# BEADS

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Bead Researchers

1991 Vol. 3

*Mohawk "Birdman" Figurine*

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KARLIS KARKLINS, editor

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# THE MOHAWK GLASS TRADE BEAD CHRONOLOGY: CA. 1560-1785

**Donald A. Rumrill**

*Early glass beads acquired by the Mohawk Indians of New York state were a mixture of whatever was made available to them by European traders. By the second quarter of the 17th century, the beads reflected a dominance of particular types and/or colors as villages were relocated. This phenomenon appears to have ritualistic connotations and suggests that the bead-selection process was a part of the ceremonialism practiced in the daily, seasonal and annual life modes of the Mohawk. Ten distinct periods have been identified based on an examination of approximately 10,000 glass beads recovered from 33 Mohawk village sites. Other datable artifacts, historic occurrences and documents are cited to bolster the validity of using glass trade beads as a primary tool in dating the Mohawk village relocations.*

## INTRODUCTION

The Five Nations Iroquois Confederacy of the 16th-18th centuries was spread across present-day New York state in an east-west line from Albany to Rochester. At various intervals, villages were relocated and revitalized to ensure ready access to firewood, and to replace exhausted horticultural resources and dilapidated longhouses. Relocation in the territory inhabited by the Mohawk (Fig. 1) appears to have been on a fairly regular basis, about every 15 years or so, as if a schedule was to be followed as directed by their select tribune of councillors.

The primary diagnostic trade artifact that has emerged from research on these temporal delineations in protohistoric and historic times is the European glass bead. Several glass bead classification systems have been devised to date but the one most accepted for Iroquoian research is the one developed by Kenneth E. and Martha Ann Kidd (1970), and all references are to that system. An asterisk (*) in the identifying code denotes a variety not recorded by the Kidds, while two asterisks (**) indicate a new type. Abbreviations used include op. = opaque, tsl. = translucent, tsp. = transparent, v.l. = very large, Pl. = color plate and R. = row in color plate. Tubular specimens with rounded ends are termed "finished" (sometimes called "tumbled"), while those with broken and jagged ends are "unfinished." The term "seed bead" refers to small beads ca. 2.0-4.0 mm in diameter.

Other trade goods that are useful in dating habitation areas (such as white clay smoking pipe heel and stem marks, firearm components and Jesuit rings) will be referenced as additional tools in the dating process. Documentary evidence such as *The Documentary History of the State of New York* (O'Callaghan 1849-51), *Documents Relative to the Colonial History of the State of New York* (O'Callaghan 1853-87) and *The Jesuit Relations* (Thwaites 1896-1901) are reliable sources which provide direct contact dates with the Mohawk from a very early date. Other tribes to the west were in relative isolation until the mid-17th century.

Estimated site-habitation dates are exclusively those of the author and, in a few cases, are slightly different from those proffered previously (Rumrill 1985) due to more recent artifact finds and updated analyses. Dr. Dean R. Snow, Professor of Anthropology at the State University of New York at Albany, has recently had Accelerator Mass Spectrometry (AMS) dating performed on Mohawk-site material, especially corn kernels, at the University of Arizona's physics laboratory. The more than 40 specimens tested so far reveal that the dates are "pretty much right on the mark" (Snow 1992: pers. comm.).

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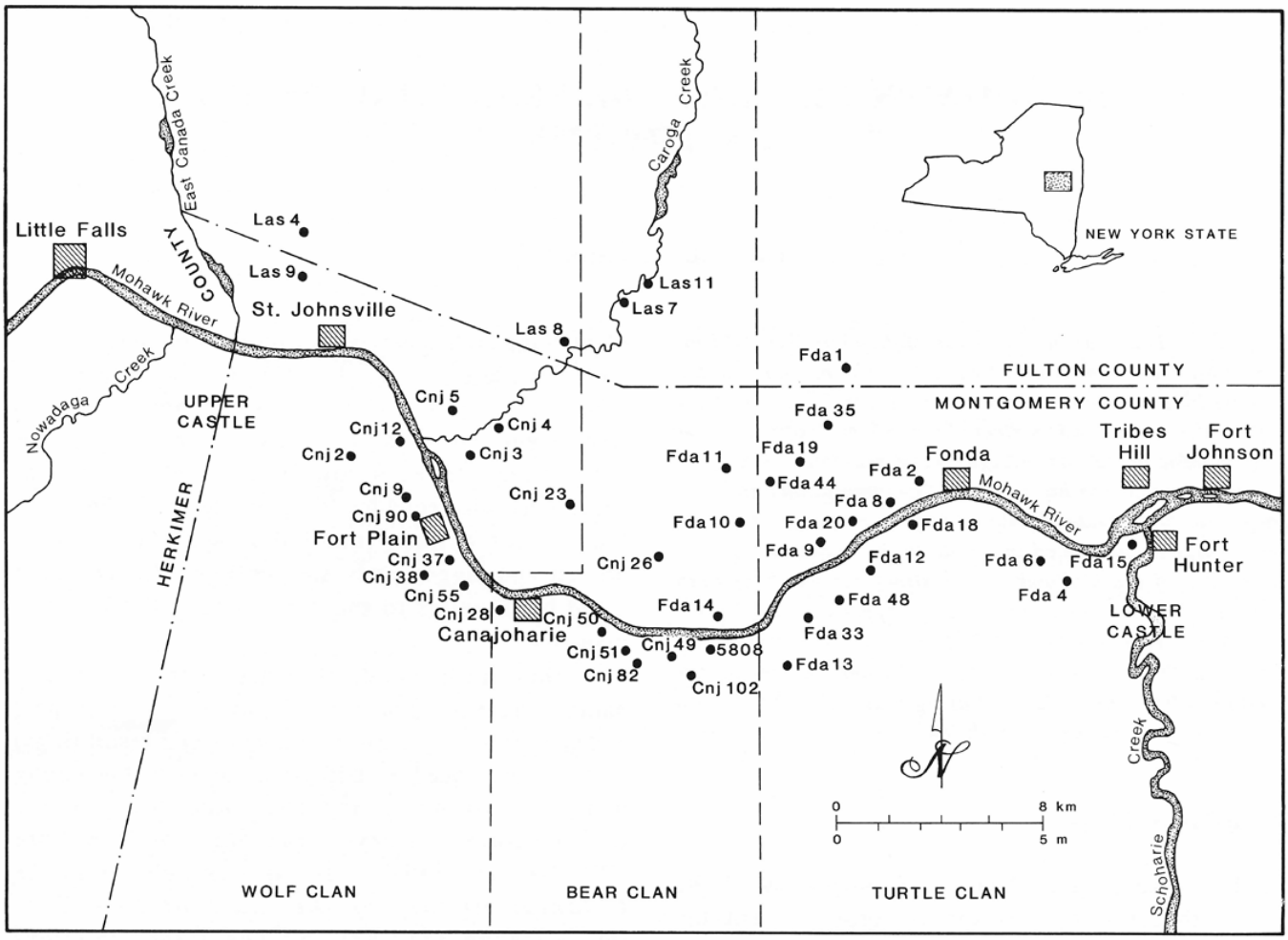


**Figure 1.** Locations of Mohawk Indian villages, ca. 1560-1785 (drawing by M.C. Rumrill and D. Kappler).

## THE BEAD CHRONOLOGY

### Protohistoric Period: 1560-1580

This is known as the Garoga Phase in ceramic studies and should also be considered the protohistoric period in overall Mohawk studies.

Prior to European incursion into the interior of New York state, the Mohawk lived a very uncomplicated existence of fractured village clusters both north and south of the Mohawk River with no seemingly structured movement pattern. That it was not always peaceful is attested by archaeological evidence of palisades protecting most villages against sporadic aggression by other Indian bands for probably ritualistic, rather than territorial, reasons. By the mid-16th century, mayhem by the intruders and, indeed, fighting even within their own ranks brought about, if not the actual formation of a "League," at least the infancy of the Great Law of Peace, the basis upon which the Iroquois Confederacy was formed.

The earliest confirmed artifacts of European origin in Mohawk territory are articles locally made from brass kettle remnants. Possibly not meant initially as trade items, these cooking vessels were eagerly sought as a source of raw material for the production of such adornments as beads (Pl. IA, R.1, #1), tinkling cones and pendants, and the manufacture of utility items such as knives, crude saws and arrow points.

The Cayadutta, Garoga and Klock sites have an approximate median date of 1570. This date has been arrived at primarily by backdating and reversing chronological movements measured by diagnostic artifacts and relevant documents from certain key

## Table 1. The Chapin Site (Fda-19) Beads (n=4).

| Variety | Description | No. |
|---|---|---|
| IIa6 | Round; op. black (Pl. IA, R.2, #3) | 1 |
| IIa36 | Round; op. aqua blue | 1 |
| IIb56 | Round; op. robin's egg blue with 3 op. white stripes (Pl. IA, R.2, #5) | 1 |
| IVk3 | Round; 5-layer chevron: tsp. bright navy exterior/ op. white/ op. redwood/ op. white/ tsp. bright blue core (Pl. IA, R.2, #4) | 1 |

control-date sites of the 17th-century Mohawk. The writer is convinced that this is also the approximate date for the genesis of the Iroquois Confederacy and the possible creation of distinct clan cantons (Fig. 1).

Cayadutta (Fda-1) is the eastern-most of the three above-mentioned village sites, and is situated 4.8 km (3 mi.) north of the Mohawk River. It is a typical, classic Mohawk village configuration on a peninsula 18 m (60 ft.) above Cayadutta Creek. Ravines delineate the village's north and south perimeters, and a single-row palisade originally extended across the southeast side, the only level access point.

A tubular bead of rolled brass nearly 17.8 cm (7.0 in.) in length was definitely recovered from this site (Beauchamp 1903: 17; Pl. 23, fig. 234), and another has been reported but not verified. A tubular wampum bead (Pl. IA, R.1, #2) was retrieved during one of several excavations conducted over the years, as were worked marine-shell remnants indicative of the *in situ* production of centrally perforated discoidal shell beads (Pl. IA, R.1, #3). The rarest find made by the author — a small turquoise nugget indigenous to the Southwest — reveals the complexity of trade conduits in place amongst the Indians.

Garoga (Las-7) is located some 9.6 km (6 mi.) north of the Mohawk River and its configuration is the same as Cayadutta. It overlooks the east bank of Caroga Creek, and had a double-row palisade on its one accessible side. Beauchamp (1903: 16; figs. 245, 256) illustrates two "cylindric brass beads" from Garoga, one 7.6 cm (3 in.) and the other 3.8 cm (1.5 in.) in length. Harrington (1905: 27) reports finding "a shell bead made from the columnella of a busicon whelk" which he termed "a good example of primitive wampum." Sixty per cent of the one-hectare (2.5 acres) village area was excavated by crews under the direction of Drs. William A. Ritchie and Robert E. Funk, past and present New York State Archaeologists, respectively. Funk also found a tubular wampum bead, as well as a centrally perforated discoidal shell bead (Ritchie and Funk 1973: 326-8).

Klock (Las-8) is west of Caroga Creek, approximately 4.8 km (3 mi.) from the Garoga site, and closely resembles the two previously mentioned villages in both lithic and ceramic traits. Dr. Funk's excavations in 1969-70 did not produce any European material, other than a few ambiguous odds and ends (Funk 1990: pers. comm.); Donald Lenig (1977: 78) reported just one item. All things being equal, Klock is probably the Wolf Clan contemporary of Cayadutta (Turtle Clan) and Garoga (Bear Clan), all dating ca. 1560-80.

None of these sites produced any glass trade beads, but descriptions of the sites are necessary to establish anchor points for clan enclaves, the probable formation-date of the Iroquois Confederacy, and the slow incursion of European influence and materials into Mohawk territory during the early decades of the protohistoric period.

### Continuing Protohistoric Period: 1580-1600

Glass trade beads did not find their way into the Mohawk Valley very quickly during this period either. Of five sites assigned to the period, Saltsman's (Fda-35), Pagerie-Smith (Las-11), Crum Creek (Las-4) and Bellinger (Las-9) have not produced beads although Pagerie-Smith, especially, has produced significantly more copper/brass refuse and artifacts (Funk 1990: pers. comm.). The only exception, Chapin (Fda-19), yielded glass beads (Table 1), each different, as well as an iron axe

## Table 2. The England's Woods Site (Fda-6) Beads (n=6).

| Variety | Description | No. |
|---|---|---|
| IIa6 | Round; op. black | 1 |
| IIa15 | Oval; op. white (Pl. IA, R.1, #4) | 1 |
| IIa40 | Round; op. robin's egg blue; "disappearing bead" (Pl. IA, R.2, #1) | 2 |
| IIbb1 | Round; op. redwood with 3 tsp. bright navy on op. white stripes; v.l. (Pl. IA, R.3, #4) | 1 |
| IVnn5 | Round; 4-layer chevron: op. white exterior/ op. redwood/ op. white/ tsp. bright blue core; 6 broad op. redwood stripes and 6 thin tsp. bright navy stripes; v.l. | 1 |

(Wemple 1982, 1986: pers. comm.). A fifth glass bead of unrecorded type was recovered by A.J. Richmond, a meticulous collector from the early part of this century. It is believed that the beads arrived near the start of the 17th century.

### Early Historic Period: 1600-1615

Acquisition of glass trade beads was not brisk even into the Early Historic Period, at least for the Mohawk. Seriations for the Oneida (Bennett 1983), Onondaga (Bradley 1987) and Seneca (Wray 1983) indicate comparatively larger numbers of glass beads for these tribes at an earlier date. Nevertheless, the writer cannot justify earlier dates for the Mohawk. There appears to be room for adjustment in all tribal territories since much of the information is from burials and Mohawk interment locations are virtually undefinable for the protohistoric and early historic periods.

