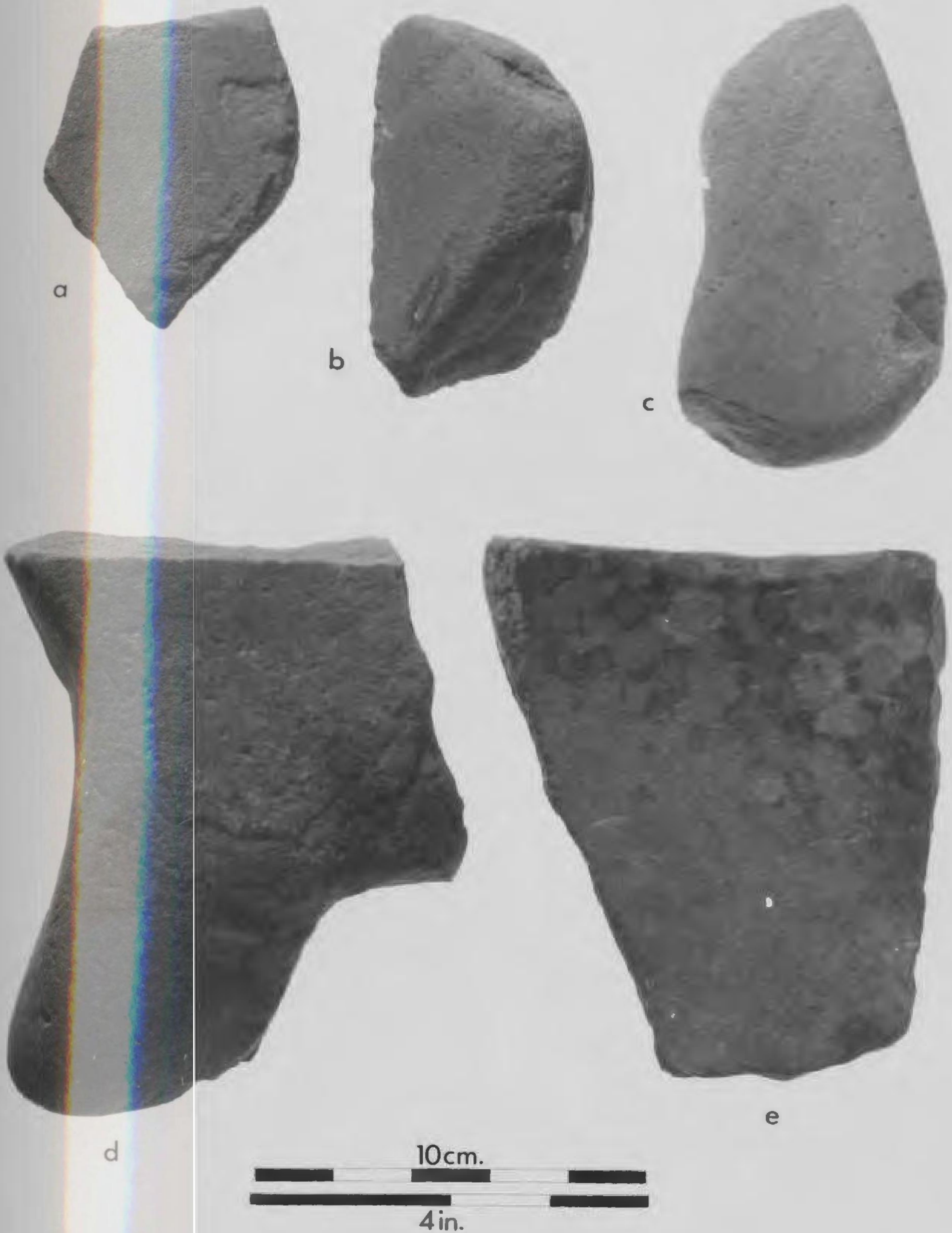

a
b
c
d
e
10cm.
4in.

Figure 27 Anvil and abrasive stones

a) anvil stone

b-c) anvil/abrasive stones

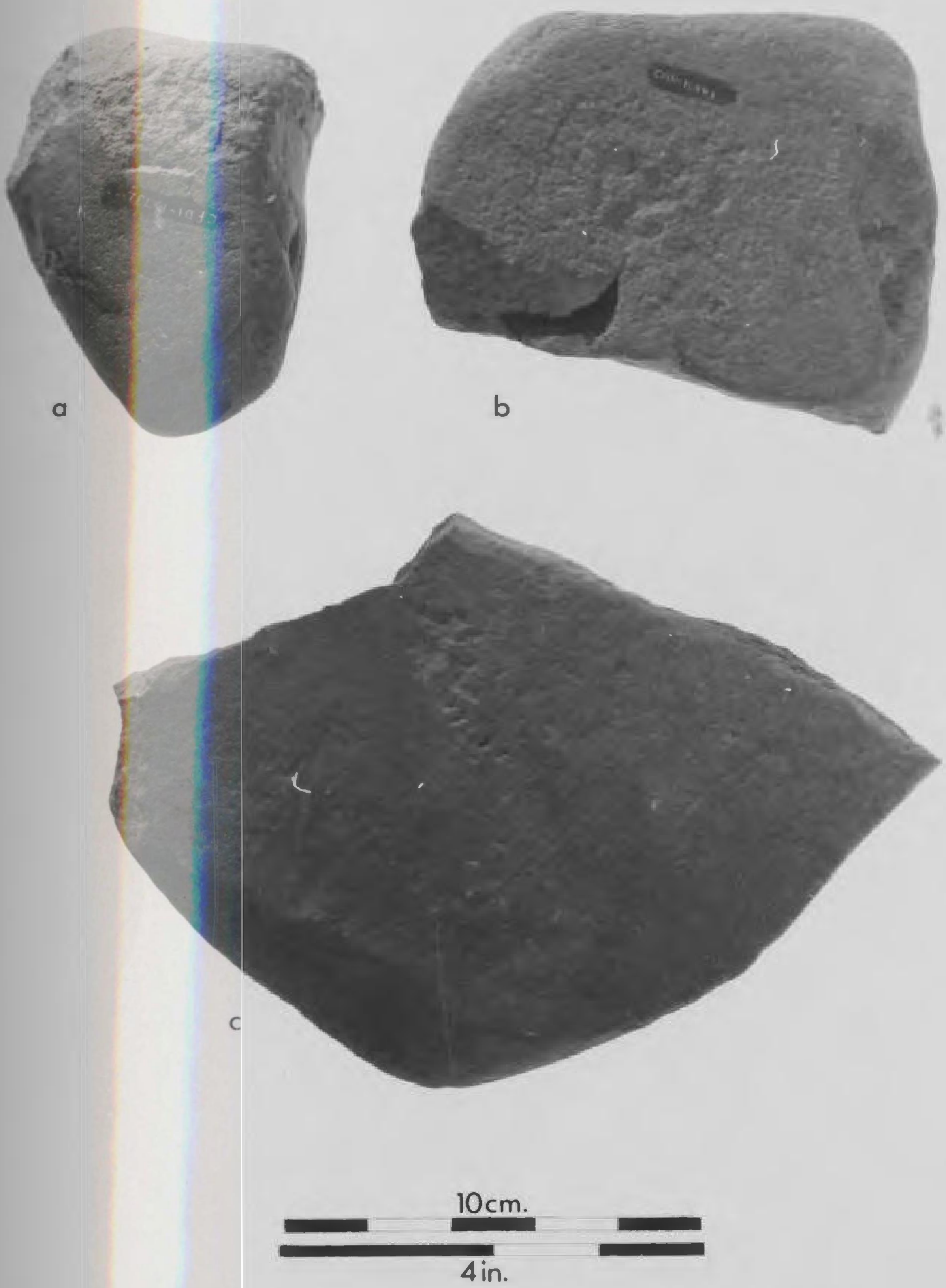
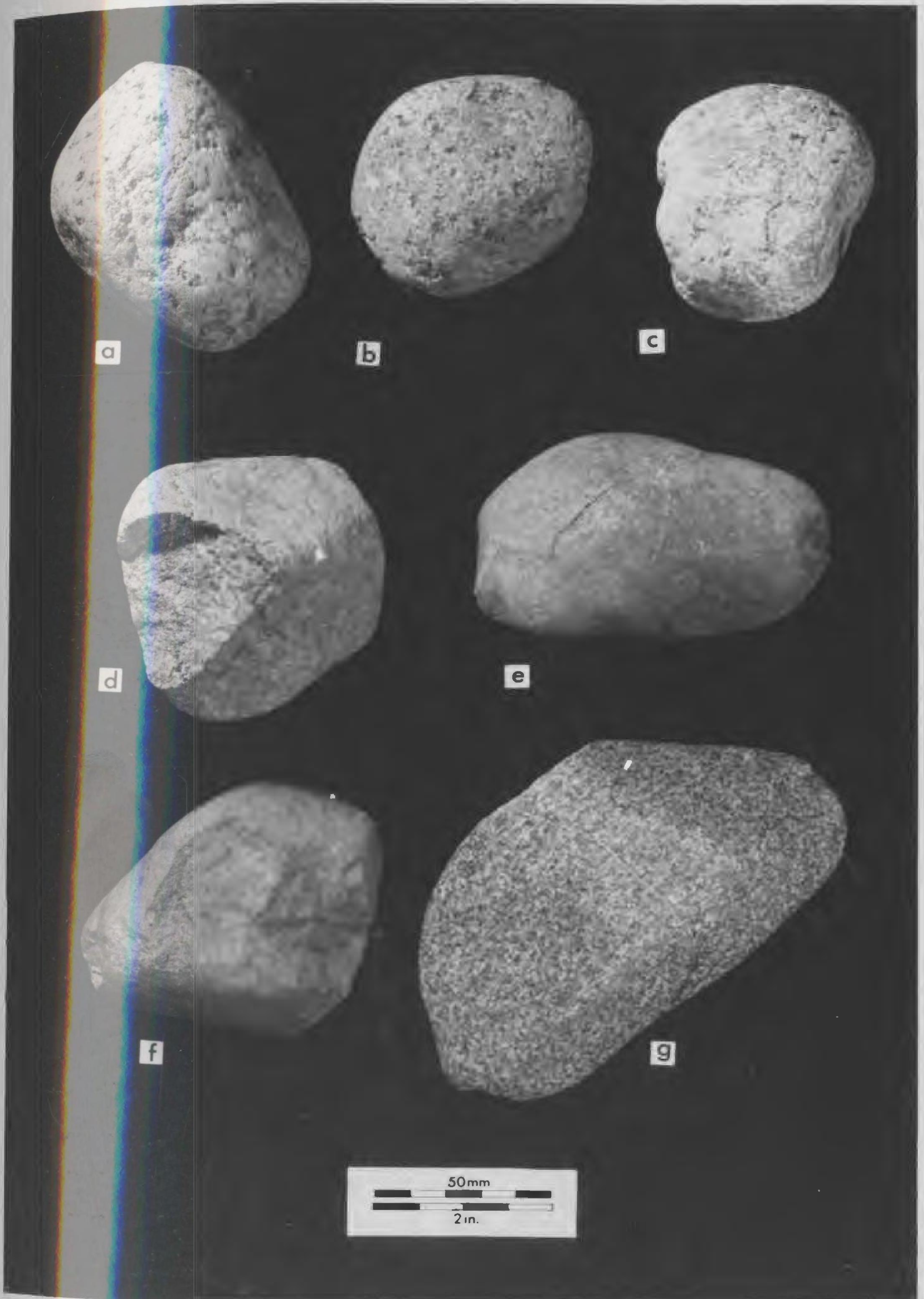

a
b
c
10cm.
4in.

Figure 28 Hammerstones

a-d) oval granite specimens

e) rectangular form with battered ends

f-g) irregularly shaped specimens with battered projections



a
b
c
d
e
f
g
50mm
2 in.

Figure 29 Choppers

a) CfD1-1:970

b) CfD1-1:1164

c) CfD1-1:832

d) CfD1-1:330


a
b
c
d
10cm.
4in.

Figure 30 Historical artifacts

a) gunflint

b) copper awl ? (perhaps prehistoric)

c-d) metal buttons

e) porcelain button

f) red/green glass bead

g) green scalloped edged pearlware

h) hand painted green/red earthenware

i) 19th century transfer patterned earthenware

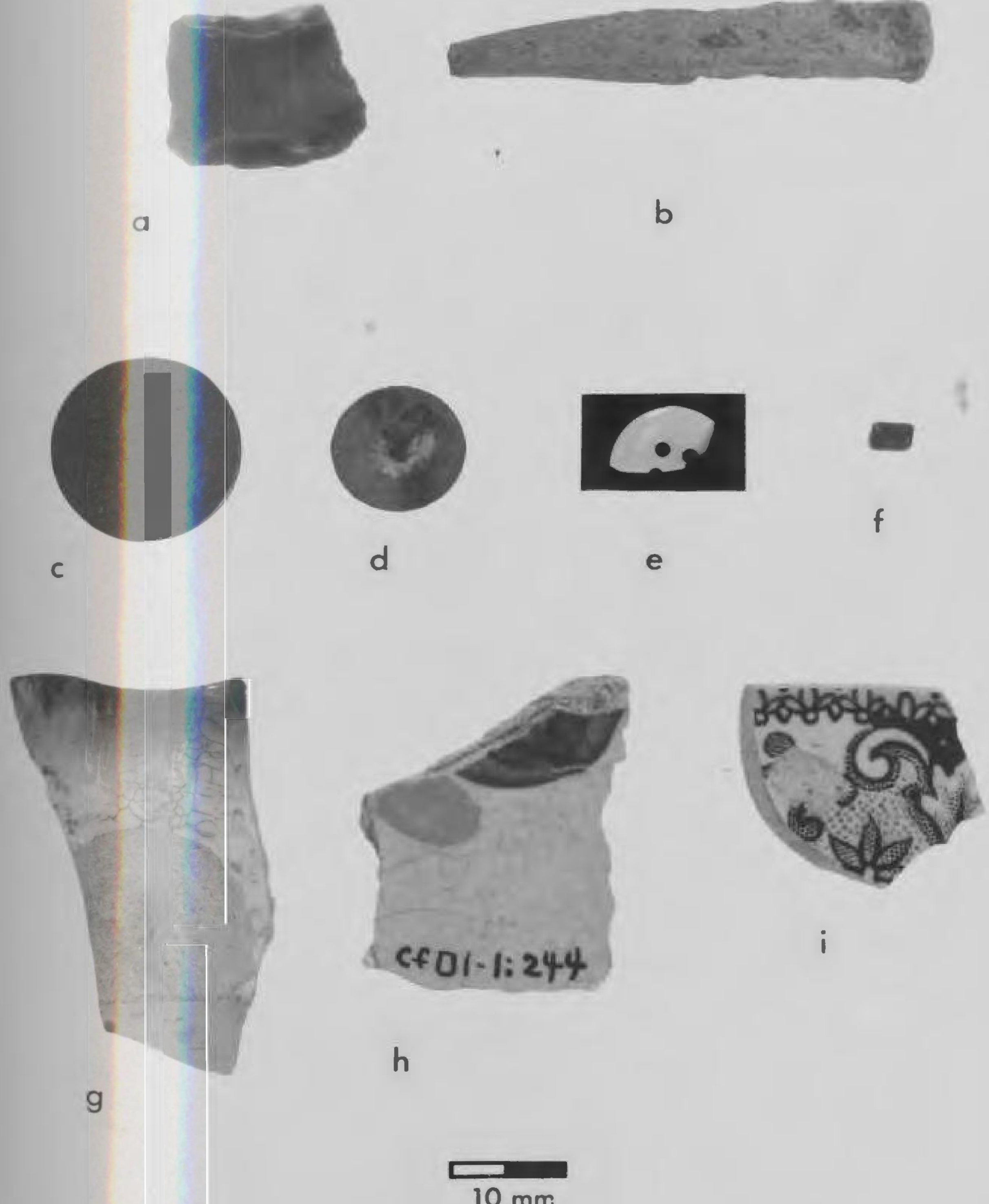
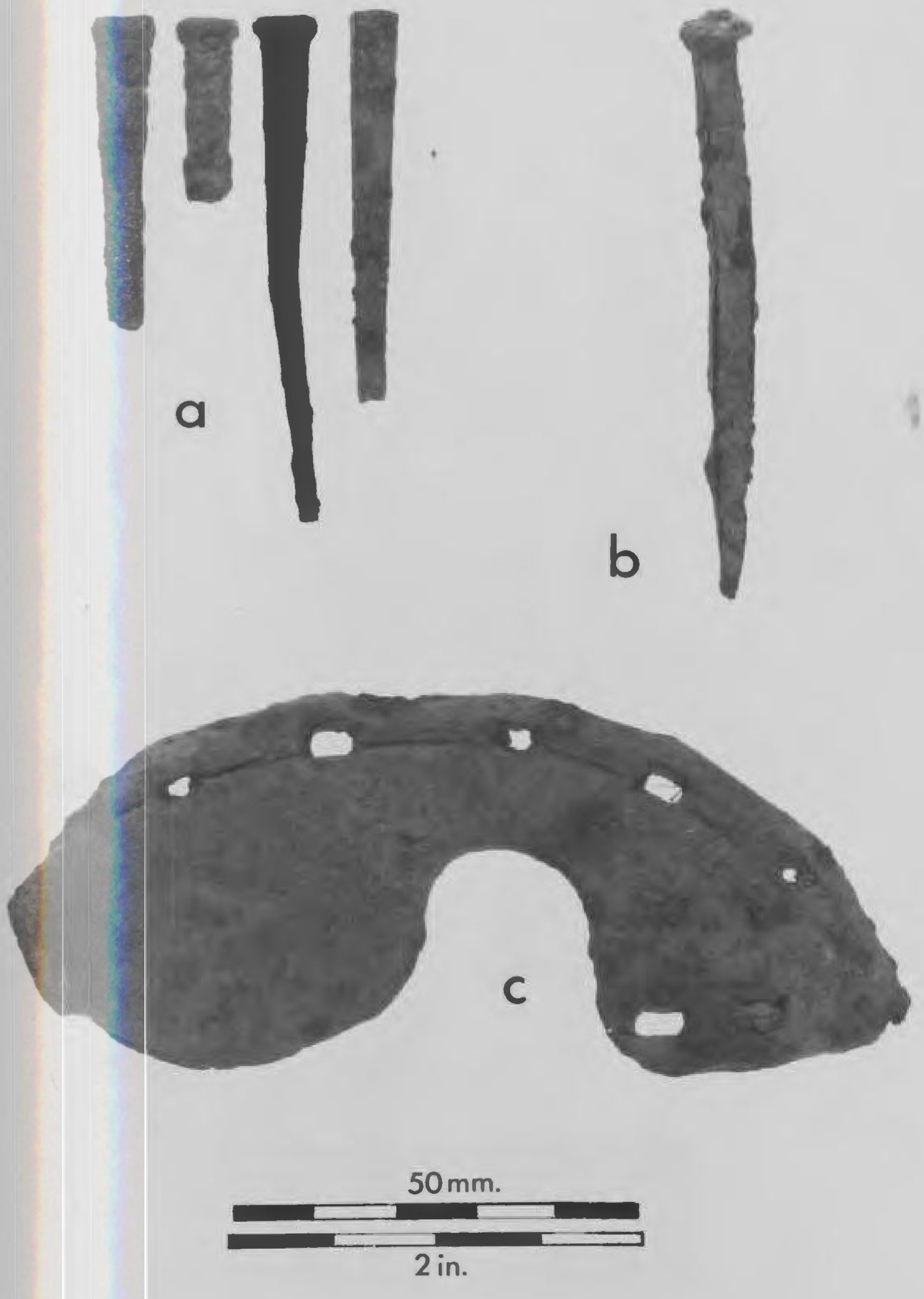

