



OLD COPPER IN MINNESOTA: A REVIEW

Author(s): Guy Gibbon

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OLD COPPER IN MINNESOTA: A REVIEW

Guy Gibbon

ABSTRACT

Old Copper refers to a complex of large utilitarian artifacts, such as spear heads, celts, and knives, that are made of nearly pure native copper. The complex, whose classic phase spans portions of the Middle and Late Archaic periods (ca. 3000-1000 BC), is distinctive to the western Great Lakes and areas as far west as Alberta. This article provides (1) a brief history of Old Copper studies, (2) a synopsis of the types, frequencies, and distributions of Old Copper artifacts in Minnesota, (3) a summary of what we know about the sources of copper used to make Old Copper artifacts in the state, (4) a discussion of four key issues in Old Copper research viewed from a Minnesota perspective, and (5) a conclusion that stresses Old Copper research priorities in Minnesota and other regions west of the Old Copper heartland.

Keywords: *Old Copper; Archaic; copper; Minnesota; Northeastern Plains*

INTRODUCTION

Artifacts made of relatively pure native copper are a distinctive feature of the precontact period archaeological record of north-central North America. Many are large, utilitarian tools, like knives, spear points, celts, spatulas, harpoons, wedges, chisels, and axes. Because their surfaces, and the surfaces of some smaller tools and ornaments, usually display signs of great age, such as heavy corrosion and a thin, oxidized patina, they have been grouped together into an Old Copper industry (McKern 1942). Present estimates suggest that the majority of Old Copper tools and ornaments date to the later Middle Archaic and earlier Late Archaic periods (ca. 3000-1000 BC). This review of Old Copper artifacts and their contexts in Minnesota is divided into five sections: (1) a brief history of Old Copper studies; (2) a synopsis of the types, frequencies, and distributions of Old Copper artifacts in Minnesota; (3) a summary of what we know about the sources of copper used to make Old Copper artifacts in the state; (4) a discussion of four key issues in Old Copper research viewed from a Minnesota perspective; and (5) a conclusion that stresses Old Copper research priorities in Minnesota and other regions west of the Old Copper heartland.

In preparing this review, two aspects of Old Copper studies became immediately apparent. First, with rare exceptions, information about Old Copper west of Wisconsin—that is, in Minnesota, Iowa, the Dakotas, northwestern Ontario, Manitoba, Saskatchewan, and Alberta—is hidden in low-profile regional publication outlets and in notes in files. This is especially true of the comprehensive and decades-long contributions by the master of western Old Copper studies, Jack Steinbring (1966, 1967, 1968, 1970a, 1970b, 1971, 1974, 1975, 1980, 1991; Steinbring and Whelan 1971; Anonymous 1986). Additional information is contained in letters sent to Lloyd Wilford at the University of Minnesota between the early 1930s and late 1950s, and, since the mid-1970s, in Cultural Resource Management (CRM) reports. Second, few studies of Old Copper of any kind have occurred in the last 15 years. This review, then, has two ulterior goals: (1) to summarize Old Copper archaeology in Minnesota for a wider audience, and (2) to spur interest once again in a unique feature of north-central North American archaeology.

A BRIEF HISTORY OF OLD COPPER STUDIES

Although occasional Old Copper artifacts had

Guy Gibbon, Department of Anthropology, University of Minnesota, Minneapolis, MN 55455

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been found earlier, substantial numbers of large artifacts made of native copper were not discovered until the late nineteenth century, when pioneer farmers and loggers cleared large tracts of land for the first time. As these and more recent copper artifacts from mounds in Ohio came to the attention of a broader public, people began to ask, Who made them? How were they made? Where did the copper come from? Because many of the copper objects resembled stone tools made by American Indians, early scholars rightly concluded that they were manufactured by earlier Indians rather than by some now-vanished, non-Indian population, such as the "Mound Builders" (Slafter 1879:157-158). And because copper does not flow smoothly into a mold without using an alloy, the correct conclusion was reached that the objects were made by a method other than casting (Hoy 1886).

An intense focus for many decades was the discovery of the sources of the raw material. Through a series of archaeological expeditions and advice from American copper miners, major pre-contact copper quarries were located on Isle Royale in Lake Superior and the Keweenaw Peninsula of Michigan, and along the Brule River in northwestern Wisconsin (Houghton 1879; Holmes 1901; West 1929; Barden 1930; Landon 1940a; Dustin 1957; Drier 1961a, 1961b; Drier and du Temple 1961). It was recognized, too, that large amounts of "float copper" had been carried southward by glacial ice sheets and deposited as till well to the south of the quarries (Salisbury 1885; Winchell 1911:505; Penman 1977:4). While most float copper appears as small nuggets, an occasional piece weighing more than 100 lb has been found.

As items of Old Copper became recognized and valued artifacts among collectors, finds were reported from an ever increasing number of political regions, including Ontario (Popham and Emerson 1954; Jury 1965; Dawson 1966, 1969; Wall 1982), Michigan (Quimby and Spaulding 1957; Griffin 1961a; Woolworth and Woolworth 1963), northern Illinois (Quimby 1961), Manitoba (Griffin 1961b; Steinbring 1966), and Minnesota (Flaskerd 1940; Landon 1940b; Fryklund 1941a, 1941b; Johnson 1964; Kammerer 1964). Quebec (Kennedy 1967), Iowa (Ritzenthaler 1969), the

eastern Dakotas (Ritzenthaler 1962; Spiss 1968), Saskatchewan (Meyer 1979), and Alberta (Ritzenthaler 1960) were soon added to the growing list. However, it quickly became apparent that the greatest concentration of Old Copper objects by far was in eastern Wisconsin. Perhaps for this reason, Wisconsin archaeologists, in particular W. C. McKern (1942), Robert Ritzenthaler (1946, 1957, 1958, 1969, 1970), Warren Wittry (1950, 1951; Wittry and Ritzenthaler 1957), Robert Hruska (1967), Ronald and Carol Mason (1961, 1967), Chandler Rowe (1962), and William McHugh (1973), played a pivotal role in professional studies of Old Copper in the 1940s, 1950s, and 1960s, just as John Barden (1930), Charles Brown (1904a, 1904b), P. Hoy (1886), D. Salisbury (1885), Edmund Slafter (1879), George West (1929), and other predecessors had been leaders in Old Copper studies in earlier decades. Especially important at this time were excavations at the Osceola (Ritzenthaler 1946), Oconto (Ritzenthaler and Wittry 1952; Ritzenthaler 1970), and Reigh (Baerreis et al. 1954; Ostberg 1956; Ritzenthaler et al. 1956) sites in Wisconsin, and at the Riverside site (Hruska 1967), which is just across the Wisconsin border in Michigan. Each of these sites contained substantial numbers of human burials, which widened the interest in Old Copper studies. It should not be a surprising conclusion, then, that our present understanding of Old Copper has been formed through a distinctly Wisconsin-area filter.

Although others had proposed classifications of Old Copper artifacts earlier (Brown 1904a, 1904b; West 1929; Flaskerd 1940), Warren Wittry's (1950, 1951) Wisconsin-focused system of classification based on style and presumed function remains the standard used today (Fig. 1). Wittry's study was based on some 2600 specimens in collections in the Museum of the State Historical Society of Wisconsin in Madison, the Neville Public Museum in Green Bay, and the Public Museum of the City of Milwaukee (Jenson 1962; Mason and Mason 1967). The publication of Wittry's system spurred regional and interregional tool-type comparisons (Griffin 1962; Fogel 1963; Hedecan and McGlade 1982, 1993) and further typological studies of Old Copper artifacts (Fogel 1963; Steinbring 1975).

