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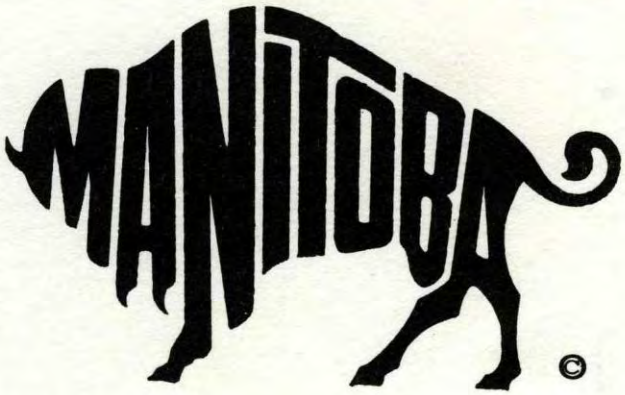

ARCHAEOLOGY

Final Report #1

THE 1974-1975 EXCAVATIONS AT THE CHERRY POINT SITE (DkMe-10): A STRATIFIED ARCHAIC SITE IN SOUTHWEST MANITOBA

by

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PREFACE

This report is the result of two summers of field research spent at the Cherry Point site in southwestern Manitoba. The site lies on the north shore of Oak Lake, a large, shallow body of water set within a region of marshland on the glacial Lake Souris plain. As one of the few large lakes in the southwestern part of the province, Oak Lake annually draws hundreds of campers, tourists, and outdoor enthusiasts to its resort.

The two seasons of archaeological research were, in a sense, an investigation into the power of the lake as an attraction to the peoples of Manitoba, both modern and prehistoric. A deep sense of the antiquity of human habitation coexists with the contrast of highly varied uses of the lake by its successive inhabitants. In its time it has served as a site for bison drives, the hunting of game, fishing, a centre of trade and trapping, as a source of lumber for overland travellers, and most recently, as a summer holiday resort.

Surface collections and excavations have shown that the earliest occupation of the lake area occurred during Paleo-Indian times. Since then peoples of every prehistoric cultural complex known to southwestern Manitoba have occupied the lakeshore, either at Cherry Point itself or at the nearby resort. Artifacts collected from the site span a range from Paleo-Indian projectile points to lead musket balls and pop bottle caps.

The primary concern of this report is to examine the components of the Cherry Point site excavated during the 1974-75 seasons. Those of the 1974 excavations were initially reported by Gibson (1975), whose report is now in press with the Western Canadian Journal of Anthropology. His results have been to some degree incorporated into this report. The components in question, especially in the present work, are primarily McKean and Oxbow complex occupations of Cherry Point.

These components represent only a segment of the archaeological resources of the Oak Lake area. Other aspects, treated only briefly in this report, have been discussed in other works (cf Syms 1974; Loveridge 1974; and Haug 1975). Further research at the site and the

surrounding region has been planned, and forthcoming reports on various aspects of the prehistory of Oak Lake may be expected in the future. It is hoped that, when all of the research at Oak Lake has been completed, the results of the work will help to further the feeling by the public of participation in, and not only observation of, thousands of years of interaction between human cultures and the environment at this site which spans not only centuries of human history but also cultural interaction and development.

CHAPTER I
OAK LAKE AND ITS SURROUNDINGS

Oak Lake lies upon the flat plain of Glacial Lake Souris, which is dissected by two major river systems: the Assiniboine to the north and the Souris to the south (see Fig. 1). Both rivers have cut deep, wide valleys through the lacustrine sediments and underlying till and bedrock. The valleys have served as travel routes and areas of winter shelter since at least early historic times.

The plain between them is characterized by long, linear sand dunes running from the northwest to the southeast. These sand dunes, while generally not great in either height or cross section, have affected the secondary drainage of the region to the extent that sloughs, marshes, and creeks exhibit a linear northwest to southeast orientation.

In the centre of the area lies Oak Lake and the affiliated Plum Marshes. The separation between lake and marsh is not clear, and at the present time a system of artificial causeways and dams serves to differentiate them and regulate drainage. Pipestone Creek drains into Oak Lake from the northwest, and the lake-marsh complex is drained in turn by Plum Creek at an outlet southeast of the marsh.

The lake covers an area of approximately 26 km^2 while the marsh, dispersed over a more irregular area, covers roughly 30 km^2 during years of normal precipitation. Neither is exceptionally deep, however. Oak Lake reaches its maximum depth along the western shore, where it is about 8 metres deep. Its average depth, as well as that of the marsh, averages 2 to 4 metres.

This extensive lake-marsh complex forms a major physiographic feature of the Lake Souris plain and has long been a well-known landmark to travellers. Loveridge (1974: 9-10) has listed some of the early explorers such as H.Y. Hind and Palliser who either stopped at or passed the lake in their travels. Oak trees, growing on an island in the marsh, made the lake an ideal shelter and refitting station during the mid-nineteenth century to travellers heading west

towards Fort Ellice by Red River cart.

The region around the lake and marsh tends to be wet and marshy in many places due to the low relief of the land and a high water table. This has produced a patchwork of natural habitats, alternating between marshland in the lower regions, prairie in the open, well-drained areas, and woodland in those areas which are both well drained and sheltered by the marsh from fire. Since the advent of agriculture, the woodland habitat has invaded the prairie to some extent as prairie fires were reduced in extent and frequency.

The marshland flora consist of meadow grasses, sedges, and reeds, with occasional patches of mixed prairie grasses on slightly better drained areas (Ehrlich, Pratt, and Poyser 1956: 56). The fauna of the marsh includes the Franklin squirrel, muskrat, deer mouse, short-tailed shrew, mink, striped skunk, short-tailed weasel, least weasel, snowshoe hare, meadow jumping mouse, western jumping mouse, meadow vole, beaver, bobcat, red fox, and more recently the raccoon (Wrigley 1974). The lake-marsh complex supports a wide variety of bird life. At least 28 marsh and shore species nest seasonally within the marsh and the lakeshore, including teal, ducks, geese, grebes, gulls, coots, herons, swans, and bitterns. Many other species are common to the marsh, woodland, and prairie habitats, including various types of wrens, sparrows, and blackbirds. Predators include marsh hawks and sparrow hawks.

The flora of the prairie habitat consists essentially of mixed perennial grasses in the less well-drained areas, thus overlapping with the better-drained marshland, while in drier areas xerophytic grasses, ground cedar, and purple pin-cushion cactus are dominant. Scrub oak and aspen may be found in the duned areas (Ehrlich, Pratt and Poyser 1956: 56). The fauna of the prairie is varied. Smaller mammals exist in abundance, including the Richardson ground squirrel, thirteen-lined ground squirrel, northern pocket gopher, long-tailed weasel, and deer mouse. Larger mammals include the badger, coyote, red and swift fox, gray wolf, porcupine, mule deer, and pronghorn antelope. Bison were formerly abundant in the area, and cougar, elk, and the grizzly bear were not uncommon (Wrigley 1974). Birds

include such species as the barn swallow, meadowlark, chickadee, house wren, yellow beaked blackbird, four species of sparrow, and the mourning dove.

The woodland habitat was until recently confined to a relatively small area on the 'Island', a sheltered spot of high ground on the eastern shore of the lake. Deciduous trees including species of oak, elm, ash, and maple form the dominant flora, with both mesic and xeric grasses in the more open areas (Ehrlich, Pratt and Poyser 1956: 56). Fauna include the white-tail deer, red fox, red squirrel, least chipmunk, northern flying squirrel, and the ubiquitous deer mouse. Birds include red-headed woodpeckers, hairy and downy woodpeckers, tree swallows, bluejays, magpies, the Baltimore oriole, and yellow warblers.

The Oak Lake area most likely was not as varied, in the past, in regard to flora as it is today, especially in the size of the woodland habitat. Brush fires and large herbivores were likely to have kept the landscape considerably more open than at present, and the modern stands of scrub oak and aspen would not have had nearly the success that they now enjoy. It is known that the oak grove existed on the Island in the mid-nineteenth century (Loveridge, personal communication), but its existence before that time is as yet hypothetical.

Northwest of the Island lies Cherry Point, the site of the excavations. It lies in the NE 1/4 of the SE 1/4 of Section 36, Township 8, Range 25 and the NW 1/4 of the SW 1/4 of Section 31, Township 8, Range 24, west of the First Meridian. In form it is a peninsula, shaped like a harpoon head pointing west into the lake. It is bounded on the south by the lake itself, on the north by a deep pond connected to the lake by a marsh, which borders the Point to the west (see Fig. 2 and Plate 1).

The most notable feature of Cherry Point is a promintory known as the West Hill (Haug 1975; Gibson 1975). It extends in an easterly direction from the boat launch at the western extremity of the Point for a distance of 300 metres and rises to a height of slightly more than 5 metres above the lake along the wave-cut cliff on its south-

western flank. A thicket of chokecherry bushes running along the top of the cliff provides the source of the peninsula's name.

Another hill forms the eastern boundary of the site. It is less imposing than the West Hill, rising to a height of only about 4 metres above the lake. A fenceline cuts the East Hill from north to south and marks the eastern boundary of the Point.

A shallow valley separates the East and West Hills from each other. At its northern and lowest end it is for the greater part of the year rather marshy. Prior to the construction of the access road to the boat launch it drained directly into the pond north of the Point.

Running along the southern edge of the Point is a low ridge which strikes the lake at an angle south of the West Hill. Behind it, to the north, is a shallow trench which borders a second low ridge connecting the East and West Hills. This complex of ridges and trench was reported as a fossil beach (Haug 1975: 7), and subsequent investigations have confirmed this.

The shoreline is not well defined along the Point, except where serious erosion has created a wave-cut cliff and a slumped bank. The old shore of the Point is preserved behind a reed bed offshore. Here the shoreline is only vaguely defined, existing more as a belt of marsh instead of a bank. This reed bed, according to local inhabitants, at one time extended along the entire shore of the Point. It was cut away during the 1950's to facilitate construction of a swimming beach. Subsequent erosion in the last two decades has destroyed much of the site. This is especially evident when the modern maps of Oak Lake are compared to those of the early land surveys.

Cherry Point first became agricultural land during the latter part of the nineteenth century. For several years it was cultivated, and ploughing disturbed the top 20 cm of the soil. During the 1950's the West Hill was converted to a private campground, while the eastern half of the site remained in agricultural use. In 1967 the provincial government of Manitoba bought the land and it has been operated as a provincial picnic ground by Manitoba Parks Branch since that time. Landscaping was carried out on the top of the western half of the West

Hill during that period, which compounded the problems of carrying out research in that area.

The abundance of artifacts lying along the eroded shoreline and disturbed plough zone of Cherry Point has provided local inhabitants with material for collections for many years. The picnic ground is, in fact, advertised at several places in the nearby town of Oak Lake as 'Buffalo Jump' due to its popularity in this respect. While the wave-cut cliff--the popular 'jump'--postdates the site by many years, the epithet has been shown to be not too inaccurate after all.

CHAPTER 2
FIELDWORK AT CHERRY POINT AND ITS VICINITY 1973-1975

The continued process of erosion of the Cherry Point Site, and the possibilities of further development of the land, led Brandon University archaeologist E. Leigh Syms to conduct test excavations and a surface collection in the fall of 1973. A crew of five visited the site in September for one day. Two small test units were excavated by trowel, shovel, and screen. The first, Unit A, was located on the southeastern slope of the West Hill about 7 metres south and 46 metres east of what later became the site datum. The second was designated as Unit B, and was located 5 metres south and 119 metres east of datum, on the East Hill.

Syms (1974) has reported the results of the test excavations as well as those of the surface collection made the same day. Also included in his report are the results of an analysis of a private collection made at Cherry Point over a number of years.

The 1973 test results were encouraging, to say the least. Excavations in units A and B yielded quantities of fire-cracked and broken rock and smashed bison bone, as well as artifacts and cultural debris indicative of at least two components. Artifacts recovered from the surface collection and from private collections indicated that six other occupations may have occurred at the site, ranging from Paleo-Indian through Late Prehistoric (Syms 1974: 16-18).

Stratified sites are not common in Manitoba, and the possibility that Cherry Point possessed separated components was a major factor in returning a crew to the site in 1974. Other reasons for another season at Cherry Point included the possibility of further modification to the land, the fact that no previous research had been done in the region, and that Oak Lake is one of two major lakes in the grasslands of southwestern Manitoba, neither of which had been well-investigated.

A crew of six under the supervision of the author spent three months during the summer of 1974 carrying out excavations at Cherry Point. The strategy developed for the investigation was the product of two factors. The first was that the size of the site, more than 50,000 square metres, prohibited any random scattering of individual

test units for the purpose of delineating the boundaries of individual components. Secondly, the 1973 tests had not been extensive enough to allow more than a general indication of the number and spatial extent of the components. Consequently, it was felt that blocks of excavation units would offer the best chance of clarifying the cultural stratigraphy of the site. To this end, two block excavations were carried out during the summer, while opportunities arose to excavate only three isolated test units. Figure 2 may be consulted to locate the various blocks and units within the site.

The first block was located on the top of the West Hill. It consisted of four two-by-two metre units, and its northwest corner was located 25 metres north and 11 metres east of datum. Excavation was hampered from the start by extremely bad disturbance of the soil by rodent burrowing. Presumably sterile levels were reached at 35 cm below surface, and the block was abandoned for a less disturbed area of the site.

The second block excavation was located on the south slope of the West Hill (Plate 2). It consisted of seven two-by-two metre units with its northwest corner 35 metres south and 46 metres east of datum. The units were excavated in 5 cm levels to a depth of 65 cm, with the exception of one--XU5, 35 metres south and 50 metres east--which was shovelled and screened in 10 cm levels to a depth of 260 cm, at which point the water table was encountered.

The three test units were all small, and were excavated by 10 cm levels. The first, XU6, was located 10 metres north and 140 metres east of datum. It measured one-by-two metres and was designed to augment the recovery on the East Hill begun in 1973 with Unit B. It was closed down upon reaching a depth of 70 cm. Another unit, XU7, was set up 81 metres south, 0 metres east of datum. It measured one metre east-west by three metres north-south and probed the stratigraphy of the foreslope of the raised beach. Constantly wet, clayey soil hampered excavation of the unit, and it was closed down at a depth of about 70 cm. The third test unit was XU14, a one-by-one metre square located 72 metres south and 35 metres west of datum. It was trowelled and screened in 10 cm levels to a

depth of 110 cm. XU14 was designed to sample the shallow trench between the raised beach and the West Hill.

The analysis of the excavated remains and surface materials collected during the summer was carried out by T.H. Gibson of Brandon University during the winter term. His results and conclusions (Gibson 1975) are discussed in following chapters.

Several local residents were contacted during the course of the 1974 field season. Their collections were assessed and photographed at the same time. A brief summary of the contents is given in Haug (1975), and Loveridge (1974).

By the end of the 1974 season it had become clear that the 1973 estimate of the cultural resources of the site had been, if anything, conservative. Surface collection and assessment of local collections had in itself confirmed Syms' eight components, and the excavations had demonstrated the existence of at least three McKean and Oxbow Complex occupations buried under the south slope of the West Hill.

A second field season was spent at Cherry Point in 1975. The excavation strategy was basically the same as that of the previous season. The crew was composed of the author as field director, five full-time crew members, and for two months, twelve high school work-study students provided by the Manitoba Youth Secretariat of the Department of Colleges and University Affairs. Two student tutors and five volunteer workers augmented the crew during the course of the summer. Professor E. Leigh Syms of Brandon University directed the project.

Excavations were confined to three major blocks and four test units. The south slope block on the West Hill was extended to the south with the addition of eight two-by-two metre units (Plate 3). Referred to as the 'Main Excavation Area', this block was started as six units arranged in a staggered fashion similar to two rows of a checkerboard. Material from the plough zone, which had disturbed the upper 20 cm of each unit, was removed by shovel and screen as a single excavation level. Excavation continued below the plough zone in 5 cm levels to 60 cm, whereupon 10 cm levels were excavated until a sterile yellow sand was reached. Two additional units were opened

within the block later in the summer, converting it to a configuration consisting of two t-shaped formations. Excavation procedures in these units were similar to the others in the block, except that 10 cm levels solely were followed beneath the plough zone.

In addition, two of the 1974 units in the Main Area block were reopened and excavated to a depth similar to the 1975 units.

A second block excavation was opened along the shoreline and adjacent to the 1974 test unit XU14 (Plate 4). It consisted of four two-by-two metre units arranged in a linear east-west trench. No plough zone had been noted in this area, so excavation proceeded in levels of 10 cm to a depth of 100 cm. Excavation stopped at that depth when water in the pits became deep enough to seriously hamper the work.

The third block was established in the Valley, with its north-west corner at 0 metres south, 80 metres east of datum (Plate 5). It consisted of four two-by-two metre units arranged in a square. Excavation was carried out in a fashion similar to that of the Main Area units: the plough zone was shovelled out in a 20 cm level and screened, then 10 cm levels were trowelled and screened. The end of the season arrived before this block could be completed, although a sterile horizon had not yet been reached.

Only one test unit was excavated during the 1975 season. This was XU34, a one-by-two metre unit, at 40 metres north, 22 metres west of datum on the north slope of the West Hill. It was shovelled and screened in 5 cm levels to a depth of 60 cm.

The large crew of the 1975 season was used to advantage in conducting a controlled surface collection of the entire site. A grid of 20 metre squares was staked out over the site and a collection of all visible materials was made. This material was then tabulated by grid unit and artifact category for further analysis.

The total number of excavation units came to 36, including units A and B from the 1973 test. The combined area excavated totalled 130 square metres, or slightly more than 0.2% of the site area, and more than 93,000 kg of soil had been moved.

Ancillary survey work was also carried out during the 1974-75 seasons. About 25 sites had been recorded within a 15 km radius of

the lake before the research at Cherry Point (see Figure 3), although field work had been done at only one of them, DkMe-1, by Vickers in the late 1940's (E.L. Syms, personal communication).

Prior to the Cherry Point research, no information had been recorded regarding the prehistoric materials which had been collected on the Island. When these collections were evaluated, the investigators were informed that most of the material had been found on or near the shoreline at the northwestern end of the Island, and that little had been found inland. Artifacts included projectile points, bifaces, end and side scrapers, lithic debitage, and ceramics. Archaeological traditions represented in the collections included McKean and Oxbow Complexes, Pelican Lake Complex, Middle Woodland, Late Woodland, Late Prehistoric, and one potsherd of the Extended or Post-Contact Coalescent Phase of the Middle Missouri Tradition (Loveridge 1974: 8-9). The site was assigned the Borden number DkMe-14.

A second area of artifact concentration was noticed along the southwestern and southern shores of the Island, some of it in situ and exposed along a road cut. Bison bone, mollusk shell fragments, a shell pendant, and one multiple two-strand cord-wrapped paddle impressed body sherd were recovered. A Borden number of DkMe-13 was assigned to the site.

A site was located on the grounds of the H.S. Perdue Research Station, situated on another island in the marsh south of the Island, where the crew and field laboratory were housed during the field seasons. Bison bone and bone fragments, lithic debitage, and one Knife River Flint bifacial knife were recovered from the garden and from rodent mounds situated in the vicinity of the station. The site, which appears to be rather diffuse and disturbed, was designated DjMe-14.

Two other sites were located during the course of the research at Oak Lake. The first, DjMe-15, was located along the southeastern shore of the lake and the dam at its southern outlet. Scattered bone fragments and lithic debitage, including one small Late Prairie Side-Notch point, were observed in the water along the shoreline. The second site, DkMe-15, was located on the western shore of the

north end of the bay extending north from the lake. No diagnostic artifacts or bone were observed on the surface, although several waste flakes were found.

One last site deserves mention. Immediately to the west of Cherry Point, on a narrow spit of land projecting south into the lake, lies a site which had been previously reported (Pettipas, personal communication), but little data had been gathered about it. Local informants, however, informed the investigators that many artifacts, including an Agate Basin point and what seemed to be a reworked Plainview point, had been collected there along the eroding shoreline. Further investigation by the 1975 crew failed to locate any diagnostic artifacts, although large numbers of bison bone were observed both in the eroding shore and in the water.

The site was designated DkMe-12. It is conceivable that the bone scattered along the shoreline may be only an extension of that lying offshore of Cherry Point. The author has been informed that, prior to the serious wave erosion of the West Hill, the bone layer had been traced in that direction (H. Battersby, personal communication). However, a marsh and bay separate the bone layers by almost 400 metres in any case, so it is most likely that, although the two sites may be related spatially, there would probably be no overlap of components between them.

CHAPTER 3
STRATIGRAPHY AND DEPOSITIONAL HISTORY

Geologically, Cherry Point is very much related to conditions prevailing in its immediate surroundings, and more remotely, to the Assiniboine River. Most of the sediments now comprising the peninsula were derived not from the discharge of Pipestone Creek but from the ancestral Assiniboine during the late Pleistocene.

These sediments are represented first by the basal sediment at Cherry Point. This is a deposit of grey silt interbedded with hardpacked, silty grey clay. It underlies the entire site area at varying depths. At the western and southern extremity of the West Hill it reaches its highest point, nearly four metres above the present lake level where it is now exposed by the wave cut cliff (Plate 6). It lies at a depth of about one metre beneath the surface along the crest of the West Hill, but in excavations in the Main Area block it was not encountered until 2 metres beneath the surface. Its depth in the Valley and on the East Hill has not been determined, although it is quite likely that it follows the same contour as on the West Hill (Figs. 4 and 5).

The clay is very dense and laminar, usually occuring in intermittent beds of 2 to 5 cm in thickness, although upon occasion it can be 10 cm thick or more. Its colour ranges from pure white to very light grey or tan, and some oxidation is visible.

The silts which are interbedded with the clay occur in much thicker layers. These are generally a light reddish-brown or tan in colour. Three different structures are visible in the silt layers. The first is actually not structured; rather, it consists of a layer of featureless silt with no visible sign of structure of bedding. The second is a finely bedded silt exhibiting fine cross-bedding. The third type of silt deposit exhibits no evidence of bedding, but it is differentiated from the first by its mottled, somewhat oxidized appearance. All three varieties of silt are very similar with respect to particle size and angularity.

Above the interbedded silts and clays lies a deposit of yellow

or gold sand. This sand is localized to the south slope of the West Hill, where it lies at depths ranging from 100 to 150 cm beneath the present ground surface. It extends eastward from the West Hill to form a low ridge which connects with the East Hill, thus cutting off the Valley from the raised beach.

The sand is considerably coarser than the underlying silts and clays and gives no evidence of bedding or structure. The top of the sand is marked by a discontinuous dark layer about 10-20 cm in thickness. An occasional layer of roughly the same thickness but not as dark occurs beneath and in contact with the upper layer. The two dark layers probably indicate the A and B horizons of a paleosol, and a preliminary analysis of grain sizes tends to support this. Black, highly carbonized root molds occur occasionally in the gold sand.

The gold sand disappears within the trench behind the raised beach. It is replaced at this point with very dark, clayey silt. This black silt extends from the southern edge of the West Hill beneath the raised beach and down to the present lake shore. Its presence has been verified along the entire front of the raised beach. It has also been noticed at the northern and shallowest tip of the Valley, although this deposit may be unrelated to that on the southern shore of the Point. In texture and petrology it is very similar to the basal silts, and it is likely that it is derived from them.

The stratigraphy of the raised beach is not well-defined. Its most noticeable feature is interbedded sands and silts (Plate 7) lying at a depth of about 30 cm beneath and crest of the beach, and reaching a basal depth of about 80 cm where it rests upon the black silt. It has no well-defined contact with the silt, and it is likely that it forms an interfingered facies with it.

All of the above sediments are overlain by a thick deposit of windblown sand and silt (Plate 8). In a previous publication it was referred to as being "a deposit of wind-blown loess" on the basis of its texture, which was finer than that of the underlying gold sand (Haug 1975: 4). Further investigation, however, has demonstrated that

in the size of the grains and their angularity, it is not remarkably different than the basal silts and the black silt. This would seem to indicate that it is derived from the immediate vicinity of Cherry Point, probably the lake bed due south of the site.

The aeolian silt is tan in colour, and it ranges in thickness from about 60 cm on the top of the West Hill to almost 150 cm at the Main Excavation Area. A thick, dark soil has been built upon this deposit which displays well-developed horizons. Rodent burrowing in this sediment has been considerable in extent.

A sediment very similar to the aeolian silt in texture and density lies above the basal silts and clays in the Valley. It is very dark brown or black in colour and has a high content of organic materials. It also appears in the trench behind the raised beach, where it lies above the black clays and silts and beneath the tan aeolian silt. It appears to be a facies of the aeolian silt which has been altered by water during temporary periods when the lake was high, although it is not a bog deposit.

The depositional relationship of the various site features and sediments is rather complex, and no concrete reconstruction has yet been satisfactorily reached. However, on the basis of the data gathered thus far, the depositional history of Cherry Point may be generally described.

The basal silts and clays are undoubtedly deltaic in origin. The size of the sediment particles and their cross-bedding are indicative of this, and the layers of clay suggest periods of wet, stagnant conditions. The alternating tendency between beds of cross-bedded silt and massive, structureless silt represent conditions of deposition by relatively swift-flowing channels and by periodically-flooded delta plains, respectively. The direction of sediment transport was from northwest to southeast, probably as part of a system of small channels in a braided stream network (F. Crawford, personal communication).

Cherry Point would thus have begun as a remnant of a dissected deltaic plain. The black, clayey silts would have formed as the lake eroded and reworked this deltaic silt over a long period of

time. This deposit most likely constitutes the matrix of the lake-bottom sediments, although it would grade eventually into a clayey ooze towards the centre of the lake.

The bed of gold sand on the south slope of the West Hill lies either directly on top of the basal silts or perhaps upon a thin bed of lake silt. Its lack of structure suggests an aeolian deposition, and its particle size indicates that its area of origin was probably the lake bed immediately south of the West Hill. Its contact with the black silt of the lakebed has not been found, but it probably presents a slump face or a wave cut along its lake sediment contact, with some reworking by wave action.

The dark layers at the top of the gold sand probably indicate a soil formation when that deposit comprised the ground surface. The presence of dark, organic root stains both within and below the dark layers supports this hypothesis. The paleosol shows some sign of erosion or dissection in that it is not continuous across the entire top of the gold sand, but no sign of blowouts or deflation has been observed.

The raised beach silts and sands sit higher than the gold sand stratigraphically, and it is probable that the beach was formed some time after the deposition of the sand. The beach sediments display an interfingered facies with the black lake silts and are overlapped by them on their upper surface. The beach may thus be interpreted as being the remnant of a period during the history of Oak Lake when the water level was considerably higher than at present. Black silts and clays overlying the beach indicate that later aeolian and water-transported sediments were at times reworked by the lake at high levels to form the characteristic shoreline formation. It is not inconceivable that at times the lake would have cut back into the black silts to form steep banks, although no evidence for this exists at this date.

As has been demonstrated, the paleosol on the gold sand represents a hiatus in the deposition of aeolian sediments. The erosion of the paleosol marks the end of the hiatus, while the poorly-defined transition between it and the overlying tan aeolian silt would indicate

that no lengthy period of time occurred between the end of the hiatus and the resumption of deposition. Thus the tan aeolian silts are a continuation of an ongoing depositional process which has been interrupted for an indeterminate length of time.

The source of the aeolian silt has been mentioned as being the lake bed to the south of Cherry Point. While the construction of the causeways and dams has led in recent times to very strict control of the lake levels, it was not uncommon in the past for both lake and marsh to virtually 'disappear' during even short droughts, thus exposing the lakebed to wind deflation (Loveridge 1974: 6).

The correlation of a small-scale depositional sequence such as Cherry Point with that of a surrounding but much larger area is at best tenuous, lacking better controls on the time sequence. In a previous report (Haug 1975) a tentative correlation was proposed between the deposits at Cherry Point and the geologic history of the Assiniboine River system and the Glacial Lake Souris basin. With some modification, this correlation is presented again in Table 1.

Klassen (1972: 552) has discussed the terminal phases of Glacial Lake Souris in relation to the history of the Assiniboine River system. Prior to 15,000 years B.P. the Assiniboine Lobe of the continental glacier blocked drainage to the east from Saskatchewan. As a result, the meltwater discharge from deglaciation was deflected to the southeast into the Souris basin, which was occupied by Glacial Lake Hind (Elson 1958: 68), the terminal phase of Lake Souris. This meltwater discharge flowed down the Pipestone Channel, now occupied by a series of streams including Pipestone Creek. At the contact with the lake a large delta formed, part of which was undoubtedly the sediment at Cherry Point.