The England's Woods site (Fda-11) has been picked over through the years but not heavily since the owners have been quite selective about who went on it and for how long. The writer was able to "hawk" the site a half dozen times and found a triangular brass pendant (Fig. 2,c), a similar pendant of red slate, a brass tinkling cone (Fig. 2,d), four rolled-brass beads like those found at Cayadutta, three brass-spiral fragments, two triangular brass arrow points and some scrap brass. Iron objects were absent. Two of the six recovered glass beads (Table 2) are known to local archaeologists as "sky blue disappearing beads," a name coined by Dr. Paul Huey while excavating at Fort Orange in present-day Albany, New York. For some reason, this particular bead disintegrates in the ground, leaving little trace.

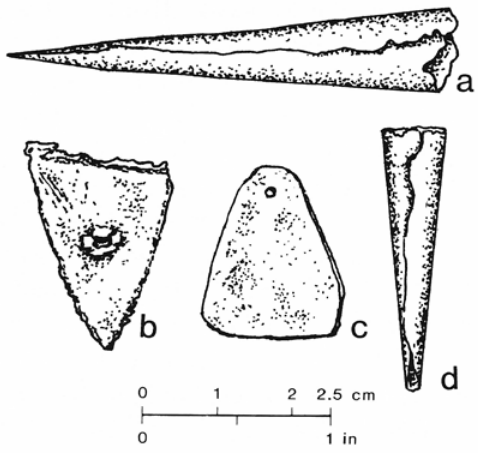


**Figure 2.** Objects made from brass trade kettles: a, conical arrow point; b, perforated triangular arrow point; c, pendant; and d, tinkling cone (drawing by M.C. Rumrill).

The Barker site (Fda-44) is similar in all respects to England's Woods including a small dome-shaped piece of brass and tubular brass beads. A small number of glass trade beads have been found but no record of them is available. The writer has managed to find eight fragments of the "disappearing bead" and a centrally perforated discoidal bead of marine shell.

Dewandalaer (Cnj-23) was a small hamlet of one or possibly two longhouses of average size: 30.5 m (100 ft.) by 6 m (20 ft.). Main villages with nearby satellite shelters, hamlets and hunting camps were common over the centuries and continued through the

## Table 3. The Briggs Run Site (Fda-9) Beads (n=635).

| Variety | Description | No. |
|---|---|---|
| IIa7 | Circular; op. black; seed beads; 86.1% (Pl. IA, R.1, #6) | 539 |
| IIa33 | Round; tsp. light aqua blue | 1 |
| IIa37 | Circular; op. aqua blue; seed bead | 1 |
| IIa40 | Round; op. robin's egg blue | 6 |
| IIa47 | Circular; op. shadow blue; seed beads | 4 |
| IIa49 | Oval; op. dark shadow blue | 6 |
| IIa54 | Oval; tsp. ultramarine | 1 |
| IIa56 | Circular; tsp. bright navy; seed beads | 4 |
| IIb* | Round; op. redwood with 8 pairs of op. white stripes; v.l. | 1 |
| IIb10 | Round; op. black with 3 op. white stripes; v.l. (Pl. IA, R.3, #3) | 1 |
| IIb15 | Round; op. black with 3 op. redwood and 3 op. white stripes; v.l. | 1 |
| IIb16 | Round; op. black with 3 op. ruby and 3 op. light cherry rose stripes | 1 |
| IIb* | Circular; as IIb16; seed beads | 2 |
| IIb18 | Round; tsp. light gray with 12 op. white stripes; "gooseberry" (Pl. IA, R.3, #1) | 1 |
| IIb* | Circular; op. white with 4 op. yellow and 4 op. green stripes | 3 |
| IIb* | Circular; op. white with 4 op. lemon yellow and 4 tsp. dark palm green stripes; a bead unique to this site | 3 |
| IIbb1 | Round; op. redwood with 3 op. bright navy on op. white stripes | 1 |
| IIbb* | Round; op. black with 8 op. redwood on op. white stripes | 1 |
| IVa5 | Round; op. redwood with tsp. apple green core | 3 |
| IVa7 | Oval; op. redwood with tsp. apple green core; cased in tsp. light gray glass; "barrel beads" (Pl. IA, R.2, #2) | 7 |
| IVa8 | Round; op. redwood with tsp. bright blue core; melted (Pl. IA, R.3, #2) | 1 |
| IVa13 | Circular; op. white with tsp. light gray core; seed beads; 2.9% (Pl. IA, R.1, #5) | 18 |
| IVa17 | Circular; tsp. ultramarine/ op. white/ op. ultramarine core; seed beads; 4.3% | 27 |
| IVk4 | Round; 5-layer chevron: thick tsp. bright navy exterior/ op. white/ op. redwood/ op. white/ tsp. bright blue core | 2 |

somewhat-regimented Confederacy organization of tribal territories and clan cantons. Significant brass recoveries are crude triangular arrow points, including one that is perforated (Fig. 2,b), and an Indian-fashioned knife. Iron scissors, awls, a knife, several wrought nails and two felling axes are in the author's collection, but not one glass bead. A final find is half a quahog shell.

Briggs Run (Fda-9) was a village constructed only 1.0 km (0.6 mi.) from the river, and may overlap into the next time period judging by the sudden increase in European material. Marine-shell scrap, along with discoidal and tubular beads, is in greater evidence than previously. Rolled brass beads, tinkling cones, and triangular and conical projectile points (Fig. 2, a) in fair numbers, a piece of a blue and gray Westerwald

## Table 4. The Yates Site (Fda-33) Beads (n=64).

| Variety | Description | No. |
|---|---|---|
| Ic'1 | Tubular, square-sectioned; loose twist; op. redwood; finished (Fig. 3) | 1 |
| IIa1 | Round; op. redwood | 1 |
| IIa6 | Round; op. black | 5 |
| IIa7 | Circular; op. black; seed beads; 35.9% | 23 |
| IIa36 | Round; op. aqua blue | 4 |
| IIa40 | Round; op. robin's egg blue | 1 |
| IIa46 | Round; op. shadow blue | 1 |
| IIa47 | Circular; op. shadow blue; seed beads; 15.6% | 10 |
| IIa55 | Round; tsp. bright navy | 1 |
| IIb56 | Round; op. robin's egg blue with 3 op. white stripes | 2 |
| IIIa3 | Tubular; op. redwood with tsp. apple green core; unfinished | 1 |
| IIIa6 | Tubular; tsp. light gray exterior/ op. redwood/ tsp. light gray core; unfinished | 1 |
| IIIa10 | Tubular; tsp. ultramarine exterior/ op. white/ tsp. ultramarine core; unfinished | 1 |
| IVa13 | Circular; tsl. oyster white with tsp. light gray core; 17.2% | 11 |
| IVa* | Round; op. shadow blue with tsp. bright navy core | 1 |

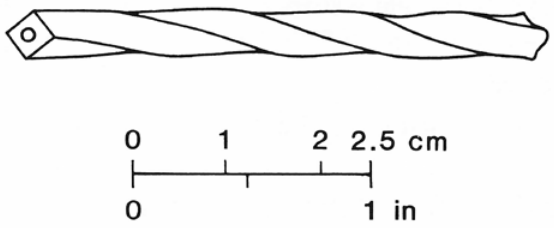


**Figure 3.** Square-sectioned, tubular glass bead with loose spiral twist (Ic'1) (drawing by M.C. Rumrill).

vessel and a small button of opaque white glass with an iron shank (Pl. IA, R.3, #5) presage direct contact with the source of this material.

At least 635 glass trade beads have been recovered from Briggs Run (Table 3), mostly by mechanized sifting of a large area, possibly a midden. Most of the specimens (95.5%) were small "seed" beads. There were also seven "barrel" beads which, in most cases, are red in color and cased in transparent gray (colorless) glass. Both ends exhibit a ridge giving the bead a barrel shape. Burials which were accidentally plowed up south of the habitation area were carefully excavated and reinterred at a safe level. There were almost no gifts included in the graves; only one contained a few seed beads.

Seed beads are the hallmark for this period with polychrome types, including "gooseberries," making a rapid increase toward the end of the period. Some beads (such as IVa5) continue throughout the century. The Mohawk and Mahican tribes are known to have been at war with each other around 1610-25, and pottery with Mahican rimsherd designs, probably crafted by captives, is found at Briggs Run.

Swart-Farley (Cnj-37) also falls into the 1600-15 period, but lacks glass trade beads. It also doesn't fit the oft-quoted theory that all of a sudden around 1630, the Mohawk made a complete exodus from the north side of the river to the south side to better control trade with Fort Orange. The small percentage of brass, iron and other European material, compared to native-made materials, demonstrates that some of the Mohawk just moved to that location about 1600 in consideration of their immediate needs.

**Polychrome and Flush Eye Bead Period: 1615-1630**

Another early transfer to the Mohawk River's south side was the band that settled at the Yates site (Fda-33). Part of the habitation area was destroyed when gravel was removed for road construction in 1953. Fortunately, Henry Wemple (1986: pers. comm.) gathered together a few avocationalists and they did as much of a salvage job as time would allow. Yates reflects the trend for the period with less than 20% of the recovered artifacts being of European origin, and, of the 64 recorded glass beads, 44 (69%) are of seed-bead varieties (Table 4). There seems to be no pronounced color preference at this time, but tubular glass beads are more numerous: 4 specimens (6.3%).

Another site south of the river occupied during this period is Ford (Cnj-82), now an abandoned gravel bank. The only glass bead attributed to this site is a small redwood specimen with an opaque black core and decorated with three, thin, opaque white stripes (IVb3). Pratt (1982: 8) records this variety for the Oneida Blowers (Andrews) site (Ond-1) and suggests a date of 1595-1625 for it. Martin and Coleman-Van Duesan (see below) are the only other Mohawk sites to display this variety with two each and, coincidentally, date to the same time period as Ford and Blowers. Additionally, a few white clay pipe stems have been found at Yates, placing the terminal date in the latter part of the period.

The Martin site (Fda-8) is less than 0.8 km (0.5 mi.) north of the river; it covers 1.2 hectares (3 acres) on a north-facing slope. Artifact concentrations and dark outlines when the field is freshly plowed suggest that 12 longhouses may have occupied the site. Analysis of 230 glass beads from seven collections (Table 5) reveals that the primary diagnostic beads are the IVk* varieties, also referred to as "chevron" beads. Gooseberries and two varieties of "flush eye" beads are quite exclusive to this era in the three Mohawk enclaves as well. Variety IIa61 is unique in that, under different lighting conditions, it can exhibit a dark amber hue, a rosy coloration or an amethyst tint. Medium to large beads are predominately polychrome, while small beads are usually circular monochromes of red, blue, and black. There are only five tubular beads in the collections: three chevrons, one Ia13 and one IIIa12, a variety which is common throughout the first half of the 17th century.

The abrupt increase in glass beads on Mohawk sites coincides with the exploration of the upper Hudson River and the development of remote posts there by the Dutch commencing in 1614 with Fort Nassau, just south of present-day Albany (O'Callaghan 1853-87, I: 11-13), and a major colonization venture at Fort Orange in 1624 (O'Callaghan 1853-87, I: 149) where Albany is now located. One of the settlers, Harmen Meyndertsz van den Bogaert, kept a journal on a trip through the Mohawk homeland in 1634-35 (Gehring and Starna 1988). It relates that one of their Mohawk companions pointed out a high hill where their castle had stood "nine years ago" when they were driven out by their enemies. The author is of the opinion that the Martin site represents the castle so designated.

Other significant artifacts provide the earliest evidence of firearms in the Mohawk Valley. Probably just "souvenirs," they include a serpentine from a matchlock, a frizzen from an early English lock (doglock), and a gun spall, plus several pieces of Weser slipware (Weserware), a northern-European earthenware imported into Amsterdam, Holland, from about 1570 to 1620. The same type of ware has been recovered at the Oneida Cameron site (ca. 1620), the Onondaga Pompey Center site (ca. 1600-20), and in early 17th-century tidewater-dwelling areas of Virginia as well (DeAngelo 1983: pers. comm.).

Rice's Woods (Cnj-26) is situated 3.2 km (2 mi.) north of the Mohawk River on a sloping ridge with both a northern and a southern exposure. Over 2,000 glass beads were recovered from burials just west of the village site, a very high proportion being chevron varieties. Most of the beads were associated with only a few of the burials (Funk 1992: pers. comm). Tangless, perforated, iron arrow points were collected here, the earliest to be found on a Mohawk site. Very little excavation has occurred on the site which, unfortunately, had a private access road cut through it recently.

