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African Burial Ground

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Cover. *African Burial Ground:* The *in situ* configuration of the waistbeads in the pelvic region of Burial 340; scale is in inches (photo by Dennis Seckler; furnished by the U.S. General Services Administration).

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KARLIS KARKLINS, editor

CONTENTS

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BEADS FROM THE AFRICAN BURIAL GROUND, NEW YORK CITY: A PRELIMINARY ASSESSMENT

Cheryl J. LaRoche

Excavation of the African Burial Ground in New York City yielded the skeletal remains of more than 400 individuals. This paper is a preliminary discussion of the beads associated with seven of the burials. The in situ *bead configurations of three of the interments are distinctive and appear to be indicative of cultural practices of Africans in 18th-century New York. The configurations include necklaces and possibly wristlets, as well as waistbeads. The latter represent the first recorded instance of such use by Africans or African descendants in North America. These objects provide insight into the religious or ritual behavior of the people who utilized the burial ground.*

INTRODUCTION

The General Services Administration of the United States government erected a 34-story office building at Broadway, Duane, Elk and Reade Streets, on a site that historical-period New York maps indicated was the location of an African burial ground. Excavation of a portion of the burial ground began in May of 1991. Located at 290 Broadway, the site is two blocks north of City Hall in the heart of lower Manhattan, New York City (Fig. 1).

During the Dutch and British colonial period, this was a hilly, ravined area which lay well north of the city limits and was considered undesirable.The Maerschalck maps are among the few from the Colonial period that delineate the location of the six-acre cemetery (Fig. 2). Since these maps indicate the presence of the burial ground, historians have long been aware of its existence (Weathers 1993). The general public, however, became aware of the existence of the burial ground through the excavations.

The burial ground, which dates from at least 1712, may have had its origins in the late 17th century after Trinity Church banned burials of Africans in its church yard in 1697 (Trinity Church Minutes 1697). Throughout the 18th century, the cemetery was the primary location available to New York's African and African-descendant population, both enslaved and free, for the burial of its dead. The human remains are among the earliest and largest historical African-descendant population excavated in the Americas.

As the 18th century progressed, the cemetery began to serve divergent functions. Portions of the land were being used commercially by the Remmey and Crolius potters for the disposal of waste from their manufacturing process. The cemetery was still in use during the American Revolution and some of the burials and artifacts date from this period. When the burial ground was closed around 1795, the land was filled and leveled, and lots were subdivided as the city continued to expand and encroach on the land.

Loft buildings erected in the 19th century stood on a portion of the site until construction began for the federal office tower in 1991. It had been thought, therefore, that the deep basements of the structures which had been erected along Broadway and Reade Street had destroyed any evidence of the 18th-century cemetery, and that few, if any, burials would have survived the urbanization process (Edwards and Kelcey 1989:147). Maps did indicate that Republican Alley and Manhattan Place had never been developed and it is here that the first burials were found (Fig. 1).

The subsequent discovery that approximately 400 burials, predominately Africans and African descendants, had survived the urbanization process was unexpected given the multiple use and frequent disregard for the funerary function of the site. Although the land was privately owned, it had been appropriated for use as a burial ground and ownership and boundary lines had been in dispute for most of the

BEADS 6:3-20 (1994)

18th century. The burials had survived because up to 28 feet of landfill eventually covered the site.

The tremendous importance of the burial ground became apparent as the excavations proceeded. Public awareness heightened and the African-American community became increasingly concerned about the desecration of an African ancestral site which held great spiritual and symbolic significance. The burials were exhumed by Historic Conservation and Interpretation, Inc., of Newton, New Jersey, and the Metropolitan Forensic Anthropology Team working through Lehman College. The last month of the excavation was supervised by John Milner Associates which, along with Howard University, continue to direct the project.

Through the actions of then-Senator Gus Savage, Mayor David Dinkins, Peggy King-Jorde and hundreds of committed members of the descendant community, excavations were halted as of July 1992. As a result, construction of the pavilion portion of the office building was cancelled in order to avoid disturbing any additional burials. Approximately 200 burials which remain interred at the site would also have been exhumed had the descendant community not intervened. In November of 1993, the skeletons were transferred to Howard University in Washington, D.C., for cleaning and further study. A third of an acre of grassed-over fenced-in land nestled among some of the most valuable real estate in the world now marks the site of the African Burial Ground. A sign reads:

> The enclosed area is the preserved part of the original African Burial Ground. Closed in 1794, the African Burial Ground once covered more than five acres–about 5 city blocks.... African men, women and children were buried in the original cemetery. Unearthed during building construction in 1991, the site is now a National Historic Landmark and within the New York City African Burial Ground and Commons Historic District. This surviving remnant of the burial ground is dedicated to the people who are buried here and to all who were enslaved in the city's early history from 1626 until July 4, 1827, Emancipation Day in New York.

The archaeological and historical significance of the site is compelling. The human remains and associated artifacts of the Africans and African descendants exhumed from the burial ground represent tangible evidence of the lives of the ancestors. The harsh conditions of capture, transatlantic passage, enslavement and servitude were not conducive to artifact retention. As is often the case, the beads and other grave goods are part of the lasting legacy of this historic population.

Approximately 560 burial-related artifacts were recovered from the burial ground. The presence of shroud pins, the most common artifact, reveals that many of the burials were wrapped in pinned shrouds. Although only the beads will be discussed here, buttons, finger rings, cufflinks/sleeve buttons and coins were also recovered from the site. One additional bead and a pendant were recovered during the course of lab work at Howard University.

THE BURIALS AND THEIR BEADS

A total of 145 beads representing 14 varieties was recovered from seven of the burials. This number may change if more beads are discovered in the pedestaled human remains being cleaned at Howard University. With the exception of a faceted amber bead and a bone bead, all were glass of either drawn or wound manufacture.

The beads are classified using the expanded version of the taxonomic system developed by Kenneth and Martha Kidd (1970) as presented in Karklins (1985). Varieties that do not appear in the Kidds' lists are marked by an asterisk (*). Colors are designated using common names, though the specimens from Burial 340 also have the appropriate Munsell color codes (Munsell Color 1976) appended. Diaphaneity is described as transparent (tsp.), translucent (tsl.) or opaque (op.). In the following text, Pl. = color plate, R. = row and # = position in the row.

Burial 107

A female believed to have been about 30 or slightly older at death, Burial 107 was interred in a hexagonal coffin oriented east-west with the head at the west end. Coffin nails were recovered, as were two shroud pins, indicating that the deceased had been wrapped in a shroud. The single associated bead was

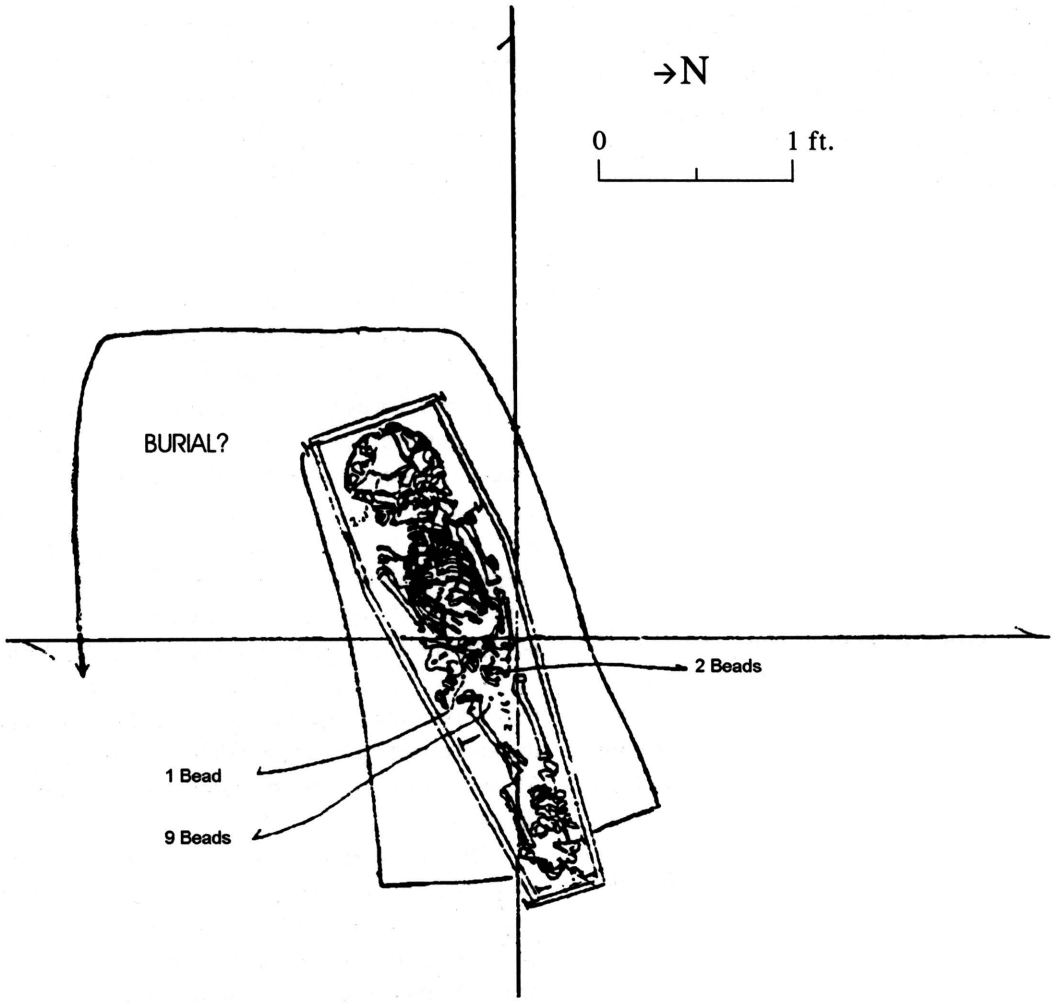

Figure 3. Field Drawing of Burial 187 showing the location of some of the associated black beads (drawing by Margo Schur; furnished by the U.S. General Services Administration).

the ear during cleaning and analysis of the remains at the Howard University laboratory:

Ia1. Tubular; op. redwood cased in clear glass; small size; 1 specimen (not illustrated).

Diameter: 3.5 mm
Length: 9.0 mm

Burial 187

Burial 187 was an infant interred in a child's coffin (children represented as much as 45% of the interments at the burial ground). This individual had 22 small black beads in association. Several of the specimens were found in situ; the rest were recovered while screening the soil from the central portion of the burial (Parrington 1993). It was determined from the placement of the *in situ* beads that the child had originally been buried with beads at the waist (Fig. 3):

IIa6. Round; op. black; pitted surface; small size; 22 specimens (Pl. IA, R.3, #3-4).

Diameter: 2.2-3.0 mm
Length: 1.5-2.5 mm

Burial 226

This burial, also an infant in a child's coffin, was laid to rest with eight beads around the neck. The method of manufacture for these remains problematic. A thick crust resulting from the decomposition of the glass in its archaeological context obscures diagnostic details, although one bead which is broken in half appears to have a yellow core.

WIb? Oblate; possibly tsp. yellow; weathered surface; medium size; 8 specimens (Pl. IA, R.3, #2).

Diameter: 4.0-4.8 mm
Length: 2.7-3.8 mm

Burial 250

Disturbed by the intrusion of a later burial, the remains of Burial 250 appear to be those of a female. She was buried in a trapezoidal or "tapering" coffin oriented east-west with the head at the west end. A large black bead was found in a mass of metal corrosion in the central portion of the burial; a metal button was found in this area as well. Due to the disturbed nature of the burial, the exact location of the bead could not be determined.

WIb*. Round; op. black; very large size; 1 specimen (Pl. IA, R.3, #7).

Diameter: 13.0 mm
Length: 11.0 mm

Burial 340

Burial 340 is that of a woman who appears to have died between the ages of 28 and 35. Her remains were discovered in May of 1992, two months before excavation of the site was halted. As with the majority of the burials in the African Burial Ground, this one was oriented east-west with the head at the west end (Fig. 4). Her body had been pinned in a shroud and placed in a "tapering" wooden coffin. Little of the wood remained and, with the exception of coffin nails, no coffin hardware was encountered. A clay pipe was also recovered, but it is from a disturbed context and poorly provenienced.

This individual is of great interest as she was buried with a strand of approximately 100 beads around her pelvis. All but five of these were found *in situ* (*see* cover). The exceptions (small yellow and turquoise specimens) were recovered by water screening loose soil. The strand, which represents eight bead varieties, also includes what appear to be cowrie shells (Pl. IB). The precise number and conclusive identification of the shells as cowries has yet to be determined.

Although preliminary field analysis indicated that Burial 340 was not interred wearing wristlets, the alternating yellow and turquoise pattern of beads at the right side may well represent such an ornament (Pl. IIA), and the five beads recovered from the fill may have formed a continuation of the alternating color pattern (the yellow beads appear white as a result of a heavy layer of glass corrosion). These two bead varieties, which are approximately the same size, are smaller than the beads on the waist strand, further suggesting that they may have been part of a separate ornament. Though the postulated wristlet beads rested next to the hip a good distance from the burial's right hand, the distal end of the radius had separated from the wrist bones sometime after the disintegration of the surrounding tissue and had slipped to the side (Fig. 5). It could easily have pulled a wristlet with it in the process.

The hands apparently rested on each hip and were not crossed at the groin, bringing the wrists in approximate line with the pelvis. Although the right hand was present and pronated (palm down over the pelvis), the bones of the left hand were missing, further complicating the question of whether or not the burial was wearing wristlets.

In addition to the waistbeads and possible wristlet, Burial 340 exhibited dental modification. Her right first incisor was modified, either by filing or chipping, to a gradual "bow tie" or "hourglass" shape. Her right lateral incisor appears to have been modified to a "point" or "peg shape." The left dentition remains buried in the soil matrix which was excavated with the pedestaled skull and will be analyzed by the Howard University bioanthropologists who are cleaning and examining the bones.

Seven glass bead varieties and one amber specimen were found with the burial:

IIa*. Circular; tsp. light gold (2.5Y 7/8); weathered surface; small size; 14 specimens (Pl. IA, R.1, #1-2).

Figure 4. Burial 340 (furnished by the U.S. General Services Administration).

Figure 5. The pelvic region of Burial 340 showing the relationship of the right hand resting on the lower abdomen with the disassociated radius in the upper left. Note the patterned, possible wristlet beads at the head of the radius (for a detailed view, *see* Pl. IIA)(furnished by the U.S. General Services Administration).

Diameter: 3.1-3.8 mm
Length: 2.0-2.8 mm

IIa*. Circular; tsp. blue green/turquoise (10BG 5/6); pitted surface; small size; 25 specimens (Pl. IA, R.1, #3-4).

Diameter: 3.4-3.8 mm
Length: 2.0-2.6 mm

IIa55. Oblate to barrel shaped; tsp. cobalt blue (5PB 2/6); medium to large size; 59 specimens (Pl. IA, R.1, #7). Several of the beads exhibit small projections, some rounded and others broken and blunt, on their ends indicating the *a speo* method of heat rounding drawn beads (Karklins 1993:31-32).

Diameter: 5.3-7.5 mm
Length: 4.0-7.1 mm

IIj2. Barrel shaped; op. black (5PB 2/1) decorated with three decomposed, op. white, trailed wavy lines that encircle the bead perpendicular to the perforation; large size; 1 specimen (Fig. 6; Pl. IA, R.2, #3; IIB, upper).

Diameter: 8.1 mm
Length: 8.3 mm

WIb6. Globular to oblate; tsp. light gold (2.5Y 7/8); weathered surface; large size; 6 specimens (Pl. IA, R.1, #5-6).

Diameter: 6.2-6.6 mm
Length: 4.7-4.8 mm

WIIc?. Faceted; color obscured by weathered surface; four concave, pentagonal, pressed facets encircle either end; flat ends; medium size; 3 specimens (Pl. IA, R.1, #8; IIB, lower).

Figure 6. Drawn bead variety IIj2 (left) and wound bead variety WIIIb* (right)(furnished by the U.S. General Services Administration).

Diameter: 5.5 mm
Length: 5.0-6.0 mm

WIIIb*. Irregular barrel; op. blue (5PB 2/1) decorated with a wavy gilt stripe around either end; large size; 1 specimen (Fig. 6; Pl. IA, R.2, #1; IIB).

Diameter: 6.1 mm
Length: 6.2 mm

Amber. Faceted globular; red (10R 3/8) with internal fractures; medium size; 1 specimen (Pl. IA, R.2, #2). Fourteen trianguloid facets with rounded or worn edges alternate around the body of the bead; the ends are smooth.

Diameter: 5.0 mm
Length: 4.7 mm

Burial 428

This burial was interrupted by a stone wall and a builder's trench. A portion of a rectangular coffin was evident. The deceased was oriented east-west, head at the west end. Two faceted beads were recovered from an unspecified location within the grave:

WIIc2. Pentagonal faceted; tsl. light gray; eight pressed facets; dull surface; large size; 2 specimens (Pl. IA, R.3, #5-6).

Diameter: 8.0-9.0 mm
Length: 7.5 mm

Burial 434

This burial was situated next to and oriented in the same direction as the previous one. The skeleton was in the process of being uncovered when the excavation was shut down. A single bone bead was found at the western end of the grave:

Bone. Irregular form; badly decomposed shaped mammal bone; medium size; 1 specimen (Pl. IA, R.3, #1).

Diameter: 5.0 mm
Length: 4.0 mm

COMPARATIVE BEAD DATA

Most of the burial ground beads—principally the monochrome drawn and wound specimens—are not particularly useful as temporal indicators, and are of little help in assigning the burials with which they were found to a specific period of cemetery use (Karklins 1995: pers. comm.). The large black drawn bead with inlaid trailed wavy lines (IIj2) which was found with Burial 340 is quite distinctive and has correlatives at several Iroquois sites in eastern and western New York state (Rumrill 1991:38-41; Wray 1983:46). The dates of the sites range from 1682 to 1750, an absolute correlation with the African Burial Ground. The two pentagonal-faceted beads (WIIc2) found with Burial 428 have been found at numerous sites around the world, and appear to date primarily to the 1700-1760 period (Karklins and Barka 1989:74). Dates for the other distinctive beads remain to be determined.

Comparing the burial ground bead assemblage to other African-descendant sites in North America and the Caribbean has begun, and some comments may already be made on similarities with the beads and beaded objects found at the Newton Plantation site in Barbados. The beads from this site were examined in order to gain an understanding of bead usage among Africans and African descendants during the 18th century. Use of the Newton Cemetery began in the last quarter of the 17th century and continued into the first quarter of the 19th century (Handler and Lange 1978). The temporal range of the Newton Cemetery site (which yielded more than 900 beads) corresponds with that of the African Burial Ground.

Not only is the Newton Plantation cemetery contemporaneous with the African Burial Ground, it also contained a burial with a definite *in situ* configuration of beads with cultural similarities to Burial 340. The Barbadian burial (no. 72) was that of a man identified as an Obeah practitioner or folk doctor who had been buried with "a unique and elaborate necklace with obvious, but generalized, African characteristics...." This object consisted of "seven cowrie shells, twenty-one drilled dog canines, fourteen glass beads of various types, five drilled... vertebrae from a... bony fish (not shark), and one large reddish-orange agate [carnelian] bead" (Handler and Lange 1978:125). This unique object may well have been brought to Barbados from Africa (Handler and Lange 1978:131).

Although not identical, a decorated wound bead variety from Newton Plantation (var. no. CISCT3Vg) is similar in color, shape and decoration to a drawn bead (IIj2) from the African Burial Ground. SEM/EDS analysis of these two beads revealed that they had similar chemical compositions (Table 1: nos. 40.79 and 35iiJ2). It is, therefore, possible that the two were produced at the same place.

Similarly, both sites produced beads (variety WIb6) composed of heavily corroded light gold glass (Fig. 7; Pl. IA, R.1, #5-6) with a distinctive "squat teardrop" shape. While Karklins (1995: pers. comm.) believes that such beads are simply aberrant forms of globular beads resulting from rushed or careless bead manufacture, this shape is, nonetheless, represented and separately identified in other 17th- and 18th-century collections. It has been described as truncated pear shaped by Harris (1984) and a truncated cone by Rumrill (1991). Since this shape is represented at two African-descendant cemetery sites, it is conceivable that the possessors of these beads were unaware that their shape was the result of a manufacturing anomaly and may have sought them for their distinctive form.

Figure 7. Examples of "squat teardrop" WIb6 beads from Newton Plantation, Barbados; the specimens measure about 6.5 mm by 4.5mm (photo by C. LaRoche).

COMPOSITIONAL ANALYSIS

Although the African Burial Ground is a tightly dated site, elemental analysis of some of the recovered beads was undertaken in an attempt to understand their chemical components with the hope that this information might eventually help in determining or corroborating their date ranges. The extent to which the beads might have been curated or heirloomed would affect their reliability as chronological indicators for the burials with which they were found, a problem noted in Africa (DeCorse 1989; Opper and Opper 1989:18).

Table 1. SEM/EDS* Compositional Surface Analysis of Glass Beads from the African Burial Ground (% by weight).

Bead No. Variety Color	340.16 IIa55 blue	340.19 IIa* turquoise	340.20 IIa* light gold	340.78 WIIIb* blue/gold	340.79 IIj2 black/white	35iiJ2 WIIIb* black/white
Na_20	13	12	-	17	14	14
MgO	3	3	-	5	4	4
$A1_2O_3$	3	7	1	3	3	4
SiO_2	63	58	39	55	54	58
K_2O	5	3	<1	1	2	4
CaO	9	8	<1	8	10	8
P_2O_5	-	1	-	-	-	-
C1	1	1	-	1	<1	1
TiO_2	«1	«1	-	«1	«1	«1
MnO	«1	-	-	3	7	5
Fe_2O_3	1	3	1	2	2	1
CoO	«1	-	-	-	-	-
CuO	-	1	-	«1	«1	-
PbO	-	3	58	2	2	<1

*AMRAY Model 1100 Scanning Electron Microscope/Kevex Model Delta IV, Energy Dispersive Spectrometer. Analysis performed by Mark Wypyski, Assistant Research Scientist, Sherman Fairchild Center for Objects Conservation, Metropolitan Museum of Art, New York.

- not detected. Also sought but not detected: Cr_2O_3, NiO, ZnO, As_2O_3, Sb_2O_3, SnO_2 and BaO.

Elemental analysis using Scanning Electron Microscopy with Energy Dispersive Spectrometry (SEM-EDS) was conducted through the Metropolitan Museum of Art in New York City. Seven specimens (six from the burial ground and one from Newton Plantation) were analyzed. Technical and philosophical constraints precluded sample taking or coating the beads in preparation for analysis. Consequently, the qualitative results are more reliable than the quantitative results. Obviously, the findings have limited application but they do provide a glimpse of the chemical formulas for selected burial ground beads.

Five of the seven, both of drawn and wound manufacture, were found to be composed of soda-lime-silica glass with high levels of magnesium (Table 1). The sixth specimen (Table 1: no. 340.20) was found to be made of glass with a very high lead content and only barely detectable levels of aluminum, potassium and calcium. Analysis revealed that the seventh specimen, a red faceted bead (no. 340.75), was not glass but an organic material, most likely amber (Mark T. Wypyski 1994: pers. comm.). The chemical formulations revealed by the analysis may provide directions for further research. The high lead content of the light gold (IIa*) bead, for example, may prove diagnostic.

INTERPRETATION

Bead Use

Seven of the burial ground interments had beads in association. Found in undiagnostic contexts, the beads in four of the graves served unknown functions. However, in the three remaining graves, the beads were found *in situ* in diagnostic loci. In one case, the burial of an infant (no. 226), the beads comprised a necklace. In the other two instances, an infant (no. 187) and an adult female (no. 340), they served as waistbeads, apparently the first recorded instance of

this practice in North America. It is possible that Burial 340 may also have been interred wearing one or more wristlets.

Waistbeads have been in evidence on the African continent for millennia (Yarbrough 1987). They have ontological, spiritual, metaphysical and historical meaning (Owerka 1991). To properly understand them we need to review the role of beads in African culture.

Beads played an important ceremonial role at each stage of life and would have served overlapping functions. The essential nature of beads and the protective properties they possess are best approached through an understanding of African traditional religion and the deeply religious nature of traditional African peoples (Mbiti 1969).

In traditional Africa, it was, and often still is, common to recognize and welcome the key moments in the life of the individual: the turning points and rites of passage such as birth, puberty and initiation, marriage, procreation, old age and death; entry into the community of the departed; and, finally, entry into the company of the spirits (Mbiti 1969). Frequently, these key events were marked with religious ceremonies and rituals in which beads often had a role (Sackey 1985). Beads were strongly associated with royalty and were symbolic of the historical status and wealth of a family.

"Africans... believe in the latent energy in things which is not visible in outward appearance but can be seen in the effects produced by use" (Parrinder 1976:23). Charms and amulets both accessed this force and protected against it. Therefore, charms, amulets and talismans were used for seriously religious intentions to secure a feeling of safety, protection and assurance. Beads would have imbued the wearer with spiritual power. They were worn as protection against the "evil eye" and to bring good fortune as well.

At birth a child began the journey towards eventual death and subsequent entry into the spirit world of the ancestors (Mbiti 1969). It was the custom in many parts of Africa to bury personal belongings, such as ornaments and beads, with the body. One entered the afterlife with the things that were a necessary part life. There are examples of beads being recovered from royal tombs and from other African and African-descendant funerary contexts (DeCorse 1994: pers. comm.; Handler and Lange 1978; Karklins and Schrire 1991; Shaw 1977).

Beads were particularly important for the protection of infants and children, and the presence at the African Burial Ground of two children adorned with a beaded necklace and waistbeads, respectively, seems to indicate that this continued to be true for New York's colonial Africans. Soon after birth the baby would have been decorated "with little strings of beads tied around its waist, its nect [sic], its arms, wrist, or ankles" (Turnbull 1966:59). These would also have been powerful charms meant to protect the child from evil spirits in life and death and would have been needed to accompany the child into the afterlife. Archaeological evidence suggests a ritualistic use of beads in the mortuary context among New York's first African Americans, paralleling archaeological evidence from the African continent.

Waistbeads functioned on at least five different entwined levels. The funerary context of the beads is the culmination of a lifetime of meaning. Waistbeads were indicators of spirituality, status and wealth. In addition to decorating and enhancing the body, the beads possessed erotic power which would have encouraged fertility. They were also apotropaic and were often viewed as valued heirlooms to be passed on from generation to generation.

Throughout life, many women of West and Central Africa wore strands of beads around their waists to emphasize their figures and their procreative role (Gordon and Kahan 1976), and this is a time honored tradition throughout much of the African continent. According to Opper and Opper (1989:9), in 1763, Demanet observed that "A woman would not consider herself dressed if she didn't have a certain number of sufficient necklaces and belts...."

Waistbeads also served an erotic function in Ghana, Senegal, Mali, Chad and the Sudan, among other countries (Francis 1992). In Ghanaian culture, "eggs, sex organs, and all the other parts of the body involved in procreation are believed to be endowed with a certain degree of sanctity" (Antubam 1963:63), and waistbeads played a provocative role in procreation. Fertility and procreation were regarded as sacred functions. Through the enhancement of sexuality, waistbeads aided in procreation which ensured personal immortality through living memory.

The sound of the rattle of the beads is reported to evoke an "auditory erotic response" in men (Francis 1992; LaRoche 1994).

In many African countries, waistbeads were and continue to be valued as heirloom pieces which were handed down from generation to generation (Ruth Rose 1993: pers. comm.), and this practice should be considered as a possibility for Burial 340. The practice of heirlooming beads could skew the interpretation of the data, leading to incorrect interpretation or temporal placement of the burial. Some of the beads from the strand could potentially be older than others.

Color Preference

Of the 145 beads analyzed from the African Burial Ground, 41% are blue, 19% are yellow, 17% are turquoise, 17% are black, 1.5% are red, 1.5% are light gray and 3% are of indeterminate color. If turquoise is included in the blue category, that group's frequency increases to 58%.

For Burial 340, of the 110 beads, 55% are blue, 23% are turquoise, 18% are yellow, 3% are of indeterminate color; black and red comprise less than 1%. If turquoise is included in the blue category, its frequency increases to 78%.

While no attempt was made to thoroughly research color preference at the African Burial Ground, the predominance of blue beads there does prompt a number of observations. Interestingly, none of the beads found in association with children were blue. All the blue beads were found with one burial (no. 340), the woman interred with the waistbeads.

According to primary accounts, a preference for blue beads existed among Africans between the 15th and 18th centuries (DuToit 1974:18; Quiggin 1949:37), a period during which Burial 340 would have been alive. The predominance of blue beads from African-descendant sites in the Americas may suggest that this preference for blue beads continued once the Africans landed in this area. Increased statistical analysis of color frequencies from a variety of sites, coupled with a statistical analysis of available colors within specified temporal ranges, may shed further light on this.

Cabak (1990) lists African-descendant archaeological sites which have produced blue beads, and discusses some of the possible origins and explanations for this perceived preference for blue beads.

Areas for Further Research

There is a dearth of information pertaining to bead use among the first generations of enslaved Africans in the Americas. There is also little evidence of wide-spread European bead usage for any purpose other than trade during the 18th century. Beads were often dismissed by early European observers, such as explorers and traders, as jewelry or trinkets which simply soothed the savage and superstitious mind. It was an attitude of misunderstanding that denied the deeper meaning or spiritual significance associated with beads, and slants the historical perspective.

For those studying beads used by Native Americans, there are sufficient bead assemblages for comparative analysis. Bead chronologies for New York and neighboring states have been established and can provide comparative data and temporal ranges for contemporary sites (Bradley 1983; Kent 1984; Pratt 1961; Rumrill 1991; Wray 1983). The circumstances surrounding the African Burial Ground are unique and care must be taken to not generalize about the beads on the basis of Native American sites, especially because the process of bead acquisition is unknown for New York's early Africans. More research is needed to determine the relationship between the two groups.

Furthermore, beads bound for North America (and probably the Caribbean) on slave ships came via Africa and would have been traded there as well. Karklins and Barka (1989:70), Killick (1987:9) and DeCorse (1989:45) have stated that North American bead literature may be used to infer the probable temporal ranges of bead varieties found in Africa. This will have implications for assessing the beads available in West Africa during the first half of the 18th century, the indicated temporal range when the individuals represented by some or all of the bead-associated burials at the burial ground would most likely have lived and died in New York. There are several archaeological indications which, when considered in conjunction with the bead chronology, suggest that Burial 340 may have been interred before 1742 (LaRoche 1994). Further research will be required to confirm this theory.

The African population living in New York during the colonial period could have been either enslaved or free and the question of bead acquisition is an

important one. The question of how Africans in the Caribbean and the Americas acquired beads has not been adequately addressed despite the recovery of hundreds of beads from African-descendant archaeological contexts (e.g., Handler and Lange 1978; Karklins 1989; Karklins and Barka 1989).

In the case of Burial 340, this is a particularly compelling question because the possibility exists that she could have brought her beads with her through the Middle Passage. Obviously, this is a theoretical though plausible point. Primary descriptive accounts do exist which describe men and women on board slave ships wearing beads around their necks, arms and waists (Handler and Lange 1978:147; Stiverson and Butler 1985).

The Middle Passage was originally misrepresented as a breach in the history and culture of African descendants in the Americas (*see* DeCorse 1991; Herskovits 1958). There is, however, ample physical and cultural evidence to the contrary. The burial ground waistbeads represent a cultural continuum. Waistbeads can claim a long cultural tradition in Africa and are represented in the early archaeological record of the continent (Addo 1994; Yarbrough 1987). The beads from the burial ground represent a continuation of this cultural tradition which is still evident on both continents today (LaRoche 1994).

DeCorse (1992) and others (Armstrong 1985:265; Jones 1985:195; Lamb 1971:35) have made observations about cultural continuity in the midst of social change. Dr. Dodson (1993) of the Schomburg Center for Research in Black Culture observed: "Africans carried cultural resources with them in the early stages of acculturation." As the burial ground beads and other artifacts, in addition to the human remains, continue to be analyzed, these early stages of acculturation should become more clearly understood.

DISCUSSION

> ...in the case of burial practices... the force of the notion that material culture is an *indirect* reflection of human society becomes clear. Here we begin to see that it is ideas, beliefs and meanings which interpose themselves between people and things. How burial reflects society clearly depends on attitudes [toward] death (Hodder 1987:3).