More recent studies of the use of native cop-

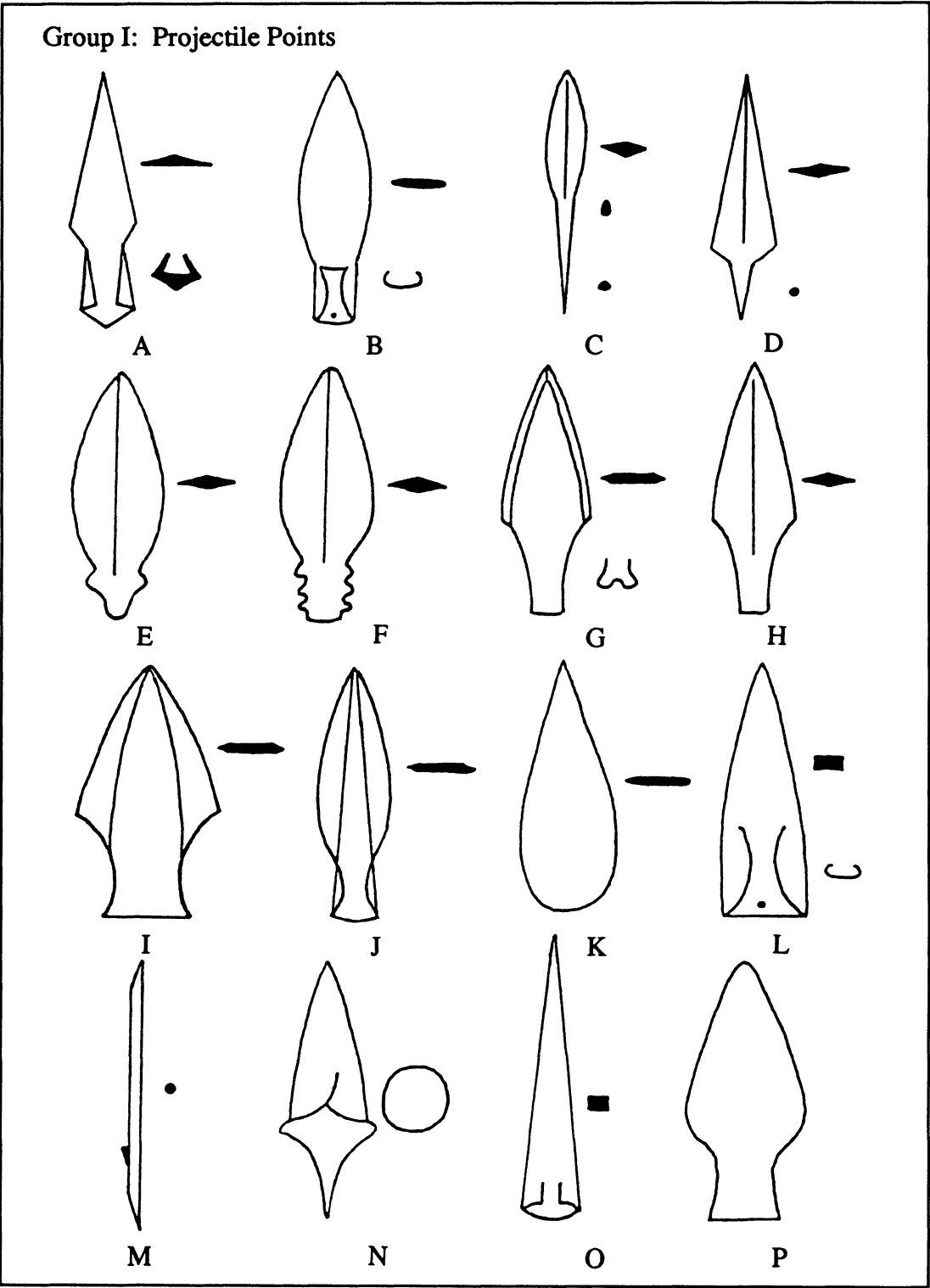


Figure 1A. Wittry's classification of Old Copper artifacts, as adapted by Steinbring (1975). Group I: projectile points.

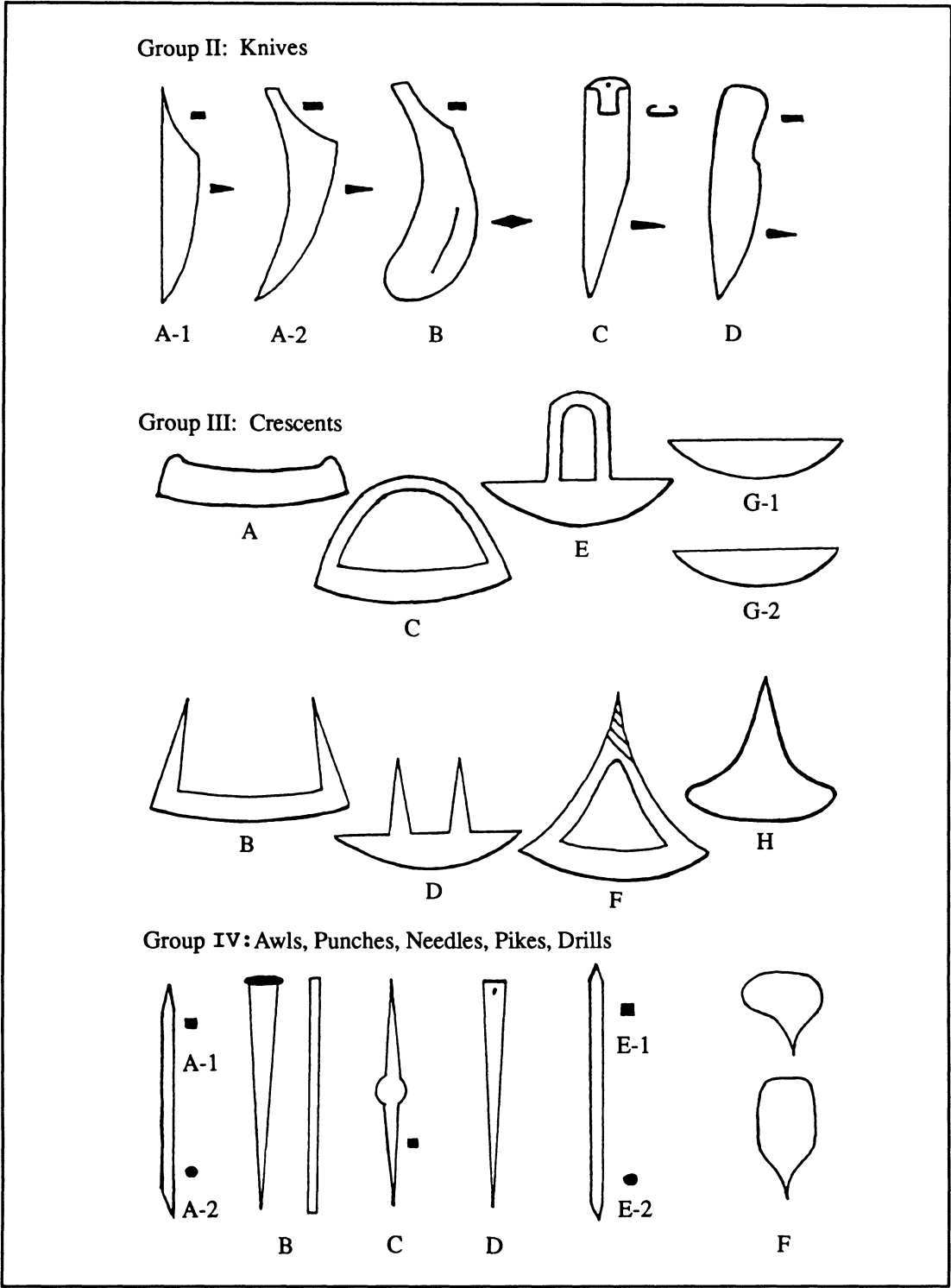


Figure 1B. Wittry's classification of Old Copper artifacts as adapted by Steinbring (1975). Group II: knives; Group III: crescents; Group IV: perforators.

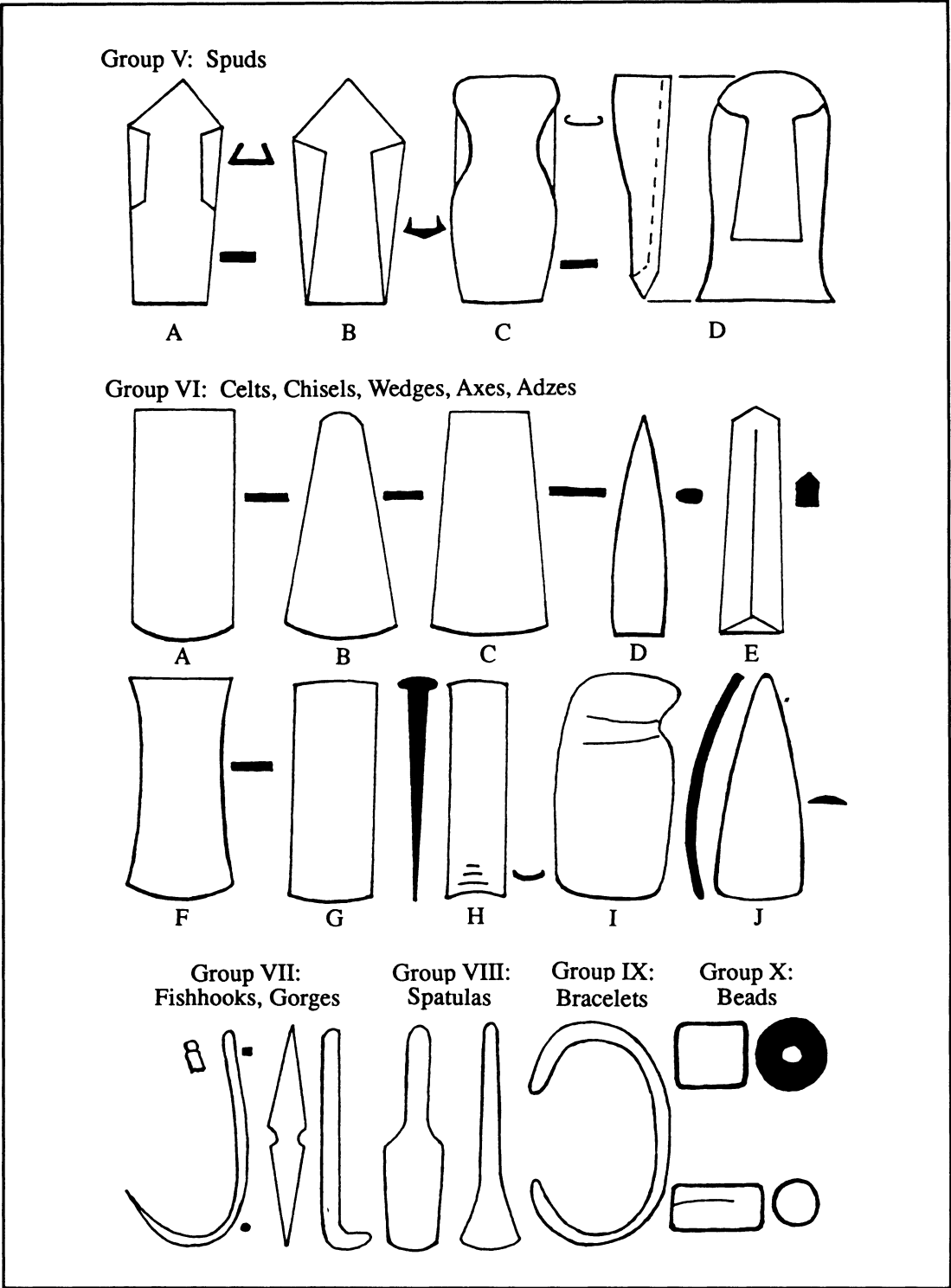


Figure 1C. Wittry's classification of Old Copper artifacts as adapted by Steinbring (1975). Group V: spuds; Group VI: celts, etc.; Group VII: fishhooks, gorges; Group VIII: spatulas; Group IX: bracelets; Group X: beads.