Twenty (22%) of the 91 beads recovered from the habitation area of the site (Table 6) are mostly medium-size chevrons, the most frequent being variety IVk3. Only 16 (17.6%) beads are monochrome and most of these are small seed beads. Many of the

## Table 5. The Martin Site (Fda-8) Beads (n=230).

| Variety | Description | No. |
|---|---|---|
| Ia13 | Tubular; tsl. aqua blue; unfinished (Pl. IB, R.1, #6) | 1 |
| IIa1 | Round; op. redwood | 1 |
| IIa2 | Circular; op. redwood | 4 |
| IIa6 | Round; op. black | 11 |
| IIa7 | Circular; op. black | 2 |
| IIa28 | Round; tsp. dark palm green (Pl. IB, R.2, #3) | 1 |
| IIa35 | Round; op. light aqua blue | 1 |
| IIa40 | Round; op. robin's egg blue | 5 |
| IIa49 | Oval; op. dark shadow blue | 1 |
| IIa52 | Circular; tsp. ultramarine | 7 |
| IIa55 | Round; tsp. bright navy | 6 |
| IIa56 | Circular; tsp. bright navy | 8 |
| IIa57 | Oval; tsp. bright navy (Pl. IB, R.1, #7) | 1 |
| IIa61 | Round; tsp. dark rose brown | 1 |
| IIb1 | Round; op. redwood with 6 op. black stripes | 1 |
| IIb2 | Round; op. redwood with 3 op. white stripes | 3 |
| IIb6 | Flattened-round; op. redwood with 8 op. white stripes | 1 |
| IIb* | Oval; op. black with 6 op. white stripes | 2 |
| IIb13 | Round; op. black with 10 op. white stripes | 1 |
| IIb14 | Round; op. black with 3 pairs of op. white stripes | 2 |
| IIb15 | Round; op. black with 3 op. redwood and 3 op. light cherry rose stripes | 4 |
| IIb18 | Round; tsp. light gray with 12 op. white stripes; "gooseberry;" 2.6% | 6 |
| IIb19 | Oval; tsp. light gray with 12 op. white stripes; "gooseberry" | 2 |
| IIb56 | Round; op. robin's egg blue with 3 op. white stripes | 3 |
| IIb61 | Round; op. shadow blue with 6 op. redwood stripes | 5 |
| IIb68 | Round; tsp. bright navy with 4 op. white stripes | 1 |
| IIb'2 | Round; op. black with 7 op. white spiral stripes | 1 |
| IIbb1 | Round; op. redwood with 3 tsp. bright navy on op. white stripes; 7.8% | 18 |
| IIbb2 | Flat; op. redwood with 3 tsp. bright navy on op. white stripes | 1 |
| IIbb3 | Round; op. redwood with 4 tsp. bright navy on op. white stripes | 4 |
| IIbb4 | Round; op. redwood with 3 tsp. bright navy on op. white stripes and 3 op. light gold stripes | 1 |
| IIbb5 | Round; op. black with 5 op. redwood on op. white stripes | 2 |
| IIbb7 | Round; op. black with 3 op. redwood on op. white stripes (Pl. IB, R.3, #4) | 6 |
| IIbb'* | Oval; tsp. dark navy with 4 op. redwood on op. white spiral stripes | 2 |
| IIg4 | Round; op. white with 3 tsp. bright navy dots each with 2 op. white rings; "flush eye" (Pl. IB, R.2, #1) | 2 |
| IIIa12 | Tubular; tsp. bright navy exterior and core with op. white middle layer | 1 |
| IIIk3 | Tubular; 5-layer chevron: tsp. bright navy exterior/ op. white/ op. redwood/ op. white/ tsp. bright blue core; beveled ends | 3 |

## Table 5. Continued.

| Variety | Description | No. |
|---|---|---|
| IVa1 | Round; op. redwood with op. black core (Pl. IB, R.1, #5) | 1 |
| IVa13 | Circular; tsp. oyster white with tsp. light gray core | 1 |
| IVa14 | Circular; op. white with tsp. light aqua blue core | 1 |
| IVa18 | Round; tsp. bright navy with tsp. light gray core | 2 |
| IVa* | Circular; op. shadow blue with op. black core | 2 |
| IVb3 | Round; op. redwood with op. black core; 3 thin op. white stripes | 2 |
| IVb* | Round; op. black exterior and core with op. white middle layer; 12 op. white stripes | 2 |
| IVb18 | Round; tsp. apple green exterior and core with op. white middle layer; 3 op. white stripes | 1 |
| IVb30 | Round; tsp. bright navy exterior and core with op. white middle layer; 3 op. white stripes | 1 |
| IVb* | Round; tsp. bright navy exterior and core with op. white middle layer; 6 op. white stripes (Pl. IB, R.1, #2) | 1 |
| IVb32 | Round; tsp. bright navy exterior and core with op. white middle layer; 7 op. white stripes | 1 |
| IVb33 | Round; tsp. bright navy exterior and core with op. white middle layer; 8 pairs of op. white stripes; 3.9% (Pl. IB, R.3, #2) | 9 |
| IVb35 | Round; tsp. dark navy exterior and core with op. white middle layer; 8 op. white stripes | 5 |
| IVb36 | Round; tsp. dark navy exterior and core with op. white middle layer; 12 op. white stripes; 3.0% (Pl. IIA, R.1, #6) | 7 |
| IVb* | Round; tsp. dark navy exterior and core with op. white middle layer; 7 op. white stripes | 1 |
| IVb* | Round; tsp. dark navy exterior and core with op. white middle layer; 10 op. white stripes | 2 |
| IVbb3 | Round; op. redwood with tsp. apple green core; 3 op. black on op. white stripes | 3 |
| IVg* | Round; tsp. bright blue exterior and core with op. white middle layer; 3 op. redwood stars on op. white dots on op. bright blue dots; "flush eye" (Pl. IB, R.2, #5) | 2 |
| IVk3 | Round; 5-layer chevron: thin tsp. bright navy exterior/ op. white/ op. redwood/ op. white/ tsp. bright blue core; 7.8% | 18 |
| IVk* | Oval; 5-layer chevron: thin tsp. bright navy exterior/ op. white/ op. redwood/ op. white/ tsp. bright blue core (Pl. IB, R.2, #2) | 3 |
| IVk4 | Round; 5-layer chevron: thick tsp. bright navy exterior/ op. white/ op. redwood/ op. white/ tsp. bright blue core; 14.3% | 33 |
| IVn2 | Round; 5-layer chevron: tsl. oyster white exterior/ op. white/ op. redwood/ op. white/ tsp. light gray core; 6 op. redwood and 6 tsp. bright navy stripes (Pl. IB, R.3, #5) | 3 |
| IVnn4 | Round; 4-layer chevron: op. white exterior/ op. redwood/ op. white/ op. redwood core; 6 op. redwood and 6 tsp. bright navy stripes; 3.0% (Pl. IIA, R.1, #1) | 7 |

## Table 6. Beads from the Habitation Area at the Rice's Woods Site (Cnj-26) (n=91).

| Variety | Description | No. |
|---|---|---|
| Ia6 | Tubular; op. light ivory; unfinished | 1 |
| IIa6 | Round; op. black | 2 |
| IIa39 | Round; tsl. aqua blue | 1 |
| IIa40 | Round; op. robin's egg blue | 2 |
| IIa47 | Circular; op. shadow blue | 2 |
| IIa48 | Round; op. dark shadow blue; 5.5% | 5 |
| IIa49 | Oval; op. dark shadow blue | 2 |
| IIa55 | Round; tsp. bright navy | 2 |
| IIb3 | Round; op. redwood with 4 op. white stripes | 1 |
| IIb4 | Oval; op. redwood with 4 op. white stripes | 2 |
| IIb15 | Round; op. black with 3 op. redwood and 3 op. white stripes; 3.3% | 3 |
| IIb16 | Round; op. black with 3 op. ruby and 3 op. light cherry rose stripes | 1 |
| IIb18 | Round; tsp. light gray with 12 op. white stripes; "gooseberry;" 2.2% | 2 |
| IIb31 | Round; op. white with 2 op. redwood and 2 tsp. bright navy stripes | 2 |
| IIb* | Round; op. white with 2 tsp. bright navy and 2 tsp. light gray stripes | 1 |
| IIb56 | Round; op. robin's egg blue with 3 op. white stripes; 2.2% | 2 |
| IIbb1 | Round; op. redwood with 3 tsp. bright navy on op. white stripes; 11% | 10 |
| IIbb3 | Round; op. redwood with 4 tsp. bright navy on op. white stripes | 1 |
| IIbb* | Round; op. black with 8 op. redwood on op. white stripes | 1 |
| IIbb27 | Round; tsp. bright navy with 3 op. redwood on op. white stripes | 1 |
| IIIk3 | Tubular; 5-layer chevron: tsp. bright navy exterior/ op. white/ op. redwood/ op. white/ tsp. bright blue core; beveled ends | 1 |
| IVa* | Round; op. shadow blue exterior/ op. white/ tsp. light gray core | 1 |
| IVa17 | Circular; tsp. ultramarine exterior/ op. white/ tsp. ultramarine core | 1 |
| IVa18 | Circular; tsp. bright navy with tsp. light gray core; 6.6% (Pl. IB, R.1, #3) | 6 |
| IVb1 | Round; op. redwood with op. black core; 8 op. black stripes | 2 |
| IVb3 | Round; op. redwood with op. black core; 3 op. white stripes | 1 |
| IVb4 | Round; op. redwood with op. black core; 3 pairs of op. white stripes | 2 |
| IVb5 | Round; op. redwood with op. black core; 6 op. white stripes | 1 |
| IVb* | Circular; op. white with tsp. light aqua blue core; 4 op. redwood and 4 tsp. bright navy stripes | 1 |
| IVb30 | Round; tsp. bright navy exterior/ op. white/ tsp. bright navy core; 3 op. white stripes; 3.3% | 3 |
| IVb31 | Round; tsp. bright navy exterior/ op. white/ tsp. bright navy core; 6 op. white stripes (Pl. IB, R.2, #4) | 1 |
| IVb33 | Round; tsp. bright navy exterior/ op. white/ tsp. bright navy core; 8 pairs of op. white stripes | 2 |
| IVb34 | Round; tsp. bright navy exterior/ op. white/ tsp. bright navy core; 16 op. white stripes. | 2 |

## Table 6. Continued.

| Variety | Description | No. |
|---|---|---|
| IVb36 | Round; tsp. dark navy exterior/ op. white/ tsp. dark navy core; 12 op. white stripes | 1 |
| IVbb1 | Round; op. redwood with op. black core; 3 op. black on op. white stripes | 1 |
| IVk3 | Round; 5-layer chevron: thin tsp. bright navy exterior/ op. white/ op. redwood/ op. white/ tsp. bright blue core; 15.4% | 14 |
| IVk4 | Round; 5-layer chevron: thick tsp. bright navy exterior/ op. white/ op. redwood/ op. white/ tsp. bright blue core; 6.6% | 6 |
| IVn6 | Round; tsl. oyster white exterior/ op. white/ op. redwood/ op. white/ tsp. light gray core; 4 op. redwood, 4 tsp. dark palm green and 4 tsp. bright navy stripes | 1 |

beads (almost 50%) are red or blue specimens decorated with simple and complex stripes, predominantly white.

It is noteworthy that although the beads associated with burials at this time are compatible with those found in habitation areas, later Mohawks exhibit a tendency to make funereal gifts of heirloom beads; i.e., beads from earlier in the sequence. Consequently, care must be taken to segregate beads recovered from different activity areas of a site (e.g., cemeteries vs. villages) or the results could create an erroneous glass trade-bead seriation.

Wagner's Hollow (Cnj-4) is 2.8 km (1.75 mi.) north of the Mohawk River and situated on a high bluff 30 m (100 ft.) above Caroga Creek with a slight slope to the north and east. The village appears to have consisted of eight longhouses based on the number of artifact concentrations. Two cemeteries are located a fair distance from the village proper; this may have been a common practice since very few early Mohawk burial grounds have been located. Brass, iron and shell artifacts are present in increasing numbers, and it should be noted that bone combs, for instance, have become beautifully executed objects of art, metal tools having facilitated their creation. Special note should be made of what appears to be the earliest white clay smoking pipe from a Mohawk site (Fig. 4). The raised-platform heelmark on the bulbous pipe bowl is a variety known as the "Dutch Tulip" which is attributed to the second quarter of the 17th century, giving much credence to a terminal date of approximately 1630 for the Polychrome and Flush-Eye Bead Period.

Two bead collections derived by surface hunting only the occupation area of the Wagner's Hollow site contain 72 specimens representing 38 varieties (Table 7). Gooseberry, chevron and flush eye beads are diagnostic types. There are also several IIb56 beads which become more numerous on later sites. Sixty-one per cent of the recovered beads are decorated with stripes, while 28% are some shade of blue.

The Coleman-Van Duesan site (Fda-10) is 2.4 km (1.5 mi.) from the river. The surrounding terrain is quite flat and the village site slopes downward from a central high point, a departure from previous geographically well-defended positions. European artifacts are more numerous and diversified and the site may, therefore, warrant a later terminal date. However, the glass bead seriation is still consistent with the sites described above and there are no firearm parts or white clay pipe remnants to extend the estimate of the occupation period. Several lead musket balls and lead waste, melted brass globs and scrap, iron axes, knives, nails and awls are in evidence, and a couple more firsts — iron Jew's harps and a bone-handled clasp knife — attest to the quickening of material culture change. Half a dumbbell-shaped lead seal with an incomplete stamped impression, originally affixed to fabric when exported from Europe, conjures up thoughts of the fur trade at Fort Orange.

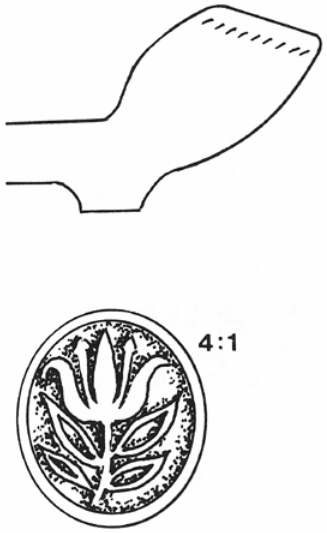


**Figure 4.** White clay pipe bowl with "Dutch Tulip" heelmark, ca. 1630 (drawing by M.C. Rumrill).

Of 420 glass beads (Table 8), a large percentage are "barrel" beads; i.e., round, oval and circular specimens which exhibit a lip-like ridge around either end. Flush eye and gooseberry beads are represented, and a "giant chevron" was uncovered during plowing and is in the possession of the property owner. Giant chevron beads and their fragments continue to be found in 1650s contexts but it has not been determined if they are an item of trade for the entire period or represent a keepsake of the ca. 1630 era.

Cromwell (Fda-12) is the last village site to be named for the 1615-30 period. It is located on the south side of the Mohawk River with a proposed terminal date of about 1636 (Rumrill 1985: 8,9) and was probably originally constructed as early as 1620. The bead assemblage is absolutely diagnostic of the period. The writer equates Cromwell to van den Bogaert's 36-longhouse village of Onekagonka of 1634-35 (Gehring and Starna 1988: 3-5). Gun spalls (early gunflints), brass, iron, and, significantly, white clay smoking pipe fragments have been recovered from this large site.