This is a preliminary assessment of the beads from the African Burial Ground. The presence of these artifacts in burial contexts indicates that the social, religious and status connotations associated with bead usage were important to some of New York's Africans in the Dutch and colonial era just as they were for Africans on the home continent.

While African-descendant archaeological sites yielding beads have been studied (e.g., DeCorse 1989; Handler and Lange 1978; Karklins and Barka 1989; Singleton 1991; Smith 1977), more research is required to properly understand the use of beads among Africans in the Americas, particularly during the early years of their enslavement. Certainly no research exists concerning bead usage among New York's early African population.

Beads were found with less than two percent of the African Burial Ground interments. Quantitative analysis of the presence or absence of beads or other artifacts in a burial context cannot be the sole determinant of significance, however. The oppression that was a reality for New York's enslaved African population, coupled with the lack of autonomy or freedom to exhibit a full range of cultural expression, probably renders conventional interpretation of quantitative statistical models inappropriate.

It may be that the use of beads was discouraged, or that beads were simply hard to come by. It may also be that, as Handler and Lange (1979:149) have suggested, beads were valued and may not have been placed in graves on all occasions. In the case of the burial ground interments, it is suggested that beads were buried with persons held in high esteem. However, further research needs to be conducted to affirm this.

Although the beads were recovered in the heart of New York City, there are factors which dictate that the initial research be focused on the African continent for much of the interpretation. The waistbeads from Burial 340 are the only known example of such bead use in a mortuary context in the Western Hemisphere. Thus, there are no comparative examples from this side of the ocean on which to draw. There are no European antecedents for waistbeads, and beaded belts rather than waistbeads are the Native American cultural tradition. The use of waistbeads within the present context is considered a reflection of an African cultural tradition.

Furthermore, the modified teeth of Burial 340 strongly imply that she was born on the African continent. The archaeological and historical record suggest that the practice of tooth modification did not continue once Africans arrived in the Americas (Handler 1994). When considered in conjunction with the modified teeth, the waistbeads are another strong indicator that this woman was probably African-born and would have known and remembered her cultural traditions. Further skeletal analysis should clarify this question. The shaped teeth and the *in situ* waistbeads suggest that Burial 340 died and was buried before she had become acculturated. The burials speak to the presence and survival of the African cultural tradition in colonial New York.

Both beads and cowries were items of barter during the colonial period (Einzig 1949; Quiggin 1949) and would have been valued monetary possessions. The blue bead with gilt decoration (WIIIb*) is unique in this assemblage and was probably viewed as significant considering the economic status of enslaved Africans in New York during this time period. Amber was probably esteemed for both its spiritual and medicinal properties (Abel 1983). To have been buried with a strand of beads which was surely prized suggests that this was a well-respected woman. The source of that respect, whether spiritual, royal, familial or economic, has yet to be determined.

CONCLUSION

The African Burial Ground is the oldest and largest historic African-descendant cemetery so far excavated in North America. It is not directly comparable with other North American sites. If, however, we take a more global view of the African experience in the diaspora during the late 17th and 18th centuries by drawing on Africa, the Caribbean and North America for examples and explanation, a pattern of bead usage does begin to emerge.

The burial ground excavations uncovered individuals with beads at the neck, waist and, possibly, wrist. These were intended to adorn the dead and accompany them on their journey into the afterlife. Waistbeads served multiple functions and were associated with a lifetime of meaning. They were meant to impart status, spirituality and power as they protected and graced the wearer.

The configurations of strung beads at both the African Burial Ground and Newton Plantation on Barbados imply ritualistic burials for important and esteemed individuals. Beads were valued items of barter on the African continent during the temporal range of these cemeteries and it would appear, from the burial customs, that some Africans and their descendants also valued beads in the Americas.

The historical and archaeological significance of the site has led the African-American descendant community to be vigilant in its oversight of this project. The archaeological record, coupled with historical documentation, is providing a historical perspective which heretofore had been obscured. The recovered beads are just one indication from the burial ground that New York's early Africans knew and maintained their cultural traditions despite the conditions imposed upon them.

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EUROPEAN BEADS FROM SPANISH-COLONIAL LAMANAI AND TIPU, BELIZE

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Excavation of the contact-period components of the Maya sites of Lamanai and Tipu in northern and west-central Belize, respectively, have yielded moderate collections of European glass and other beads. The archaeological data are augmented by ethnohistorical documentation regarding the length of Maya/Spanish interaction. Contexts do not provide unequivocal stratigraphic evidence of sequential bead importation, but known dates of bead varieties assist in refining both site chronology and the understanding of bead use. As the first Central American collections to be analyzed, the two assemblages offer an initial glimpse of one aspect of European impact on native material and non-material culture.

INTRODUCTION

Excavation of the Spanish Colonial portions of Lamanai, in north central Belize, and Tipu, near the country's western border (Fig. 1), has provided the first archaeological documentation of 16th- and 17th-century Maya life in the southern lowlands. The work at Lamanai, begun in 1975 and completed in 1986 (Pendergast 1981, 1986a-b, 1990, 1991), comprised full excavation of every identifiable residential structure of the colonial settlement, as well as the two sequent Spanish churches and several non-structure-associated refuse dumps of the period. One of the two contact-period cemeteries was completely excavated, whereas the second (and probably later of the two) saw only the most minimal sampling (Pendergast 1986b:4). In contrast, the Tipu project has, since its initiation in 1980, involved excavation of the single identifiable church and its more than 600 associated burials (Cohen, Bennett and Armstrong 1989), as well as investigation of eight colonial residences (Graham 1991; Graham and Bennett 1989; Graham, Jones and Kautz 1985). Insofar as the church and Spanish-period cemetery are concerned, the sample of the colonial remains at the site is largely complete; only a portion of the sanctuary was left unexcavated. Of what we estimate to be the colonial community, less than one-third has been excavated.

Despite the differences in sample size and character at the two sites, there is a strong suggestion that colonial-period material culture contrasts between Lamanai and Tipu are more than an artifact of excavation. The contrasts are, in fact, very likely to reflect significantly different relations between Maya and Spaniard in communities that played largely separate roles on the early colonial stage (*see* Graham, Pendergast and Jones 1989). Although the archaeological record from the two communities includes parallels in some areas of European material culture, the contexts and types of glass beads at the two sites overlap only partially. The differences in extent of excavation of the sites may have some degree of bearing on this aspect of sample comparability (Pendergast 1991:350), but there is very good reason to suppose that imported beads were utilized at Lamanai in ways different from those that characterized Tipu.

In addition to their value as sources of information regarding native status and European economic impact in the two communities, the Lamanai and Tipu bead collections are the first from Central America to be analyzed. They are, therefore, useful as evidence of the bead varieties that figured in early contact in the area. The grave-lot associations at Tipu also bear on bead chronology, and some suggestions regarding chronology are made in this paper. It is important to note, however, that the details of burial sequence

BEADS 6:21-47 (1994)

Figure 1. Map of Belize showing the location of Lamanai and Tipu, as well as other archaeological sites (drawing by D. Findlay).

Figure 2. Structure N11-18 at Lamanai, the source of most of the site's beads and probable home of the community's *alcalde* (photo by D. Pendergast).

derive from a wide range of data and cannot be worked out in full until all analyses are completed.

Full discussion of the Tipu and Lamanai assemblages will appear in excavation reporting, but we present here a summary of the contexts in which the two bead collections were encountered. Most of the beads are glass, but some jet and amber are also included. The bead descriptions, the type and variety designations and the dating based on typology are the work of Smith; the discussions of the archaeological contexts, associated artifacts and the probable significance of the two collections were written by Graham (Tipu) and Pendergast (Lamanai).

THE LAMANAI BEAD SAMPLE: CONTEXTS

With a small number of exceptions, the 16th-century Lamanai glass beads come from a restricted but, nonetheless, complex context: a residence designated Structure N11-18 (Fig. 2) (Pendergast 1991:348-350, Fig. 16-4). Together with a variety of other European goods, the beads serve to identify with virtual certainty the principal Spanish colonial-period Maya residence, presumably the home of the settlement's *alcalde* (mayor) (Pendergast and Graham 1993). One of the two principal lots of beads (18 specimens; *see* Table 1), was recovered from a large midden that abutted the north face of the structure. The second lot consists of 20 beads, 14 of which were scattered over the interior of the house, a context that yielded a broad range of other European goods (Pendergast and Graham 1993:345-351), with the remaining six distributed on exterior floor surfaces at the front of the structure. The beads' presence immediately atop floor ballast and other building surfaces leaves no doubt that they were strewn throughout the structure as part of a deposition of wealth/status items that must, given the context, have been among the last acts that preceded abandonment of the residence. The meaning of the effort cannot be fully reconstructed, but it is highly likely that the discarding of previously valued

Table 1. Lamanai Bead Varieties by Provenience.

Provenience	Variety	Quantity
Structure N11-18, certainly or probably in core	IIa2a2	2
Structure N11-18, midden at north face of platform	IIA1e IIA2a IIIA2a IIIA2b IIIC2a IVA4c IVC2e IB4f	3 3 5 3 1 1 1 1
Structure N11-18, exterior building surfaces	IIA2a IIA2b IIIA2a IIIC2a	1 1 3 1
Structure N11-18, interior building surfaces	IIA1e IIA2a IIA2b IIIA1a IIIA2a IIIA2b IVA4c IVC2e?	1 4 1 1 3 1 1 1
Midden, south face of Structure N11-7 platform	IIIA2b	1
Structure N12-26	IIIA2a IIIA2b	1 1
West of N12-26, no structural association	IIIA2a	1
Structure N12-30	WIb11	2
TOTAL		**45**

European objects was part of a rejection of many aspects of Spanish influence over the community.

Certainly in use for longer than most or all of the midden specimens, the interior and exterior surface beads from the building are very likely to have been deposited a good many decades after their arrival at Lamanai. Although the suggestion that the beads were retained for so long a period raises a rather difficult conceptual problem, the argument for cessation of Structure N11-18's use during the opening years of the rebellion is a compelling one. First, abandonment of the structure at an earlier date would have meant the casting aside of a variety of imported goods, including the beads, by a still-functioning community under at least nominal Spanish control. Second, the absence of another Colonial structure equal to N11-18 in size, complexity and artifact content demonstrates that, if N11-18 had been abandoned early, the *alcalde* would have been left with neither house nor European goods as indicators of his rank at a time when he still administered the settlement. Finally, the construction of a substantial church (the second built in the community) probably not long before 1600 (Pendergast 1986b:3-4, 1993:123-124), is an indication of the importance of Spanish endeavors at the site over a protracted period. In this context, early rejection of Spanish goods, especially as there was so small a quantity of them in the community, seems highly improbable.

Owing both to the structure-related source of the beads and to the nature of more narrowly defined contexts within that source, the sample tells us only about elite material perquisites and not about either the motivations or the mechanisms of introduction of the beads to Lamanai. Given the volume and apparent age range of the sample, it is possible, but not particularly likely, that the entire lot represents a single importation. It is equally possible that the lot was intended as a gift to the *alcalde* to assist in establishing his identity as the native wielder of power substantiated by Spanish rule. It is obvious, however, that this, as well as alternative interpretations, must remain speculation because of the limitations imposed by the context. The documented role of priests in the introduction of beads, among other gifts, to native communities (van Oss 1986:16; Villagutierre Soto-Mayor 1983:246, 282, 288, 363) is no more apparent in the Lamanai sample than is any secular concern.

Three other contexts, all but one of which are structure-related, proved to be minor sources of early contact-period beads; the total from the three sources is four specimens. An additional two beads (Kidd variety WIb11) come from Structure N12-30, a building approximately 400 meters south of N11-18 that was almost certainly also a residence. N12-30 is highly likely to have been a building of considerable importance, on grounds of its location in the vicinity of the second church, probably built early in the 17th century (Graham, Pendergast and Jones 1989:1256, Fig. 2). The beads appear to confirm the date posited on locational grounds.

THE LAMANAI BEAD SAMPLE: CHRONOLOGICAL BRACKETING

Apart from the evidence of the beads themselves, there is only a general chronological bracketing within which the contexts of the bead sample can be placed. Documentary evidence fixes the date of establishment of at least nominal Spanish rule of the frontier territory in which both Lamanai and Tipu lie as 1544 (Graham, Pendergast and Jones 1989:1256). It is probable that construction of the first church at Lamanai (*see* Pendergast 1986b:1, 1991:341-343) began not long after this date, and erection or amplification of the putative *alcalde*'s residence may date from this period as well. If the community's leader retained his authority in the face of declining Spanish control early in the 17th century, Structure N11-18 may have remained in use until the final events of the rebellion that Lamanai and Tipu had joined by 1638. On their arrival at Lamanai sometime near mid-1641, a group of Franciscan priests found the church and other buildings burnt and the populace supposedly decamped into the forest (López de Cogolludo 1971:Book 11, Chapter 13). The deposition of beads in midden adjacent to N11-18, and probably of those found in association with other structures, surely predates these events by some years. The specimens found within the confines of N11-18 are, in contrast, most likely to have been deposited very close to the last stage of the rebellion.

Table 2. Non-Burial Bead Associations at Tipu.

Lot Number	Context	Bead Dates	Variety and Quantity
T-004	Str. H12-6: collapse debris, east wall.	Pre-1560?	S&G IIA2a [1]
T-101	Str. H12-7: the bead was found in the upper 15 cm while clearing the area just to the east of the structure.		Kidd IVa*(a) [1]
T-150	Str. H12-8: the sole amber bead was encountered in a dark midden deposit below post-abandonment accumulation and above structural features ca. 18-28 cm below ground surface in the central trench.		Amber var. 1 [1]
T-151	Str. H12-18: post-abandonment accumulation, 12 cm below ground surface in the south trench.	pre-1560?	S&G IIIA2a [1]
T-156	Str. H12-18: post-abandonment accumulation, 10 cm below ground surface.	S&G IB1b [1]	
T-162	Str. H12-18: from possible midden material mixed with post-abandonment accumulation 10-25 cm below ground surface, above structural features of H12-18 in the area of the central trench.	pre-1560?	S&G IIA1e [1] S&G IIA2a [1]
T-624	Almost certainly displaced from a burial, the bead came from about 30 cm below ground surface in an area with no clearly associated burials; the nearest are B 534 and 536, both juveniles, which lay 1.0 m to the east and slightly south of the point where this bead was recovered.		Kidd IIa59 [1]

THE TIPU BEAD SAMPLE: CONTEXTS

Virtually all of the uncertainty that envelops the Lamanai sample does not affect the major portion of the material at Tipu. In contrast with the Lamanai specimens, a minimal number of the Tipu beads comes from midden or structure core contexts (Table 2). The preponderant portion of the sample was associated with burials (Table 3) placed both beneath the nave floor of the Spanish church (Fig. 3) and also outside the church on the north, west and south sides. The practice of sub-floor burial in the nave is also in evidence in the first church at Lamanai (Pendergast 1986b:4), but only one burial was accompanied by a fragment of probable European metalwork and none was interred with beads. Although the evidence is not absolutely conclusive, the contrast between the Lamanai and Tipu church-burial samples suggests that

Table 3. Burials with Associated Beads at Tipu.

Burial No.	Lot No.	Sex and Age	Context	Bead Dates	Variety and Quantity
B 75	T-615	juvenile, 6-8	Bead was found 60 cm below ground surface, above burial, and is assumed to be part of B 75; field notes report 2 inter-linked earrings found in dirt within skull.		S&G IIIA2f [1]
B 95	T-613	female, 25-35	Blue glass bead found with wire at skull; probably part of earring suspended from wire.	post-1580	Kidd IIa40 [1]
B 139	T-510	juvenile, 5-7	Approx. 140+ necklace beads were found in dirt within the skull (Pls. IVA-B). Of these, ca. 139 are glass beads, and 3 are jet. Another jet bead is part of a silver earring at the right ear (Pl. IVC).	ca. 1540-1630, probably post-1575	S&G IIC2e [1] S&G IC1a [3] S&G IC1b [60] S&G IC1c [43] S&G IC1d [11] S&G IC1e [15] S&G IB1i var. [5] Kidd IIa59 [1] Jet var. 1 [2] Jet var. 2 [1] Jet var. 5[1]
B152, 153,154 155,156 159,160	T-619	juveniles, 2-5	Broken jet seed bead; field notes place it with B154, but these burials are mixed and fragmentary as a result of ancient disturbance.		Jet var. 4 [1]
B 244	T-881	juvenile, 4-6	Numerous small beads found in the neck area; total ca. 370.	ca. 1540-1630, probably post-1575	S&G IB1i [228] Kidd IIa*(b) [140] S&G IB1b [2]
B 247	T-883	juveniles, 3-5 and 4-6	B 247 includes 3 mixed and fragmentary individuals of which 2 are juveniles and 1 is undetermined. Six beads (5 complete, 1 fragmented) were recovered, probably associated with the 3-5 year old.	ca. 1540-1630, probably post-1575	S&G IB1e [2] Kidd IIa*(a) [1] Kidd IVa*(b) [1] Kidd IVb*(a) [1] Kidd IVb*(b) [1]
B 344	T-862	juveniles, 3-5 and 9-11	B 344 consists of fragments of 2 juvenile burials aged 3-5 and 9-11; the 2 beads (1 is a fragment) appear to be associated with the 9-11 year old; a copper needle was also recovered, but could be associated with either individual.	ca. 1560-1575	S&G IIA1e [1] Kidd IIa*(a) [1]

Table 3. Continued.

Burial No.	Lot No.	Sex and Age	Context	Bead Dates	Variety and Quantity
B 361 B 362	T-850	juveniles, 4-6 and 6-8	These burials were adjacent to one another and poorly preserved. Both individuals were buried with glass bead jewelry. The T-850 artifacts could be from either 361 or 362. A silver earring is reported for B 361 in the field notes. T-850 includes 3 copper bells, two of which had glass beads in the suspension hoops, suggesting that one child wore a necklace of glass beads (mostly Nueva Cadiz) from which hung copper bells. T-850 also includes 3 *Spondylus*-shell beads that may have formed a composite necklace with the glass beads (some Nueva Cadiz beads were found in the neck area of B 362; *see* T-892). Two small, broken, side-notched points and a broken obsidian blade also came from this lot, but may be from grave fill. Tentatively, based on the field notes, the bright blue and chevron beads are part of B 361, with the Nueva Cadiz beads being part of the necklace of B 362, in which case the copper bells and possibly the shell beads are also associated with B 362.	pre-1575	S&G IA3d [1] S&G IIA1e [15] S&G IVA4a [2]
B 362	T-892	juvenile, 6-8	Beads were found around the skeleton and in the neck region; 1 *Spondylus*-shell bead was also found with this burial; indications are that the Nueva Cadiz beads of T-850 and possibly the copper bells and all the *Spondylus*-shell beads are associated with B 362.	ca. 1560-1575	S&G IA1b [1] S&G IIA1e [1] Kidd IIb18 [1]
B 363	T-882	male, 18-22	This was a historic-period burial, but the individual was flexed (Fig. 5), not extended as is the norm, and lay on his right side; he wore a *Spondylus*-shell armband or bracelet (9 beads) on his lower right arm, and a bracelet of ca.12 Nueva Cadiz Plain and Twisted glass beads on his left wrist (Fig. 8).	pre-1560	S&G IIA2a [7] S&G IIC2b [1] S&G IIIA2a [1] S&G IIIC2c [1] S&G II*** (weathered, unclassifiable) [2]
B 379	T-865	juvenile, 10-12	The beads were found on the right side of the skull; 2 (copper?) rings or earrings were also found in the general vicinity of the skeleton.	ca. 1540-1630, probably post-1575	S&G IB1b [2]

Table 3. Continued.

Burial No.	Lot No.	Sex and Age	Context	Bead Dates	Variety and Quantity
B 397	T-849	juvenile, 6-8	The 97 beads were found in the neck area; a compound gilded pendant (composed of the S&G IIIA1a beads; Fig. 6) was recovered while sifting dirt from the skull.	pre-1560	S&G IIA1e [51] S&G IB1i [19] S&G IB2b [4] S&G IIIA1a [10] S&G VIDIc(?) [1] Bone var. 1 [12]
B 417	T-847	probably male, 17-20	The glass bead is not mentioned in the field notes, and was probably found while sifting dirt from within and around the skull; fragments of copper ornaments or fittings were found near a mandible fragment that lay on a clump of dirt resting on the right arm of nearby B 415.	ca. 1575-1630	Kidd IIb18 [1]
B 427	T-891	probably female, 25-35	The 28 beads are not described in the field notes, and were probably recovered while sifting dirt from within and about the skull.	ca. 1575-1630	S&G IB1b [6] S&G IB1e [3] S&G IB1i [3] Kidd IIa7 [2] Kidd IIa*(c) [1] S&G IB2b [2] Kidd IVa(c) [1] Kidd IVa(d) [10]
B 463	T-889	male, 20-30	The bead was found between the knees.	pre-1560	S&G IIA2a [1]
B 479	T-888	juvenile, 12-14	The glass bead came from the right ischium; a tubular *Spondylus*-shell bead was found in one of the hands.	post-1580	Kidd IIa40 [1]
B 520	T-873	juvenile, 3-5	Two fluted-teardrop jet beads were found (Pl. IIIA, R.2, #1). Fragments of a probable copper earring (Fig. 7) were found on the right side of the head, and it is believed that at least one of the beads formed part of the ornament.		Jet var. 3 [2]
B 533	T-811	juvenile, 5-7	There is no mention of the beads in the field records. However, since this is an infant, the delicate bones and the soil matrix were removed to the lab, and the beads were probably recovered while sifting the soil.		S&G IB1e [86] IB1b var. [33]

Figure 3. The church at Tipu, looking northeast, with the altar in the east end. An extensive cemetery is situated on its north, west and south sides (photo by R. Kautz).

either beads were utilized for different purposes at the two sites, or the nature of access to European goods differed in the two communities.

The Tipu beads that derive from structure-core and midden contexts provide limited information regarding possible use. The beads associated with church burials, however, are a significant source of such data; they are from primary contexts and date, at least insofar as their use is concerned, from the middle to latter half of the 16th century and the early 17th century, when relations between Tipu and the Spanish authorities were relatively good. For this reason, the presentation of contextual data for the bulk of the sample focuses on issues quite different from those reviewed at Lamanai. The principal considerations regarding the contexts of the 18 bead-associated Tipu interments, apart from their general locations within the nave, are the sex and age of the individuals. Use of the beads as jewelry is indicated by the location of the specimens relative to the body; e.g., in the skull or neck region, near the ear or in the area of the pelvis where a hand lay. Not all burials are quite so informative because some were affected by later disturbance that usually resulted from multiple sequent interments in a very restricted space.

All but one of the individuals for whom data were recoverable were interred fully extended on their backs with heads to the west (orientation range: 254° to 290°), facing east, with the arms either folded over the stomach or chest (Fig. 4) or extended at the sides; this is the standard Christian burial mode (Graham, Pendergast and Jones 1989:1258). The lone deviation from this pattern occurred in Burial 363, but even though the individual was flexed on the right side in Precolumbian fashion, the burial retained the Christian westward orientation of the head (Fig. 5). (This interesting burial, on the church's north side, was disturbed by a later interment, and is believed to be one of the earlier Christian burials at the site.)

Data on age and sex of the interred individuals were provided by the director of the church burial excavations, Mark Cohen of the State University of New York at Plattsburgh. The ongoing work of Cohen and his collaborators on the Tipu population is contributing extensively to our expanding knowledge of the Conquest experience and its effects on the diet

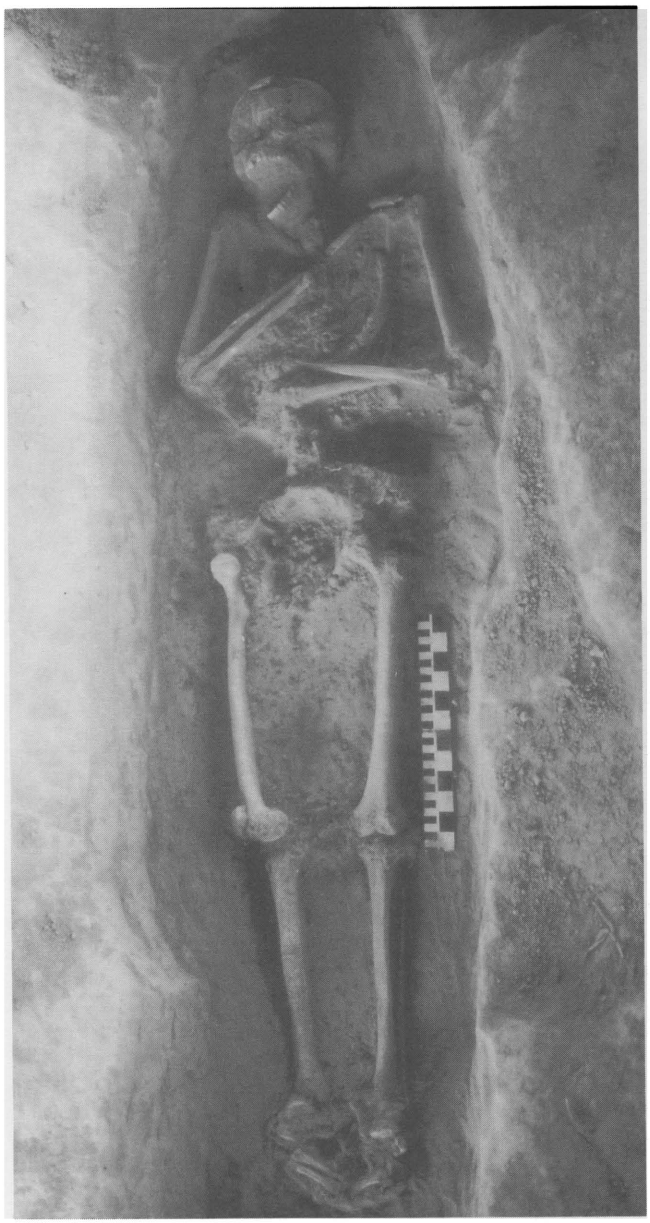

Figure 4. Burial 463, an adult male, in the typical Christian burial posture at Tipu (photo by E. Graham).

and health of New World peoples (e.g., Cohen, Bennett and Armstrong 1991; Cohen et al. 1992, 1994, n.d.; Danforth 1989, 1991; Jacobi 1994).

THE TIPU BEAD SAMPLE: CHRONOLOGICAL BRACKETING

The Tipu collection reflects an occupation from the early 1540s until perhaps the early part of the 17th century. The site's documentary history has been presented elsewhere both extensively (Jones 1989) and in summary (Graham 1991; Graham, Pendergast and Jones 1989); we provide a brief review here because some of the suggested early and late terminal dates for the beads are based on an architectural sequence that has been tentatively correlated with the documentary evidence.

Although the name "Tipu" does not appear in Spanish records until 1568, evidence regarding the conquest of the region by Melchor and Alonso Pacheco suggests that Tipuans were expected to begin paying tribute as early as 1544 (Jones 1984, 1989:14, 41-44, 51). In subsequent years, the Maya of both Tipu and Lamanai engaged in anti-Spanish rebellions; intensification of such activity in 1567-1568 resulted in a Spanish decision to focus on Tipu and make it a resettlement community, in which rebellious and potentially rebellious Maya from remote villages were placed under firmer Spanish control (Jones 1989:22, 47-53). The more extensive Colonial-period construction and some additions to existing buildings are believed to reflect the Spaniards' investment in the site during this period (Graham, Pendergast and Jones 1989:1256). If this proposed correlation is correct, beads from structures used during the Postclassic to Colonial-period transition (such as H12-6 and portions of H12-8) are most likely to date from 1544 to 1568, whereas those from buildings of entirely Colonial-period construction (H12-13, H12-7 and H12-14) and from additions to structures that already had Colonial components (H12-8) represent the years from 1568 to perhaps the beginning of the 17th century.

In the early 17th century, Maya cooperation with the Spaniards waned and then ceased with the major rebellion of 1638, which drove the Spaniards from Belize. They did not return until 1695, when Tipu became a base for unsuccessful Spanish efforts to draw the recalcitrant Itza Maya of the Peten into the European fold. Military conquest of the Itza in 1697 resulted in Spanish loss of interest in Tipu, although the community continued to exist until its inhabitants were forcibly resettled on the shores of Lake Peten Itza in 1707.

At first glance, Tipu's 163-year Colonial-period history might lead one to expect more beads of 17th-century date than occur in the collection.

Figure 5. Atypical Tipu Burial 363 which is flexed on its right side in standard Precolumbian fashion (photo by E. Graham).

However, closer inspection of the community's archaeological and documentary evidence shows that ties were strongest, and Christianization efforts the most effective and best monitored, from the mid-16th century but only through the early years of the 17th century. Dating of the bead types by Smith is largely in accord with the archaeological and documentary record.

The only discordances occur in the cases of beads found in non-burial, non-primary contexts (e.g., beads from redeposited middens used in construction or recovered from post-abandonment accumulation [Table 2]). Beads from post-abandonment deposits could, of course, have been brought to the surface by roots; if not, they are most likely from the latest Colonial-period occupation at that location (i.e., they were lost at this time) and, therefore, date to the early 17th century. Beads from the redeposited middens could have been lost as early as the 1560s, but acquired even earlier. On the other hand, these middens were not sealed and, hence, could contain material lost much later than the 1560s. Unlike the

Lamanai situation, the midden contexts at Tipu are not primary and, thus, are too equivocal to be very helpful with the bead chronology.

GLASS BEAD DESCRIPTIONS AND COMPARISONS

The bead sample investigated in this study includes 816 specimens from Tipu and 46 from Lamanai. The bulk of the beads are glass of drawn manufacture. Only two wound glass varieties represented by three specimens are present. Beads of materials other than glass include five jet varieties, one amber variety and one bone variety. A number of the recovered varieties have relatively long temporal ranges, but all appear to relate to the 16th- and 17th-century occupations of the two sites.

The bead descriptions, which are organized according to manufacturing technique, employ the typology developed by Smith and Good (1982)(hereafter S&G) for 16th-century beads from Peru for comparative purposes. Previously unrecorded varieties have been assigned S&G codes and are marked "(new)." The typology developed by Kidd and Kidd (1970)(hereafter Kidd) is also utilized for descriptive purposes and to identify beads not suitable for the S&G system. The Kidds' scheme, though useful for post-A.D.-1560 beads, lacks the precision of the Smith and Good typology for early 16th-century beads and, hence, specific varieties cannot usually be identified. When this is the case, an asterisk (*) appears in the type code followed by a sequential letter (one letter sequence per type) for ease of reference. A number of beads from both Lamanai and Tipu are highly patinated and not identifiable to the specific variety level in some cases; nevertheless, the types present are easily datable.

Within the broad categories of manufacturing technique, beads are classified by structure. Multilayered beads are described from outer layer to inner, with slashes (/) separating the layers.

The third basis for classification is color. Color names are generally those used in the *Color Harmony Manual* (Container Corporation of America 1958) which is the notation system employed by the Kidds. Beads are categorized as transparent (tsp.) if the perforation is visible when the bead is held up to the light, translucent (tsl.) if light penetrates the bead and opaque (op.) if it does not. However, in the case of heavily patinated beads and the interior layers of multilayered beads, it was occasionally impossible to determine the diaphaneity.

Beads are further classified on the basis of general shape categories: tubular, spherical, subspherical, barrel shaped, olive shaped, torus ("doughnut") shaped and so forth. Detailed discussions of bead typology can be found in Good (1972), Karklins (1985), Kidd (1979), Smith and Good (1982) and Sprague (1985).

Drawn Glass Beads

Tubular Beads with Plain Layers

These beads consist of unaltered tube segments whose shape has not been modified by heat rounding. However, some specimens do exhibit grinding on their ends. There are 13 varieties represented by 134 specimens (two additional Nueva Cadiz Plain beads from Tipu and one from Lamanai were too weathered to classify). Many of these are varieties of Nueva Cadiz Plain and Nueva Cadiz Twisted beads which exhibit one to three layers. Tubular beads with plain layers make up 11.6% of the Tipu collection, but comprise 84.8% of the Lamanai total.

In the descriptions that follow, D = diameter, L = length, W = width and T = thickness. Pl. = color plate, R. = row and # = position in row.

