30). However, with the craze for Birmingham steel jewellery that had begun in 1760 at an end (F. Buckley, 1933, Old English Glass, *Glass* 10:322-323), the number of metal beadmakers began to decline and by mid-century they are no longer listed in the directories. During this same time period the number of glass-beadmakers remained relatively constant; bird's (and doll's?) eyes seem to have been one of their principal products.

Makers of gold and silver beads appear in the directories in the 1870s and are pretty well a constant thereafter. A manufacturer of steel beads appeared briefly in the directory listings in the 1890s, apparently prompting one of the precious metal beadmakers to announce that he could also provide beads of the base metals. Glass beads cease to be mentioned after 1895, suggesting that they were no longer being made or at least not in significant numbers.

Beads of gold, silver, and other metals were the principal products of the Birmingham bead industry in the present century although "crinoid and Galalith* beads and necklets" were apparently also produced around 1925 (*Kelly's Directory*, p. 1036). (*Galalith was a type of black casein plastic.) At least one manufacturer of gold and silver beads was still active in 1973 but has since apparently discontinued production.

While the directories reveal what materials were used to produce beads in Birmingham and when, they are mute when it comes to such questions as what specific types of beads were made, in what quantities, and where were they marketed? Can anyone provide the answers or help flesh out the aforegoing history?

38. SOME COMMENTS ON MULBERRY AND TWISTED SQUARE BEADS, by Karlis Karklins (1987, 11:12-14)

Despite years of research on Dutch beads, the answer to Peter's query, "mulberries and twisted squares–who made them?," remains a big question mark. Actually, both bead types have been found in and around Amsterdam in archaeological contexts that date to 1670-1750, and a few have been found in association with bead manufacturing waste. Unfortunately, it is waste derived from the production of drawn beads, not wound beads. Thus, there is no archaeological evidence for the manufacture of wound beads in Amsterdam. However, this does not necessarily mean that they were never made there; the archaeologist's trowel may yet unearth the evidence.

The fact that there is no record of a glass bead factory in The Netherlands during the 18th century is not relevant as the factories produced drawn beads; the wound mulberry and twisted square beads would have been the products of a cottage industry, with workers scattered all over Amsterdam or some other center. Neither does the absence of mulberry and twisted square beads at such North American Dutch sites as Fort Orange negate a Dutch origin for the beads. Holland ceded New Netherland to England in 1664 and the final Dutch occupation of Fort Orange was in 1674, just at the beginning of the temporal range for the bead types under discussion. In fact, twisted square beads are relatively common in archaeological contexts on the Caribbean island of St. Eustatius which the Dutch retained (personal observation).

Although the Dutch no longer governed New Netherland, they continued to live and trade there. There is solid historical evidence that the Dutch were also supplying beads to the English and French during 18th century (Karklins 1982:113), and it is highly likely that at least some of the beads described by Brain (1979) and Good (1972) were supplied by the Dutch. The question that arises here is: "Were the beads that came from Holland made there, or was Holland just a warehouse for the beads produced by other countries?" Unfortunately, this question will remain unanswerable until we have comparative material from 17th-19th-century bead-production sites elsewhere in Europe, especially Venice.

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39. BEADS FROM THE WRECK OF THE DUTCH EAST INDIAMAN *DE LIEFDE* (1711), by Karlis Karklins (1988, 12:11-17)

Introduction

In October of 1711, the Amsterdam chamber of the Dutch United East India Company or Vereenigde

Oostindische Compagnie (VOC) dispatched the ship *De Liefde* on a trading mission to Batavia, the former capital of the Dutch East Indies on the Island of Java, via the Cape of Good Hope and Ceylon. After taking on the major portion of her heavy cargo and supplies at Texel on the Zuider Zee, the ship proceeded into the North Sea, taking the northern route to the Atlantic. During the winter months, this route was less dangerous than having to sail into the prevailing wind in the English Channel. It also avoided enemy vessels in the Channel as the United Provinces were at war with France at this time in the War of the Spanish Succession. Despite the precautions, faulty navigation caused the ship to run aground not long thereafter and sink off the southern tip of the Out Skerries in Shetland, Scotland, with the loss of all but one crewman (Bax and Martin 1974:82-83).