a
b
c
d
e
f
g
h
i
CfDl-1:244
10 mm

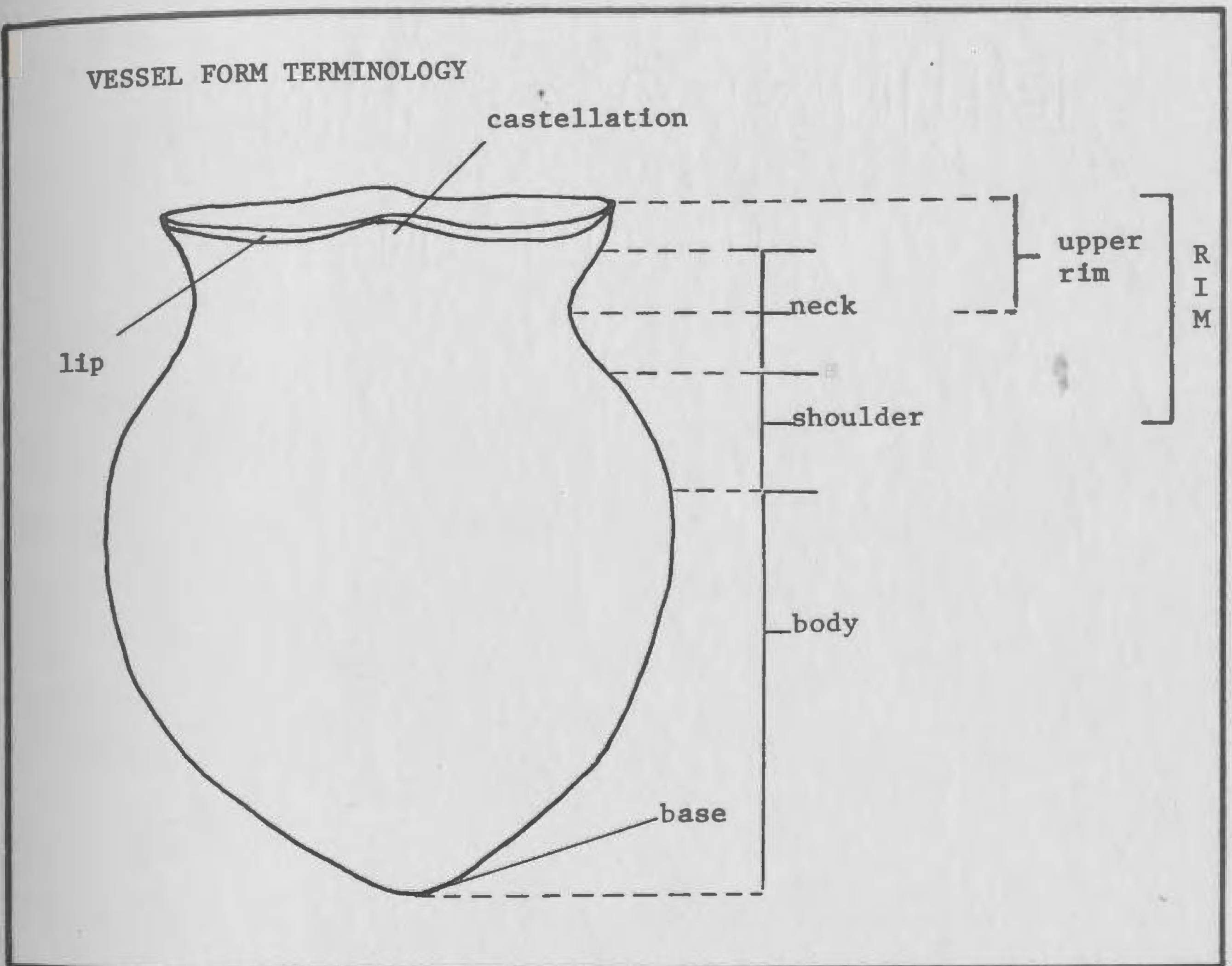
Figure 31 Historical artifacts - metal

a) machine cut nails with stamped heads

b) hand wrought rose head nail

c) oxen shoe


a
b
c
50 mm.
2 in.



(adapted from Keenlyside 1978:334)

FIGURE 32
Vessel form terminology

Figure 33 CfD1-1 rim sherd profile variation. Note: profiles are oriented such that the left side always represents the exterior surface of the rim.

CfDl-1 OXBOW SITE

RIM PROFILE VARIATION WITHIN 1978 SAMPLE

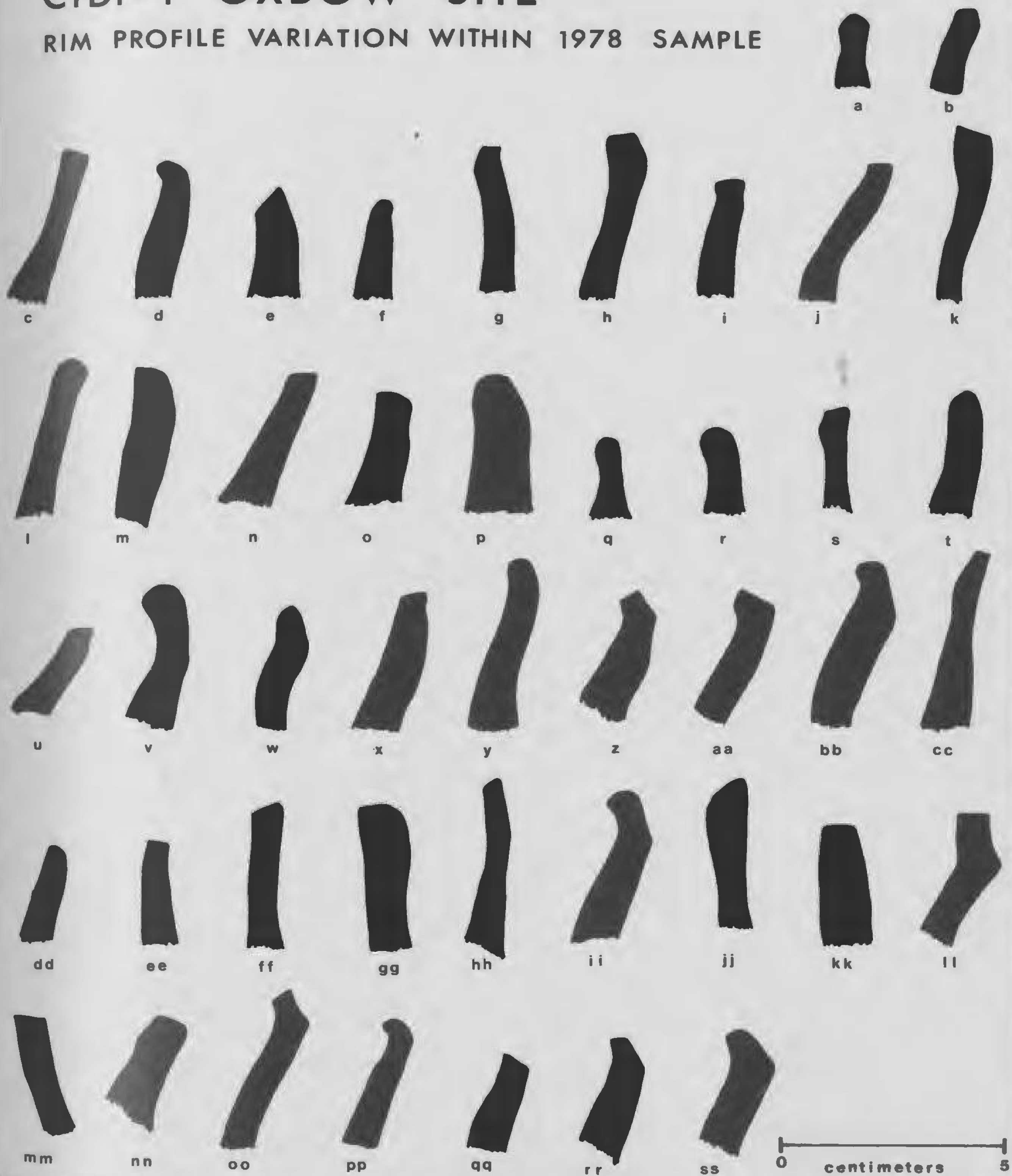
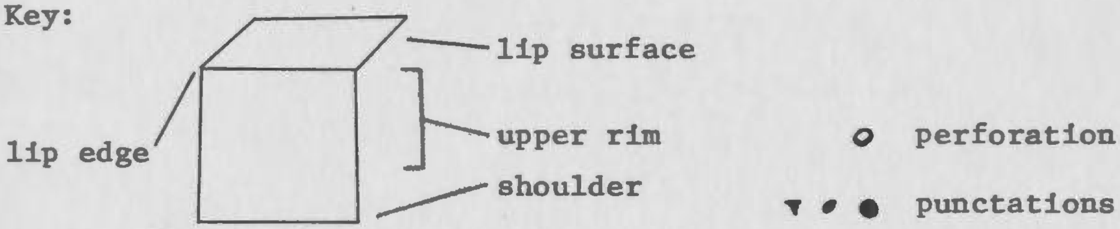
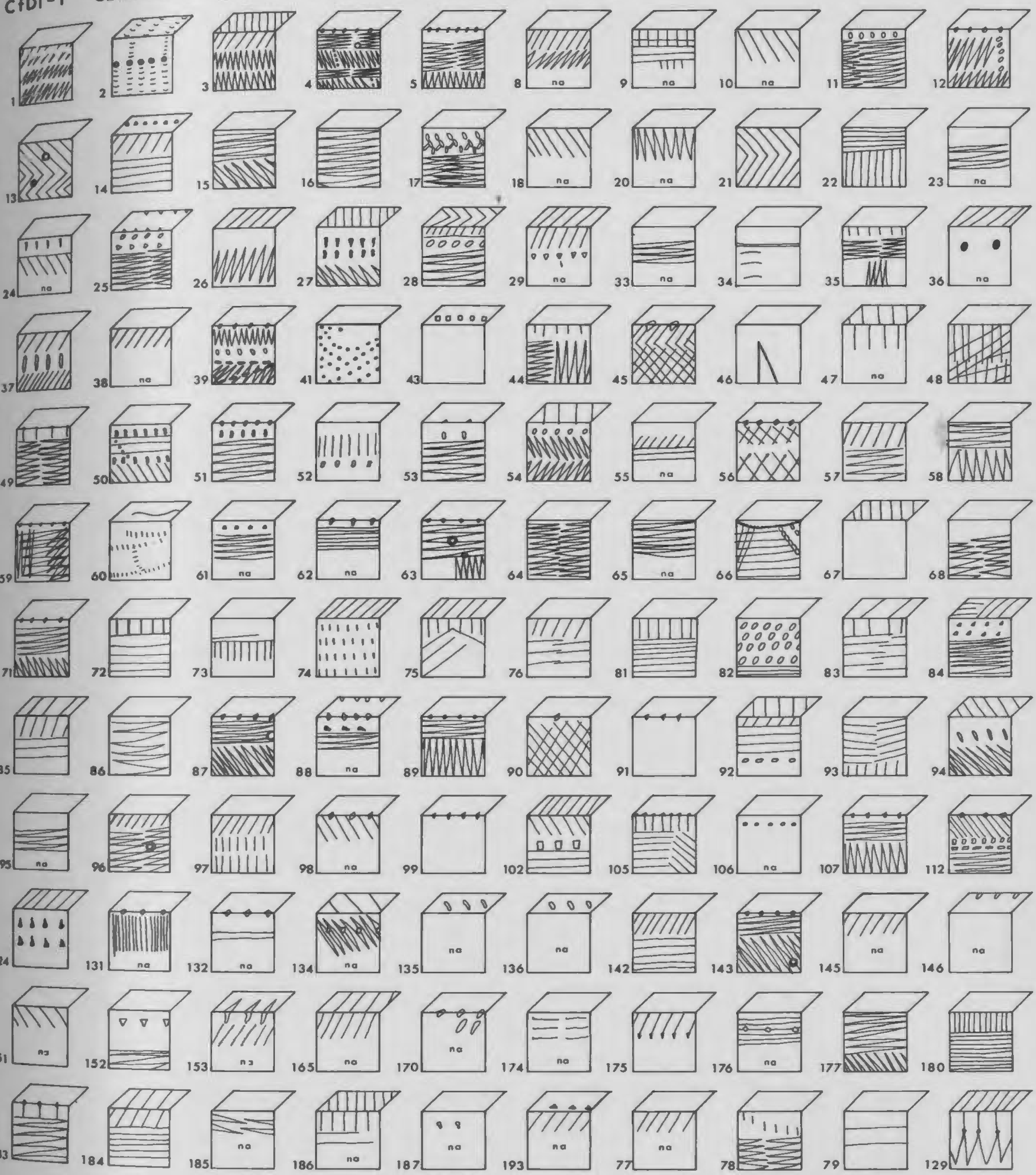


Figure 34 CfD1-1 Rim and lip ceramic decorative motifs

Key:



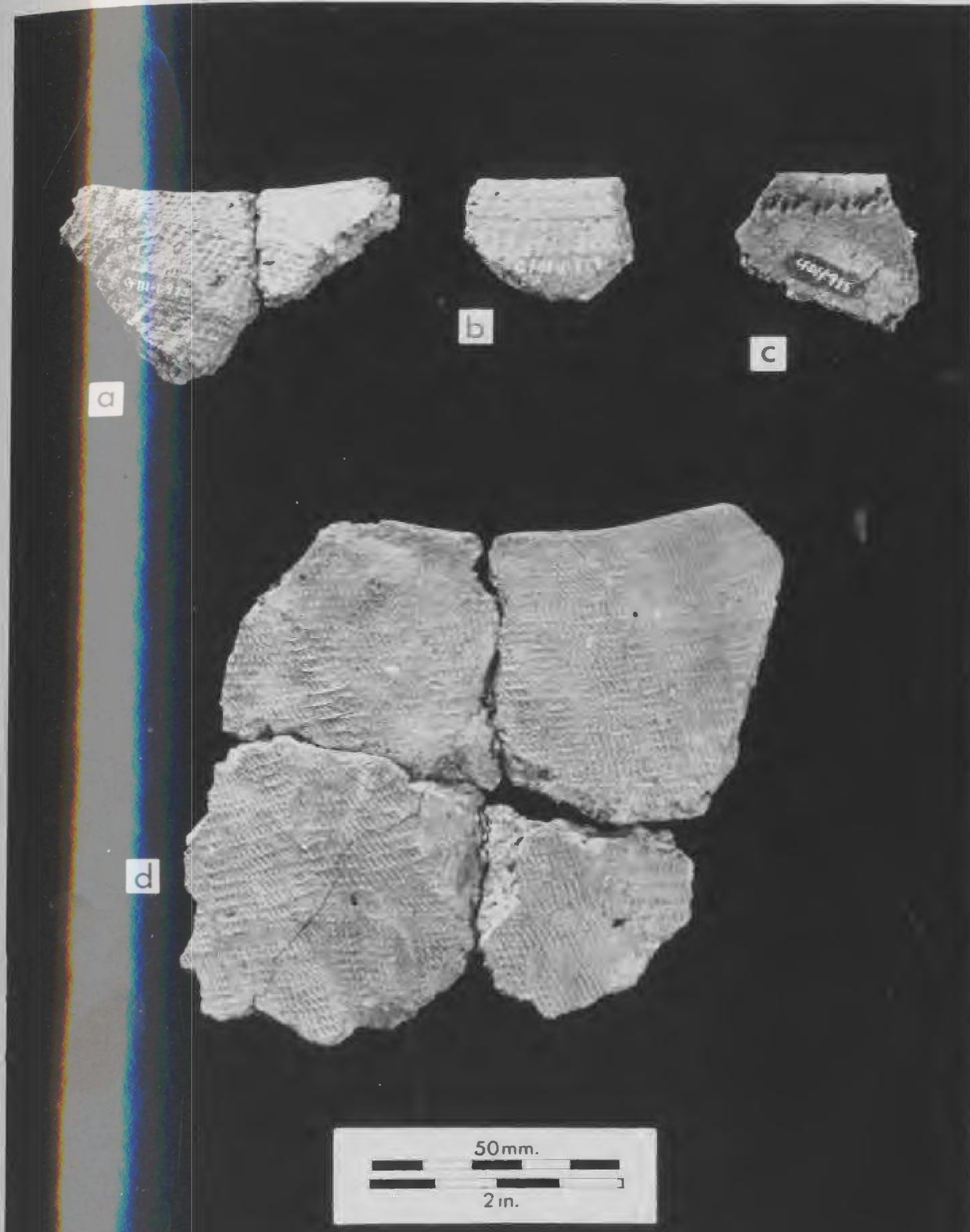
CfDl-1 CERAMIC RIM and LIP DECORATIVE MOTIFS