IA1b (S&G illustration no. 2). Tubular, oval cross section; tsl. navy blue. This is Kidd variety Ia19.

Tipu: n = 1. D: 2.5-3.0 mm; L: 11.5 mm.
Lamanai: none present.

IA3d (new). tubular, round cross section; op. aqua blue with three compound spiral stripes of tsl. white on op. brick red (Pl. IIC, R.1, #1). Kidd variety Ibb'*. This is a new variety from a mid-16th-century context, judging by its gravelot association with Nueva Cadiz beads.

Tipu: n = 1. D: 7.0 mm; L: 11.0 mm.
Lamanai: none present.

IIA1e (S&G Ill. 37). Tubular, square cross section (Nueva Cadiz Plain); tsl. navy blue. Kidd variety Ic*.

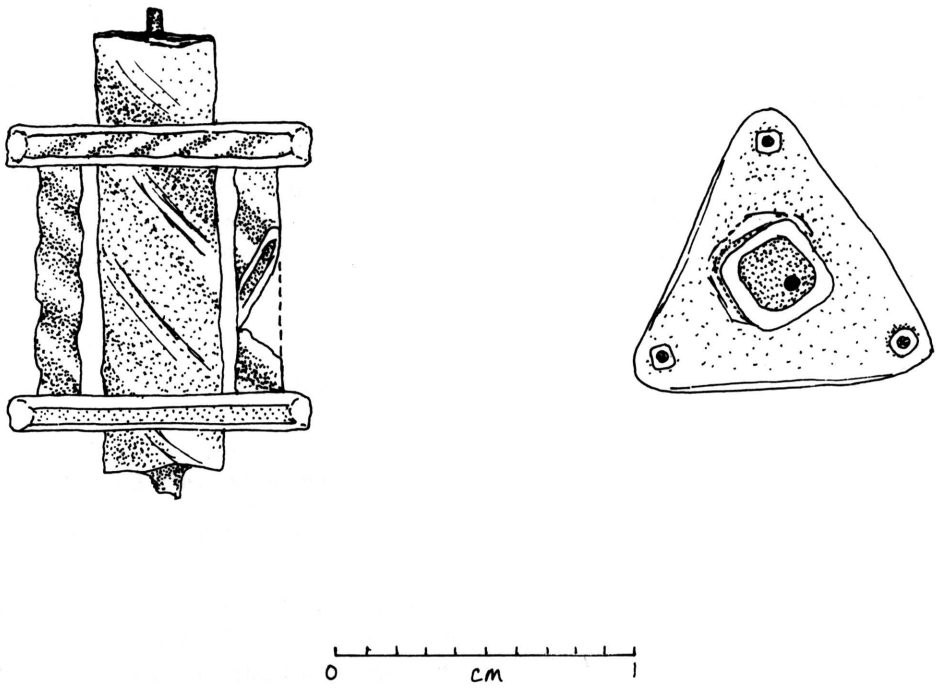

Figure 6. An unusual pendant found with Burial 397, a juvenile, at Tipu. The object consists of a large central IIIA1a bead flanked by several similar but smaller specimens set in an unidentified bonding agent (drawing by Julie Barnes-Smith).

The square cross section is rather indistinct on most of the thinner specimens.

Tipu: n = 70. D: 1.5-3.5 mm; L: 8.0-20.0 mm.
Lamanai: n = 4. D: 2.0-3.0 mm; L: 7.5-14.0 mm.

IIA2a (S&G Ill. 40). Tubular, square cross section (Nueva Cadiz Plain); tsl. bright blue/ op. white/ tsl. navy blue core that appears black by reflected light (Pl. IIC, R.1, #2; R.3, #1). Kidd variety IIIc*. Nueva Cadiz beads with a purple core have been reported from the Nueva Cadiz type site (Smith 1983).

Tipu: n = 6 + 4 variants. D: 3.5-6.0 mm; L: 9.0-33.0 mm. One of the variants has a very dark burgundy core that appears black by reflected light. The other three variants have dark purple cores that appear black by reflected light; one of these is the longest of the IIA2a beads. The variants have not been separated into new varieties because their external appearance is the same as the typical IIA2a specimens.

Lamanai: n = 6 definite, 2 possible (eroded) + 2 variants. D: 3.0-6.0 mm; L: 17.0-44.0 mm. The variants have very dark burgundy cores that appear black by reflected light.

IIA2b variant. Tubular, square cross section (Nueva Cadiz Plain); tsl. bright blue/ op.white/ tsl. pale blue core (Pl. IIC, R.1, #3). A slight variant of S&G variety IIA2b (Ill. 41), with a pale blue rather than colorless core. Like Kidd variety IIIc1.

It appears that the inner layers of 16th-century beads were quite variable, and were probably made of whatever glass was available. Slight variations in core color are, therefore, not seen as important criteria for the identification of new varieties.

Tipu: none present.
Lamanai: n = 2. D: 3.5, 5.0 mm; L: 8.0, 24.0 mm.

IIC2b (S&G Ill. 51). Tubular, square cross section (Nueva Cadiz Plain); tsl. bright blue/ op. white/ tsl.

pale blue core (Pl. IIC, R.1, #4). The corners of one end have been ground to produce facets. Like Kidd variety IIIc1, but with the addition of facets.

Tipu: n = 1. D: 3.5 mm; L: 35.0 mm.

Lamanai: none present.

IIC2e (S&G Ill. 54). Tubular, square cross section (Nueva Cadiz Plain); tsl. navy blue/ op. white/ tsl. navy blue core (Pl. IIC, R.2, #1). The corners have been ground to produce facets. Fairbanks (1967) would have considered this a Peru Corner Faceted bead, but this designation has generally passed out of usage. Kidd variety IIIc*, but with ground end facets.

Tipu: n = 1. D: 4.0 mm; L: 5.0 mm.

Lamanai: none present.

IIIA1a (S&G Ill. 57). Tubular, twisted, square cross section (Nueva Cadiz Twisted); tsp. navy blue (Pl. IIC, R.2, #2). Kidd variety Ic'*.

Tipu: n = 10. D: 1.4-3.5 mm; L: 7.8-14.0 mm. These specimens comprise an unusual pendant (Fig. 6; Pl. IIIA, R.2, #2) found with Burial 397, a juvenile. The object consists of a large central IIIA1a bead flanked by nine similar but smaller specimens set in an unidentified bonding agent. The additional beads produce a triangular cage effect around the central bead. At the corners of the ornament are impressions of spherical objects, perhaps tiny pearls, now missing. A wire passes through the perforation of the central bead. Remnants of gold leaf on the object suggest that part or all of it was originally gilded.

Lamanai: n = 1. D: 4.0 mm; L: 15.5 mm. This appears to be variety IIIA1a, but is highly weathered and has a relatively thin wall, suggesting that it is the core of a badly eroded multilayered bead.

IIIA2a (S&G Ill. 58). Tubular, twisted, square cross section (Nueva Cadiz Twisted); tsl. bright blue/ op. white/ tsl.-op. navy blue core (Pl. IIC, R.2, #3). Kidd variety IIIc'*.

Tipu: n = 2. D: 4.0-5.0 mm; L: 12.0-30.0 mm.

Lamanai: n = 9 definite, 3 probable (eroded) + 1 variant (the latter has a dark burgundy core that appears black). D: 4.5-5.0 mm; L: 7.0-45.5 mm.

IIIA2b (S&G Ill. 59). Tubular, twisted, square cross section (Nueva Cadiz Twisted); tsl. bright blue/ thin op. white/ tsp. light blue core (Pl. IIC, R.2, #4). Kidd variety IIIc'*.

Tipu: none present.

Lamanai: n = 6 definite and 1 probable (eroded). D: 4.0-8.0 mm; L: 9.0-47.0 mm.

IIIA2f (new). Tubular, twisted, square cross section (Nueva Cadiz Twisted); tsl. bright blue/ op. white/ tsp. purple core (Pl. IIC, R.2, #5). This is a slight variant of variety IIIA2a, with a purple rather than a blue core. A Nueva Cadiz Plain bead with this layering is reported from the Tatham Mound in Florida (Mitchem and Leader 1988:45), a site perhaps visited by Hernando de Soto in 1539. Kidd variety IIIc'*.

Tipu: n = 1. D: 4.5 mm; L: 21.0 mm.

Lamanai: none present.

IIIC2a (S&G Ill. 67). Tubular, twisted, square cross section (Nueva Cadiz Twisted); tsl. bright blue/ thin op. white/ tsl.-op. navy blue core. The bead has facets ground on the corners of both ends. Kidd variety IIIc'*, but with ground end facets.

Tipu: none present.

Lamanai: n = 1 + 1 variant. D: 5.0, 10.0 mm; L: 18.0, 28.0 mm. The variant has a deep burgundy core that appears black by reflected light.

IIIC2c (S&G Ill. 69). Tubular, twisted, square cross section (Nueva Cadiz Twisted); tsl. bright blue/ op. white/ tsp. pale blue core (Pl. IIC, R.3, #2). Kidd variety IIIc'*.

Tipu: n = 1 fragment with facets on one end only. D: 6.0 mm; L: 10.5 mm.

Lamanai: none present.

Nueva Cadiz beads were first described from the Nueva Cadiz site in Venezuela, occupied from 1515 to 1541 (Deagan 1987; Fairbanks 1967; Goggin n.d.; Smith and Good 1982). At present no temporal distinction is made between Nueva Cadiz Plain and Twisted beads; the two occur together at a number of sites. The many varieties identified by color combinations, together with end faceting, also do not seem to be temporally diagnostic at our present state of knowledge. Beads of twisted glass and blue cut glass were in use during the conquest of Mexico, 1517-1521 (Bernal Díaz del Castillo, *in* Smith and Good 1982:4). The

reference is clearly to Nueva Cadiz Twisted beads, and the mention of cut glass suggests that some were also faceted. Nueva Cadiz beads are common in Peru, conquered in the 1530s, and are found on sites in the southeastern United States which are believed to have been visited by Spanish explorers in the 1520s to 1540s. They have been found in a tomb at Kilómetro 1, Apartado, Antioquia, Colombia (Bray 1978:106); at Valentim, Brazil (Meggers and Evans 1957: 59); with a burial at Changuina, Costa Rica (Stone 1966), and elsewhere in that country (Hartman 1901). Although Deagan (1987:163) states that they are absent at St. Augustine in Florida, Santa Elena in South Carolina, and Bayaha, Haiti, a recent find at the Fountain of Youth Park site in St. Augustine (Florida State Museum, 8SJ31 Fs#1177) suggests that they may occasionally be found in contexts that postdate 1565. Prior to this find, general opinion based on archaeological evidence was that Nueva Cadiz beads usually predate 1560 (Smith 1983, 1987; Smith and Good 1982), or 1550 (Deagan 1987:163).

Tubular Chevron Beads with Unfaceted Ends

Two varieties of tubular chevron beads with 5-7 layers are in the collection. These have layers molded to show a star pattern in cross section. They comprise only 0.2% of the Tipu bead collection and 4.3% of the Lamanai total.

IVA4a (S&G Ill. 73). Tubular chevron bead with five layers: tsp. light gray (colorless)/op. white with tsl. navy blue stripes set in the grooves/ op. brick red/ op. white/ tsp. very pale blue or colorless core (Pl. IIC, R.3, #3). The ends are heat rounded. Like Kidd variety IIIk3.

Tipu: n = 2. D: 4.0, 4.5 mm; L: 7.5, 9.0 mm. One specimen is badly patinated, and the identification of the core's color is tentative.

Lamanai: none present.

IVA4c (new). Tubular chevron bead with seven layers: tsl. navy blue/ op. white/ op. brick red/ op. white/ tsl. pale blue/ op. white/ tsp. pale blue(?) core (Pl. IIC, R.3, #4). The high points of the rays of the second layer show through as white stripes. One specimen is severely patinated and the identification of the colors of the three innermost layers is tentative. The second example is even more patinated. The ends are eroded. Similar to S&G variety IVA4a, but with more layers; Kidd variety IIIk*.

Tipu: none present.

Lamanai: n = 2. D: 8.5 mm; L: 15.0, 21.0 mm.

Varieties of tubular chevron beads similar to the above two are known from many early-to mid-16th-century contexts. They have been found at Nueva Cadiz (Smith 1983); Puerto Real, Haiti (1503-1578)(Ewen 1991); in a tomb at Kilómetro 1, Apartado, Antioquia, Colombia (Bray 1978:106); the Treasure Island Canal Zone 10 site (slide in Florida State Museum); Cajamarquilla, Peru (Peabody Museum, Harvard, 46-77-30/6048; slide courtesy of Jeffrey Brain); and various other sites in Peru and Colombia (Smith and Good 1982). What may be the latest well-dated specimen, ca. 1570, was found at the Fountain of Youth Park site in St. Augustine (Deagan 1987:114, 166).

Tubular Chevron Beads with Faceted Ends

The following chevron bead variety was produced by grinding tubular specimens into subspherical or olive-shaped forms. Definite flat facets are present on the ends.

IVC2e (S&G Ill. 83). Irregular-subspherical to olive-shaped chevron beads with faceted ends; seven layers: tsl. navy blue/ op. white/ op. brick red/ op. white/ tsl. navy blue/ op. white/ tsp. blue core (Pl. IIC, R.3, #5; IIIB, R.1, #1). Kidd variety IIIk*.

Tipu: none present.

Lamanai: n = 2. D: 4.0-7.5 mm; L: 6.0-6.5 mm.

The IVC2e chevron bead has been reported from the Tatham Mound, Florida (Mitchem and Leader 1988). The many varieties of faceted chevron beads generally appear to be of similar date: approximately 1500-1590, with infrequent occurrences until perhaps 1600 (Smith 1983, 1987; Smith and Good 1982); the dates assigned by Deagan (1987:172) are 1500-1580. The beads have been reported from Fountain of Youth Park and Fort Center (Florida State Museum collections examined by Smith); Weeki Wachee and Ruth Smith Mounds (Mitchem et al. 1985); Philip Mound, Seven Oaks, San Marcos de Apalachee and St. Marks Lighthouse in Florida; Parkin Mound in Arkansas; Bear Point, Alabama; Kent Mound, Georgia (Smith and

Good 1982); Poarch Farm, Georgia (private collection located by James B. Langford); Puerto Real, Haiti, in a 1540-1578 context (Florida State Museum collections examined by Smith; *see* Ewen 1991); Nueva Cadiz, Venezuela (Smith 1983:158); Treasure Island Canal Zone 10 site (slide in Florida State Museum); in a tomb at Kilómetro 1, Apartado, Antioquia, Colombia (Bray 1978:106); Costa Rica (Hartman 1901:Plate 60); and Picaca Cemetery, Brazil (Meggers and Evans 1957:50-51). Many other sites in the Southeast from Florida to Missouri have produced faceted chevron beads, but their specific varieties have not been determined. The majority of the finds in the Southeast are from aboriginal sites probably visited by Hernando de Soto between 1539 and 1543.

On Spanish-Colonial sites, small faceted seven-layer chevron beads were replaced by heat-rounded, generally spherical chevron beads with five layers sometime around 1580-1590 (Deagan 1987; Smith 1983). They, thus, appear to have remained in use perhaps as much as a quarter century longer than Nueva Cadiz beads.

Heat-Rounded Beads other than Seed Beads

Drawn beads whose shapes were imparted by heating and agitating them during the production process usually postdate Nueva Cadiz beads. There seems to have been a shift from the long tubular beads of the mid-16th century to short subspherical beads that were popular from the late 16th through the 17th century at Spanish-Colonial sites (Smith 1983). Some heat-rounded beads have been observed in Peruvian collections with Nueva Cadiz beads, but specific grave provenience was not available. Heat-rounded beads identified in Peru as probably predating 1560 have been assigned variety numbers by Smith and Good (1982). Later heat-rounded beads have been classified using the Kidd system when possible.

Non-seed bead heat-rounded beads were rare at Lamanai (2.2%), but made up 17.9% of the Tipu bead collection.

IB1b (S&G Ill. 10). Subspherical to oblate spheroidal; tsp. navy blue (Pls. IIC, R.4, #1; IIIB, R.1, #2). Kidd variety IIa55. A common bead from 1575-1670; reported from the Tatham Mound in Florida, with a date near 1540 (Mitchem and Leader 1988).

Tipu: n = 11. D: 2.5-7.0 mm; L: 2.5-7.0 mm.

Lamanai: none present.

IB1b variant. Subspherical; tsp. pale navy blue (patinated)(Pl. IIIB, R.1, #3). A pale form of Kidd variety IIa55.

Tipu: n = 33. D: 4.0 mm; L: 3.5 mm.

Lamanai: none present.

IB4f (new). Olive-shaped; tsl. navy blue/ thin op. white/ tsl. navy blue core (Pl. IIC, R.4, #2). The exterior is decorated with 8 opaque white stripes. Like Kidd variety IVb35, but olive shaped. Previously unreported, although it is similar to several identified varieties. A similar, unprovenienced specimen from Peru has only six stripes (Smith: notes). Almost certainly a mid-16th-century bead.

Tipu: none present.

Lamanai: n = 1. D: 5.0 mm; L: 11.0 mm.

Kidd IIa40. Subspherical; op. bright blue (Pl. IIC, R.4, #3). Numerous tiny bubbles.

Bright blue/turquoise blue beads appeared around 1575, and quickly became one of the more common beads in the trade. They remained in common use until well into the 19th century. Smith (1983:150) notes that the earlier specimens tend to be subspherical or spherical, whereas 18th-century beads tend to be more barrel shaped. Smith (1983) attributes the variety to the period from ca. 1575 to the 18th century, and Deagan (1987) suggests a range of 1575-1720, based on the sample of sites chosen for her analysis.

Tipu: n = 2. D: 6.5, 7.0 mm; L: 6.0 mm.

Lamanai: none present.

Kidd IIa*(a). Subspherical; tsp. bright blue (Pl. IIC, R.4, #4). One example was recovered by Deagan from the Fountain of Youth Park site (8SJ31), established in 1565.

Tipu: n = 1. D: 6.0 mm; L: 5.5 mm.

Lamanai: none present.

IB1e (S&G Ill. 13). Subspherical to ovate spheroidal; tsp. dark green (Pl. IIC, R.4, #5). Like Kidd variety IIa28.

Small, green, heat-rounded beads were found in collections of 16th-century Peruvian beads by Smith and Good (1982), and have been reported from the Tatham Mound in Florida (Mitchem and Leader 1988). They

are quite common during the period ca. 1575-1670, and have been found at the Terrapin Creek site (ca. 1590-1610), Bradford Ferry site (ca. 1600-1630) and Milner Village site (ca. 1630-1670) in Alabama (Smith 1987, 1992; Smith et al. 1993).

Tipu: n = 91. D: 3.0-7.0 mm; L: 3.0-7.0 mm.
Lamanai: none present.

Kidd IVa*(a). Torus-shaped; small, with four(?) layers: tsp. light gray (colorless)/ tsl. copen blue/ op. white(?)/ tsl. copen blue core (Pl. IIIB, R.1, #4).

Tipu: n = 1. D: 3.5 mm; L: 2.0 mm.
Lamanai: none present.

Kidd IVa*(b). Subspherical; tsp. light gray (colorless)/ op. brick red/ tsl. burgundy core that appears black by reflected light (Pl. IIIB, R.1, #5). A slight variant has a purple core.

This is an unusual variant of the common Cornaline d'Aleppo bead which usually has a green core (*see* Kidd IVa*[c] below). Deagan (1987) dates the common Cornaline d'Aleppo varieties to the period 1575-1800. The present variety, probably of late 16th-century date, has not been previously identified.

Tipu: n = 1 + 1 variant. D: 3.0-4.0 mm; L: 2.0-3.5 mm.
Lamanai: none present.

Kidd IVa*(c). Subspherical; tsp. light gray (colorless)/ op. brick red/ tsl. yellowish green core (Pl. IIIB, R.1, #6). This is the common Cornaline d'Aleppo variety which Deagan (1987) dates to the 1575-1800 period.

Tipu: n = 1. D: 3.2 mm; L: 2.0 mm.
Lamanai: none present.

Kidd IIb18. Subspherical to spherical; tsp. light gray (colorless) with 11-13 op. white stripes (Pl. IIC, R.4, #6). The white stripes rest on a colorless core and are covered by a thick layer of colorless glass so that the stripes are deeply embedded in the bead. This is popularly called a "gooseberry" bead.

Gooseberry beads appear in early- to mid-16th-century contexts, but as long olive-shaped forms (Smith and Good 1982:Ill. 27). The subspherical variety probably appeared about 1575, when other subspherical heat-rounded beads appeared in quantity. This variety is common well into the 18th century, but a change to a barrel shape usually defines the late form.

Tipu: n = 2. D: 4.5, 5.5 mm; L: 4.0, 5.5 mm.
Lamanai: none present.

Kidd IVb*(a). Subspherical; tsp. navy blue/ op. white/ tsp. navy blue/ op. white/ incomplete tsp. navy blue core (Pl. IIIB, R.1, #7). The exterior is decorated with three op. brick red and three op. white alternating stripes. A similar bead, with fewer layers and only two red and two white alternating stripes, was found at the aboriginal Terrapin Creek site in Alabama, with an estimated date of 1575-1600 (Smith 1992).

Tipu: n = 1. D: 5.0 mm; L: 4.5 mm.
Lamanai: none present.

Kidd IVb*(b). Ovate spheroidal; tsp. navy blue/ op. white/ tsp. navy blue (Pl. IIIB, R.1, #8). Two op. brick red stripes adorn the exterior. A similar bead with additional white stripes was uncovered at the Terrapin Creek site (Smith 1987).

Tipu: n = 1. D: 4.0 mm; L: 5.5 mm.
Lamanai: none present.

Faceted Seed Beads

Most of these small beads exhibit several random ground facets that were applied after the beads had been heat rounded (Pl. IVA). However, on variety IC1*, the facets form a definite pattern. Faceted seed beads were only present at Tipu where they comprised 16.2% of the bead collection.

IC1a (S&G Ill. 32). Faceted subspherical; small; tsp. navy blue (Pl. IIIB, R.1, #9). Kidd variety IIf* in the expanded version (Karklins 1985:94).

Tipu: n = 3. D: 3.0 mm; L: 4.0 mm.
Lamanai: none present.

IC1b (new). As above, but tsp. purple (Pl. IIIB, R.2, #1).

Tipu: n = 60. D: 2.9-3.5 mm; L: 3.0-3.8 mm.
Lamanai: none present.

IC1c (new). As above, but tsp. cerulean blue (Pl. IIIB, R.2, #2).

Tipu: n = 43. D: 3.0-3.5 mm; L: 3.0 mm.
Lamanai: none present.

IC1d (new). As above, but tsp. amber (Pl. IIIB, R.2, #3).

Tipu: n = 11. D: 2.5 mm; L: 2.0 mm.
Lamanai: none present.

IC1e (new). Faceted ovate spheroidal; tsp. purple covered with a thick chalky patina (Pl. IIIB, R.2, #4). While there is variation in the pattern of the facets, the optimal form seems to be four triangular to pentagonal facets around either end.

Tipu: n = 15. D: 3.0-3.5 mm; L: 3.8-4.0 mm.
Lamanai: none present.

Only one navy blue faceted subspherical seed bead has been identified by Smith and Good (1982) in collections of hundreds of early Peruvian beads. One example was recovered from the Ruth Smith Mound in Florida with Nueva Cadiz beads, with a possible date of ca. 1539 (Mitchem et al. 1985:209). Beads of these varieties are relatively numerous at the Bradford Ferry site (ca. 1600-1630) in Alabama (Smith 1987, 1992).

The name Cedar Bluff Small Blue Decahedral was applied to these beads in the 1960s by workers at Mound State Monument, Alabama, but was never published. The beads appear to be good markers of the 1540-1630 period. They are directly associated with a Nueva Cadiz bead in Burial 139 at Tipu and this, plus their almost total absence from mid-16th-century Peruvian collections, suggests use in the late 16th century, perhaps ca. 1560-1570.

Seed Beads

Seed beads are small heat-rounded glass beads often used for embroidery, although they also functioned as necklace beads. They are usually of little value for comparative purposes and, for that reason, are treated in summary form here. Seed beads are generally unusual in collections of 16th-century Peruvian beads, but their scarcity may be a function of recovery techniques. Available data suggest their appearance in the late 16th century. Most seed beads are torus-shaped, but some are more barrel-shaped or spherical.

Seed beads were encountered only at Tipu. They were relatively common, comprising 51% of the bead collection.

IB1i (S&G Ill. 17). Tsp. navy blue (Pl. IIIB, R.2, #5). A number of specimens are severely eroded and most of their color has leached out (Pl. IIIB, R.2, #6). Kidd variety IIa56. These beads were rare in the hundreds of looted 16th-century beads from Peru studied by Smith and Good (1982).

Tipu: n = 250. D: 2.5-3.5 mm; L: 1.0-3.0 mm.
Lamanai: none present.

IB1i variant. Tsp. pale navy blue (Pl. IIIB, R.2, #7). A pale form of Kidd variety IIa56.

Tipu: n = 5. D: 2.5 mm; L: 2.0 mm.
Lamanai: none present.

Kidd IIa59. Tsp. purple (Pl. IIIB, R.2, #8).

Tipu: n = 1 + 1 fragment. D: 3.0 mm; L: 1.5 mm.
Lamanai: none present.

Kidd IIa*(b). Torus-shaped; tsp. amber (Pl. IIIB, R.2, #9).

Tipu: n = 140. D: 2.5 mm; L: 1.5 mm.
Lamanai: none present.

Kidd IIa7. Op. black (Pl. IIIB, R.3, #1).

Tipu: n = 2. D: 3.0 mm; L: 1.0 mm.
Lamanai: none present.

Kidd IIa*(c). Tsp. light gray (colorless)(Pl. IIIB, R.3, #2). The glass contains several longitudinal bubbles which give the impression of stripes.

Tipu: n = 1. D: 3.0 mm; L: 1.5 mm.
Lamanai: none present.

IB2b (S&G Ill. 21). Tsl. navy blue/ op. white core (Pl. IIIB, R.3, #3). Kidd variety IVa*. This bead has been identified in 16th-century collections from Peru, and is present at the post-1565 Fountain of Youth Park site in St. Augustine.

Tipu: n = 6. D: 2.0-2.5 mm; L: 1.5-2.0 mm.
Lamanai: none present.

Kidd IVa*(d). Thick tsp. light gray (colorless)/ op. white core (Pl. IIIB, R.3, #4).

Tipu: n = 10. D: 3.0 mm; L: 1.5 mm.
Lamanai: none present.

Wound Glass Beads

Small Seed Beads

A single wound seed bead was uncovered at Tipu. It was formed by winding a single filament of glass around a mandrel at least once. The ends of the filament do not abut but overlap so that the bead presently consists of a glass loop. One end of the filament is flattened against the other and probably represents an original bead end. The other end of the filament is round-sectioned and broken, suggesting that the bead may originally have consisted of several revolutions of the filament.

VID1c(?). Torus-shaped at present; tsp.-tsl. amber(?)(Pl. IIIB, R.3, #5). The glass is patinated and partially decolorized, making it difficult to determine the original color. Small wound beads have been recovered from early 16th-century sites in Peru (Smith and Good 1982:37-38), as well as from the purported site of Columbus' landing on San Salvador in the Bahamas (Brill and Hoffman 1987).

Tipu: n = 1. D: 2.8 mm; L: 1.6 mm.
Lamanai: none present.

Large Subspherical Beads

Lamanai produced one variety, possibly from a rosary. This variety was produced by repeatedly winding a glass filament around a mandrel until the desired size was achieved.

Kidd WIb11. Subspherical; op. robin's egg blue (Pl. IIC, R.4, #7). These beads have a long temporal range, but they do occur at least as early as the mid-17th century. A rosary composed mostly of identically sized specimens was encountered in the cemetery of Sainte-Marie among the Hurons, a Jesuit mission which operated near what is now Midland, Ontario, from 1639-1649 (Karklins 1995), and it is likely that the Lamanai specimens date to approximately the same time period. However, the possibility remains that they may represent the so-called "Padre Beads" which are believed to have been made in China (Sprague 1992), and were common in the southwestern United States during the late 19th century.

Tipu: none present.

Lamanai: n = 2. D: 8.0, 9.0 mm; L: 7.0, 7.5 mm.

BEADS OF OTHER MATERIALS

Full descriptions of the five varieties listed below are presented in a discussion of jet and amber sources represented in the Tipu collection (Lambert et al. 1994).

Jet Beads

Five varieties of jet beads were recovered. Carbon-13 nuclear magnetic resonance spectroscopic analysis of samples taken from varieties 2, 3, 4 and 5 revealed a jet spectrum consistent with a Spanish origin (Lambert et al. 1994).

Variety 1. Rectangular- to square-based pyramidal beads with a perforation in each of two opposing corners (Pl. IIIA, R.1, #1-2; IVB). Each hole consists of two parallel-sided segments which were drilled into the sides near the corners at roughly right angles to each other.

This jet variety, generally considered to be a rosary bead, is the most common at Spanish-Colonial sites, with a date range from about 1650 to 1800 (Deagan 1987:183).

Tipu: n = 2. W: 5.0, 6.0 mm; L: 6.5, 7.0 mm; T: 4.5, 5.0 mm.
Lamanai: none present.

Variety 2. Tapering faceted bead; pentagonal cross section (Pls. IIIA, R.1, #3; IVB). The perforation is slightly hourglass shaped.

Tipu: n = 1 fragment. D: 6.5 mm (existing); L: 5.5 mm (existing).
Lamanai: none present.

Variety 3. Fluted (tetralobate) teardrop-shaped bead (IIIA, R.2, #1). The perforation is hourglass-shaped. Two specimens were recovered, but one subsequently fragmented as the result of desiccation. Parts of what appears to have been a copper earring (Fig. 7) were found in association and it is believed that at least one of the jet beads formed a part of it. A likely configuration is depicted in a 16th-century painting repro-

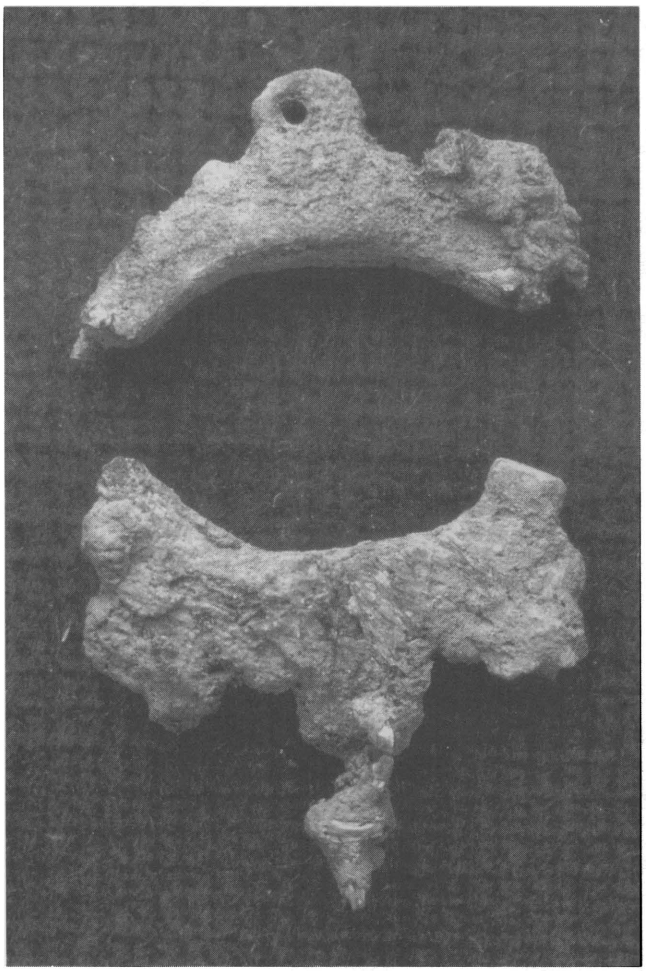

Figure 7. Remnants of a copper earring found with Burial 520. It is believed that one of the fluted teardrop-shaped beads was originally suspended in the central opening (photo by B. Boyle).

duced in South, Skowronek and Johnson (1988:159, Fig. 94, bottom right).

Tipu: n = 2. D(max.): 10.0 mm; L: 13.5 mm.
Lamanai: none present.