The wreck site was initially investigated by divers from the minesweeper *HMS Shoulton* in 1964, and excavated in 1966-1968 by John and Peter Brannon of Scientific Surveys, Ltd., Ealing, England. The wreck was further investigated on several occasions by others between 1974 and 1986 (Price and Muckelroy 1977:187; T. Watt: pers. comm.). The excavators recovered a variety of artifacts including several which securely identify the wreck as *De Liefde*: a number of newly-minted coins dated 1711; four VOC-marked swivel-gun breech-blocks; the ship's bronze bell dated either 1700 or 1701 (the year *De Liefde* made her maiden voyage); a lead weight dated 1711; and pewter spoons bearing the A-VOC cipher of the Amsterdam chamber (Bax and Martin 1974:84-88).

The wreck also produced an interesting assortment of glass and brass beads, a representative sample of which was obtained for study from the Shetland Museum in Lerwick. The glass specimens are described below using an expanded version of the Kidd and Kidd (1970) taxonomic system as presented in Karklins (1985). An asterisk (*) in the code denotes bead varieties not recorded by the Kidds; two asterisks (**) denote a previously unrecorded type.

Drawn Glass Beads with Applied Decoration

These beads consist of short segments of a tube that was drawn out from a hollow globe of molten glass. The beads were subsequently decorated with filaments of viscid glass.

IIj(?)*. Tubular; gilded transparent yellowish-brown body decorated with a wavy filament of opaque light gold glass encircling either end (1 specimen; Fig. la), The ends are well-rounded. Diameter: 4.1 mm; Length: 4.2 mm.

Wound Glass Beads

Beads of this sort were formed by winding a strand of molten glass around a metal mandrel until the desired size and shape were achieved. The beads were sometimes pressed with small paddles while the glass was still soft to impart facets.

Wlb*. Globular; opaque black (3 specimens; Fig. lb). The perforation tapers noticeably on some examples. Diameter: 8.2-10.2 mm; Length: 7.7-8.2 mm.

WIIc2. Faceted "Five Sided" beads; transparent light gray (colorless) (5 specimens). Each specimen exhibits eight pressed pentagonal facets; shape ranges from oblate (Fig. lc) to ovate (Fig. ld). The perforations arc slightly tapered. Surfaces are slightly eroded and pitted. Diameter: 9.5-12.2 mm; Length: 9.0-10.6 mm.

WII.** Standard truncated pentagonal bicone (Beck [1928] type XII.C.2.f.); opaque black (the glass is a transparent burgundy on the thinnest edges) (1 specimen). The bead has a pentagonal cross-section, and five trapezoidal facets form either hemisphere (Fig. 1e). The surface is shiny. Diameter: 8.7 mm; Length: 7.2 mm.

WIIIb*. Globular to ovate; opaque black (transparent burgundy on sliver edges) body adorned with a wavy strand of aventurine around the middle and a wavy strand of opaque white glass around either end (3 specimens; Fig. 1f). Generally shiny surfaces. Diameter: 8.6-9.3 mm. Length: 9.7-9.8 mm.

WIIIb*. Globular; transparent ruby body decorated with an opaque white floral spray encircling the equator (2 specimens; Fig. 1g), The surface is slightly eroded. Diameter: 7.7-7.8 mm; Length: 7.0-7.5 mm.

Brass Beads

Ranging from annular (Fig. 1h) to barrel-shaped (Fig. 1i), the 31 brass beads were fashioned from tubing using a lathe that first contoured the surface of each bead and then cut almost all the way through the tube where the ends were to be. When the tube was completely segmented, the individual beads were snapped off, leaving a slight burr at the edge of the perforation. Diameter: 3.2-3.5 mm; Length: 1.5-3.0 mm.