Vessels numbers five, 74, 82 and 84

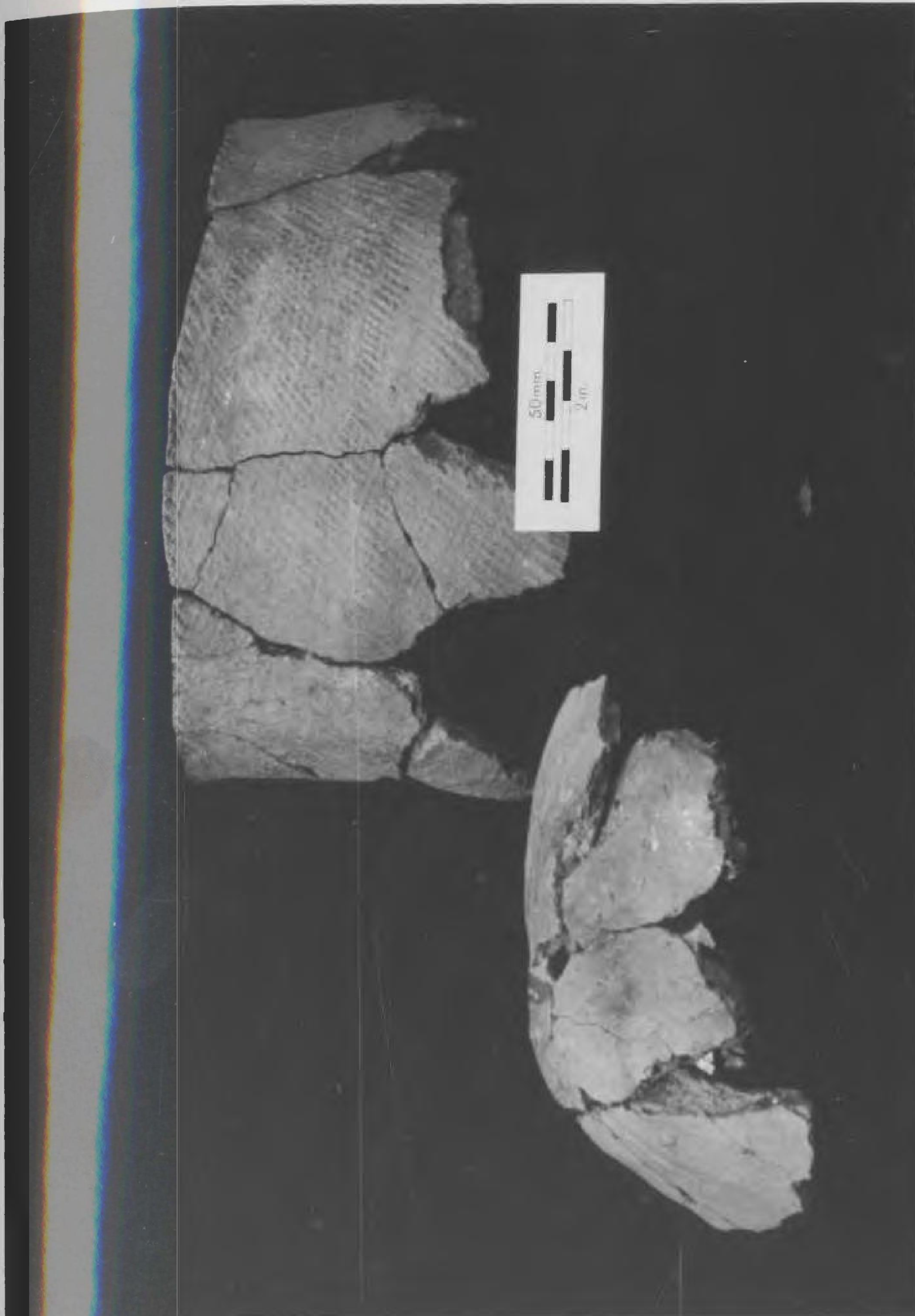
Figure 35 a–c) Interior rim decoration (a) vessel 82 (b) vessel 84 (c) vessel 74

d) vessel number five, reconstructed upper rim and body


a
b
c
d
50mm.
2 in.

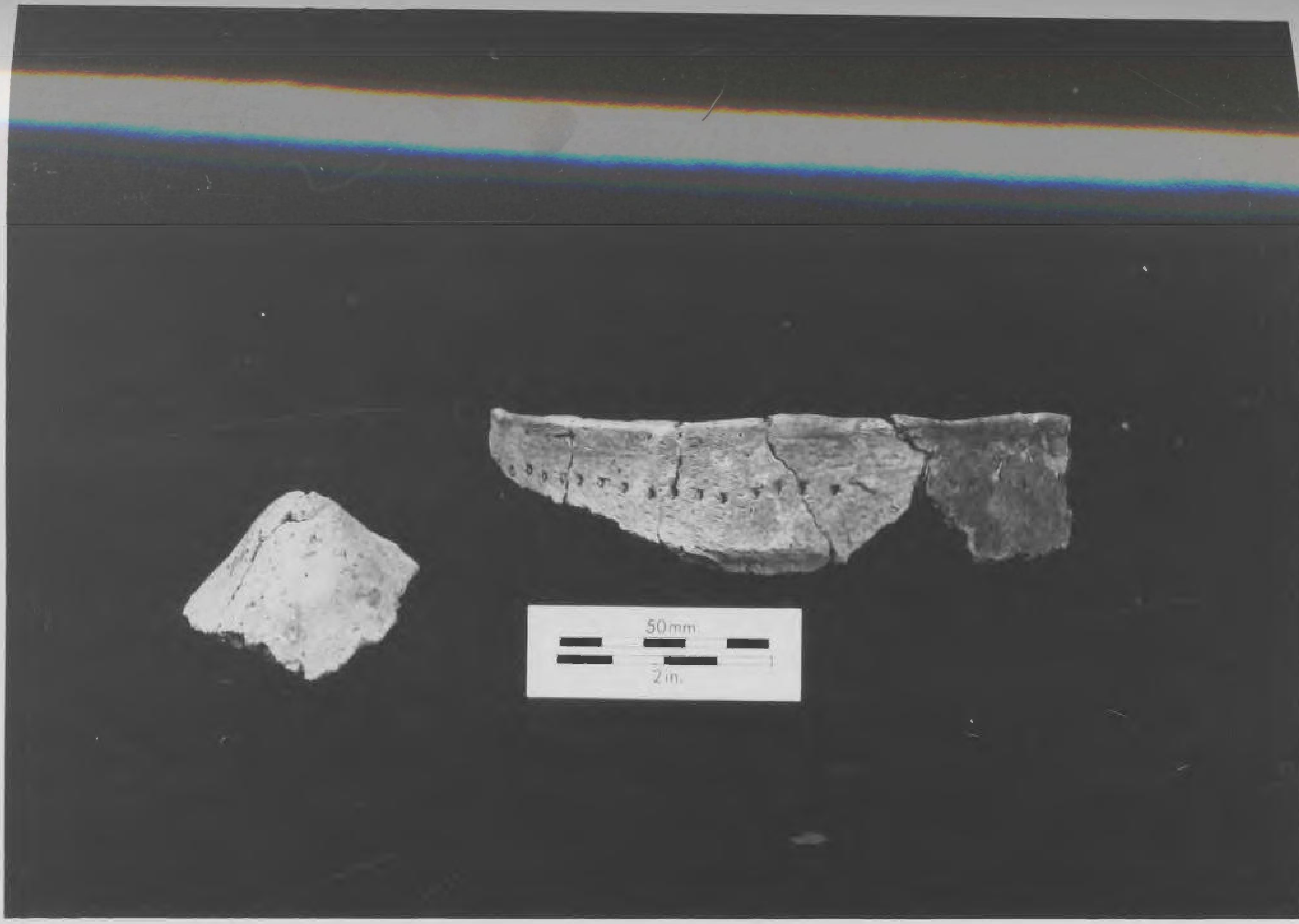
Vessel number one

Figure 36 Vessel number one, reconstructed rim and upper body with rounded base. The vessel is decorated with the rocker stamping application of a dentate tool. (see page 65 for a detailed description of the vessel sorting procedure).


50mm
2 in

Vessel number two

Figure 37 Rim and base sections of vessel two. The upper rim exhibits a vertical application of a cord wrapped stick with tool end being used to create a single encircling row of oval punctates in the neck area. (see page 65 for a detailed description of the vessel sorting procedure).


50mm
2in.

Vessel number three

Figure 38 A reconstructed upper body and rim section from vessel number three. The vessel is decorated with the rocker stamping application of an alternately notched tool.


50mm.
2 in.

Examples of CfDl-1 vessel attributes

Figure 39

a) vessel 41 exhibits use of a simple stamp circular punctate tool

b) vessel 74 exhibits use of a simple stamp rectangular punctate tool

c) simple stamp of an alternately notched tool edge

d) fragments of a simple stamped juvenile vessel

e) technique of drawing by incising

f) technique of drawing by trailing

g) a flat lipped rim sherd demonstrates a drilled perforation as well as a dentate tool applied by rocker stamping

h) a rounded lip rim sherd demonstrates punctations applied to the wet clay

i) a juvenile vessel rim sherd with encircling trailed line


a
b
c
d
e
f
g
h
i
50mm.
2in.

Examples of CfD1-1 vessel attributes

Figure 40

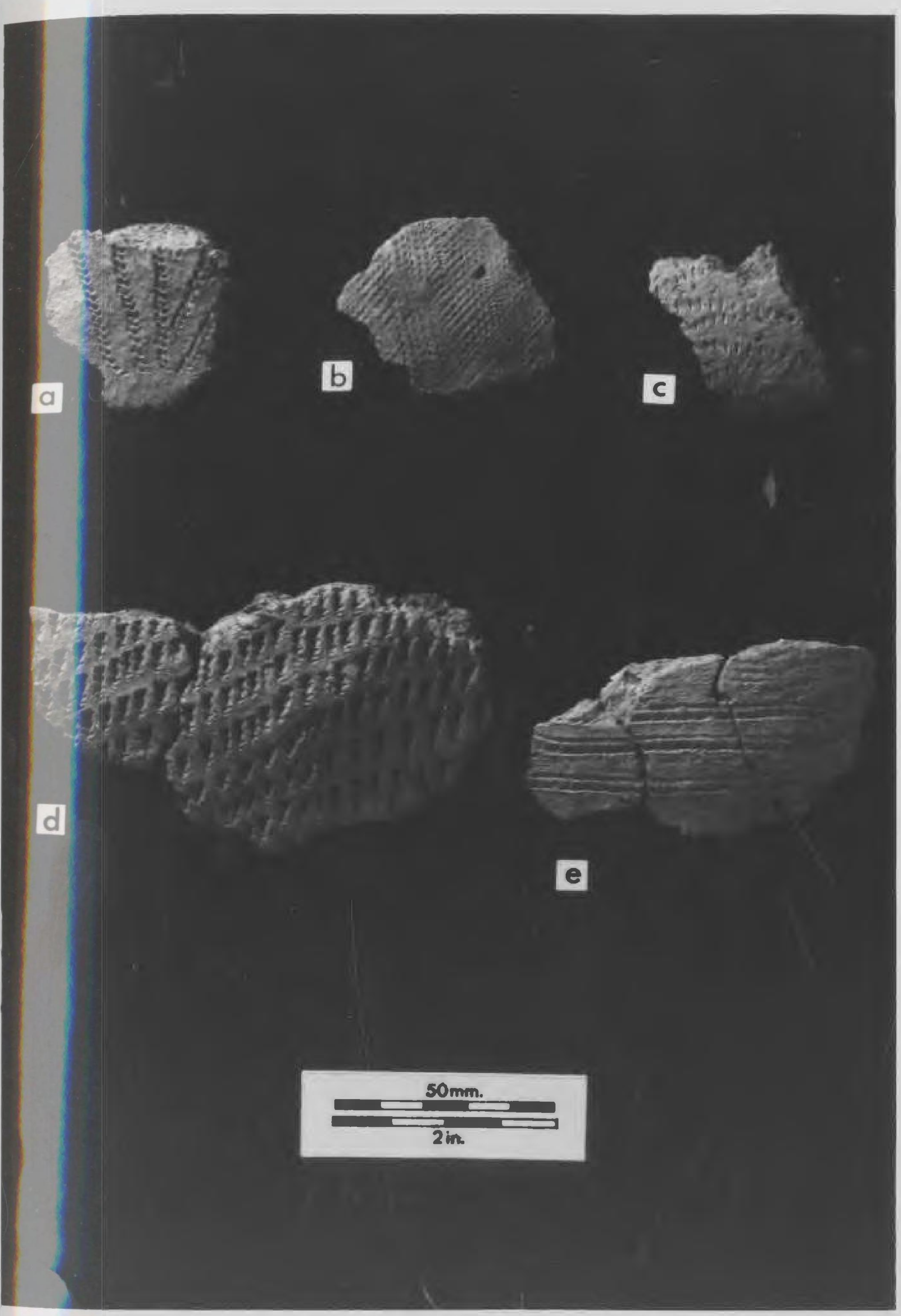
a) dragged stamp of crescent shaped tool end

b) rocker stamped application of a fine dentate tool

c) rocker stamped application of a cord wrapped stick

d) simple stamped punctations created by the obliquely applied end of a dentate tool

e) vessel 188 demonstrates the dragged stamping application of an alternately notched tool


a
b
c
d
e
50 mm.
2 in.

Castellation and rounded lip attributes

Figure 41

a) vessel 180 demonstrates a pointed castellation

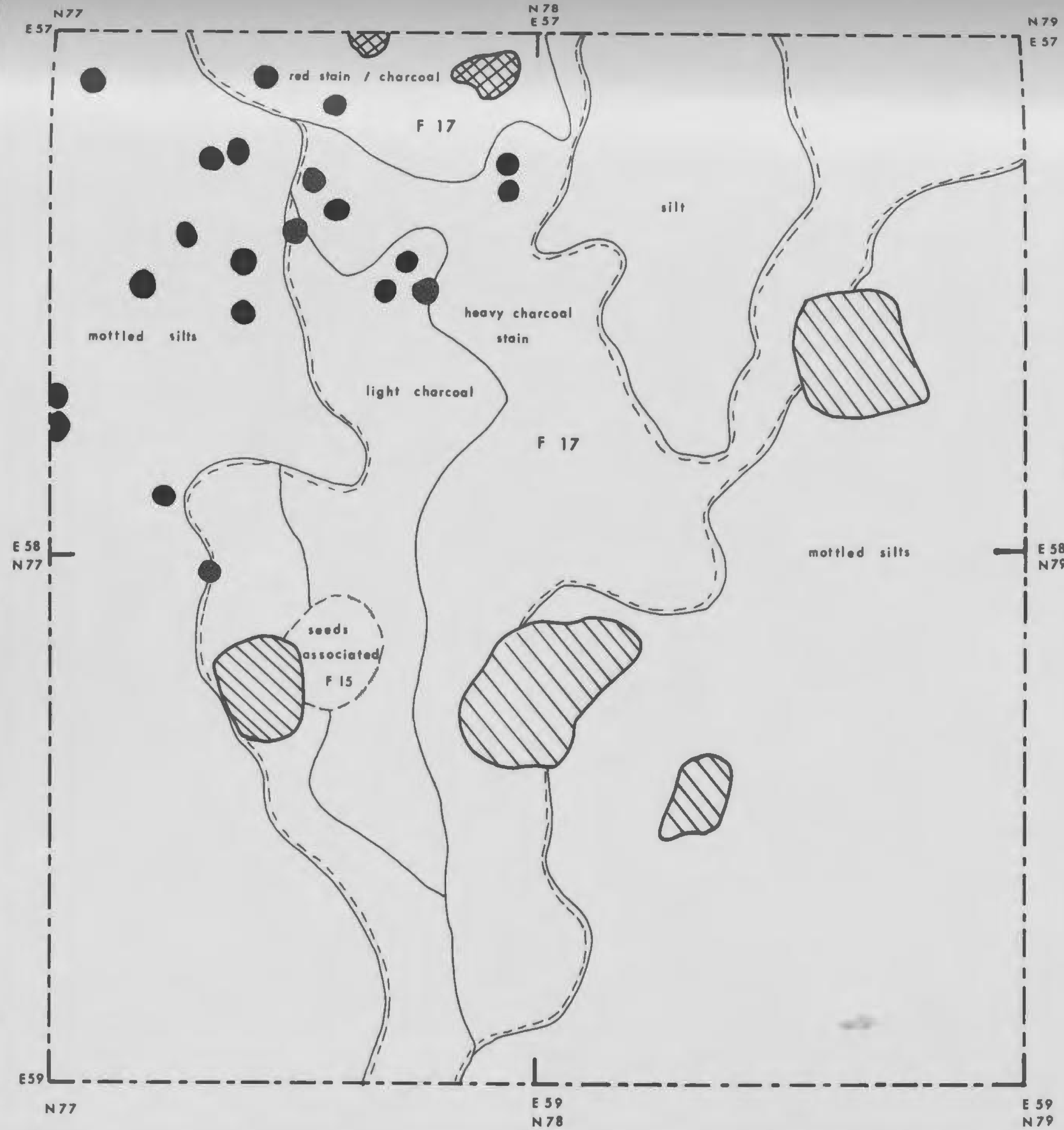
b) vessel 104 exhibits a rounded lip and an undecorated surface

c) vessel 97 exhibits a rounded castellation


a
b
c
50mm.
2 in.