Variety 4. Spherical seed bead.

Tipu: n = 1 fragment. D: 4.0 mm; L: ca. 4.0 mm.
Lamanai: none present.

Variety 5. Faceted subspherical. This specimen formed part of an earring (Pl. IVC), but disintegrated after recovery. The bead had a series of trapezoidal facets around the middle as well as either end. The perforation was hourglass-shaped (Pl. IVD).

Tipu: n = 1. D: 4.0 mm; L: ca. 4.0 mm.
Lamanai: none present.

Amber Bead

A single amber bead was excavated at Tipu. NMR spectroscopic analysis indicates that the amber is clearly of Baltic origin (Lambert et al. 1994).

Variety 1. Subspherical bead (Pls. IIIA, R.2, #3; IVD). Reddish amber with a weathered cortex. The perforation is parallel sided.

Tipu: n = 1. D: 15.0 mm; L: 9.0 mm.
Lamanai: none present.

Bone

A number of small bone seed beads were uncovered at Tipu. These appear to have been lathe-turned as evidenced by a slight lip around the perforation on some specimens (this has been obliterated by grinding in a number of instances), a feature noted on other bone beads that were definitely lathe-turned (Karklins 1995). While local manufacture cannot be ruled out entirely, it is likelier that the beads were manufactured in Europe.

Variety 1. Subspherical to barrel-shaped (Pl. IIIB, R.3, #6). The holes are parallel sided.

Tipu: n = 8. D: 2.3-3.0 mm; L: 2.5 mm.
Lamanai: none present.

DISCUSSION

The Lamanai Collection

The collection of beads from Lamanai primarily reflects a middle 16th-century occupation. The assemblage consists of several varieties of Nueva Cadiz Plain, Nueva Cadiz Twisted, faceted chevron and tubular chevron beads. The faceted chevrons are known to have been in use virtually throughout the century, whereas the Nueva Cadiz beads were typically out of style by mid century.

Any provenience that contains Nueva Cadiz beads probably predates 1550 or 1560, whereas one that only contains chevron beads may date as late as 1570-1580,

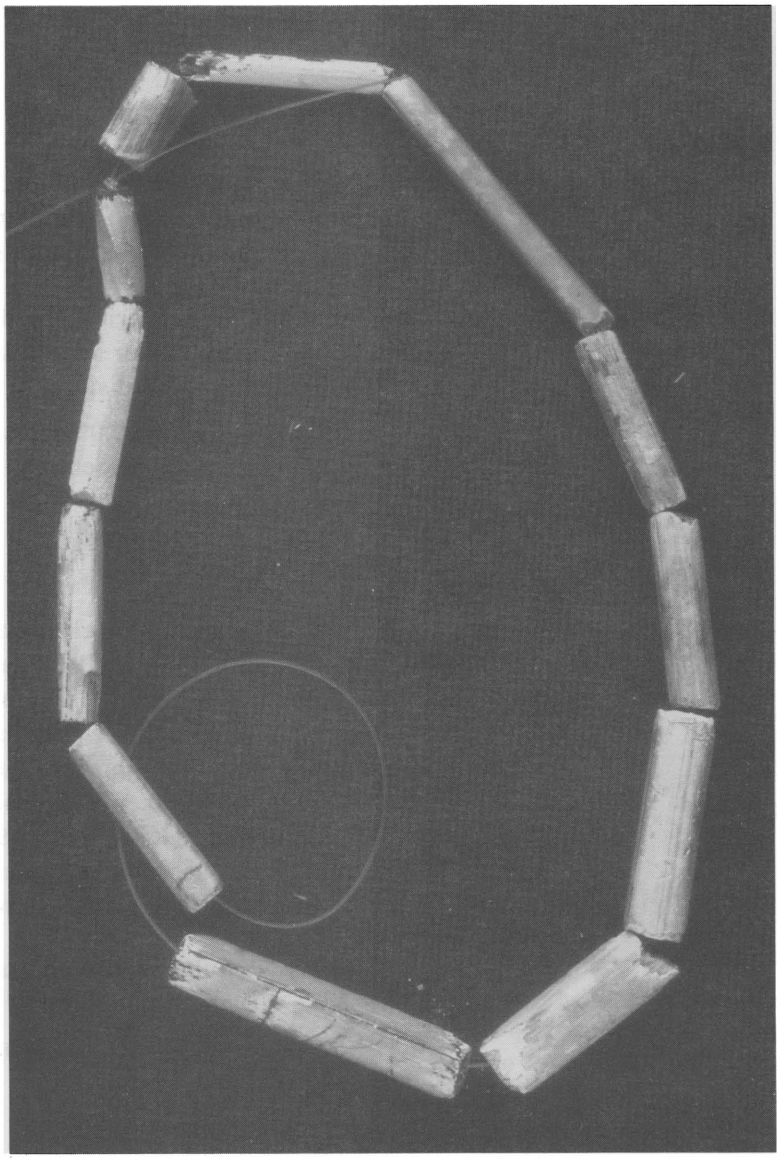

Figure 8. The bracelet of Nueva Cadiz Plain and Twisted beads found on the left wrist of Tipu Burial 363 (conjectural stringing)(photo by B. Boyle).

but could just as easily be pre-1550. At Lamanai, chevron beads were always found in deposits with Nueva Cadiz beads, so the sample in its entirety appears to date from before about 1550-1560 on typological grounds. The probability that Spaniards were periodically present at the site for at least a half century after 1544 suggests that supplies of beads would have continued to be available and, hence, that new styles could have been introduced in the years following 1570-1580. The absence of late 16th and early 17th-century beads seems at first glance to raise the possibility that the contexts investigated at Lamanai ceased to be occupied by 1580, but archaeological evidence shows instead that early beads are very likely to have remained in use until about 1641. The small quantity of beads may indicate that the entire lot was imported to Lamanai over a comparatively short period; it is possible that limitations in quantity combined with early cessation of bead importation to lend additional importance to the beads, and to ensure their retention in use over three quarters of a century or more.

The Tipu Collection

The Tipu assemblage of mid-16th-century beads consists of several varieties of Nueva Cadiz Plain, Nueva Cadiz Twisted and tubular chevron beads. Large Nueva Cadiz beads were typically out of style by the middle of the century, but smaller beads of this type may have remained in use until about 1575 or possibly even 1600, because they are found in association with several varieties of heat-rounded beads at Native American sites (Smith 1983). The Tipu collection further solidifies this association through the co-occurrence with Burial 344 of a heat-rounded blue bead and a S&G IIA1e Nueva Cadiz bead. Presumably, an early to mid-16th-century assemblage that consisted of long tubular Nueva Cadiz beads gave way to a transitional assemblage of small Nueva Cadiz varieties and subspherical heat-rounded beads about 1575, with a subsequent disappearance of the Nueva Cadiz varieties that left only the more-or-less spherical heat-rounded beads by perhaps the 1580s or 1590s.

Any primary context (i.e., the burials, since the middens at Tipu are redeposited) that contains large Nueva Cadiz or long tubular chevron beads probably predates 1550 or 1560, although tubular chevron beads have been found in post-1565 context at St. Augustine. Beads may, of course, have been available to the inhabitants of Tipu prior to the first Spanish appearance on the site about 1544, and documentary evidence suggests that importation of new styles could have continued after 1570-1580.

Structures probably occupied prior to 1560 include H12-8 and H12-6. The fact that several burials in the church were accompanied by Nueva Cadiz beads suggests that the church, or at least the Christianization process, was in operation before 1560. The tubular chevron bead probably associated with Burial 361 indicates a date before 1570, and may identify the burial as among the earlier ones in the structure.

Lots that contain only the small Nueva Cadiz IIA1e beads could be as late as ca. 1580, but clearly could be as early as those with large Nueva Cadiz or tubular chevron beads. The association of a heat-rounded bead with a small Nueva Cadiz bead in the gravelot of Burial 344 suggests a date of about 1575 for the interment.

Lots that contain subspherical or spherical beads of various shades of blue and green probably postdate 1560, and could extend well into the 17th century. However, given the scarcity of beads and the absence of certain marker types (such as Kidd flush-eye types IIg and IVg), it appears quite likely that most or all of the contexts are of late 16th-century date. The fact that the new bead types that appear in the ca. 1590-1630 period are not present at Tipu may indicate any of several things: that only early burials were accompanied by beads; that the church was little used in the early 17th century; that importation of beads to the site ceased at some point prior to 1590; or, if priests and their catechizing efforts were the primary vehicle of bead transport to Tipu, that priests ceased to visit the community on a regular basis after about 1590. Burials 95 and 479, both accompanied by bright blue heat-rounded beads that probably postdate 1580, appear to be among the later interments in the church.

The dates postulated for the bead-associated burials listed in Table 3 are based on the assumption that the beads were not retained in use for any appreciable time after their arrival at Tipu. The assumption is obviously not directly testable but, if the beads were used by the persons with whom they were buried, consideration of style may indicate reasonably close links between bead age and interment date. Beads that are listed as dating as late as 1630 could be of even later 17th-century date, but both the site's documented history and the general scarcity of beads among the church burials argue for a cutoff date well before mid century.

Beads can also be used in a very limited fashion to shed light on periods of structure use. For example, it appears fairly likely on various grounds that the use of the superstructure of Structure H12-7 continued beyond that of Structure H12-6; the fact that H12-6 contained a large Nueva Cadiz bead (pre-1550 or 1560) whereas H12-7 yielded a bead of probable 1575-1630 date lends weak support to the archaeologically based suggestion.

Apart from potential support for structure histories, the beads are a very substantial basis for the interpretation of burial and related practices in the contact-period years at Tipu. Although one-third (6) of the bead-associated burials are those of adults, it is clear on simple numerical grounds that beads played

a particularly important role in child burials. This recognition is greatly strengthened when quantities and positions of the beads are considered; four of the six adults were accompanied by single beads, and only one (Burial 363; see Table 3) possessed a quantity of beads equal to that of some of the juveniles. The two major concentrations of beads were associated with children aged four to six years and five to seven years, near the lower end of the probable age range of one to 12 years for the entire group. Five of the nine children were interred with necklaces (Table 3), and none can be shown to have been clothed in garments adorned with beads; in contrast, the lone adult with an appreciable quantity of beads appears to have been buried in a bead-decorated loincloth or other lower-body garment.

The predominance of associations between children and beads is quite likely to mirror the special affinity that priests are reported to have felt for the young (Mendieta 1945, Tomo II:64, Tomo III:72-73), as well as the importance of children as interpreters for the Spanish and as singers, sacristans and assistants in the Mass (Peñalosa 1969:69, 70). In the case of the adult burials, the presence of beads and the differences in quantity may reflect status, even though the quantities of beads are minuscule in all cases but one. None of the adults was of advanced years; hence, it is possible that even here we may be seeing, especially in the case of Burial 363, persons who played liturgical roles earlier in life.

Summary

The history of bead use at Lamanai and Tipu is obviously incomplete at this stage, if for no other reason than the need for further work at both sites. We hope to extend investigation of the contact-period site center at Tipu, and excavation of a second cemetery at Lamanai is also a goal for the future. These two efforts are highly likely to augment our knowledge of both the range of the beads that were imported and the full extent and significance of bead use in the two communities. The Lamanai work, in particular, has the potential for revising the present picture of burial/bead association rather drastically. Appreciation of the beads as part of an assemblage of European imports can be gained in part from existing discussions (Graham 1991:327-328; Graham, Pendergast and Jones 1989:1258; Pendergast 1991:347-351; Pendergast and Graham 1993:344-351), but will remain limited until detailed reporting is complete. It is clear at this stage, however, that the inter-site differences apparent in the bead collections are a reflection of major differences in other areas of European material impact on native culture, just as in a sense they reflect the communities' largely divergent courses in pre-contact times. The contrasts between the two sites tell us, in the area of bead studies as in all aspects of contact-period research, that it is exceedingly dangerous to erect generalizations regarding Maya/Spanish interaction on the presently available data foundation. As the first collections from Central America to be analyzed, the Lamanai and Tipu beads are unquestionably instructive. However, we shall not know the full range of questions to be asked, let alone the answers, until excavations have shed light on a good many more 16th- and 17th-century communities.

ACKNOWLEDGEMENTS

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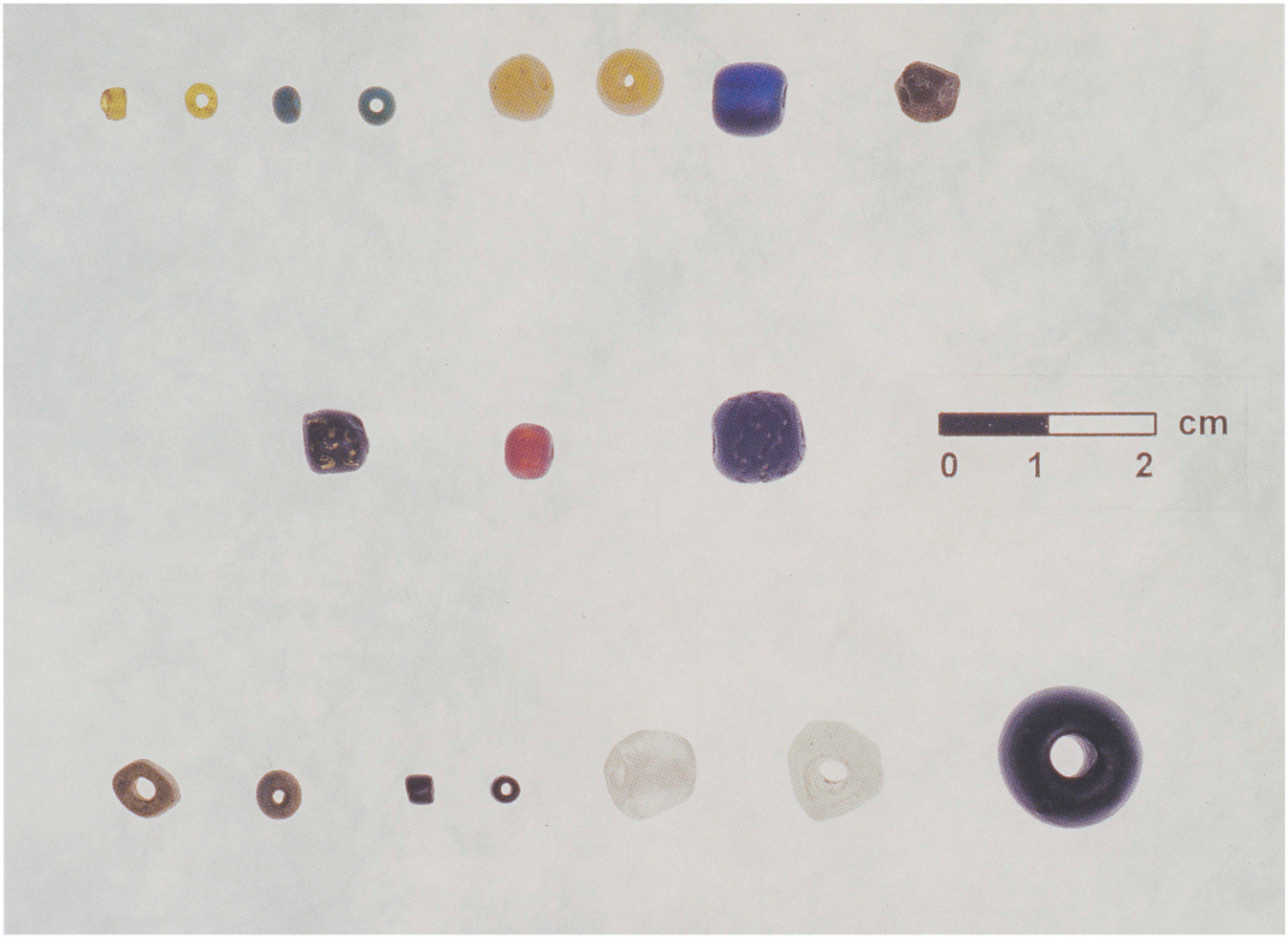

Plate IA. *African Burial Ground:* **R.1:** 1-2, IIa* (tsp. light gold); 3-4, IIa* (tsp. blue green/turquoise); 5-6, WIb6 (tsp. light gold); 7, IIa55 (tsp. cobalt blue); 8, WIIc? (indeterminate color). **R.2:** 1, WIIIb* (op. blue with 2 gilt wavy lines); 2, Amber; 3, IIj2 (op. black with 3 white wavy lines). **R.3:** 1, Bone; 2, WIb? (possibly tsp. yellow); 3-4, IIa6 (op. black); 5-6, WIIc2 (tsp. light gray); 7, WIb* (op. black) (photo by Doville Nelson).

Plate IB. *African Burial Ground:* Field drawing of the waistbead arrangement of Burial 340 (drawing by Margo Schur; provided by the U.S. General Services Administration).

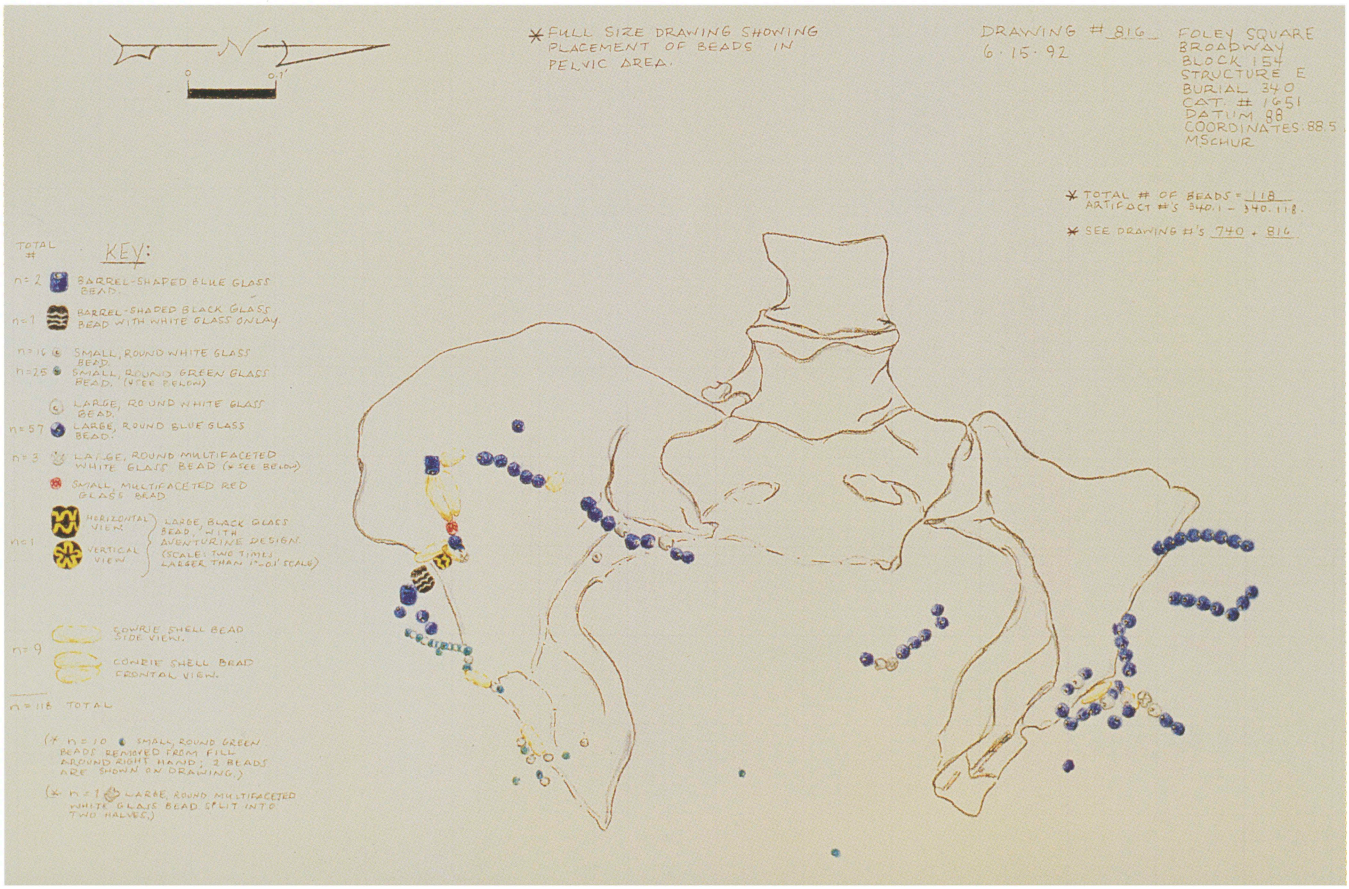

Plate IIA. *African Burial Ground:* Detail of the *in situ* arrangement of the possible wristlet of Burial 340 (photo by Dennis Seckler; furnished by the U.S. General Services Administration).

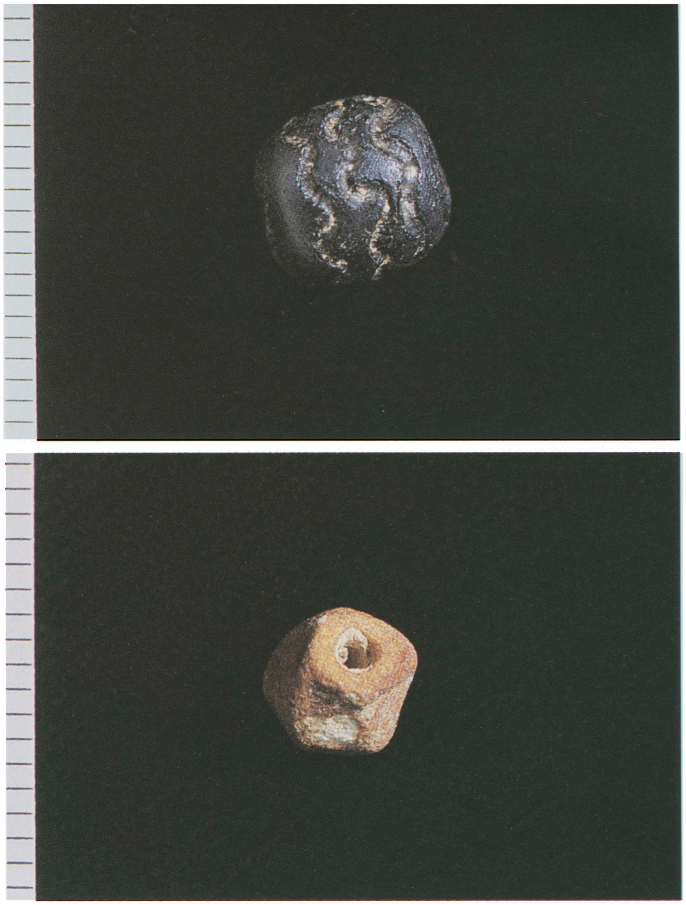

Plate IIB. *African Burial Ground:* Drawn bead variety IIj2 (top), and wound bead variety WIIc? (bottom); scale in mm (furnished by the U.S. General Services Administration).

Plate IIC. *Belize:* Larger glass bead varieties from Lamanai and Tipu. **R.1:** 1, IA3d; 2, IIA2a; 3, IIA2b; 4, IIC2b. **R.2:** 1, IIC2e; 2, IIIA1a; 3, IIIA2a; 4, IIIA2b; 5, IIIA2f. **R.3:** 1, IIA2a; 2, IIIC2c; 3, IVA4a; 4, IVA4c; 5, IVC2e. **R.4:** 1, IB1b; 2, IB4f; 3, Kidd IIa40; 4, Kidd IIa*(a); 5, IB1e; 6, Kidd IIb18; 7, Kidd WIb11 (centimeter scale) (photo by B. Boyle).

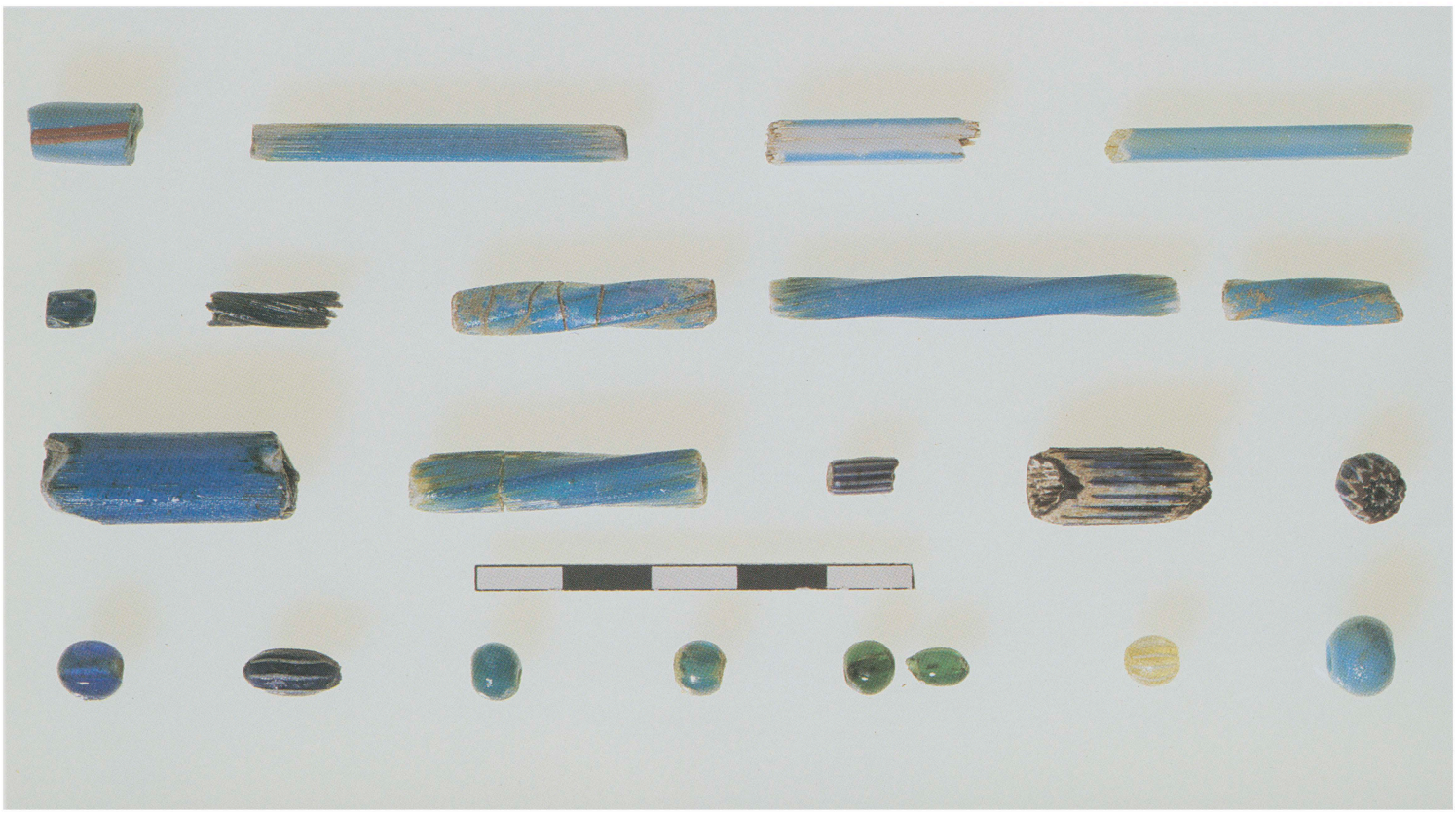

Plate IIIA. *Belize:* Beads of jet and amber and a glass-bead pendant from Tipu. **R.1:** 1-2, jet variety 1; 3, jet variety 2. **R.2:** 1, jet variety 3; 2, glass-bead pendant; 3, amber variety 1 (centimeter scale)(photo by B. Boyle).

Plate IIIB. *Belize:* Smaller glass and bone bead varieties from Lamanai and Tipu. **R.1:** 1, IVC2e; 2, IB1b; 3, IB1b variant; 4, Kidd IVa*(a); 5, Kidd IVa*(b); 6, Kidd IVa*(c); 7, Kidd IVb*(a); 8, Kidd IVb*(b); 9, IC1a. **R.2:** 1, IC1b; 2, IC1c; 3, IC1d; 4, IC1e; 5-6, IB1i; 7, IB1i variant; 8, Kidd IIa59; 9, Kidd IIa*(b). **R.3:** 1, Kidd IIa7; 2,Kidd IIa*(c); 3, IB2b; 4, Kidd IVa*(d); 5, VID1c(?); 6, bone variety 1 (centimeter scale)(photo by B. Boyle).

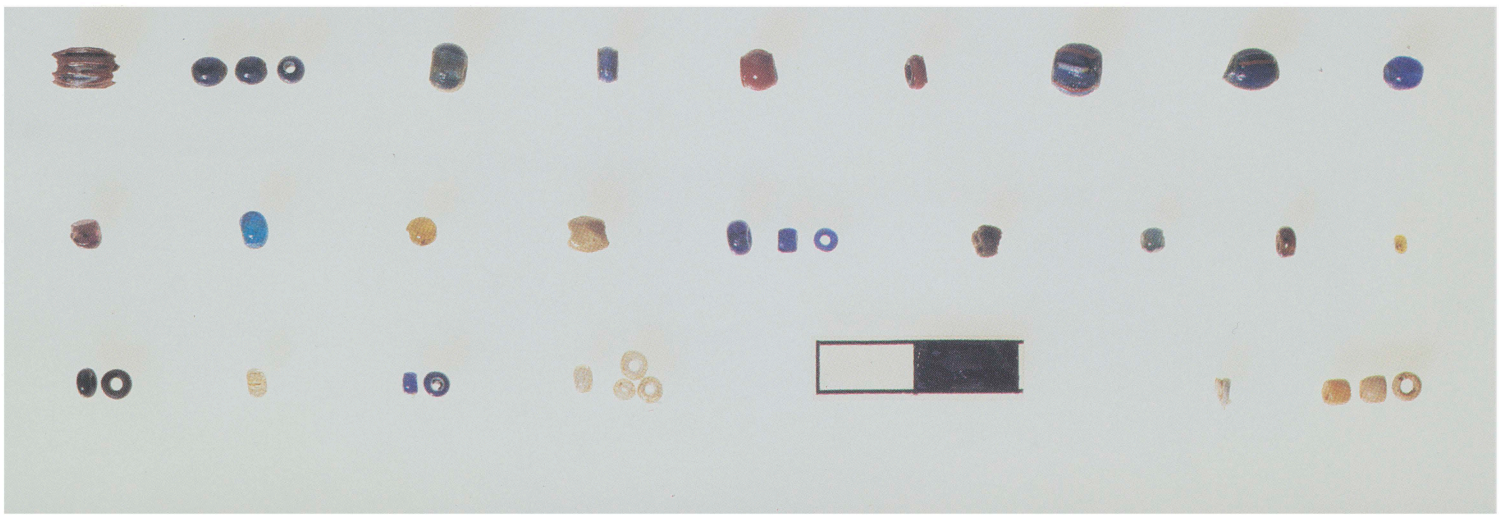

Plate IVA. *Belize:* Several varieties of faceted seed beads (D: 3.0-3.5 mm); Tipu Burial 139 (photos by B. Boyle).

Plate IVB. *Belize:* Jet bead varieties 1 and 2 which form part of Burial 139's necklace (conjectural stringing).

Plate IVC. *Belize:* Silver earring with a faceted jet bead (variety 5) as its principal component; Tipu Burial 139.

Plate IVD. *Belize:* The amber bead and the split variety 5 jet bead with its hourglass-shaped perforation (Tipu).

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A POSSIBLE BEADMAKER'S KIT FROM NORTH AMERICA'S LAKE SUPERIOR COPPER DISTRICT

Susan R. Martin

Beads of copper are amongst the oldest and most widespread ornaments known in North America. Native copper was an important material to prehistoric Americans, and certainly the most important metal. It was collected, transported and traded over wide areas as early as 7000 years before present, and its use for ornaments persisted until it was gradually replaced by European metals over the many years of the contact period. A recently discovered cache of copper beads, bead preforms, awls, a crescent knife and scraps of raw copper at site 20KE20 in northern Michigan offers insight into the process of copper-bead production in 5th-century North America.