After 15,000 B.P. the Assiniboine Lobe had retreated far enough to allow the drainage to shift to the east, and the ancestral Assiniboine River assumed approximately its present course. Klassen (1975) has suggested a chronology for this and subsequent time consisting of six phases. Phases I through III all are related to the downcutting of the Assiniboine Valley and to a generally rising Lake

Agassiz. These three phases span a time from about 15,000 B.P. to 13,000 B.P. Phase IV is characterized by aggradation of the Assiniboine valley and a lowering of Lake Agassiz. Klassen (1975: 53) assigns a time range of approximately 13,000 B.P. to 12,000 B.P. Phase V lasted from about 12,000 B.P. to 7,000 B.P. and was marked by continued aggradation in the Assiniboine valley and alternating high and low water levels for Lake Agassiz (Klassen 1975: 53-55). Phase VI has continued from that point until the present. During that time Lake Agassiz disappeared, and the Assiniboine has continued its lateral erosion and the deposition of alluvium.

According to Klassen and Wyder (1970: 8-9), the deltaic silts laid down prior to Phase I underwent dune-building and deflation in the period after their deposition. This could not have come about at any really late date following the deposition. The gold sand at Cherry Point may represent this period, and it appears to rest conformably upon the silts, which implies deposition not too long after the deposition of the silts.

Klassen's Phase V corresponds with or at least includes the readvance of the late Wisconsin ice designated as the Valderan Advance (Wright and Frey 1965) during which Lake Agassiz rose to the Campbell Beach level (Elson 1967). It is conceivable that at this time Oak Lake would have reached a higher level as well. This would have formed the raised beach and possibly the paleosol on the gold sand. This process could have occurred several times during Phase V, and the present raised beach may be quite recent.

The deposition of the tan aeolian silt has been dated in its upper levels (see Chapter 4) from about 1000 B.C. to the present. By extrapolation, its earliest date would be roughly 3000 to 4000 B.C., but this must remain purely as a speculative estimate.

CHAPTER 4

DESCRIPTION AND ANALYSIS OF THE EXCAVATED MATERIALS FROM THE 1975 INVESTIGATIONS

ANALYTIC PROCEDURES

Records made during the course of the 1975 excavations followed essentially the same pattern as those of the 1974 season. As a general rule, provenience of all remains larger than roughly 1 cm in diameter was kept, and those artifacts were recorded on floorplan drawings for the trowelled levels. Extreme care was taken to separate remains which lay in ambiguous contexts, such as rodent burrows, from undisturbed remains. Material which turned up in the screen for trowelled levels was also separated and marked as 'uncertain provenience'.

Cataloguing consisted of assigning a lot number to each block of material, usually that from each excavated level. Individual items within the lot were then assigned a single identification number in addition to the lot number.

Seven categories of lithic raw material were used in the analysis of lithic tools. Identification of each material was based upon its visual qualities and texture. They are described below:

Knife River Flint: A flint consisting of silicified and altered lignite, ranging from light brown to dark brown in colour. It is very fine-grained in texture, with a shiny, waxy, luster. Fracture is flat conchoidal, and fresh fractures show a dull luster. The only known sources of the flint exist in central and western North Dakota (Clayton, Bickley, and Stone 1970).

Souris River Gravels: Agates, petrified woods, and a light brown flint similar to Knife River Flint have been observed in the gravel deposits along the Souris River in Southwestern Manitoba. The material is generally of too poor a quality to be useful as raw material. Its relation to Knife River Flint has not been determined, although Hlady (1965) has suggested that it may be Knife River Flint which has been transported to the Souris area by preglacial streams.

Swan River Chert: Several varieties of chert, ranging from very coarse grained to fine grained have been included in this category. Inclusions of opal and calcite are common. Colours generally range from pinkish to orange, they are often mottled, mixed, or combined with white. Tamplin (1968) and Mayer-Oakes (1970) first described

the chert. No source or quarry has yet been identified, although Mayer-Oakes (1970: 108) notes that its source area seems to correspond with the upper Assiniboine drainage system.

Cathead Chert: Several varieties of mottled or banded chert of tan, light grey, brown, and dark grey colour have been included in this category (Mayer-Oakes 1970). It is fine-grained in texture with a generally dull luster. Source areas have been reported to be in the area between Lakes Winnipeg and Winnipegosis.

Selkirk Chert: This is a very distinctive light grey or white chert. It is fine-grained and has a very dull luster. It is commonly believed to be derived from the Ordovician limestones and dolomites south of Lake Winnipeg.

Jasper: Jasper is a cryptocrystalline quartz with a dull luster and a flat, rough conchoidal fracture. Colours include olive, green, red, yellow, brown, and grey, and a banded structure is often present. It is of Paleozoic age, occurring most frequently in the Lake Superior area (Frondel 1962, Semenov 1964, and Howell, et al 1962).

Miscellaneous: This catch-all category includes materials which could not be fitted into the preceding categories, such as occasional flakes of grey chalcedony, quartzite, basalt, or obsidian.

Lithic tools were divided into several categories based upon morphology and flaking patterns. When possible, inferences of function have been drawn from both morphological and spatial contexts, although the typology used in this report reflects basically an attempt to reduce the data for the purposes of manipulation. The lithic tool categories are listed and defined below:

Projectile Points: generally triangular or lanceolate tools with bifacial retouch along the lateral edges. Hafting alterations such as basal grinding, notching, shouldering, or waisting (constriction of the body of the point) may appear singly or in combination. Typing of the points is based upon summations of Archaic and Woodland projectile points given in Syms (1969) and Reeves (1970). Selected data on the points is presented in Table 2.

Endscrapers: generally, flakes bearing unifacial retouch on three sides, with steep distal retouch and a tapering proximal end (Table 3).

Unifacially Worked Flakes: flakes bearing a unifacial retouch in a continuous pattern along an edge (Table 4).

Bifacially Worked Flakes: flakes bearing a continuous retouch along both sides of an edge.

Ambiguous Worked Flakes: flakes which display retouch along an edge, but which may be discontinuous or irregular.

Utilized Flakes: flakes which show nibbling or use retouch along an edge. Such nibbling or use retouch may be either unifacial of bifacial (Table 5).

Tool Blanks: made from either flakes or cores which have been bifacially shaped and thinned with the evident purpose of forming a tool, but not being completed. They are similar to biface knives or fleshers, but are generally less well formed, with little or no pressure flaking to create a good working edge.

Unaltered Flakes: either complete or fragmentary flakes bearing no trace of either retouch or utilization.

Cores and Core Fragments: nodules or broken fragments which display evidence of flake removal, usually without the intention of producing a tool from the exhausted nucleus. Subdivided into three types: multifaceted, polyhedral, and discoidal (MacDonald 1968, Crabtree 1972).

Retouchers: lithic tool used to remove flakes from a tool blank by pressure. Battering and nicking along an edge or facet crest identify this category (Semenov 1964, Crabtree 1972).

Bifaces: tools worked bifacially around the entire edge. They are usually ovate, lunate, round, or lanceolate in form (Crabtree 1972).

Hammerstones: rocks or exhausted cores which have been used as percussors in the production of flakes (Crabtree 1972). Characteristics include battering and breakage along an edge or on one or more ends of the rock.

Ground Stone: rock or stone which displays evidence of shaping or alteration by grinding or abrasion.

Burins, drills, and gravers had originally been included in the list of lithic tool categories, but none was recovered during the excavations at Cherry Point. Other artifact categories were developed to handle description and summation of non-lithic remains and rock. These were reduced to a smaller set for the purposes of this report:

Broken and Fire-Cracked Rock: rocks which have been shattered or broken due either to fire-cracking or crushing in other cultural activities. Soft broken rock, such as weathered limestone and mudstone were excluded from this category.

Unbroken Rock: rocks which were either unbroken or exhibited little sign of such treatment. Soft broken rocks excluded from the above category were included in this one.

Potsherds: ceramic remains from the site were poor enough to warrant inclusion in a single, general category.

Bone Tools: worked bone was also rare enough to allow a single category. This does not include cut or incised bone.

Faunal remains are the subject of a separate report and receive very little treatment in this paper other than brief description and generalization. The original categories for cataloguing of faunal remains had included 'worked bone', 'unworked bone', 'charred unworked bone', and 'charred worked bone'. A differentiation was also made between identifiable and unidentifiable bone in regard to part of the body and type of animal. These have now been incorporated into the faunal analysis (R. Balcom, J. Dubois, personal communication).

MAIN EXCAVATION AREA

A total of ten excavation units was worked in the Main Excavation area during the 1975 field season. Two of these were the southernmost of the 1974 units, which were reopened and excavated to a greater depth (Fig. 6).

Two stratigraphic horizons were encountered in these units during the course of the work. The uppermost was the tan aeolian silt, while beneath it lay the gold aeolian sand (Fig. 7). The tan silt was very dense and hardpacked, with no sign of former deflation or buried soils. Rodent disturbance was considerable, but not nearly so bad as in other areas of the site. The gold sand was not so dense as the tan silt, nor was much evidence visible of rodent disturbance. Highly carbonized root molds were observed in and below the paleosol of the gold sand.

Cultural remains were restricted to the tan aeolian silt. Gibson (1975: 24-31) has defined three occupation levels or living floors within the tan silt of the Main Area, on the basis of the 1974 excavations. He numbered them as Occupations One through Three. Occupation One was the deepest, lying at depths of forty to fifty-five cm beneath the surface. Occupation Two lay at depths of twenty-five to forty cm beneath the surface, and Occupation Three lay at depths of fifteen to twenty-five cm beneath the surface, not including the plough zone.

This three-component scheme was verified during the course of the 1975 season. The original occupations and the extensions delineated during 1975 were defined on the basis of artifact densities, linear orientation of large remains and features, and by related features which probably lay within the same living floor.

A fourth occupation, lying beneath the other three, was excavated during 1975. To avoid references to 'Occupation Zero' the nomenclature was altered. The occupations were renamed alphabetically, from upper to lower. Thus Gibson's Occupation One is now Main Area 'C', Occupation Two is Main Area 'B', and Occupation Three is Main Area 'A'. The lowest occupation was designated Main Area 'D'.

MAIN AREA, OCCUPATION A

Much of Occupation A was destroyed by the plough zone, which generally overturned the soil to a depth of 20 cm in the Main Area. As a result, no discrete upper bounds for the occupation were determined. Its lower bounds were determined basically by observation of artifact densities throughout the units. No large bones or features aided the identification of the occupation. The lower bounds were established at generally 30 cm below the surface, although at the northern and southern ends of the excavation it reached only 25 cm. The upper bounds were placed at ground level, to include materials found within the plough zone. The distribution of artifacts for which provenience was preserved is depicted in Fig. 8.

Projectile Points. Three projectile points were recovered in Occupation A during the 1975 season. All three were found in the plough zone. The first (Plate 9a) is made from a Knife River Flint flake and exhibits very little retouch on its ventral face. It is shouldered, almost corner-notched, and generally well-made. The second (Plate 9b) is made of Swan River Chert and has been broken both distally and proximally. It bears a shaft constriction and a basal notch. The third (Plate 9c) has also been broken at both ends, making identification of type virtually impossible. It is made of a rust-coloured jasper. Indentations at the broken base indicate that it had been shouldered or notched.

Endscrapers. Four endscrapers were found in Occupation A. Three were in the plough zone, and the fourth (Plate 9f) lay just beneath it. One of the endscrapers (Plate 9d) was made of Cathead Chert, while the other three (Plate 9e-g) were all Knife River Flint.

Unifacially Worked Flakes. Three flakes were recovered with unifacial retouch. One of them (Plate 9h) lay within the plough zone. Two of the flakes (Plate 9h-i) were rather thick with steep angles of retouch on straight working edges. They were made of Cathead Chert and Knife River Flint, respectively. The other (Plate 9j) was made of a coarse white chert and had a thinner, somewhat concave working edge.

Utilized Flakes. Only one utilized flake was recovered from Occupation A in the 1975 season (Plate 9k), and it lay beneath the plough zone. It is a flake of Swan River Chert which exhibited use nibbling on a convex edge. The nibbling was restricted to the ventral face, and the edge angle varied from 20-70°.

Ambiguous Worked Flakes. One Knife River Flint flake (Plate 9l) showed traces of retouch. This was comprised of several shallow pressure flakes removed from the dorsal surface of the flake. The flake lay beneath the plough zone.

Retouchers. One Knife River Flint core fragment (Plate 9m), recovered beneath the plough zone, bore wear patterns along a raised dorsal ridge which resemble those of lithic pressure flakers described by Semenov (1964). It appears to have been part of a multifaceted core.

Unaltered Flakes. 121 unworked flakes were found within Occupation A. About half of these were Knife River Flint, and Swan River Chert and jasper were the next largest categories. 61 of the flakes lay beneath the plough zone.

Broken and Fire-Cracked Rock. This category contained 75 items, scattered throughout Occupation A. The majority of the broken rock appears to have come from the southern four units of the excavations. Only 15 of the rocks occurred beneath the plough zone.

Potsherds. Seven small body sherds were found within Occupation A. Two were found in the plough zone, and two others were found in the backfill of a rodent burrow. The provenience of the other three is not certain, and they may also have come from rodent burrows. None of the sherds is large enough to allow an identification of type, although all appear to be sand-tempered, and three appear to be fabric-impressed.

Faunal Remains. Bone and tooth fragments were scattered throughout the occupation, generally in very small fragments. The material seems to be comprised almost entirely of bison. The proportion of identifiable bone is quite small, and the majority of it is made up of identifiable bone, the majority of which appears to be bones of the

legs, head, and neck (R. Balcom, personal communication).

MAIN AREA, OCCUPATION B

Occupation B was defined by Gibson (1975: 31) as lying between twenty-five to forty cm beneath the surface on the basis of a feature consisting of over one hundred pressure flakes and two bone concentrations. It was extended south in the 1975 units on the basis of a large bone feature, Feature 8, which lay at a depth of forty-five cm beneath the surface at the southern end of the excavations. It was defined as lying directly beneath Occupation A, with its upper limits at 25 to 20 cm beneath the surface of the 1975 units, and its lower bounds at 35 to 50 cm beneath the surface. Artifact density in this occupation was greater than in the other occupations (Fig. 9), and appeared to be concentrated within the southern half of the units.

Features. Only one feature was recorded within Occupation B in the 1975 season. This feature, Feature 8, was located in Unit 20 at a depth of 30 to 42 cm beneath the surface. It consisted of a shattered bison humerus and its associated bone fragments (Plate 10). In the same unit and levels were fragments of a scapula, metatarsal, radius and ulna, and phalanges (Plate 11).

Projectile Points. Three projectile points were recovered from Occupation B. All three were broken. The first (Plate 12a) was in two fragments; one was found in the plough zone and the other lay at the edge of a rodent burrow in the occupation, thus casting doubt upon its original location. The other two (Plate 12b-c) were found in an undisturbed context. The points were made of Knife River Flint, Selkirk Chert, and Swan River Chert, respectively. All three bear shallow side notches and are concave basally. In the latter two the basal concavity is very pronounced.

Endscrapers. Three endscrapers were found within the occupation. All three were made of flakes of Knife River Flint. The first (Plate 12d) was complete and covered on its unworked surface with a white patina. The other two (Plate 12e-f) were both broken transversely.

Unifacially Worked Flakes. Three unifacially-worked flakes were excavated. Two were rather similar (Plate 12h, j); both were made of Knife River Flint, possessed rather straight working edges with steep angles of retouch, and were relatively thick flakes. The third (Plate 12g) was also Knife River Flint, but the flake on which it was made was much thinner than the other two.

Utilized Flakes. The three utilized flakes from Occupation B were all of Knife River Flint. Two of them (Plate 12k-l) possessed quite shallow edge angles. The third (Plate 12i) had a much steeper edge angle and was thicker than the others.

Unaltered Flakes. 73 unworked flakes were recovered from the occupation. Knife River Flint was the major source of raw material, totalling about 40% of the population, while the other raw materials were divided up irregularly among the remaining flakes.

Cores and Core Fragments. Seven core fragments were recovered from Occupation B in 1975. Six of the cores were of the multifaceted type. Three of these (Plate 13a-c) were made of Knife River Flint, two others (Plate 13d, g) were Swan River Chert, and one (Plate 13f) was Souris River Silicified Wood. The seventh fragment was from a Swan River Chert discoidal core (Plate 13e).

Hammerstones. Three hammerstones were excavated from the occupation. They included a battered quartzite cobble (Plate 13i), and two battered granite cobbles (Plate 13h, j).

Broken and Fire-Cracked Rock. 117 fire-cracked and broken cobbles and rock fragments were found within Occupation B in 1975. The majority of these occurred in the southern four units, although Unit 17 also contained a high percentage of cracked rock.

Unbroken Rock. 22 unbroken or soft rocks were found within the occupation, which is comparable to Occupation A. However, the proportion of fire-cracked rock to unbroken rock is much higher in Occupation B.

Potsherds. Two potsherds were excavated in Occupation B. They are sand or granite tempered with fabric impressions, and most likely come from the same vessel as the Occupation A sherds. Both were

found within rodent borrows.

Faunal Remains. The most remarkable aspect of the faunal remains from Occupation B was the remains of a bison forequarter in Feature 8 and Unit 20. Large fragments of bone occurred in the occupation with somewhat greater density than in the other occupations, although in general the bone tended to occur in scattered small fragments.

MAIN EXCAVATION AREA, OCCUPATION C

Gibson (1975: 24, 29) defined Occupation C as lying at depths ranging from 40 to 55 cm beneath the surface. He utilized the existence of two related features and two bone concentrations to identify the occupation. It was extrapolated to the 1975 units mainly on the basis of artifact densities. No major features or concentrations of remains served to identify a living floor. Its upper limits were set directly beneath and in contact with the lower bounds of Occupation B, while its lower bounds were set at 60 cm beneath the surface. An exception was made for two units, where the lower bound was fixed at 70 cm, to include several artifacts found in those levels.

A total of 280 artifacts and other remains were recovered from Occupation C. The remains for the most part seemed to be scattered evenly across the occupation (Fig. 10, Plate 14).

Features. Only one feature, Feature 7, was recorded in Occupation B. This was a fragmented but in situ bison scapula (Plate 15). No artifacts or other remains were associated with it. The primary purpose in declaring it a feature had been to prevent the separation of the various fragments of the scapula.

Projectile Points. Three projectile points were recovered within Occupation B during the season. Two were found in situ (Plate 16 a-b). Both of these points are very similar, although one is broken. They are constricted or waisted above the base and possess basal concavities. They are made of a mottled chalcedony and a tan chert, respectively. The third point (Plate 16c) was found in a rodent burrow, and thus probably belongs with one of the upper levels. It is broken, so that only the base was found. It bears a marked similarity to point 9a in Occupation A. It is made of Knife River Flint.

Endscrapers. Only one endscraper was excavated during the season from the occupation (Plate 16d). It is made of Knife River Flint and is nearly square in shape, having a very wide proximal end.

Unifacially Worked Flakes. This category included five flakes from Occupation C. Four of them are made of Knife River Flint. One of them possesses a working edge similar to an endscraper, although it is divergent rather than convergent towards its proximal end (Plate 16e). Another (Plate 16f) has a straight, thick, and steeply retouched working edge. The other two (Plate 16h-i) are similar, except that their working edges are not as long as 16f, nor are the flakes as thick. The fifth (Plate 16g) is made of Swan River Chert. Its working edge is straight and thick, although the angle of retouch is not so steep as the others.

Utilized Flakes. Three utilized flakes were found in Occupation C during 1975. Two are made of Knife River Flint (Plate 16j-k), while the third is Swan River Chert (Plate 16n). All three are fairly thick flakes with steep angles to the working edges.

Ambiguous Worked Flakes. Three flakes from Occupation C belong in this category (Plate 16l-m, o). All three are made of Knife River Flint. They are quite small--less than one gram--and thin, with fine unifacial retouch scattered irregularly along their edges.

Unaltered Flakes. 80 unworked flakes were recovered within the occupation. Almost 50% are Knife River Flint, another 27% are of miscellaneous material, while the rest are divided among the remaining raw material categories.

Tool Blanks. One unfinished bifacial tool was recovered from Occupation C (Plate 16q). It is made of Swan River Chert and has had large, collateral flakes removed bifacially. It is 44 mm long by 30 mm wide by 11 mm thick, and it weighs 14 grams.

Cores and Core Fragments. Only one core fragment came from Occupation C during the 1975 excavations (Plate 16p). It is from a Cathead Chert nodule and exhibits multidirectional flake removal.

Hammerstones. Five hammerstones were excavated from the occupation.

Two are battered quartzite nodules (Plate 17b-c), and the other three are granitic cobbles (Plate 17 a, d-e).

Broken and Fire-Cracked Rock. 162 rocks and rock fragments fall within this category, including several rather large broken cobbles.

Unbroken Rock. Only 15 unbroken or soft rocks were found in Occupation C. This is the smallest of the upper three Main Area occupations, especially considering the number of broken rocks.

Potsherds. Only one sherd was found within Occupation C, and it lay within a rodent burrow. It is sand or granite tempered, but it bears no other similarity to the sherds found in the upper layers.

Bone Tools. One rib fragment was found in Occupation C which may have been altered to serve as a handle for an endscraper or a knife, although this is uncertain due to the fact that it has been gnawed by rodents. It lay within a rodent burrow, so its association with the occupation is probably spurious.

Faunal Remains. The identifiable bone from Occupation C is predominantly bison. Most of the fragments are long bone, skull, and neck, although rib fragments also occur. As in the other occupations, the majority of the bone has been smashed and crushed to unidentifiable fragments (R. Balcom, personal communication).

MAIN EXCAVATION AREA, OCCUPATION D

Evidence for the existence of this lowest Main Area occupation is much more tenuous than for the upper three occupations. It was first noticed by a concentration of sizeable bone fragments at 110 to 130 cm beneath the surface of Unit 15. The bone was very poorly preserved and in association with a jasper scraper and one fire-cracked rock (Plate 18). Other scattered artifacts, including a large broken cobble in Unit 16, tended to confirm the existence of a rather thinly populated, dispersed occupation lying just above the paleosol of the Gold Aeolian Sand. The lower limits range from 130 cm beneath the surface in Unit 15 to 90 cm in Unit 20 at the south end of the excavations. The upper bounds range from 110 cm to 60 cm in a similar fashion.

Unifacially Worked Flakes. This category contained four flake tools in Occupation D. One is a jasper flake with large, shallow flakes removed from its dorsal face. The working edge is very convex, and the angle of retouch is moderately steep (Plate 20b). Another is very similar to 20b (Plate 20a), except that it is made from Swan River Chert. The other two have relatively straight working edges (Plate 20c-d). They were made on rather thin flakes of greyish chalcedony and Knife River Flint, respectively.

Utilized Flakes. Only one utilized flake was found in Occupation D (Plate 20e). This was a rather thin Knife River Flint flake with a straight working edge and a moderately shallow angle on the working edge. It exhibited dorsal edge use retouch only.

Cores and Core Fragments. One core fragment (Plate 20f) and one nodule of Cathead Chert (Plate 20g) were found in the occupation. The core fragment was Knife River Flint and had come from a multi-faceted core. The Cathead Chert nodule had not had any flakes removed.

Unaltered Flakes. 15 unaltered flakes were excavated from the occupation. Nine of these were Knife River Flint, four others were Swan River Chert, and the other two were placed in the miscellaneous category.

Broken and Fire-Cracked Rock. Seven broken cobbles and rocks were excavated within Occupation D. The most notable of these was found in Unit 16 and weighed in excess of one kg.

Unbroken Rock. This category contained seven items from Occupation D, which sets the occupation aside as the only one in which unbroken rock is as numerous as broken rock. This may well be due to the small size of the sample from the occupation, however.

Faunal Remains. Faunal remains were very poorly preserved. Identifiable bone was confined to Unit 15. Unfortunately, none of it could be preserved and only one piece was identified (R. Balcom, personal communication).

SHORELINE EXCAVATION BLOCK

Four excavation units were worked in the Shoreline Block during the 1975 season (Fig. 11). The soil in this block was different from that of the Main Area, which has made stratigraphic correlations between the two areas virtually impossible. The upper 20 cm is composed of rather loose soil and sand blown ashore during periods of high wind. Occasional laminae of sand occur within this layer. No plough zone was discernable. Below this soil lies the Black Aeolian Silt mentioned in the preceding chapter. Most of the cultural remains occurred within this layer, which extended to a depth of about 50 cm. Beneath the silt lay grey lake clays and silts, which proved very difficult to excavate. Artifacts also occurred within this layer, although organic remains were much less well-preserved than in the Black Silt. They grey clay extended to the base of the excavations at 100 cm (Fig. 12).

No occupation floors similar in density to those of the Main Area were observed, although levels five and six, which lay between 40 and 60 cm beneath the surface, contained a rather dense concentration of bone which appeared to all lie at about the same depth. This concentration contained many large rib fragments and a complete articulated radius and ulna of a bison (Fig. 13, Plate 21).

Features. Only one feature was recorded in the Shoreline Block. This was Feature 10, a shattered bison metacarpal bone, which lay in a small pile (Plate 22). It lay at a depth of 75 cm beneath the surface. Thus it lay below and was not associated with the concentration of shattered bone in levels five and six. No artifacts were in association with the feature.

Projectile Points. The solitary projectile point from the Shoreline units lay at a depth of 35 cm and was not associated with either the bone concentrations below or with any artifacts in its own level. It is made of Knife River Flint, bears shallow, rather formless corner notches, and is decidedly asymmetrical (Plate 23a).

Endscrapers. This category contained only one speciman from the Shoreline units. It is broken transversely and has a rather wide

working edge. It is made from Knife River Flint (Plate 23b).

Unifacially Worked Flakes. Two unifacial flake tools were found in the Shoreline Block (Plate 23c-d). The first is made of Cathead Chert and has a straight, steep working edge. It was found at a depth of 50 to 60 cm and thus lay in the bone concentration. The second is made of Souris River Gravel and has a decidedly convex and steep working edge. It lay at 95 cm in depth, beneath the level of Feature 10.

Unaltered Flakes. Only 13 flakes were found within the Shoreline units. The majority of these, eight, were Knife River Flint.

Cores and Core Fragments. One Knife River Flint core fragment was found in the block, at a depth of about 50 cm and within the bone concentration (Plate 23e).

Broken and Fire-Cracked Rocks. 19 broken rocks were excavated within the block. None of them appeared to have been cracked or split by fire.

Unbroken Rocks. Only two unbroken rocks were found in the excavations, which is the smallest number of all the blocks excavated.

Faunal Remains. Faunal remains were scarcer in the Shoreline units than in the other blocks. Observations in the field indicated that ribs and rib fragments occurred in greater numbers than in the Main Area or the Valley blocks, and that bone fragments were in general not as small. Fragments of eggshell were recovered from the block at a depth of 45 cm and in the bone concentration. It could not be ascertained whether they lay in a rodent burrow or not.

VALLEY EXCAVATION BLOCK

Four excavation units were arranged in a square in the shallow valley between the East and West Hills (Fig. 14). The 'A' and 'B' horizons of the Tan Aeolian Silt were present in these units (Fig. 15). The 'A' horizon had been almost completely obliterated by the plough zone, and both deposits were badly disturbed by rodent burrows. Beneath these layers was the Black Aeolian Silt, which extended to the base of the excavation at 90 cm beneath the surface. This layer was of interest because of its contact with the overlying tan silt. Lenses and laminae of the upper silt lay within the black

silt, and vice versa, which is indicative of at least some water transport or redistribution of sediments. This and the general -300 cm contour of the black silt was the basis for the aforementioned hypothesis that the black silt was a facies of the tan aeolian silt which had been altered by high lake water.

The presence of two distinct stratigraphic layers provided the basis for a division of the block into separate periods of deposition. Little evidence of occupation floors was observed in the tan silt or in the upper 20 cm of the black silt, so remains from these levels were lumped together for description and analysis as the Valley Block Upper Levels (Plate 24).

The Valley Block Lower Levels (Plate 25) were defined for the purpose of this analysis as lying at and beneath 60 cm. These levels contained at least two occupation floors, but because of the 10 cm excavation levels it was not possible to separate them.

VALLEY BLOCK, UPPER LEVELS

Projectile Points. Three projectile points were found within the upper levels. Two of these (Plate 26b-c) were only tip fragments made of miscellaneous material. The third (Plate 26a) was made of brown jasper. It is shouldered, with basal thinning scars and almost no trace of a basal concavity. It is possible that this point, which lay at a depth of 55 cm, may have been in a disturbed context.

Endscrapers. Only one endscraper was found within the upper levels. It is made of Knife River Flint (Plate 26d).

Unifacially Worked Flakes. This category contained only one item (Plate 26e). It is a Knife River Flint flake with retouch on its dorsal face.