Discussion and Conclusion

Based on an inventory of the beads recovered from *De Liefde* between 1964 and 1986 (courtesy of Tommy Watt,

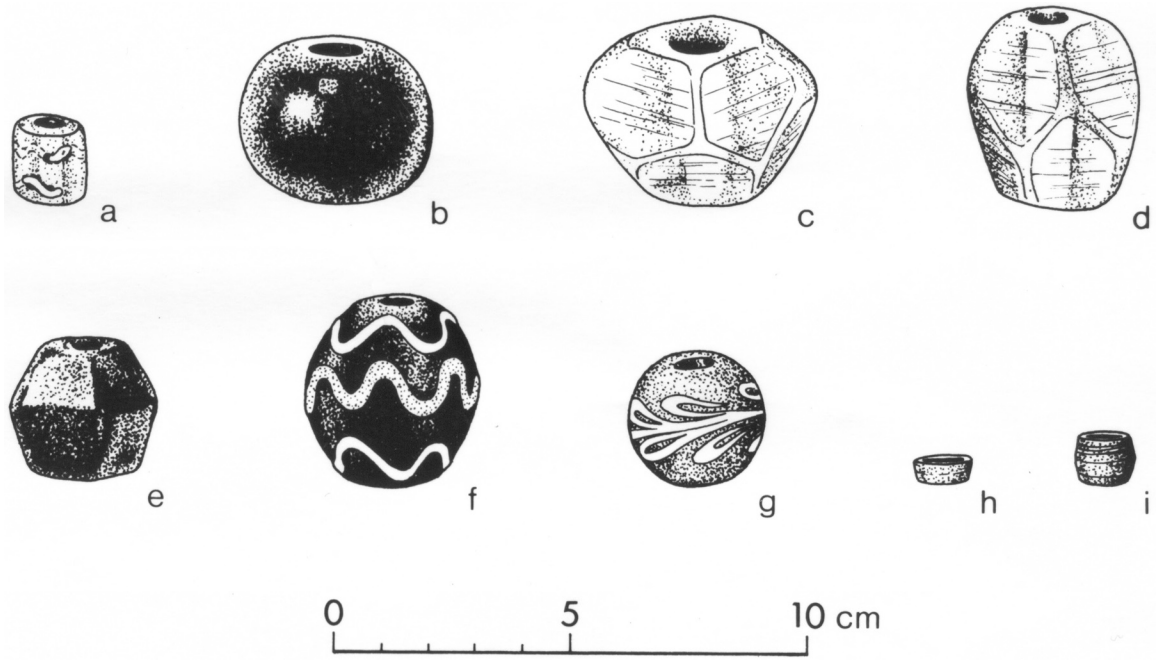

Figure 1. Beads from the wreck of *De Liefde* (drawing: Dorothy Larsen, Environment Canada, Canadian Parks Service, Ottawa).

Shetland Museum), the colorless faceted beads (WIIc2) were the most common (347 specimens), although the bulk appear to have been somewhat smaller than those examined for this study. The brass beads were next in frequency with 67 specimens, followed by the decorated black beads (10 specimens). The other varieties were all represented by one to four beads.

Although it is known that the beads were loaded aboard *De Liefde* in Holland, it is uncertain where they were made. Of the seven recorded varieties, only two (WIb* and WIIc2) have been found in archaeological contexts in and around Amsterdam (Karklins 1974:80), and this is far from conclusive proof of indigenous manufacture. While there is some evidence for a glass-bead industry in The Netherlands after 1698 (Karklins 1983:113), it is likely that the three decorated varieties, IIj(?)* and WIIIb*(a) & (b), were produced in Venice, the renowned center of fancy bead manufacture in the early 18th century (Francis 1979:9). The other glass beads may have been made there as well, though other centers, such as Bohemia and Germany, cannot be ruled out entirely either. The source of the brass beads remains unresolved.