INTRODUCTION

The use of native-copper beads as ornamentation was probably one of the most widespread and long-lived traditions in prehistoric eastern North America. The most plentiful source of native copper (i.e., relatively pure elemental copper) in the world is the Lake Superior basin of interior North America (Fig. 1) where it is found both in ancient volcanic lodes and as a constituent of Pleistocene-age glacially transported river and stream gravels. Native people of the region made use of the material as early as 7000 years B.P. (Beukens et al. 1992; Martin 1993). It was mined, gathered and used for various tools such as awls, spear points, knives and adzes, as well as for ornamental and symbolic objects such as beads, bracelets, ear spools, tinkling cones and, occasionally, engraved and embossed breastplates, musical instruments and headdresses.

The distribution of the oldest copper artifacts is basically the same as the spatial distribution of the glacial drift within which the raw copper is often found. In addition, there is some evidence that the material was traded far to the east and south of its most-abundant Great Lakes source in very early times. Other copper sources are known from Nova Scotia, New Jersey, the Appalachians and the American Southwest (Rapp et al. 1990), and there is growing evidence that copper was mined and gathered in these areas by aboriginals, particularly in the last thousand years (Childs 1994; Goad 1978).

Copper implements are somehow entrancing to many North American prehistorians. Students of technology and aesthetics find it fascinating that the material was used routinely for many thousands of years with straightforward technologies of processing, largely cold-hammering and annealing, a continuum with ancient stoneworking technologies. No one in eastern North America resorted to smelting the metal; there was no real need to because the material was nearly pure copper. It was shaped by hammering and annealing. The results include some of the most compelling, beautiful artistry known from North American prehistory (Halsey 1983). Students of symbolic behavior find copper implements of particular interest because some aboriginal cultures charged them with special cosmological and symbolic properties. Copper objects were thought to contain the powers of good medicine, wealth and well-being. Copper is also sometimes found in important social contexts such as burials and ritual cremations (Greber and Ruhl 1989; Hruska 1967). Copper objects were widely sought, and trading ornaments and talismans of copper became a standard feature of prehistoric life far afield from the Upper Great Lakes and other sources (Brose 1994).

BEADS 6:49-60 (1994)

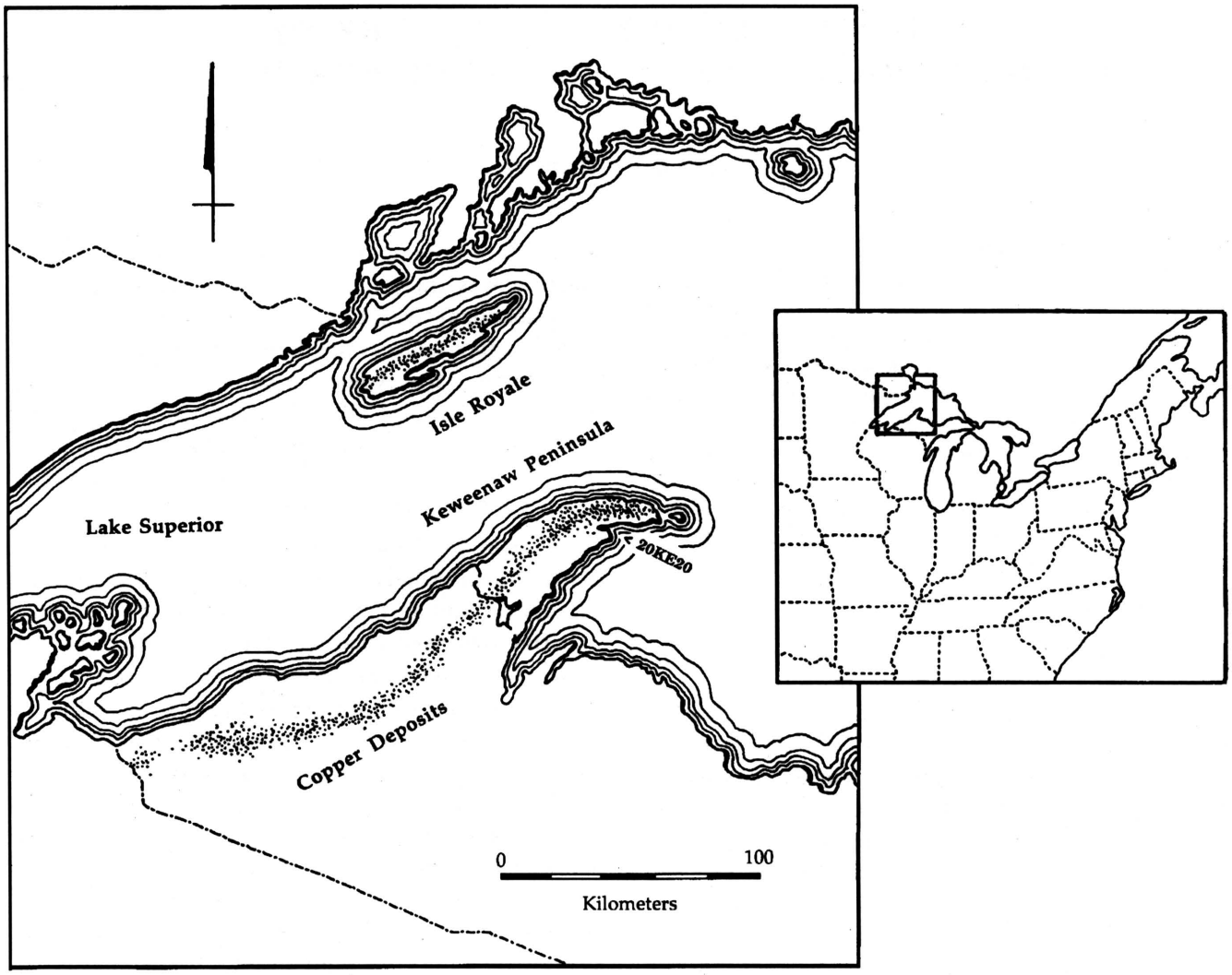

Figure 1. Location of selected native copper deposits in the Lake Superior district, United States/Canada border region (drawing by Patrick E. Martin).

A BEADMAKER'S KIT UNCOVERED

Concentrated deposits of copper artifacts and raw nuggets, colloquially referred to as caches, are occasionally discovered and reported. This is particularly common in the northeastern United States and adjacent areas of Canada, and is of particular interest because it is assumed that the practice of caching is intentional or, as Leader (1988:72-73) puts it, the caches "represent ordered behavior" and may include "some form of processing tool kit." The caching of copper for future recovery seems to have been a common pattern of behavior through long reaches of prehistoric time (Binford 1961; Griffin and Quimby 1961; Halsey 1983; Leader 1988; Martin 1993; Popham and Emerson 1954). This is the depositional context of the copper artifacts described in this paper: a pouch of copper beads and bead preforms in various stages of the production process buried in a sandy ridge about 15 centuries ago.

In 1987, an amateur artifact collector, prospecting with a metal detector on a wooded relict beach ridge adjacent to an outcrop of native copper in Keweenaw County, Michigan, discovered the cache of copper artifacts. He very hastily collected the cache, making no use of modern excavation procedures. Later, and somewhat reluctantly, he enlisted the help of professional archaeologists at Michigan Technological University for description and analysis. The cache was a great find because it included preserved textiles and leather associated with copper artifacts. Many isolated copper artifacts have been discovered at the site as well; typologically, the range of the recovered tool types suggests a long period of occupancy and use (Martin 1993).

Limited rescue excavations were conducted at the site (20KE20) in the summer of 1988, by the Archaeology Laboratory of Michigan Technological University (MTU), with the financial support of MTU, the Michigan Bureau of History and the National Geographic Society. A series of radiocarbon dates and their consistency with what appear to be sequent beach features suggests that copper use and fabrication at 20KE20 went on over a substantial period of prehistoric time, perhaps the range of 7800-1500 years B.P. (Martin 1993:175). The cache allows us to better understand prehistoric beadmaking and trade patterns in northeastern North America, particularly from 500 B.C. to A.D. 500.

DESCRIPTION OF THE CACHE

Found in a shallow pit, the cache at site 20KE20 consisted of various copper items contained in a leather bag or wrapper within which was a remnant of textile. Several kilograms of small, corroded and concreted copper strips were collected and stored for some intended use. In addition, there were 43 awls, a crescent knife, a small triangular point, a hammered nugget and more than 300 copper beads, some strung on fiber cord. According to the finder, the copper artifacts were systematically arranged within the package (Fig. 2). Judging from the quantity of finely prepared and worked copper items from the cache, it appears that the surrounding area was an extraction/collection and fabrication workshop of the sort predicted by Halsey (1983:35).

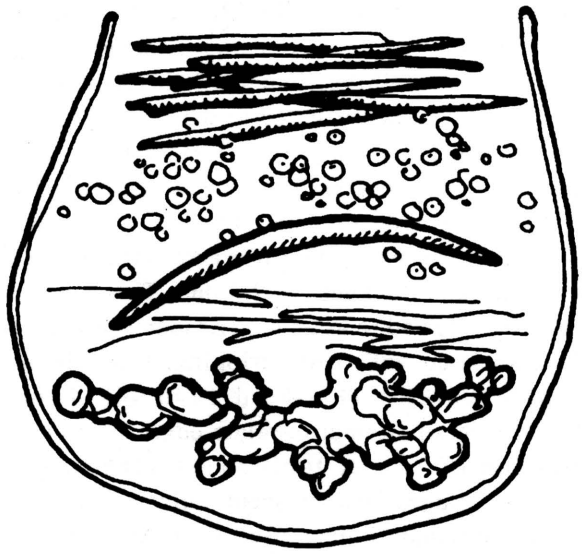

Figure 2. Schematic drawing of the copper artifact cache recovered at site 20KE20 in 1988. From the top: awls, beads, crescent, textile remnant, bead preforms, leather pouch. Not to scale (drawing by Timothy Pauketat).

Upon professional re-excavation in 1988, the feature appeared to extend to a depth of about 30 cm below ground surface and covered an area about 25 cm in diameter. There was no evidence that the cache was part of a burial; the feature appeared rather isolated in the middle of a large discolored area that had resulted from root or rodent action. A leather sample found in direct contact with a mass of native copper in sandy soil ca. 15-25 cm below surface yielded an uncalibrated date of 1570±100 radiocarbon years or about A.D. 280-480 (Martin 1993:175).

THE COPPER CACHE FINDS

The artifacts from the cache are described here in groups determined by probable function. The beads (n = 300+), strung on 3-ply z-twist fiber cord of unknown species, are shown in Plate VA. Their appearance suggests that they were strung in an order somewhat graduated by size; they range in length from 1.5 mm to about 9.0 mm. The beads are in the possession of the finder and are, unfortunately, not available for more intensive study.

Of 43 awls (Pl. VB), most are square in transverse cross-section and single-pointed with a blunted or

flattened opposite end. Double-pointed awls are scarce. The specimens are remarkably standardized in appearance, something which has been noticed in other caches and is attributed to the "hand," or style, of an individual copper worker (Leader 1988:73).

A single crescent knife lay underneath the beads and atop the textile remnant (Fig. 2). The object is 11.7 cm long, measures 17.8 mm across the blade, and has a maximum thickness of 2.5 mm. This form, also commonly referred to as an ulu (Leader 1988:63), has been associated with bark stripping, food chopping and hide working (Flaskerd 1940:46). Penman (1977:19), in an attempt to relate edge angles of one collection of copper tools to hypothetical tool functions, alleges that crescent knives, "similar to ulus or semilunate knives used by Eskimo women," include a great range of edge angle measurements consistent with multiple aspects of meat butchering. Implements of this general form are assumed to be of Late Archaic age based on associations in caches and burials with diagnostic Old Copper Culture artifacts (Wittry 1957:218); however, I suggest that the temporal position of crescents needs reconsideration given the dating of the cache at 20KE20.

A singular cache item is a triangular flat point 5.8 cm in length, 8.7 mm in width at the base, and 2.4 mm in thickness. This long narrow piece is called a point for lack of a more specific term; it may have functioned as a piercing tool. It shows no evidence of any haft structure, and rather looks like a short fat awl or an awl-in-progress.

Situated at the bottom of the cache, underneath the textile remnant, the copper strips are among the most interesting finds (Pl. VC). Some beads are present among the strips, and many of the strips have already been worked into recognizable and regular shapes; some are partially curved. The strips, a kilogram of which was available for study (n = 1000+), vary only a little in size. Average weights and metrics, according to a grab sample of rectangular pieces from the deposit (n = 72), are: weight = .25 g, length = 7.5 mm, width = 2.5 mm. They appear to be blanks partially worked into bead shape, and are what beads look like before they are crimped or hammered into a spherical or semi-spherical form. The sides of the blanks appear to have a slight central bulge, and the ends, which will eventually abut or overlap, are tapered slightly. These bead blanks fit neatly into the size range of the finished beads and appear to represent beads at the small end of the size range: those roughly 1.5 mm to 2.5 mm in length. Similar materials, dating nearly a thousand years earlier, were recovered from the Boucher site in Vermont (Heckenberger, Peterson and Basa 1990:188).

THE ANCIENT COPPER-BEADMAKING PROCESS

Controlled excavation of the immediate environs of the cache at 20KE20 in 1988 resulted in the recovery of 38 copper beads. Found within about a meter of the cache, most were associated with rodent and/or root activity. The professional excavators found others by sifting the amateur's backdirt. The specimens ranged from 1.5 mm to 9.0 mm in length (Table 1) and included several sets strung on fiber cord.

Careful examination of the beads revealed some interesting characteristics of the beadmaking process and the aesthetics that accompanied it. The beads were examined, measured and then photographed under low magnification at the Archaeology Laboratory of Michigan Technological University. This examination expanded our understanding of how beads were formed, finished and strung, and revealed what patterns of aesthetic preference are recognizable in the strung arrangements of the beads.

For at least a century, researchers have offered explanations about prehistoric metallurgical and artisan skills applied to native copper (Clark and Purdy 1982; Cushing 1894; Goad 1980; Leader 1988; Smith 1965). These explanations are correct; however, they are spatially removed from the primary context of the metal extraction localities and depend largely on metallographic analyses and experimental metal working for conclusions. With the 20KE20 beads and associated finds, we have archaeological evidence of the process in its entirety, at the immediate source of the raw material and on the probable manufacturing site.

The fabrication process for the beads is relatively complex. The raw material was gathered from conglomerate deposits of native copper about 100 m from the cache. Small, regular, flat pieces of copper—perhaps the by-products of other tool fabrication

Table 1. 20KE20 Copper Bead Measurements (in mm).

Catalog No.*	Length	Diameter	Thickness	Comments
2.1	5.1	4.5	<1.5	no grinding, very rough
2.2	4.7	5.2	—	spaced evenly on cord
2.3	4.0	5.0	—	(no species identification
2.4	3.9	5.5	—	on cording)
2.5	5.0	5.5	—	
6.1	7.7	6.0	2.5	
18.1	1.9	2.5	<.5	strung on 3-ply
18.2	2.0	2.7	<.5	z-twist cord
18.3	1.5	1.9	<.5	*(Aslepias syriaca)*
18.4	broken	—	<.5	
27.1	6.3	7.5	2.0	beveled
27.2	3.0	3.0	—	slight bevel
27.3	5.9	6.5	—	(strung on
27.4	4.9	6.0	1.5	*Asclepias syriaca)*
27.5	3.5	3.8	—	strung on
27.6	2.7	3.1	—	*Asclepias syriaca*
27.7	2.8	3.0	—	
27.8	3.6	3.8	.75	no bevel
31.1	6.9	8.3	2.8	
31.2	5.6	8.5	2.3	
31.3	6.7	9.0	2.8	
31.4	7.6	7.2	1.9	
31.5	7.0	8.8	2.5	
31.6	9.0	8.5	—	smaller bead in hole of a larger bead; spacer bead?
31.7	6.0	6.7	—	strung in graduated
31.8	5.5	6.0	—	sizes (no species
31.9	4.5	5.0	—	identification on cord)
31.10	4.5	4.8	—	
31.11	4.0	3.9	—	

Table 1. Continued.

Catalog No.*	Length	Diameter	Thickness	Comments
42.1	3.8	3.9	—	the strand has a 90 degree
42.2	3.8	4.1	—	angle in it
42.3	4.6	4.4	—	(the cord species is
42.4	5.0	5.0	—	indeterminate,
42.5	4.9	4.5	—	but it is different from the
42.6	3.0	3.2	—	other strands)
42.7	4.2	4.5	—	
42.8	4.5	4.5	—	
42.9	3.4	3.8	.8	

*Beads grouped together are strung together.

tasks—were saved and prepared for use as bead preforms. They were extremely regular in shape and were somewhat smoothed or ground before being shaped into beads. They may have been produced by intentionally folding thinned copper sheets (Franklin 1982), or by fine hammering. The size of the blank obviously dictated the size of the finished bead. A blank about 6.0 mm wide, 1.4 cm long and 2.0 mm thick would have produced a bead 6.0 mm in length and about 7.5 mm in diameter.

After selecting a blank and heating it to a temperature that softens the copper, the blanks were bent, hammered or squeezed into a rounded shape. It is possible that this rounding was done free-form for the larger beads; that is, the blank was held and lightly hammered, perhaps with blows directed via a fine-tipped awl, into the desired shape, then finished. There are other possibilities as well. One is that the strip could be completely or partially tapped around a form, such as a bone, copper awl or dowel. Another is that the strip could be pinched or crimped around a cord or thong, thus accomplishing forming and stringing in one operation. This would seem potentially useful particularly for the smallest beads, those in the ca. 1.5-mm-length range.

The wrap joins, or areas where the ends of the bead blank meet, were also carefully treated. Irregularities at the ends are neatly tucked together, and the join area smoothed. In some cases this joining is so precise that it is nearly invisible. This is not due to corrosion products obscuring the seam, but to the care and artistry with which the beads were produced. Joins on larger beads tend to overlap and are usually carefully smoothed; those on smaller ones are more frequently irregular. The larger beads tend to be regular in cross-section and precisely rounded, whereas the smaller ones are more likely to be out of round. This is especially true of the 1.5-mm beads; some researchers attribute shape irregularities to insufficient annealing in larger artifact forms (Childs 1994:244).

In general, the beads from 20KE20 are either globular or sub-globular (i.e., they are slightly wider than they are long). In some cases the beads have been ground, polished or smoothed on the ends to the point that they appear beveled or even faceted. The beads have also generally been smoothed or polished around the interior circumference of the perforation, likely to protect the cord or thong from abrasion. The final appearance of the bead is, no doubt, the collective result of hammering into shape, smoothing, and abrasion after stringing.

The smallest beads deserve additional comment, for simply handling such small items is difficult so that forming them into a predictable shape is quite an accomplishment, one that is not well understood. In some cases, particularly with the smaller beads (those ca. 1.5-1.9 mm in length), the overlap seams are aligned precisely along the cord, and the orientation of the seam overlap or abutment is always the same.

Furthermore, these beads are spaced at precise intervals along the string and are sometimes slightly out of round, all of which suggests that these very small beads were crimped and strung in one operation (Fig. 3,d). In other cases, the smaller beads were imbedded in the holes of larger ones (Pl. VD), leading us to investigate whether they were actually exfoliated interiors of the larger specimens. Upon microscopic examination there was no evidence of breaks, shedding or exfoliation on the surfaces of the smaller beads, suggesting that they are definitely individual beads. If evidence of exfoliation was hidden by corrosion and oxidation layers, it was certainly not apparent under magnification. It appears that the positioning of the larger and smaller beads was intentional, suggesting that the smaller beads were used as spacers to set off the larger ones on a strand.

APPEARANCE OF THE BEAD STRANDS

The orderly appearance of the recovered bead strands suggests an overall concern with size relations and variable patterns of bead stringing. Because groups of beads were recovered in strands, we have the pleasure of understanding and describing how strands of beads should look, according to the aesthetics of a 5th-century native North American. The beads recovered through excavation display a number of patterns; there are five of particular nterest which are illustrated in an idealized fashion in Fig. 3. In the first pattern (Fig. 3,a), the bead strand makes a right-angle turn. The beads are approximately even in size, but the perforation in one bead is angular rather than straight, causing the strand to kink at a right angle. It is unclear whether this pattern is intentional or accidental, but the decorative effect of the kink is quite striking.

A second pattern is shown in Fig. 3,b. Here, five beads appear to be graduated in size, much like the longer strand in Pl. VA. The third pattern (Fig. 3,c) is one in which there is an alternating pattern of small and large beads. In this pattern, small beads may have acted as spacers between larger beads. In the fourth pattern (Fig. 3,d), which involves the smallest specimens, beads of very uniform size are crimped or strung along a fine cord at standard intervals and with aligned overlaps. Fig. 3,e depicts the final pattern in which a random assortment of sizes is strung.

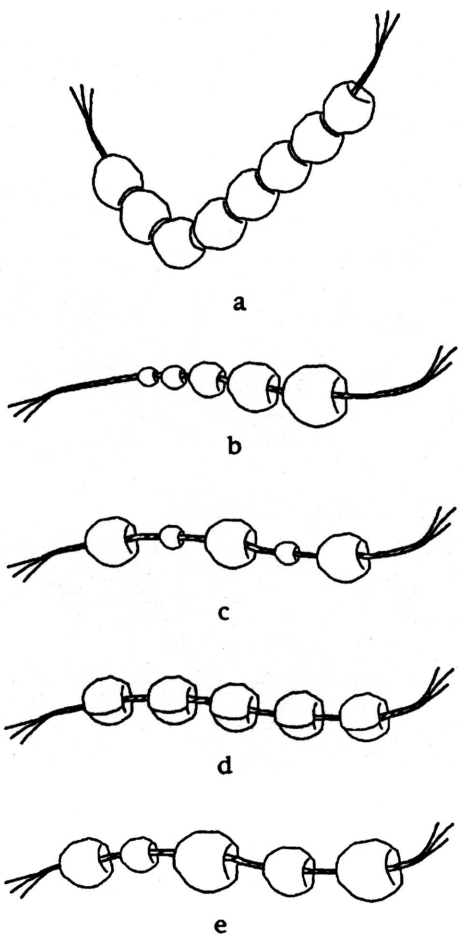

Figure 3. Hypothetical patterns of stringing beads (not to scale): a, right-angle; b, graduated; c, alternating size; d, crimped and aligned; e, random (drawing by Julia J. Bailey).

CORDING AND TEXTILES IN THE CACHE

Fortunately, the preservation of organic materials is enhanced by saturation with copper salts so we can relate some details about the materials used to string ancient beads (Bisbing and Martin 1993:170). Three samples of bead cord were compared to modern samples of *Asclepias syriaca* (milkweed) and *Apocynum androsaemifolium* (dogbane), both of which were commonly used by Native Peoples of the northern Great Lakes region (Yarnell 1964). Two of the samples are indistinguishable from the milkweed; no sample resembled dogbane. One of the samples remains unidentified. The structural details of some of the cord are clearly apparent: a 3-ply z-twist cord of milkweed fibers is the stringing element of the beads

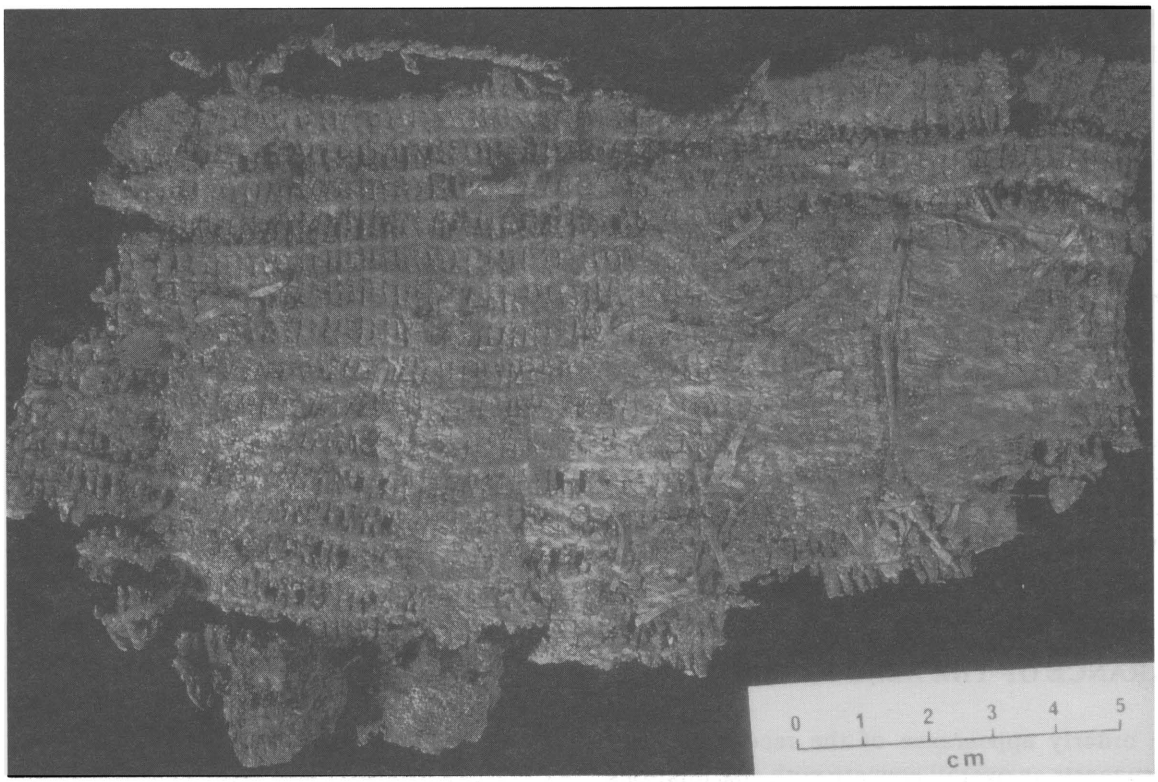

Figure 4. Textile associated with the cache, 5th century A.D. (photo by Patrick E. Martin).

in Pl. VA, and also the very small (1.5-1.9 mm size) beads (Table 1).

The textile fragment found in the cache (Fig. 4) is a woven fabric composed of at least three constituents. It is weft-twined with the twined stitches dropping to the left. The warp (the components which extend lengthwise from the loom or origin point) consists of coarse, woody bast fibers which are poorly retted. There may be remnants of woody tissue adhering to this fiber; i.e., it appears to be incompletely retted or separated from coarse woody layers originating close to the fine fibers. The warp fiber appears very coarse and the species remains unidentified.

The warp appears to be wrapped in a translucent material which is of animal origin. Although the translucent wrap, when examined by polarized light microscopy, does not show any structural details such as cellular outlines or undulating birefringent fiber structures, it does accept Van Gieson stain which is characteristic of collagen in leather. Micro-Fourier transform infrared spectroscopy produces absorption characteristics typical of polyamides or proteins. Though it is unclear what the exact source of this material is, its transparency and birefringence are consistent with porcupine quills. Overall, the textile is very similar in structure to examples recovered from the Boucher site and from the Riverside cemetery (Heckenberger, Peterson and Basa 1990:204; King 1968:121).

The weft (components that extend from selvage to selvage) is composed of bast fibers that are similar to those comprising the bead cords. The yarn has been very carefully retted and is more delicate than the warp. It is unclear whether the apparent difference in the fibers relates to differential preservation or to differential preparation before fabrication of the textile. The animal fiber wrap around the warp may have prevented the infiltration of copper salts. The species of the weft fibers is uncertain although the ultimate fibers are unlike dogbane but similar to the modern milkweed.

DISCUSSION AND CONCLUSIONS

The proposed age of the 20KE20 cache deserves discussion because the artifact assemblage appears to include some temporally incongruous elements. The radiocarbon date for the feature is inconsistent with the assumed age of crescents or ulus thought to be of Late Archaic age. However, in a cursory search of the literature from sites in Wisconsin and upper Michigan, where the putative Late Archaic dates of these implements originated, no organic constituents of ulus or crescents have yet been dated by radiocarbon methods. It is important to recognize also that many, if not all, of these sites are multicomponent localities which were excavated somewhat unsystematically over many years. Crescents are not present in the Osceola site (Wisconsin) or Boucher site (Vermont) collections; the specific contexts of crescents at the Riverside site (Michigan) and at the Oconto site (Wisconsin) are not dated. At the Reigh site (Wisconsin), several crescents are associated with burial contexts but no radiocarbon dates are available from the specific areas of the site where crescents were recovered. Thus, it is difficult to conclude that the attribution of crescents to the Late Archaic is well established. Rather, one might conclude that the age or longevity of crescents as an implement type is still in question. Four possibilities arise as a result of the 20KE20 date:

a. The radiocarbon date for the 20KE20 cache is too recent and crescents are really Late Archaic in age.
b. The crescent at 20KE20 is an heirloom from the Late Archaic.
c. The ages of crescents from sites in Wisconsin and Michigan are actually unknown and/or crescents are wrongly attributed to Late Archaic components.
d. Crescents are actually a long-lived artifact type not solely associated with the Late Archaic.

Given the fact that contexts containing crescents have yet to be dated by radiocarbon methods to the Late Archaic, one conclusion is that options c and d may be considered provisionally correct.

What is the relationship, if any, between sites such as 20KE20 and Boucher? What explanation is there for the copper, textile, technological and contextual similarities between Boucher and 20KE20 despite the time and distance that separate them? Site 20KE20 is so similar to Boucher in terms of beadmaking potential and textile materials that we must try and explain why these similarities exist despite 1000 years' time difference and 1000+ kilometers distance in space.

The prehistoric Upper Great Lakes region was connected by an elaborate water highway within which there existed crosscurrents of many cultural traditions, uniting peoples of vastly separate territories. In some ways, the prehistoric Northeast was—at least around and to the north of the Great Lakes—one large cultural province within which a continuum of related beliefs, behaviors and material culture extended over long time spans. Thus, the Boucher site and its material contents—the beads, the bead preforms, the textiles—hold much in common with site 20KE20 which was used 500-1000 years later in time, with virtually identical bead technology, bead morphology and textile technology/design. The Riverside site (20ME1), about 250 km south of 20KE20 at the western edge of Lake Michigan and occupied through Late Archaic times into the Woodland era, also shares these features (Hruska 1967; King 1968). The most compelling model that comes to mind to explain this widespread similarity is one of down-the-line trade across space via long-established trading partnerships which were modeled on real or fictive kin relations (Heckenberger et al. 1990:140). These long-lived patterns of trade definitely operated within the Upper Great Lakes (Brose 1994).

Another sense of the interconnectedness of the region comes from a look at the constituents of assemblages of Upper Great Lakes archaeological sites, especially those with pottery representative of the Woodland cultures. On sites of Terminal Woodland age on Lake Superior's Isle Royale, for instance, it is clear that the prehistoric inhabitants either made pottery in imitation of Huron pottery of eastern derivation or acquired Huron pottery by trade, or Hurons brought pottery to the island themselves (Clark 1991). One thing is absolutely certain; there was either direct or indirect contact across the length of the Lake Superior basin with material traditions that included the Huron and other eastern styles of pottery making. These strong similarities suggest repeated contact through mutually desirable trading links over vast reaches of time and space.

In general, one concludes that there was widespread communication in the Northeast during prehistory to the point that rather continuous and heterogeneous styles in material culture are regular elements in prehistoric deposits in the copper-bearing district as elsewhere. This may help to explain why non-material aspects of culture, like mythical understandings and depictions of water spirits native to the Upper Great Lakes (Childs 1994), are wide-spread across northeastern North America during prehistory. Ideologies and materials make identical journeys.

Is the 20KE20 cache a beadmaker's kit and are the awls in the cache perhaps related to the manufacture of beads? The technical function of the awls related to beadmaking is problematic. It is certainly a possibility that their co-deposition is not caused by bead production requirements at all. It is, however, interesting to consider whether the awls might play a role in bead production. Certainly awls are, along with beads, one of the most ubiquitous of copper objects. Awls could have been used in a variety of ways in a beadmaker's kit. A pointed awl round in cross-section could have functioned as a mandrel to form beads of various sizes. In addition, awls might have been used to hold bead preforms in place during heating, as punches to direct force to form beads and bar stock for the production of bead preforms.

How many strands of beads might be represented in the 20KE20 cache? At the Boucher site, 100+ beads were judged to comprise a hypothetical bead strand, based on counts of beads recovered from burial contexts (Heckenberger, Peterson and Basa 1990:190). This number is more or less accurate for Riverside, although some burials included fewer, but very large, beads (Hruska 1967). If the Boucher bead-per-strand count is applied to 20KE20, then there may have been as many as three or four strands of beads in preparation. This figure fits well with the number of hypothetical patterns and size ranges of strands discussed earlier.