Utilized Flakes. Only one utilized flake was recovered (Plate 26f). It is a Knife River Flint flake with a rather thin, convex working edge.

Ambiguous Worked Flakes. The single ambiguously-worked flake from the upper levels (Plate 26g) is made of a miscellaneous material with irregular fine retouch on a convex edge.

Unaltered Flakes. 78 unworked flakes were found in the upper levels. 32 of these were Knife River Flint, 19 were Swan River Chert, and the rest were scattered among the other categories.

Cores and Core Fragments. Three core fragments were found in the upper levels. Two were made of Swan River Chert (Plate 26i-j). The first was from a discoidal core while the second was from an indeterminate type of core. It bore traces of battering from use as a hammerstone. The third (Plate 26h) was from a multifaceted core of Knife River Flint.

Broken and Fire-Cracked Rock. 41 cracked rocks were recovered from the upper levels. They were generally quite small, and only a few appeared to have been split by heat.

Faunal Remains. Faunal remains from the upper levels were not especially remarkable. In general the bone was smashed into very tiny fragments with very few large pieces or complete bones. One concentration of fragments appeared in Unit 28 at about 30 cm, although little else could be associated with it.

VALLEY BLOCK, LOWER LEVELS

The concentration of remains in the lower levels of the Valley Excavation Block was the highest of any of the areas excavated. The material lay thickly scattered over the four units (Fig. 16), although no patterning of artifacts could be discerned visually. While the upper bounds of this component (or components) was more or less arbitrarily set at 60 cm, no lower boundaries could be established because the block could not be completed by the end of the field season.

Features. One feature, Feature 9, was recorded within the lower levels of the Valley Block. This was a concentration of shattered long bone fragments lying in Units 21 and 26 at a depth of about 85 cm beneath the surface.

Projectile Points. Two projectile points were excavated within the lower levels of the block. The first (Plate 27a) is made of Selkirk Chert. It is either notched very shallowly or waisted, and it has

a deep basal concavity. The other point (Plate 27b) is fragmentary and made of Knife River Flint.

Unifacially Worked Flakes. Six flakes from the lower levels were unifacially worked. Four of these are made of Knife River Flint and have long, thin working edges (Plate 27d, f-h). They are also decortication flakes. A fifth (Plate 27e) is also Knife River Flint, but it is thicker than the other four. The sixth flake is somewhat aberrant (Plate 27c) in that it is worked ventrally and has a thick steep working edge on its distal end, much like an endscraper. It is made of Souris River Silicified Wood.

Bifacially Worked Flakes. The lower levels contained the only two bifacially worked flakes found in the blocks. The first (Plate 27i) is made of Swan River Chert and has a straight, shallow working edge. The other (Plate 27j) is a white quartzite or chert.

Utilized Flakes. Four utilized flakes were found in the lower levels (Plate 27k, n-p). All four are made of Knife River Flint and have edge angles of less than 40°.

Ambiguous Worked Flakes. Two ambiguously-worked flakes were recovered (Plate 27l-m). Both are made of Knife River Flint.

Tool Blanks. Two tool blanks were excavated in the lower levels. The first (Plate 28a) is quite obviously an unfinished projectile point. It is made of brown jasper and measures 41.3 mm long by 28 mm wide by 8.8 mm thick, and it weighs 9.9 grams. The other is ovoid in form (Plate 28b). It measures 47.1 mm long by 27.9 mm wide by 10.4 mm in thickness, and it weighs 13.9 grams. It is made of dark, coarse chert.

Unaltered Flakes. 97 unaltered flakes were found in the lower levels. 30 of these are Knife River Flint, another 26 are Swan River Chert, and the rest are predominantly made up of miscellaneous material.

Cores and Core Fragments. Five core fragments and one core were recovered. The complete core (Plate 28i) is made of Swan River Chert and has had flakes removed multidirectionally. Three of the core fragments (Plate 28e-f, h) are from multifaceted Swan River

Chert cores. The other two fragments (Plate 28d, g) are a Knife River Flint fragment and a broken nodule of Souris River Gravel.

Hammerstones. Only one hammerstone was found in the lower levels (Plate 28j). It is a battered granite nodule weighing 64 grams.

Ground Stone. The lower levels of the Valley Block yielded the only ground stone implement of the excavations. It is a triangular slab of schist (Plate 29) which is broken along two of the edges and ground bifacially along the third.

Broken and Fire-Cracked Rock. 108 broken and cracked rocks were found in the lower levels. Compared with the totals of broken rock from the Main area, and considering that these were made up of the remains from eight units, the lower levels of the Valley Block were considerably denser.

Unbroken Rocks. Seven unbroken rocks were recovered from the lower levels.

Faunal Remains. Faunal remains were abundant in the lower levels. Many large but rather poorly preserved bone fragments were found, including a broken bison mandible and many long bone fragments. Numerous small fragments of crushed bone were collected as well.

RADIOCARBON DATES

Gibson (1975) described six radiocarbon samples which had been submitted to the Radiocarbon Dating Laboratory at the University of Saskatchewan. All samples were concentrations of bone from the Main Excavation Area and were excavated during the 1974 season.

The two samples from Main Area, Occupation C were dated on the basis of bone collagen. They are 910 ± 205 B.C. (S-1029) and 880 ± 260 B.C. (S-1030).

Collagen dates on two samples from Main Area, Occupation B yielded 110 ± 130 B.C. (S-1032) and A.D. 100 ± 100 (S-1031).

The last two samples were drawn from Main Area, Occupation A, beneath the plough zone. They were also bone collagen dates and yielded A.D. 910 ± 185 (S-1034) and A.D. 935 ± 105 (S-1033).

The dates all exhibited rather high standard deviations. This

was caused by the relatively small size of each sample (A. Rutherford, personal communication).

DISCUSSION

Raw Materials. Table 6 summarizes the distribution of raw material types over the site for unworked and worked lithics, excluding hammerstones. This may be totalled and converted to relative frequencies, which are presented in Table 7. The most notable factor about raw materials is the popularity of Knife River Flint, which comprises over 45% of the lithic sample. It is also worth noting that it accounts for over 56% of the worked lithics. This somewhat greater relative frequency for worked tools seems to indicate a preference for Knife River Flint as a raw material for tools. This same preference shows up in the disproportion between worked Selkirk and Cathead Chert tools when compared to their relative frequency in the overall population--although these are both relatively small samples.

Raw material relative frequencies for the Main Area appear in Table 8. The results are not greatly different than the overall total in Table 7. Gibson (1975) presented the results from the 1974 excavations in the Main Area. These are summarized in Tables 9 and 10. The most notable difference is the higher frequency of Swan River Chert in the 1974 totals. The lithic categories used by Gibson are basically a collapsed version of those in this report. For the purposes of comparison, Knife River Flint and Souris River Gravels were combined into the 'Brown Chalcedony' category. Cathead Chert, Selkirk Chert, and Jasper were placed in the 'Fine Chert' category, and Swan River Chert and Miscellaneous were not altered.

Table 11 presents the combined 1974 and 1975 totals for the Main Area. It would appear that Knife River Flint remained the most popular raw material for lithic tools, although its relative frequencies for worked materials is little different for those of the population in general in that category. Swan River Chert would seem to be favoured as a source of material for tools. It constitutes 24% of the lithic tools, although only about 15% of the total lithic

population.

Only five of the projectile points were made from Knife River Flint, which amounts to only 33% of the 1975 sample. The rest of the points are made of various materials, and no particular category gains a majority. On the other hand, all but one of the end scrapers were made of Knife River Flint. Unifacial and utilized flakes were predominantly Knife River Flint as well.

It may be hypothesized that Knife River Flint was desirable for tools on which the working edge needed to be fairly sharp and uniform, such as knives and scrapers. Knife River Flint is an excellent material for such tools because of its flaking properties. Projectile points, however, are not so much dependent on sharp edges as on a well-worked, sharp tip. Thus the particular raw material would not be so important, as long as it could be worked without too much difficulty.

Unifacially Worked Flakes. This category, while effective in the presentation of raw data, is not as acceptable in presenting tools in a functional context. Four metric attributes--length of working edge (L), angle of retouch on the working edge (A), thickness of the flake at the working edge (T), and the working edge contour index (I)--a ratio of the depth of the working edge to L--were submitted to a correlation analysis. Their Pearson product-moment scores (r) are presented in Table 12. Only two significant correlations were isolated: LxA and LxT.

Length and edge angle are negatively correlated. They are graphically displayed in Fig. 17. Edge length and edge thickness are positively correlated, as may be seen graphically in Fig. 18. Edge angles in Fig. 17 display a definite split to form two groups at about 60°. Wilmsen (1968: 156-159) suggests that edge angles from 46 to 55° constitute a medium-angle set of scraping tools, while edge angles of 66 to 65° are a high-angle set. If the range from 56 to 65° is included in the high-angle category, the angles in Fig. 17 may be subdivided into two categories. A further subdivision may be made on the basis of length, where a natural break appears in the distribution of edge lengths at about 22 mm. Thus a fourfold

subdivision of Fig. 17 may be obtained.

A further subdivision may be made in Fig. 18, where a break occurs in edge thickness at about 5.0 mm. The plot of LxT measurements may thus also be subdivided into four parts.

A comparison between these compartmented graphs yields four combined categories based upon edge length, edge angle, and edge thickness. In the first class are all the tools with rather long, thin working edges with medium angles of retouch. This all fits the general requirements of unifacial knives. The second tool class, Heavy Sidescrapers, is made up of the tools which bear long, thick working edges with high angles of retouch. A third class of Medium Sidescrapers is composed of flakes having long, thin working edges and high angles of retouch. The fourth class, Light Scrapers, is made up of flakes having short, thin working edges with steep retouch angles. These four categories were used to classify each unifacial tool in Table 4.

Utilized Flakes. Utilized flakes presented the same problems in functional interpretation as did the unifacial flakes. With one small change, the same four variables were submitted to a correlation analysis. The alteration was the substitution of 'maximum flake thickness' for 'thickness at working edge'. The coefficients of correlation (Table 13) indicated only one pair of variables which was significant at the 5% level of confidence. These variables, flake thickness and edge contour index, were correlated positively.

When plotted as a graphic display (Fig. 19) the specimens appear to fall within a single group, save one, of relatively thin, straight-edged flakes. One single thick, convex flake stands by itself. When the flakes were studied for signs of wear, edge nibbling was observed dorsally on most of them and ventrally on several. Striations were noted on only one flake, and these were dorsal oblique. The morphology of the flakes and their pattern of wear does not readily suggest any single function, although it is quite likely that they were used as knives. Fine edge nicking and relatively few scratches might be indicative of meat cutting, as Semenov suggests (1964: 103). Those with primarily dorsal edge nibbling and relatively steep edge angles may have been utilized as scrapers.

Artifact Distribution. The three Main Area upper components appear to be quite similar in their artifact inventories. Projectile points, endscrapers, and side scrapers comprise the bulk of the tools, while knives and light scrapers are relatively rare. Gibson (personal communication) has noted that bifaces were found during the 1974 season in two of the occupations, as well as sidescrapers, endscrapers, and projectile points.

The lower levels of the Valley Block are not similar to the Main Area components. Endscrapers and high-angle sidescrapers are absent from the inventory, while knives, light and medium-angle scrapers are much more abundant. The only bifacially worked tools, two knife fragments, are also present in these levels.

The sample from the upper Valley Block levels is very small, but the tools are basically similar to the inventory of the Main Area. Projectile points are most numerous, but endscrapers, knives, and light scrapers are represented.

The Shoreline and Main Area D inventories are somewhat different than the other areas. The extremely small size of the samples, especially from the Shoreline Block, may be at fault; however, the areas samples were as large as the others. Main Area D is dominated by scrapers and one knife fragment. Projectile points, endscrapers, and high-angle sidescrapers were not found. The Shoreline Block, on the other hand, contained high-angle sidescrapers and an endscraper. Other than a single projectile point and 13 unworked flakes, this block contained no other tools.

CHAPTER 5
INTERPRETATIONS AND DISCUSSION

GENERAL SITE INTERPRETATION

The artifact inventories from the Main Area upper components, A through C, are not essentially different. The small size of the samples precluded any statistical tests to compare them, thus interpretations are only speculative. The abundance of endscrapers, high-angle and medium-angle scrapers, and flakes utilized as scrapers is indicative of hide-working activities such as hair and fat removal, and skin softening. Light scrapers and medium-angle scrapers may also have been used for cutting skin upon occasion, but the relative scarcity of knives suggests that little cutting took place.

The Main Area D component contains a very small sample of tools. However, these do not seem to be greatly different than those of the upper components except for the lack of endscrapers.

The lack of a large sample of lithic tools from the Shoreline Block renders interpretation difficult. All of the tools are scrapers with high angles of retouch, which would primarily indicate hide-working activities such as hair and fat removal. The lone endscraper may have served as either a skin softening tool or a hair and flesh remover. Its location along the shoreline, as well as its rather broad working edge, tends to support the latter functional category.

The upper levels of the Vally Block also contain a rather small population of lithic tools. These suggest an interpretation of hide-softening and cutting.

The lower levels of the Valley Block contain many knives but relatively few scrapers. High-angle scrapers and endscrapers were not found. The knives would indicate a great deal of cutting activity, either of skins or other rather soft materials. The ground stone slab from this component is of no great help in interpretation; however, its bifacial wear along one edge is suggestive of scraping activities.

Faunal remains do not appear to be greatly different between the Main Area components and the Valley Block. The majority of the bone in both areas consists of small shattered and crushed fragments.

The majority of the identifiable bone appears to be from the legs, head, and neck portions of the animals. The presence of a bison forequarter in Main Area B seems to indicate that complete animals were rarely butchered or processed in these areas. This statement is supported by the observation that rib and thoracic vertebrae fragments appear to exist in a higher proportion in the shoreline units.

Almost all of the identifiable bone is bison, although solitary remains of moose, wolf, fox, badger, turtle, fish, and elk were noted (J. Dubois and R. Balcom, personal communication). The remains of a foetal bison were recovered in 1974 in Main Area A. This is indicative of a late spring or very early summer occupation of that component, since bison calves generally are born in April or May (Roe 1951). It is quite possible that the other components are also from that time of the year.

The number of individual animals within each component does not appear to be large (R. Balcom, personal communication). Minimum numbers for bison range from one to two animals per component in the Main Area and Shoreline Block.

The amount of smashed bone and broken rock within the Main Area and Valley components most likely represents an activity oriented toward the procurement of bone marrow and grease. Relatively little of the bone is charred, and no hearths were found in either area. Balcom (personal communication) has suggested that the amount of small, uncharred fragments may be indicative of eating the marrow raw, since bone has not usually been smashed into such small fragments in ethnographically observed cases of marrow procurement for the purpose of cooking.

The overall site interpretation for the excavated components may be summarized from the above:

1. The McKean and Oxbow complex campsites on the West Hill and the Valley were probably late spring or early summer campsites of relatively small bands or groups of people.
2. Cherry Point was a bison kill and an occupation site. Animals were probably killed either singly or in small groups by driving them onto the peninsula and into the marshy shores of the lake.

3. Initial dismemberment of the carcasses took place behind the shore or on the raised beach. The quarters, heads, and neck portions of the animals were dismembered more completely on the West Hill and in the Valley.

4. Hide preparation and treatment took place on the West Hill and in the Valley, as well as the smashing of bone to obtain bone grease and marrow.

5. The Valley, because of its sheltered position, and the top of the the West Hill (Gibson 1975) were probably the habitation areas. Cooking and household activities would have taken place in these areas.

CLIMATIC RECONSTRUCTION

At this date, the soil samples collected during the Cherry Point excavations have not been examined for seeds or pollen for an environmental reconstruction. However, the radiocarbon dates from the Main Area components A through C provide a means of some gross correlation with paleo-environmental reconstructions in nearby areas (Table 14).

On the most general level, Bryson and Wedland (1967) have provided some overall climatic reconstruction for central North America during the Holocene. They utilized the Blytt-Sernander Paleoclimatic sequence used originally in Europe. Four climatic episodes are applicable to the time range of the Cherry Point occupations. The earliest is the Late Sub-Boreal, which lasted from about 1500 to 500 B.C. It is marked as a period of climate which was generally cooler and a bit wetter than at present on the Northern Plains. The Sub-Atlantic followed it and lasted until about A.D. 400. This period was generally wetter and somewhat warmer than at present. The Scandic and Neo-Atlantic periods began at about A.D. 400 and lasted until about A.D. 1200. During this period the Northern Plains were generally warmer than at present, while precipitation rose from about the modern level during the Scandic to more moist than present during the Neo-Atlantic.

These climatic episodes, however, span centuries at a time and cover a vast territory. It is likely that minor fluctuations, which may have been significant on a very local level, are not reflected at all in their sequence. Ritchie (1967) discusses a series of pollen cores taken in the uplands region west of the Lake Agassiz Basin and presents a brief description of floral communities for the region

during Holocene times. According to him, Southwest Manitoba would have been dominated by grassland during the period from about 8500 B.C. to roughly 1500 B.C. At that time the climate changed and the forests shifted southward, replacing much of the southwestern grassland with aspen parkland and prairie. This situation has then persisted until the present.

Oak Lake may well have been a transitional area between parkland and prairie. It was predominantly open prairie at the time of European exploration and settlement (D.M. Loveridge, personal communication), although the lower levels of the tan aeolian silt contain carbonized root molds of fairly large plants or trees, which may suggest aspen parkland incursions into the area.

Further commentary on the paleo-environment has been provided by David (1971). He procured five radiocarbon dates from buried paleosols in a sand dune about 100km northeast of Oak Lake, in the Carberry Sandhills. These dates are indicative of periods of increased precipitation and soil formation. At some point or points between the periods of soil formation, precipitation dropped off and sand dunes buried the old soils.

The oldest of the sandhill dates correlates with the onset of the Sub-Boreal and with the replacement of the grassland by parkland and mixed deciduous forest. The others do not coincide particularly well with other climatic episodes and may reflect more localized or short-term conditions of drought and high precipitation.

The earliest of the Cherry Point components, Main Area C, fall between two of the soil-forming periods, during which somewhat drier conditions than normal may have prevailed. The lake may have been somewhat lower at this time, so that the shoreline may have been considerably further out into the lake bed than at present.

Main Area B also falls between two of the soil dates from the sandhills, although the overall climate for that period was much wetter than at present. It is quite likely that the lake was not much different than at present at that time. While a period of low precipitation may have prevailed then in the sandhills, Oak Lake is fed by a stream system which covers a considerable area, and it may not have been as drastically affected by local conditions.

Main Area A, on the other hand, falls within the time span of the fourth soil date at roughly A. D. 900-1000. This was generally a period of increased precipitation, and the sandhill date seems to reflect this. It is probable that Oak Lake and Plum Marsh were at or above their present levels at that time, and the raised beach may have been active.

Such interpretations, of course, without the benefit of further analysis, are simply speculation. It may be at least generally concluded that the occupation of the lakeshore does not seem to coincide with any particular climatic condition. The level of the lake would have been important in regard to its use as a drive site. If the lake had been substantially lower than at present, the size of Cherry Point would have been considerably greater--perhaps not even a peninsula but rather connected to the lakeshore to the west--and managing a bison drive on it may have presented considerably greater difficulties. On the other hand, if the lake were as high as the raised beach, the Valley would have been under water, and the West Hill would have been connected with the East Hill by a narrow, marshy isthmus. Finally, if the lake had been greatly lower than the present level it may also have disappeared in the summer months or at best become a stagnant marsh.

IMPLICATIONS OF THE CARBON-14 DATES OF THE COMPONENTS

The six dates returned on the Main Area components were much more recent than had been expected. At first, contamination of the samples was suspected, either by mishandling or post-depositional conditions. However a check on the excavation records turned up no evidence of possible contamination in the field or laboratory, and the collagen dating procedure used by the radiocarbon laboratory precluded any possibility of post-depositional alteration to the samples, such as carbonate addition in ground water, which could have distorted the results (A. Rutherford, personal communication). In addition, the perfect spacing of the dates in three matched pairs supported the assumption that three separate components were present. The dates fit the samples in their stratigraphic context, although not precisely in the manner described by Gibson (1975), so

post-depositional mixing of bone could also be ruled out.

Intrusion of early points into more recent components could also be disregarded. Main Area A yielded one Duncan and one Hanna projectile point during the 1975 season, and one Duncan and one Hanna point during the 1974 season (Gibson 1975). It must be emphasized that the McKean Complex points recovered from Main Area A in 1974 were all beneath the plough zone in undisturbed contexts, and they were all associated with the radiocardbon samples. Main Area B contained three Oxbow points in the 1975 excavations, and in 1974 three Duncan, one Hanna, and one Oxbow point were recovered. Three Oxbow and three Duncan points turned up in Main Area C in 1974, and in 1975 two more Duncan and a Hanna point were found. While one or two of these may be intrusions from another level, it is worth noting that almost no projectile points later than McKean or Oxbow complex were recovered from the Main Area. Except for one, these were recovered within the plough zone.

The Cherry Point dates, if ultimately acceptible, raise some interesting questions regarding northern Plains prehistory. The McKean Complex was previously considered to have lasted from about 3000 B.C. to 1500 B.C. (Syms 1969: 163-65). The dates from Cherry Point have moved the terminal date for the McKean Complex to the tenth century A.D. The Oxbow Complex was similarly considered, beginning in about 3300 B.C. and terminating at 2000 B.C. (Reeves 1973: 1236). Mixed McKean and Oxbow sites have been subsumed by Reeves (1973: 1247) as a single complex, the McKean-Oxbow with uncertain relationships to the original complexes.

Both Oxbow and McKean extend into the Late Middle Prehistoric at several sites, however. Dyck (1970, personal communication) had dated the Harder Site at 1410 ± 140 B.C. and 1400 ± 80 B.C., and the Cruther Site at 1180 ± 80 B.C. (both are Oxbow sites). The Mavrakis-Bentzen-Roberts Bison Trap in Wyoming has been identified by Reeves (1973) as Powers-Yonkee, although Syms (1969) notes that a Duncan point was also present. It has been dated at 650 ± 200 B.C. (Bentzen 1966), but because of its stratigraphic similarity to the much earlier and nearby Powers-Yonkee Site some doubt has been cast upon its

reliability.

Several researchers (Husted 1968, 1969; Mallory 1968; Syms 1969, 1970) have postulated the origins of the McKean Complex in the foothills of the Rockies and Big Horn Mountains during the period preceding 3000 B.C., and the subsequent spread of the complex into surrounding regions after that time. Carbon dates taken at a large number of sites have tended to confirm this, and the Cherry Point dates for Main Area C would indicate an entry into Manitoba sometime around or before 1000 B.C. (Fig. 20).

The Oxbow Complex presents problems in interpretation. The oldest known dates for the complex occur in Saskatchewan (Reeves 1973: 1240-42), although Oxbow points and their variants appear in many sites of somewhat less antiquity over the plains (Fig. 20). Reeves (1973: 1245) postulates the origin of Oxbow in the preceding side-notch complexes of the plains and foothills of the Rockies. They are often found with McKean Complex materials, and the relationship between the two is somewhat ambiguous. It is evident, however, that the two survived side by side in Manitoba at least as late as the time of Christ.

Reeves (1970) classified the late McKean Complex (characterized by Hanna points) as the Hanna Phase of the Tunaxa Tradition. He suggests that the succeeding Pelican Lake Phase of the Late Middle Prehistoric period arose from this phase as part of the same tradition. Carbon dates from the northern plains would tend to confirm this, as the phase (or complex) appears to develop over a wide area at roughly the same time (Fig. 20). He assigns a time range of 1000 B.C. to A.D. 100 for the Pelican Lake Phase, although later dates have been noted in Alberta, Wyoming, and Montana.

The cultural sequence for Manitoba becomes more involved following Pelican Lake. In the parkland of West-central Manitoba Pelican Lake was replaced or displaced by the Anderson and Nutimik phases (MacNeish 1958), which Wright (1967) assigns to the Laurel Tradition. In the grasslands, Pelican Lake was followed by the Besant Phase, which Reeves describes as a segment of the Napikwan Tradition which had contacts or affiliations with the Illinois Hopewell Tradition (Reeves

1970: 206). This took place during the period of A.D. 1 to A.D. 100.

Reeves (1970) asserts that the Pelican Lake Phase, although displaced by Besant, survived and developed into the Avonlea Phase during that same time, at which time the bow and arrow was introduced to the plains. He notes that there was apparently much contact between the two (1970: 207) and that they coexisted on the plains until about A.D. 800, with Besant occupying the Saskatchewan Basin and Avonlea the Upper Missouri region.

Towards the close of the first millenium A.D. the Manitoba Phase of the Late Woodland Tradition occupied southern Manitoba (MacNeish 1958; Joyes 1970), replacing or absorbing the Besant and Avonlea occupants.

The Oxbow-McKean, Pelican Lake, Besant-Avonlea, and Manitoba Phase sequence has constituted the Manitoba cultural succession for several years--with variations. It would now appear, however, that McKean-Oxbow spanned this entire time period in Manitoba--rather than disappearing during the first or second millenium B.C.

While Cherry Point is the site which has provided radiocarbon dates in a stratified context, Pelican Lake points and McKean-Oxbow points have been found together at other sites in the province. At the Larter Site on the Red River north of Winnipeg, Pelican Lake points were found both below and in association with McKean Complex and Archaic side-notch points. MacNeish (1958) used this assemblage to define his Larter Focus. Syms (1969), however, reanalyzed the Larter materials and reached the conclusion that the site was stratified, with Larter and McKean belonging to different components. The site does demonstrate one instance, at least, of a stratigraphic relationship between Pelican Lake (Larter) and McKean-Oxbow which is anomalous to that normally observed on plains sites.

The same phenomenon of Pelican Lake points lying beneath McKean and Oxbow components was noted at Cherry Point in 1974 (Gibson 1975). In this case a single Pelican Lake point was found beneath Main Area C. Its presence below the McKean components was at that time attributed to rodent activity, although no sign of a burrow had been observed.

Hlady (1970: 275) has also reported Oxbow and Pelican Lake points recovered in association with each other at the Whitemouth Falls site in Southeast Manitoba. The Oxbow-Pelican Lake components at this site lay above Whiteshell Phase (McKean) materials.

Other evidence for an extended McKean Complex comes from the Tailrace Bay Site excavated by Mayer-Oakes in 1961-62. It lies on the northwest shore of Lake Winnipeg. Mayer-Oakes recovered 13 McKean lanceolate points from the site, several from undisturbed contexts (the italics are mine):

> Clear cut associations with other artifacts are rare for the McKean point.... In the ten clear grey-zone McKean find contexts seven were found at the bottom of this thin zone or in contact with the top of the gravel. Endscrapers, flakes, and Laurel ware sherds were also associated with McKean in at least two cases each (Mayer-Oakes 1970: 118).

Saylor (personal communication) has provided another case of Oxbow and later ceramics lying either in association or near the same stratigraphic context at the Hollow Water Area of site EgKx-1 on Lake Wanipigow in eastern Manitoba.

Thus, it may be summarized that other sites within the province have indicated the possibility of McKean and Oxbow components or materials in association or above remains of supposedly more recent components. Undetected mixing of materials and disturbance have been offered in past reports as possible explanations for the anomalous provenience of the McKean and Oxbow tools (cf Syms 1969, Gibson 1975). At Tailrace Bay Mayer-Oakes suggested (1970: 350) that McKean and Laurel may have been contemporaneous, although he found such an interpretation difficult to support on the basis of the remains from a single site.

Mayer-Oakes' belief has, however, been confirmed at Cherry Point by radiocarbon dating. While more dates, both from Cherry Point and from other sites, would be desirable to confirm this hypothesis, the data appear to indicate that an extended McKean and Oxbow population persisted in Manitoba throughout the first millenium A.D.

The primary implications of an extended McKean-Oxbow complex

in Manitoba prehistory are those related to lifestyle and co-existence. McKean, Oxbow, Pelican Lake, Besant and Avonlea did not apparently differ greatly in either settlement patterns or subsistence bases in the bison-rich plains (Syms 1969, 1970; Reeves 1970). Given the survival of the Early Middle Prehistoric McKean and Oxbow complexes through the Late Middle Prehistoric and the Early Late Prehistoric, the question of how these peoples were able to compete in the same ecological niche with supposedly more complex and sophisticated hunting-gathering societies arises.

Reeves (1970: 208, 216; citing Lee and DeVore 1968) suggests that Besant and Avonlea (and most likely Pelican Lake) populations operated well below the carrying capacity for the plains ecosystem, thus ensuring ample resources for both complexes. This is no doubt an adequate generalization for any prehistoric population on the plains, but it offers no explanation regarding the survival of a less complex society such as McKean or Oxbow within the same general region. Various laws of cultural dominance (of White 1959, Sahlins and Service 1960) would rule out such a survival per se.