per in precontact North America have become both more geographically diffuse and more technical. The majority of these studies demonstrate a shift in geographic focus from early copper use in the Great Lakes and Ohio areas to a later use in the Southeast, Northeast, and far Northwest of the continent (Leader 1988; Childs 1994; Fox et al. 1995). And while replicative experiments and metallographic studies of copper artifacts are not new (Cushing 1894; Wilson and Sayre 1935; Bastian 1961), more recent studies tend to be more technical than their predecessors (Schroeder and Ruhl 1968; Rapp et al. 1984, 1990a, 1990b, n.d.; Leader 1988; Pletka 1991). A more subdued trend has been a continued interest in the function of Old Copper artifacts (Penman 1977). As this brief review suggests, Old Copper as a topic of archaeological interest has faded in importance since its heyday in the 1940s, 1950s, and 1960s. Nonetheless, good reviews of Old Copper have been provided recently by Ronald Mason (1981:181-199, n.d.).

OLD COPPER ARTIFACT TYPES
IN MINNESOTA

Illustrations of Steinbring's modification of the original Wittry classification of Old Copper artifacts provide an efficient way to summarize the presence, frequencies, and distribution of Old Copper artifact types in Minnesota (Fig. 1, Table 1). Based on an extensive but still incomplete survey of sources, the most common Old Copper artifact class in the state is the spear point, with 175 inventoried at present. In order of decreasing frequency, the types represented are A (47), O (40), C (22), B (10), E and F (9 each), G (5), K (3), H and P (2 each), and M and N (1 each); 24 additional spear points are mentioned in reports but their descriptions are too vague to place them in a type. Eighteen of the 31 knives in the catalog are simple tang types (A) with a straight or slightly concave or convex back and a beveled, curved blade. Many of these knives may represent a regional variant, for they have a broad, flat tail rather than a true "rat" tail. A second type represented by four knives is a heavy, crescent-shaped "drawing" knife thought to have been used to carve wood. The descriptions of nine additional knives are too vague to assign to type. Also inventoried are 31

Table 1. Documented Old Copper artifacts by Wittry class in Minnesota.

GROUP	SUBTYPE	NO.
I. Spear points	IA	47
	IB	10
	IC	22
	IE	9
	IF	9
	IG	5
	IH	2
	IK	3
	IM	1
	IN	1
	IO	40
	IP	2
	misc	24
II. Knives		31
III. Crescents		31
IV. Perforators	awls	57
	pikes	4
	needles	2
	uncertain	8
V. Spuds		4
VI. Celts (etc.)	celts	4
	chisels	2
	wedges	2
	axes	3
VII. Fishhooks	fishhooks	13
	gouges	1
IX. Bracelets		4
X. Beads		4
TOTAL		345

crescents (III), 71 perforators (IV), four spuds (V), 11 celts/chisels/wedges/axes (VI), 12 fishhooks and one gorge (VII), four bracelets (IX), and four beads (X). By percent, the distribution is 51% spear heads (I), 9% knives (II), 9% crescents (III), 21% perforators (IV), 1% spuds (V), 3% celts/chisels/wedges/axes (VI), 4% fishhooks and gorges (VII), 1% bracelets (IX), and 1% beads (X). Although an inventory of Old Copper artifacts in Minnesota is only now underway, it seems unlikely that the final count will exceed 600 or 700 items—in contrast to the many thousands in eastern Wisconsin. The Minnesota Old Copper catalog

used here is on file at the Minnesota State Historic Preservation Office (SHPO) in St. Paul and at the Wilford Archaeology Laboratory at the University of Minnesota in Minneapolis.

It remains unclear how well the frequencies of artifact types in Table 1 represent the original universe of all Old Copper artifacts in Minnesota. Published surveys of Old Copper in collections in Roseau County (Fryklund 1941a), Mille Lacs County (Bleed 1969), St. Louis County (Winchell 1911:378; Steinbring 1975), Cook County (Platcek 1965; Steinbring 1975), and in the Snake-Kettle rivers area in the east-central part of the state (Caine 1969, 1974) provide some idea of the numbers of artifacts that might once have been present (also see Jenson 1962 for a description of the Norman Collection). Although there is no reliable method for determining this number, a present "best guess" would be between 3000 and 4000 shaped items (excluding copper nuggets and pieces of scrap).

SOURCES OF NATIVE COPPER IN MINNESOTA

An exhaustive study of the sources of copper used in making Old Copper artifacts in Minnesota has not been undertaken. However, like Wisconsin, Minnesota has only limited outcrops of the copper-containing basalt that is so extensive on the Keweenaw Peninsula in northern Michigan, Michipicoten Island in northern Lake Superior, Isle Royale in western Lake Superior, and elsewhere in the more northern Lake Superior region. Together these deposits of native copper are by far the largest in the world (Rapp et al. 1990a:233). Nonetheless, float copper was widespread throughout the northeastern two-thirds of the state, with reported aggregate amounts collected from various localities weighing as much as 200 lb, 175 lb, 100 lb, 80 lb, 78 lb, 50 lb, 36 lb, and many smaller amounts (Winchell 1911:504-505). The largest piece recovered was found near Riverton in Crow Wing County and weighs 1084 pounds. These pieces of float copper were carried southward from the region of Lake Superior by glacial action and are incorporated, for the most part, in the red till associated with that movement. While no systematic comparative study has been carried out, float copper seems to have been much more

common in northeastern Wisconsin than in eastern Minnesota.

Sourcing of western Great Lakes copper was a focus of several early studies (Moore 1903; Wilson and Sayre 1935). More recent neutron activation analyses of trace elements in raw nuggets, copper artifacts, and samples from mines indicate that much of the copper used to make artifacts in the state may have come from local float copper concentrations and from Isle Royale rather than from the Keweenaw Peninsula or other northeastern sources (Rapp et al. 1980, 1984, 1990a, 1990b, n.d.). Examples are the lower Snake River valley in east-central Minnesota and near Minong, which is about 40 miles to the east in west-central Wisconsin (Fig. 2). Nuggets of native copper can still be found in the Snake River valley during times of low water. Christina Harrison (n.d.a:59) has suggested that the Snake River region, and also probably the nearby Kettle River, were important centers of copper "quarrying" and processing during the Old Copper period, and that at least some of the metal used to make Old Copper artifacts in northeastern Minnesota came from this source. Initial trace element fingerprinting by George Rapp and his colleagues indicates that copper artifacts from Petaga Point, McKinstry, and the Snake River sites, and most likely the Old Copper artifacts from Houska Point, all came from native copper outcrops or from nuggets in streams along the Snake River (Rapp et al. 1980, 1984). While these results lend support to Harrison's hypotheses, serious problems in identifying some elements by neutron activation analysis when in a copper matrix cast doubt on the reliability of this technique (George Rapp, personal communication, 1996).

Although never systematically tested, it has been generally assumed in Minnesota that the quarrying of copper in Michigan and Ontario mines began only after float copper sources to the south began to be depleted (Winchell 1911:502, 504). Possible support for this idea may exist in what appears to be more diffuse origins of copper in Initial and Terminal Woodland sites (Rapp et al. 1990a). However, a greater geographic and temporal range of copper artifacts has to be sampled to adequately test this possibility.