Feature 17

Figure 42 Unit 78-4 indicating post moulds and feature 17 on the level 4 floor.



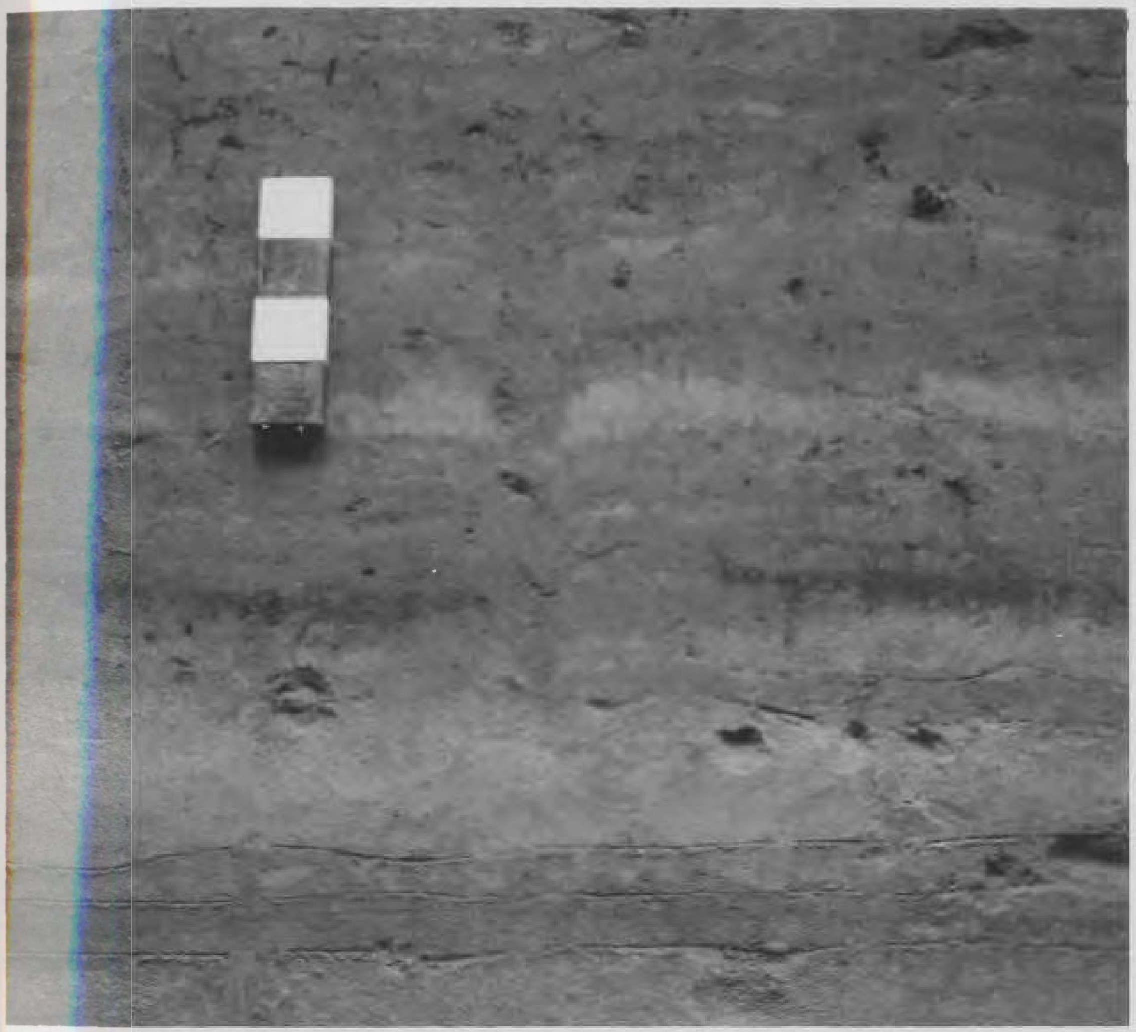
UNIT 78-4

LEVEL 4 FLOOR

FEATURE 17

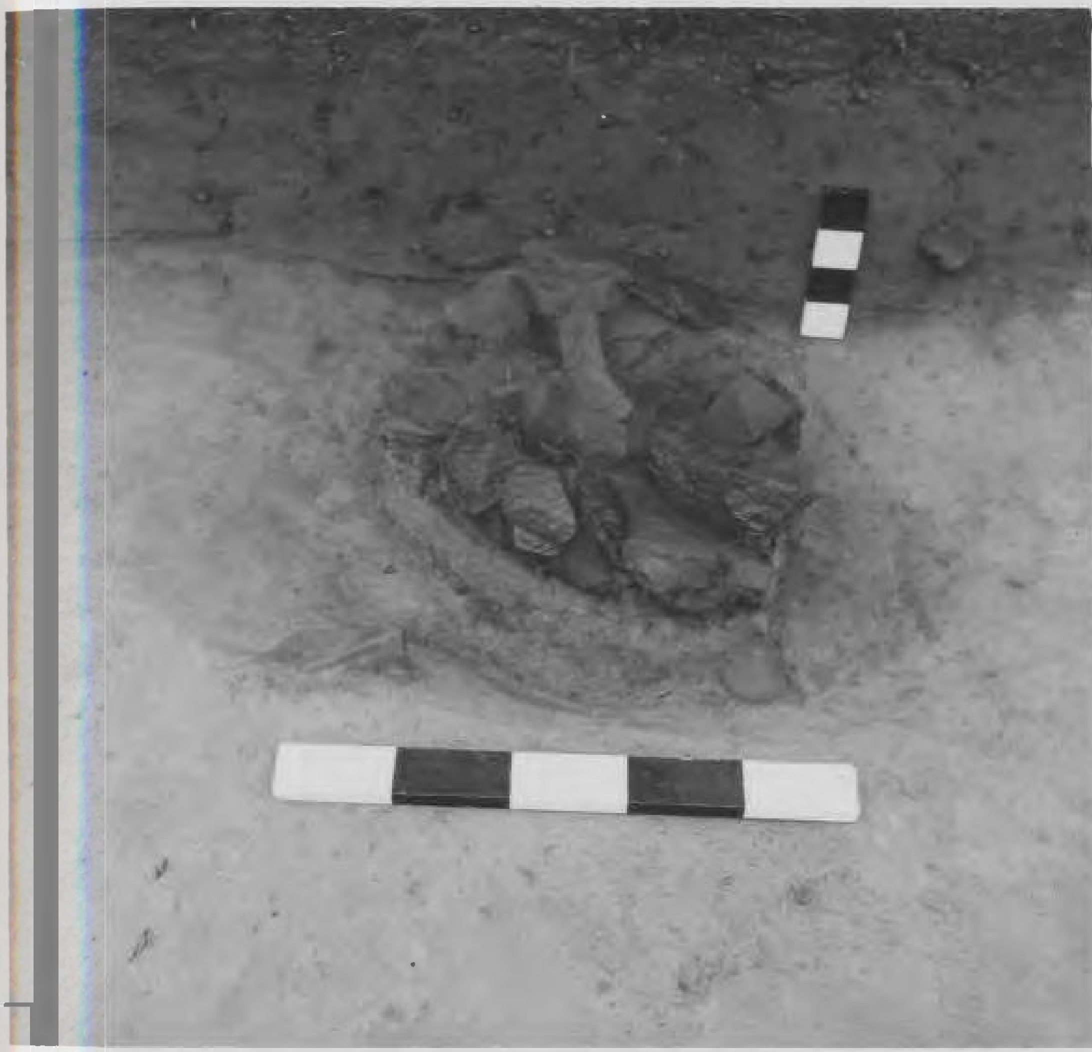
Post mould profile unit 78-4

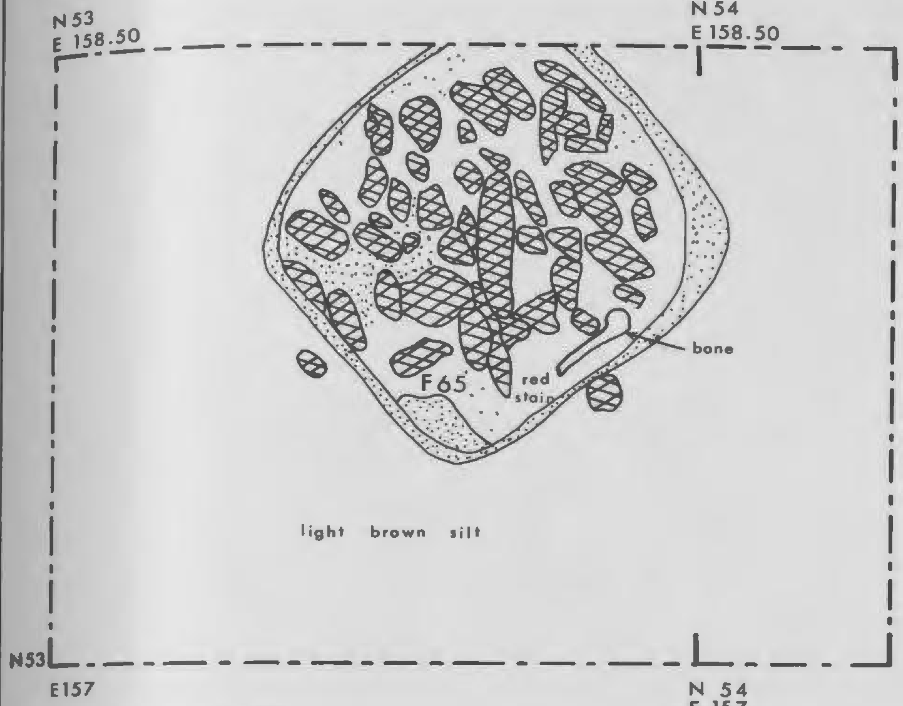
Figure 43 Profile of a post mould as it occurred in cross-section on the South wall of unit 78-4. Scale: 20 cms.



Feature 55

Figure 44 Unit 78A, looking West over feature 55, a platform of fire cracked rocks. Scales: 20 and 50 cms.



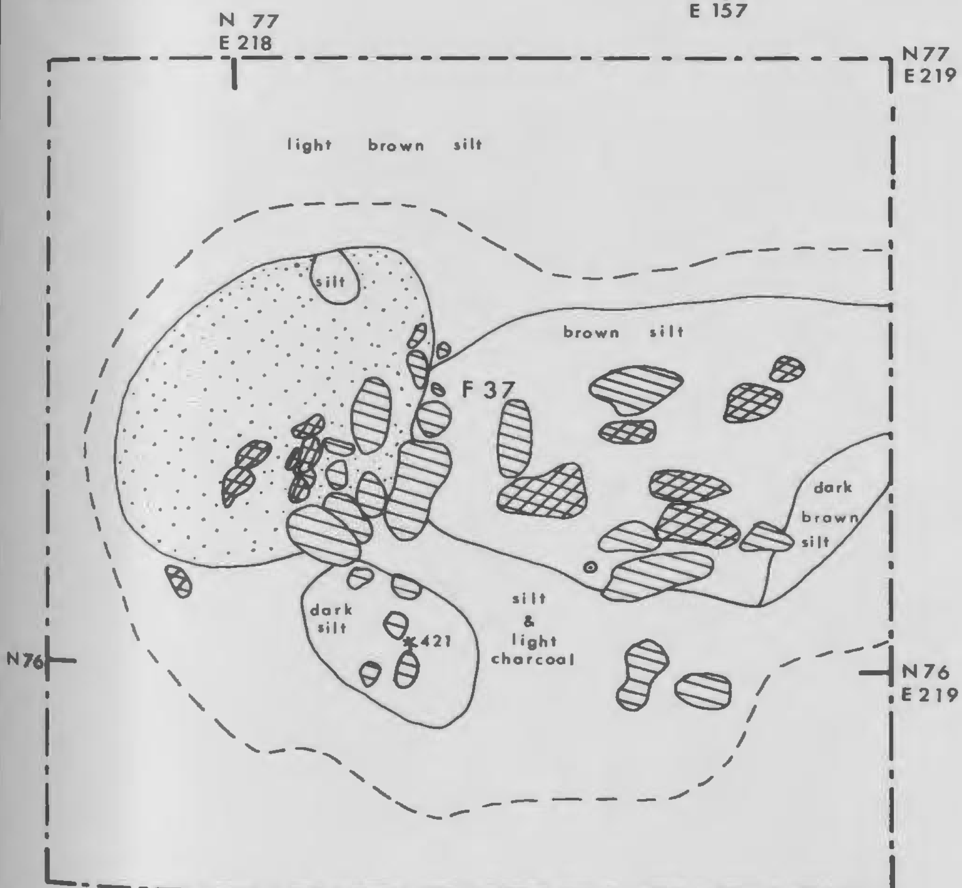


UNIT 78-A

FEATURE 65

LEVEL A/1014-A/1027

0 CENTIMETERS 50



UNIT 78-10

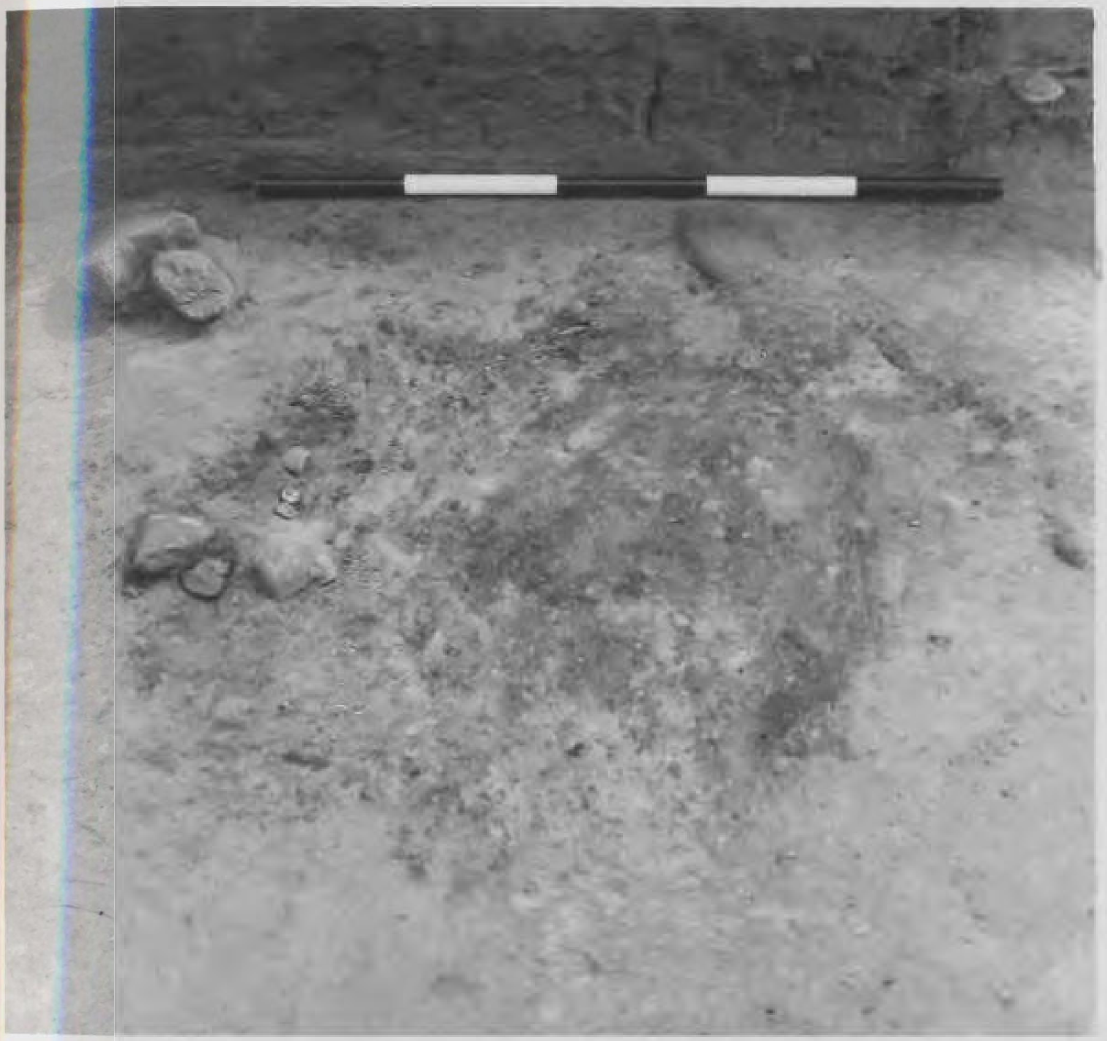
FEATURE 37

LEVEL A/995-A/1020

0 CENTIMETERS 50

Hearth area, unit 78-12

Figure 46 A form B hearth feature from the upper levels of unit 78-12. Scale: one metre.