Acculturation on the part of McKean and Oxbow societies is a possibility that must not be overlooked. The adoption of various elements of Besant or Avonlea technology and/or social organization might have placed McKean and Oxbow peoples on a more equal footing with the other societies. At this time the data do not lend themselves to an intensive examination of extended McKean-Oxbow technology, settlement, patterns, and resource bases. Data related to changes or developments in the trade of goods such as lithic raw materials might also prove a fruitful line of investigation. Reeves (1970) and Syms (1969) have examined this flow of goods to some extent, but a thorough study of these (including extended McKean-Oxbow sites) is necessary to gain some meaningful pattern of exchange and interaction.

While acculturation may have been one of the means utilized by the extended McKean-Oxbow to exist as contemporaries with later societies, another alternative line of investigation is of interest. Along with acculturation, or even independent of it, is the

possibility of differential resource utilization. In other words, the extended McKean-Oxbow peoples might have utilized a somewhat different adaptive strategy than the surrounding societies of the boreal forest-parkland environment and the plains. Such differential adaptations to these regions or between them might explain the ability of different cultural systems to have survived and coexisted within the same areas without one or the other having been displaced.

Cherry Point is an important site in that is has confirmed previous speculation that the McKean and Oxbow complexes survived in Manitoba long after they had disappeared in other areas of the plains. The existing chronologies for Manitoba are thus shown to be badly in need of revision, if not total reassessment. Manitoba prehistory and that of the northern plains in general is considerably more complex than had been originally supposed, as Reeves (1970: 217) has noted:

> But if nothing else, I hope that I have demonstrated that Northern Plains Prehistory...is complex and dynamic, and should not be blithely dismissed as an extension of the Middle Missouri, Eastern Woodlands, or the Great Basin culture areas.

Explanatory models of adaptation and interaction are needed for the northern plains and parkland-boreal forest, especially on the interface between them. Simple chronologies, although providing a data base and an initial starting point for explanation, do not in themselves offer processual explanations; rather they "simply explicate mechanisms of cultural process" (Binford 1972: 22). To solve the problems of interpreting the interaction and adaptation of the peoples of early Manitoba, such models, with their derived test implications, are necessary for a better understanding of the dynamics of the prehistoric cultures of the northern plains and its surroundings.

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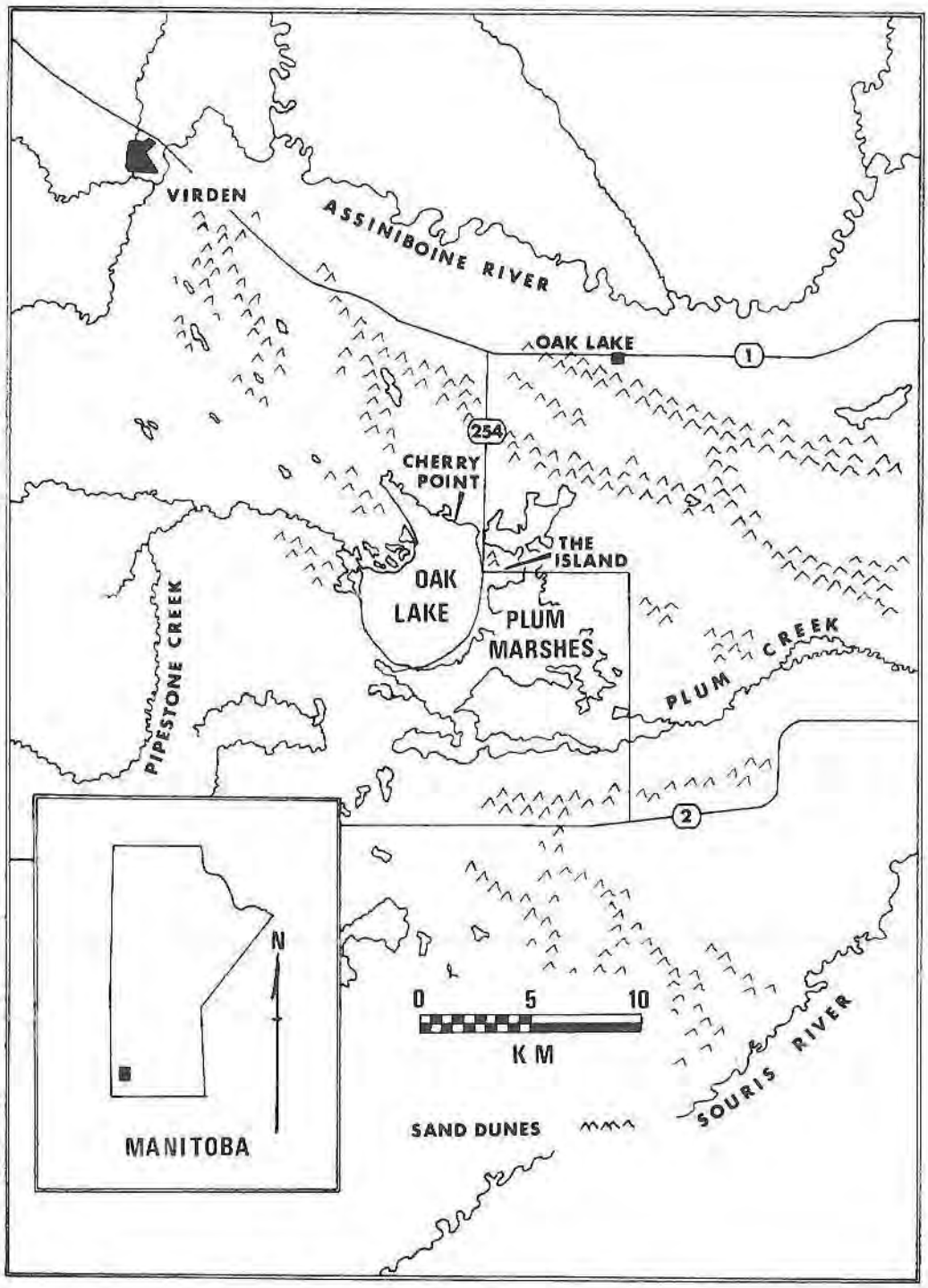

Fig. 1. Map of the Oak Lake region.

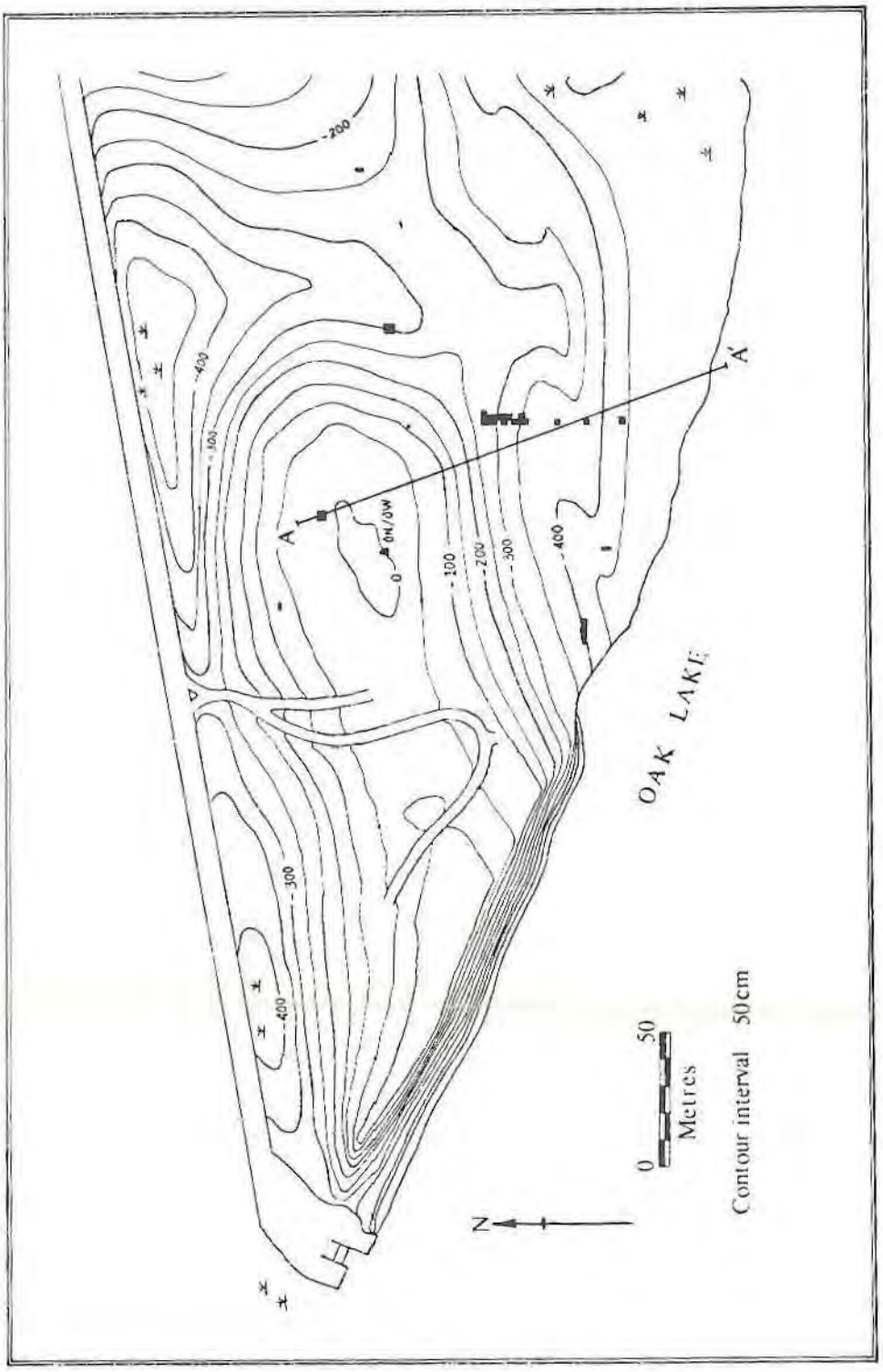

Fig. 2. Topographic map of Cherry Point.

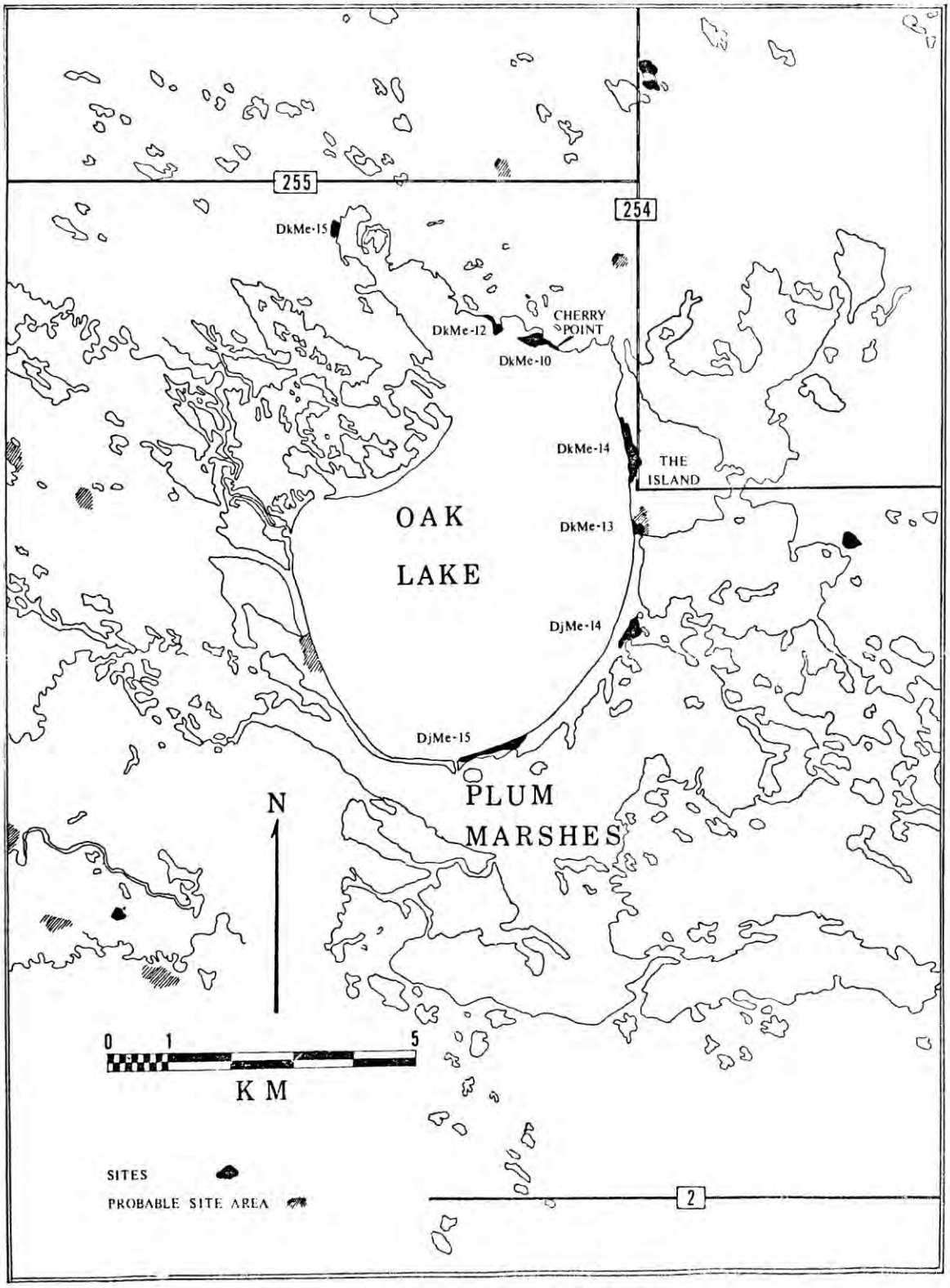

Fig. 3. Sites in the Oak Lake region.

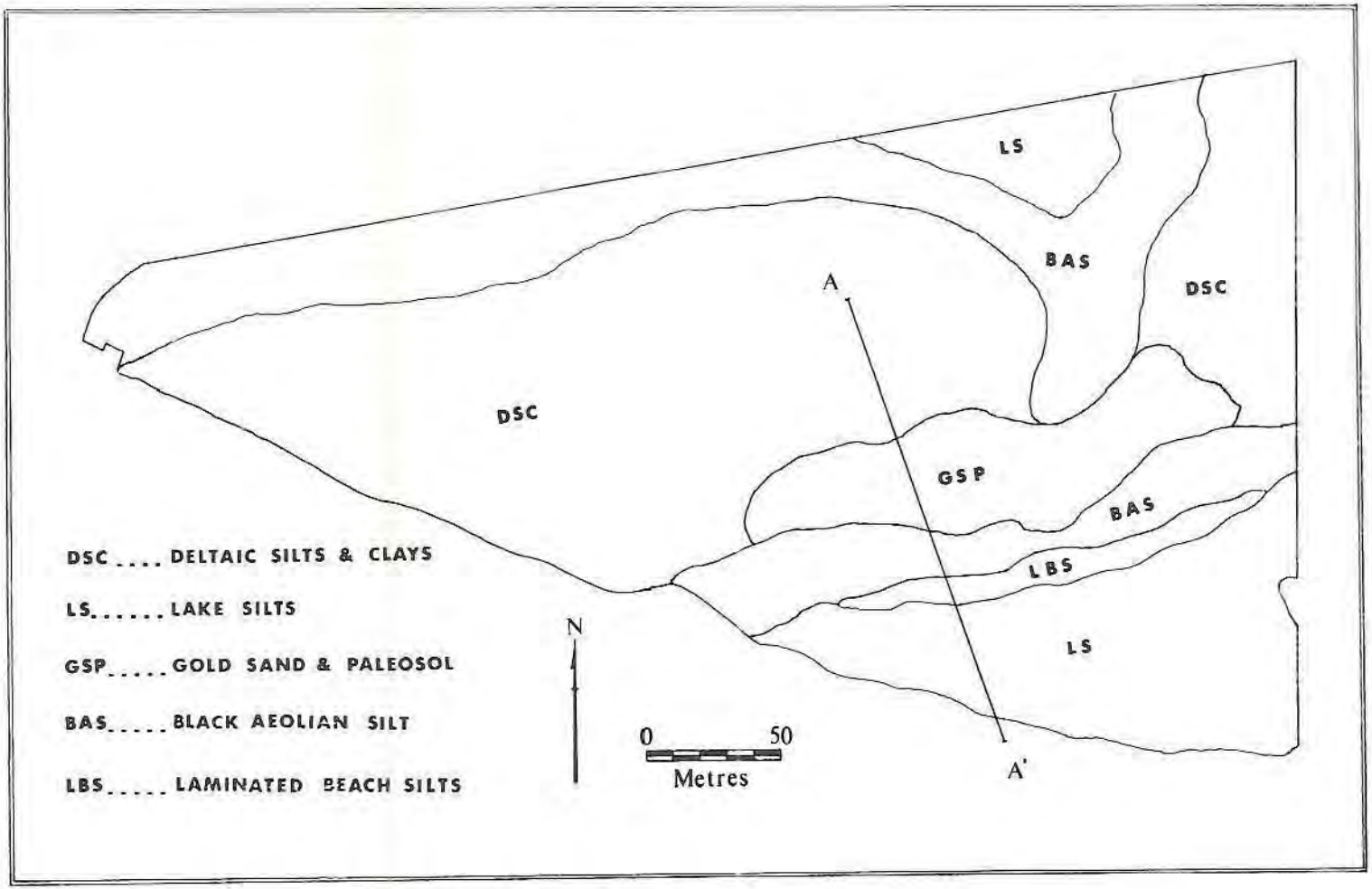

Fig. 4. Subsurface stratigraphy of Cherry Point beneath the tan aeolian silt.

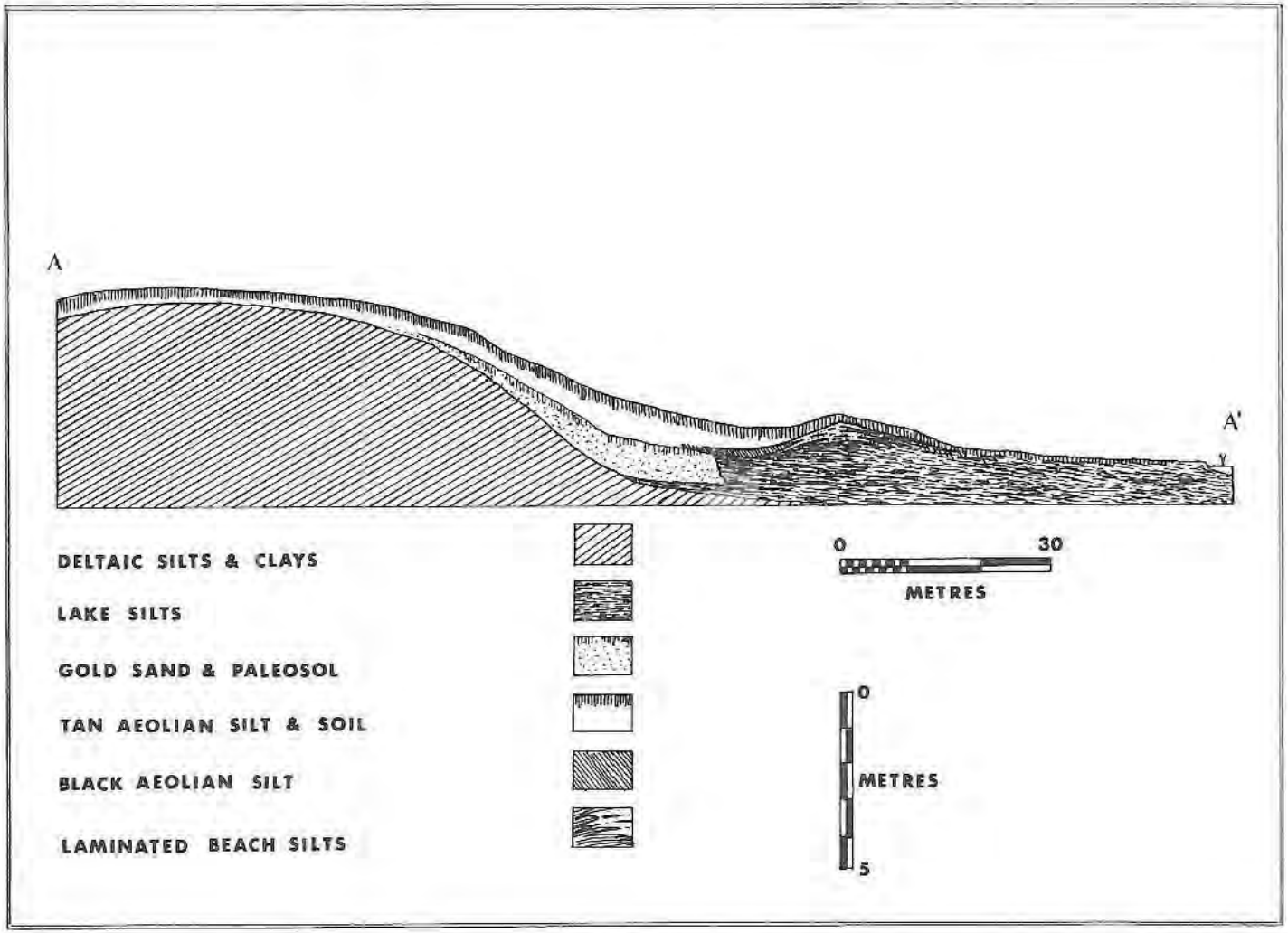

Fig. 5. Cross section A-A' of Cherry Point showing sedimentary structure.

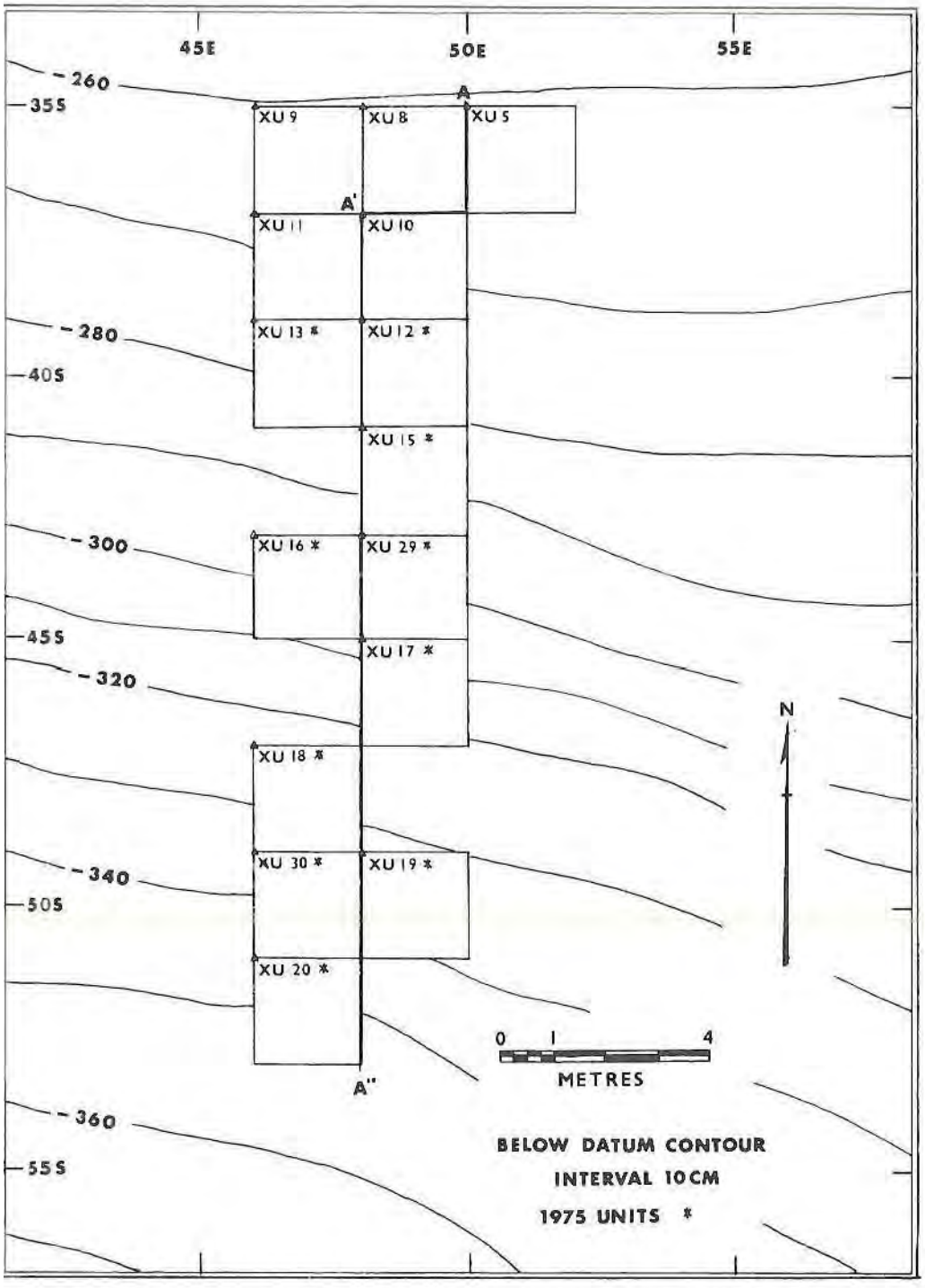

Fig. 6. Plan view of the Main Excavation Area, 1974-1975.

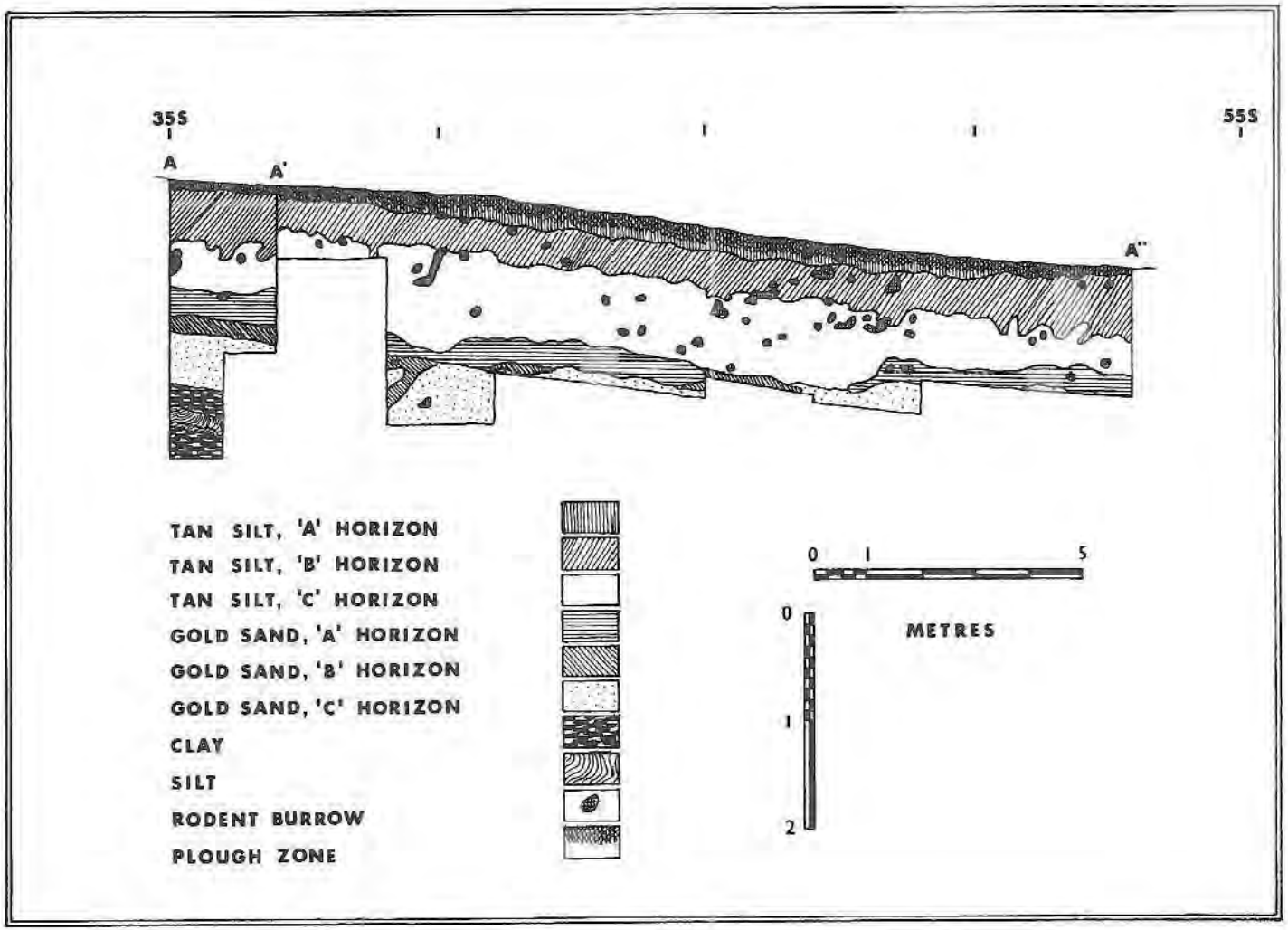

Fig. 7. Profile A-A'-A" of the Main Excavation Area, 1974-1975.