Throughout the 1615-30 period, there is a predominance of polychrome glass beads with percentages of the various varieties being equal, within tolerances. However, each site has several varieties that are not common to the other. It appears that these "exotic" beads represent what

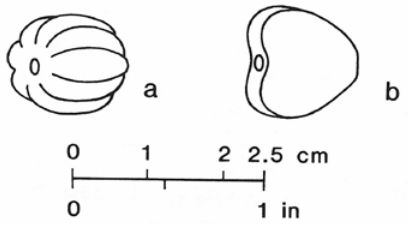


**Figure 5.** Wound glass beads: a, melon (WIIe) and b, corn (WIIa) (drawing by M.C. Rumrill).

was available at Fort Orange and were very acceptable to the Mohawk.

**Blue Bead Period: 1630-1646**

Date ranges for the various periods are not as exact as they may seem but are based on documented events and artifacts that can be relatively tightly dated. For instance, the Failing site (Cnj-12) was probably initiated ca. 1620 and was abandoned about 1635. This was probably the large 55-longhouse castle of Tenotoge which van den Bogaert described as being in a very deteriorated condition (Gehring and Starna 1988: 9). Sand Hill #1 (Cnj-9) can be conjectured as another van den Bogaert village, possibly Cawaoge with 14 longhouses, of the same approximate date. Failing was destroyed when the New York State Thruway overran it, and Sand Hill #1 has been almost completely destroyed by gravel quarrying. Surviving artifacts, documents and theoretical chronological movements have been used to determine occupation periods for these villages. No one has yet been able to interpret the van den Bogaert journal sufficiently to equate more than just a few historical villages with actual site locations.

As previously noted, the Mohawk did not have a simultaneous *en masse* exodus to the south side of the Mohawk River, but, by ca. 1634, it is evident that all villages were so located. Clan enclaves remained intact as villages moved almost directly across the river (Fig. 1). Bead-wise, a phenomenon occurred that was to set a pattern for the remainder of the 17th century. Whereas glass beads had previously been dominated by round polychromes, the 1630-46 period is best described as the "blue bead era." This was true also throughout the Five Nations Iroquois Confederacy although reported date ranges for the different areas do not always coincide. Very few bead

**Table 7. Beads from the Habitation Area of the Wagner's Hollow Site (Cnj-4) (n=72).**

| Variety | Description | No. |
|---|---|---|
| IIa1 | Round; op. redwood | 1 |
| IIa9 | Round; tsp. light gray; 5.6% | 4 |
| IIa13 | Round; op. white | 1 |
| IIa15 | Oval; op. white | 2 |
| IIa18 | Round; op. amber; 5.6% | 4 |
| IIa19 | Circular; op. amber | 1 |
| IIa29 | Oval; tsp. dark palm green | 1 |
| IIa40 | Round; op. robin's egg blue | 1 |
| IIa44 | Round; tsp. cerulean blue | 1 |
| IIa57 | Oval; tsp. bright navy | 2 |
| IIb2 | Round; op. redwood with 3 op. white stripes | 1 |
| IIb15 | Round; op. black with 3 op. redwood and 3 op. white stripes | 1 |
| IIb18 | Round; tsp. light gray with 12 op. white stripes; "gooseberry;" 6.9% | 5 |
| IIb* | Round; op. white with 2 op. redwood and 2 op. brown stripes | 1 |
| IIb48 | Round; op. mustard tan with 8 op. redwood stripes | 2 |
| IIb54 | Round; tsl. light aqua blue with 8 op. redwood stripes | 2 |
| IIb56 | Round; op. robin's egg blue with 3 op. white stripes | 3 |
| IIb* | Round; tsp. bright navy with 6 op. white stripes | 2 |
| IIb* | Round; tsp. bright navy with 8 op. white stripes | 1 |
| IIb'* | Round; op. black with 6 op. white spiral stripes | 1 |
| IIb'* | Round; op. black with 8 op. white spiral stripes | 1 |
| IIb'4 | Oval; tsl. oyster white with numerous irregular spiral stripes of op. light gold, op. redwood, tsp. ultramarine and tsl. aqua blue (marbled effect) | 2 |
| IIb'* | Round; op. aqua blue with 8 op. redwood spiral stripes | 1 |
| IIbb1 | Round; op. redwood with 3 tsp. bright navy on op. white stripes | 3 |
| IVa1 | Round; op. redwood with op. black core | 1 |
| IVa19 | Circular; tsp. bright navy exterior and core; op. white middle layer | 2 |
| IVa* | Oval; op. brass-coated glass; possibly intrusive | 1 |
| IVb3 | Round; op. redwood with op. black core; 3 op. white stripes | 1 |
| IVb4 | Round; op. redwood with op. black core; 3 pairs of op. white stripes | 3 |
| IVb32 | Round; tsp. bright navy exterior and core; op. white middle layer; 7 op. white stripes | 1 |
| IVb34 | Round; tsp. bright navy exterior and core; op. white middle layer; 16 op. white stripes | 3 |
| IVbb1 | Round; op. redwood with op. black core; 3 op. black on op. white stripes | 3 |
| IVbb4 | Round; op. redwood with op. black core; 3 tsp. bright navy on op. white stripes | 1 |
| IVg* | Round; tsp. bright blue exterior and core; op. white middle layer; 3 op. redwood stars on op. white dots on op. bright blue dots; "flush eye" | 1 |

## Table 7. Continued.

| Variety | Description | No. |
|---|---|---|
| IVk3 | Round; 5-layer chevron: thin tsp. bright navy exterior/ op. white/ op. redwood/ op. white/ tsp. bright blue core; 11.1% | 8 |
| IVn7 | Flat; 5-layer chevron: tsl. oyster white exterior/ op. white/ op. redwood/ op. white/ tsp. light gray core; 4 op. redwood, 4 tsp. dark palm green and 4 tsp. bright navy stripes | 1 |
| WIIe6 | Melon; tsp. bright copen blue (Fig. 5,a) | 1 |
| Brass | Tubular | 1 |

## Table 8. The Coleman-Van Duesan Site (Fda-10) Beads (n=420).

| Variety | Description | No. |
|---|---|---|
| Ib5 | Tubular; op. black with 3 op. white and 3 op. redwood stripes; unfinished | 1 |
| IIa1 | Round; op. redwood; 3.8% | 16 |
| IIa2 | Circular; op. redwood; 6.4% | 27 |
| IIa6 | Round; op. black | 9 |
| IIa7 | Circular; op. black | 5 |
| IIa13 | Round; op. white | 3 |
| IIa15 | Oval; op. white | 1 |
| IIa26 | Round; tsp. emerald green | 2 |
| IIa28 | Round; tsp. dark palm green | 2 |
| IIa31 | Round; tsp. turquoise | 2 |
| IIa36 | Round; op. aqua blue | 1 |
| IIa38 | Oval; op. aqua blue | 1 |
| IIa40 | Round; op. robin's egg blue; 4.3% | 18 |
| IIa41 | Circular; op. robin's egg blue | 1 |
| IIa46 | Round; op. shadow blue | 4 |
| IIa47 | Circular; op. shadow blue | 5 |
| IIa48 | Round; op. dark shadow blue | 6 |
| IIa49 | Oval; op. dark shadow blue | 3 |
| IIa54 | Oval; tsp. ultramarine | 1 |
| IIa55 | Round; tsp. bright navy | 14 |
| IIa56 | Circular; tsp. bright navy | 7 |
| IIb1 | Round; op. redwood with 6 op. black stripes | 1 |
| IIb2 | Round; op. redwood with 3 op. white stripes | 3 |
| IIb3 | Round; op. redwood with 4 op. white stripes | 1 |

## Table 8. Continued.

| Variety | Description | No. |
|---|---|---|
| IIb* | Round; op. redwood with 3 pairs of op. white stripes | 1 |
| IIb* | Round; op. redwood with 8 pairs of op. white stripes | 1 |
| IIb10 | Round; op. black with 3 op. white stripes | 2 |
| IIb15 | Round; op. black with 3 op. redwood and 3 op. white stripes | 2 |
| IIb18 | Round; tsp. light gray with 12 op. white stripes; "gooseberry" | 11 |
| IIb* | Round; op. white with 6 op. redwood stripes | 1 |
| IIb22 | Flat; op. white with 8 op. redwood stripes | 2 |
| IIb33 | Round; op. white with 3 op. redwood and 3 tsp. dark palm green stripes | 2 |
| IIb34 | Oval; op. white with 3 op. redwood and 3 tsp. dark palm green stripes | 1 |
| IIb56 | Round; op. robin's egg blue with 3 op. white stripes | 4 |
| IIb61 | Round; op. shadow blue with 6 op. redwood stripes | 5 |
| IIb72 | Oval; tsp bright navy with 2 op. redwood and 2 op. white stripes | 1 |
| IIb73 | Oval; tsl. dark navy with 3 op. white stripes | 1 |
| IIbb1 | Round; op. redwood with 3 tsp. bright navy on op. white stripes | 11 |
| IIbb5 | Round; op. black with 5 thin op. redwood on op. white stripes | 1 |
| IIbb7 | Round; op. black with 3 broad op. redwood on op. white stripes | 2 |
| IIbb10 | Round; op. black with 3 op. lemon yellow on op. redwood stripes and 3 thin tsp. bright navy on op. white stripes | 1 |
| IIg* | Round; tsp. turquoise with 3 op. white dots; "flush eye" | 1 |
| IIIb7 | Tubular; tsp. shadow blue exterior and core; op. white middle layer; 8 op. white stripes; unfinished | 1 |
| IIIb* | Tubular; tsp. bright navy exterior and core; op. white middle layer; 6 op. white stripes; unfinished | 1 |
| IIIbb3 | Tubular; op. redwood with op. black core (the core of one bead is square); 4 tsp. bright navy on op. white stripes; unfinished | 2 |
| IIIbb7 | Tubular; tsp. bright navy exterior and core; op. white middle layer; 3 op. redwood on op. white stripes; unfinished | 1 |
| IIIk2 | Tubular; 4-layer chevron: thin tsp. teal green exterior/ op. white/ op. redwood/ op. black core; unfinished | 2 |
| IIIk3 | Tubular; 5-layer chevron: tsp. bright navy exterior/ op. white/ op. redwood/ op. white/ tsp. bright blue core; beveled ends | 1 |
| IVa1 | Round; op. redwood with op. black core | 10 |
| IVa3 | Circular; op. redwood with tsp. light gray core | 2 |
| IVa* | "Barrel;" op. redwood with tsp. apple green core; cased in tsp. light gray glass; shiny; flanged ends; 12.6% (Pl. IB, R.1, #1) | 53 |
| IVa5 | Round. op. redwood with tsp. apple green core | 3 |
| IVa6 | Circular; op. redwood with tsp. apple green core | 6 |
| IVa10 | Round; op. black exterior and core; op. white middle layer | 2 |
| IVa13 | Circular; tsl. oyster white with tsp. light gray core | 3 |

## Table 8. Continued.

| Variety | Description | No. |
|---|---|---|
| IVa14 | Circular; tsl. oyster white with tsp. light aqua blue core | 3 |
| IVa* | Circular; op. shadow blue with op. black core | 1 |
| IVa19 | Circular; tsp. bright navy exterior and core; op. white middle layer; 9.2% | 39 |
| IVa* | Circular; tsp. bright navy with tsp. light aqua blue core | 2 |
| IVb* | Round; op. redwood exterior and core; op. black middle layer; 3 op. black stripes; cased in colorless glass (Pl. IB, R.1, #8) | 1 |
| IVb3 | Round; op. redwood with op. black core; 3 broad op. white stripes | 1 |
| IVb* | Round; op. redwood exterior and core; op. white middle layer; 16 op. white stripes | 2 |
| IVb15 | Circular; op. white with tsp. light gray core; 4 op. redwood and 4 tsp. bright navy stripes (Pl. IB, R.1, #4) | 2 |
| IVb16 | Circular; op. white with tsp. light aqua blue core; 3 op. redwood and 3 tsp. bright navy stripes | 4 |
| IVb* | Circular; op. white with tsp. light gray core; 8 op. redwood stripes | 1 |
| IVb* | Round; op. black exterior and core; op. white middle layer; 12 op. white stripes | 13 |
| IVb28 | Round; tsp. bright navy exterior/ op. white/ op. redwood core; 4 op. redwood, 4 op. white and 4 op. lemon yellow stripes | 1 |
| IVb29 | Round; tsp. bright navy exterior and core; op. white middle layer; 3 op. white stripes | 1 |
| IVb31 | Round; tsp. bright navy exterior and core; op. white middle layer; 6 op. white stripes | 1 |
| IVb* | Circular; tsp. bright navy exterior and core; op. white middle layer; 5 op. white stripes | 1 |
| IVb33 | Round; tsp. bright navy exterior and core; op. white middle layer; 8 pairs of op. white stripes | 1 |
| IVb35 | Round; tsp. dark navy exterior and core; op. white middle layer; 8 op. white stripes | 4 |
| IVb'* | Oval; tsl. black exterior and core; op. white middle layer; 4 op. white spiral stripes | 1 |
| IVbb1 | Round; op. redwood with op. black core; 3 op. black on op. white stripes | 1 |
| IVbb7 | Round; op. redwood with tsp. apple green core; 3 tsp. bright navy on op. white stripes | 1 |
| IVbb8 | Oval; op. redwood with tsp. apple green core; 3 tsp. bright navy on op. white stripes | 1 |
| IVbb* | Round; tsp. bright navy exterior and core; op. white middle layer; 6 triple op. redwood on op. white stripes (Pl. IB, R.3, #3) | 1 |
| IVg* | Round; tsp. bright blue exterior and core; op. white middle layer; 3 op. redwood stars on op. white dots on op. bright blue dots; "flush eye" | 4 |
| IVk3 | Round; 5-layer chevron: thin tsp. bright navy exterior/ op. white/ op. redwood/ op. white/ tsp. bright blue core | 6 |

## Table 8. Continued.

| Variety | Description | No. |
|---|---|---|
| IVk4 | Round; 5-layer chevron: thick tsp. bright navy exterior/ op. white/ op. redwood/ op. white/ tsp. bright blue core; 7.8% | 33 |
| IVk5 | Flat; 5-layer chevron: thick tsp. bright navy exterior/ op. white/ op. redwood/ op. white/ tsp. bright blue core | 7 |
| IVn6 | Round; 5-layer chevron: tsl. oyster white exterior/ op. white/ op. redwood/ op. white/ tsp. light gray core; 4 op. redwood, 4 tsp. dark palm green and 4 tsp. bright navy stripes (Pl. IB, R.3, #1) | 2 |
| IVn7 | Flat; 5-layer chevron: color sequence as for IVn6 | 2 |
| IVnn4 | Round; 4-layer chevron: op. white exterior/ op. redwood/ op. white/ op. redwood core; 6 broad op. redwood and 6 thin tsp. bright navy stripes | 11 |
| IVnn5 | Round; 4-layer chevron: op. white exterior/ op. redwood/ op. white/ tsp. bright blue core; 6 broad op. redwood and 6 thin tsp. bright navy stripes | 1 |
| IV** | Round; 4-layer chevron: tsp. light gray exterior/ op. white/ op. redwood/ tsp. light gray core; 6 op. redwood stripes and 6 tsp. bright navy on op. white stripes | 1 |
| WIe* | Truncated cone; tsp. dark palm green | 1 |

types are carried over from one village site to the next in the chronological sequence. Consequently they become the prime diagnostic artifact for determining 17th-century Five Nations Iroquois chronology.