The traditional normative functions of the tools found in the 20KE20 cache suggest a woman's kit for beadmaking, as well as for other domestic tasks; e.g., food preparation, hide-working/piercing and the like. The cache is primarily composed of sedentary tools, as named by Leader (1988): i.e., tools used for processing materials rather than food procurement. The presence of a crescent or ulu supports the notion that the cache is a woman's tool kit. Awls are often assumed to be women's tools, but supporting evidence, such as the inclusion of awls with female burials, is not as strong as might be desired, at least in the region and time period of interest. As far as the sites mentioned earlier are concerned, the Riverside cemetery awls are associated with women's burials, but are more commonly part of undifferentiated fill (Hruska 1967). The evidence from Boucher is not conclusive; the only awl recovered from a burial context was associated with a young adult of undetermined sex. Crescents are also sometimes associated with male burials (Ritzenthaler et al. 1957:286; 295; 299), leaving us wondering whether they are exclusively women's tools.

Obviously, the evidence here for interpreting the cache as a woman's beadworking kit is inconclusive and yields a hypothesis rather than a conclusion. It is clear that widely distributed and long-lived similarities in form and style indicate probable trading contacts for copper, and this bundle of objects may have been part of that trade. This likelihood suggests that we at least rethink our assumptions about the activities of women regarding copper manipulation, and this analysis is a rudimentary attempt to do that. It is also reasonable to entertain alternative ideas about the technical functions of implements, such as awls, beyond normative concepts of skin-working and piercing. It is interesting to note that years ago, Ray H. Landon, then president of the Minnesota Archaeological Society, expressed the view that copper-working was a valued male skill in ancient societies. He put it this way: "It may be that there were certain men in the tribes that worked copper who occupied a position similar to that of the so-called arrowhead maker" (Landon 1940:28). Perhaps the special status of the copper-worker can, on the evidence of the cache at 20KE20, be extended to some of the women of prehistory as well.

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TOWARD A SOCIAL HISTORY OF BEADMAKERS

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An understanding of beads requires an understanding of the people involved with them. This paper examines three historical aspects of people engaged in beadmaking, especially the production of glass beads. The history of their social relations is considered in regards to the record of their physical movements, the manner in which they organize themselves and pass on their traditions, and their status within society. Information concerning each of these is arranged geographically and chronologically in an attempt to discern the patterns of the social history of beadmakers.

INTRODUCTION

Beads do not exist without people. Studying beads alone misses the point. They are artifacts, which presupposes the human element. People search out raw materials, turn them into beads, and then distribute, use and dispose of them. They are a uniquely human endeavor, and an understanding of beads must be grounded in a perception of the people behind them.

This paper focuses on beadmakers, especially (but not exclusively) glass beadmakers. It is an attempt to initiate a social history of beadmakers, defined as a historical understanding of their social traditions. Three questions, each of which illuminates some aspect of the social history of beadmakers, will be examined.

1. *Why do beadmakers move?* It is well documented that beadmakers shift locations. What has not been closely examined is why. Two hypotheses may be advanced. In one, beadmakers are forced to move when economic, social, health or political conditions become intolerable, or raw materials—especially wood for fire and alkalis—have been exhausted. In the other hypothesis, they are enticed to move, invited to new areas, perhaps with the promise of special privileges or pecuniary gain.

   Whether the movement is because of a "push" or a "pull," it is easy for glass beadmakers to do. They are not peasants tied to the land. Their chief raw materials are widespread, and special materials—such as colorants—have long been articles of commerce. They need only their skills to set up shop, giving them freedom akin to goldsmiths or jewelers. It is not clear whether it is easy for other sorts of beadmakers to move.
2. *How do beadmakers organize themselves and learn their craft*? The notion that anyone can pursue whatever occupation suggests itself is historically quite new. Perhaps in remote antiquity one could do whatever needed doing, but specialization by gender and age has been the norm for millennia. Glass is an invention of civilization, a stage of development that implies specialization. Glass beadmaking is not something that just anyone can do. It needs to be learned, and the mechanisms for teaching it are keys to the historical development of beads. Three methods of transmission may be considered: the family, a guild or a caste. People are born into a family and caste. Guilds are more voluntary and developed differently in different places.
3. *What is/was the social status of beadmakers*? The status of a producer may depend upon the status of the product. A writer of fine literature enjoys more prestige than a pornographer, though not always more recompense. Wages are not only dependent upon training, skill and utility of production, as Adam Smith (1937) would have it in an ideal world; we need only think of the salaries of schoolteachers.

BEADS 6:61-80 (1994)

Schenk (1963) attempted a sociology of glassmaking which we can adapt to beads. He asserted that while glassmakers enjoyed a monopoly and made a unique product, glass was special, even semi-magical, and glassmakers enjoyed high status. With the introduction of factories, glass became more common and workers were no more important than other hands. He pointed out that in Germany, the high status of glassmakers continued until 18th-century industrialization changed the picture. This is a working hypothesis to be tested.

One way to consider beadmakers is according to the technological level at which they work. I have suggested a division into small-scale beadmaking, industrial beadmaking and mechanical beadmaking (Francis 1982a:5-7, 1983a).[1] Schenk's hypothesis suggests that small-scale beadmakers would enjoy more status than workers in an industrial or mechanical environment.

Before proceeding, a word about references in this paper. Much of this information is based on my own work, either first-hand observation or from archival research. Some has been widely published; some small arguments here are distilled from data from many sources. Rather than add a bloated bibliography to an already lengthy paper, I have minimized citations. I shall cite only key works, especially in areas that may be unfamiliar to readers. The Asian material is to be covered in *The Asian Maritime Bead Trade*, to be published by the University of Hawaii Press. The European material is documented in Francis (1988).[2]

SOUTH INDIA

The most dramatic movement of beadmakers was by the producers of the small, monochrome, drawn-glass Indo-Pacific beads that are arguably the most important trade bead of all time (Francis 1991). The industry began in the 3rd or 4th century B.C., at Arikamedu in southeastern India. By the 1st century A.D., beadmakers had set up shop at Mantai in northern Sri Lanka and two places in Funan (the earliest Southeast Asian state): Khlong Thom (Thailand) and Oc-eo (Vietnam). After Funan collapsed in the 7th century, its beadmakers evidentially shifted to Srivijaya, the new power which spanned both sides of the Strait of Malacca. Beadmaking was practiced at Srivijaya/Palembang (Sumatra, Indonesia), Kuala Selinsing and Sungai Mas (Malaysia) and Takua Pa (Thailand). By around 1200, the industry was extinct outside India, but Indo-Pacific beads continued to be made at Arikamedu until the beadmakers moved to Papanaidupet in Andhra Pradesh in the 16th century, where they remain today (Fig. 1).

Why did the beadmakers move? In some cases, it appears that they did so because local events made continuation of their work difficult or impossible. Funan was overrun by the Khmers, driving the beadmakers to Srivijaya. Kuala Selinsing, once an island in the estuary (*kuala*) of the Selinsing River, was apparently being degraded (it is now divided into eleven islands), forcing a move to Sungai Mas. Mantai was attacked by the Cholas in the 10th century and all but abandoned thereafter.

However, in most cases, it is likely that the beadmakers were invited to move to new locations. Mantai, Oc-eo and Khlong Thom traded with Arikamedu and apparently wanted beadmakers. Srivijaya may have invited beadmakers from the crumbling Funan kingdom. Takua Pa was apparently set up as a port by Srivijaya in the 9th century. Though recent (perhaps during the 17th century), the movement from Arikamedu to Papanaidupet is not yet understood.

Who were these beadmakers? Most likely Tamil Indians. Each of the aforementioned places is known to have had Tamilians living there. It is unlikely they would have taught the process to outsiders, and the complexity of beadmaking precludes it being easily learned. If the present state of Indo-Pacific beadmakers is anything to go on, they had low status and worked in a hot and dangerous industry.

How could they have discovered where their product was in demand and obtained the funds and permission to move to foreign places? The answer appears to lie in their guild. South Indian guilds were very important. There were both craft and merchant guilds, the latter more powerful with many privileges. These *gramma* (guilds) sometimes developed into *nagara* (towns), administering cities in which they were based. The two most powerful guilds were the Ayyavoje and the Manikgramman. Both dealt in precious stones, the former in South India and the latter overseas as well (Verma 1972).

Figure 1. Beadmakers with some of their tools in Papanaidupet, Andhra Pradesh, India (1986). These are the inheritors of the once-mighty Indo-Pacific beadmaking industry. Their ancestors belonged to one of the large South Indian guilds, probably the Manikgramman. No guild exists today; the workers are of various castes (all photos by Peter Francis, Jr.).

The Manikgramman is of particular interest, as its name is related to "bead;" *manikya, mani, manikam, manek and manik* all mean precious stones or beads in Sanskrit, Hindi, Tamil and Malay. The Manikgramman was a powerful presence at least at Srivijaya and Takua Pa. There were five craft guilds under it, of which oil-pressers alone have been identified. They or a similar guild were the only likely mechanism by which Indo-Pacific beadmakers could shift their bases of operations.

At least Indo-Pacific beads were held in high regard in East Asia during the early centuries of the current era. They appear to have been sent as tribute from Funan to Chinese courts. They were buried with royalty in the Silla and Paekche Kingdoms of Korea, and were commonly placed in the graves of Han-period Chinese nobility in southern China (Guangdong province) and northern Vietnam. If Schenk's hypothesis is correct, the beadmakers of Funan (and perhaps later those of Srivijaya) may have enjoyed more status than those of India. But only if the status of their product filtered back over such long distances.

In sum, South Indian glass beadmakers were peripatetic, though some always remained at Arikamedu. They moved mostly because they were wanted elsewhere. That they belonged to a guild is certain and that it was the Manikgramman is most likely. It would have been this important corporation that allowed them to make moves of international scale. Their status was probably not high, even though the products of some of them may have been esteemed in distant places.

NORTH INDIA

The North Indian glass-bead industry has always specialized in wound beads, and its history differs from that of South India. Documents from a century or so ago list over 60 glass bead- and bangle-making villages, of which only Purdalpur survives.

British Imperial policy disrupted Indian village-based industries. At first the British insisted upon the sale of only English goods or (as with glass beads)

Table 1. Beadmaking Castes in India, 1911.

Caste	Location, Religion	Type of Work	Population
Manihar	North India, Muslim	Glass beads, bangles	102,300
Gazula	Andhra Padesh, Sudra	Peddlers	102,000
Patra	Orissa, Hindu	Peddlers	61,400
Lakhera	North India, Muslim	Lac bangles, beads	60,100
Curihar	North India, Muslim	Glass bangles	55,500
Kancar	Deccan	Glass beads, bangles	19,100
Sankhari	Bengal, Hindu	Shell bangles, beads	14,800
Ramaiya	Punjab, Brahman	Peddlers	5,300
Bisati	Punjab, Sikh?	Peddlers	3,600
		Total	424,100

Source: primarily Baines (1912:96-97, 150).
Note: Sudra and Brahmin are major caste divisions among Hindus, the former the lowest (not outcasts) and the latter the highest.

goods imported in English ships. The colonists belatedly realized that India's impoverishment would inhibit future sales. Then large industrial centers were built in India (Firozabad in the case of glass), and these dealt a death blow to the old village-based industries (Gadgil 1929:46; Gupta 1960:92-94).

North Indian beadmakers consolidated. Purdalpur had been only one of many beadmaking villages, but became the refuge for beadmakers from elsewhere. Beads are made there by techniques and in styles which can be traced back 2000 years. In 1947, the Partition of India saw many northern beadmakers leave for Pakistan, where the government set up a modern glass factory at Hyderabad to supply small bead workshops (Francis 1979:9-11).

Guilds (*srini*) are recorded in North India during the last centuries B.C. as groups of workers linked by kinship which could even maintain militia. After the breakup of the Mauyran dynasty (ca. 187 B.C.), they slowly lost importance. In the Deccan (north peninsular region) they remained powerful under the Satavahannas until the 2nd century A.D., when villages became more independent and central authority weakened. The fortunes of North Indian guilds were the opposite of South Indian ones (Kosambi 1975).

The caste system takes the place of guilds. While caste was never quite as rigid as once believed (Srinivas 1962), it remains very hard to change. One is born, marries and dies within a caste, doing what one's family has always done. In the beadmaking castes, some members are peddlers who sell the products produced by their cousins.

The Census of 1911, the last to report by caste, recorded nearly half a million beadmakers—a large number—though only about 0.2% of the population. Table 1 lists the beadmaking castes in India at the time.

There are many minor bead industries and castes not on this list (Francis 1983b). The composition of modern Indian beadmaking centers is more varied than it was early in the century. Caste strictures are breaking down, especially in urban areas. Today, wherever beadmaking is profitable, non-traditional workers may join. The stone-bead drillers in Cambay (Fig. 2) and the diamond cutters in Gujarat and Maharashtra are largely Patels, an agricultural caste. The glass beadmakers of Papanaidupet, beadmakers in

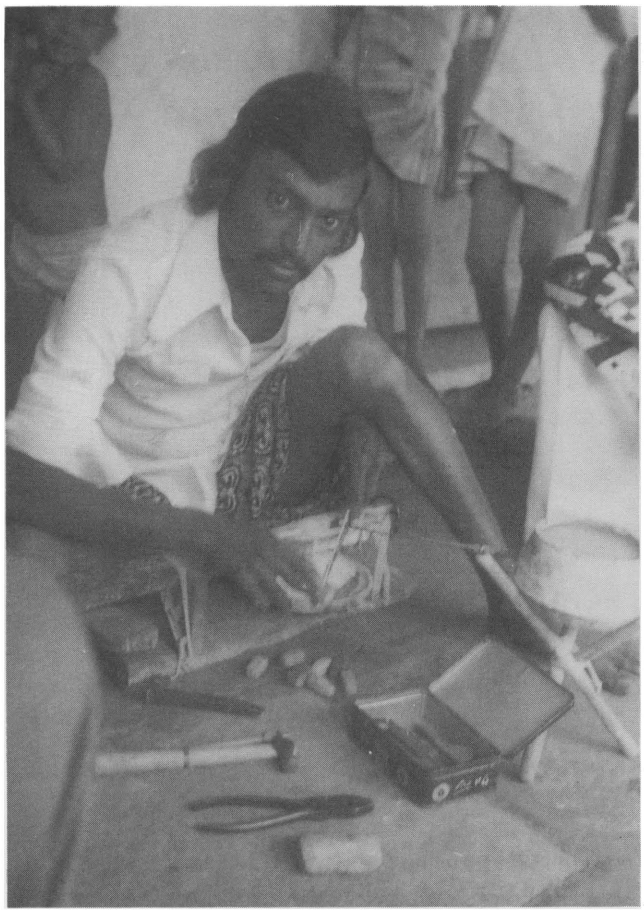

Figure 2. A young member of the Patel caste drilling stones near Cambay, India (1981). The large stone-bead industry of western India has attracted workers from non-traditional beadworking castes.

many media in Benaras and the stone beadmakers of Cambay are of various castes and/or religions.

Contrasting with the glass-bead industry in India is the stone-bead industry based in Cambay. It has been controlled by Muslims for centuries, with Hindus doing most of the work. Its base of operations has shifted at least four times in the last 4000 years, but it did not move far, and the industry has always remained close to the source of stones in what is now Gujarat state (Francis 1982b).

The status of Indian glass beadmakers has traditionally been low because the status of glass is low. Indians are knowledgeable about gems, and Indian society ranks people and things minutely. Except for imported blown glass, the material had little esteem. The 1st-century *Arthasastra*, a treatise on the science of government, required a goldsmith to be "skilled in his profession, of noble birth and trustworthy," but glass was not allowed into the royal treasury (Kangle 1972:110; Shamasastri 1915:87). A 6th-century mineralogical text, the *Ratnapariksha*, refers to glass only as an imitation of precious gems (Finot 1896). The *Hitopadesa*, a book on the education of children from the early centuries A.D., includes the following aphorisms for children: "In this lineage no one is born who is devoid of virtues. How can there be the birth of a glass-gem in a mine of rubies?"; "The jewel is trodden by the feet; glass is upheld on the head. Be that as it may, for glass is glass and the jewel a jewel."; "If glass is studded in the crown and the jewel is set in a foot-ornament, it is not the fault of the jewel but ignorance of the setter." (Dikshit 1969:165-166).

As for the makers of inferior jewels, Arungzeb (died 1707) converted the Manihar and Lakhari (lac worker) castes to Islam (Gode 1949:13). Muslim converts in India commonly began as low-caste or outcastes; an attraction of the Faith of the Prophet is that it has no caste. The low status continues. The beadmakers of Purdalpur are not admired by the Hindus of neighboring Sikandra Rao, who insist on using the Hindu form of the village name. The highest-paid industrial workers in India are the men who feed glass onto a roller to make a "spring" to be cut apart into bangles (Fig. 3)(Development Commissioner 1980:4). But their social standing does not match their income; Firozabad is controlled by a nexus of corrupt politicians and local *dacoits* (bandits), run like the worse of the old American "company towns." The workers are encouraged to drink, smoke and gamble their wages away, and are constantly in debt (Pal 1986).

One more observation may be appropriate. The status of those who furnish raw materials to beadmakers is often lower than that of the beadmakers. Many people make bangles (and sometimes beads) from lac and use it to color objects, including wooden beads, but the raw lac is gathered by tribals, outcastes not prohibited from taking the life of the lac insect. The diggers of agates and carnelians in the Ratanpur area, who furnish Cambay lapidaries, are outcaste tribal Bhils (Fig. 4); the *Garuda Purana* of the 5th century or so referred to them as "communities of vile caste" (Shastri 1968:207).

Figure 3. The man who produces glass "springs" in the production of bangles is (or was in 1981, when this picture was taken) the highest-paid industrial worker in India. Despite his high wages, he saves nothing because of the rigged nature of business in Firozabad.

The movements of North Indian beadmakers were more from necessity than invitation. Caste, rather than guilds, controls what people do and remains very important. It is breaking down in urban areas and affecting the composition of beadmakers in cities. The status of North Indian beadmakers is low within the larger community and, in the case of glass, reflects the traditional low esteem in which glass was held.

CHINA

Our understanding of the internal movements of Chinese beadmakers is rudimentary, though we can identify various beadmaking regions at different times (Francis 1990a). There are references in Chinese annals to kings inviting glassmakers to work in their realms (Francis 1986:10-12). Glass beadmakers no doubt joined the flood of refugees from the Mongol invasion, setting up in Suzhou, Huangzhou and Guangzhou (Canton) to produce beads for export to Southeast Asia.

Two Chinese bead industries left the Middle Kingdom. In the 14th century, some people making small "coil" beads plied their trade at Tamasik, a settlement on Fort Canning Hill, Singapore. Around 1600, Chinese beadmakers lived in Bantam, Java, Indonesia, and made beads for export to Borneo. Though we do not know where they originated, we can see why they left China. The Mongols of the Yuan dynasty (1260-1368) appropriated the best craftsmen for the palace and separated them from the rest of the population. The Ming (1368-1644) extended this policy, leading to a decline in craftsmanship. Many craftsmen emigrated to Southeast Asia with the government's blessing.

Chinese guilds were formed to protect members from government interference and reduce competition. They regulated trade and aided their members, operating on democratic principles. The term for

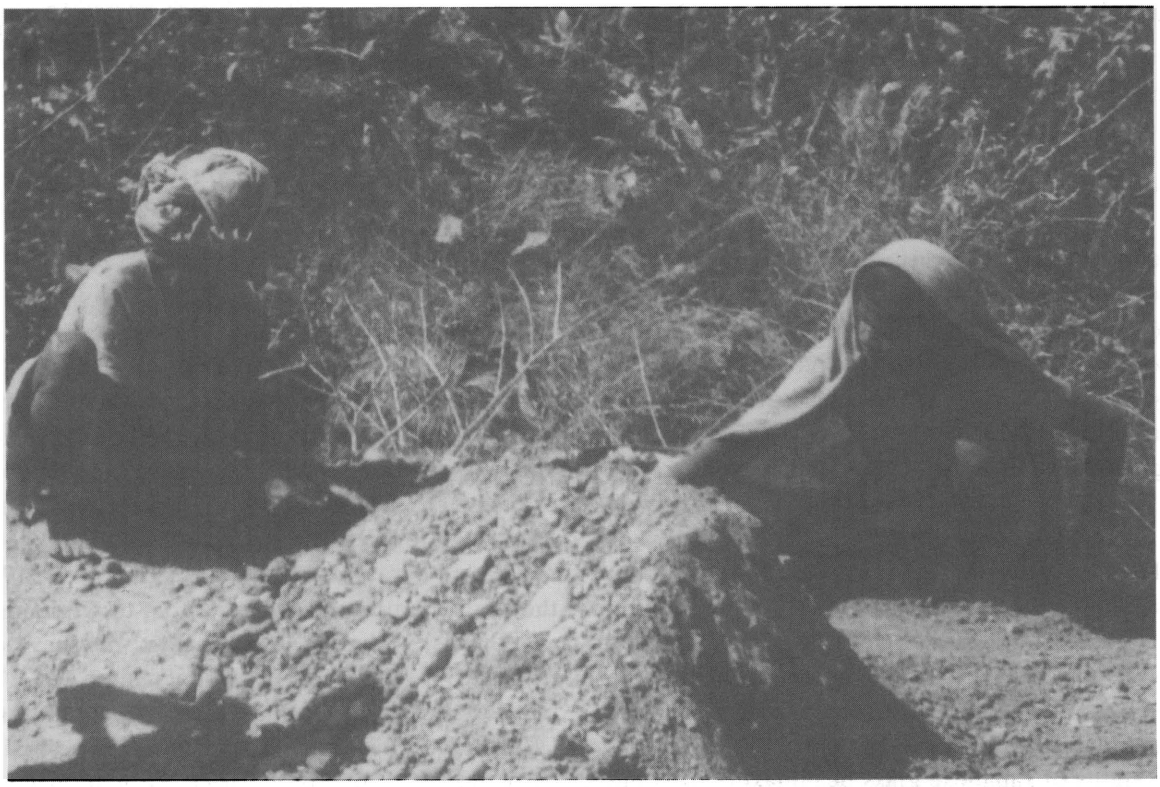

Figure 4. Two Bhil tribal members sort raw stones from a Ratanpur mine in western India (1981). The hardest work—the mining of agates and carnelians—often devolves on the lowest members of society.

guilds was *kung-so* (public office) or *tang* (hall), while merchants from another city were grouped in a *hwei-kwan* (club house) (Morse 1967). They were minutely organized. Both merchants and producers had their own guilds.There were guilds for rice merchants and crab sellers, glue makers and jewelers, as well as soothsayers and scavengers, thieves, beggars, and both male and female prostitutes (Gernet 1962:87, 98-99). We can assume that there were glass beadmaking and other beadmaking guilds as well.

The *Intrigues of the Warring States*, a collection of droll psuedo-historical tales set in the period 453-221 B.C. and written by at least 100 B.C., contains a story about a bead-stringer giving advice to a king (Crump 1964:84-85). Bead-stringing was thus a recognized occupation, perhaps with its own guild. Even so, its status may not have been high. Part of the spice of the *Intrigues* is that the lowliest people give good advice to the highest. The bead-stringer was at the bottom of society, not near the top.

The position of beadmaker may have been different. Glass was valued, especially in the early years, and never despised. The magnificent beads of the Late Zhou period must have been prized. As a substitute for jade, glass had status; the 2nd-century inscription on Emperor Wu-liang's tomb reads: "[Glass pi][3] come to the hands of a king who does not try to conceal his own faults" (Harada 1962:104-105). The invitation of kings to glassmakers to enter their realms suggests esteem. The name of a Sui (580-617) glassmaker, Ho Zhou, has been recorded. Wang Ch'ung, a 5th-century Taoist alchemist said of glassmaking: "This is the climax of Taoist learning and a triumph of their skill" (Needham 1962:109, 112). High praise, indeed. During the Qing dynasty (1644-1911), glass court beads ("Mandarin chains") were popular for all but the very top ranks which were required to wear jewels.

Movements of Chinese glass beadmakers were occasioned by attraction (kings inviting them) and repulse (external emigration). Guilds were important, no doubt, and a search of their records could well be rewarding. Status seems to have been high for glassmakers and their products, and though the Chinese

used glass beads primarily as a jade substitute, beads obtained considerable esteem during the Qing (Manchu) period.

JAPAN AND KOREA

The Japanese likely learned glassmaking from the Chinese, but soon went their own way. Hereditary guilds (*be*) were operating by the 3rd century A.D. The *tamatsukuri-be* included jewelers and beadmakers. At least by 702, it was merged with the metalworkers *be* into a state organ called the Casting Office. But the Casting Office was downgraded late in the century and for the next millennium, beadmaking was in private hands, especially monks'. The guild system was revived in the Kamakura period (1186-1334) as *za*, but there is no known glassmakers' guild. During the Edo period (1603-1868) and after, beadmaking was entirely in private hands, and gained considerable prestige (Blair 1973). Guilds in Japan were less important than in China or Korea.

The status of Japanese glass beadmakers rose and fell with the strength of the industry. During the Tomb period (A.D. 250-552), they were prominent and held in honor. Skilled craftsmen moved up in rank during the 8th century if they belonged to the Casting Office, and a slave who was a master stone beadmaker was freed because of his skill. After the revival of glassmaking from 1603, skilled beadmakers were well paid and honored (Blair 1973:49, 93-94, 201-202).

Modern glass beadmaking in Korea began when five youths were taken to Japan to learn the craft in 1927. Park Che Chung returned in 1934, to open a factory at the age of 20, making beads mostly for top-hat strings (Francis 1985:31). The Japanese still buy Korean beads and repackage and label them "Made in Japan;" they apparently did this with Chinese beads as well.[4]

During the Yi dynasty (1392-1910), the makers of men's top hats were among the most esteemed artisans, and their guild jealously guarded their rights (X.Y.Z. 1896:266). Almost the only use for beads at this time was for top-hat strings, and beadmakers may have shared some of this honor. The Koreans adopted the guild system from China, and their records are better than those of the Chinese, some going back 2000 years (Crane 1926:12), though they have not been searched for information on bead guilds.

Data on the movements of Japanese and Korean beadmakers are scanty. Guilds were more important in Korea than Japan, and the status of beadmakers rose and fell with the status of their products in both countries.

THE MIDDLE EAST

We have yet to trace the movements of early beadmakers. An earlier article (Francis 1990b) documented movements of beadmakers from Early Islamic centers to modern locales. Many of these shifts were under the Ottomans, who encouraged craftsmen to spread their work throughout the empire. I have nothing to add, except that I now think the beadmakers of Herat left Bokhara in 1920 (not 1917) when the Emir, fleeing the Soviets, went to Afghanistan.

Guilds, including glassmakers, may have existed in Old Babylonian times (Oppenheim 1964:79-83), but certainly were formed in Mesopotamia early on (Weisberg 1967). Asia Minor and Greece had guilds (Rostovtzeff 1964:1049-1087). This spread into the Roman Empire, though labor forced by the state may have been more important (Rostovtzeff 1957:384-387; 1964:298).

The Islamic world had fewer social strictures. Although Islamic law regulates commerce, it is to keep it honest. Since the establishment of the Caliphate, there has been no attempt to regulate labor (Levy 1969: 255-256, 298), in accordance with the ideal that each person is directly accountable to Allah. Local structures existed for crafts; Olin (1846:293) reported each quarter of Cairo worked on its own trade, with a "sheik" in charge. To be admitted to a trade, one had to be apprenticed.

The openness of work rules resulted in fruitful cooperation. In Fustat (Old Cairo), Jewish and Muslim glassmakers lived side by side in an area assigned to them and formed partnerships. The great Spanish Rabbi of the 12th century, Maimonides, was asked if the Jews could work with Muslims since their jointly owned tools would be employed on the Sabbath—it was permitted. In these cases, everything was shared, but Friday's profits went to the Jews alone and Saturday's to the Muslims (Goitein 1973:24).

Several early Islamic glassmakers, dealers or scions of these families, became renowned scholars. Cohen (1973) noted a dozen or so learned men with a

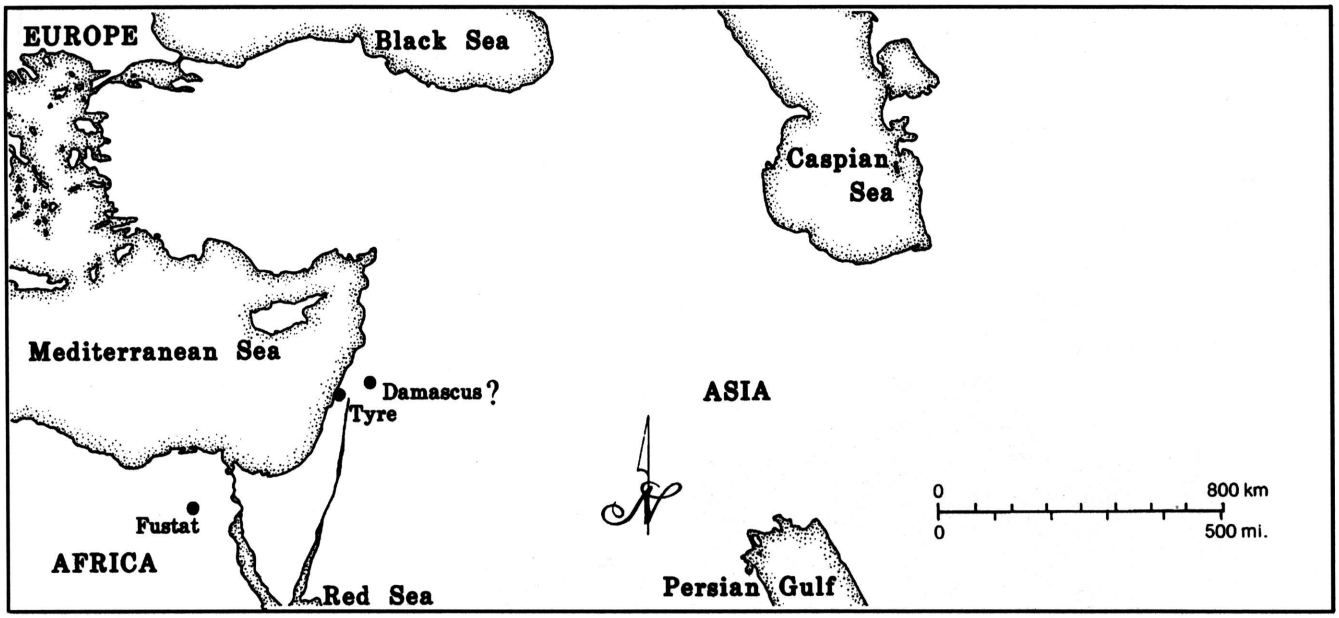

Figure 5. Glass beadmaking centers of the Middle East around A.D. 1000. Fustat and Tyre are confirmed centers; Damascus is a possibility (drawing by D. Kappler).

nisba[5] connected with glass. For example, in the 10th century, Ibrahim ibn Sirri ibn Sahal al-Nahwi al-Zajjaji[6] wrote: "I used to make glass. Later on I started to learn grammar." He became a Khalif's scribe (Cohen 1973:34). In the Muslim world, being a glassmaker carried no stigma, but neither did it impart any particular esteem. The ability to change occupations at will was a strikingly modern aspect of early Islamic society.