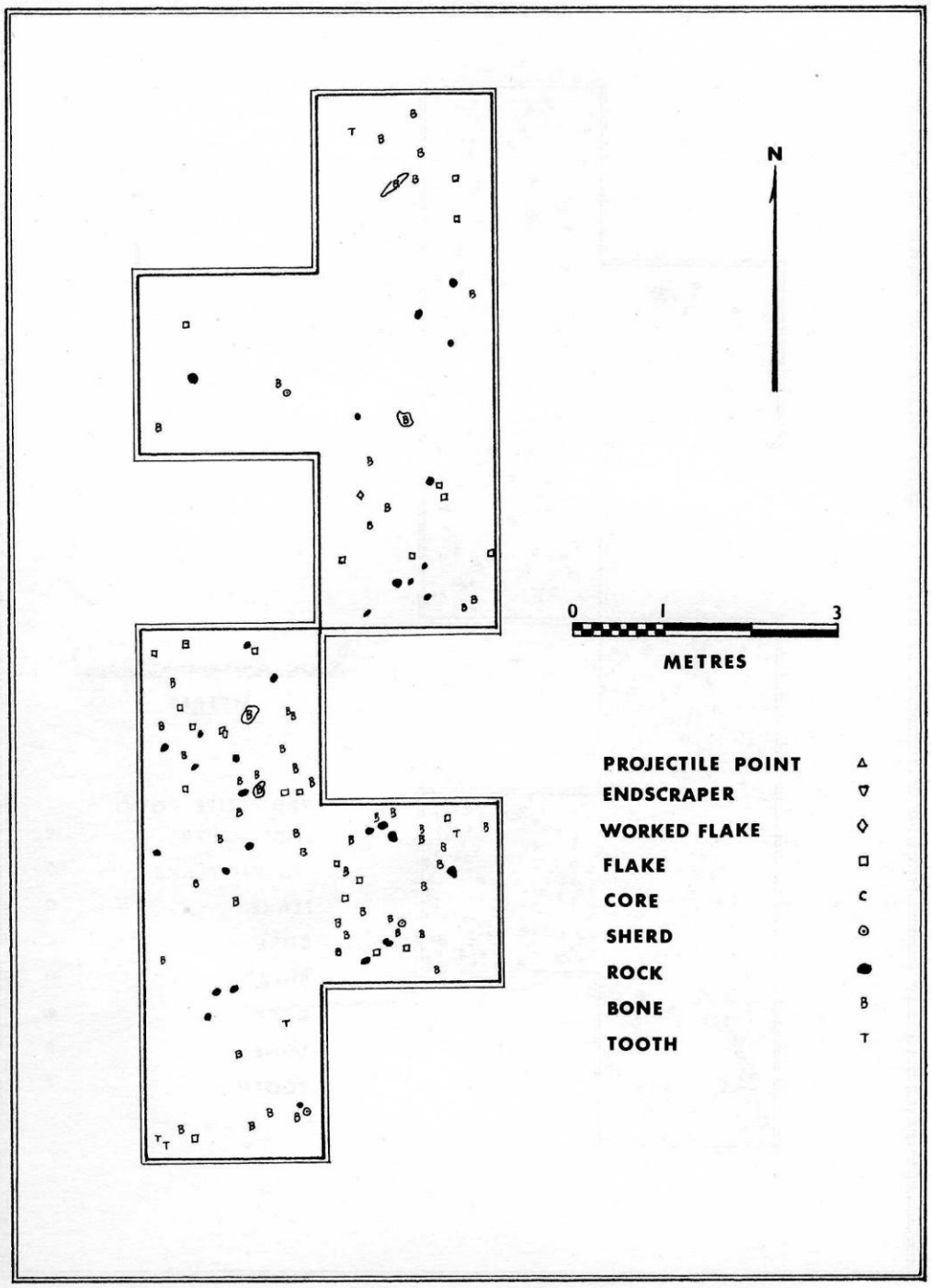

Fig. 8. Plot of artifacts recovered in situ in the Main Area A component, 1975.

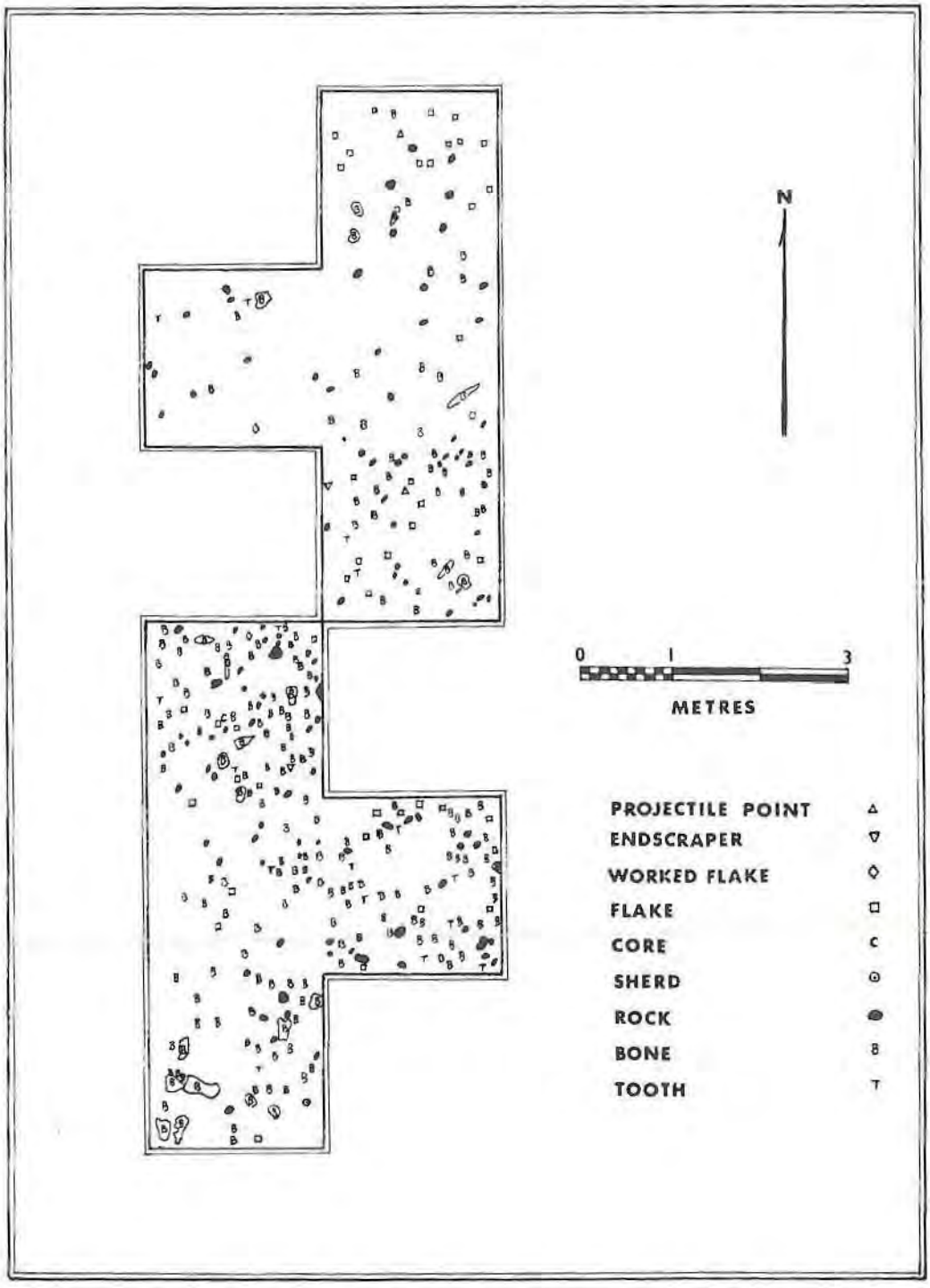

Fig. 9. Plot of artifacts recovered in situ in the Main Area B component, 1975.

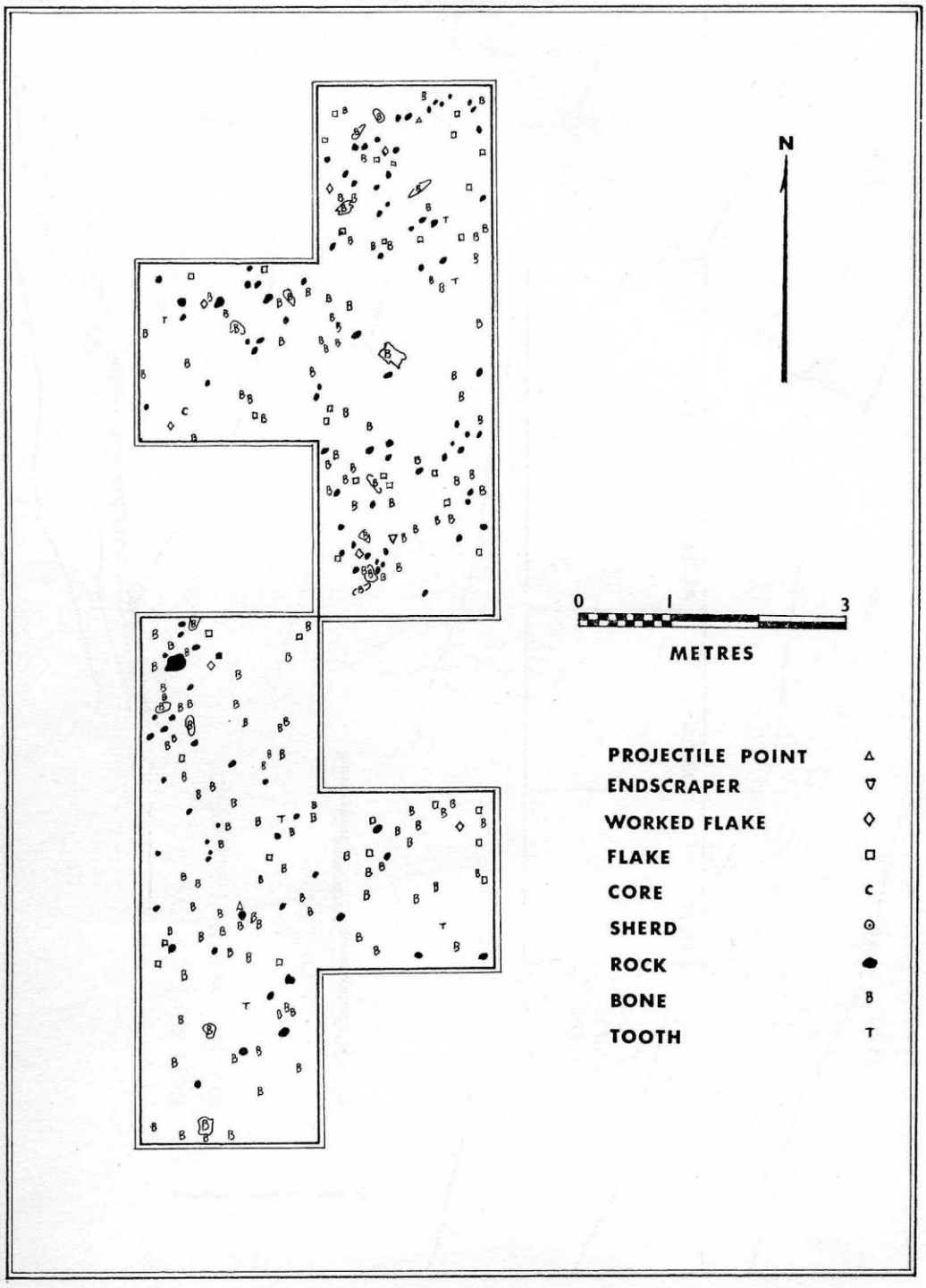

Fig. 10. Plot of artifacts recovered in situ in the Main Area C component, 1975.

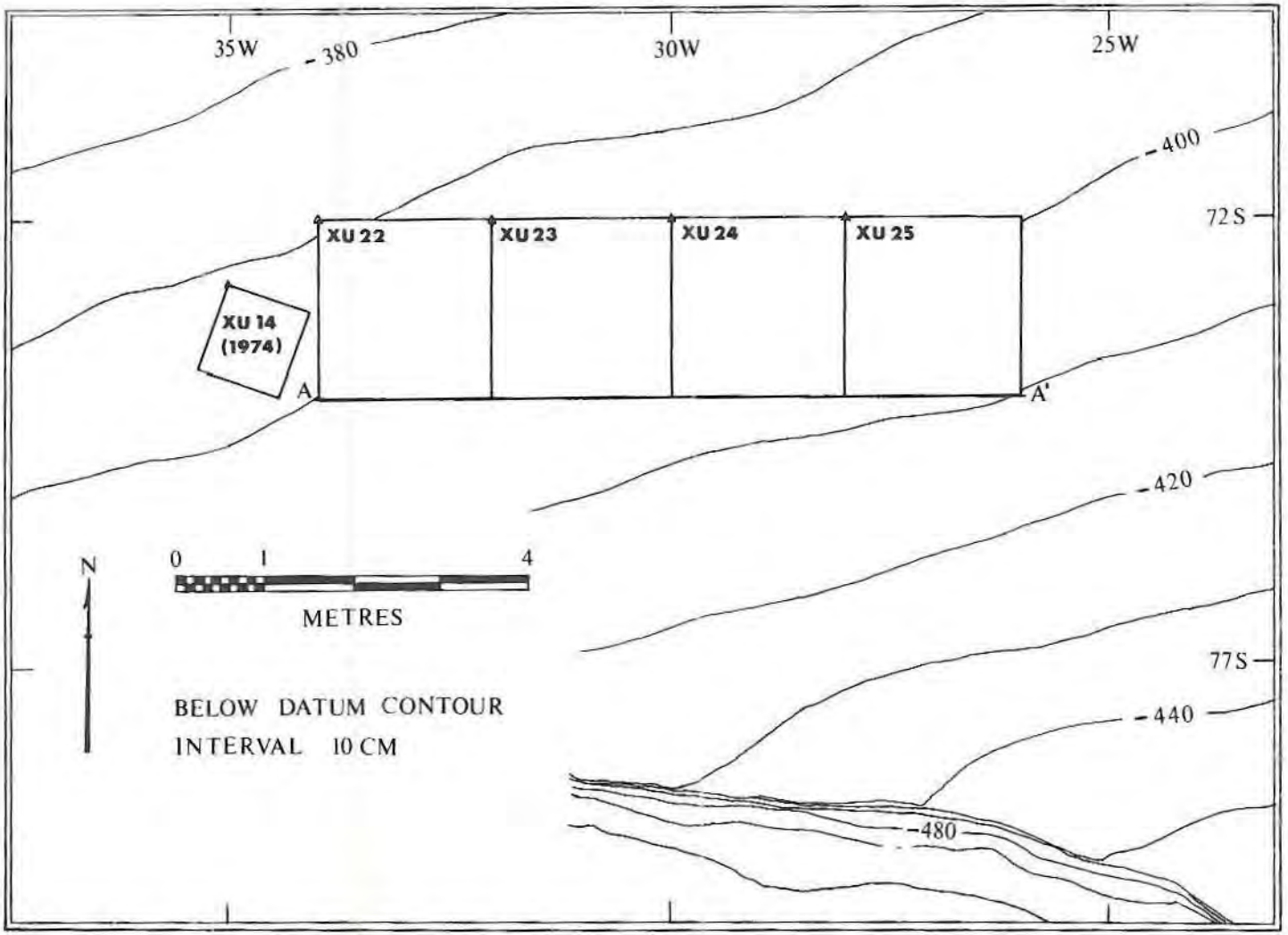

Fig. 11. Plan view of the Shoreline Block, 1975.

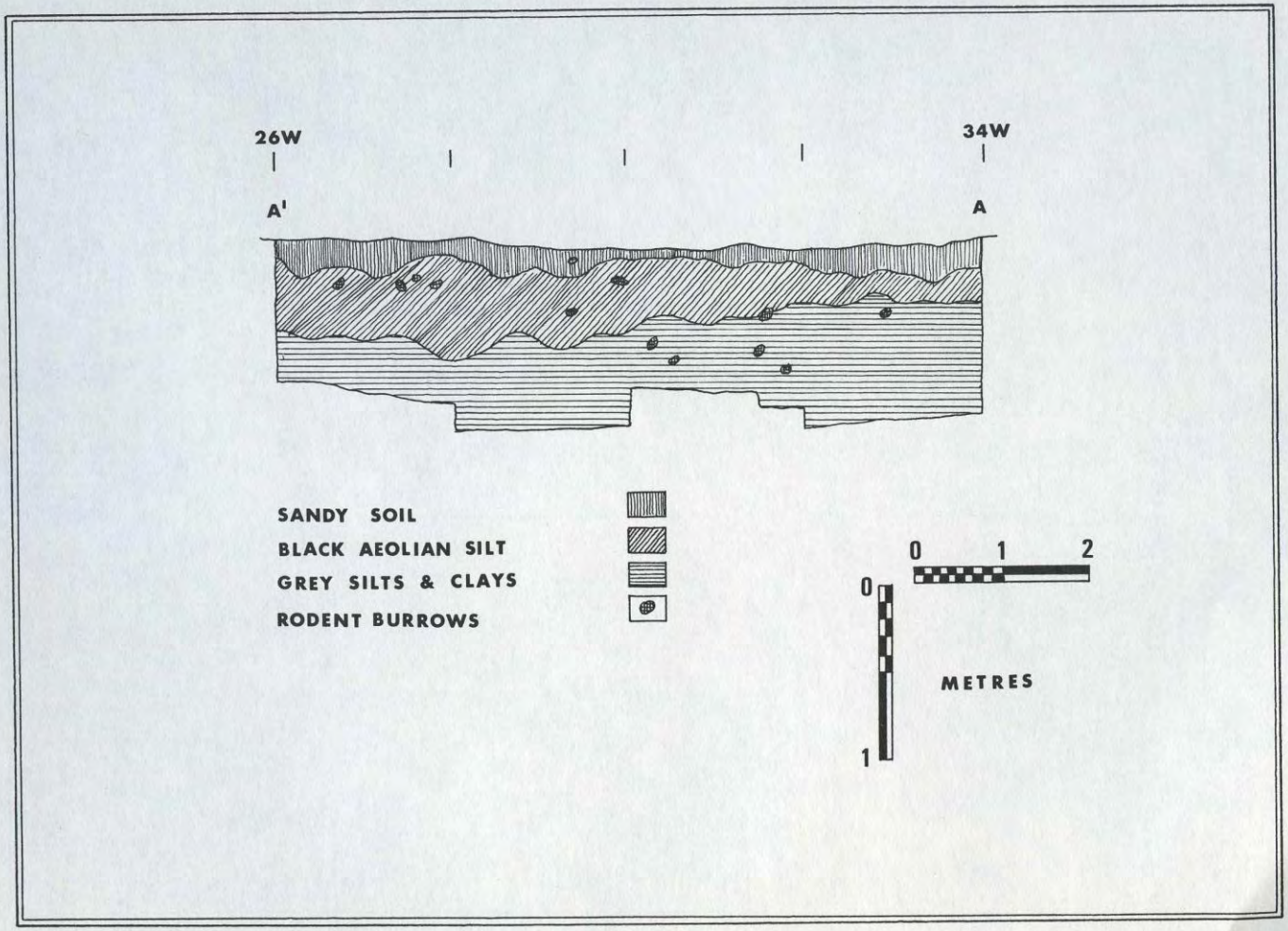

Fig. 12. Profile A'-A of the Shoreline Block.

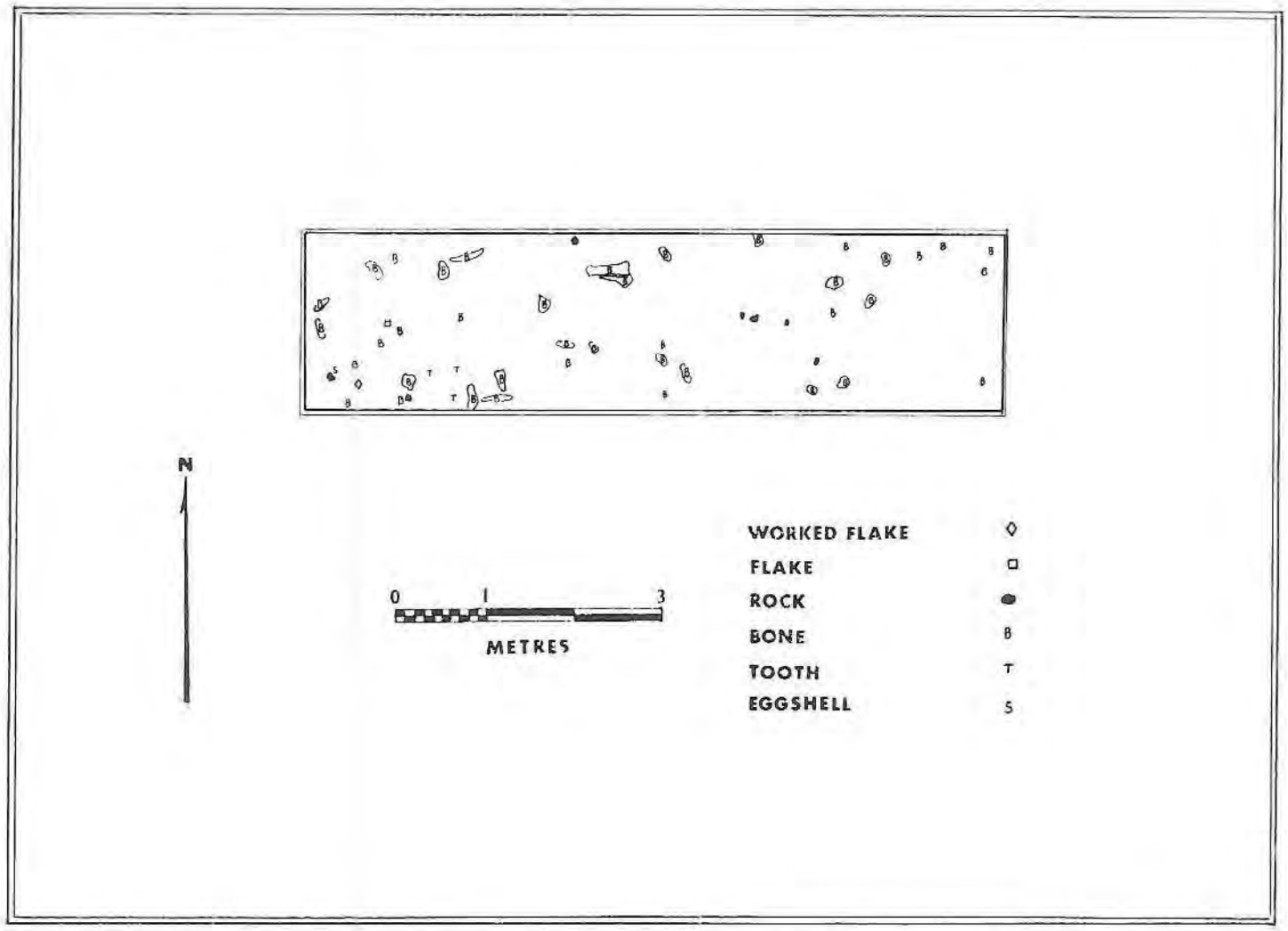

Fig. 13. Plot of artifacts recovered in situ in the Shoreline Block, levels 5 and 6.

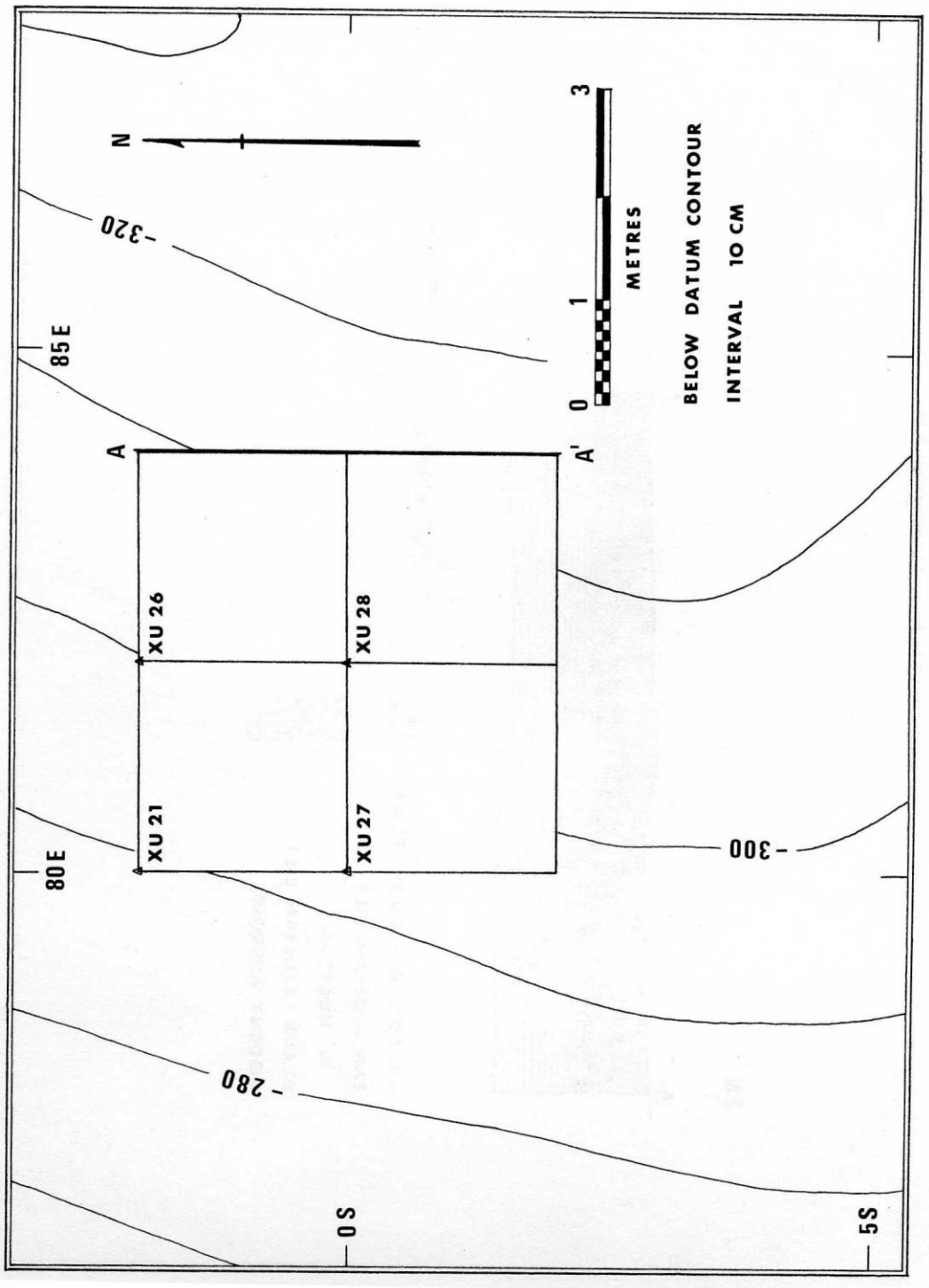

Fig. 14. Plan view of the Valley Block, 1975.