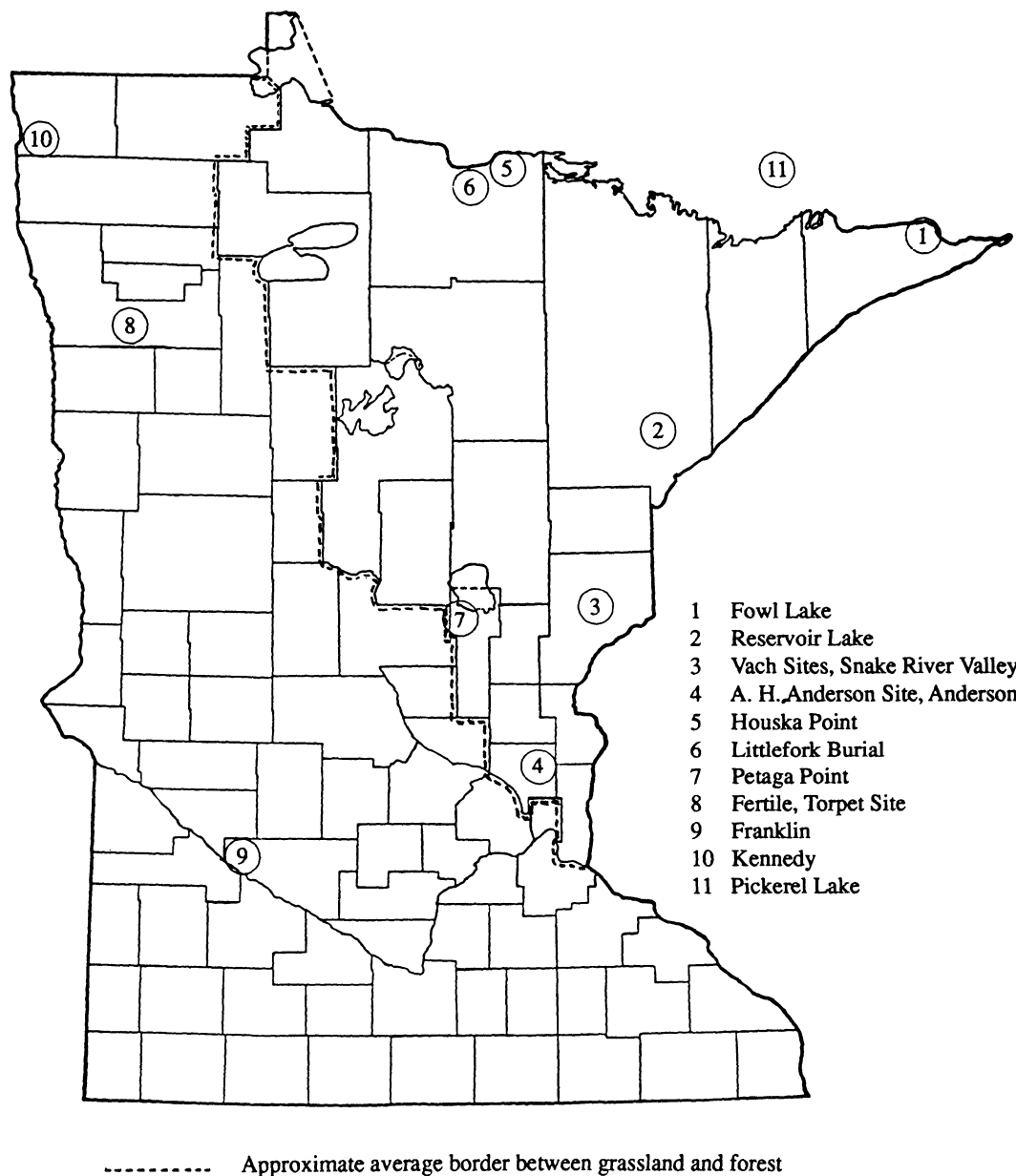


Figure 2. Locations of key sites and areas. (1) Fowl Lake; (2) Reservoir Lake; (3) Vach sites, Snake River valley; (4) A. H. Anderson site; (5) Houska Point; (6) Littlefork burial; (7) Petaga Point; (8) Fertile, Torpet sites; (9) Franklin; (10) Kennedy; (11) Pickerel Lake.

FOUR ISSUES IN OLD COPPER RESEARCH

As in any research domain, increasing familiarity with that domain exposes many issues that are either unresolved or need clarification. Four of the many issues in Old Copper studies are reviewed here.

Is Old Copper a Northern Hardwood Forest, Western Great Lakes Phenomenon?

The perhaps unintended impression is given in many publications that Old Copper is a northern hardwood forest ("lakewoods" or "northwoods") and western Great Lakes phenomenon. A map of the geographic distribution of Old Copper artifacts clearly demonstrates, however, that Old Copper artifacts are as widely distributed west of Wisconsin as they are in Wisconsin and eastward (Fig. 3). And, although the largest number and greatest variety of artifacts are clearly present in the mixed hardwood forest, they have also been found in the grasslands of the northeastern Plains, the aspen parkland between the grasslands and the mixed hardwood forest, in the deciduous forest zone south of the mixed hardwood forest, and in the southern portion of the boreal forest to the north.

In Minnesota, the issue of Old Copper environmental associations is confused by the mid-Holocene dry period during which prairie grasslands pushed northeastward across the state (Fig. 4). By 1000 BC, the prairie-forest border had retreated to a more or less stable position that lasted into the late precontact period. At that time a combination of climatic change (the Little Ice Age) and a dramatic decrease in the frequency of prairie fires encouraged the encroachment of trees still farther into the grasslands. But regardless of where the prairie-forest border was, Figure 3 clearly demonstrates that the western distribution of Old Copper (west of Wisconsin) is as geographically extensive as is its eastern distribution.

Since most Old Copper artifacts from Minnesota are surface finds, their age, and thus their grassland or forest context, remains in doubt. For sake of argument, a line can be drawn across the state that reasonably separates "forest" in the northeast from "grassland," with "forest" covering the 18 most northeastern of the 87 counties in the state (Fig. 2). Table 2 lists the frequencies of

Old Copper artifacts by type in these two biomes. Of the 345 artifacts in the Old Copper catalog, 258 or 75% are in "forest" and only 87 or 25% in "grassland." By percent, 59% of the spear points (Class I), 77% of the knives (II), 87% of the crescents (III), 96% of the perforators (IV), 75% of the spuds (V), and 100% of the celts/chisels/wedges/axes (VI), fishhooks/gorges (VII), bracelets (IX), and beads (X) are in the "forest" biome, with the complementary percentages in the "grassland" biome. Although some part of these figures is undoubtedly the result of sampling error, the conclusion that a greater number and variety of Old Copper artifacts are present in "forest" compared to "grassland" in Minnesota seems defensible.

Besides having the greatest number and variety of Old Copper artifacts, the 18 wooded counties also contain those sites and localities that have the greatest concentrations of Old Copper artifacts (see Fig. 2). Many of them have clear evidence, too, for copper tool manufacture in the form of nuggets, pieces of scrap, and even possible anvils. Among the best known of these sites and localities are: (1) the Fowl Lake site (21CK1), which is located in Cook County on a point of land along the west side of the Pigeon River near narrows between North and South Fowl lakes (Platcek 1965; Steinbring 1975:347); (2) Houska Point (21KC6) at the mouth of the Rainy River in Koochiching County (Steinbring 1970a); (3) the Vach sites (21PN4, 8-10, 13-15), which are within a mile radius of each other along the lower Snake River valley in Pine County (Caine 1969, 1974); (4) the Petaga Point site (21ML11) along the Rum River outlet of Mille Lacs Lake (Bleed 1969); (5) the Reservoir Lakes locality northwest of Duluth in St. Louis County (Figs. 5 and 6; Steinbring 1975); (6) the Anderson site (21AN8), among others, in Anoka and Isanti counties (Harrison n.d.b); and (7) the Pickerel Lake site, which is just across the border in Ontario's Quetico Provincial Park (Steinbring 1975).

Most reports on these "forest" biome concentrations are descriptions of artifacts in private collections. Among the most prominent collections are the Moore Collection from Petaga Point, and the Vach and Joseph E. Neubauer collections from the Pine County locality. Among the many other