The beads found at four important Mohawk village sites for this period are described in Tables 9-12. The Bauder site (Fda-13) inventory (Table 9) is a compilation of the beads from seven collections. Fifty-four seed beads are present, over half of which are of blue hues. Another uncataloged collection containing almost 400 beads contains mostly seed beads, also predominately of blue hues. Only two tubular beads are present. The IIa1 variant described in Table 9 is diagnostic of this period.

The Bauder site collection contains several distinctive beads that have not been found elsewhere in the Mohawk territory. Two of these are the tubular, multi-layered, "Nueva Cadiz" varieties (IIIc'*) which have twisted square-sectioned bodies. Beads similar to the three-layered specimen have been reported from four Seneca sites near Rochester (Smith and Good 1982: 51-2) which are attributed to the 1590-1635 period (Wray, Sempowski and Saunders 1991: 387).

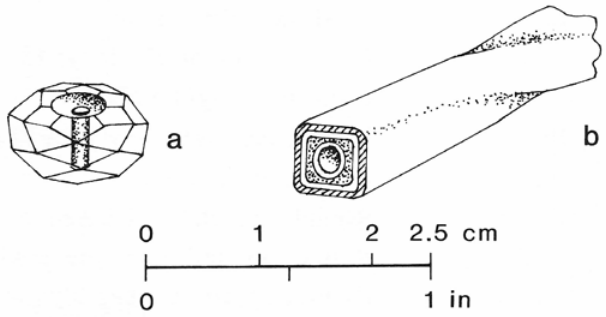


**Figure 6.** Unique beads from the Bauder site (ca. 1640): a, faceted Florida Cut Crystal; and b, Nueva Cadiz variety (drawing by M.C. Rumrill).

With the exception of the Daisy site in eastern Pennsylvania, these are the only occurrences of Nueva Cadiz beads north of Tennessee (Smith and Good 1982: 46-7). The four-layered specimen with the apple green core appears to be unique (Fig. 6,b).

Even more interesting and problematic are four rock-crystal beads which are identical in every respect to those known as Florida Cut Crystal (Smith 1983). They are oblate and exhibit irregular cut facets (Fig. 6,a). The two beads that could be examined have 14

## Table 9. The Bauder Site (Fda-13) Beads (n=198).

| Variety | Description | No. |
|---|---|---|
| Ia1 | Tubular; op. redwood; unfinished | 2 |
| IIa1 | Round; op. redwood with shiny colorless casing; tiny perforation; diagnostic (Pl. IIA, R.1, #4) | 7 |
| IIa3 | Oval; op. redwood | 2 |
| IIa6 | Round; op. black | 2 |
| IIa7 | Circular; op. black | 6 |
| IIa11 | Round; tsl. oyster white | 1 |
| IIa13 | Round; op. white | 1 |
| IIa19 | Circular; op. amber | 1 |
| IIa27 | Circular; tsp. emerald green | 1 |
| IIa37 | Circular; op. aqua blue | 3 |
| IIa40 | Round; op. robin's egg blue; 8.3% | 16 |
| IIa42 | Oval; op. robin's egg blue | 4 |
| IIa43 | Round; tsl. bright blue | 1 |
| IIa47 | Circular; op. shadow blue | 3 |
| IIa48 | Round; op. dark shadow blue | 3 |
| IIa49 | "Barrel;" op. dark shadow blue | 2 |
| IIa52 | "Barrel;" tsp. ultramarine; 8.3% | 16 |
| IIa54 | Oval; tsp. ultramarine | 2 |
| IIa56 | Circular; tsp. bright navy; 13.5% (Pl. IIA, R.1, #5) | 26 |
| IIa57 | Oval; tsp. bright navy | 3 |
| IIb18 | Round; tsp. light gray with 12 op. white stripes; "gooseberry" | 6 |
| IIb20 | Round; op. white with 3 op. redwood stripes | 1 |
| IIb* | Round; op. white with 2 op. redwood and 2 op. dark brown stripes | 3 |
| IIb* | Round; op. dark palm green with 3 op. redwood stripes | 1 |
| IIb56 | Round; op. robin's egg blue with 3 op. white stripes; 9.4% | 18 |
| IIb67 | Oval; tsp. bright navy with 3 op. white stripes | 1 |
| IIb68 | Round; tsp. bright navy with 4 op. white stripes | 2 |
| IIbb10 | Round; op. black with 3 op. lemon yellow on op. redwood stripes and 3 tsp. bright navy on op. white stripes | 1 |
| IIg4 | Round; op. white with 3 tsp. bright navy dots each containing 2 op. white rings; "flush eye" | 1 |
| IIIc'* | Tubular, square-sectioned; twisted; tsl. turquoise exterior/ thin op. white middle layer/ tsp. light blue core; "Nueva Cadiz" | 1 |
| IIIc'* | Tubular, square-sectioned; loose twist; tsl. turquoise exterior/ op. white/ op. redwood/ tsl. apple green core; "Nueva Cadiz" (Fig. 6,b) | 1 |
| IVa11 | Circular; tsp. light gray outer layer and core; op. white middle layer | 1 |
| IVa13 | Circular; tsl. oyster white with tsp. light gray core; 14.1% | 27 |
| IVa14 | Circular; tsl. oyster white with tsp. light aqua blue core | 1 |

## Table 9. Continued.

| Variety | Description | No. |
|---|---|---|
| IVa* | "Barrel;" op. white with tsp. light gray core | 4 |
| IVa17 | Circular; tsp. ultramarine exterior and core; op. white middle layer | 5 |
| IVa19 | Circular; tsp. bright navy exterior and core; op. white middle layer | 1 |
| IVa* | Circular; tsp. bright navy exterior/ op. white/ op. black core | 1 |
| IVb* | Circular; op. white with tsp. light gray core; 8 op. redwood stripes | 3 |
| IVk4 | Round; 5-layer chevron: thick tsp. bright navy exterior/ op. white/ op. redwood/ op. white/ tsp. bright blue core | 1 |
| IVn7 | Flat; 5-layer chevron: tsl. oyster white exterior/ op. white/ op. redwood/ op. white/ tsp. light gray core; 4 op. redwood, 4 tsp. dark palm green and 4 tsp. bright navy stripes | 3 |
| WIe* | Truncated cone; tsp. light gold | 1 |
| WIIa1 | "Corn" bead; tsp. light gold (Fig. 5,b) | 2 |
| WIIa3 | "Corn" bead; tsp. dark palm green | 1 |
| Glass | Buttons; op. black; iron shanks | 5 |
| Stone | Oblate; Florida Cut Crystal; faceted | 4 |

diamond-shaped facets encircling the middle and 6-7 pentagonal facets around either battered end for a total of 26-28 facets. The specimens are 11-13 mm in diameter and 7-9 mm in length.

The presence of the cut-crystal beads in the Mohawk region is enigmatic as no similar beads have been previously reported north of Leedstown, Virginia (Karklins 1992: pers. comm.). Also, these beads are believed to derive from the Spanish and are generally assigned to the second half of the 16th century (Smith 1983: 148, 155). In this instance they date significantly later. A worn Dutch copper coin bearing the inscription *Transisvlania* (Overijssel) and the date 1628 provides a viable *terminus post quem* for the Bauder site. The coin's worn condition, coupled with the other beads and firearm components that have been found at the site, suggests an occupation centering on about 1640.

The Van Evera-McKinney site (Cnj-51) is represented by 48 glass beads (Table 10) in two collections. Tubular beads comprise 25% of the total, while blue beads make up almost half (44%) the inventory.

The 115 beads reported for Oak Hill #1 (Cnj-2) (Table 11) are from a midden excavated by a crew from the 1983 Mohawk Valley Project directed by Dr. Dean Snow, SUNY Albany, and Dr. William A. Starna, SUNY Oneonta, and cataloged by Pamela E. Sugihara (Sugihara 1986). Tubular beads comprise 15.7% of the collection. Approximately half of the remainder are seed beads. Blue beads make up 40.9% of the total.

The Rumrill-Naylor site (Cnj-102) is believed to be the Canagere village mentioned in van den Bogaert's journal for 1634-35. The 144 beads described in Table 12 are a combination of 53 specimens surface-collected by the author, and 95 specimens derived from the excavation of two longhouses and adjacent areas by the 1984 Mohawk Valley project under the direction of Dr. Dean R. Snow, SUNY Albany. Blue beads predominate, comprising 60.4% and 51.6% of the surface and excavated collections, respectively. Tubular beads make up 17.0% and 10.5% of the two collections, respectively.

Artifacts which link the previous four sites to the same time period include identical polished slate pipes (Rumrill 1988:19), sheet-lead effigies (Rumrill 1988: 19-20), white-clay pipe bowl and stem marks,

## Table 10. The Van Evera-McKinney Site (Cnj-51) Beads (n=48).

| Variety | Description | No. |
|---|---|---|
| Ia1 | Tubular; op. redwood; unfinished | 3 |
| Ia2 | Tubular; op. black; unfinished | 1 |
| Ia5 | Tubular; op. white; unfinished | 2 |
| Ia7 | Tubular; op. light gold; unfinished | 1 |
| Ia19 | Tubular; tsp. bright navy; unfinished | 2 |
| Ib2 | Tubular; op. redwood with 6 op. white stripes; unfinished | 1 |
| Ibb2 | Tubular; op. black with 3 op. redwood on op. white stripes; unfinished | 1 |
| IIa1 | Round; op. redwood | 4 |
| IIa7 | Circular; op. black | 5 |
| IIa17 | Round; op. light gold | 1 |
| IIa18 | Round; op. amber | 1 |
| IIa27 | Circular; tsp. emerald green | 1 |
| IIa36 | Round; op. aqua blue | 2 |
| IIa38 | Oval; op. aqua blue | 1 |
| IIa43 | Round; tsl. bright blue | 2 |
| IIa56 | Circular; tsp. bright navy | 4 |
| IIa57 | Oval; tsp. bright navy | 2 |
| IIb56 | Round; op. robin's egg blue with 3 op. white stripes | 6 |
| IIbb21 | Round; op. teal green with 3 op. redwood on op. white stripes | 1 |
| IIg5 | Round; op. shadow blue with 3 op. redwood dots on op. white dots; "flush eye" | 1 |
| IIIa12 | Tubular; tsp. bright navy outer layer and core; op. white middle layer; unfinished | 1 |
| IVa13 | Circular; tsl. oyster white with tsp. light gray core | 3 |
| IVb16 | Circular; op. white with tsp. light aqua blue core; 3 op. redwood stripes and 3 tsp. bright navy stripes | 1 |
| IVn* | Round; 5-layer chevron: tsp. bright navy exterior/ op. white/ op. redwood/ op. white/ tsp. bright navy core; 6 narrow op. white stripes and 6 broad op. light gold stripes | 1 |

Campen bale seals originating from a center of textile manufacturing in the province of Overijssel, Holland, and black-glass buttons with iron-wire shanks. Firearm parts represent early Dutch snaphaunces and wheellocks, early English snaplocks and Spanish miquelets (Puype 1985: 85-6; Rumrill 1985, 1986). Van den Bogaert mentions in his 1634-35 journal that in every village the Mohawk would ask him to fire his musket and relates that there was no evidence of firearms. The recovered artifacts reveal that the villages were abandoned sometime after his journey.

Additionally, a white-clay pipe stem with the initials PG and a fleur-de-lis in a diamond (Fig. 7) was found at Rumrill-Naylor, and a bulbous pipe bowl (Fig. 8) with a raised heelmark of a mounted knight with raised sword and the initials VO was found at Van Evera-McKinney. Both marks are usually found on the same pipe which dates to 1640-47 at Fort Orange (Huey 1984: pers. comm.; 1988, 2: 272), and to 1630-40 at the Onondaga Shurtleff site (Bradley 1976).