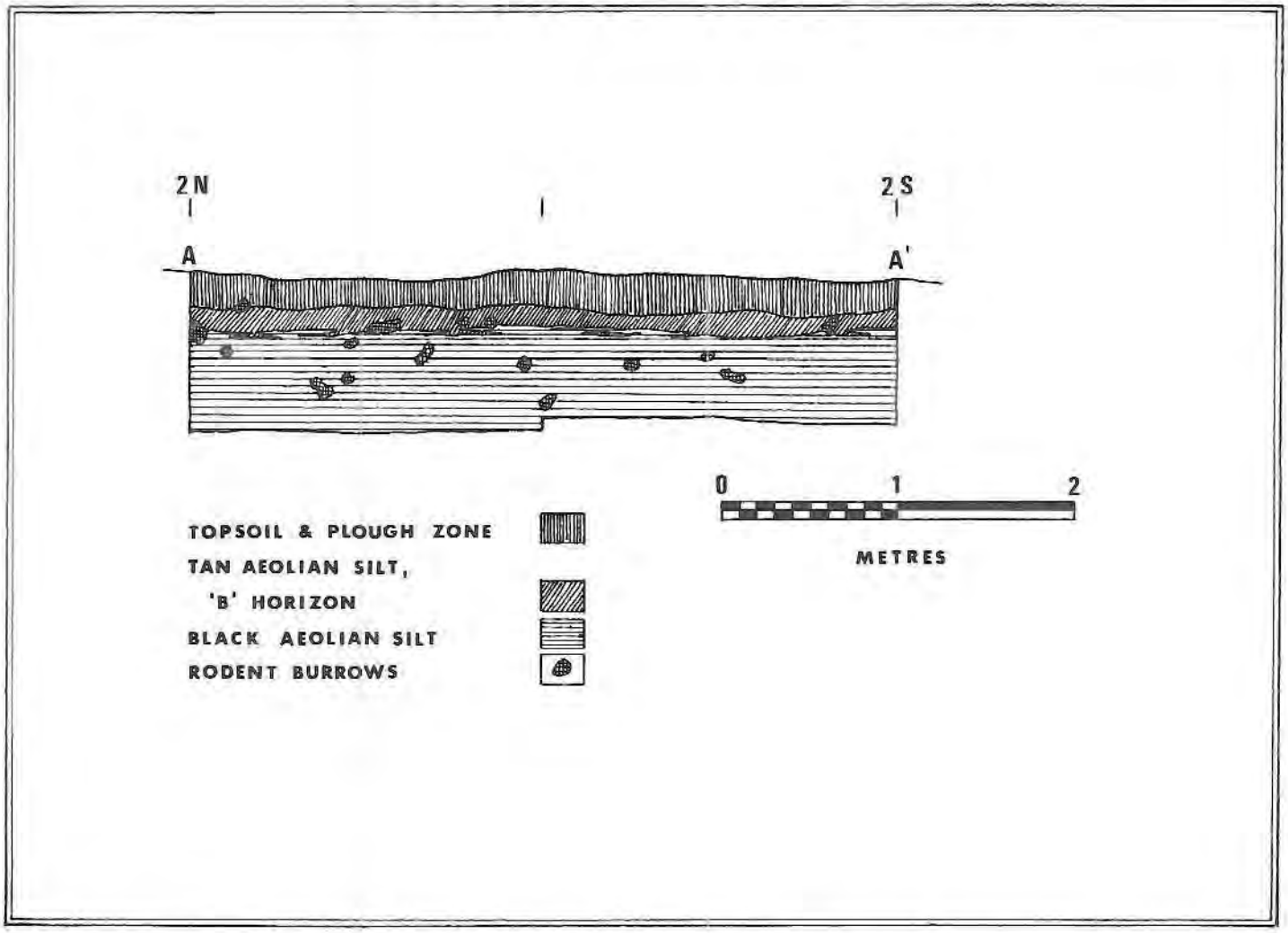

Fig. 15. Profile A-A' of the Valley Block.

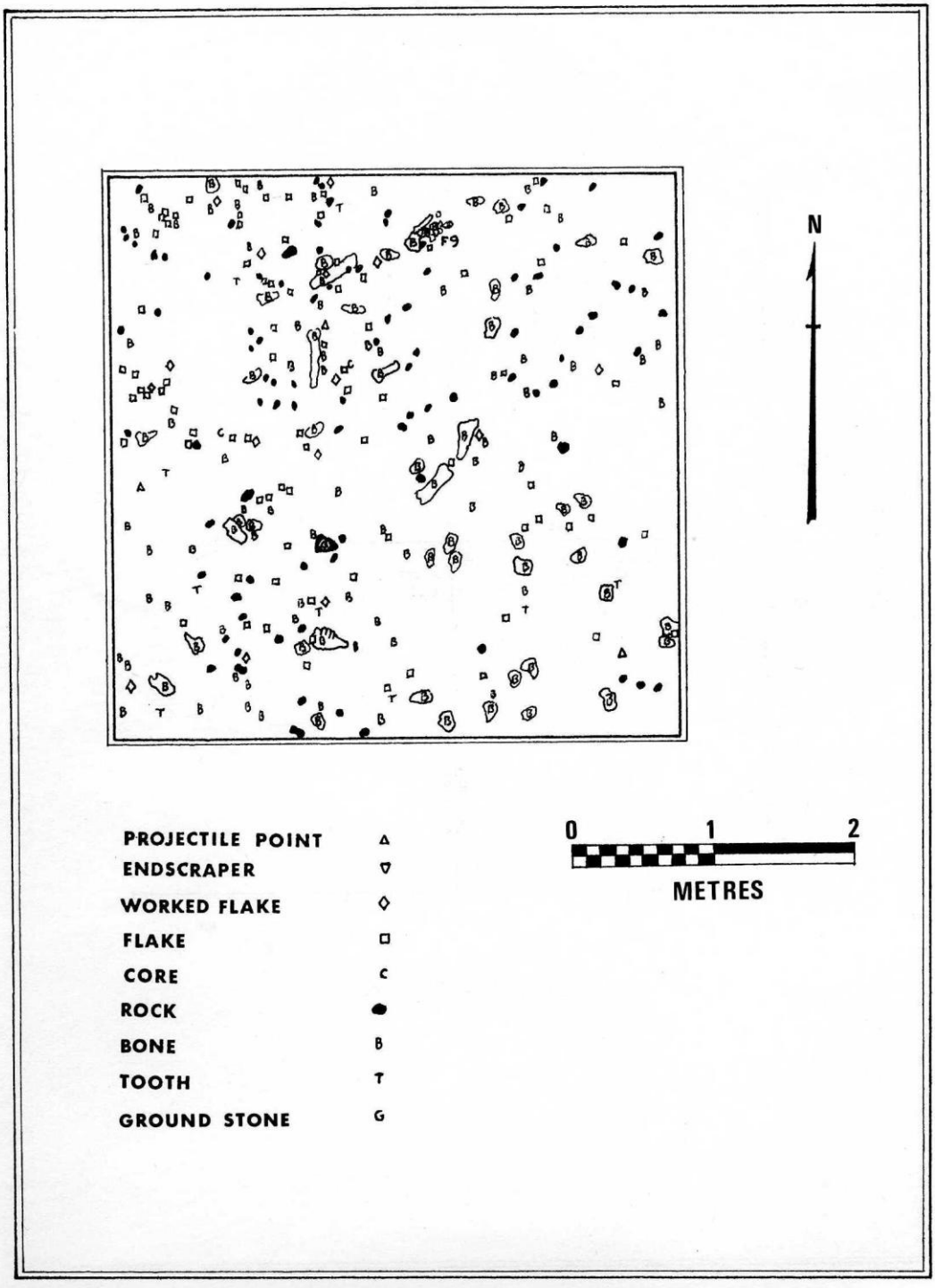

Fig. 16. Plot of the artifacts recovered in situ in the Valley Block, lower levels.

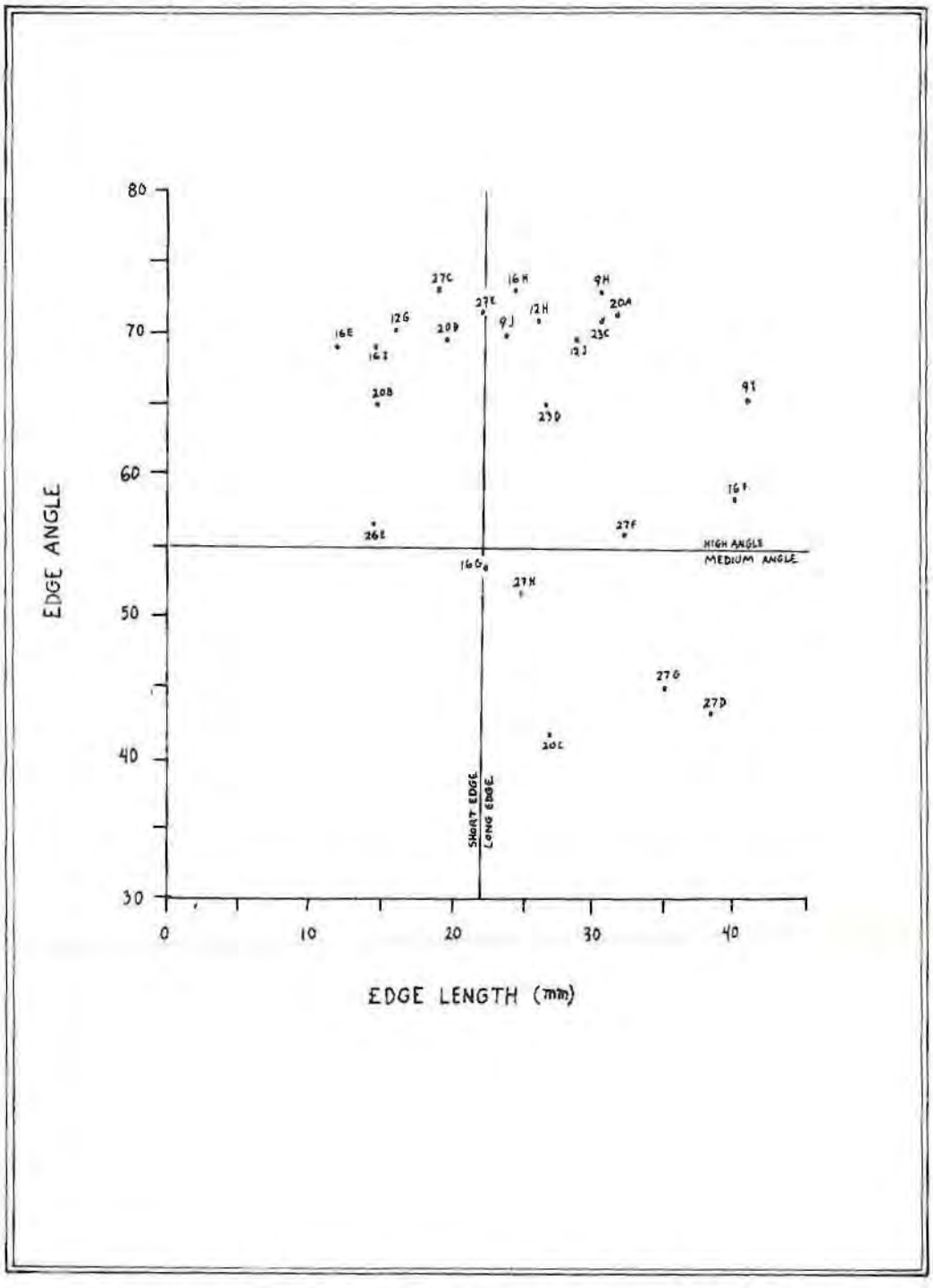

Fig. 17. Plot of variables 'Length' by 'Edge Angle' for unifacially worked flakes.

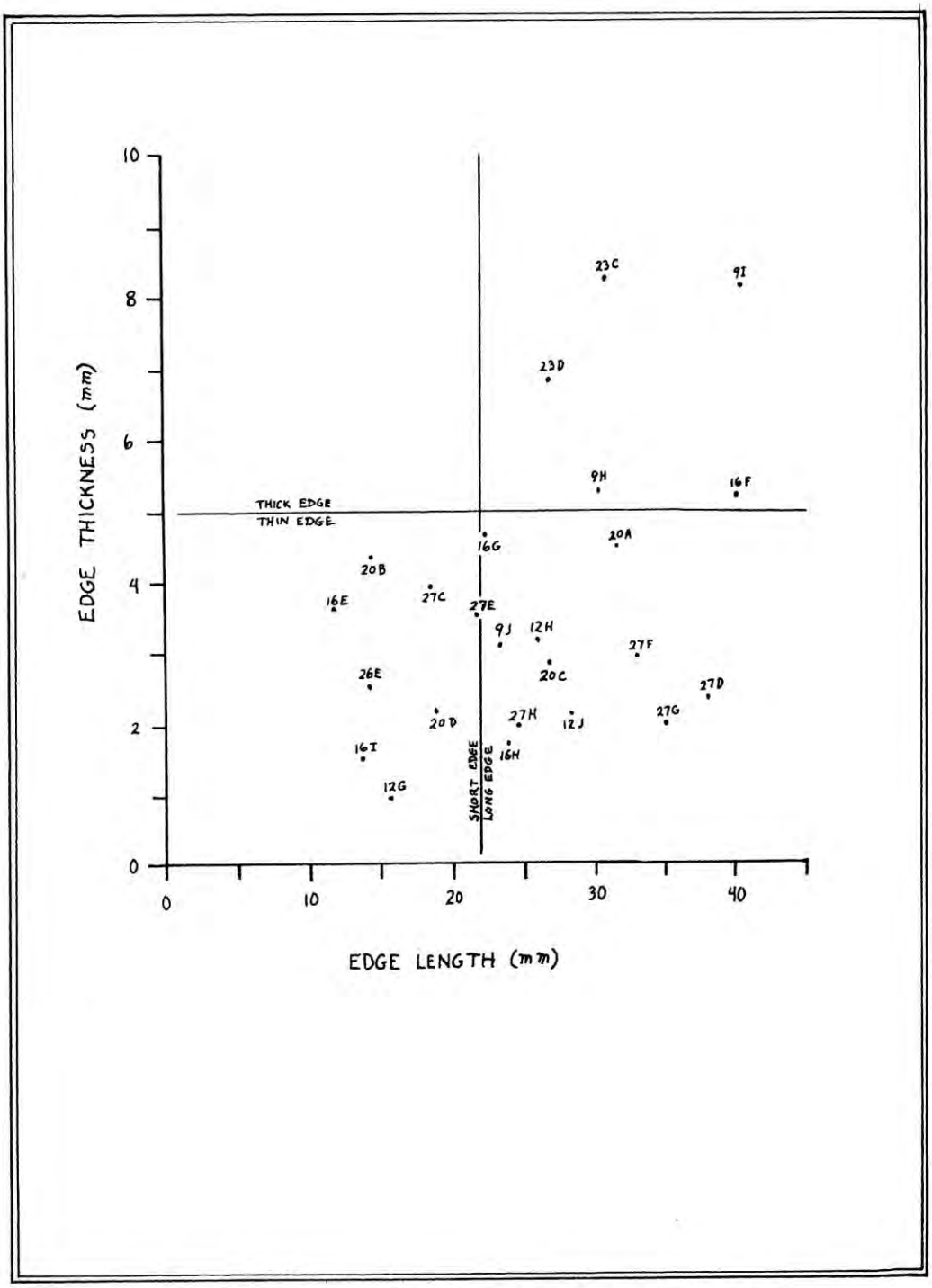

Fig. 18. Plot of variables 'Length' by 'Edge Thickness' for unifacially worked flakes.

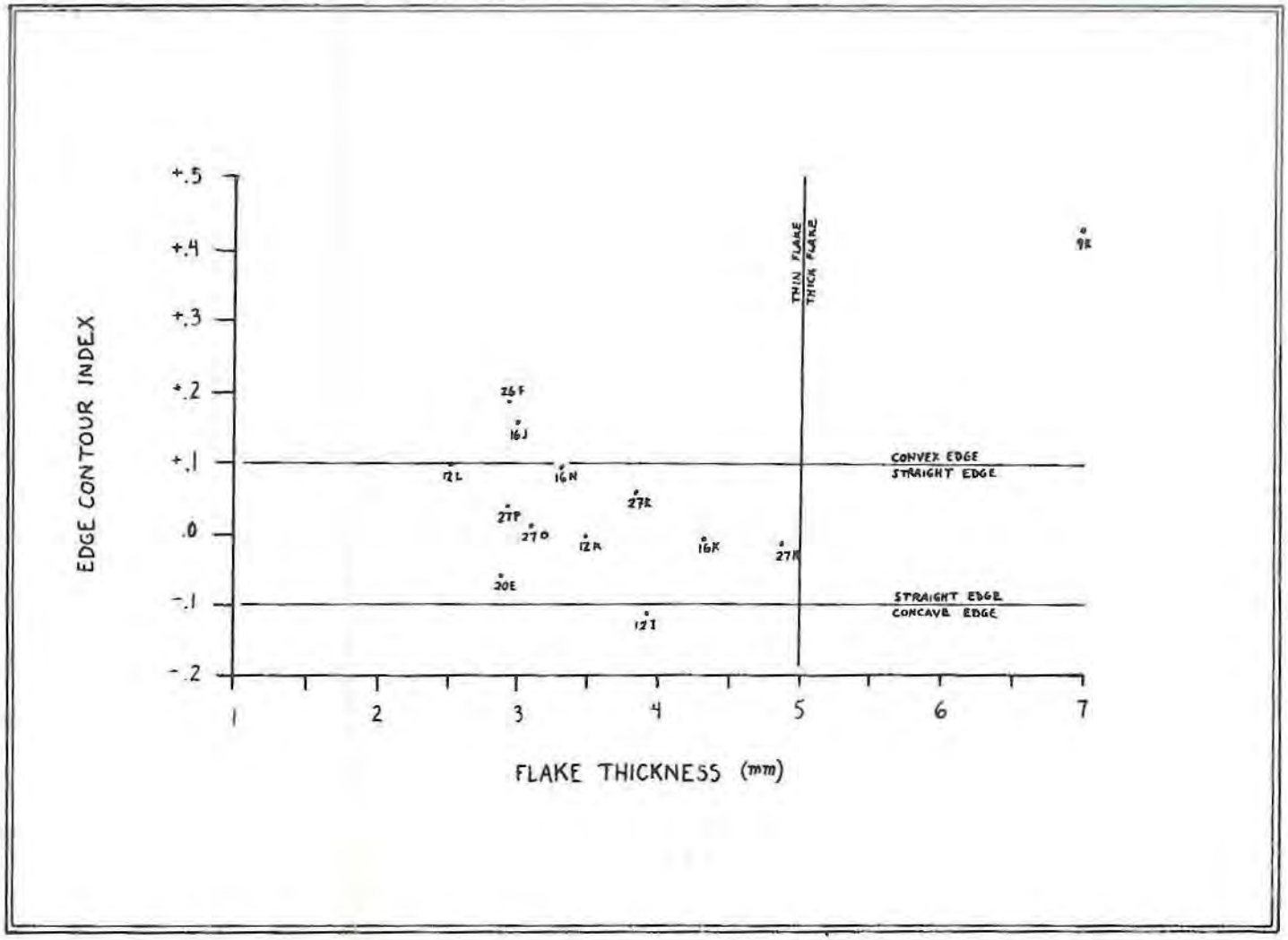

Fig. 19. Plot of variables 'Flake Thickness' by 'Edge Contour Index' for utilized flakes.

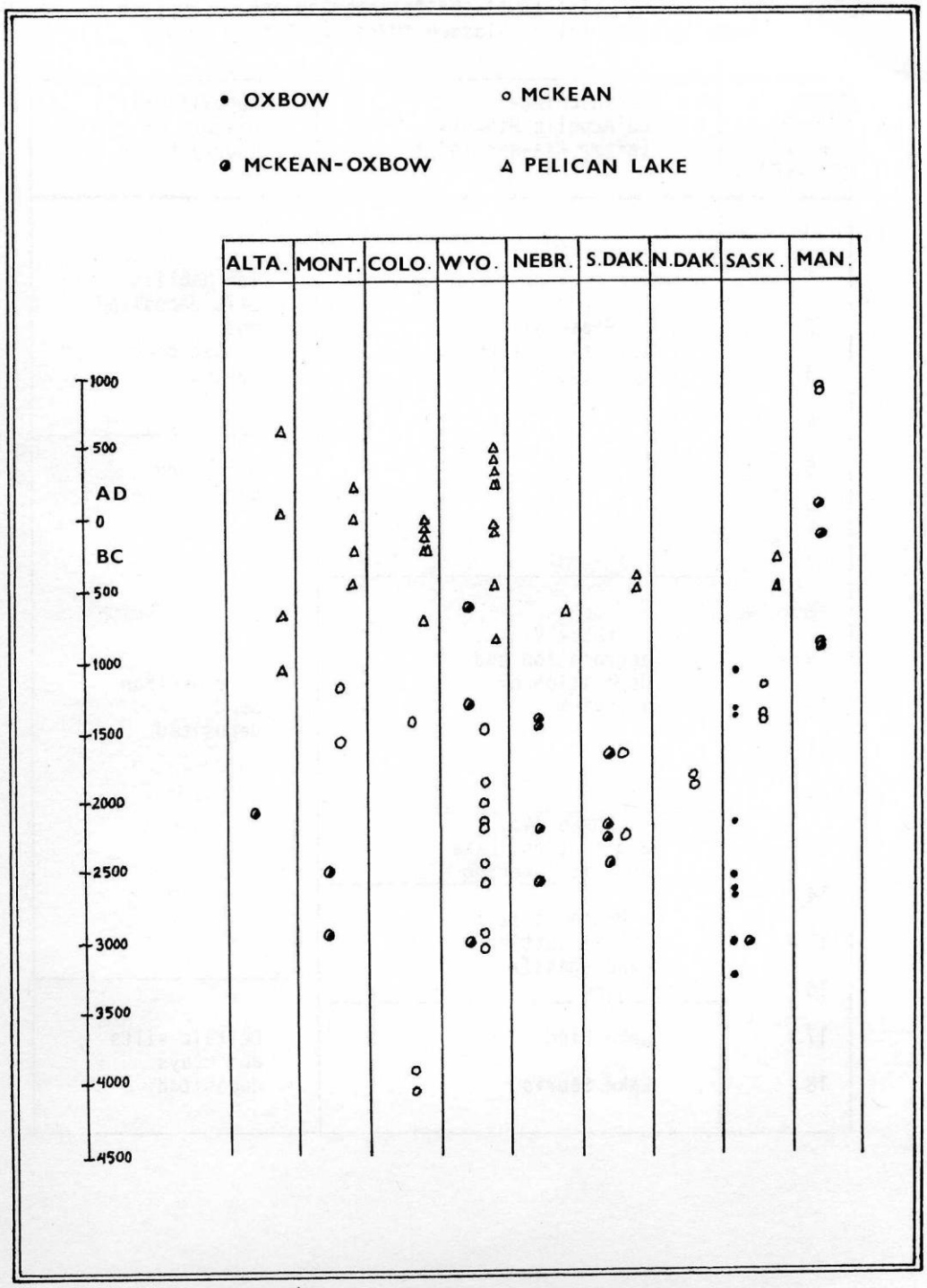

Fig. 20. Radiocarbon dates for components of the McKean, Oxbow, and Pelican Lake complexes on the northern plains.

Table 1

Depositional history of the Assiniboine and Qu'Appelle river valleys (after Klassen 1975) and Cherry Point.

Years Before Present (X 1000)	Assiniboine-Qu'Appelle History (after Klassen 1975)	Depositional History of Cherry Point
0	Phase VI: lateral erosion and deposition of alluvium	Tan aeolian silt deposited and raised beach formed
1		
2		
3		
4		
5		Gold Sand paleosol formed
6		?
7		?
8	Phase V: aggradation and deposition of alluvium	Gold Aeolian Sand deposited
9		
10		
11		
12		
13	Phase IV: aggradation, Lake Agassiz lowering	
14	Phases I-III: valley cutting, Lake Agassiz rising	
15		
16		
17	Lake Hind	Deltaic silts and clays deposited
18	Lake Souris	

Component or provenience	Plate No.	Maximum length	Maximum width	Maximum thickness	Basal concavity depth	Weight	Basal grinding	Material	Type
Main 'A'	9a 9b 9c	34.6[a] 30.7 --	19.8[a] 18.2 16.9	5.0[a] 7.7 4.0	0.0[a] 2.5 --	3.0[b] 4.4 1.4	no yes NA	KRF[c] SRC JSP	Hanna Duncan ?
Main 'B'	12a 12b 12c	-- -- 28.0	-- -- --	5.3 -- 3.6	1.8 4.0 --	4.6 0.4 0.8	no no no	KRF SC SRC	Oxbow Oxbow Oxbow
Main 'C'	16a 16b 16c	-- 32.3 --	19.2 20.3 --	6.2 5.5 --	3.0 2.4 0.8	4.2 4.0 0.8	yes no no	Misc Misc KRF	Duncan Duncan Hanna?
Shoreline	23a	27.1	27.8	5.4	0.0	3.0	no	KRF	?
Valley, Upper levels	26a 26b 26c	33.4 -- --	18.1 -- --	7.1 4.9 --	0.8 -- --	4.3 2.4 0.5	yes NA NA	JSP Misc Misc	Hanna ? ?
Valley, lower levels	27a 27b	30.0 --	15.2 --	4.3 --	2.9 --	1.8 0.6	no no	SC KRF	Oxbow Oxbow?

[a] measurements in mm.

[b] measurements in grams.

[c] KRF- Knife River Flint
SRC- Swan River Chert
SC- Selkirk Chert
JSP- jasper
Misc- miscellaneous material

Endscraper attribute data, 1975.

Component or provenience	Plate no.	Maximum length	Maximum width	Maximum thickness	Distal edge angle	Weight	Raw Material
Main 'A'	9d	19.1[a]	18.3[a]	5.1[a]	65	<.3[b]	CC[c]
	9e	20.8	17.6	4.7	72	2.4	KRF
	9f	--	17.9	4.2	60	1.4	KRF
	9g	--	15.2	<.8	64	0.5	KRF
Main 'B'	12d	22.4	16.6	5.6	73	2.7	KRF
	12e	--	16.3	2.6	70	0.8	KRF
	12f	--	28.7	6.4	65	3.9	KRF
Main 'C'	16d	<4.1	23.0	7.0	70	5.0	KRF
Shoreline	23b	--	<4.4	5.3	69	3.2	KRF
Valley, upper levels	26d	18.0	17.8	4.7	64	1.8	KRF

[a] measurements in mm.

[b] measurements in grams.

[c] CC- Cathead Chert
KRF- Knife River Flint

Table 4

Unifacially worked flakes attribute data, 1975.

Component or provenience	Plate no.	Edge length	Edge angle	Edge thickness	Weight	Raw material	Type
Main 'A'	9i	41.0[a]	63	5.3[a]	4.7[b]	KRF[c]	HSS[d]
	9h	30.2	73	5.3	4.0	CC	HSS
	9j	23.1	70	3.0	9.7	Misc	MSS
Main 'B'	12g	15.3	70	1.0	0.4	KRF	LS
	12h	25.6	71	3.2	1.9	KRF	MSS
	12j	28.0	70	2.1	1.9	KRF	MSS
Main 'C'	16f	40.0	58	5.1	5.4	KRF	HSS
	16h	23.8	73	1.7	1.7	KRF	MSS
	16i	14.1	69	1.6	1.9	KRF	LS
	16g	22.2	53	4.7	4.8	SRC	Knife
	16e	11.5	69	3.5	0.8	KRF	LS
Main 'D'	20d	18.7	70	2.1	1.8	Misc	LS
	20b	14.0	65	4.3	3.3	JSP	LS
	20a	31.3	71	4.5	5.2	SRC	MSS
	20c	26.4	41	2.9	5.6	KRF	Knife
Shoreline	23c	30.6	71	8.2	9.2	CC	HSS
	23d	25.3	65	6.8	6.7	SRG	HSS
Valley, upper levels	26e	14.3	57	2.5	1.1	KRF	LS
Valley, lower levels	27d	37.8	43	2.3	5.5	KRF	Knife
	27g	35.0	45	2.0	5.2	KRF	Knife
	27h	24.7	52	2.0	3.1	KRF	Knife
	27f	32.7	57	2.9	5.0	KRF	MSS
	27c	18.4	73	3.9	4.8	SRG	LS
	27e	21.2	71	3.5	2.6	KRF	LS

[a] measurements in mm.

[b] measurements in grams

[c] KRF- Knife River Flint
CC- Cathead Chert
SRC- Swan River Chert
SRG- Souris River Gravels
JSP- jasper
Misc- miscellaneous material

[d] HSS- High-angle sidescraper
MSS- Medium-angle sidescraper
LS- Light scraper

Utilized flakes attribute data, 1975.