The movements of glass beadmakers in the Middle East (*see* Figs. 5-10) happened mostly because of large-scale catastrophes (the Crusades, Mongol

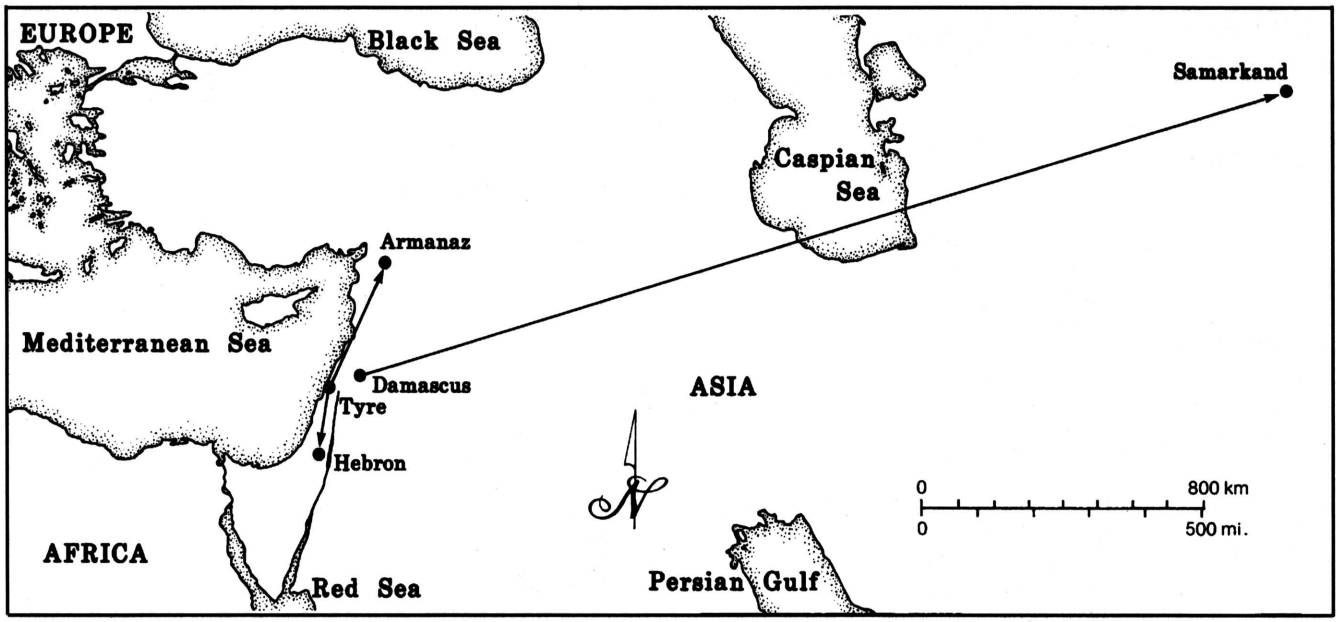

Figure 6. By 1400, the Crusaders had destroyed glassmaking at Fustat (Old Cairo) and Tyre. Tyre glassmakers evidentially went to Hebron (El-Khalil) and Armenaz (in modern Syria). Tamerlain took glassmakers to Samarkand in 1402, and a bead workshop opened there shortly thereafter (drawing by D. Kappler).

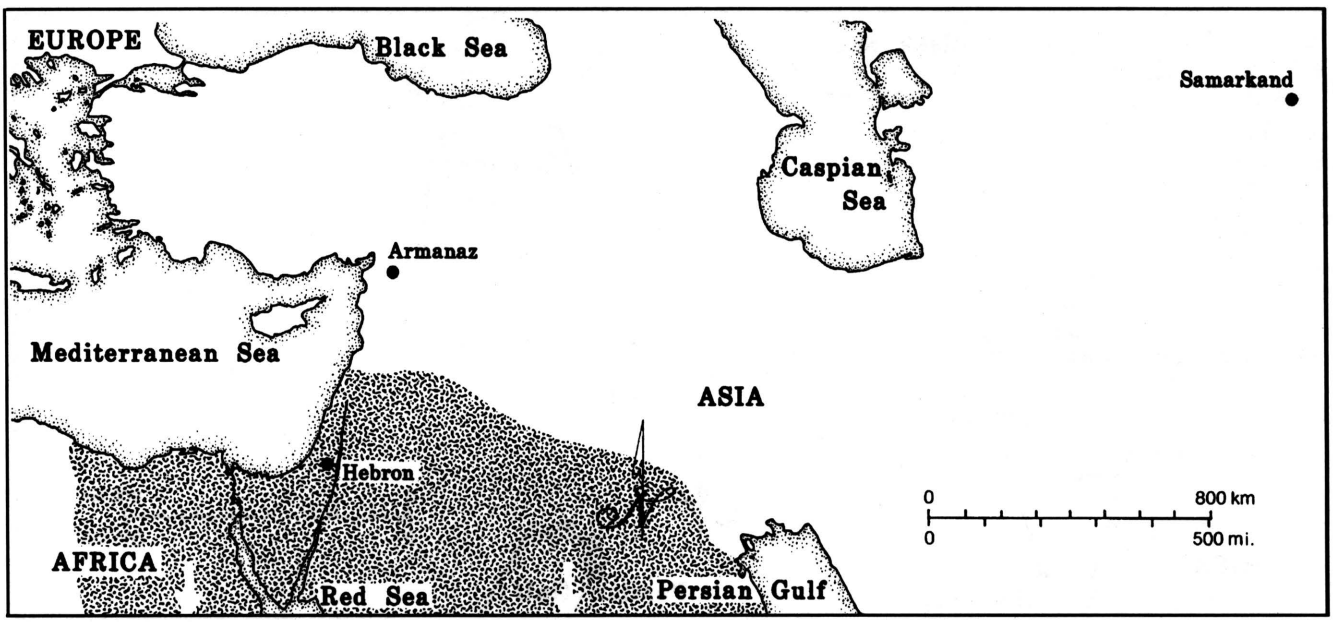

Figure 7. By 1600, Hebron had become the dominant glassmaker and glass beadmaker for the Arab world, and its products penetrated into what are now Sudan and Chad in Africa. The shaded area was supplied by Hebron (drawing by D. Kappler).

invasions, the coming of Communism) and personal events (family feuds [Fig. 11], falling in love [Fig.12]). No guilds were involved. If Kurinsky (1991) is right about the monopoly that Jews once had on glassmaking, Muslim glassmakers were converts. Glassmaking did not confer either high or low status.

AFRICA

I seriously doubt if the beadmakers of Bida, Nigeria, came from Egypt, though they regard themselves as distinct from the other Nupe around them and have a tradition of having moved into Bida.

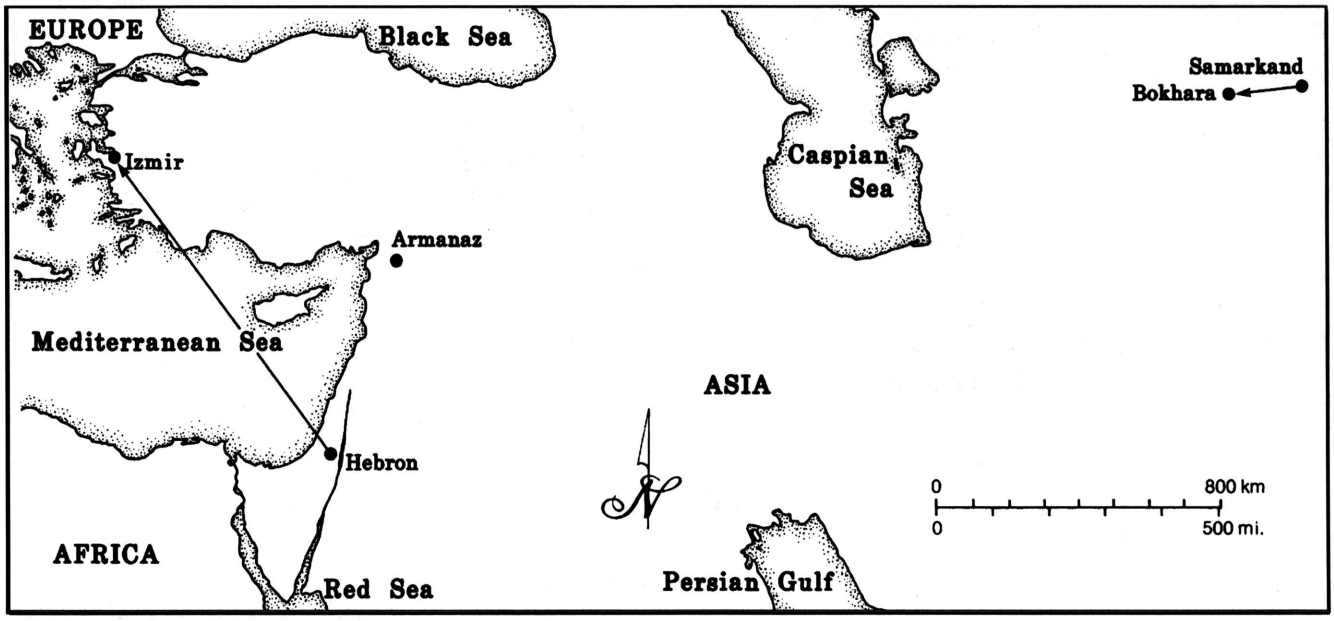

Figure 8. By 1880, some beadmakers had gone from Hebron to Izmir, Turkey. Samarkand was all but abandoned and the beadmakers apparently left for Bokhara (drawing by D. Kappler).

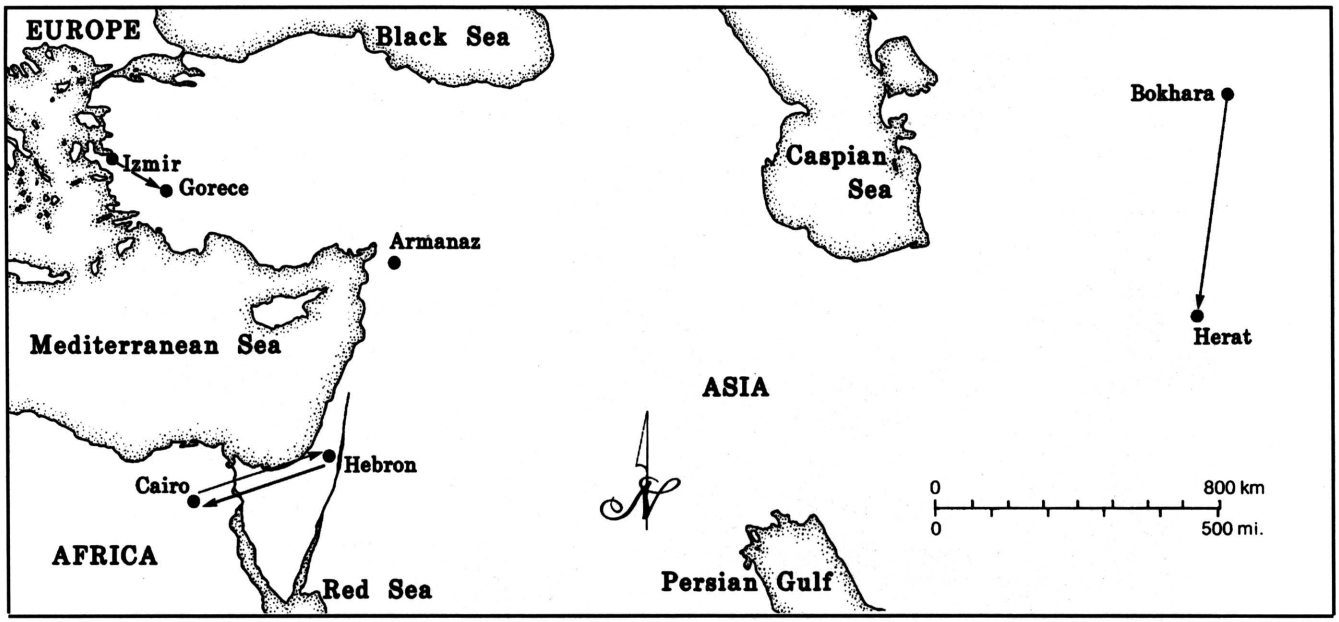

Figure 9. There were more changes by 1930. The Soviet invasion pushed Bokhara beadmakers to Herat. Armenaz stopped making beads. A glassworker from Cairo went to Hebron, married and returned making glass beads like those currently being made in Hebron. The beadmakers of Izmir were forced to go to Gorece by neighbors who complained about smoke and fire from their furnaces (drawing by D. Kappler).

They have a secret guild, the Massaga, and members may not stop working or set up in another town. They receive raw materials from the guild master and deliver finished goods to him. Guild members are considered high in status, traditionally with good incomes. Their privileges allow them to change the

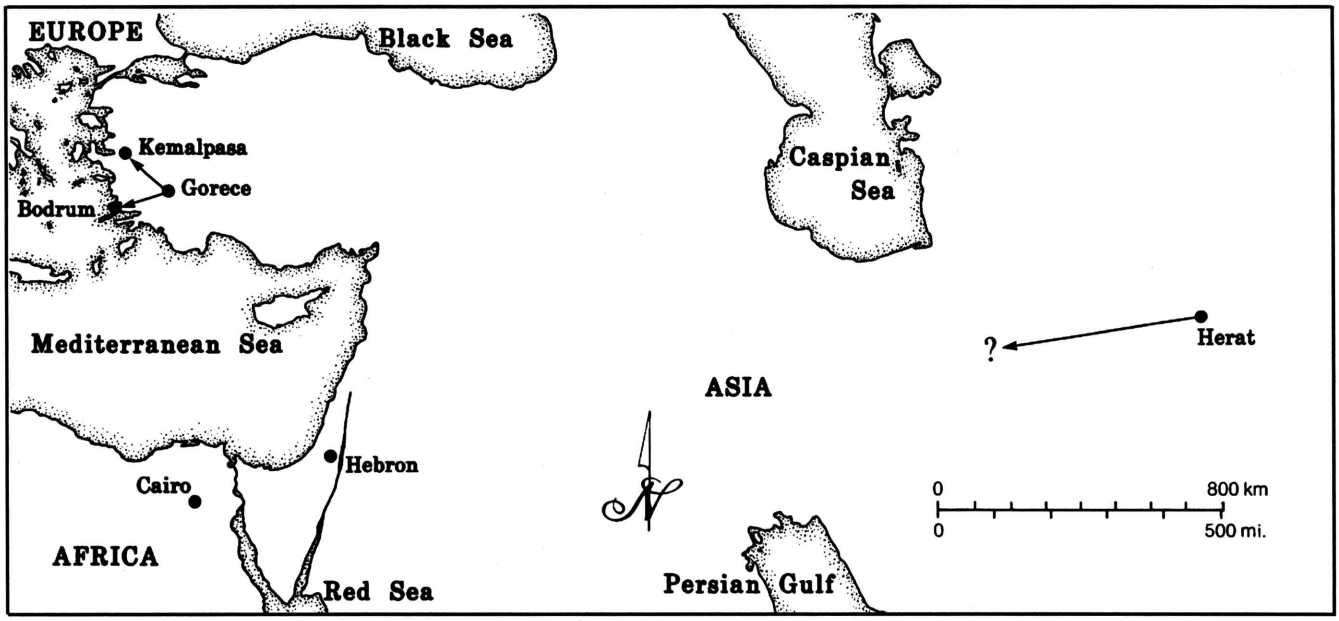

Figure 10. By 1980, there had been another change in bead styles in Hebron. The Afghan War likely drove out the Herat beadmakers, perhaps to Iran. Personal feuds caused a few Gorece beadmakers to go to Kemalpasa and Bodrum (drawing by D. Kappler).

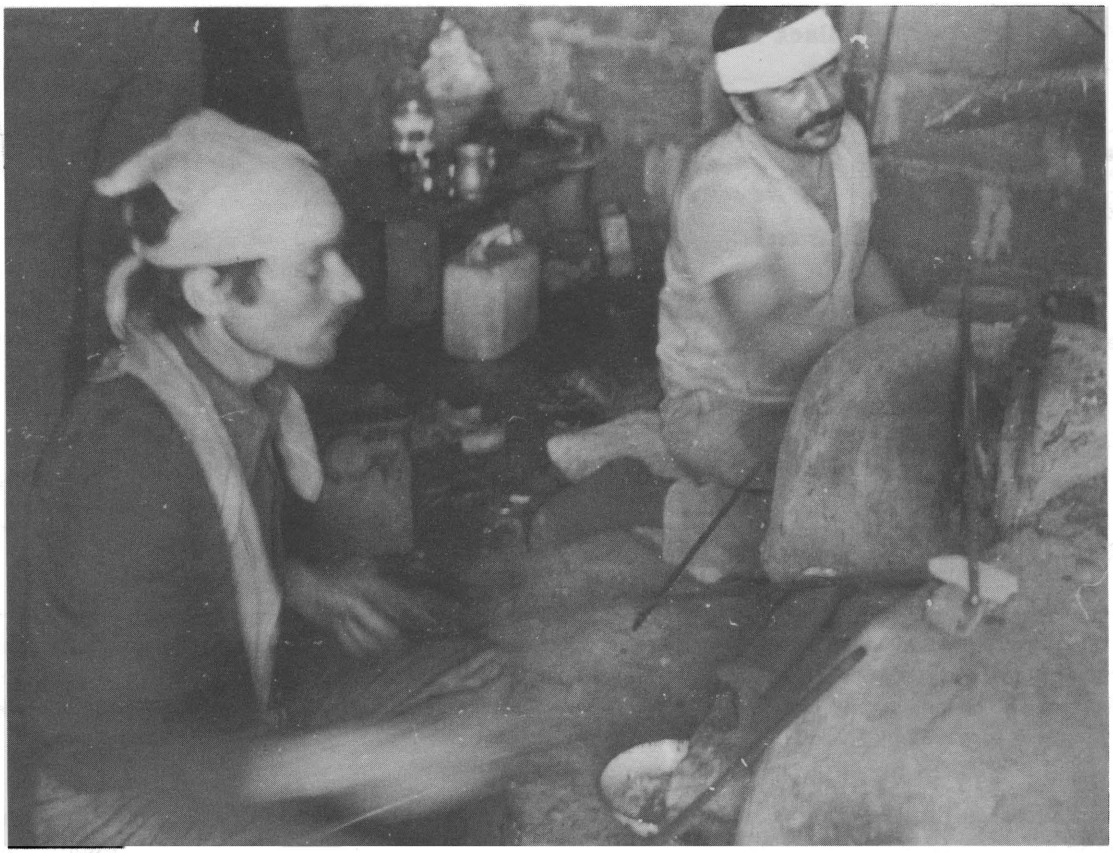

Figure 11. Two beadmakers in Gorece, Turkey (1978). Their ancestors moved from Hebron to Izmir, Turkey, about 1880. The beadmakers were subsequently forced to move to Gorece around 1930, their neighbors in Izmir having asked them to leave because of the smoke and the threat of fire from their furnaces.

shop they work for, and to work overtime in the master's shop and keep what they earn (Frobinius 1913:434-437; Meek 1925:157; Nadel 1951:274).

The Hausa have long been organized into exclusive hereditary guilds; they are bead sellers rather than beadmakers. The Yoruba Lantana beadmakers of Ilorin are known to have come from Old Oyo. Their beads are high in status, but many of them are said to have been slaves (O'Hear 1986).

In Ghana, master powder-glass beadmakers —especially the late Osie Kwame of Dabaa, guru of all current Asanti beadmakers—are honored. However, beadmaking does not impart high status (Fig. 13). Krobo beadmakers are considered by urban Accra dwellers to be dangerous and wild people, as are all Krobo.

Generalizations are hard to make about the varied beadmakers in sub-Saharan Africa. All have some tradition of moving, but beadmaking does not seem to have been a motive. The Nupe of Bida have a guild, the beadmakers of Ilorin teach their children, as do powder-glass beadmakers of Ghana, though in Asanti one man is credited with spreading the craft. High status outside the local community does not seem to go with beadmaking.

EUROPE

The mercantile and craft guilds of medieval Europe may have developed by the 8th century from religious associations created to aid members when in trouble and their families after the member's death, though Roman guilds fulfilled these functions (Rostovtzeff 1957:190). Birenne (1937:140-188) traces the explosive growth of guilds in the 10th century to several factors: wealth generated from export income, the legal authority of the state setting

Figure 12. A glass beadmaker working at a furnace in Cairo (1988). The local bead industry in Fustat (Old Cairo) was wiped out during the Crusades. Beadmaking resumed there only after a member of the Al-Daour family reintroduced it after being apprenticed in Hebron and marrying his master's daughter.

up guilds and the voluntary association of guild members. They initiated new members, fiercely guarded their monopolies, fined members and tried to keep foreign competition out (Young 1913:31). They were chartered by the king, and grew in independence and social, economic and political importance.

In England and northern Germany they were called *gild*, derived from *geld*, a tax or tribute. In southern Germany they were *znuft*. In France they were *metier*, synonymous with craft or trade. The Spanish word is *gremios*: craft, brotherhood or congregation. A modern Italian dictionary lists *corporazone*, *associazione* and *maestranze* (master), but in Venice the common term was *arte*. *Universario* was also used in and outside Italy. Beadmaking guilds were formed wherever the craft was important enough to warrant it, often developing from related guilds.

The guild system reached its apogee in the 12th century, and was still powerful when Europe became beadmaker to the world. In time, guilds became obstructionist and monopolistic, reflecting the mercantile economic system. The prophet of free enterprise, Adam Smith (1937:118-123), railed against the "Policy of Europe" in 1776, especially apprenticeship, branding it a seven-year stint of unpaid labor. It was an unnecessary drain on economic growth; a bright youth could even learn to make clocks in a few weeks.

Smith was writing at the twilight of the system. Signs of trouble were already visible by the 14th century (Birenne 1937:200-219). By the 17th century, guilds were so weak in Holland that bead factories were operated by glassmakers and traders, foreigners and Dutch (Francis 1988: 45-46), in line with the early "capitalistic spirit" that propelled Dutch development. The French Republic abolished guilds and, though restored by Napoleon, they never recovered (Engle 1981:42). Their formal abolition in England in 1853 was long after they were obsolete (Gross 1942:967).

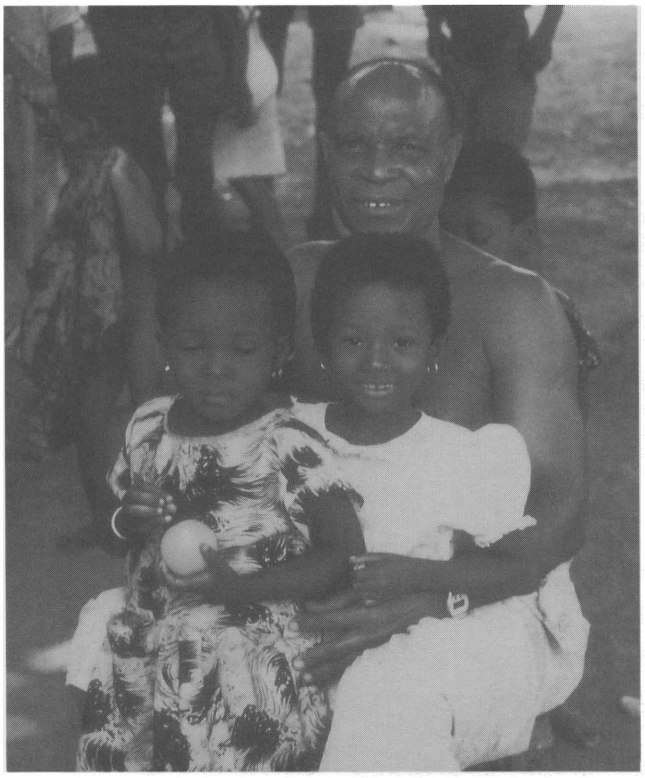

Figure 13. Attah Gyaafi of Asamang, Ghana (1988). Gyaafi has achieved some local status and was even featured on a Ghanaian television program. The status comes not from simply being a beadmaker, but his shrewd business sense; he owns all the powder-glass operation in this village, unlike other villages with many small entrepreneurs.

France

The enameler's guild at Neveres was permitted to make fancy beads in 1565 and 1577. The Paternoteier was organized by 1593, to enable its members to prepare their own raw materials and "paternosters and buttons of enamel and of glass, chains, collars and bracelets... by the fire and furnaces" (Barrelet 1953:91-92).

The French crown offered a guarantee of citizenship, the right to set up shop and other privileges to any glassmaker who settled in France (Scoville 1950:82-83). Bernard Palissy (ca. 1510-1569) declared: "The art of the glassmaker is noble and those who work therein are noble" (Sauzay 1868:47). It is unclear whether these *gentilshommes verriers* were noble because they made glass or despite their occupation. Sauzay (1868:50-52) suggested that since glassmaking was permitted to the nobility, impoverished members took to it. However, Scoville (1950:83) said: "The true reason why French nobles could blow glass and yet did not have the right to engage in any other industry (save agriculture) before 1600 will probably never be known." He cites various other theories, including the role of glass in church windows made "to the glory of God," and the facetious suggestion that it was apt that such gentlemen made bottles and glasses for wine.

French glassmakers, whether high or low born, enjoyed many privileges of the nobility, but it was a mixed blessing. Gentlemen glassmakers had constantly to guard against upstarts without proper pedigrees. Daughters always married glassmakers because their fathers would not have a plebe for a son-in-law and no other noble would have her hand. They struggled hard to keep their place in society. An 18th-century parish priest of Languedoc ended his daily prayers with the petition: "God maintain the noble glassmakers in their present poverty, for, if they become rich, they will become insufferable" (Scoville (1950: 84-87).

French glassmakers and glass beadmakers were free to move, and outside glassmakers were always welcomed. The relationship with the king was their political association. As for their status, despite recognition from the crown, they had a hard time maintaining their position in the eyes of others. This is a false high status, defended by the glassmakers, but not recognized by their contemporaries.

Italy (Venice)

Despite many prohibitions, Venetians spread their craft far and wide. Sometimes they were harshly punished by their government for doing so; at other times they came and went with impunity. They were often invited.

In 1486, Venetians helped start a rosary factory in Germany (Jackson 1927). During the 16th and 17th centuries, beadmaking was spread to England and significantly expanded in Holland by Venetians. The most peripatetic beadmaker was Zuan Antionio Miotti of the famed family. He managed a factory in Middelburg, Holland, in 1606, owning it by 1610. He went to England in 1619, and to Brussels and Namur in Belgium about 1622. In the mid 18th century, Venetian bead- and glassmakers established new industries or trained workers in Florence, Rome,

Bologna, Naples, Torino, Pisa, Loreto, Marseilles, Innsbruck, Graz, Amsterdam, Spain and Portugal (Francis 1988:44-45, 55).

More recently, some migrated to Venezuela (named after Venice) and settled near Caracas; beadmaking there has since ceased (R. Corbin 1989: pers. comm.). The full relationship between the southern French and Venetian industries is still to be learned, but at least some Venetians moved to the Lyon area to make beads.

It is not known when the first glassmaker's guild was organized in Venice, but a guild existed there at least by 1224 (Fig. 14). There had long been guilds for beadmakers in bone, ivory and wood (for rosaries, especially for the Holy Land). The Cristalleri guild was founded in 1284, to work rock crystal, and a branch, Arte Minuta, made beads. From the beginning, they were wary of glass imitations, and their earliest rules forbade the making of glass gems and lenses (Francis 1988:12-13).

In 1308, glass beadmakers were organized into the Arte de' Margariteri and given status equal to beadmakers in bone, ivory and wood. In 1486, another glass beadmaker's guild was founded, the Paternostreri, whose rules describe chevron beads, *oldani* (whatever they were), canes and other "sorts of work newly discovered" (Gasparetto 1958:184; Morazzoni 1953:22).

On 17 February 1510, the Capitolo dell'Arte, the central ruling body of all guilds, backed the glass beadmakers, "to keep what was newly discovered twenty years ago... an invention made by our glassmakers of Murano of pure canes of common cristallo and colors of diverse sorts." So emphatic was their endorsement that Gasparetto (1958:186), dean of Venetian historians, proclaimed: "Rock crystal dies and glass beads are born."

A third guild, the Arte de' Perleri e de' Suppialume, was founded in 1528, to make wound beads "at the lamp" (*suppialume* refers to blowing into the flame of an oil lamp to increase its heat). The Paternostreri opposed them as they made a similar product. Not until 1647 did the Suppialume achieve equal status with the Margariteri and Paternostreri, sharing a technical school, a patron saint and rules, but maintaining separate governing councils and banks. In time, the Paternostreri's fears were borne out; the Suppialume supplanted the old guild (Francis 1988:13).

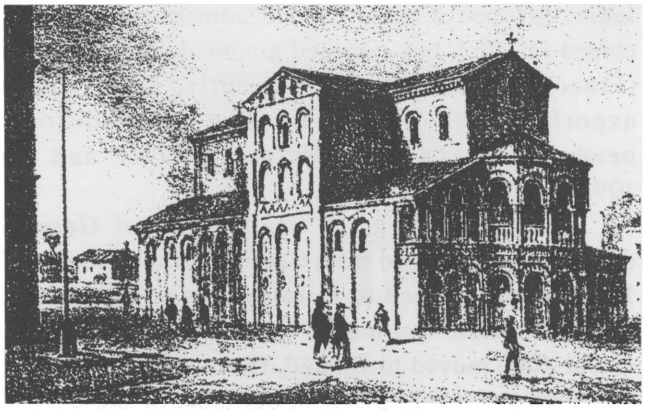

Figure 14. The 12th-century Basilica of Saints Mary and Donato on the island of Murano (Venice). Inside is a chapel dedicated to St. Anthony, the patron saint of the beadmakers' guilds (Zanetti 1869: frontispiece).

Early Venetian glass- and beadmakers held high status. In 1376, the Senate permitted a nobleman marrying a glassmaker's daughter to pass his titles to their children; this was not allowed when marrying other commoners. Glassmakers could become noblemen upon payment (Francis 1988:12). But later industrial workers were not as well off. In the late 19th century, the demand for beaded dresses created high wages and many Venetians quit their former jobs to make "seed" beads. But when demand dropped, they were unceremoniously laid off (*Scientific American* 1883).

Despite many prohibitions, Venetian glass- and beadmakers often emigrated, tempted by rival countries which wanted a share in the bead industry. Guilds long played a key role in Venetian bead history, and reflected the manufacturing processes of the beads. Status was high for masters but, as the industry developed, the status of ordinary workers equaled that of other industrial workers in Europe and America.

Bohemia

The Bohemians also spread beadmaking. In 1895, Daniel Swarovski moved from the Jablonec (Gablonz) region to Wattens, Austria, to protect his inventions for faceting beads; a billion-dollar company grew from these humble beginnings (Francis 1993). In 1940, glassmakers and beadmakers went to Benaras,

India, to open a glass- and beadmaking school. It closed in 1962, but spawned a considerable industry (Francis 1982c:11). More recently, Czechs have exported technology to Boshan, the traditional beadmaking center of China (Sprague and An 1990:11).

After World War II, beadmakers of German descent were expelled from Czechoslovakia (Jargstorf 1993:14) and moved to German-speaking countries. One beadmaker settled in Krimsmunster, Austria. About 4000 moved to Gmünd, Germany. Others went to Warmensteinach, Bavaria, but most of these—and probably most of those in Gmünd—ended up near Kaufbeuren in a suburb called Neu Gablonz (New Jablonec) (Francis 1988:37-38). There is also a company called Neu Gablonez in Vienna, Austria.

In Bohemia, glass guilds were organized at Chribská in 1661, the Sloup estate in 1683, and Kamenichy Senov in 1694. The garnet-cutting guild of Turnov sent Wenceslas and Franz Fiser to spy out glassmaking in Venice which was producing cheap imitations of garnets. They discovered a gold-lead ruby glass, and soon many garnet cutters were making false garnets. The work was hidden from the prying eyes of neighboring villages, and not until 1792 did the guild rules make a distinction between "hard work" or stone cutting and "soft work" or glass grinding. From this backhanded way, the great bead industry of Jablonec nad Nisou (Gablonz) developed (Francis 1988:31-32).

In 17th-century Bohemia, beadmaking was a privilege open only to free peasants. The glass melter signaled his high status by being allowed to change his apron after every batch (Francis 1988:30-33); one wonders if his wife was proud of him on wash day? There was a change during the industrial period, at least as interpreted by pre-revolutionary Czech historians. The records of the Riedl Glass Works of Nova Louka show "the bad social standing of the employed glassworkers as well as... their material dependence on the master of the glass works" (Urban 1966:176). Recent investigations have disclosed that many Czech beads were made by forced prison labor under the Communists (Henry n.d.).

Glassmakers and beadmakers in Bohemia moved to many locations. Movements outside Bohemia were voluntary (Austria), invited (India and China) and forced (Germany and Austria). Guilds were once important but, in time, capitalists and Communists became the keys to the history of the industry. The once-high status of beadmakers declined under both dispensations.