## Table 11. The Oak Hill #1 Site (Cnj-2) Beads (n=115).

| Variety | Description | No. |
|---|---|---|
| IIa1 | Round; op. redwood cased in colorless glass (shiny); tiny perforation; diagnostic variant | 6 |
| IIa7 | Circular; op. black | 14 |
| IIa40 | Round; op. robin's egg blue | 16 |
| IIa44 | Round; tsp. cerulean blue | 2 |
| IIa51 | Circular; tsp. dark shadow blue | 3 |
| IIa57 | Oval; tsp. bright navy | 4 |
| IIb56 | Round; op. robin's egg blue with 3 op. white stripes | 4 |
| IIIa12 | Tubular; tsp. bright navy outer layer and core; op. white middle layer; unfinished | 18 |
| IVa5 | Round; op. redwood with tsp. apple green core | 2 |
| IVa11 | Circular; tsp. light gray outer layer and core; op. white middle layer | 4 |
| IVa13 | Circular; tsl. oyster white with tsp. light gray core; 36.5% | 42 |

Three of the above sites (Bauder, Rumrill-Naylor and Oak Hill #1) also figure prominently in the events surrounding the capture and death of Rev. Isaac Jogues, S.J., a French Jesuit priest on missionary service to the Huron Indians in Canada. After their capture in 1642 on the St. Lawrence River by a Mohawk war party, Jogues, his two French lay assistants, Rene Goupil and William Couture, and several Hurons were taken to the first Mohawk "castle" named Ossernenon where they ran the gauntlet and were variously tortured. Several of the Hurons were slain and others adopted into the tribe. Couture was also adopted and took up residence at Teonontoguen (Oak Hill #1) as a "Mohawk" until some years later when he was released and returned to Canada.


**Figure 7.** White clay pipe stem mark, ca. 1640 (drawing by M.C. Rumrill).

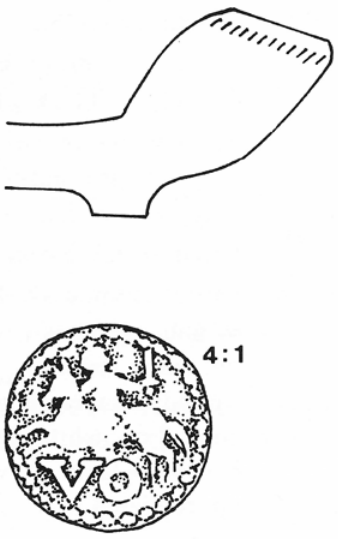


**Figure 8.** White clay pipe bowl and heelmark, ca. 1640 (drawing by M.C. Rumrill).

## Table 12. The Rumrill-Naylor Site (Cnj-102) Beads (n=144).

| Variety | Description | No. |
|---|---|---|
| Ia1 | Tubular; op. redwood; unfinished | 5 |
| Ia19 | Tubular; tsp. bright navy; unfinished | 5 |
| Ib13 | Tubular; op. pale blue with 3 op. redwood stripes; unfinished | 2 |
| Ib21 | Tubular; op. shadow blue with 6 op. redwood stripes; unfinished | 1 |
| Ibb1 | Tubular; op. redwood with 3 tsp. bright navy on op. white stripes; unfinished (Pl. IIA, R.1, #3) | 6 |
| IIa1 | Round; op. redwood cased in clear glass; tiny perforation; diagnostic variant | 5 |
| IIa3 | Oval; op. redwood cased in clear glass; tiny perforation; variant | 1 |
| IIa7 | Circular; op. black | 9 |
| IIa15 | Oval; op. white | 1 |
| IIa28 | Round; tsp. dark palm green | 1 |
| IIa31 | Round; tsp. turquoise | 4 |
| IIa36 | Round; op. aqua blue; 2 specimens have tiny perforations; 14.6% | 21 |
| IIa40 | Round; op. robin's egg blue | 3 |
| IIa44 | Round; tsp. cerulean blue (Pl. IIA, R.1, #2) | 6 |
| IIa48 | Round; op. dark shadow blue | 2 |
| IIa49 | Oval; op. dark shadow blue | 2 |
| IIa55 | Round; tsp. bright navy | 1 |
| IIa56 | Circular; tsp. bright navy | 1 |
| IIb36 | Oval; op. white with 4 op. lemon yellow and 4 tsl. dark palm green stripes | 2 |
| IIb55 | Flat; tsl. light aqua blue with 8 op. redwood stripes | 1 |
| IIb56 | Round; op. robin's egg blue with 3 op. white stripes | 8 |
| IIb57 | Round; op. robin's egg blue with 4 op. white stripes | 1 |
| IIb70 | Round; tsp. bright navy with 16 thin op. white stripes | 1 |
| IIb'2 | Round; op. black with 7 op. white spiral stripes | 2 |
| IIIbb4 | Tubular; op. redwood with tsp. apple green core; 3 op. black on op. white stripes; unfinished | 1 |
| IVa6 | Circular; op. redwood with tsp. apple green core | 3 |
| IVa13 | Circular; tsl. oyster white with tsp. light gray core; 20.8% | 30 |
| IVa* | Circular; op. dark shadow blue with tsp. bright navy core; 7.6% | 11 |
| IVb36 | Round; tsp. dark navy exterior and core; op. white middle layer; 12 op. white stripes | 6 |
| IVnn1 | Round; 3-layer chevron: op. redwood exterior/ op. white/ op. redwood core; 8 op. white stripes | 1 |
| IVnn4 | Round; 4-layer chevron: op. white exterior/ op. redwood/ op. white/ op. redwood core; 6 broad op. redwood and 6 thin tsp. bright navy stripes | 1 |

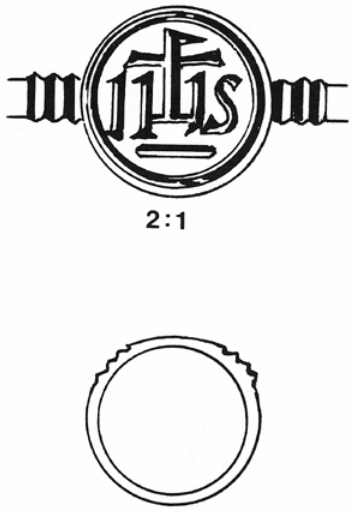


**Figure 9.** Incised brass Jesuit ring, ca. 1658 (drawing by M.C. Rumrill).

Goupil was made a slave and, on September 29, 1642, was slain at Ossernenon which the writer believes could be the Bauder site. Jogues was made a slave to a family that had recently lost a son in warfare. In 1643, he was secretly rescued by the Dutch and given transportation back to France (Jameson 1909: 235-53). Back in Canada in June of 1646, Jogues made a trip to the Mohawk Valley as a peace envoy in civilian attire, was respectfully accepted in this role and allowed to return to Canada. In October 1646, he returned to the Mohawk Valley as a priest in his Jesuit habit and was slain on the 18th of that month at the "lodge of the bear clan" (the writer believes that this is the location of the Rumrill-Naylor site), the Mohawk blaming a locked box that he had left in June for causing crop disasters and other troubles (Grassman 1969: 113-16; O'Callaghan 1853-87, III: 250, n. 4).

Since the "black robes" were persona non grata until ten years later, a number of significant finds reinforce the probability of these events occurring at the named villages and that the dates proffered for the sites are quite accurate. The items include a small rosary medal, a silver chalice and a pewter bottle cap at Oak Hill #1; a late 16th or early 17th-century Catholic French Grotto souvenir pin (J. Baart 1986: pers. comm.) and a hinged locking clasp at Rumrill-Naylor; and a pewter cup at Bauder.

**Unfinished-End Tubular Bead Period: 1646-1659**

When Mohawk villages moved to new locations in the mid 1640s, the renewal rites accompanying the occupation of their new homes again brought forth a dramatic change in glass bead styles. Tubular beads become the numerically dominant style. A large number are red and blue, with a fair number of white as well, suggesting that color was not a factor in the selection process at this time. A small tubular bead of opaque light gold glass (Ia7) appears at the end of this period and is a marker for ca. 1660. A small but significant number of round blue beads are found in the assemblages, helping to confirm the bead sequence. Almost all of the tubular beads exhibit broken or unfinished ends, a diagnostic trait for this period. Around 1659, short tubular beads with finished or rounded ends appear as a time marker as will be noted in the next section. Catlinite (red pipestone) beads appear for the first time in squared and rounded tubular forms, as do long tubular beads of marine shell.

Jesuit priests were allowed to visit the Mohawk Valley intermittently from 1655 to 1658 (Brodhead 1853, I: 646-7), and one finds religious rings with incised patterns (Fig. 9) on all sites of this period, thus serving as horizon markers. Firearms become abundant with late snaphaunces and English locks being the weapons of choice (Puype 1985; Rumrill 1986). Cast pewter pipes and lead and pewter effigies (Fig. 10), possibly produced by the Indians themselves (J. Baart 1987: pers. comm.), appear and disappear throughout Iroquoia in the first half of the 1650s and are diagnostic of this period (Rumrill 1988). White clay pipes with EB hallmarks on raised heels are common and flush-heel funnel bowls with the same EB impression (Fig. 11) are introduced near the end of the period. Brass Jew's harps stamped with a stylized R have been identified by Jan Baart (1986: pers. comm.) as being manufactured by one person exclusively in Holland from around 1640 to 1680. At least 80% of the artifacts found on sites of this period are European.

The Printup site (Fda-18), a village of approximately seven longhouses, produced 323 glass beads (Table 13).

**Figure 10.** Pewter pipe with "Birdman" effigy, ca. 1650 (drawing by M.C. Rumrill).

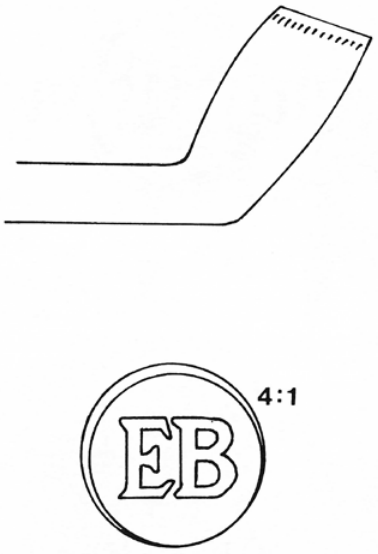


**Figure 11.** White clay pipe bowl with "EB" heelmark, ca. 1660 (drawing by M.C. Rumrill).

## Table 13. The Printup Site (Fda-18) Beads (n=323).

| Variety | Description | No. |
|---|---|---|
| Ia1 | Tubular; op. redwood; all but two specimens have unfinished ends; 41.5% (Pl. IIA, R. 2, #2) | 134 |
| Ia2 | Tubular; op. black; unfinished ends on all but one bead | 8 |
| Ia4 | Tubular; tsl. oyster white; unfinished; 6.5% (Pl. IIA, R.2, #4) | 21 |
| Ia5 | Tubular; op. white; the ends of all but one bead are unfinished | 6 |
| Ia13 | Tubular; tsl. aqua blue; unfinished; 5.6% | 18 |
| Ia19 | Tubular; tsp. bright navy; unfinished; 15.5% (Pl. IIA, R.2, #5) | 50 |
| Ib2 | Tubular; op. redwood with 6 op. white stripes; unfinished | 6 |
| IIa1 | Round; op. redwood | 7 |
| IIa36 | Round; op. aqua blue; 6.8% | 22 |
| IIa38 | Oval; op. aqua blue | 7 |
| IIa40 | Round; op. robin's egg blue | 1 |
| IIa45 | Circular; tsp. bright copen blue | 1 |
| IIa57 | Oval; tsp. bright navy | 10 |
| IIIa1 | Tubular; op. redwood with op. black core | 7 |
| IIIa3 | Tubular; op. redwood with tsp. apple green core; unfinished | 12 |
| IIIa12 | Tubular; tsp. bright navy exterior and core; op. white middle layer; unfinished | 12 |
| IIIbb6 | Tubular; op. black with tsp. light gray core; 3 op. redwood on op. white stripes | 1 |

## Table 14. The Mitchell Site (Cnj-49) Beads (n=36).

| Variety | Description | No. |
|---|---|---|
| Ia1 | Tubular; op. redwood; unfinished | 2 |
| Ia13 | Tubular; tsl. aqua blue; finished | 1 |
| Ia19 | Tubular; tsp. bright navy; unfinished | 1 |
| Ib* | Tubular; op. mustard tan with 8 op. redwood stripes; unfinished | 1 |
| IIa1 | Round; op. redwood | 2 |
| IIa36 | Round; op. aqua blue | 4 |
| IIa40 | Round; op. robin's egg blue | 4 |
| IIa41 | Circular; op. robin's egg blue | 1 |
| IIb7 | Round; op. redwood with 12 op. white stripes | 1 |
| IIb48 | Round; op. mustard tan with 8 op. redwood stripes | 1 |
| IIbb1 | Round; op. redwood with 3 tsp. bright navy on op. white stripes | 1 |
| IIIa12 | Tubular; tsp. bright navy exterior and core; op. white middle layer; 30.6% | 11 |
| IIIm1 | Round or oval; 7-layer "giant" chevron fragments: tsp. bright blue exterior/ op. white/ op. redwood/ op. white/ tsp. bright blue/ op. white/ tsp. bright blue core | 2 |
| IIIm* | Round or oval; 7-layer "giant" chevron fragments: tsp. bright blue exterior/ op. white/ op. redwood/ op. white/ op. redwood/ op. white/ op. redwood core | 1 |
| IVa13 | Circular; tsl. oyster white with tsp. light gray core | 1 |
| IVb36 | Round; tsp. dark navy exterior and core; op. white middle layer; 12 op. white stripes | 1 |
| IVn7 | Flat; 5-layer chevron: tsl. oyster white exterior/ op. white/ op. redwood/ op. white/ tsp. light gray core; 4 op. redwood, 4 tsp. dark palm green and 4 tsp. bright navy stripes | 1 |

Tubular beads with unfinished ends represent 83.9% of the total collection. Five other tubular specimens have finished ends. The collection also contains a long tubular catlinite bead (Pl. IIA, R.2, #3).

A village of approximately six longhouses, the Mitchell site (Cnj-49) yielded 36 glass beads (Table 14). Tubular beads with unfinished ends comprise 44.4% of the collection. Also present are two tubular purple wampum, a tubular bird-bone bead, a perforated elk's tooth, and a black-glass button.

At the Janie site (5808), a village of 3-4 longhouses, tubular beads with unfinished ends make up 71.4% of the glass bead collection (Table 15). Similarly, tubular specimens with unfinished ends comprise 77.8% of the total (Table 16) at the Brown site(Cnj-55).