Component or provenience	Plate no.	Edge length	Edge angle	Flake thickness	Edge contour index	Weight	Raw material
Main 'A'	9k	28.2[a]	30-	6.9[a]	.43	3.8[b]	SRC[c]
Main 'B'	12i	17.2	64	3.9	-.12	2.2	KRF
	12k	33.6	22	3.5	-.01	2.0	KRF
	12l	20.9	23	2.5	.10	0.7	KRF
Main 'C'	16j	17.0	56	3.0	.16	0.8	KRF
	16k	13.2	64	4.3	-.02	1.1	KRF
	16n	17.0	65	3.3	.09	0.7	SRC
Main 'D'	20e	16.1	63	2.8	-.06	1.1	KRF
Valley, upper levels	26f	15.1	20	2.9	.19	1.7	KRF
Valley, lower levels	27k	15.8	9	3.8	.06	1.2	KRF
	27n	14.7	32	4.8	-.02	2.2	KRF
	27o	14.9	33	3.1	.01	0.8	KRF
	27p	14.0	39	2.9	.04	0.6	KRF

[a] measurements in mm.

[b] measurements in grams.

[c] KRF- Knife River Flint
SRC- Swan River Chert

Table 6

Contingency table of raw lithic materials and lithic artifacts for the Cherry Point components, 1975.

		Knife River Flint	Souris River Gravels	Swan River Chert	Cathead Chert	Selkirk Chert	Jasper	Miscellaneous	Totals
Main 'A'	W[a]	7		2	2		1		12
	U[b]	60	4	17	3	1	18	18	121
Main 'B'	W	12	1	4		1		1	19
	U	31	3	10	3	5	1	20	73
Main 'C'	W	10		3	1			2	16
	U	38	4	9	1	3	3	22	80
Main 'D'	W	4		1	1			1	7
	U	9		4				2	15
Shoreline	W	3	1		1				5
	U	8	1	1			1	2	13
Valley, upper levels	W	4		1			1	4	10
	U	32	2	19	1		2	22	78
Valley, lower levels	W	13	2	5		1	1	2	24
	U	30	5	26	4		9	23	97
Totals		261	23	102	17	11	37	119	570

[a] Worked lithics

[b] Unworked lithics

Table 7

Relative percentages of raw materials for lithic artifacts at the Cherry Point site, 1975.

	Worked Rel. %	Unworked Rel. %	Total Rel. %
Knife River Flint	56.9	43.6	45.8
Souris River Gravels	4.3	4.0	4.0
Swan River Chert	17.2	18.0	17.9
Cathead Chert	5.4	2.5	2.9
Selkirk Chert	2.2	1.9	1.9
Jasper	3.2	7.1	6.5
Miscellaneous	10.8	22.9	20.9
Totals	100.0	100.0	99.9

Table 8

Relative percentages of raw materials for lithic artifacts from the Main Excavation Area, 1975.

	Worked Rel. %	Unworked Rel. %	Total Rel. %
Knife River Flint	61.0	47.8	49.9
Souris River Gravels	1.9	3.8	3.5
Swan River Chert	18.5	13.8	14.6
Cathead Chert	7.4	2.4	3.2
Selkirk Chert	1.9	3.1	2.9
Jasper	1.9	7.6	6.7
Miscellaneous	7.4	21.5	19.2
Totals	100.0	100.0	100.0

Table 9

Contingency table of raw lithic materials and lithic artifacts from the Main Excavation Area, 1974 (after Gibson 1975).

		Brown Chalcedony	Swan River Chert	Fine Chert	Miscellaneous	Totals
Main Area (1974)	W	22	15	12	1	50
	U	491	131	300	17	939
Totals		513	146	312	18	989

Table 10

Relative percentages of raw materials for lithic artifacts from the Main Excavation Area, 1974 (after Gibson 1975).

	Worked Rel. %	Unworked Rel. %	Total Rel. %
Brown Chalcedony	44.0	52.3	51.9
Swan River Chert	30.0	14.0	31.5
Fine Chert	24.0	31.9	31.5
Miscellaneous	2.0	1.8	1.8
Totals	100.0	100.0	100.0

Table 11

Relative percentages of raw materials for lithic artifacts from the Main Excavation Area, 1974 and 1975.

	Worked Rel. %	Unworked Rel. %	Total Rel. %
Brown Chalcedony	53.8	52.1	52.3
Swan River Chert	24.0	13.9	14.7
Fine Chert	17.3	27.6	26.7
Miscellaneous	4.8	6.4	6.3
Totals	99.9	100.0	100.0

Table 12

Correlation matrix for four variables for Unifacially worked flakes.

	L	I	A	T	
Edge length (L)	1.000				$\bar{L}$ = 25.258 σ = 3.304
Edge index (I)	-.217	1.000			$\bar{I}$ = .0725 σ = .09858
Edge angle (A)	(-.365)	.020	1.000		$\bar{A}$ = 63.3 σ 9.907
Edge thickness (T)	(.410)	.013	.160	1.000	$\bar{T}$ = 3.633 σ = 1.913

Table 13

Correlation matrix for four variables for Utilized flakes.

	L	I	A	T	
Edge length (L)	1.000				$\bar{L}$ = 18.423 σ = 5.318
Edge index (I)	.368	1.000			$\bar{I}$ = .06538 σ = .134
Edge angle (A)	.412	-.341	1.000		$\bar{A}$ = 40 σ = 19.115
Edge thickness (T)	.294	(.434)	-.163	1.000	$\bar{T}$ = 3.669 σ = 1.124

( ) = $\underline{t}$ score significant at the 5% level of error

Table 14

Environmental reconstruction and the radiocarbon dates from the Cherry Point components (after Bryson and Wendland 1967, Ritchie 1967, P. David 1971).

	Bryson and Wendland (1967)	Ritchie (1967)	P. David (1971)	Cherry Point Dates
2000	Recent	Aspen Parkland Communities		
	Neo Boreal			
1500	Pacific		soil	
			Dune building	
1000	Neo Atlantic		soil	Main Area A
	Scandic		Dune building	
500			soil	
A.D. 0 B.C.	Sub Atlantic		Dune building	Main Area B
			soil	
500				
1000	Sub Boreal		Dune building	Main Area C
1500	Early Sub Boreal	Grassland Communities	soil	
2000				

Plate 1. Aerial view of Cherry Point and the north shore of Oak Lake.

Plate 2. The Main Excavation Area, 1974.

Plate 3. The Main Excavation Area, 1975.

Plate 4. The Shoreline Excavation Block.

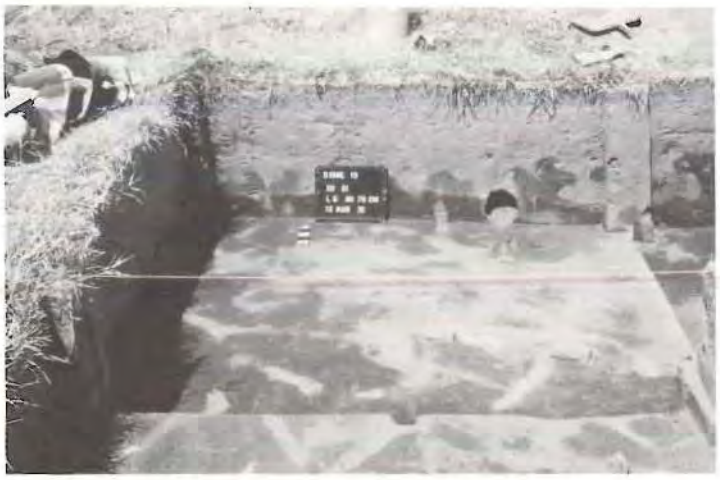

Plate 5. The Valley Excavation Block.

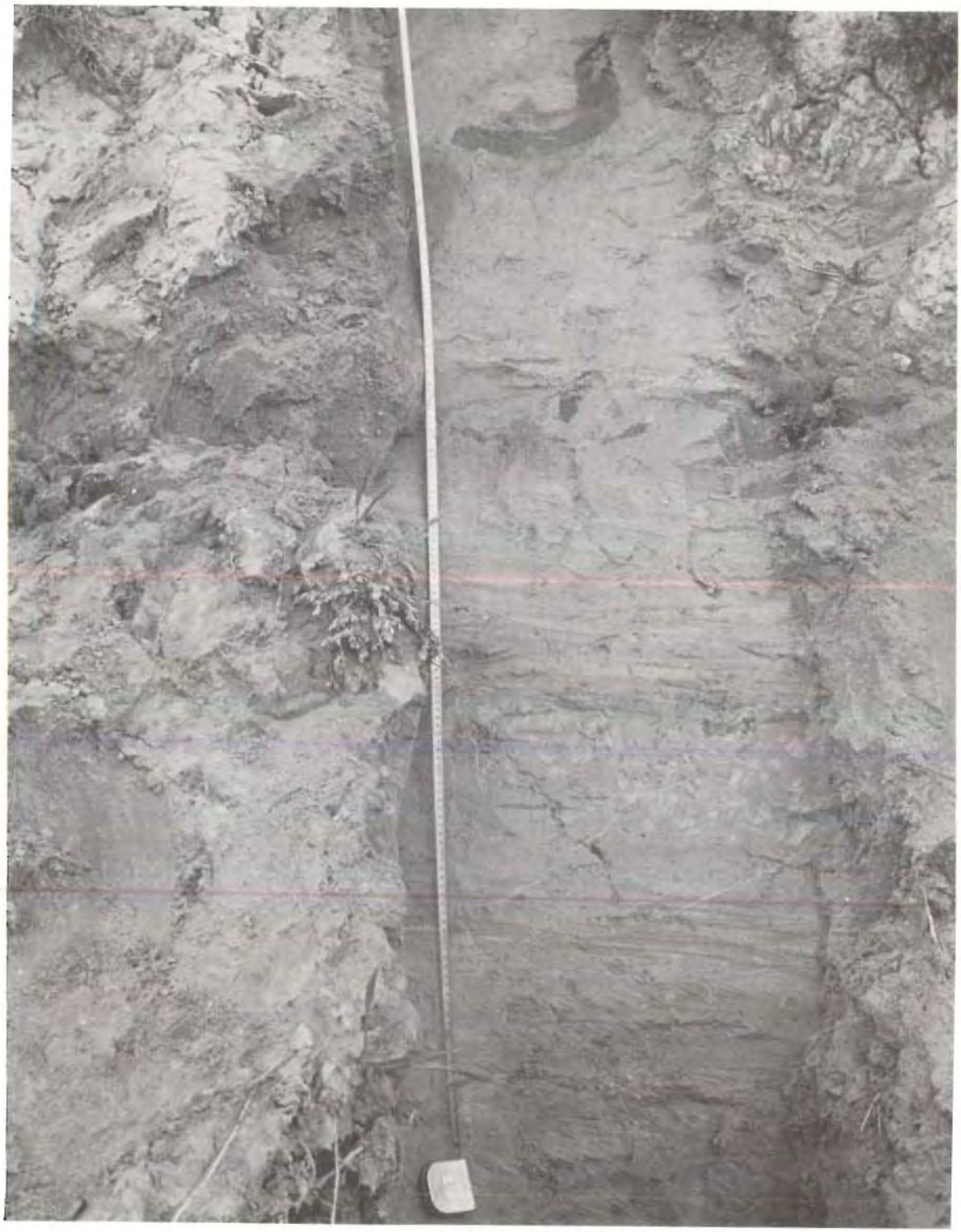

Plate 6. Deltaic silts and clays exposed on the wave-cut cliff at Cherry Point.

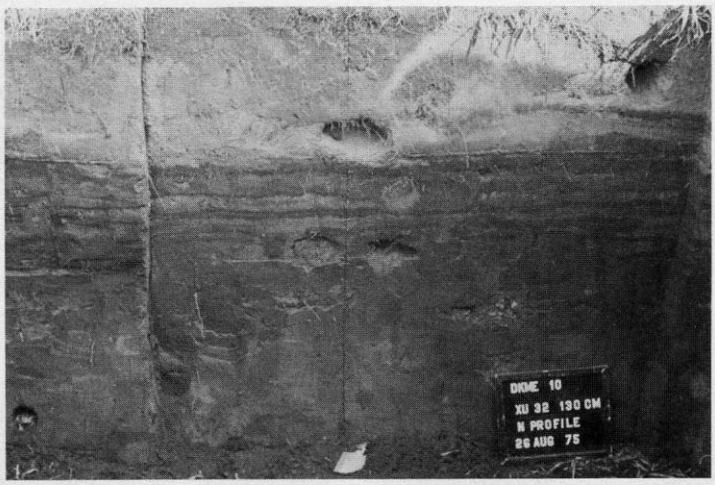

Plate 7. Laminated beach sands exposed on the raised beach at Cherry Point.

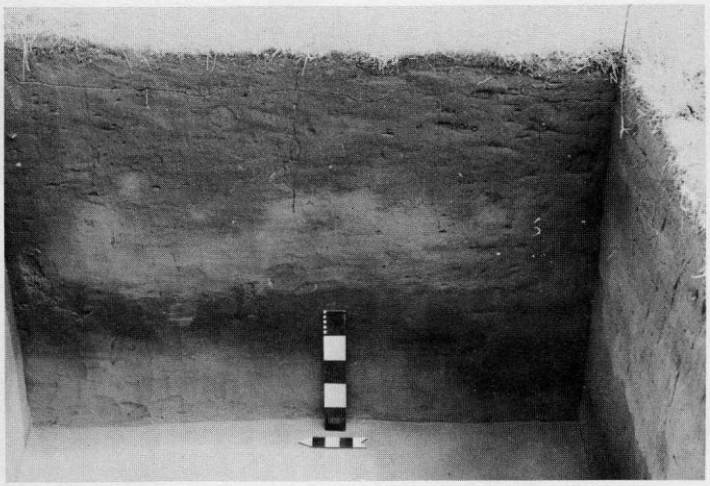

Plate 8. The tan aeolian silt, the paleosol of the gold sand, and the gold aeolian sand in the Main Excavation Area.

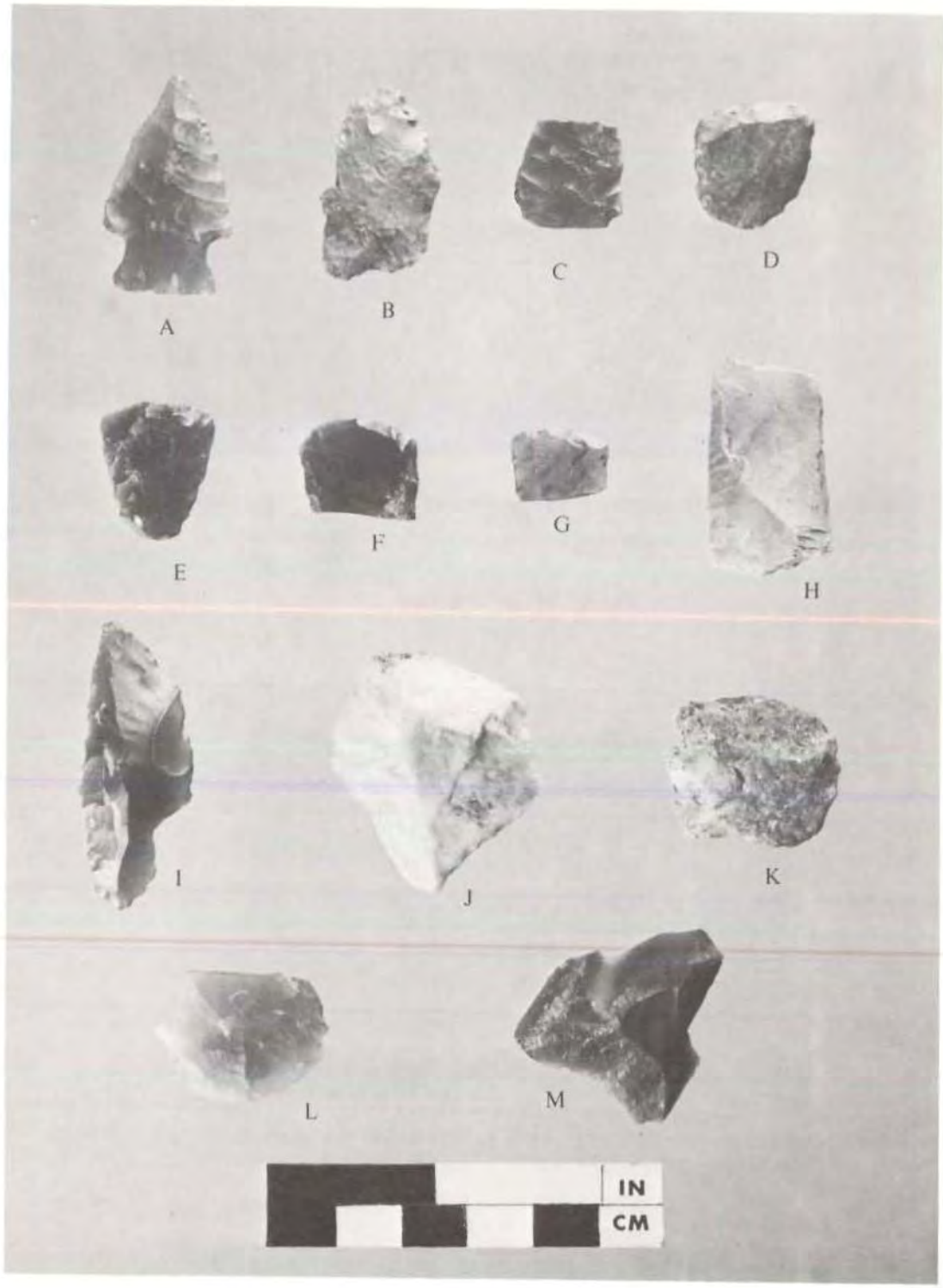

Plate 9. Artifacts from component A, Main Excavation Area, 1975.

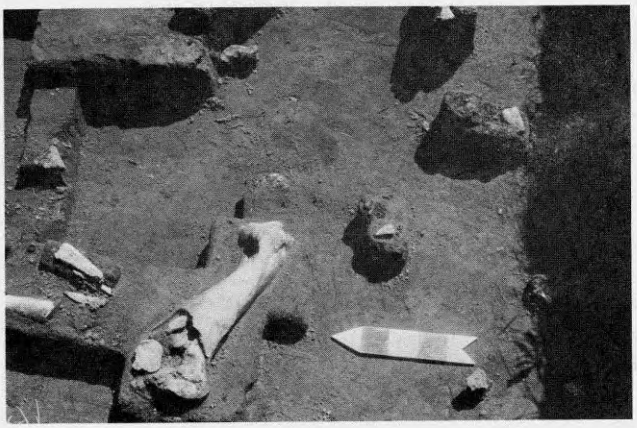

Plate 10. Feature 8 in component B, Main Excavation Area, 1975.

Plate 11. Feature 8 and associated materials in component B, Main Excavation Area, 1975.

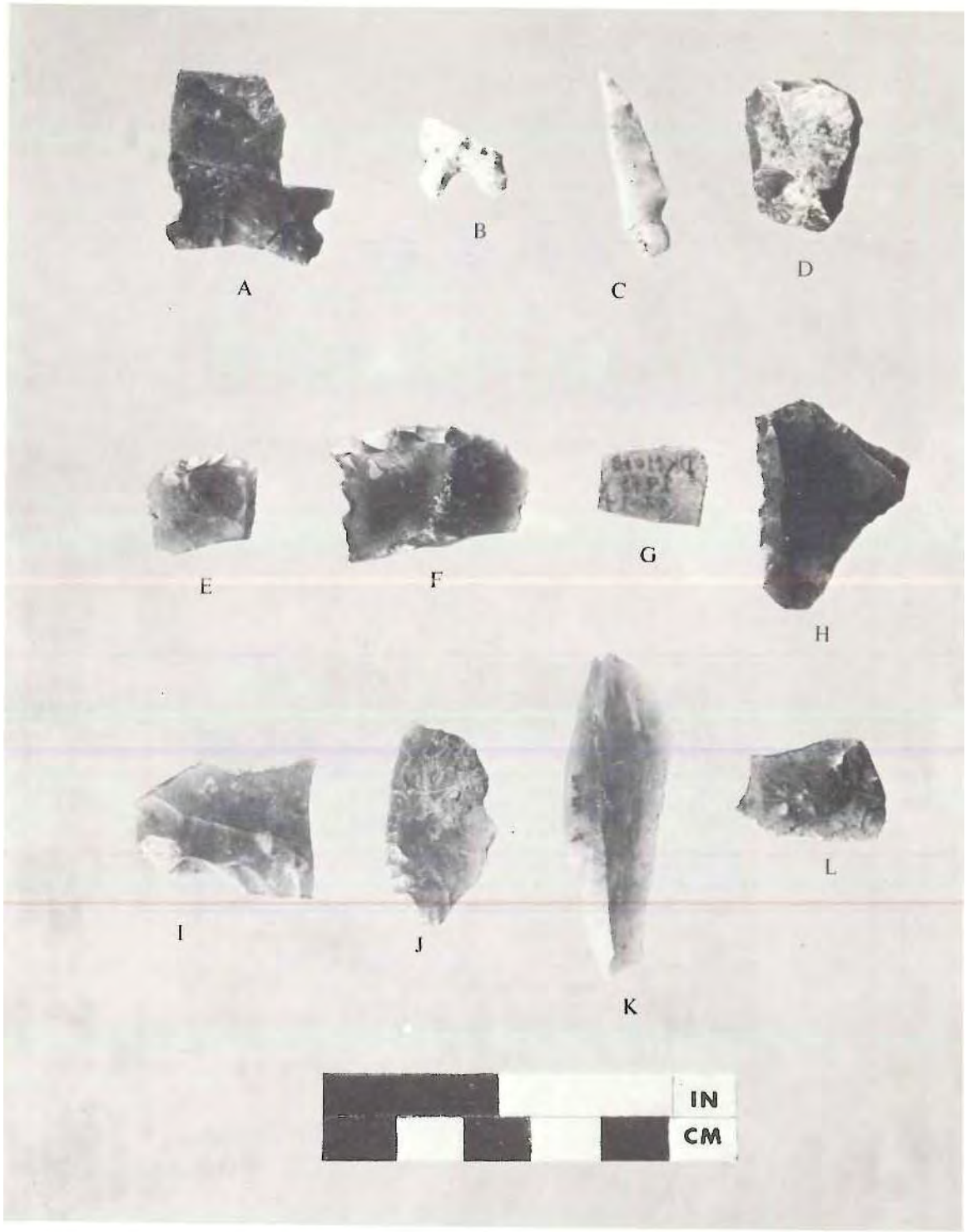

Plate 12. Artifacts from component B, Main Excavation Area, 1975.

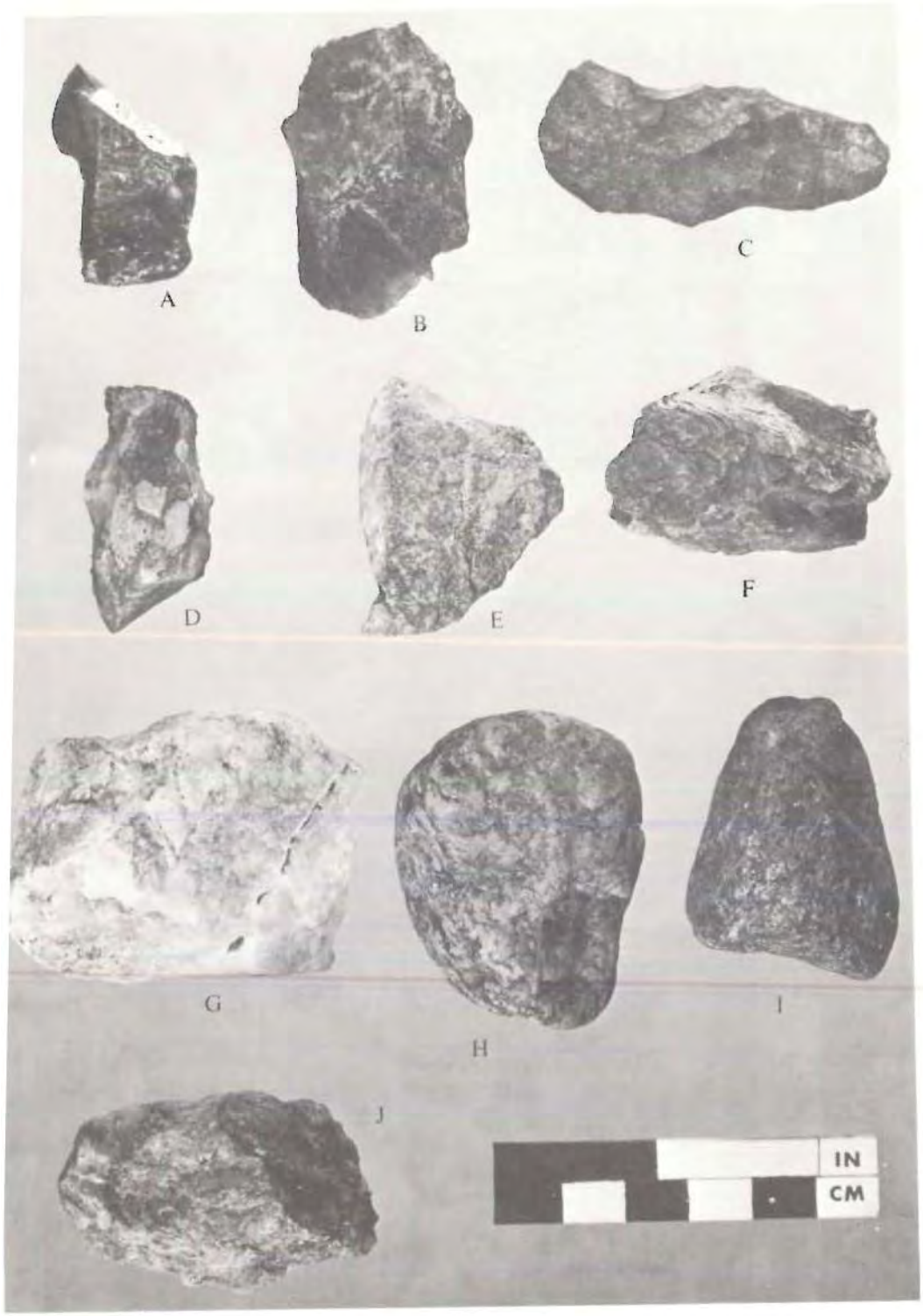

Plate 13. Artifacts from component B, Main Excavation Area, 1975.

Plate 14. Component C, Main Excavation Area, 1975.

Plate 15. Feature 7 in component C, Main Excavation Area, 1975.

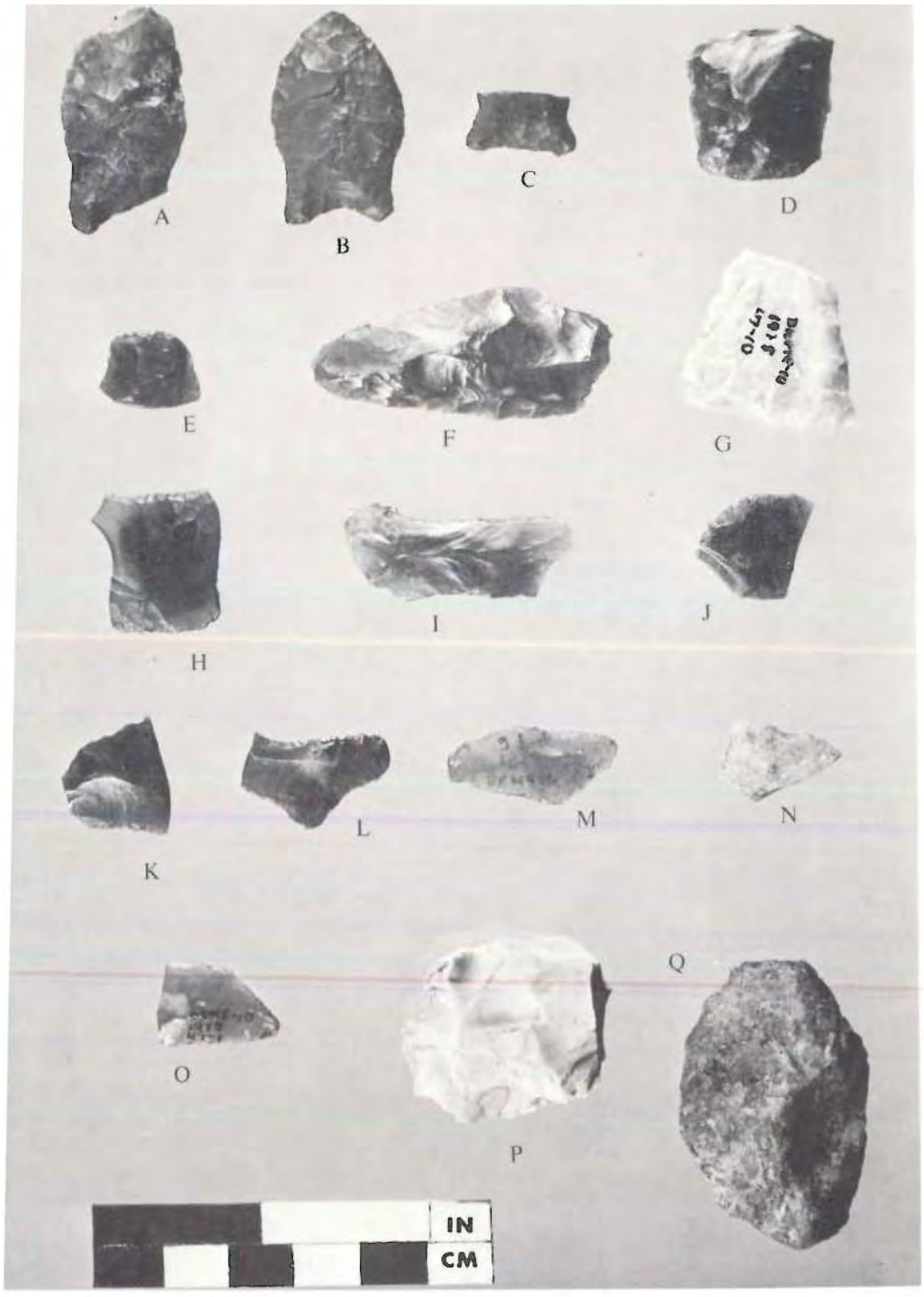

Plate 16. Artifacts from component C, Main Excavation Area, 1975.