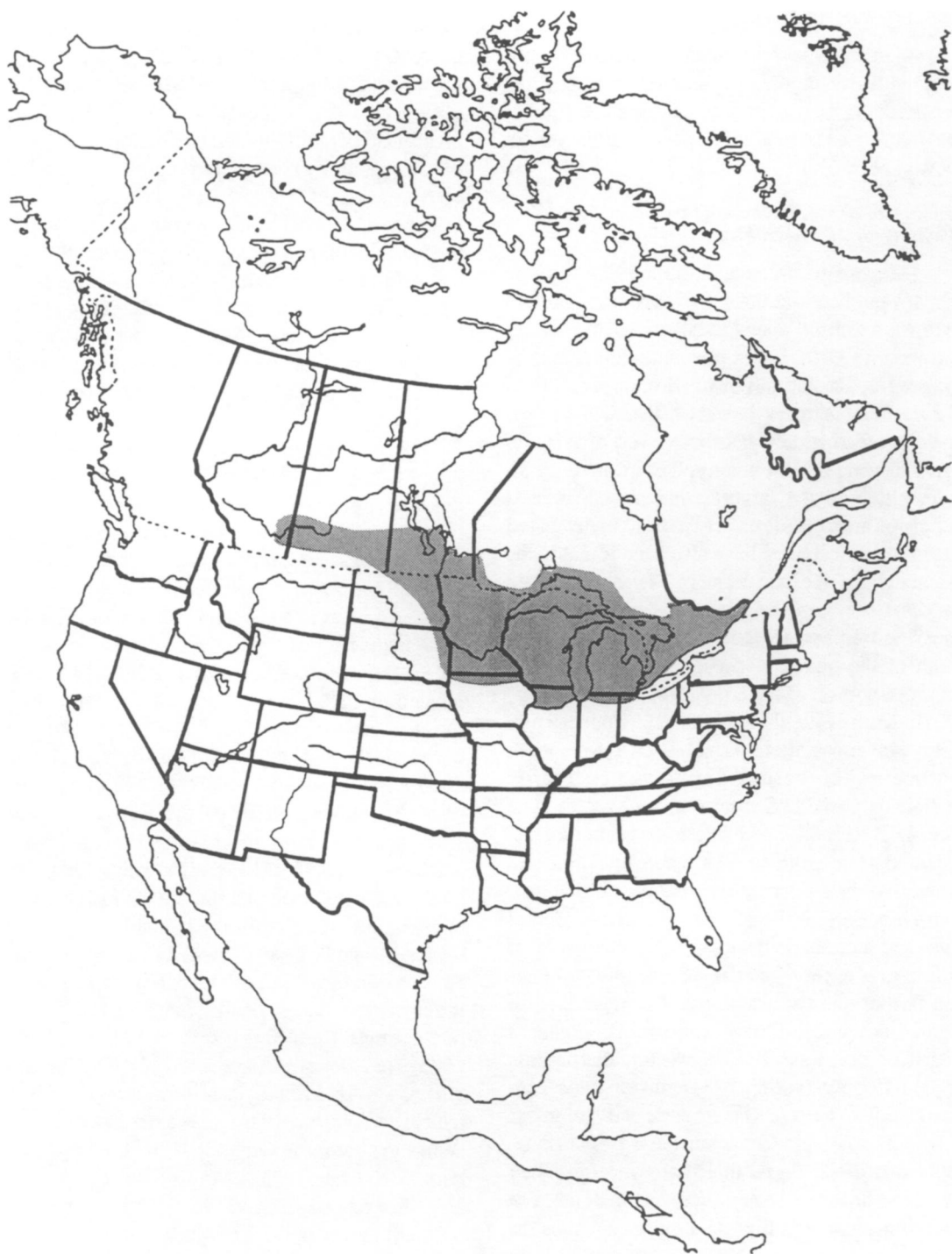


Figure 3. Distribution of Old Copper artifacts.

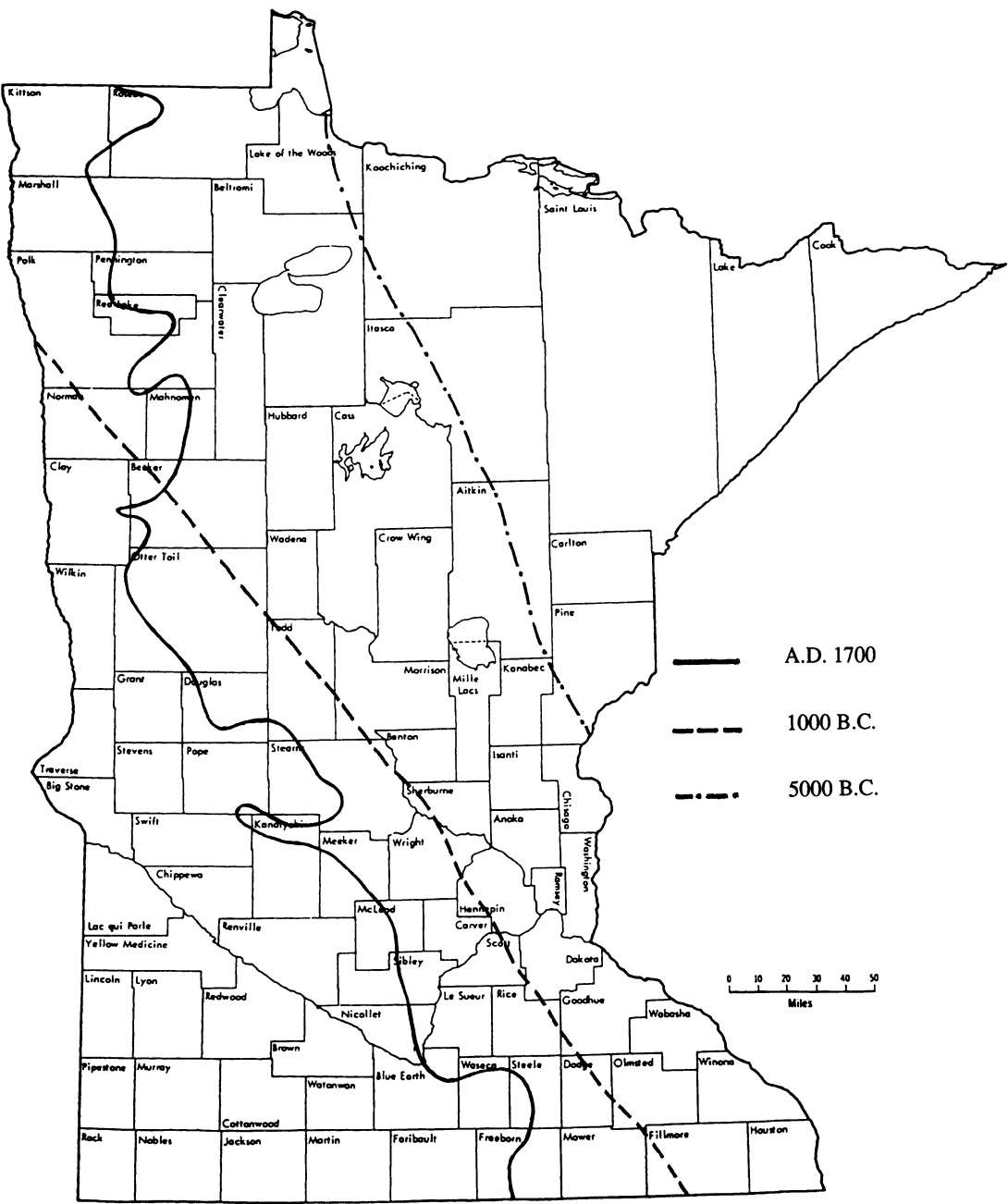


Figure 4. Prairie/grassland border fluctuations in Minnesota.

Table 2. Old Copper artifacts by biome in Minnesota.

GROUP	SUBTYPE	FOREST	GRASSLAND
I. Spear points	IA	19	28
	IB	8	2
	IC	6	16
	IE	1	8
	IF	7	2
	IG	4	1
	IH	2	0
	IK	0	3
	IM	1	0
	IN	1	0
	IO	37	3
	IP	1	1
	misc	16	8
II. Knives		24	7
III. Crescents		27	4
IV. Perforators	awls	55	2
	pikes	4	0
	needles	1	1
	uncertain	8	0
V. Spuds		3	1
VI. Celts (etc.)	celts	4	0
	chisels	2	0
	wedges	2	0
	axes	3	0
VII. Fishhooks	fishhooks	13	0
	gouges	1	0
IX. Bracelets		4	0
X. Beads		4	0
TOTAL		258	87

collections mentioned in the literature are the E. E. Baldrige Collection from around Tower in St. Louis County (Winchell 1911:378) and the less localized Jacob Brower (Winchell 1911:497-499) and J. F. Norman collections (Jenson 1962). In the “grassland” biome, Johnson (1964) has described Old Copper artifacts in collections from the Red River Valley and Fryklund (1941a) from Roseau County.

Is Old Copper an Industry or a Cultural Tradition?

A second issue is whether Old Copper is a cultural tradition, or at least associated with a

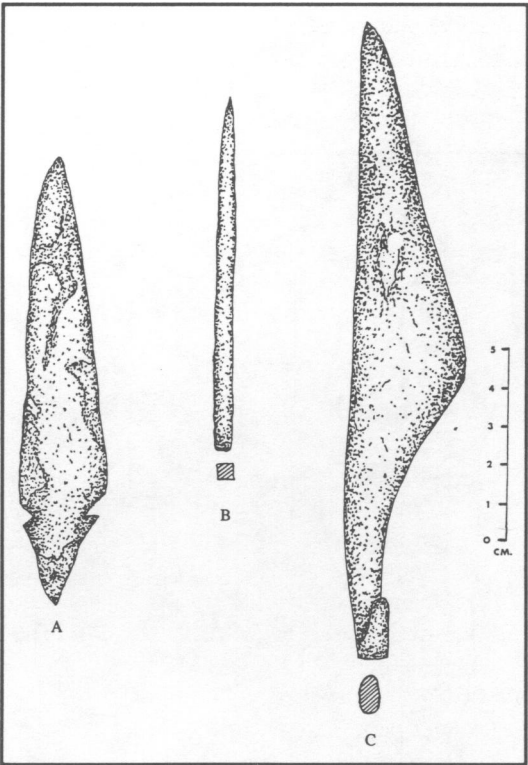


Figure 5. (A) copper spear point; (B) awl; and (C) knife from the Reservoir Lakes locality (after Steinbring 1975).

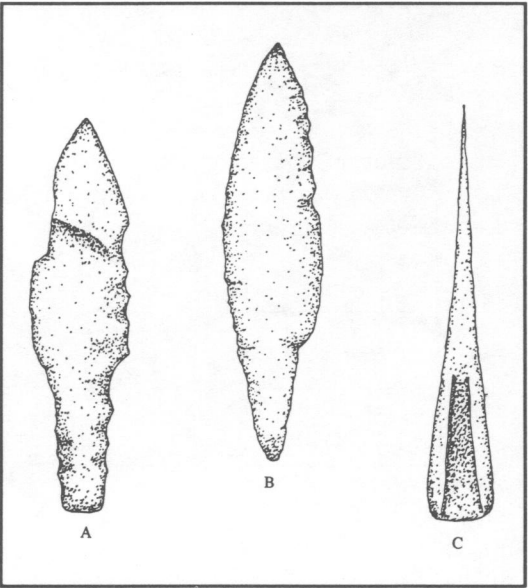


Figure 6. (A, B) copper spear points and (C) socketed awl from the Reservoir Lakes locality (after Steinbring 1975).

particular cultural tradition, or a metallurgical tradition shared by a number of otherwise distinctive Archaic societies. W. C. McKern (1942) originally defined Old Copper as an industry. However, it gradually became known over the years as the Old Copper culture, which implies that copper artifacts were an essential core of a unified culture or cultural tradition. These options can be tested by determining the extent to which Old Copper artifacts transcend lithic assemblage complexes and in particular projectile point associations.