Hearth areas 50 and 62, unit 78-11

Figure 47 Hearth features 50 and 62 unit 78-11, contents and distribution of staining

Key:* fire cracked rock

rock

flake •

core ⊙

artifact *

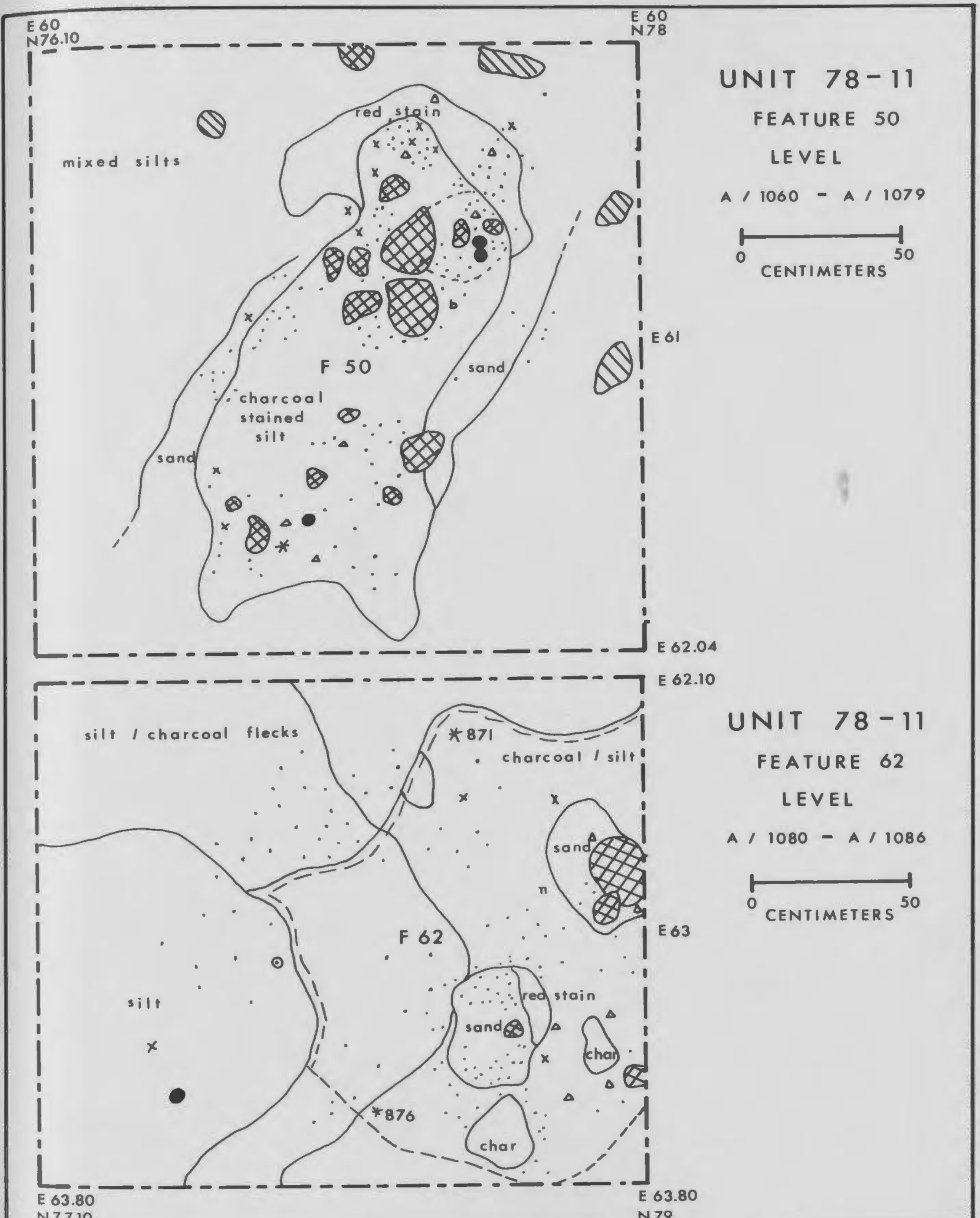
pottery sherd ×

post mould ●

rd rodent disturbed

char charcoal stain

*This key also applies to Figures 65, 66, 67 and 68.



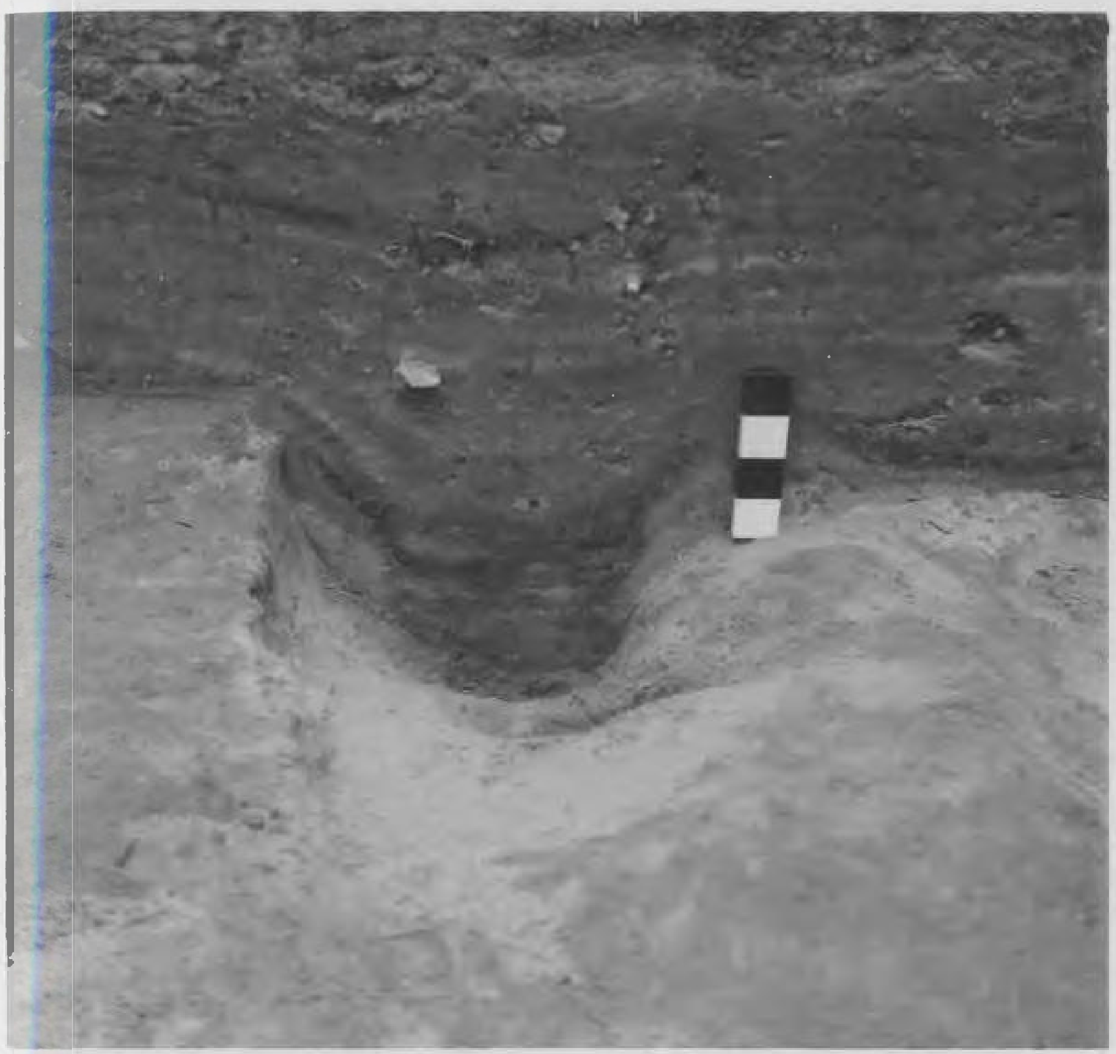
E 60
N76.10
E 60
N78
UNIT 78-11
FEATURE 50
LEVEL
A / 1060 - A / 1079
0
50
CENTIMETERS
mixed silts
red stain
F 50
sand
charcoal
stained
silt
sand
E 61
E 62.04
E 62.10
UNIT 78-11
FEATURE 62
LEVEL
A / 1080 - A / 1086
0
50
CENTIMETERS
silt / charcoal flecks
871
charcoal / silt
sand
F 62
E 63
silt
red stain
sand
char
876
char
E 63.80
N77.10
E 63.80
N79

West wall profile of hearth feature, unit 78-11

Figure 48 West wall of unit 78-11 showing feature 38, a form B hearth, in cross-section. Note post moulds gently sloping towards central portion of this charcoal and red stained lens. Scale: 20 cms.

South wall profile of pit feature, unit 78-11

Figure 49 A lightly charcoal stained pit along the South wall of unit 78-11. This pit is connected to a form D feature by a charcoal band. Scale: 20 cms.

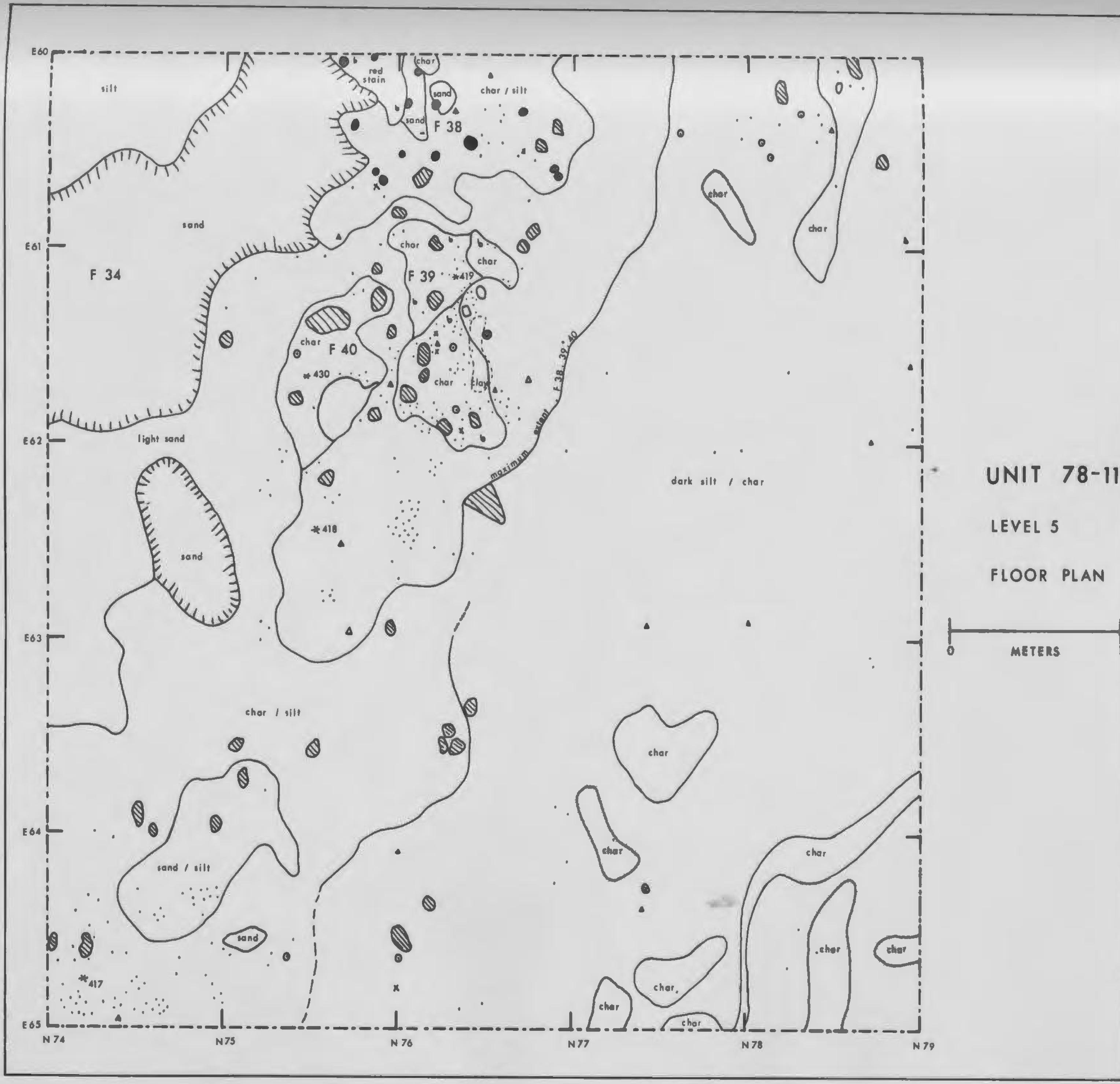


West wall profile of three feature forms unit 78-10

Figure 50 A combination of three feature forms, a pit, a pit hearth and a form B hearth, in profile along the West wall of unit 78-10. Scale: 50 cms.

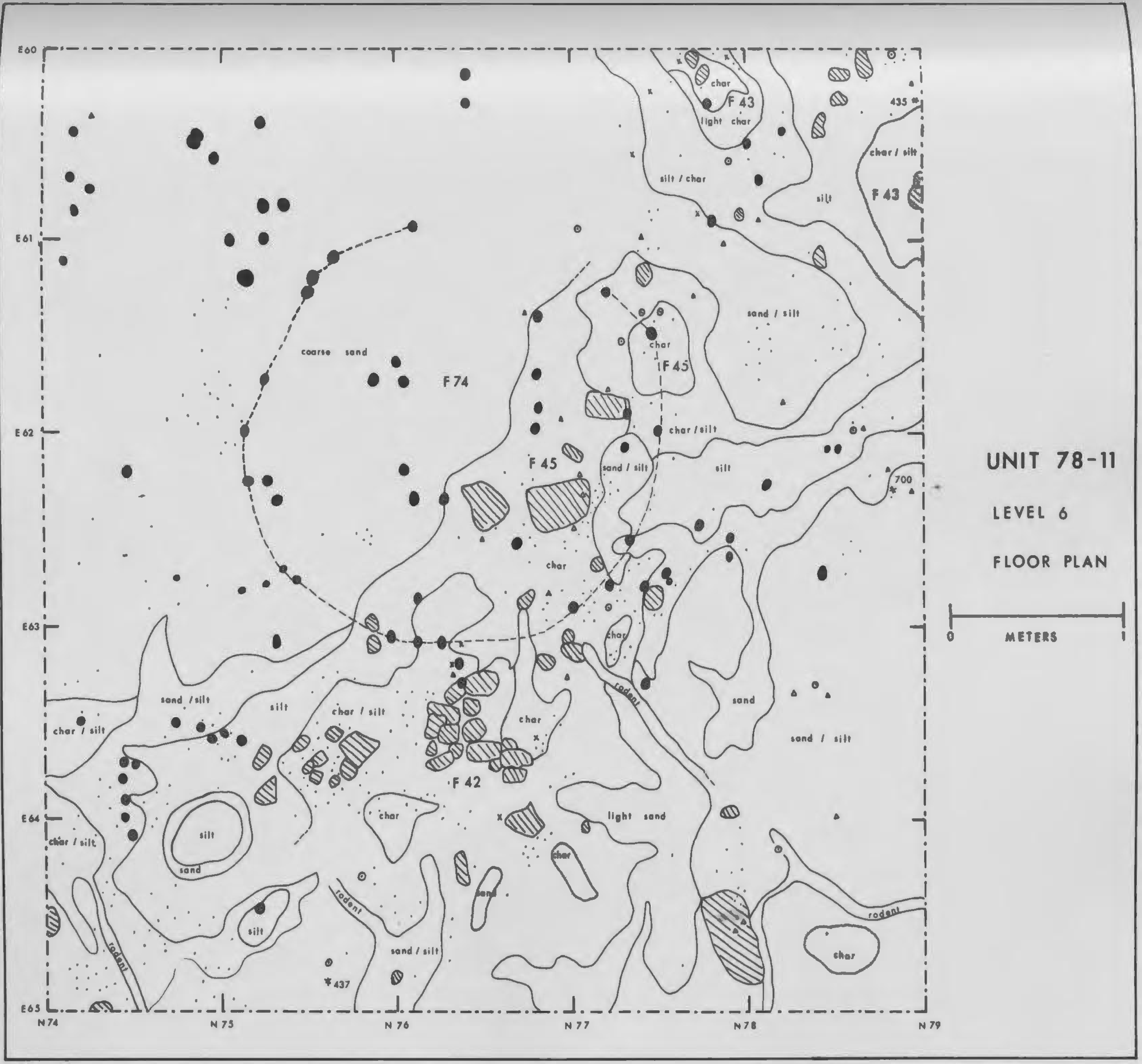
Feature 36, unit 78-10

Figure 51 The "washed" look of feature 36, unit 78-10. The shallow dip in the central portion of the photograph produced a heavy concentration of chipping debris. Scale: 50 cms.


UNIT 78-11
LEVEL 5
FLOOR PLAN
0
METERS
1
E60
E61
E62
E63
E64
E65
N 74
N 75
N 76
N 77
N 78
N 79
silt
sand
F 34
light sand
red stain
char
sand
sand
F 38
char / silt
char
F 39
*419
char
char
F 40
*430
char
clay
maximum extent F 38, 39, 40
*418
dark silt / char
char / silt
char
char
char
char
sand / silt
sand
*417
char
char
char
char
char
char
char
char

Floor plan of level 6 unit 78-11

Figure 53 Unit 78-11, floor plan and distribution of contents within level 6. House structure (feature 74) indicated by broken line.