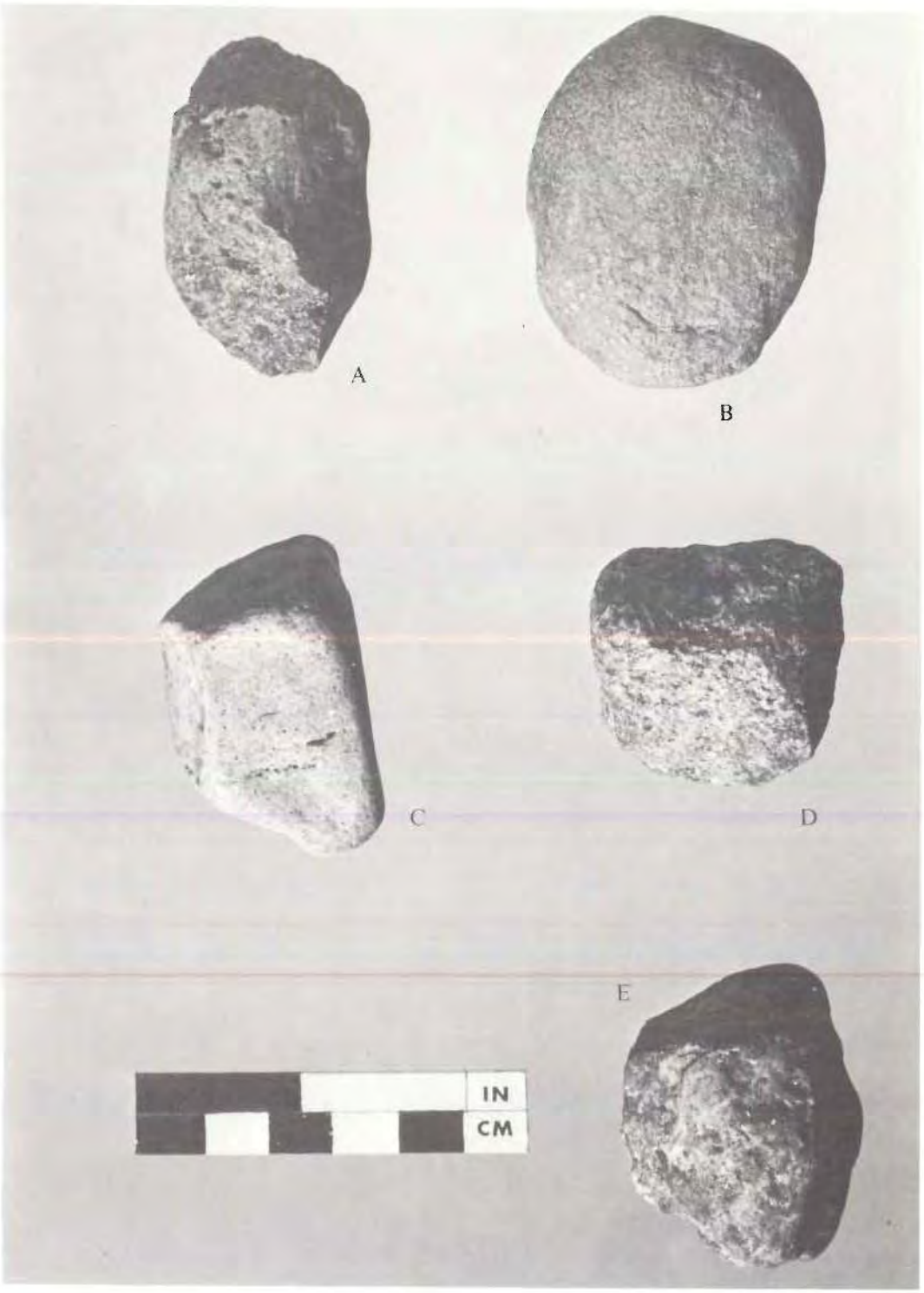

Plate 17. Artifacts from component C, Main Excavation Area, 1975.

Plate 18. Bone in component D, Main Excavation Area, 1975.

Plate 19. Bone in component D, Main Excavation Area, 1975.

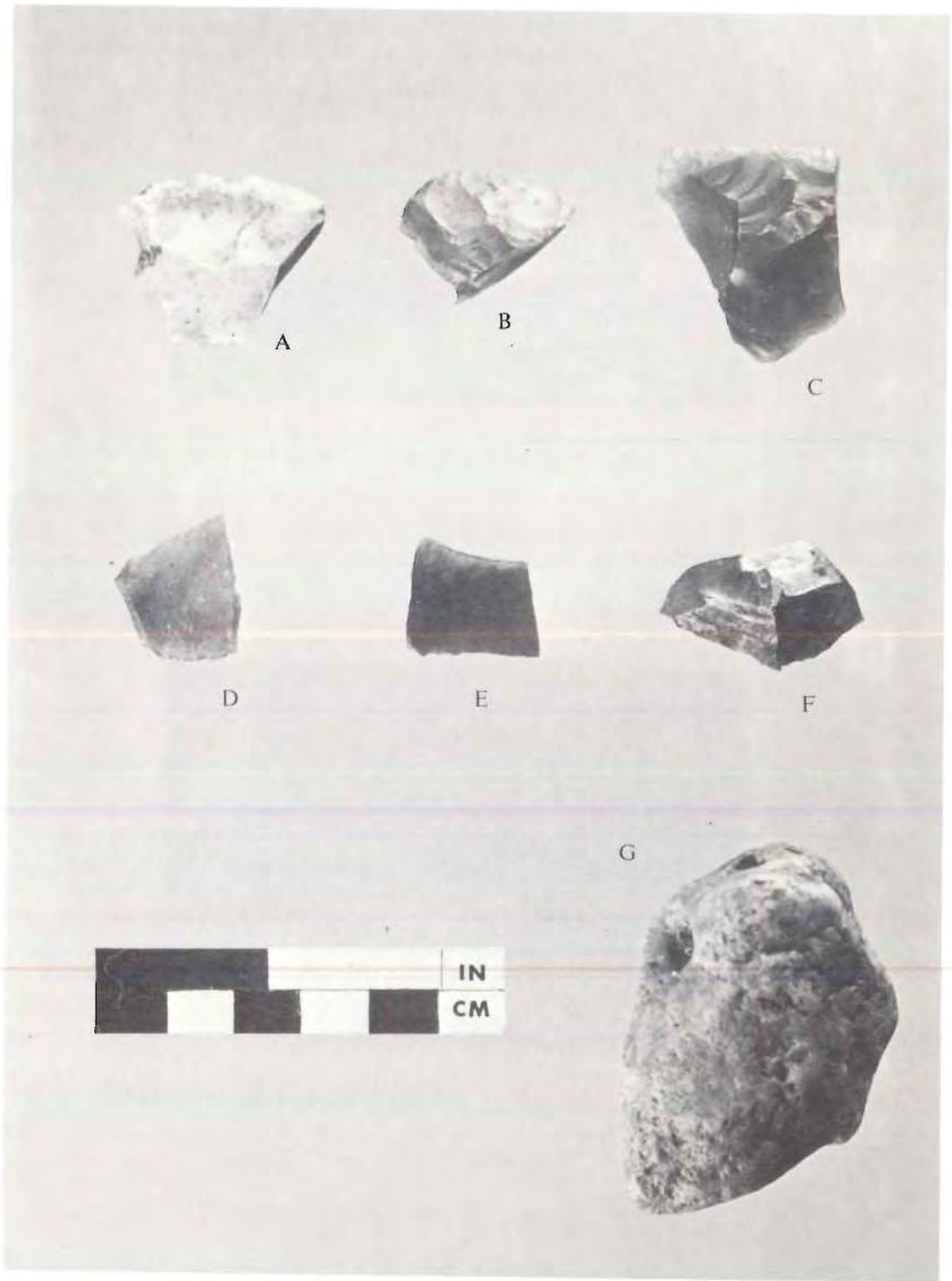

Plate 20. Artifacts from component D, Main Excavation Area, 1975.

Plate 21. Bone in Shoreline Excavation Block, levels 5 and 6.

Plate 22. Feature 10, a crushed bison metacarpal bone, in the Shoreline Excavation Block, levels 5 and 6.

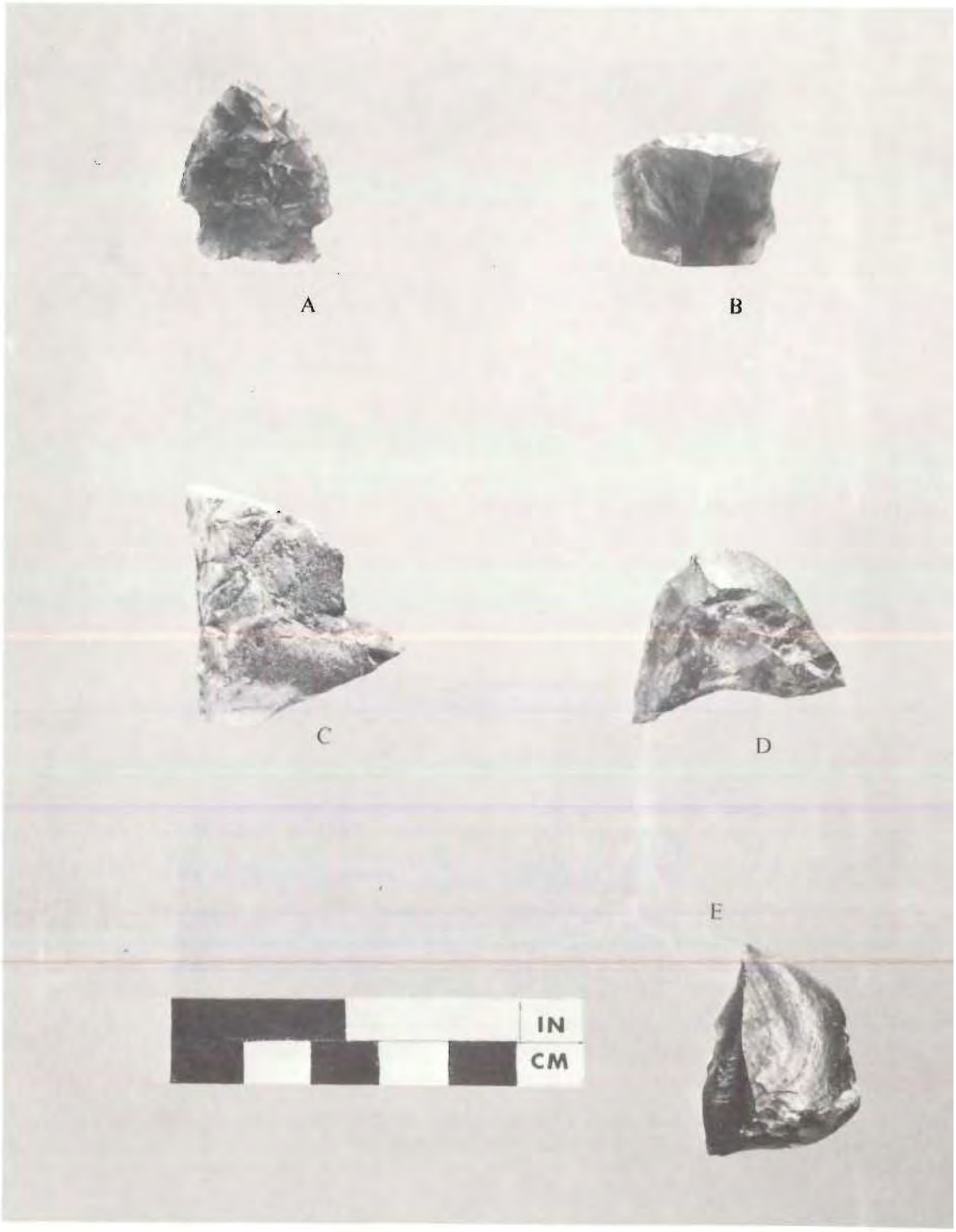

Plate 23. Artifacts from the Shoreline Excavation Block, levels 5 and 6.

Plate 24. Upper levels of the Valley Excavation Block. Note the rodent burrows.

Plate 25. The floor of the lower levels, Valley Excavation Block.

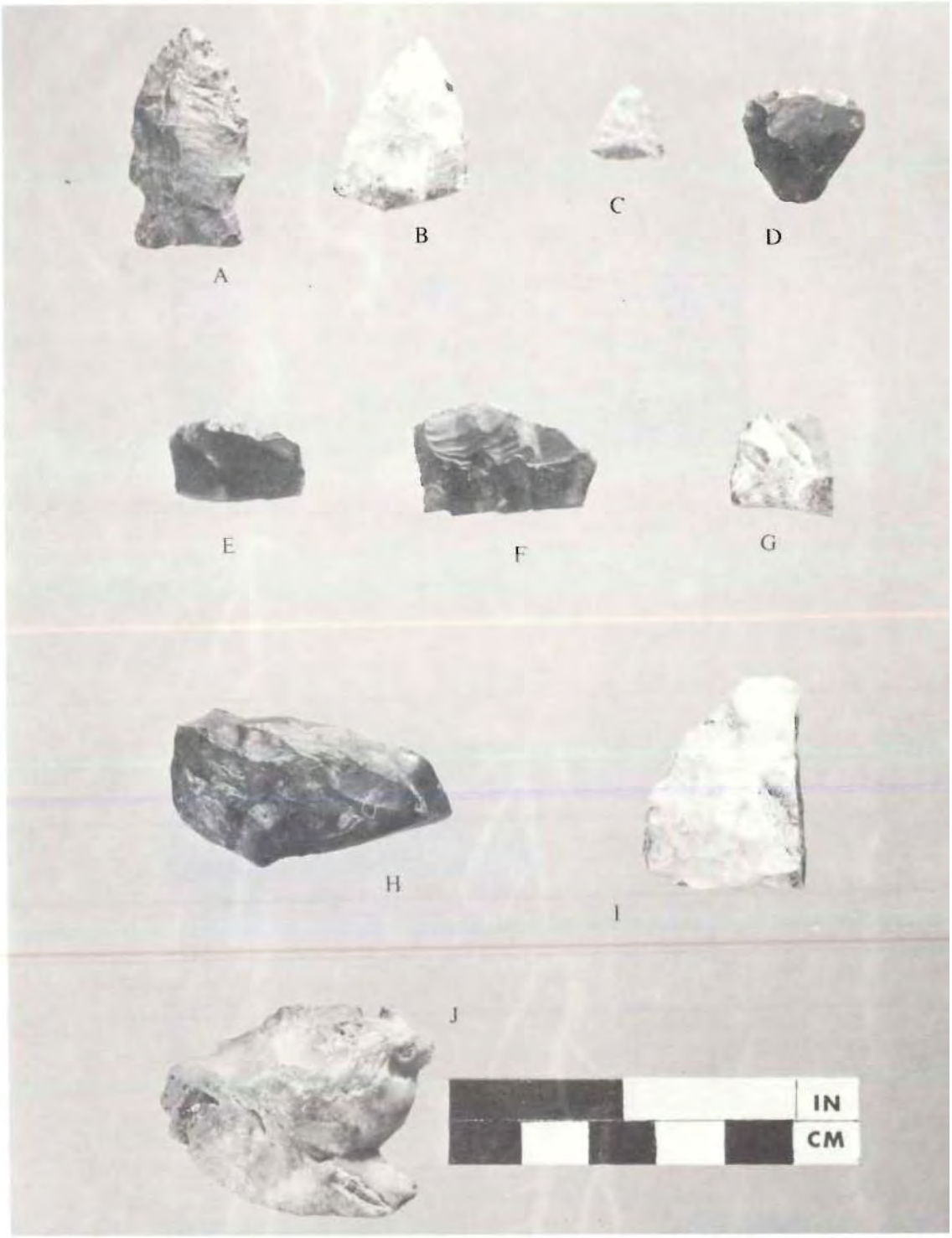

Plate 26. Artifacts from the upper levels, Valley Excavation Block.

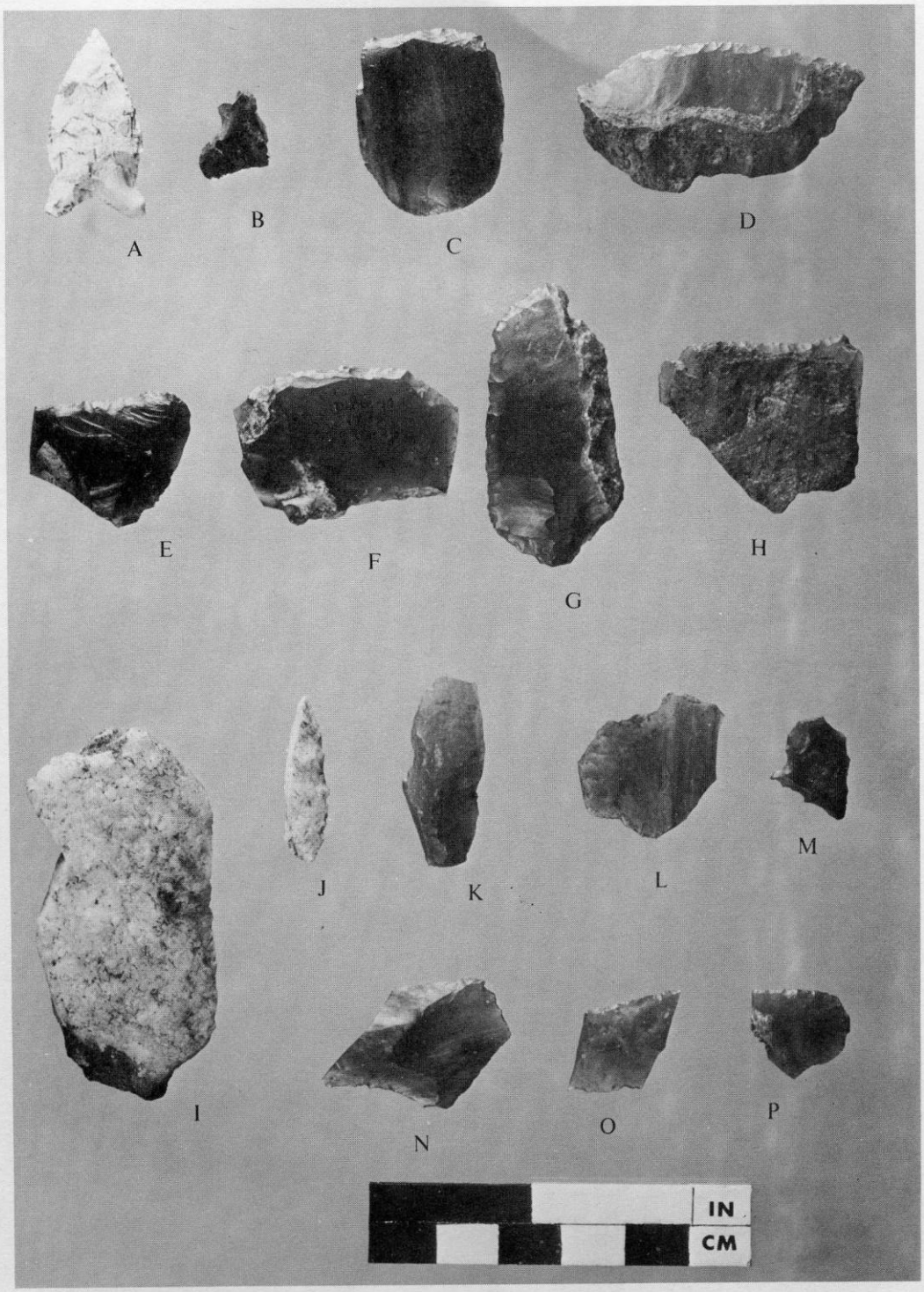

Plate 27. Artifacts from the lower levels, Valley Excavation Block.

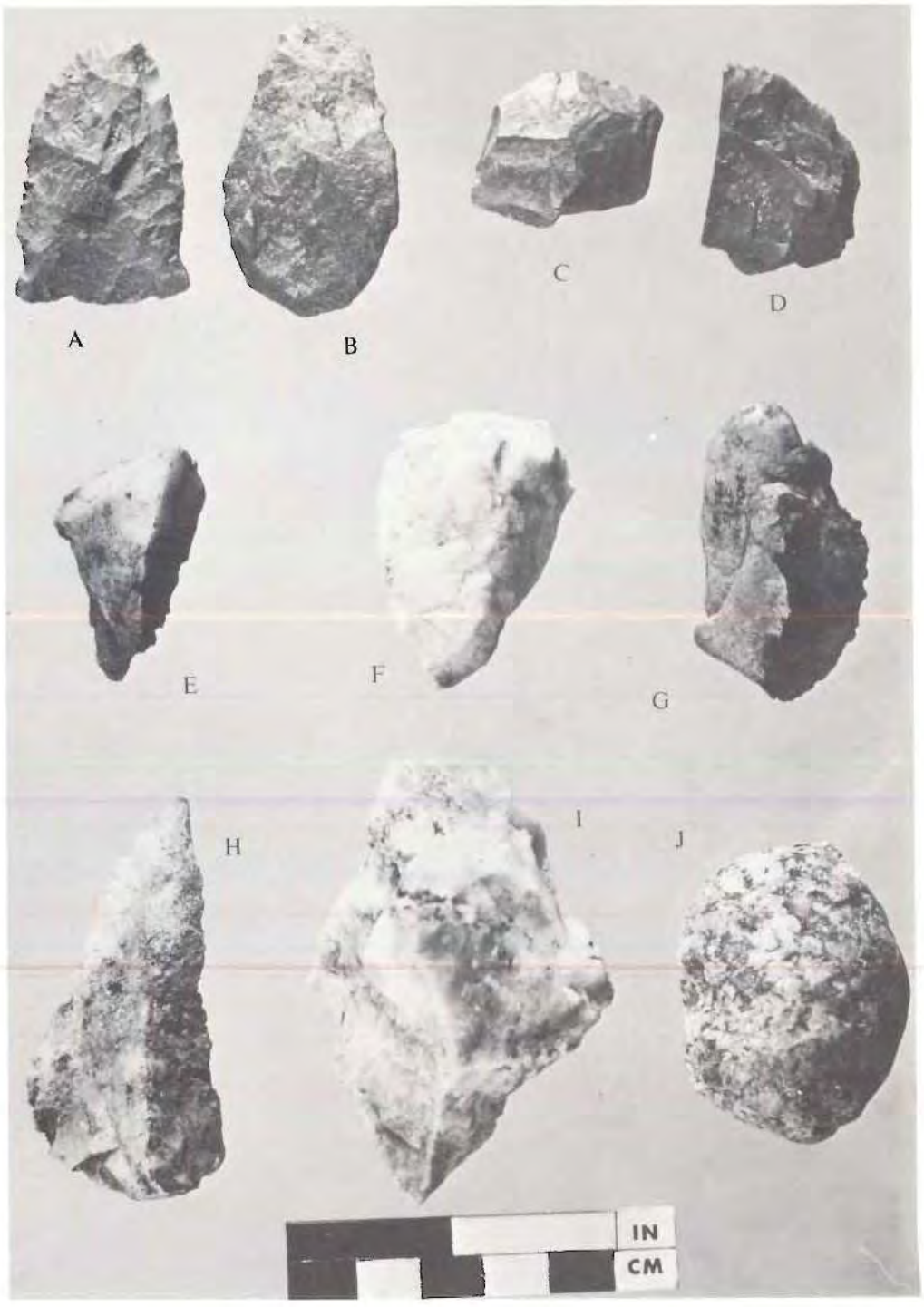

Plate 28. Artifacts from the lower levels, Valley Excavation Block.

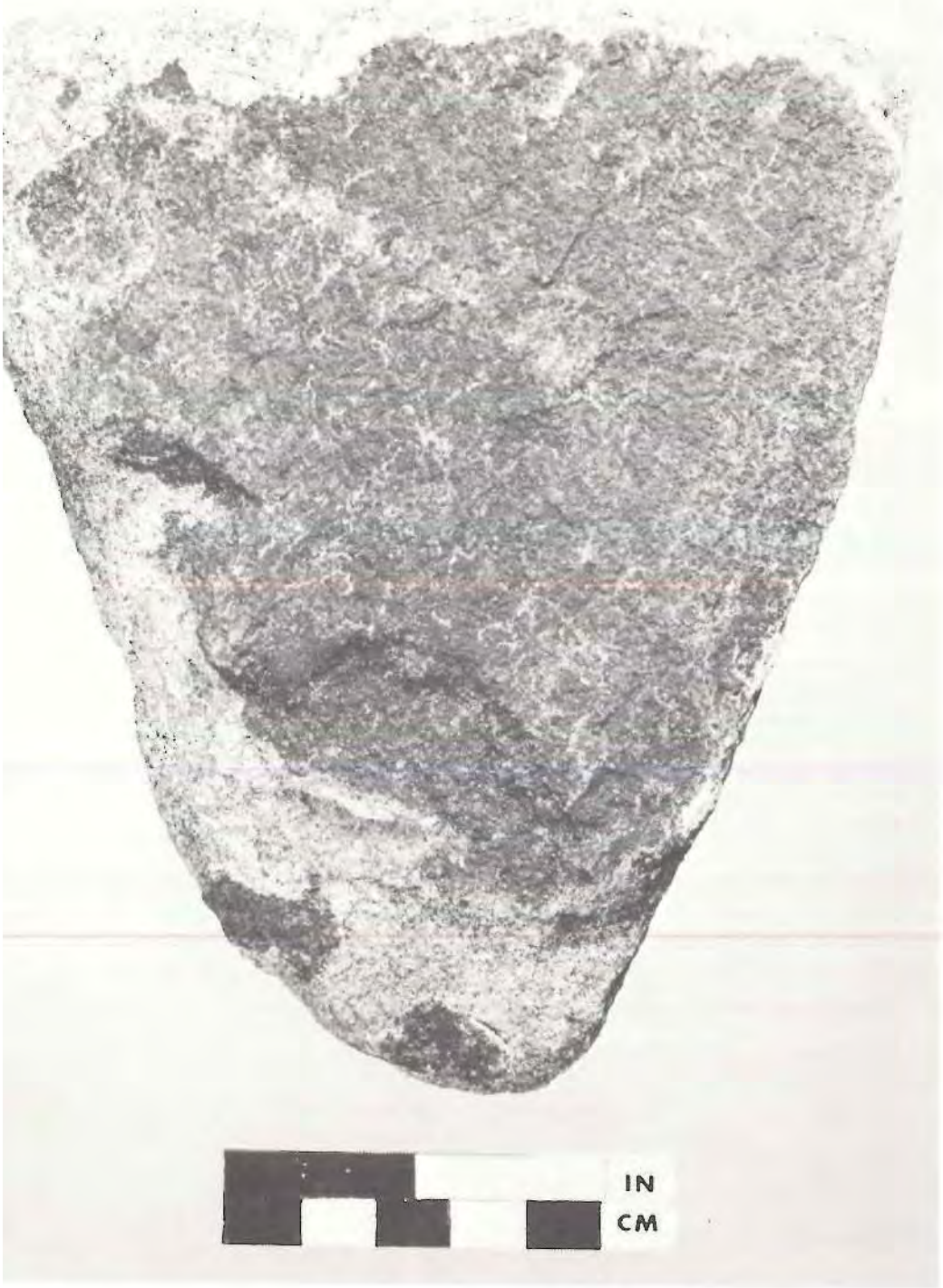

Plate 29. Ground schist slab from the lower levels, Valley Excavation Block.