In Wisconsin, Old Copper artifacts made of native copper are thought to be persistently associated with Osceola (Ritzenthaler 1967) and Raddatz (Wittry 1959) side-notched projectile points, end scrapers and choppers made on large flakes, flaked stone drills with expanding bases, bowtie-shaped atlatl weights, and perforated ground stone gorgets. Needless to say, these artifact types are found as well outside Old Copper contexts. Reliable lithic assemblage associations are difficult to find in Minnesota, mainly because few recorded Old Copper artifacts have been discovered during systematic, reported excavations. Still, Osceola and Raddatz points are present throughout the "forested" area outlined in Figure 2, as demonstrated by Harrison's (n.d.a, n.d.b) Statewide Archaeological Survey reports for Anoka, Isanti, Kanabec, and Pine counties. Caine (1974:60) has suggested that copper in the Snake River valley is more closely associated with Durst Stemmed projectile points, another common point type in the "forested" biome, than with Raddatz points. However, the evidence for a reliable projectile point type/Old Copper association remains circumstantial at present and often confusing. For example, both Durst Stemmed and Raddatz Side-Notched points were found with a IA spear point in a collection from a site (21IA16) in Isanti County. In other regions of the "forested" zone, Durst points seem associated with the Old Copper component at Petaga Point (Bleed 1969) and a possible Raddatz point was found at the Houska Point site (Steinbring 1975).

Caine (1974) has also suggested that the lithic assemblages at the Snake River Vach sites in Pine County and Petaga Point in Mille Lacs County can be grouped together with zones 4 and 5 of the Durst rockshelter and the upper levels of the Rad-

datz rockshelter, and that they are quite different from Reigh, Osceola, Knapp, and Riverside, which are burial sites dominated by Raddatz and Osceola points and leaf-shaped blades. According to her analysis, the Petaga Point-Snake Valley complex shares Durst Stemmed points, flake choppers, and large flake scrapers. Conical points and awls are also the most common copper artifacts in the complex, while decorative copper and heavy implements such as socketed spuds are absent at Petaga Point and rare in the Snake River area. While sampling error must be considered, there does seem to be a lithic tradition associated with Old Copper artifacts in this southeastern portion of the "forested" zone.

The situation seems different, however, in northern and western Minnesota and in Manitoba. Although Archaic copper artifacts are associated with Raddatz points at LM-8 of the Caribou Lake sites in eastern Manitoba (Buchner 1979:91), classic Old Copper artifacts in that area are generally thought to have Oxbow point affiliations (Buchner 1979:81; Steinbring 1980). Oxbow points are also widely distributed throughout northern and western Minnesota. Oxbow-like points have been found in possible association with Old Copper artifacts at the Pickerel Lake site just north of the Minnesota border, at Petaga Point (Bleed 1969:46, Pl. 10, "s-w"), in the west component of the Fish Lake Dam site (21SL15) (Steinbring and Whelan 1971:33, Fig. 1, #1-4), and at Houska Point. Radiocarbon dates for Oxbow points on the Northwestern Plains fall for the most part between 3500 and 1000 BC (Gregg 1985:105-108). These dates span the Middle Archaic into early Late Archaic time range of classic Old Copper (3000-1000 BC).

If people making Oxbow points in Minnesota were participants in a broader Oxbow "interaction sphere," then ideas about Oxbow cultural patterns could serve as a source of ideas for understanding some aspects of the western extension of Old Copper. For instance, based on current ideas about Oxbow groups, Oxbow points in Minnesota could be associated with small family groups that moved to the adjacent western grasslands to hunt bison during warm months. Perhaps as a result of this annual movement, Oxbow points seem associated with the active trade of Knife River flint from North Dakota across northern Minnesota. In this

regard, it is interesting to note that Oxbow-like points at Petaga Point and Pickerel Lake are made of this material. Some archaeologists also believe that the appearance of the Oxbow complex at the transition from the Atlantic to the more favorable Sub-Boreal climatic episode reflects an improvement in subsistence resource potential in the Northern Plains. Perhaps for this reason significant numbers of human skeletal remains appear for the first time in the Northern Plains in association with the Oxbow complex (Gregg 1985:105-108).

In tentative conclusion, then, there seem to be: (1) a possible Old Copper association with Radatz Side-Notched and Durst Stemmed projectile points in east-central Minnesota and with Oxbow points to the north and west; (2) a concentration of rolled conical points in the St. Croix River drainage basin in east-central Minnesota and west-central Wisconsin; and (3) sufficient evidence in this western zone of Old Copper distribution that Old Copper was a metallurgical tradition shared in varying degrees by a number of different societies.

Did Old Copper Artifacts have a Functional or an Ideological Use?

A persistent question in Old Copper studies is what meaning items made of native copper had for their makers (Rickard 1934; McKern 1942; Ritzenthaler 1946; Martin et al. 1947; Miles 1951). Old Copper has been variously interpreted as a burial complex, as status elevating objects (Binford 1962b:221-222), and as primarily utilitarian (McHugh 1973). Clues to the use of Old Copper artifacts can be gathered through metallurgical analysis, use-wear studies, habitat associations, contextual associations within sites, and mode of acquisition, among other approaches.

Metallography helps in decoding questions of use, for items intended for ceremonial use might not have the finishing touches necessary to prepare a tool for serious work. Because blade tips and other tool edges are regularly work hardened, they do seem prepared, if not intended, for heavy use. In addition, the fact that most items are annealed indicates that they may have been intended for heavy use, for an annealed blade can be reshaped and reused after bending. An analysis of wear marks and edge angles on a sample of Wisconsin Old Copper artifacts by Penman (1977) also dem-

onstrates that many were heavily used. Penman concludes that: (1) while spear points were used as spear points, some were also used as saws, gouges, and wedges; (2) crescents ("ulus") were multipurpose tools used to butcher meat among other functions; (3) awls were used for piercing hides; (4) pikes were used for heavy piercing, such as breaking ice for winter fishing; (5) spuds were used for heavy wood and bone working; and (6) VIC "celts" were most likely used as wedges. He suggests, too, that conical spear points (Class IO) were used for harpooning fish, and that fishhooks would have been particularly useful in the winter when fish spearing and hook-and-line fishing would be the only methods used because nets would freeze.

An especially important clue to the use of copper artifacts is the context, or site type, in which they are found. In Wisconsin, interpretations of Old Copper have been heavily influenced by the presence of native copper artifacts in three disturbed cemeteries: Osceola in Grant County, Oconto in Oconto County, and Reigh in Winnebago County. Perhaps as many as 500 people were buried at Osceola, 200 at Oconto, and 43 at Reigh. In Minnesota, Old Copper artifacts have been found in as many as 11 burials. Johnson (1964) in his 1959 Red River Valley survey reported the presence of two IB copper points with a single human skeleton in a pit in Herman beach gravel at the Torpet site (21PL1) in Polk County. It was one of nine similar sites he was told about during the survey. In each, single skeletons were found with copper artifacts during gravel mining operations. In most cases, the sites had been destroyed and the artifacts dispersed. Three of the sites were on the Herman beach, five on the Campbell beach, and one on the McCauleyville beach, which is immediately inside the Campbell beach. A IA spear point was also associated with a probable Old Copper burial near Fertile, which is in Polk County (Fig. 7B; Johnson 1964:19). The best documented of these burials is the Littlefork Burial, which is on the Rainy River adjacent to a sturgeon fishing ground and next to the McKinstry site (Steinbring 1971). At Littlefork, two IB spear points were found in association with a burial and what may be sturgeon imagery on bone harpoons (Fig. 8).