UNIT 78-11
LEVEL 6
FLOOR PLAN
0
METERS
1
E60
E61
E62
E63
E64
E65
N74
N75
N76
N77
N78
N79
F 43
F 74
F 45
F 42
coarse sand
char
light char
silt / char
char / silt
silt
sand / silt
sand
light sand
rodent
435
437
700

Floor plan of level 7 unit 78-11

Figure 54 Unit 78-11, floor plan and distribution of contents within level 7. Note the concentration of cultural debris in areas of features 46 and 47, two form B features.

UNIT 78-11

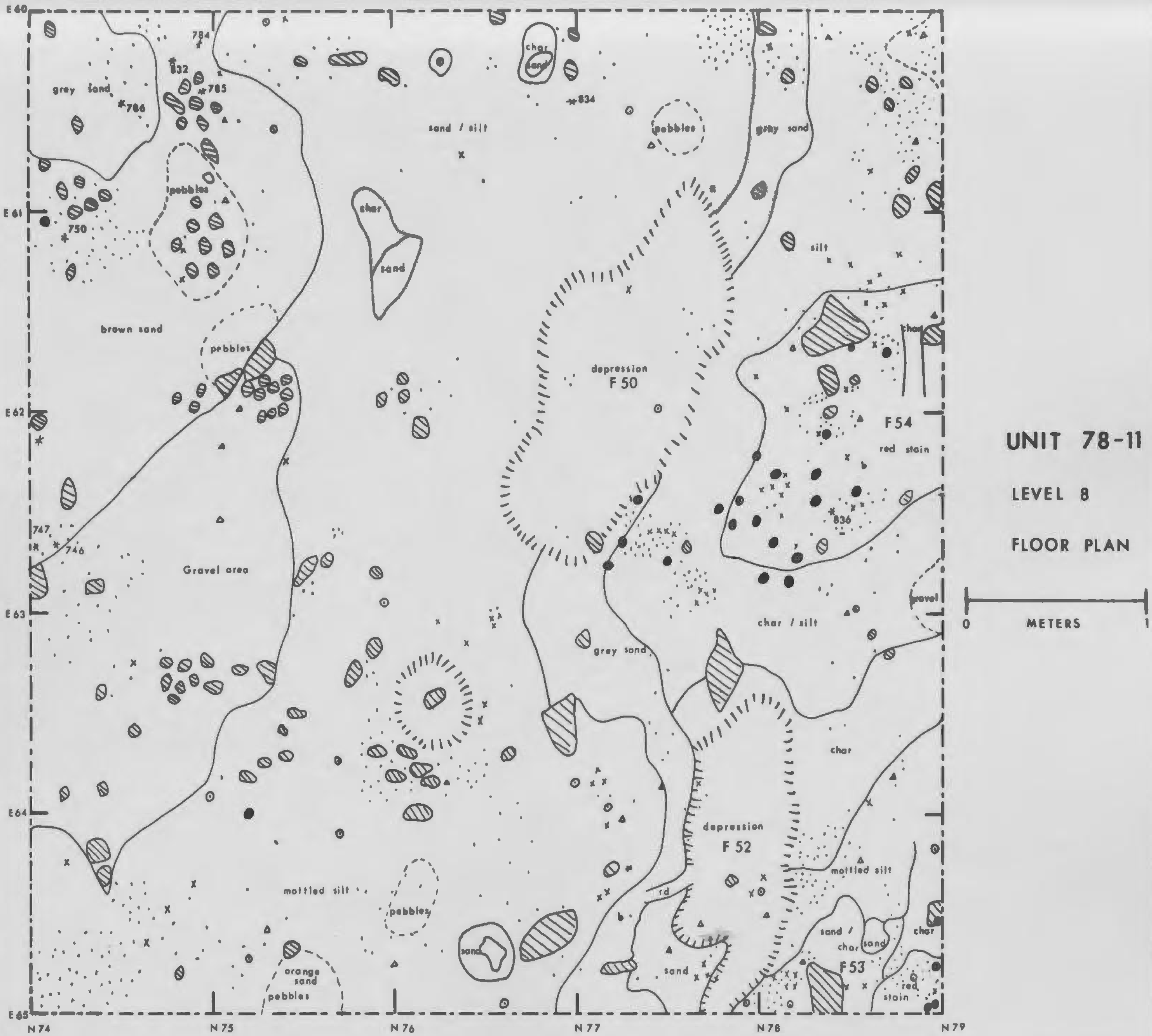
LEVEL 7

FLOOR PLAN

0 METERS 1

Floor plan of level 8 unit 78-11

Figure 55 Unit 78-11, floor plan and distribution of contents within level 8. Note concentrations of cultural debris in areas of features 53 and 54.



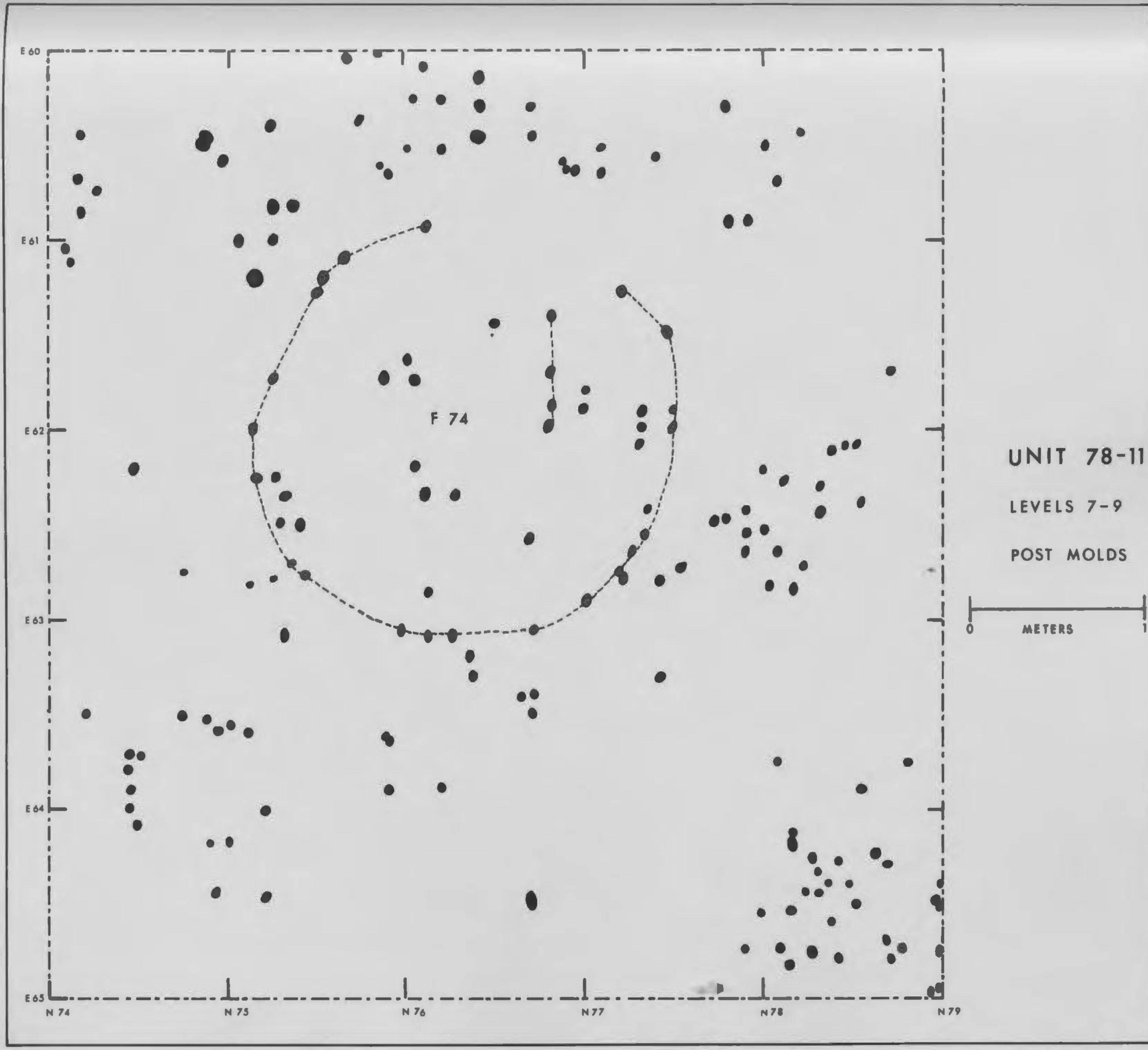
UNIT 78-11

LEVEL 8

FLOOR PLAN

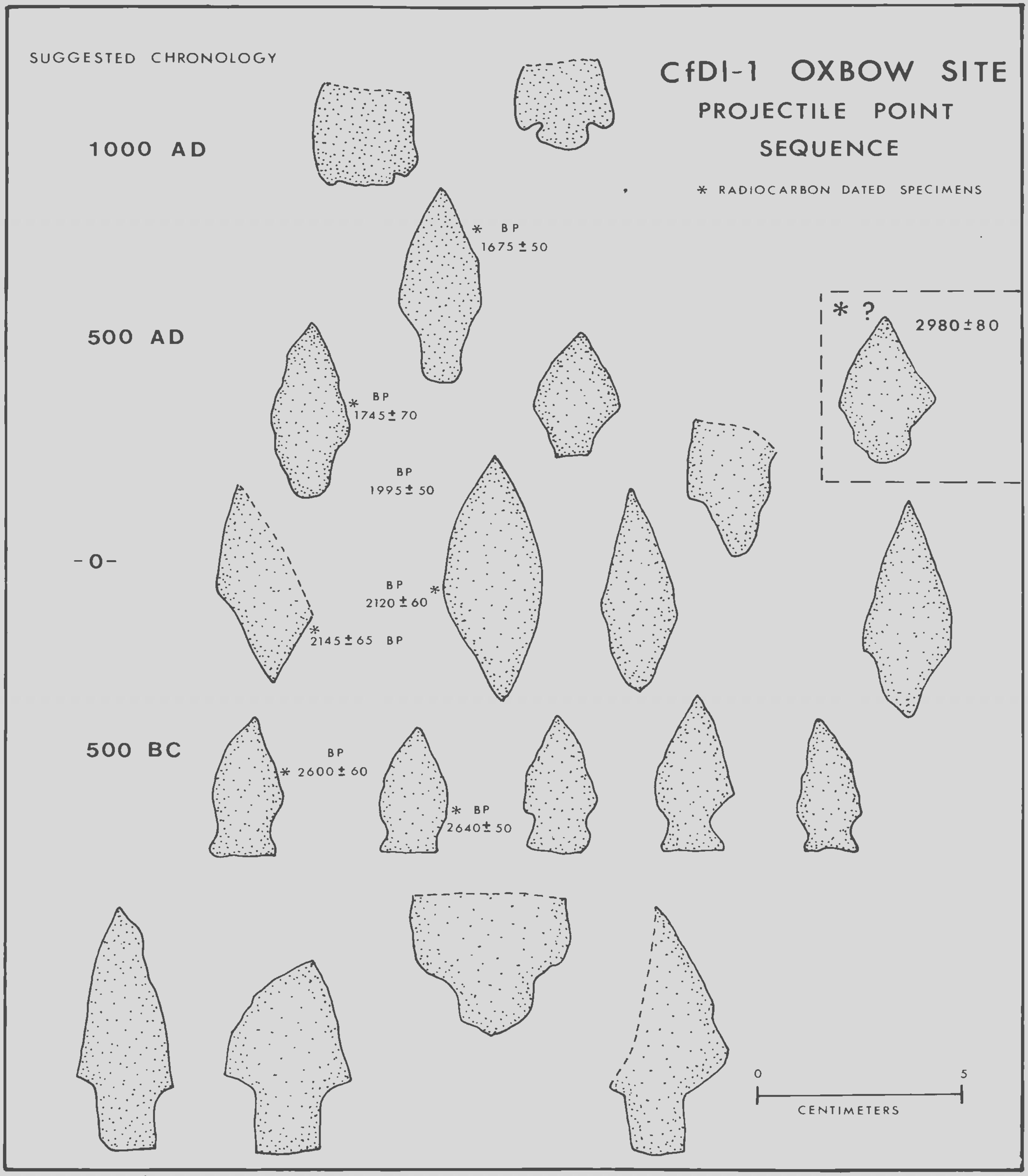
Post moulds, levels 5 through 9 unit 78-11

Figure 56 Fifty centimeters of post mould features have been recorded on this one drawing. The information was taken from level drawings 5 through 9, Unit 78-11. A ● represents a single post mould drawn to scale.