### Short, Finished-End, Tubular Bead Period: 1659-1666

This period is very well documented both for its beginning date and its disastrous termination. New York colonial documents record that on September 24, 1659, Dutch and Mohawk representatives met at "Kagnuwage" where the most-easterly Mohawk village was preparing to erect palisades and had asked for horses to help with this task (Brodhead 1853, I: 659). In October 1666, the Marquis de Tracy

## Table 15. The Janie Site (5808) Beads (n=42).

| Variety | Description | No. |
|---|---|---|
| Ia1 | Tubular; op. redwood; unfinished; 11.9% | 5 |
| Ia16 | Tubular; op. shadow blue; unfinished | 1 |
| Ia17 | Tubular; tsp. dark shadow blue; unfinished | 1 |
| Ia18 | Tubular; tsp. ultramarine; unfinished; 23.8% | 10 |
| Ia20 | Tubular; tsp. dark navy; unfinished; 11.9% (Pl. IIA, R.2, #1) | 5 |
| IIa15 | Oval; op. white | 1 |
| IIa37 | Circular; op. aqua blue; 23.8% | 10 |
| IIb56 | Round; op. robin's egg blue with 3 op. white stripes | 1 |
| IIIa1 | Tubular; op. redwood with op. black core | 2 |
| IIIa3 | Tubular; op. redwood with tsp. apple green core | 1 |
| IIIa9 | Tubular; tsl. shadow blue with tsp. bright navy core | 1 |
| IIIa12 | Tubular; tsp. bright navy exterior and core; op. white middle layer; 9.5% | 4 |

## Table 16. The Brown Site (Cnj-55) Beads (n=9).

| Variety | Description | No. |
|---|---|---|
| IIa40 | Round; op. robin's egg blue | 2 |
| IIIa1 | Tubular; op. redwood with op. black core; unfinished | 3 |
| IIIa3 | Tubular; op. redwood with tsp. apple green core; unfinished | 3 |
| IIIa12 | Tubular; tsp. bright navy exterior and core; op. white middle layer; unfinished | 1 |

began a punitive mission of destroying "four Mohawk villages which totalled a hundred cabins" (O'Callaghan 1849-51, I; 68-70), and described the topography of the first village. Both the historical description and the archaeological evidence leave no doubt that this is the Freeman site. Kingston Larner, a long-time member of the Van Epps-Hartley Chapter of the NYSAA, supervised an excellent two-season excavation of a large area of the site and concluded that most of the village and palisade had been consumed by fire. No religious artifacts were unearthed. This is significant since both earlier and later villages had Jesuits in residence (i.e., ca. 1657-58 and ca. 1667-82), with many religious artifacts being recovered from these sites.

White clay pipes with EB flush-heel marks (Fig. 11) are prevalent at Freeman, as are brass Jew's harps with an impressed R. In addition, a piece of gray stoneware from a Bellarmine that shows the distinctive facial feature is attributable to the third quarter of the 17th century. Brass arrow points have a new standard configuration: stemmed with double perforation and elongated barbs (Fig. 12).

That the Mohawk were still making pottery at this late date is evidenced by ten rimsherds decorated with a pattern known as Fonda Incised, one in use since the era of the Garoga site a century before. The rimsherds do not seem to represent an earlier occupation since no other early artifacts were recovered.

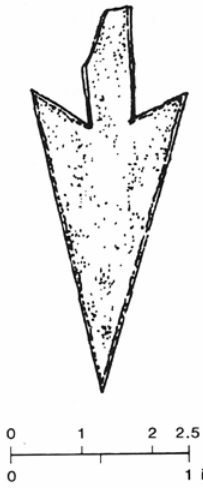


**Figure 12.** Tanged brass arrow point, ca. 1660 (drawing by M.C. Rumrill).

Of the three sites that will be dealt with here, only Freeman is cut and dried. The Allen and Fisk sites appear to have been relocated two to five years earlier, based on the number of tubular glass beads with unfinished ends that are present. These include the tubular light gold (Ia7) time marker for 1660 that has already been mentioned. Incised brass finger rings are present at Allen and Fisk. Allen also has numerous lead and pewter pipes and effigies that appear only in the 1650s (Rumrill 1986). It is a site with at least two historic occupations which will be dealt with later. Curiously, Allen (Table 17) and Fisk do not exhibit a color preference in their glass beads, but Freeman (Table 18) does, with red varieties making up 56% of the collection; tubular beads with finished ends comprise 57.1% of the total. At the Allen site, tubular beads make up 73.5% of the collection total; those with finished ends comprise 58.3% of the total.

The glass beads in the Fisk site (Cnj-38) collection were quantified only on the basis of shape: 64 tubular beads with unfinished ends, 24 tubular beads with finished ends, and one round bead (IIb*, op. black with 6 op. white stripes).

### Red Bead Period: 1667-1682

After the almost complete destruction of the Mohawk villages by de Tracy, archaeological and documentary evidence substantiates that all were rebuilt on the north side of the Mohawk River. Jesuit

## Table 17. The Allen Site (Cnj-28) Beads (n=132).

| Variety | Description | No. |
|---|---|---|
| Ia1 | Tubular; op. redwood; 9 unfinished, 5 finished | 14 |
| Ia2 | Tubular; op. black; finished | 24 |
| Ia5 | Tubular; op. white; 2 unfinished, 10 finished | 12 |
| Ia7 | Tubular; op. light gold; unfinished | 1 |
| Ia19 | Tubular; tsp. bright navy; finished | 15 |
| Ib3 | Tubular; op. black with 3 op. redwood stripes; finished (Pl. IIA, R.3, #6) | 13 |
| Ib4 | Tubular; op. black with 3 op. white stripes; 5 unfinished, 3 finished (Pl. IIA, R.3, #7) | 8 |
| Ib10 | Tubular; op. white with 3 op. redwood stripes; 2 unfinished, 2 finished (Pl. IIA, R. 3, #8) | 4 |
| Ib12 | Tubular; op. white with 3 op. black stripes; finished (Pl. IIA, R.2, #9) | 2 |
| IIa1 | Round; op. redwood | 30 |
| IIa2 | Circular; op. redwood | 5 |
| IIIa1 | Tubular; op. redwood with op. black core; 1 unfinished, 3 finished | 4 |

## Table 18. The Freeman Site (Fda-48) Beads (n=91).

| Variety | Description | No. |
|---|---|---|
| Ia1 | Tubular; op. redwood; finished (Pl. IIA, R.3, #1) | 5 |
| Ia2 | Tubular; op. black; finished; 11% (Pl. IIA, R.3, #2) | 10 |
| Ia5 | Tubular; op. white; finished; 11% (Pl. IIA, R.3, #3) | 10 |
| Ia7 | Tubular; op. light gold; unfinished (Pl. IIA, R.3, #4) | 4 |
| Ibb2 | Tubular; op. black with 3 op. redwood on op. white stripes | 1 |
| IIa1 | Round; op. redwood; 19.8% | 18 |
| IIa2 | Circular; op. redwood; 12.1% (Pl. IIA, R.3, #5) | 11 |
| IIa3 | Oval; op. redwood | 1 |
| IIa26 | Round; tsp. emerald green | 1 |
| IIa28 | Round; tsp. dark palm green | 2 |
| IIa37 | Circular; op. aqua blue | 1 |
| IIIa1 | Tubular; op. redwood with op. black core; finished | 6 |
| IIIa2 | Tubular; op. redwood with tsp. light gray core; finished | 1 |
| IIIa3 | Tubular; op. redwood with tsp. apple green core; finished; 20.9% | 19 |
| IVb* | Circular; op. redwood with op. black core; 8 op. black stripes | 1 |

priests, who were again allowed to reside in Mohawk country, converted many to Catholicism and persuaded them to defect to Canada where a village, also called Caughnawaga, was created, thereby carrying on the progression of villages of the same name. A goodly number of Mohawk residents were not actually Mohawk at all. At one point it was estimated that at least half were adopted captives and, in 1659, the entire Huron bear clan at Quebec, Canada, voluntarily transplanted to the Mohawk domain.

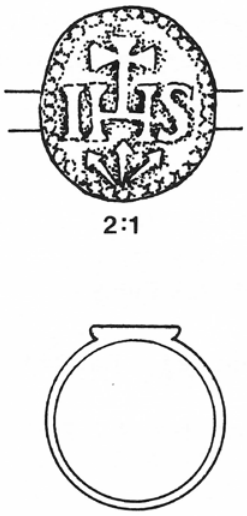


**Figure 13.** Stamped brass Jesuit ring, ca. 1670 (drawing by M.C. Rumrill).

Great Britain, meanwhile, had taken possession of New Amsterdam (New York City) on September 8, 1664, and with it the areas influenced by the Dutch known as New Netherland. Great Britain also considered the Five Nations Iroquois as part of this jurisdiction. In 1673, the Dutch regained control (O'Callaghan 1853-87, III: 198-202) only to lose it again by treaty to Britain on February 19, 1674. On orders from Governor Andros, an Englishman by the name of Wentworth Greenhalgh made a trip in 1677 through Iroquoia informing all Five Nations and any resident priests of the sovereign right of Great Britain to govern this territory. Greenhalgh recorded where each village he visited was situated in relation to the river and how big it was. He estimated a total of 96 "houses" and noted that all were on the north side of the river (O'Callaghan 1853-87, III: 250-52).

Religious items are found once again on sites of this period, and a majority of the brass rings are of stamped embossed types (Fig. 13) whereas earlier ones were all incised, making the former a good time marker. The presence of stamped rings

## Table 19. The Jackson-Everson Site (Cnj-5) Beads (n=275).

| Variety | Description | No. |
|---|---|---|
| Ia1 | Tubular; op. redwood; finished | 7 |
| Ia2 | Tubular; op. black; finished | 3 |
| IIa1 | Round; op. redwood; 52.2% (Pl. IIA, R.4, #1) | 143 |
| IIa2 | Circular; op. redwood; 23% (Pl. IIA, R.4, #3) | 63 |
| IIa3 | Oval; op. redwood (Pl. IIA, R.4, #2) | 3 |
| IIa7 | Circular; op. black | 1 |
| IIa40 | Round; op. robin's egg blue | 1 |
| IIIa1 | Tubular; op. redwood with op. black core; finished | 6 |
| IIIa2 | Tubular; op. redwood with tsp. light gray core; finished | 1 |
| IIIa3 | Tubular; op. redwood with tsp. apple green core; finished | 3 |
| IVa2 | Round; op. redwood with tsp. light gray core | 2 |
| IVa5 | Round; op. redwood with tsp. apple green core; 12% (Pl. IIA, R.4, #6) | 33 |
| IVa6 | Circular; op. redwood with tsp. apple green core | 8 |
| IVb36 | Round; tsp. dark navy exterior and core; op. white middle layer; 12 op. white stripes | 1 |

fits the framework established for the Seneca of this period described by Alice S. Wood (1974). The Fox Farm site has all the archaeological and documentary evidence for being the St. Peter's mission of the 1670s. Unfortunately, 90% of the area has been trucked away for gravel. A new white clay pipe heelmark is the "cross and orb" (Fig. 14) which also correlates extremely well with the occupation of the Onondaga Indian Hill (1663-82) (Bradley 1976: 4) and Bloody Hill (1675-85) (DeAngelo 1976) sites, and the Oneida Sullivan (1660-77) and Upper Hogan (1670-80) sites (Bennett 1983: 55-6).

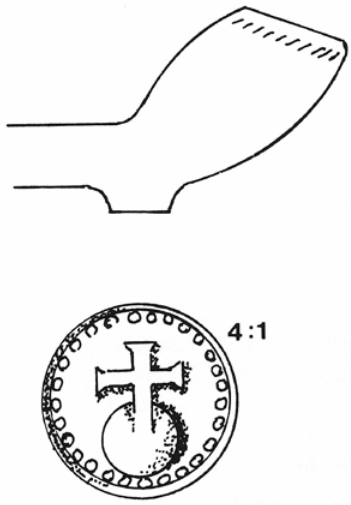


**Figure 14.** White clay pipe bowl with "cross and orb" heelmark, ca. 1675 (drawing by M.C. Rumrill).

Iron trade axes for this period have the round English hafting eye whereas the Dutch axe eye was oblong. Also, every site of this period is dominated by red glass beads, as presaged by their presence in significant numbers at the Freeman site. The renewal or revitalization ritual of glass bead selection was borne out once more with the rebuilding of the Mohawk castles and hamlets.

One village, Jackson-Everson, is believed to have been the new residence of the captive Hurons since virtually all of the native-made ceramics recovered from the site and adjacent burials are of incised Huron rimsherd designs. All sites of this period still contain native pottery and lithic artifacts.