SPAIN AND MEXICO

Spain, the most autocratic country in Europe, exercised tight control over *gremios* (guilds) for a long time. I have been unable to learn if there was a beadmaking guild in Spain, though the importance of rosaries would suggest it. The guild system was exported to the Americas with devastating consequences, as native talent withered (only a Spaniard could be a master or officer) and the conqueror's tastes alone were satisfied (Francis 1987a, b). The classical case in Mexico is the silversmith's guild (Anderson 1941), tightly regulated and allowing no deviations.

In Mexico, guild restrictions were not lifted until after the Revolution of 1910. Only then could people do whatever they wanted. With the exception of amber working in Simojovel, Chiapas, all Mexican bead industries are *sui generis*, using *ad hoc* methods to make beads from clay, stone, shell, coral and other materials. Visiting these workshops is an interesting experience because beads are made by methods wholly invented by the living master or his/her parent (Fig. 15).

The paucity of documentation about beadmaking in Spain and pre-conquest Mexico gives us only post-conquest Mexico to consider. There, the guild system stifled initiative and beadmaking did not arise until after the system was abolished. Today there is no particular status attached to beadmaking in Mexico; it is just another way of making a living.

CONCLUSIONS

This condensed global survey of beadmakers is offered to stimulate debate and encourage more research on the topic. The survey cannot be comprehensive because the necessary data are not at hand. However, if we are to understand beads, we must understand the people behind them, including beadmakers. A review of the topics discussed here may guide further inquiry.

Figure 15. A young man drills a stone bead in Iguala, Mexico (1985). After the guild system was abolished following the 1910 Revolution, anyone who wanted to make a bead could. Those who chose to do so had to figure out how to do it. This bead is being drilled using a most unorthodox method involving a bent umbrella rib and commercial "emery" slurry.

Beadmakers (especially those working with glass) moved around a lot, though they may have stayed in one location for extended periods. Motives for movements varied. Some were enticed, a few traveled for personal reasons, but most were forced to move. These shifts were due to major economic, political and social changes going on around the beadmakers, events such as the Crusades, the Partition of India, changes in Chinese dynasties, the Mongol invasions and the coming of Communism. Such large-scale social changes affected not only beadmakers, but many other people as well. Two lessons may be drawn from this. One is that the history of beadmaking is often a microcosm of the history of a given society. The other is that the story of beadmaking must be understood in light of the larger history of humanity.

Historically, guilds were the fundamental instrument for transmitting beadmaking skills, and the beadmakers' principal sociopolitical organization. The history of many beadmaking groups cannot be understood without taking guilds into account, for better or worse. This is true for nearly all the places surveyed, the exceptions being North India (where caste takes the place of guilds), Japan, the Middle East and some sub-Saharan areas. This suggests a rich source of further data about beadmakers and beadmaking in the extant records of guilds in many parts of the world.

Schenk's (1963) hypothesis about the decline in the status of beadmakers as the industry grows and becomes more mechanized fits the West European experience best. Indian glass beadmakers were hampered by the low esteem in which glass was held due to its inferiority to gems. French glassmakers once treasured high status, but it was artificially inflated. Chinese beadmakers may have been honored in the past, while Japanese beadmaker's status fluctuated. Beadmaking does not seem to confer any particular status in the Middle East, modern Mexico or sub-Saharan Africa aside from the honor individual masters hold within their own community.

ENDNOTES

1. Small-scale beadmaking consists of a beadmaker working at or near home, assisted by his family and perhaps a few other hands. Industrial beadmaking began with the ability to make many beads at one time, with a clear division of labor among a large number of workers. The production of drawn beads in Venice and molded beads in Bohemia are examples of this, even though (as in the case of Venice) it preceded (or heralded) the Industrial Revolution. Indo-Pacific beadmaking in Asia may also be considered at this level. Mechanical beadmaking began with the invention of the Prosser process for producing buttons and beads from powdered components. The Danner glass-tube-drawing machine, adapted for beads by the Venetians probably in the late 1920s, was another such advance. No successful bead-winding machine has yet been introduced, but mechanization and computerization continue for drawn bead manufacture, especially in Japan.
2. I know some readers will think this unfair or find it annoying, but I am always ready to provide references and discuss the development of arguments with any interested party.
3. A *pi* (*bi* in the old transliteration system) is a flat round disc with a hole one third the diameter of the object. Commonly of jade, they served as burial offerings, and small ones were sometimes worn.
4. This is something that should be kept in mind by those using beads with such attributions for comparative purposes or to determine the chemical composition of beads from specific manufacturing centers.
5. A *nisba* was originally a designation of origin or occupation, later evolving into a surname.
6. *Nahwi* is grammar and *zajj* is glass.

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BOOK REVIEWS

Perlen aus Gablonz: Historismus, Jugendstil/ Beads from Gablonz: Historicism, Art Nouveau.

Waltraud Neuwirth. Selbstverlag Dr. Waltraud Neuwirth, P.O. Box 11, A-1194, Vienna, Austria. 1994. 560 pp., 189 b&w figs., 180 color figs., index of names. ATS 950 (cloth) + ATS 85 surface postage.

This hefty volume contains a wealth of information about the beads produced by the "Gablonz industry." That is, it not only includes those actually produced in and around the former city of Gablonz (presently called Jablonec nad Nisou) in what is now the Czech Republic, but also the products of the beadmakers who established themselves in Austria and Germany when they were forced to leave Czechoslovakia in the wake of World War II. The material contained in the volume, presented in the form of a source book, is based on collections of sample cards and other materials at the Technical Museum for Art and Industry, Vienna, and the Gablonz Archive and Museum, Neugablonz Industry and Jewelry Museum, Kaufbeuren-Neugablonz, Germany, combined with information obtained from the Austrian Patent Office in Vienna and other European sources.

To be accessible to researchers worldwide, much of the text is in both German and English. As is usually the case in the translation of any document, especially one that contains specialized terminology, there are problematic terms and minor translation errors scattered throughout the English text. For example, *Ehrenmünze* (p. 11) is translated as "Coin of Honor" instead of "medal" (p. 23), and *Löthrohrs* (p. 11) becomes a "soldering tube" instead of a "blowpipe" (p. 23). Also one questions the use of "spinning factories" (p. 23) to describe the establishments where beads were produced at the lamp. Notwithstanding, Ann Dubsky, the translator, has done a very good job indeed and her terminology will serve as the basis for a refined German/English lexicon of bead terminology as more and more German and English-speaking researchers interact.

Following a brief introduction to the Gablonz industry, the author jumps straight into the troublesome world of bead nomenclature and categorization/classification. There are so many different varieties and so many different names—some of which changed meaning through time—that it is sometimes difficult to determine what a specific type of bead listed in an old catalogue or document looked like; e.g., what was the form of a "scarred" (*genarbte*) bead (p. 10, 22)? Fortunately, there is enough data available to help answer many other such questions.

The next chapter deals with bead colors, and interior and exterior coatings. Techniques covered include painting, coloring on the outside (glazing and staining), lining with color, exterior and interior gilding (gold and silver), coating (an interior reflective layer), platinizing (a platinum-like coating), iridizing, and lustering (a pearly surface). There is also a useful list of 67 German color names and related terms with their English equivalents.

A look at the confusing subject of bead sizing systems follows. This chapter will be of especial interest to anyone who has ever tried to determine historical bead sizes for specimens found in archaeological contexts or on historical beadwork, as well as any beadworker who has ever wondered what size designations such as "00" and "12/0" really mean. The author surveys the sizing systems used by several Bohemian manufacturers, pointing out that size designations not only varied from manufacturer to manufacturer but also from one bead type to another. Accompanying illustrations depict measuring devices used in the bead industry and hand-held bead counters, as well as sample cards which show the different sizes available for specific bead types. Tacked onto the end of this chapter is one that provides examples of 19th-century Venetian and Bohemian bead prices.

The next chapter explains the difference between "glass" and "composition" (a glass containing lead and easily fusible substances that was much used in the Gablonz industry). Dr. Neuwirth then presents a description of the drawing process for the production

of rods (solid), canes (hollow) and tubes (either) both "at the bench" and "in the gallery." At one point the latter included the use of bicycles on tracks and electrically drawn wagons to draw out the tubes! Glass overlays to produce multilayered beads, the application of stripes, and filigree glass are also dealt with. Subsequent sections discuss satin or Atlas beads, and imitation jet, a specialty of the Bohemian bead industry.

The chapter on "Drawn Beads, Chopped Beads" describes the two principal techniques used to segment drawn glass canes into bead lengths: chopping, as practiced by the Venetians, and breaking, as practiced by the Bohemians until they began using the much more efficient chopping machines. The latter helped to revitalize the lagging Bohemian bead industry as it drastically increased productivity. There is also a section on embroidery and bugle beads from Venice and Murano which seems a bit out of place, followed by information concerning the rounding, stringing, cutting/faceting and polishing of drawn beads (through some oversight the English section on polishing appears on p. 242 instead of following the text on p. 213). Various schematic drawings from the Austrian Patent Office depict the machines that were used to accomplish the different tasks.

"Molded Beads" are the next to be dealt with. This heading subsumes beads made by "molding" (*Quetschen*), "squeezing" (*Drücken*) and "pressing" (*Pressen*). The author believes that the first two involved the use of simple molds and tools in a shop, while the latter involved machinery, presumably in a factory. This is not a totally satisfactory explanation and it should be added that the first two terms seem to equate to what I have termed "mold-pressing" and involves the use of molten glass, while "pressing" is what North American researchers have generally termed "Prosser molding" and involves the use of pulverized components in a dry or slightly moistened state. This chapter is surprisingly short considering that "molded beads" were the backbone of the Gablonz bead industry. However, the brevity of text is more than made up for by the abundant illustrations of the relevant tools and machinery, as well as examples of molded beads in various stages of the production process.

Wound beads, the topic of the next chapter, were also produced in Gablonz but never achieved the prominence they did in Venice. Two production techniques are outlined: winding at the lamp and winding from the pot. While the first method is relatively well known, the second is not and the information is most welcome.

The fourth production technique to be discussed is blowing, free-blown and mold-blown beads being discussed. The text is supplemented by numerous illustrations of blown beads, as well as the tools, molds and machinery that were required to produce them.

The final chapter to be translated into English deals with a substantial collection of bead sample cards donated to the Technical Museum in Vienna in 1913 by two Gablonz beadmaking concerns, Redlhammer and Mahla. The Redlhammer Brothers were manufacturers of "porcelain beads and buttons," while the Mahla Brothers were simply exporters. Accompanied by a brief history of the two companies, the sample cards—61 of which are illustrated in full-color photographs—provide an excellent overview of the beads produced in Gablonz around the turn of the century.

The last third of the book is devoted to "Contemporary Sources" in German that deal with various aspects of the Gablonz industry. Included are excerpts from sundry documents of the 1854-1908 period, two "address books" of Gablonz-industry beadmakers and exporters from 1892 and 1900, respectively, and several technical papers concerning beadmaking between 1868 and 1925. This section also contains numerous engravings of sundry beaded items—from jewelry to garments to household articles—that appeared in *Bazar* magazine during the second half of the 19th century. These well illustrate the wide variety of items that incorporated Gablonz beads in their fabric.

Waltraud Neuwirth's book is a most welcome fount of knowledge on the Gablonz bead industry. There is a *lot* of information crammed between its two covers that is not readily available elsewhere. The abundant illustrations, half in color and of excellent quality, greatly enhance the text. While the price is relatively high (about $90 U.S.), it will be well worth it to anyone seriously interested in this branch of the European bead industry.

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Speaking with Beads: Zulu Arts from Southern Africa.

Jean Morris, with text by Eleanor Preston-Whyte. Thames and Hudson, 500 Fifth Avenue, New York, NY 10110. 1994. 96 pp., 1 b&w fig., 147 color figs. $19.95 (paper).

This book is built around photographs taken by Jean Morris mainly in the Msinga and Nongoma areas of KwaZulu/Natal. Some of the photos date back to the mid-1970s, while the rest were taken between 1989 and 1991. The bulk of the text that accompanies the photos has been provided by Eleanor Preston-Whyte with a contribution by Geraldine Morcom who writes about the beadwork used by the members of the Nazareth Baptist Church, more commonly known as the Shembe.

The photographs are excellent and provide a good record of both the continuities and changes in beadwork styles in these areas over the past few decades. The text, however, sometimes does not come up to the same level.

Chapter 1, "Voices from the Past," provides a concise, mostly accurate review of the history of bead trade and the use of beads in the early days of the Zulu Kingdom. Some errors in detail do occur (e.g., Dingiswayo was not Shaka's uncle) but do not detract seriously from the overall story. It is unfortunate, however, that all of the beadwork chosen to illustrate this chapter comes from only one museum. As is evident from the photos, the Campbell Collections of the University of Natal, Durban, contain some visually stunning examples of early beadwork, but these early-period holdings are not well documented. An example of the difficulties that this presents can be seen in most of the captions which claim that pieces are from the Greytown area ca. 1890-1900. These objects come from a collection which was assembled by Douglas Giles, a magistrate who served in various areas of Natal including Umzinto, Port Shepstone, the Bergville area, Bulwer and Greytown from 1884 to 1923. He then retired near Greytown where he died in 1938. The collection was donated to the museum by his widow in 1949. No specific information accompanied the collection so it can only be assumed that it was collected roughly between 1880 and 1920, and, although it is likely that some of it came from the region he served, there is no way to identify which pieces these are. In any case, they were certainly not all from the Greytown area. Furthermore, some of the captions are not consistent with the museum's records: the three belts on page 12 are not from the Giles collection and have no information to accompany them so should not be attributed to the Greytown area.

The statement in page 11's caption that "the colour combination of blue next to white identifies the item as originating in the Greytown area, 1890-1900" is curious and one would like to know the source of this information. In any case, so many different groups use blue and white together that it can hardly be counted on as a marker for any specific area. Similarly the statement on page 15 identifying neck ornaments as coming from Southern Natal ends by stating that "the beads are typically larger than those commonly used in Northern Zululand at the time." There are too many exceptions to this broad statement for it to be of much use to researchers. Another strange choice is the trade bead sample card reproduced on page 17 which depicts beads which were seldom, if ever, used by the Zulu. The card itself states that most of them are called Basuto beads; i.e., used by the Sotho.

Chapters 2 and 3 examine the information that beads, beadwork pieces and entire outfits can convey to the observer capable of "reading" them. Most of the information is useful and accurate but, unfortunately, the attempt to use the names of Msinga conventions or styles, which were brought to light and explained by Frank Jolles, is largely unsuccessful. Of 14 attempts to apply the names of these styles to beadwork pieces, only four are accurate (Frank Jolles: pers. comm.). Other errors which could mislead researchers include using names which are not accurate, at least for the area from which the piece comes: on page 46 the necklace called *ngqi* is actually called *amapasi* by the people of Msinga, and on page 55 *ucu* is used when the correct name should be *isibebe* or another local variation (an *ucu* is a single string of beads, usually very long).

Chapter 4 introduces the reader to the Nazareth Baptist or Shembe Church. It describes the origins and development of this Zulu church and discusses the dress and, particularly, the beadwork made and used by the members. Chapter 5 discusses the production of beadwork for the fashion and beadwork market,

while Chapter 6 describes the *umhlanga* or Reed Dance which brings Zulus together dressed in traditional finery to watch the young women of the Zulu nation dance. As the authors point out, this annual festival has also become an important political forum for the king.

Speaking with Beads will be valued especially for its wonderful photographs. Serious researchers will also benefit a great deal from the detail, such as the place and date, supplied with the field photos. However, the reader searching for accurate, detailed information could be misled by the captions in Chapter 1, and will certainly be confused by the misuse of terms describing "styles" in Msinga beadwork. It is a great pity that Jean Morris passed away shortly before the release of this book, but it will stand as a testimony to her skill and artistry as a photographer and observer of the Zulu people.

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Collectible Beads: A Universal Aesthetic.

Robert K. Liu. Ornament, Inc., P.O. Box 2349, San Marcos, CA 92079-9806. 1995. 256 pp., 309 color figs., glossary, list of bead organizations, index. $49.95 (cloth) + $6.55 domestic and $9.50 foreign postage.

Spurred by the ever-increasing interest in bead collecting worldwide, Robert Liu set out to provide the bead aficionado with reliable information on collectible beads. He thus chose "to include only beads and some pendants that were available on the marketplace within the past two decades." Also, as this book is aimed at the collector, the less interesting and more inexpensive beads produced primarily during the past two decades were not considered either. While these restrictions definitely limit the subject matter, the diversity of the beads that are covered is quite impressive, nonetheless. Surprisingly, there is no price guide, seemingly de rigueur for a book aimed at collectors. However, Liu rightly points out that such would essentially be a waste of time as prices vary so greatly from one dealer and one place to another.

Rather than be pedantic, the author has kept the text succinct, letting the more than 300 color photographs and their captions convey much of the information. And the illustrations are superb, as one would expect of a photographer the caliber of Robert Liu. All of us who publish on beads have much to learn from his work.

To put beads in their proper perspective — as items long sought and used by peoples all around the world—Robert chose to approach the subject largely from a cultural-geographical perspective. Thus, the first part of the book deals with six relatively distinct regions: Africa; China and Taiwan; Japan, India, Himalayan Countries, Thailand, Philippines, and Indonesia; Middle East and North Africa; Precolumbian Americas; and The Americas and Europe.

While dealing with the entire continent excluding the area that encompassed ancient Egypt, the chapter on Africa emphasizes the west coast from Morocco to Nigeria. This part of the world has been a principal source of collector beads since at least the late 1960s, when boxcar loads of millefiori and other European-made beads began to flood into the United States from that continent. Then some of the beads began to be bought back by Africans, while others found their way to markets in the Near and Far East. After discussing the complexities of the African bead trade, Robert takes the reader on a tour of the various beads that this continent has made available to the collector. Both local and imported manufactures are included.

China and Taiwan, the subject of chapter 3, are collectively the second most prolific source of collector beads in the world. Following resumption of trade with the People's Republic of China in the early 1970s, the subsequent influx of Chinese beads and jewelry was one of the largest to hit the United States. Among the most intricate and beautiful of the imports are the early glass beads which, unfortunately, have been increasingly faked in recent years. Other imports to be discussed are beads composed of various natural organic and inorganic materials, as well as synthetic inorganics, especially glass.

The next chapter takes in other selected Asian countries, including Korea and Japan, India and the Himalayan countries, Thailand, The Philippines, Indonesia, and Malaysia. The great diversity of beads, both old and new, to be found here makes this

region an important one to connoisseur bead collectors. It is also the source of strikingly beautiful necklaces and other beaded adornments, such as those of the Naga of India and Akha of Thailand. Here, as elsewhere, most of the older beads have been looted from archaeological sites with the resultant wholesale destruction of truly incredible amounts of irreplaceable scientific data. Even worse, the worldwide craving for ancient beads has turned some individuals to the ghoulish practice of unearthing recent interments which were buried with heirloom beads. It is, therefore, the reviewer's fervent hope that the reader will be content to revel in the beads illustrated in this book and not set out in eager pursuit of actual specimens.

Moving on to the Middle East and North Africa, Liu points out that the former region is the prime source of ancient glass beads, political unrest and warfare facilitating the wholesale looting of archaeological sites in several countries, most notably Lebanon, Iran and Afghanistan. For this reason, some of the largest collections of ancient beads are in the possession of Middle Eastern antiquities dealers. The beads are splendid (the Phoenician mask pendants and Roman face beads that are illustrated rank among the finest examples) but generally lack any provenience data, rendering them practically useless as sources of information about past cultures.

The beads of the Precolumbian Americas are not generally popular with collectors. Shell beads are plentiful but have usually lost their color because of leaching. Jadeite, gold and quartz-family beads are at the other end of the popularity spectrum, and one can only admire the skill and tenacity of the artisans who laboriously fashioned beads from quartz crystal and carnelian with little more than stone tools, reeds or sticks and sand.

The cultural-geographical survey of the world's collectible beads ends with an examination of those of The Americas and Europe. Few ancient European beads are available to collectors, and most non-imported European beads on the market are of 19th- or 20th-century origin though earlier examples do occasionally pop up in antique shops in places like Amsterdam. The situation in North America is quite similar with only a few strands of Indian trade beads coming onto the market annually. Peru has also been a source of Colonial-period beads but, again, the quantities involved have not been sizeable.

Liu then enters the classy world of contemporary mixed-media necklaces and contemporary beads, discussing various aspects of their production and marketing, and showcasing the works of some of the world's most talented artisans. The subject of the next chapter, Fakes and Simulations, will be of especial interest to collectors as the burgeoning quest for beads worldwide has resulted in a corresponding increase in the production of numerous, well-made replicas of the scarcer beads. The final chapter deals with the process of Collecting Beads, revealing how to acquire, arrange, display, record and research a bead collection.

Robert Liu has produced a handsome, well-written volume that well covers the subject matter. *Collectible Beads* is beautifully designed and the breathtaking illustrations alone are worth the asking price. A slight impediment to the reader who wishes to check a particular reference cited in text concerns the fact that chapter headings do not include the chapter number, forcing the reader to consult the table of contents to find the appropriate number before delving into the References and Bibliography section. Also, a number of typos and errors of fact have crept into the text here and there. One of the prevalent problems concerns the use of the term "Islamic period." For Muslims, it still is the Islamic period; what should have been used is "Early Islamic period." There also seems to have been a problem with the conversion of some dates from centuries to years. For example, on page 102, a bead attributed to the 2nd to 6th century A.D. by Peter Francis is converted to 200-600 A.D., rather than 100-600 A.D. Similarly, a faience bead Lois Dubin believes to be from the 5th or 4th century B.C. becomes "400 to 500 B.C." (p. 110), rather than 500-300 B.C.

Novice collectors/researchers will find this book very useful, especially since there is an extensive list of further readings in the References and Bibliography section. It may not appeal as much to those who already possess a fairly broad knowledge of beads and their status in the world bead market, or who want in-depth information on specific types or regions. But then, this is not the intended audience.

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Perles d'Afrique.

Marie-Françoise Delarozière. Éditions Édisud, La Calade, RN 7, 13090 Aix-en-Provence, France. 1994. 240 pp., 13 b&w figs., 150 color figs., bibliography, index. 370 French Francs (cloth).

In her new book, *Perles d'Afrique*, Marie-Françoise Delarozière fills the reader with wonder with her descriptions of rare and mysterious beads from the Islamic Republic of Mauritania, as well as the more easily recognized beads of European or local manufacture that are found in Africa. Different materials used in Mauritania during the neolithic period—such as shell, ostrich egg shells, fish vertebrae, pottery and various types of stone—are well described. Glass and metal beads of the medieval period are also well documented. Among the more remarkable of the stone beads of these two periods in Mauritania are those of greenish amazonite and blue scorzalite, an extremely rare material. Glass beads are found in great numbers at medieval sites, having been brought there by trans-Saharan caravans. It is probable that some of these beads were locally reshaped to suit the needs of the indigenous population. Ancient beads such as these, found in the sands of the Sahara, are highly collectable, having intrigued researchers and collectors alike throughout the world.

The author also discusses and illustrates prehistoric quartz and carnelian beads from Mali and Niger, terra-cotta bead necklaces from Mali and metal beads from Burkina Faso, Cameroon, Ghana, Nigeria and Côte d'Ivoire. Kenyan beads made of iron and aluminum, and various gold and silver beads are covered as well. As is the case with all the photos in this book, those of beaded objects from Guinea, Togo, Nigeria and Cameroon are superb. The last section of *Perles d'Afrique* offers wonderfully descriptive and romantic stories about beads and bead use in Africa, as told to the author by friends and acquaintances.

Of particular interest is a description of the neolithic carnelian industry that existed in the Oued Tilemsi valley in Mali. Numerous carnelian beadmaking sites have been discovered by Jean and Michel Gaussen to the east and northeast of Gao. The raw material came from a mountainous region called Adrar des Iforas which straddles southern Algeria and Mali. Techniques used to form the stones into beads are described and illustrated on pages 26-32.

Another interesting passage in the book describes two beads found in Côte d'Ivoire, and considered highly desirable and very expensive by Mauritanians, Haussas and Senegalese. One is a medieval glass bead with blue spots. The other is a 19th-century Venetian bead with black eyes, locally called "feather" or "eye of the peacock" (p. 82).

Traditional tools and techniques used in fashioning beads from silver, gold, and ebony inlaid with silver are fully described and well illustrated. Gold and gold-plated silver beads from Senegal are also dealt with, as are beads from Mali, Niger and Mauritania which are composed of braided vegetal material and called "Timbuctu gold."

Superbly illustrated with photographs and the author's own watercolors, *Perles d'Afrique* is written with a great amount of love and romantic wonder. The text and illustrations combine to provide the reader with a sense of the magic and reverence with which beads are held in Africa. Even for those who cannot read the French text, this book is a must for collectors and researchers alike. However, it is important to note that the chapters concerned with Mauritania were originally published in Delarozière's first book, *Les Perles de Mauritanie*, which is now out of print. Only those who own her original work can judge whether or not it is worthwhile for them to own *Perles d'Afrique* as well.

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Indian Trade Goods.

Oregon Archaeological Society. P.O. Box 13293, Portland, Oregon 97213. 1993. 48 pp., 50 b&w figs. $7.50 (paper) postpaid.

This is a new edition of the book of the same title written by veteran trade-goods historian Arthur Woodward and published by the Oregon Archaeological Society in 1965. While the text is essentially Woodward's, it has been thoroughly edited and parts of the text have been reshuffled and others deleted.

Unfortunately, the latter material includes the original endnotes, leaving the reader wondering where some of the quoted material originated, as well as a useful appendix on "Columbia River Trade Beads" by Emory Strong. On the positive side, section headings have been added making it easier to locate specific topics. However, they have also created a few minor problems as now some unrelated text is included in a section because of its placement in the original text (e.g., the last paragraph on page 21 has nothing to do with "Fancy Beads"). Such orphan paragraphs should have been edited out or moved to a relevant section.

Considering that most of the narrative text is uncut, unaltered Woodward work, it is regrettable that the OAS did not print his name on the title page as the principal author as it did in 1965! They do, however, recognize his contribution to the present work in the preface.

A number of OAS members spent much time preparing a very attractive publication with extensive illustrations of various trade objects. I feel, however, that these depictions leave much to be desired. Many illustrations in the original work were photographs and too many of these have been reduced to drawings of less clarity in the new edition.

Indian Trade Goods begins with a general introduction to the subject, followed by chapters that deal with glass beads, as well as buttons, and trade on the Northwest Coast. The former chapter, which occupies the largest part of the text, initially deals with bead nomenclature and the manufacture of glass beads, followed by short sections on specific bead categories such as star or chevron, O.P., cut, fancy, and cornaline d'Aleppo. While most of Woodward's data are still viable, a quick once-over by one of several bead experts in the Pacific Northwest would have helped to bring the publication up to date. For example, we now know that "O.P. beads" (p. 18) are not the so-called "Russian" beads but distinctive thin-walled hexagonal tubes which are actually quite scarce in the Northwest (K. Karklins: pers. comm.). And no one has used the term "wire laid" (p. 21) for decades.

Furthermore, the addition of new illustrations with captions that do not always fit has introduced several minor errors to the monograph. For instance, the caption to figure 16A mentions "polychrome wire wound beads," yet all the illustrated specimens are drawn chevrons. Also, while the beads in figures 18B and 20A illustrate two different chapter sections, they are actually one and the same form with the exception that one is eight sided and schematically drawn while the other is six sided and a much more realistic representation. It might also be mentioned at this point that many of the beads illustrated on pages 18-21 are taken from Kenneth and Martha Kidd's 1970 publication *A Classification System for Glass Beads* but without any credit to them.

The chapter on buttons covers the subject well and includes a time chart based on that published by Stanley J. Olsen in 1963. Beads are again dealt with in the chapter on Trade on the Northwest Coast, as are other trade goods such as gunflints, fire steels, kettles, coins and medals. Unfortunately, the coverage in this chapter is inadequate for the complexity of the subject of Indian trade goods, briefly surveying only a handful of the possible categories. The book ends with a short Suggested Reading list. This should have been expanded to include the works of the many fine scholars who have published on trade goods since 1965.

In summary, this is a rather "arty" publication that will be attractive mainly to newcomers and dilettantes interested in Indian culture. It is not a technical reference of much use to the professional.

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Glass, Glass Beads and Glassmakers in Northern India.

Jan Kock and Torben Sode. THOT Print, Bellahøjvey 180, DK 2720 Vanløse, Denmark. 1995. 32 pp., 36 color figs., 30 b&w figs. $10.00 (paper) + $12.00 postage and bank expenses.

This small book (also available in Danish) is excellently illustrated. The text, while short, is accurate and highly readable. It is based on first-hand investigation of the modern glass-ornament business in northern India, and serves as a commendable introduction to this important industry.

The publication begins by stating correctly that the traditional ways of making beads and bangles are threatened in northern India by new methods and styles. The value of the traditional industry is linked

to an understanding of now-lost processes for making similar goods in Denmark. The Indian material is presented as a parallel to an understanding of European processes.

A discussion then follows concerning the dichotomy between the city and country in India. Still largely a rural society, India is quickly becoming urbanized and, in that process, social tensions increase and old techniques may be lost.

The rest of the book describes glassmaking, beadmaking and bangle making in several centers. One section discusses the making of "country glass" at Jalasar, near Purdalpur, where the authors were stoned by the children (yes, it happens). There is a charming description of Purdalpur, the center of glass beadmaking, followed by a discussion of the role of Firozabad, the major producer of ornamental glass in India.

The sections on Firozabad describe the making of hollow glass beads and techniques learned or borrowed from the Japanese. There is also a discussion — though not very detailed — of the making of glass bangles there. The scene then switches to Purdalpur where the manufacture of several types of beads is documented. These include the traditional furnace-wound beads, the newer face and other mosaic beads (including chevrons) and lamp-worked beads which are now becoming dominant after the technique was introduced by a Czech couple in Varanasi (Benaras).

Some other beadmaking techniques are also covered, though only briefly, including silk-screened decoration on glass beads and the irising of beads. The making of "conterie" beads (that is, seed beads) mechanically in Varanasi, introduced in 1981 with Japanese help, is also revealed.

The last sections cover *motiwala* (bead sellers) and *bangliwala* (bangle sellers). This is appropriate as both groups are traditionally of the same caste as the bead- and bangle-makers and are an extension of the manufacturer's business.

Throughout there are excellent color and black-and-white photos, as well as line drawings. These make the processes, the tools and the furnaces come alive to the reader. They are the next best thing to being there, and the authors are to be congratulated for their excellent presentation.

While my praise cannot be high enough for this book, there are some points that I would like to make in regards to it. These are made in the spirit of helping the authors who will be continuing to work on this industry in several future projects.

For one thing, the work lacks cultural insights. That most workers in Purdalpur are Muslims is briefly mentioned only in conjunction with furnaces being closed on Friday. But this is a central fact about these people for they belong to castes that converted to Islam in the early 18th century, and were no doubt low or even outcastes before then. Upper caste Hindus regard them with very low status. The fact that they were Muslims influenced about half of them to flee to Pakistan at the Partition of India, forming another chapter of their story.

There is also a paucity of historical data. The glassworkers of northern India are the inheritors of a very ancient glass beadmaking tradition. This is briefly mentioned, but the continuation of methods and styles forms one of the most important parts of their story. The role of English colonial policies in the destruction of small glass bead- and bangle-making enterprises and the rise of Firozabad is also a key factor in understanding this industry.

While the size of the book was limited by practical considerations (it was first published as an article in the Danish magazine BYGD), it would also have been useful for the authors to gather more information regarding the names of tools, ingredients and other relevant items. Linguistic studies of traditional industries can be highly rewarding.

Finally, I was annoyed by the lack of documentation. Much of the book presents information gathered personally, but there are also many statements which must have been obtained from published sources and these are never acknowledged. Despite these misgivings, the book is very valuable in documenting current practices. It is pretty much up-to-date except that chevron beads are no longer made the way the process is described, for now Purdalpur beadmakers have molds and are making chevrons that look very much like Venetian products. In sum, this booklet is an invaluable addition to any library on the making of glass beads.

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Plate VA. *Copper Beadmaking:* Examples of prehistoric copper-bead strands (photos by Patrick E. Martin).

Plate VB. *Copper Beadmaking:* Some of the copper awls from 20KE20.

Plate VC. *Copper Beadmaking:* Four concreted masses of copper-bead preforms.

Plate VD. *Copper Beadmaking:* Detail of prehistoric copper beads; note the bead within a bead at the top.