UNIT 78-11
LEVELS 7-9
POST MOLDS
0
METERS
1
F 74
E 60
E 61
E 62
E 63
E 64
E 65
N 74
N 75
N 76
N 77
N 78
N 79

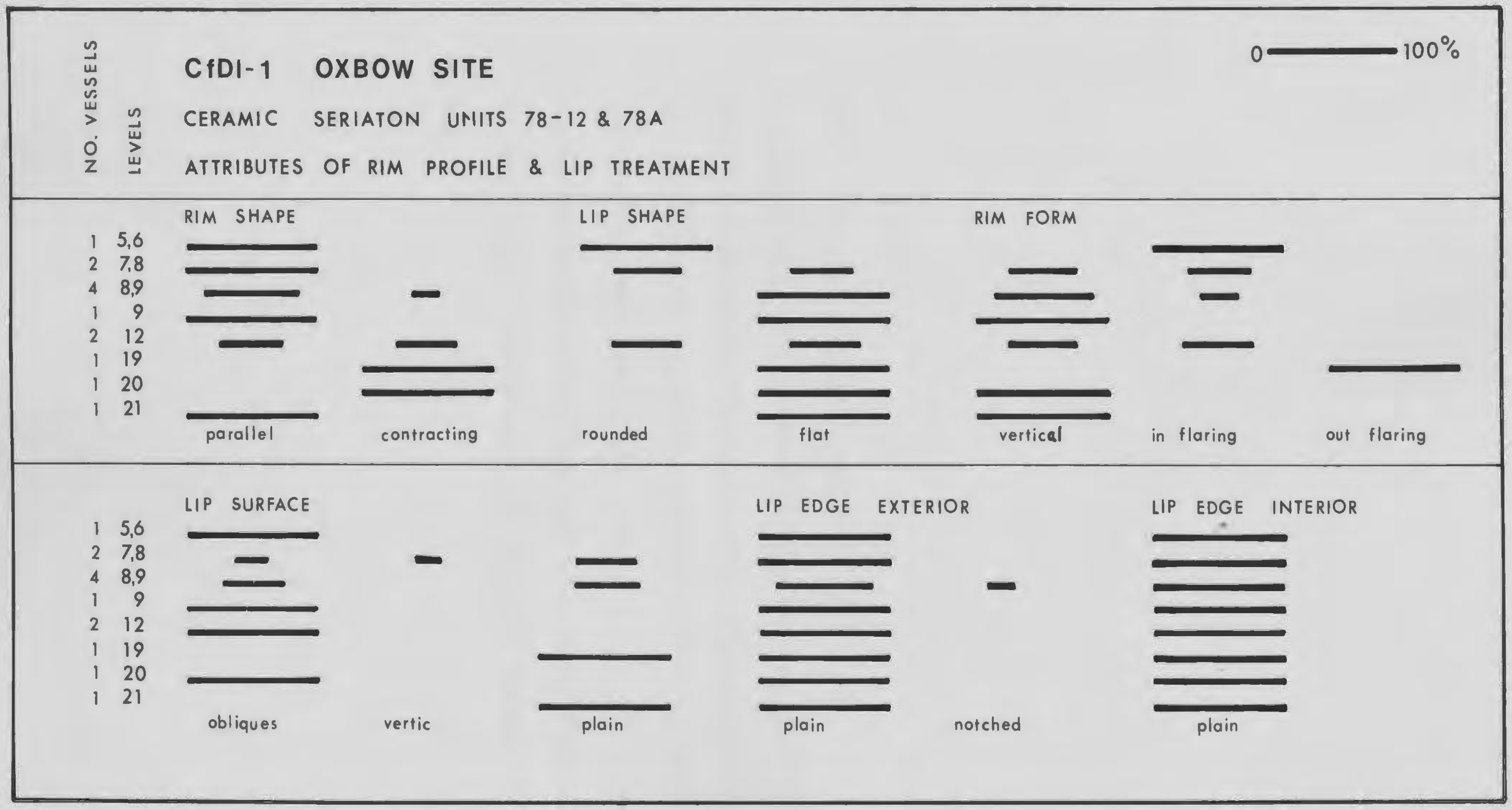
CfDl-1 projectile point sequence

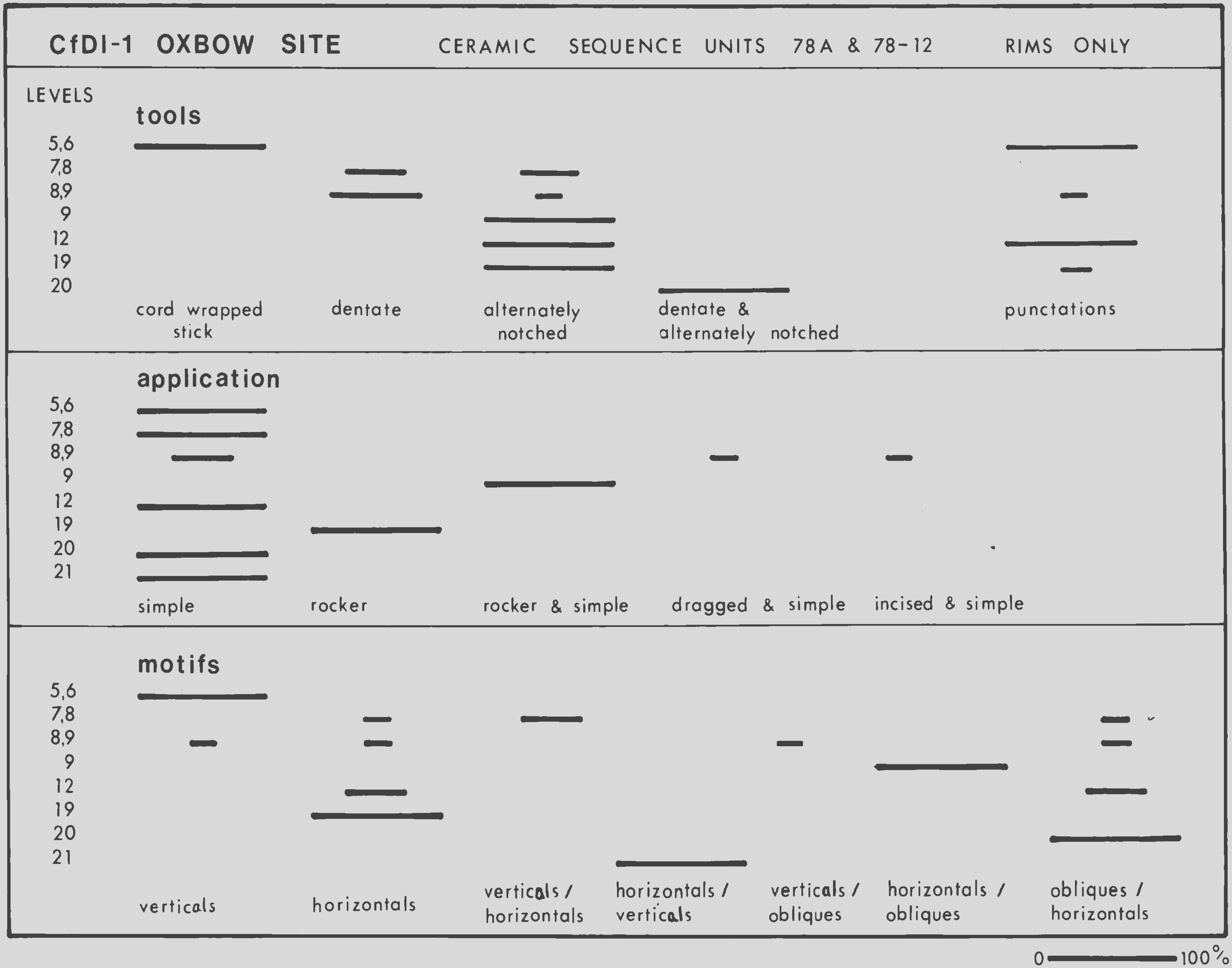
Figure 57 The Oxbow site projectile point sequence. The specimens illustrated are from the entire site area and have been chronologically ordered through a close examination and comparison of unit and cross-site stratigraphy as well as by radiocarbon dates. Two projectile points, one in the lower left and another in the upper right corner of the illustration, were excavated during the 1979 season.


SUGGESTED CHRONOLOGY
CfDl-1 OXBOW SITE
PROJECTILE POINT
SEQUENCE
* RADIOCARBON DATED SPECIMENS
1000 AD
500 AD
-0-
500 BC
* BP 1675 ± 50
* ? 2980±80
* BP 1745 ± 70
BP 1995 ± 50
BP 2120 ± 60 *
* 2145 ± 65 BP
BP * 2600 ± 60
* BP 2640 ± 50
0
5
CENTIMETERS

CfDl-1 area B ceramic seriation

Figure 58 A seriation of ceramic attributes concerning rim profiles and the decorative treatment received by lip surfaces and edges of the rim. This chart involves only those rim sherd vessels from units 78-12 and 78A.

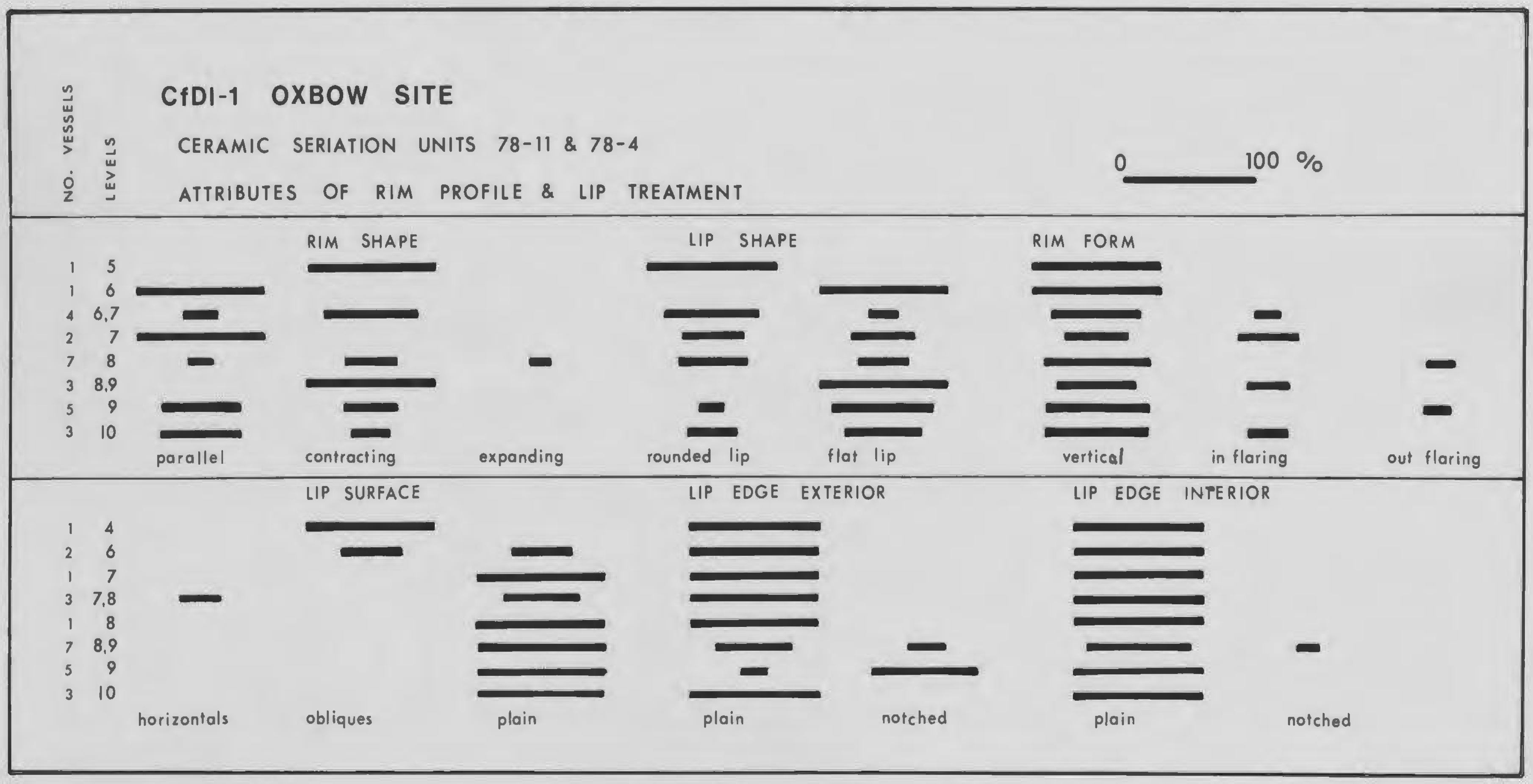

CfDl-1 OXBOW SITE
CERAMIC SERIATON UNITS 78-12 & 78A
ATTRIBUTES OF RIM PROFILE & LIP TREATMENT
0 100%
NO. VESSELS
LEVELS
1 5,6
2 7,8
4 8,9
1 9
2 12
1 19
1 20
1 21
RIM SHAPE
parallel
contracting
LIP SHAPE
rounded
flat
RIM FORM
vertical
in flaring
out flaring
LIP SURFACE
obliques
vertic
plain
LIP EDGE EXTERIOR
plain
notched
LIP EDGE INTERIOR
plain



CfDI-1 OXBOW SITE
CERAMIC SEQUENCE UNITS 78A & 78-12
RIMS ONLY
LEVELS
tools
5,6
7,8
8,9
9
12
19
20
cord wrapped stick
dentate
alternately notched
dentate & alternately notched
punctations
application
5,6
7,8
8,9
9
12
19
20
21
simple
rocker
rocker & simple
dragged & simple
incised & simple
motifs
5,6
7,8
8,9
9
12
19
20
21
verticals
horizontals
verticals / horizontals
horizontals / verticals
verticals / obliques
horizontals / obliques
obliques / horizontals
0
100%

CfD1-1 area A ceramic seriation

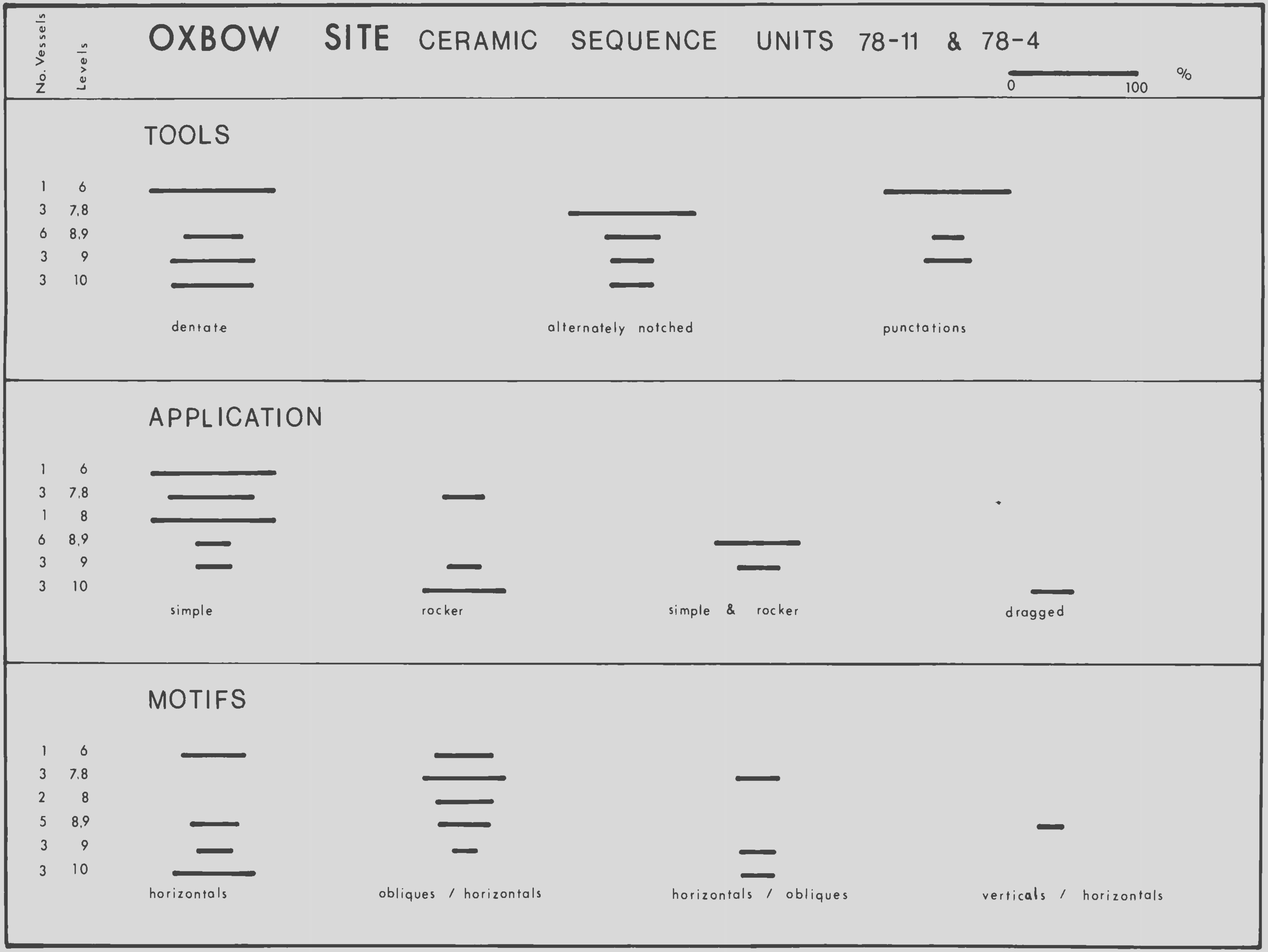
Figure 60 A seriation of ceramic attributes concerning rim profiles and the decorative treatment received by lip surfaces and edges of rim sherd vessels from units 78-11 and 78-4.



CfDl-1 OXBOW SITE
CERAMIC SERIATION UNITS 78-11 & 78-4
ATTRIBUTES OF RIM PROFILE & LIP TREATMENT
NO. VESSELS
LEVELS
0 100 %
RIM SHAPE
LIP SHAPE
RIM FORM
1 5
1 6
4 6,7
2 7
7 8
3 8,9
5 9
3 10
parallel
contracting
expanding
rounded lip
flat lip
vertical
in flaring
out flaring
LIP SURFACE
LIP EDGE EXTERIOR
LIP EDGE INTERIOR
1 4
2 6
1 7
3 7,8
1 8
7 8,9
5 9
3 10
horizontals
obliques
plain
plain
notched
plain
notched

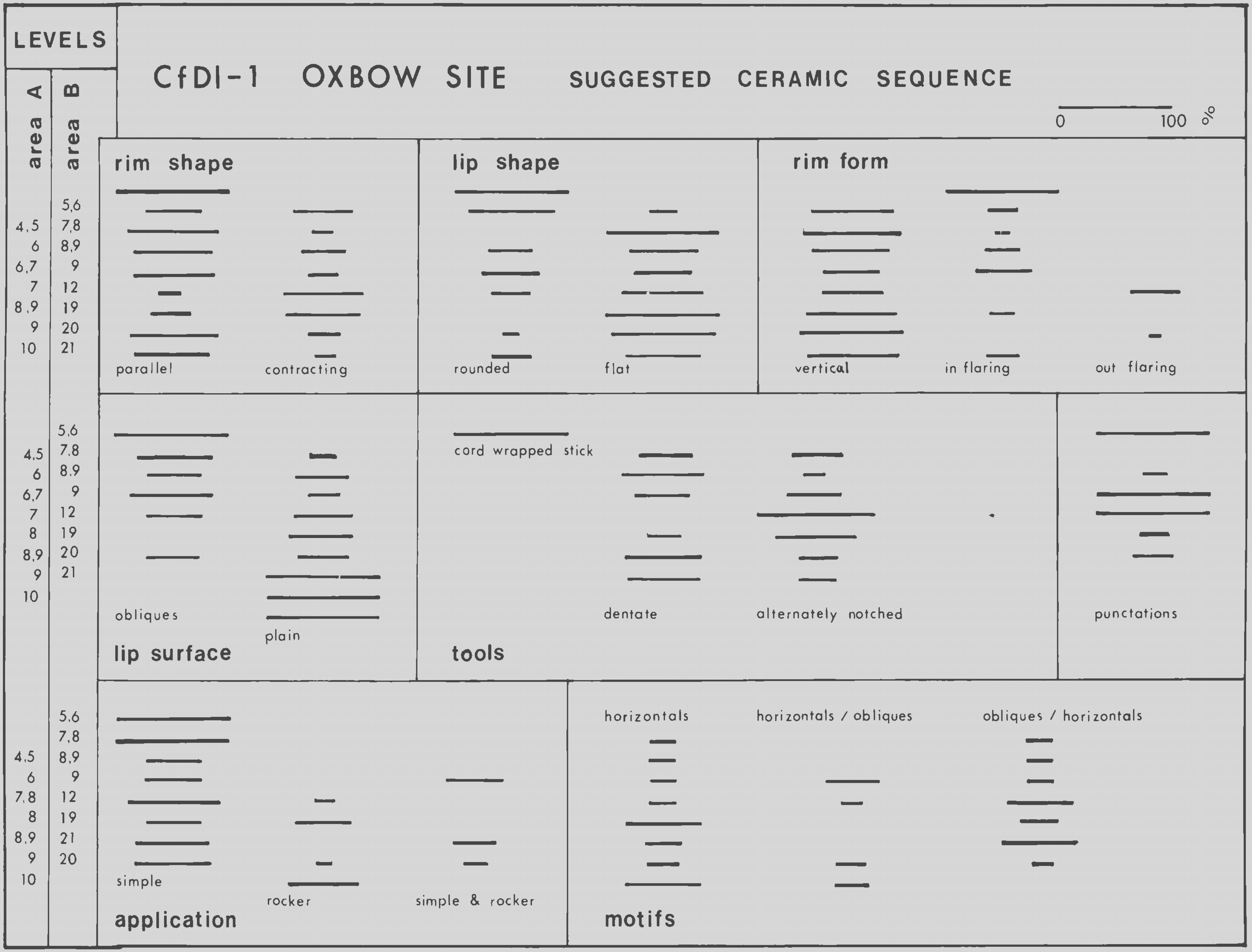
CfD1-1 area A ceramic seriation continued