That a functional use of copper artifacts was not inconsistent with their placement with the dead

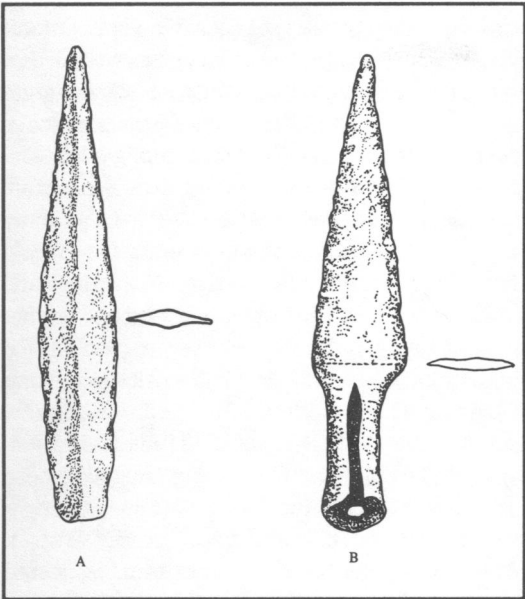


Figure 7. Copper spear points from (A) the Arvilla site and (B) the Fertile burial.

is indicated by their associations at non-burial sites. Besides burial sites, Johnson (1964:15-16) in his Red River survey identified two other kinds of Old Copper site: small camps and isolated projectile points that he interpreted as the lost points

of hunters. Many other spear points in collections in the state were apparently also isolated finds, which supports the idea that they could have been lost during the hunt. A distinctive western characteristic of Old Copper is the association of spear points with bison bone. A IA1 spear point was found embedded in the skull of a buffalo two miles east of Kennedy in Kittson County (Fryklund 1941b:12), and a IO conical point was among the bones of buffalo in mud at the bottom of the Minnesota River near Franklin in Renville County (Fryklund 1941a:9). Another IA socketed point was found at 21AN56, a possible buffalo kill site in Anoka County (SHPO files). Steinbring (1980:226) notes that a IE spear point was found in probable association with bison bones in eastern Manitoba. Copper artifacts have been found, too, among apparent village or camp site debris in Minnesota and the adjacent section of Ontario. Among the best known of these sites are Petaga Point, Houska Point, Fowl Lake, the Vach sites, and Pickerel Lake.

Still another source of information about the possible use of Old Copper artifacts is their geographical distribution. If Old Copper artifacts represent a burial complex loaded with symbolic meaning, we would expect Wittry's 10 classes to be more or less distributed as a set irrespective of

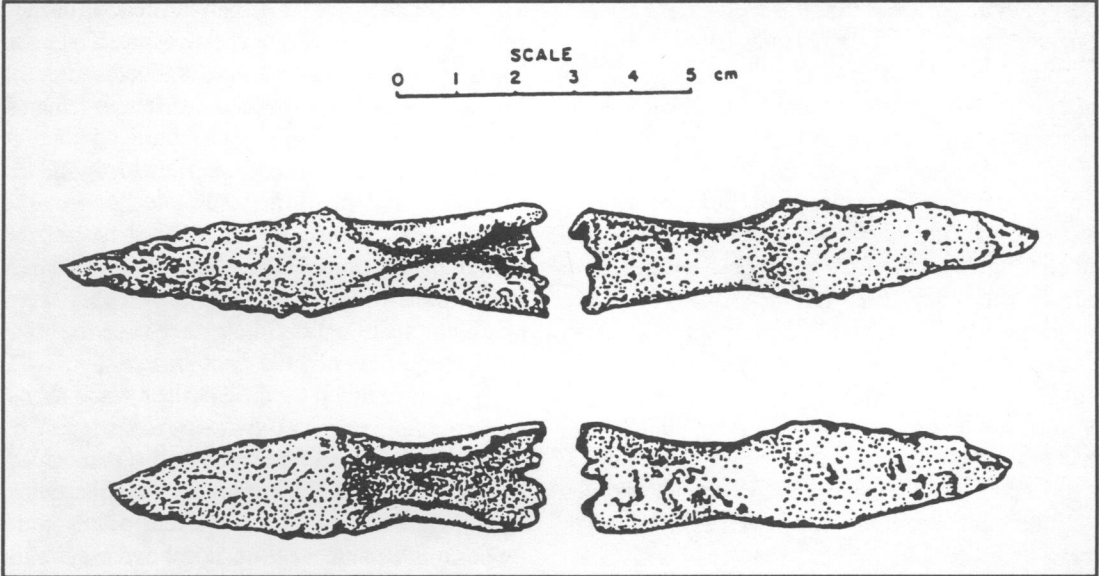


Figure 8. Two IB spear points from the Littlefork burial (after Steinbring 1975).

habitat type. On the other hand, if their function was primarily utilitarian, we would expect a differential distribution of frequencies of artifact by class across habitats. In Minnesota, all of the celts, chisels, wedges, axes, fishhooks, gorges, bracelets, and beads in the catalog, and the great majority of knives (77%), crescents (87%), spuds (75%), and perforators (96%) are in the "forested" area of Figure 2. Only spear points are close to being evenly distributed between "forested" (59%) and "grassland" (41%) biomes. In fact, 83% of all Old Copper artifacts found in the "grassland" area are spear points. The predominance of spear points in Old Copper collections in the "grassland" biome seems true as well for North Dakota, where a search located five items, all of which were spear points.

While sampling error must again be taken into consideration, it seems that classes of Old Copper artifacts were unequally distributed in "forest" and "grassland" biomes. One possible implication is that while Old Copper was primarily a forest-associated industry, some tools were carried out into the grasslands, especially to hunt bison.

Steinbring (1975) has argued that at least some copper crescents had a nonutilitarian function. This is suggested by: (1) their most common *in situ* context, which is as mortuary furniture; (2) their presence in all but one (Osceola) of the major cemetery sites; (3) their position in the thoracic region of some burials, which suggests they were suspended on the chest; (4) the general absence of average- to large-sized crescents in excavated portions of habitation sites; (5) the delicate nature of the miniature crescents that do occur in habitation contexts; (6) the unsuitable shape of some for butchering functions, especially those with exceptionally long "handles." He supports his suggestion that they served as lunar symbols with evidence from both ethnographic and archaeological sources. This evidence includes the presence of lunar mythology among historic populations in the Upper Great Lakes region and a possible association between burial type (high status), burial alignment (to the full or half moon), copper crescents, and lunar-compatible numbers of incisions upon burial furniture.

The final source of clues to the use of Old Copper artifacts considered here is the mode of

acquisition of copper artifacts. Were copper tools obtained through trade and as gifts or were they manufactured locally? Although weak, the argument is that alliance-cementing gifts and ritual objects from a sacred Lake Superior "center," for example, would be obtained in Minnesota from other areas. On the other hand, if the primary function of the items was utilitarian, they would more likely be manufactured in local camp and village sites. Old Copper "trade" caches are not uncommon. Among the many examples are the Farquar cache and the McCollum site in Ontario (Brown 1907; Popham and Emerson 1954; Griffin and Quimby 1961; Binford 1961; Johnston 1968; Jury 1973). In Minnesota, a cache may have been present at Petaga Point, for many items of copper were found at the same time (Bleed 1969:24). However, more common in Minnesota is scattered evidence of manufacture in habitation sites. For example, hundreds of trim bits and pieces of other manufacturing debris were found at Houska Point (Steinbring 1970a:4) and at the Vach sites (Caine 1969, 1974), all of which are considered habitation sites. Trim bits, copper nuggets, partially finished blades, charcoal, ashy earth, and a possible forge were found at the Pickerel Lake site (Steinbring 1975). Steinbring suggests that the Pickerel Lake site was a special copper working station rather than a habitation site. Whether the possible caches are evidence for down-the-line exchange or whether the Vach sites and Houska Point represent central places where people came to barter remains undetermined.

In summary, none of the available evidence convincingly demonstrates that Old Copper artifacts had an exclusively ideological, social, or utilitarian use. Nonetheless, the evidence strongly supports the conclusion that, however they were viewed by their makers, most were used for utilitarian purposes, which is not inconsistent with their placement with the dead or their use as social markers. As Mason (1981:198) has suggested, copper may have been a magical stone that played an important role in intergroup relations in the region in the Archaic period. Even though most copper implements were made for ordinary utilitarian purposes, their rarity and special properties of malleability and repairability may have made them important gifts to exchange within networks

of social relations and items that signaled family prestige and social identification. Obviously, the meaning and use of Old Copper implements remain open topics for research.

What is the Age of the Old Copper Industry?

Determining the age of the Old Copper industry has been, and most likely will continue to be, a lively arena of debate in archaeology. Estimates of the age of Old Copper artifacts, and more generally of the use of copper, have varied widely. Winchell (1911:502), for example, suggested that precontact people in this region learned their copper working skill from "the tribes of Mexico and Arizona." Ritzenthaler (1946), on the other hand, once argued that an Old Copper culture represented the earliest human occupation in Wisconsin, and that it was affiliated with Eskimo and possibly Asian sites. Quimby (1954) also argued for a great antiquity for the culture. He (1962a:77) suggested it was contemporary with the horse at 3500 BC and that "some Old Copper Indians may have lived on the shores of the lake [Glacial Lake Agassiz]." Early radiocarbon dates of 3650 BC and 5560 BC from the Oconto site seemed to support a pre-3000 BC age for the industry (Wittry and Ritzenthaler 1957:320-321).

The idea of a great antiquity for Old Copper was eventually challenged by a variety of counter evidence (Mason and Mason 1961; Wormington 1962; Binford 1962a; Quimby 1962b). For instance, in 1959 Elden Johnson (1964) tested Quimby's suggestion that Old Copper Indians once lived on the shores of Glacial Lake Agassiz by plotting the associations of Old Copper artifacts with beach ridges of the glacial lake. The assumption was that if Old Copper artifacts did date back to the terminal glacial period, their age of appearance could be determined by the beach ridges they were associated with. Johnson's study conclusively demonstrated that classic Old Copper artifacts in this region of northwestern Minnesota were more recent than all of the beach ridges of Lake Agassiz. A more recent age for Old Copper was supported, too, by the demonstration that the copper-using cultures in the western Arctic and Subarctic did not have significant amounts of copper until the last millennium, and by a suite of new radiocarbon dates, such as 2590 BC for Oconto

(Ritzenthaler 1970:77) and 2750 BC for the Morrison's Island-6 site (Kennedy 1967). Together, these and other data indicated an age range for Old Copper artifacts of 3000 to 1000 BC (5000 to 3000 years ago). Today, this age range is generally accepted as the most likely age of classic Old Copper (Caine 1974:60; Mason n.d.).