The beads recovered from the wreck of *De Liefde* are noteworthy for a number of reasons. First, they expand our knowledge of what the Dutch were trading into the East Indies, and possibly South Africa and Sri Lanka, during the early 18th century. As the archaeological investigation of Dutch trading forts in Indonesia has apparently yet to be initiated (Miksic 1982:44), and only three other VOC shipwrecks dating to the late 17th and early 18th centuries are known to have produced beads, this knowledge has been extremely sketchy up till now.

The tight dating of the specimens coupled with their diagnostic forms and decorative elements also makes them potentially useful in the preparation and refinement of bead chronologies. In this respect, the faceted light gray and globular black beads fit well into the 1711 time-frame. However, the two decorated specimens are generally attributed to the ca. 1760-ca. 1820 period, at least in North America (personal observation; Quimby 1966:88). Their presence on *De Liefde* reveals that these fancy beads had been in use at least 50 years earlier elsewhere in the world.

And, because the ownership of *De Liefde* is known, as is its point of origin and its destination, the recovered beads will provide a bit more useful information to those attempting to determine bead trade routes, and commercial bead assemblages for the various European trading companies.

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providing information regarding the beads found on several unpublished VOC wrecks and for putting me in contact with the Shetland Museum. Gratitude is expressed to Mr. Tommy Watt, Assistant Curator of the Shetland Museum, Lerwick, for the kind loan of a sample of *De Liefde* beads and providing an inventory of the beads recovered from the wreck between 1964 and 1986.

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40. EUROPEAN CHICKEN EGG BEADS, by Karlis Karklins (1988, 12:24)

Museums are frequently fascinating places for bead researchers to spend a few hours. You just never know what new material or use you will encounter. Take a recent visit to the Musee de l'Homme in Paris. As I neared the end of the European gallery, I spied a colorful stuffed figure about 4.5 ft. high that had a cloth head and wore a black skirt. The front of the effigy was festooned with eight strands of chicken eggs strung end to end and five strands of ca. l-inch-square pieces of colored cloth. The caption read:

> In Czechoslovakia, this straw figure is called "Smartka" meaning "Death." Its crudely painted face represents a death's head which symbolizes the end of winter. The Sunday before Palm Sunday, young girls carry it in a procession to the river where they drown it.

Does anyone know anything more about these egg beads? Are they also used elsewhere in Europe and in similar ceremonies? Are the eggs ever colored or decorated like Easter eggs? What is their history?

41. THE SUITABILITY OF THE ISCC-NBS CENTROID COLOR CHARTS FOR DETERMINING BEAD COLORS, by Karlis Karklins (1989, 14:8-12)

Researchers interested in comparing bead assemblages from archaeological sites are not infrequently frustrated in their efforts by a lack of adequate descriptions of the recovered specimens. Ever-increasing use of the expanded Kidd and Kidd (1970) classification system (Karklins 1985) has greatly improved the situation but color determination remains a problem. Because the *Color Harmony Manual* (Container Corporation of America 1958) used by the Kidds to identify bead colors is relatively obscure, many individuals have been using the color plates in the Kidds' publication to identify their specimens. This is *not* recommended practice as the illustrations, being reproductions of shaded colored-pencil drawings, are not accurate enough for this purpose, especially in the 1970 French edition and the 1983 reprint in which the colors are substantially different from the 1970 English edition. In addition, the number of recorded bead colors has more than doubled since the Kidds' system was first published so their inventory is far from complete.

Ideally, a bead should be compared directly to the glossy side of the color chips in the *Color Harmony Manual* or the *Munsell Book of Color* (Munsell Color 1976), the relevant colors in which have been correlated to those in the *Manual* (Table 1). Unfortunately, not only are both of these