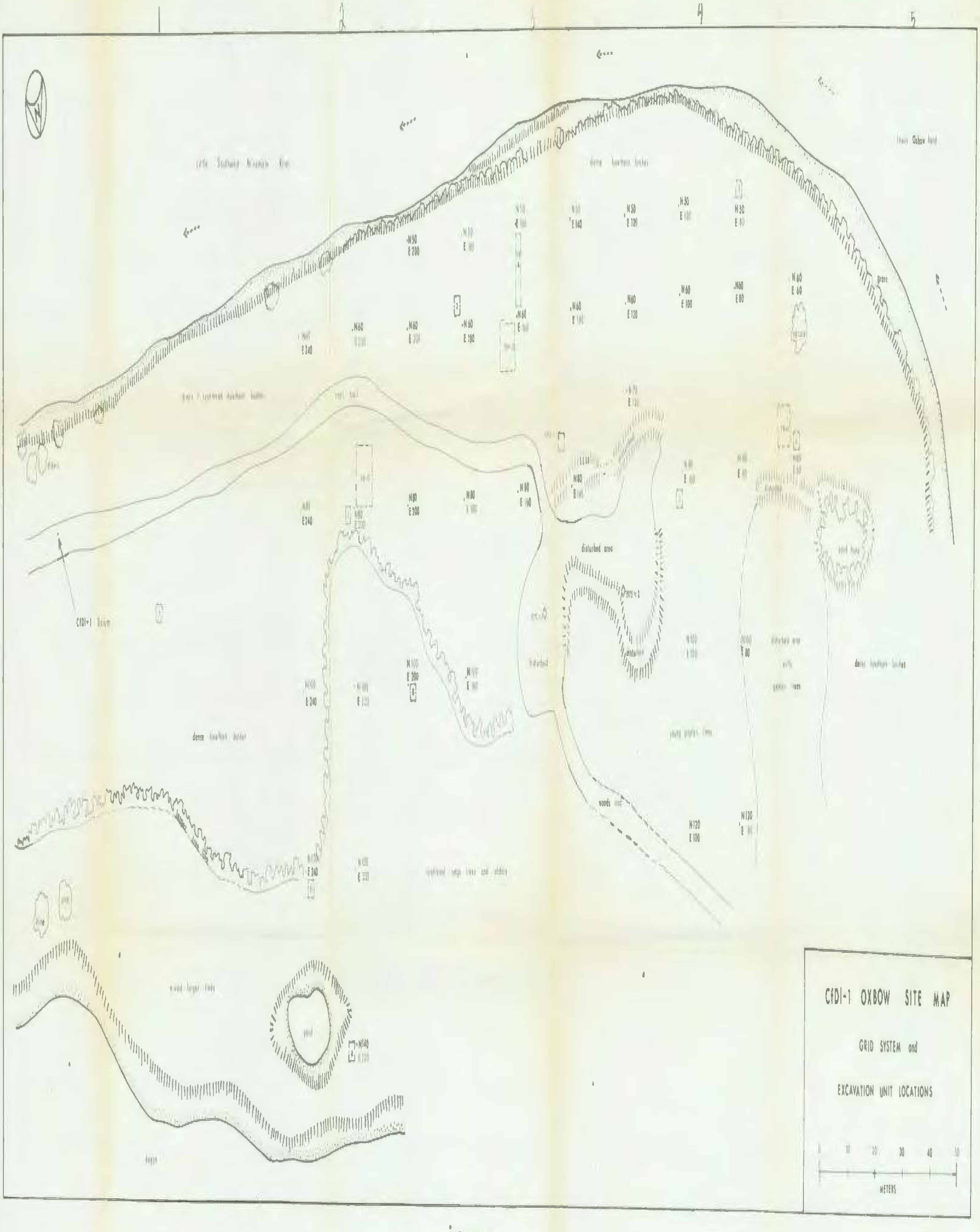
Figure 61 A seriation of ceramic attributes for rim sherd vessels from units 78-11 and 78-4. The chart illustrates the sequence of decorative tools, their application and the motifs produced in the rim area of the vessels.


OXBOW SITE CERAMIC SEQUENCE UNITS 78-11 & 78-4
No. Vessels
Levels
0
100
%
TOOLS
1 6
3 7,8
6 8,9
3 9
3 10
dentate
alternately notched
punctations
APPLICATION
1 6
3 7,8
1 8
6 8,9
3 9
3 10
simple
rocker
simple & rocker
dragged
MOTIFS
1 6
3 7,8
2 8
5 8,9
3 9
3 10
horizontals
obliques / horizontals
horizontals / obliques
verticals / horizontals

CfD1-1 combined ceramic seriation results

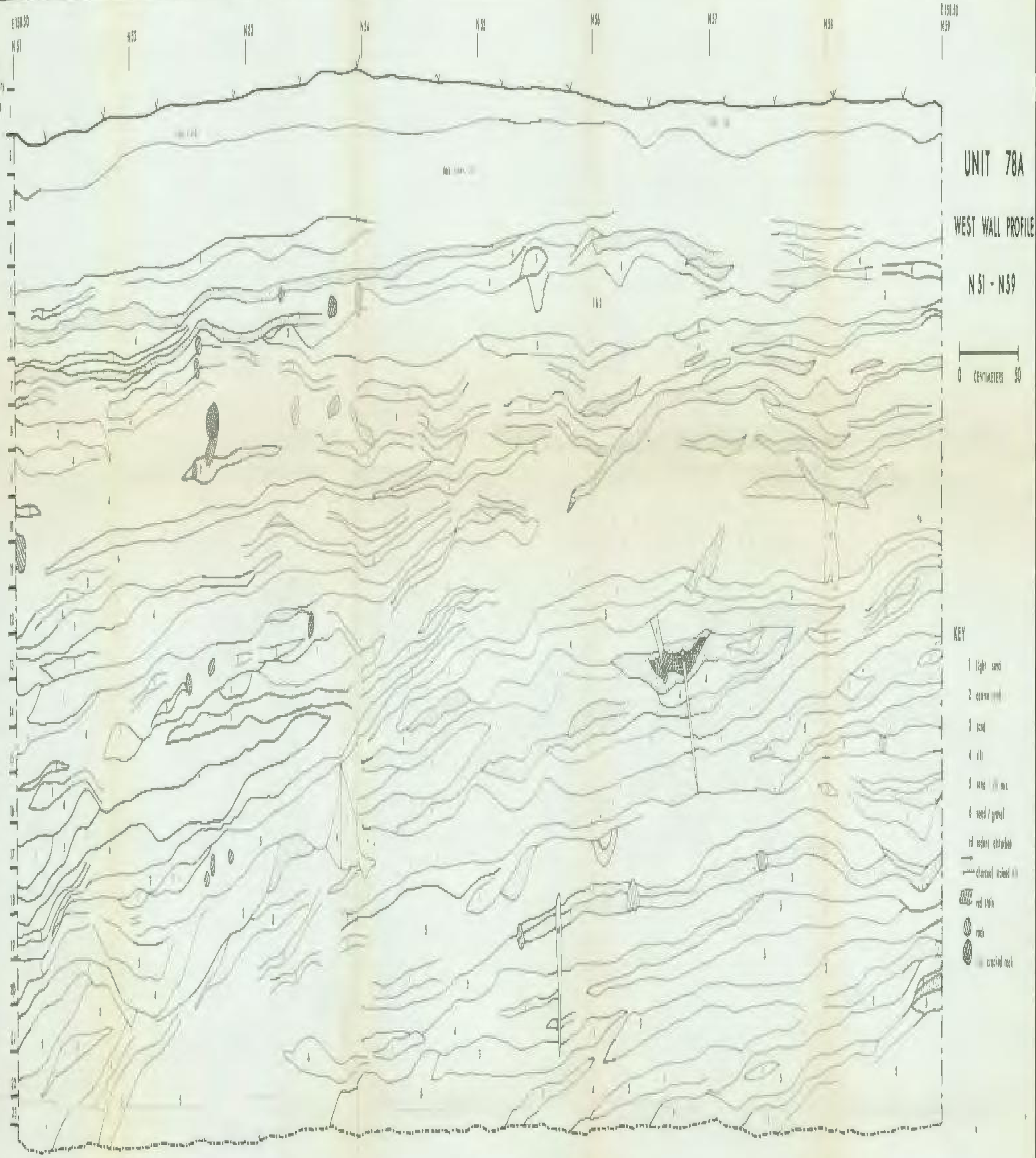
Figure 62 The combined seriation results concerning attributes of rim sherd vessels from areas A and B. Note: Only those attributes which demonstrate trends are here included. It is therefore possible that certain levels may not illustrate 100% of the attribute field.


LEVELS
area A
area B
CfDl-1 OXBOW SITE SUGGESTED CERAMIC SEQUENCE
0
100 %
rim shape
5,6
4,5 7,8
6 8,9
6,7 9
7 12
8,9 19
9 20
10 21
parallel
contracting
lip shape
rounded
flat
rim form
vertical
in flaring
out flaring
5,6
4,5 7,8
6 8,9
6,7 9
7 12
8 19
8,9 20
9 21
10
obliques
plain
lip surface
cord wrapped stick
dentate
alternately notched
punctations
tools
5,6
7,8
4,5 8,9
6 9
7,8 12
8 19
8,9 21
9 20
10
simple
rocker
simple & rocker
application
horizontals
horizontals / obliques
obliques / horizontals
motifs



CfDl-1 OXBOW SITE MAP
GRID SYSTEM and
EXCAVATION UNIT LOCATIONS
METERS
N50
E200
N60
E240
N80
E200
N120
E100
disturbed area
disturbed
woods road

FIGURE 3



E 158.50
N 51
N 52
N 53
N 54
N 55
N 56
N 57
N 58
E 158.50
N 59
10 cm
arbitrary
levels
UNIT 78A
WEST WALL PROFILE
N 51 - N 59
0 CENTIMETERS 50
KEY
1 light sand
2 coarse
3 sand
4 silt
5 sand mix
6 sand / gravel
rd rodent disturbed
charcoal stained
red stain
rock
cracked rock

FIGURE 8

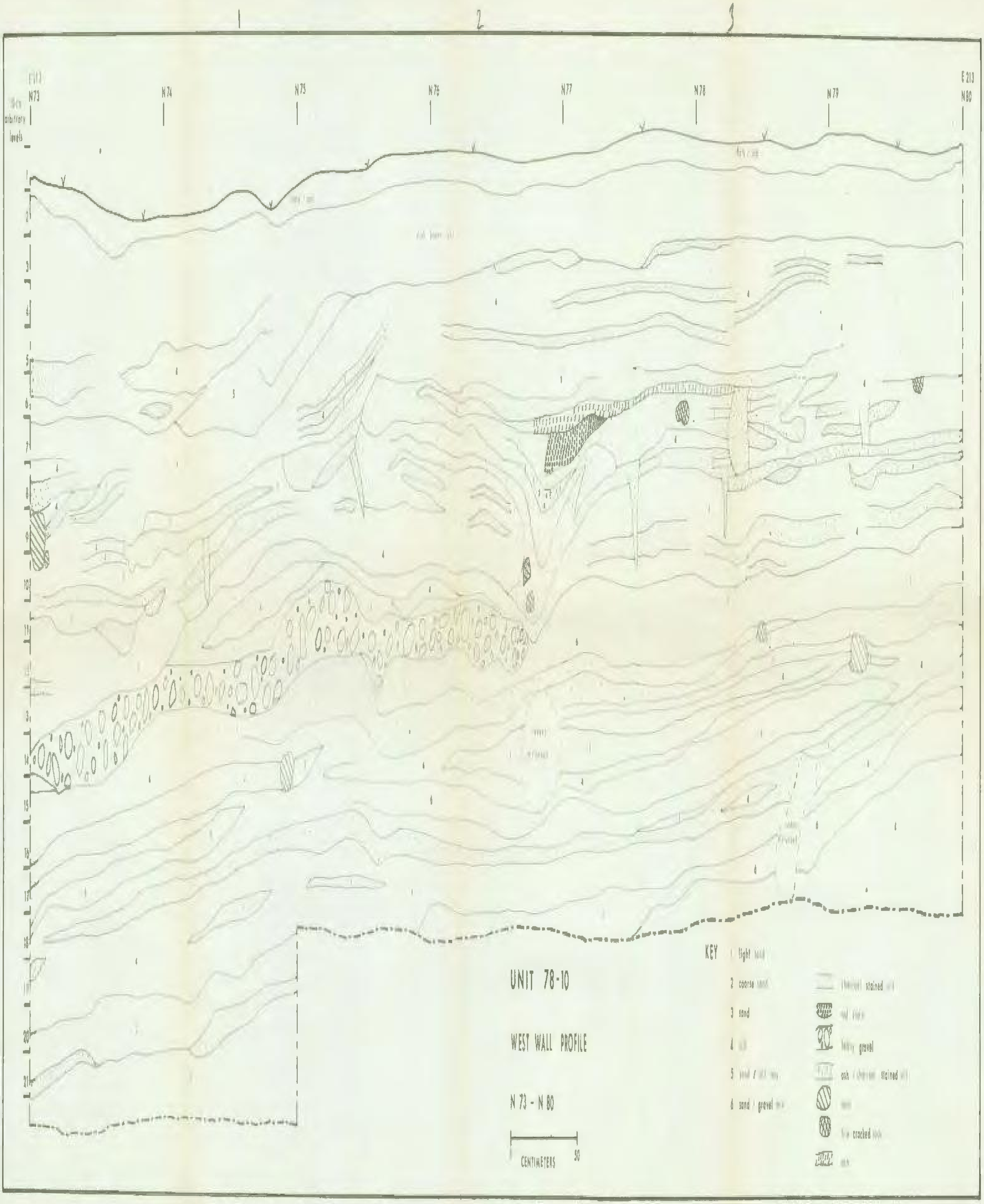

1
2
3
E 213
N 73
N 74
N 75
N 76
N 77
N 78
N 79
E 213
N 80
arbitrary
levels
KEY
2 coarse
3 sand
4
5
6 sand / gravel
stained
gravel
ash
stained
cracked
UNIT 78-10
WEST WALL PROFILE
N 73 - N 80
CENTIMETERS
0
50

FIGURE 10

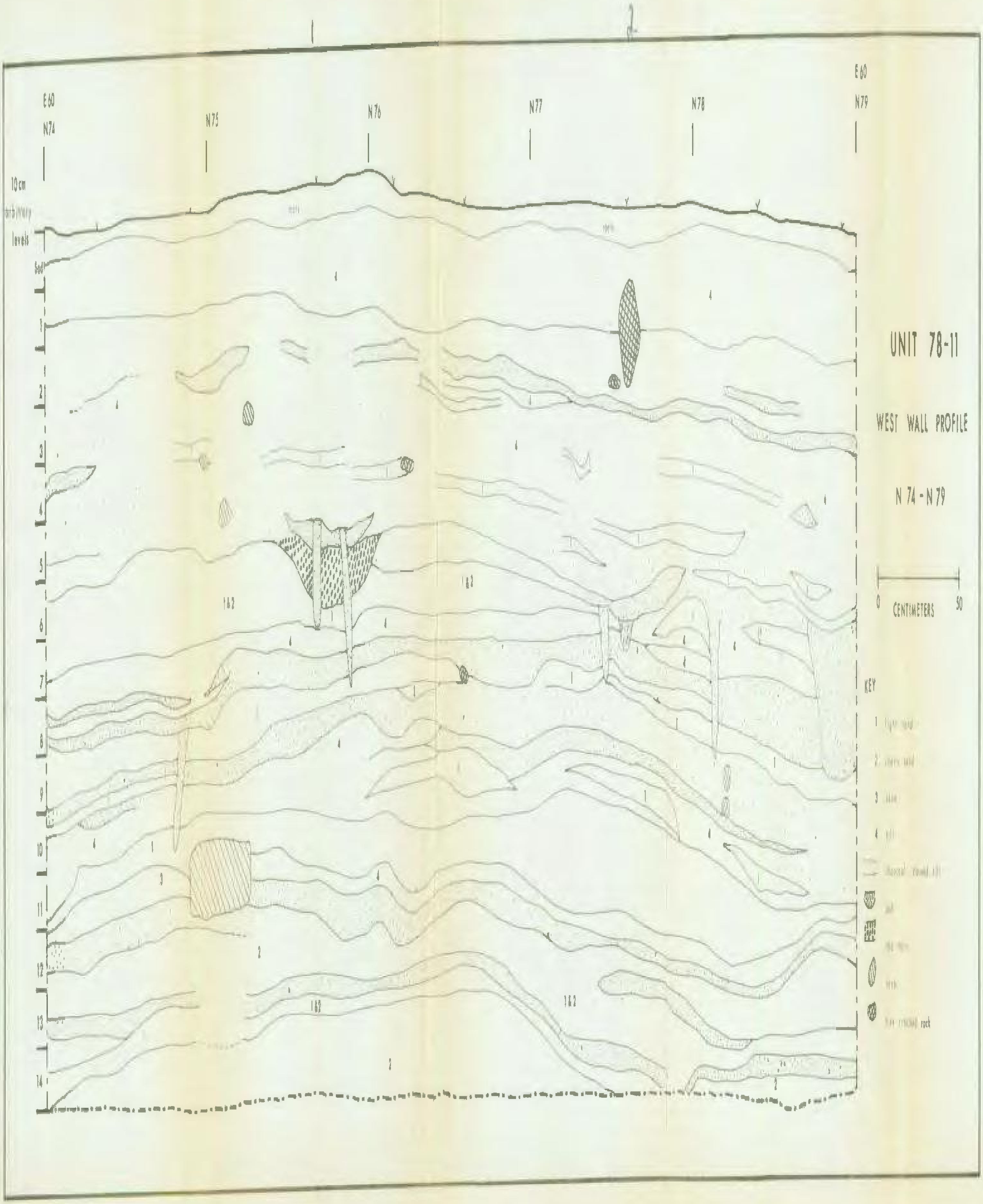

UNIT 78-11
WEST WALL PROFILE
N 74 - N 79
0
CENTIMETERS
50
KEY
E 60
N 74
N 75
N 76
N 77
N 78
E 60
N 79
10 cm
arbitrary
levels
Sod
1
2
3
4
5
6
7
8
9
10
11
12
13
14
1 & 2
rock

FIGURE 12