In spite of this general consensus, problems remain, for other evidence indicates that Old Copper, or something associated with it, could be both earlier and more recent than the 3000-1000 BC time period. Steinbring (1970b, 1991:56) suggests that the existence of copper points resembling Late Paleoindian Agate Basin lanceolate forms, which he labels McCreary points, supports the emergence of Old Copper forerunners as early as 6500-6000 BC in western Manitoba and 500 or so years earlier to the east. McCreary points have a plain lanceolate form with a concave base and, on a few examples, parallel grooves resembling the collateral flaking on some Late Paleoindian point types (Fig. 9). He also suggests a possible association of McCreary points in Manitoba with later western Glacial Lake Agassiz beaches (Steinbring 1991:26). According to his count, 10 to 12 points are now known from Michigan, northern Illinois, eastern Wisconsin, northern Minnesota, western Manitoba, and possibly Saskatchewan. In Minnesota, a McCreary point from Roseau County is in the Fryklund Collection in the Roseau County Historical Museum, and another from Aitkin County is illustrated in Winchell (1911:498, #1217). Michlovic (1978) reports a copper point from Clay County that resembles a Late Paleoindian point form. Steinbring (1975:400, Fig. 24) reports the presence of copper variants of the Late Paleoindian Scottsbluff Type II (Eastern variety) in southern Ontario, Michigan, and northern Minnesota. Mayer-Oakes (1950) also provides good evidence for the contemporaneity of a Late Paleoindian assemblage and Old Copper at Starved Rock in northern Illinois.

Support for the view that native copper, if not Old Copper, was worked well before 3000 BC can be found in a variety of other sources. For example, Beukens and others (1992) report a direct calibrated AMS radiocarbon date of 4800 BC on a well-preserved wood splinter lodged in the tang of a copper point from the South Fowl Lake site,

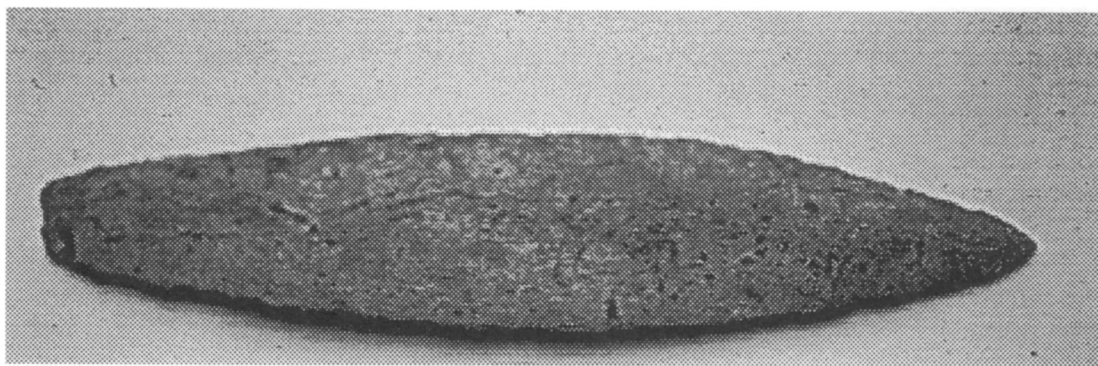


Figure 9. A McCreary copper spear point from Manitoba (from Steinbring 1975).

and calibrated dates between 3300 and 3000 BC for similar material from the Renshaw site near Thunder Bay, Ontario. An early geological report by Tanton (1931) describes the discovery of copper implements beneath "forty feet" of deltaic sediment in the same area. The latter is evidence for an occupation of the Kam Delta during the pre-Nipissing Transgression before 3000 BC. Two extremely oxidized fragments of what were probably copper awls in the basal Archaic zone at the Cemetery Point site in eastern Manitoba are thought to date between 5000 and 4000 BC (Buchner 1980:13). The most frequently cited well-dated occurrence of copper in the Midwest is 3600 BC for perforators at the Modoc Rock Shelter in Illinois (Fowler 1959).

Another possible indication of an early date for Old Copper is the presence of Old Copper artifacts and Late Paleoindian projectile points, such as Agate Basin, Scottsbluff, and Eden, in the same sites. This kind of "place" association has been reported for the Reservoir Lakes locality, the Fowl Lake site, and Houska Point. However, a contextual association of these artifact forms has not been demonstrated at any of these sites (Neumann 1979). At best, sites like these present an opportunity to test a possible Late Paleoindian-Old Copper relationship.

On the other end of the classic 3000-1000 BC age range is the presence of copper implements that resemble Old Copper forms in Laurel and Arvilla contexts. These artifacts indicate a continuity of Old Copper ideas, if not classic forms, into

the first half of the first millennium AD in the industry's western extension. The Arvilla copper item is a large spear point that resembles a IA1 spear point in size and general appearance but deviates from it in details of style (Fig. 7A). It was found with copper ornaments as a grave good in Mound 3 at the Arvilla site, which is just across the Red River from Minnesota in North Dakota (Johnson 1964). Substantial numbers of copper artifacts in Laurel components along the Rainy River are miniature versions of standard Wittry classes, like crescents and knives (Fig. 10) (Steinbring 1970:14, 1975). Steinbring (1975) has also reported the presence of a IIA2 knife in probable Laurel context at the Falcon Lake site in Manitoba. He (1975:207) raises the possibility that sites in the Shield that contain classic Old Copper artifact forms, like Pickerel Lake, could be contemporary with ceramic-using Initial Woodland groups to the south. Miles (1951), too, suggests that Old Copper extends into the Early Woodland period. Finally, five radiocarbon dates on charcoal from the Riverside site range from 510 BC to AD 1; a single date on a bone sample is 1045 BC (Hruska 1967).

CONCLUSIONS

(1) A more thorough inventory and a better understanding of the context of Old Copper implements is needed in Minnesota and in other regions west of the Old Copper heartland. Very few implements have been found in controlled, reported excavations, with Peter Bleed's work at Petaga Point and Steinbring's at Houska Point and Fish

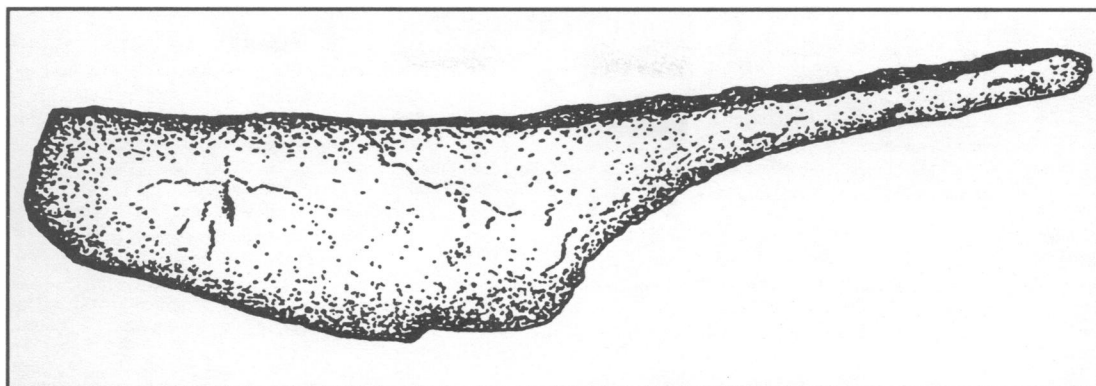


Figure 10. Copper knife from a Rainy River Laurel component (after Steinbring 1975).

Lake Dam among the few exceptions in Minnesota.

(2) It seems that Old Copper spear points were used to spear both sturgeon and bison in Minnesota. Whatever social and religious meanings these items may have had, they were employed, and often heavily so, as tools.

(3) Old Copper seems best interpreted as a metallurgical tradition shared to varying degrees by a number of different societies. For example, while Old Copper artifacts seem associated with assemblages containing Raddatz Side-Notched and Durst Stemmed projectile points in east-central Minnesota and areas to the east, they seem more closely associated with assemblages containing Oxbow points in northern Minnesota and in areas to the west. It is assumed that these distributions reflect large-scale social divisions in north-central North America.

(4) Old Copper-related forms in Minnesota, such as McCreary points and Laurel/Arvilla copper, could be both very early and very late in age in this western region. There is no reason, for instance, that Old Copper started in eastern Wisconsin, as is often assumed, just because drift copper and copper artifacts are more plentiful there. A closely related issue is the definition of Old Copper. Are there formative, classic, and post-classic periods that would accommodate this apparent temporal drift? Like the normal curve, while the great majority of Old Copper artifacts fall under the height of the curve (the 3000-1000 BC classic period), other Old Copper-related arti-

facts seem to trail off under the tails of the curve (the formative and post-classic periods). These possibilities need study.

(5) Finally, there is widespread and in some instances extensive information about Old Copper in Minnesota, Iowa, the eastern Dakotas, north-western Ontario, Manitoba, and Alberta. This material, which covers as large an area as does Old Copper material to the east, cannot be ignored in definitive discussions of the Old Copper industry.

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