The majority of the bead analysis for Jackson-Everson is derived from a 1983 midden excavation conducted by a small group of SUNY Albany graduate students and volunteers as an adjunct to the Mohawk Valley Project (Sugihara 1986: 57-9). Earl

## Table 20. The White Orchard Site (Cnj-3) Beads (n=88).

| Variety | Description | No. |
|---|---|---|
| IIa1 | Round; op. redwood; 53.4% | 47 |
| IIa2 | Circular; op. redwood; 23.9% | 21 |
| IIa3 | Oval; op. redwood | 6 |
| IIa6 | Round; op. black. | 2 |
| IIb'3 | Oval; op. black with 3 op. white spiral stripes (these beads, as well as specimens of several other varieties, were mounted on brass wire links) | 2 |
| IIIa1 | Tubular; op. redwood with op. black core; finished | 2 |
| IVa1 | Round; op. redwood with op. black core (Pl. IIA, R.4, #5) | 1 |
| IVa3 | Circular; op. redwood with tsp. light gray core | 1 |
| IVa5 | Round; op. redwood with tsp. apple green core | 3 |
| IVa6 | Circular; op. redwood with tsp. apple green core | 2 |
| WIe* | Truncated cone; tsp. emerald green | 1 |

## Table 21. The Schenck Site (Fda-14) Beads (n=141).

| Variety | Description | No. |
|---|---|---|
| Ia2 | Tubular; op. black; finished | 3 |
| Ia5 | Tubular; op. white; finished | 2 |
| Ia7 | Tubular; op. light gold; finished | 3 |
| Ia20 | Tubular; tsp. dark navy; unfinished | 1 |
| IIa1 | Round; op. redwood; 59% | 83 |
| IIa2 | Circular; op. redwood; 14% | 20 |
| IIa3 | Oval; op. redwood | 5 |
| IIa6 | Round; op. black | 7 |
| IIa7 | Circular; op. black | 1 |
| IIa40 | Round; op. robin's egg blue | 1 |
| IIb9 | Round; op. black with 3 op. redwood stripes | 1 |
| IIb23 | Round; op. white with 4 op. black stripes | 1 |
| IIIa1 | Tubular; op. redwood with op. black core; finished | 2 |
| IIIa3 | Tubular; op. redwood with tsp. apple green core; finished | 1 |
| IIIa8 | Tubular; tsl. oyster white with tsp. light gray core; unfinished | 2 |
| IIIa* | Tubular; op. shadow blue with tsp. light gray core; unfinished | 1 |
| IIIa9 | Tubular; tsl. shadow blue exterior/ op. white middle layer/ tsp. light gray core; unfinished | 1 |
| IVa5 | Round; op. redwood with tsp. apple green core | 6 |

**Table 22. The Fox Farm Site (Fda-20) Beads (n=92).**

| Variety | Description | No. |
|---|---|---|
| IIa1 | Round; op. redwood; 35.9% | 33 |
| IIa2 | Circular; op. redwood; 46.7% | 43 |
| IIa3 | Oval; op. redwood | 4 |
| IIa6 | Round; op. black | 1 |
| IIa7 | Circular; op. black | 3 |
| IIa8 | Oval; op. black | 1 |
| IIa36 | Round; op. aqua blue | 1 |
| IVa5 | Round; op. redwood with tsp. apple green core | 3 |
| IVa6 | Circular; op. redwood with tsp. apple green core | 1 |
| IVa8 | Round; op. redwood with tsp. bright blue core | 1 |
| IVb* | Round; op. redwood with tsp. apple green core; 3 op. black stripes | 1 |

Casler and Dr. Kingston Larner, serious longtime avocationalists and members of the Van Epps-Hartley Chapter of the NYSAA, also provided much information. The writer, additionally, made his own investigation and viewed other collections. Only the Sugihara assemblage, consisting of 275 glass beads plus one heirloom specimen, is described here (Table 19) since all glass bead assemblages for this period are monotonously the same (cf. Tables 20-22). At all the sites, red specimens comprise 89.6%-97.8% of the bead collections.

**Pea-Size Black Bead Period: 1682-1693**

Sometime between 1680 and 1683, the Mohawk, because of the necessity of revitalizing their habitat and resources, removed to locations on both sides of the Mohawk River. The Allen and Horatio Nellis sites are probably at the earlier end of the sequence since a few religious artifacts have been found in the habitation areas. Glass beads in the occupation mantle at Nellis are those prevalent during the 1682-93 period with a few leftovers from the previous period, while grave goods are predominantly heirloom types. Both bead assemblages are presented for comparative purposes (Tables 23-24). Note that red beads diagnostic of the previous period comprise 51.6% of the beads recovered from the Nellis site burials; 15.1% of the beads are even earlier.

Caughnawaga (Fda-2) is the present-day site of the Katerie Tekakwitha Memorial Shrine dedicated to an Indian maiden who the supervising Franciscans are petitioning the Catholic church to elevate to sainthood as the first Native American to achieve this status. The site is reported to be the location of the mission and spring at which she was baptized in 1676, but, unfortunately, archaeological evidence and historical documents reveal that this village was not in existence until at least five years after she left the Mohawk Valley in 1677 for Canada, where she died in 1680 (Grassman 1969: 314). The Jesuit priests were forced to leave the valley around 1682, and religious artifacts are no longer found on any of the Mohawk sites for the remainder of the 17th century. The entire Caughnawaga village site was excavated in the early 1950s (the only Mohawk village with this distinction), mainly through the efforts of Earl Casler, Donald Lenig and the Van Epps-Hartley Chapter of the NYSAA, with no religious artifacts being recovered. The bulk of the beads (88.3%) were black (Table 25).

Count Louis de Frontenac, Governor of New France (Canada), with over 600 French and Canadian soldiers and Indian allies, struck the Mohawk villages in February of 1693 (O'Callaghan 1853-87, IX:

## Table 23. Beads from the Occupation Mantle at the Horatio Nellis Site (Cnj-50) (n=36).

| Variety | Description | No. |
|---|---|---|
| Ia1 | Tubular; op. redwood; unfinished | 1 |
| Ia19 | Tubular; tsp. bright navy; unfinished | 2 |
| Ibb2 | Tubular; op. black with 3 op. redwood on op. white stripes; finished | 1 |
| IIa1 | Round; op. redwood | 1 |
| IIa6 | Round; op. black | 4 |
| IIa7 | Circular; op. black | 14 |
| IIa13 | Round; op. white | 1 |
| IIa36 | Round; op. aqua blue | 2 |
| IIa44 | Round; tsp. cerulean blue | 1 |
| IIa53 | Circular; tsp. ultramarine | 2 |
| IIIa1 | Tubular; op. redwood with op. black core; finished | 3 |
| IIIa3 | Tubular; op. redwood with tsp. apple green core; unfinished | 1 |
| IVa1 | Round; op. redwood with op. black core | 1 |
| IVa* | Circular; op. shadow blue with tsp. bright navy core | 1 |
| IVb16 | Circular; op. white with tsp. light aqua blue core; 3 op. redwood and 3 tsp. bright navy stripes | 1 |

550-2). Two large villages and one hamlet were pillaged and burned. One of these was doubtless Caughnawaga, the last to be referred to by that name in the Mohawk Valley. Another may have been the Horatio Nellis site. The third settlement remains unidentified, but was probably not the Allen site which, although contemporary, does not appear to have been harmed since its glass beads continue into the next period (Table 26).

HG heelmarks, some with three-pointed and others with five-pointed crowns, on flush-heel white clay pipes (Fig. 15) become dominant. Only the HG and EB makers marks seem to appear on flush-heel pipes in the Mohawk territory. Firearms have progressed to the well-known flintlock with a gooseneck cock, rounded surfaces on most exposed lock parts, lockplates with concave bottom edges, and artistic side plates (Puype 1985; Rumrill 1986). Red glass beads are replaced by pea-size black beads which comprise 52.8%-88.3% of the bead collections, and wound beads appear more frequently. Distinctive types for this period include "Roman" and flush eye beads (the latter are different from the earlier ones). Tubular catlinite and shell beads continue to be present, including a large conch-shell bead measuring 2.7 cm x 3.3 cm x 1.4 cm (Pl. IIA, R.4, #4).

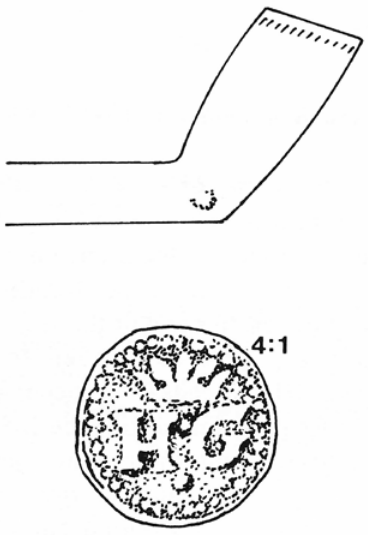


**Figure 15.** White clay pipe bowl with "crown and HG" heelmark, ca. 1690 (drawing by M.C. Rumrill).

**Table 24. Beads Associated with Burials at the Horatio Nellis Site (Cnj-50B) (n=126).**

| Variety | Description | No. |
|---|---|---|
| Ia1 | Tubular; op. redwood; very large; unfinished | 2 |
| Ia5 | Tubular; op. white; finished | 1 |
| Ib10 | Tubular; op. white with 3 op. redwood stripes; finished | 4 |
| Ib12 | Tubular; op. white with 3 op. black stripes; finished | 1 |
| Ic'1 | Tubular, square-sectioned; loose twist; op. redwood; finished | 1 |
| IIa1 | Round; op. redwood; 43.7% | 55 |
| IIa2 | Circular; op. redwood; 7.9% | 10 |
| IIa6 | Round; op. black; 11.1% | 14 |
| IIa7 | Circular; op. black | 5 |
| IIa12 | Circular; tsl. oyster white; 12.7% | 16 |
| IIa13 | Round; op. white | 1 |
| IIa31 | Round; tsp. turquoise | 1 |
| IIa33 | Round; tsp. light aqua blue | 1 |
| IIa44 | Round. tsp. cerulean blue | 1 |
| IIa45 | Circular; tsp. bright copen blue | 2 |
| IIa46 | Round; op. shadow blue | 1 |
| IIa52 | Round; tsp. ultramarine | 1 |
| IIa55 | Round; tsp. bright navy | 1 |
| IIIa1 | Tubular; op. redwood with op. black core; unfinished | 2 |
| IVb36 | Round; tsp. dark navy exterior and core; op. white middle layer; 12 op. white stripes | 2 |
| IVnn4 | Round; 4-layer chevron: op. white exterior/ op. redwood/ op. white/ op. redwood core; 6 broad op. redwood and 6 thin tsp. bright navy stripes | 1 |
| WId* | Doughnut-shaped; op. black (iridescent) (Pl. IIB, R.1, #8) | 1 |
| WIe* | Truncated cone; tsp. emerald green | 2 |

**Early Wound Bead Period: 1694-1712**

The Mohawk dispersed in several directions after Frontenac's crushing campaign of 1693 (O'Callaghan 1853-87, IV: 20). Various groups went to Schuyler Flats near Albany, Tribes Hill (originally Tripe's Hill) across the river from Fort Hunter, and "Eskarie" (Schoharie), 40 km (25 mi.) south of the Mohawk River on Schoharie Creek near Middleburgh, New York. Clan cantons were essentially abandoned and two main villages were the population centers: the "Lower Castle" near Fort Hunter and the "Upper Castle" near present-day Fort Plain (O'Callaghan 1853-87, IV: 802). There were other smaller communities. One, the Allen site near Canajoharie, was at times referred to as the "Middle Castle," and another was known as the "Castle of Tarajories." The latter was not the usual metaphoric name denoting the location of the village but, rather, the name of the sachem who resided there (O'Callaghan 1853-87, III: 901). The material culture was 99% European; native-made pottery had all but disappeared with only pottery pipes remaining as a vestige of this craft. However, shell and catlinite beads and ornaments increased in frequency.

Glass beads did not change radically as they had in the past at the time of village relocation, although wound and faceted beads did become more common.

## Table 25. The Caughnawaga Site (Fda-2) Beads (n=724).

| Variety | Description | | No. |
|---|---|---|---|
| Ia1 | Tubular; op. redwood; finished | | 1 |
| Ia19 | Tubular; tsp. bright navy; finished | | 1 |
| IIa1 | Round; op. redwood | | |
| IIa2 | Circular; op. redwood; 9 specimens are seed beads | (5.4%) | 39 |
| IIa3 | Oval; op. redwood | | |
| IIa6 | Round; op. black | | |
| IIa7 | Circular; op. black; 151 specimens are seed beads | (88.2%) | 639 |
| IIa8 | Oval; op. black | | |
| IIa13 | Round; op. white | | 6 |
| IIa14 | Circular; op. white; seed bead | | 1 |
| IIa31 | Round; tsp. turquoise | | 1 |
| IIa37 | Circular; op. aqua blue; seed beads | | 13 |
| IIa56 | Circular; tsp. bright navy; seed beads | | 15 |
| WIe* | Truncated cone; tsp. light gold | | 5 |
| WIIa3 | "Corn" bead; tsp. dark palm green | | 3 |

## Table 26. Beads of the First Historic Occupation at the Allen Site (Cnj-28) (n=39).

| Variety | Description | No. |
|---|---|---|
| IIa6 | Round; op. black; 38.5% | 15 |
| IIa7 | Circular; op. black; 33.3% | 13 |
| IIa13 | Round; op. white | 6 |
| IIg1 | Round; op. black with 3 op. white dots; "flush eye" (Pl. IIB, R.1, #6) | 1 |
| IIj1 | Round; op. black with 2 parallel op. white wavy lines; "Roman bead" (Pl. IIB, R.1, #2) | 1 |
| IIj2 | Round; op. black with 3 op. white wavy lines; "Roman beads" (Pl. IIB, R.1, #1) | 2 |
| IVb* | Round; op. white with op. redwood core; 4 op. redwood and 4 tsp. bright navy stripes | 1 |

Limited information is available for two sites of this period (Tables 27-28).

### Wound and Faceted Bead Period: 1712-1750

Britain's Queen Anne had a fort and chapel built for the Mohawk Indians in 1712 on the east side of Schoharie Creek where it enters the Mohawk River (O'Callaghan 1853-87, V: 279-81). A map accompanying a survey of this location (O'Callaghan 1849-51, III: 902) reveals that the "Lower Castle" consisted of two groups of cabins, one on each side of the creek. These are the Cold Springs sites and the associated cemetery at Auriesville. Also at Auriesville is the Roman Catholic Martyrs Shrine to

## Table 27. The Milton Smith Site (Fda-6) Beads (n=56).

| Variety | Description | No. |
|---|---|---|
| Ia1 | Tubular; op. redwood; unfinished | 1 |
| Ia5 | Tubular; op. white; finished | 1 |
| Ib10 | Tubular; op. white with 3 op. redwood stripes; finished | 1 |
| Ib22 | Tubular; tsp. dark shadow blue with 6 op. redwood and 6 op. white stripes; finished | 1 |
| IIa6 | Round; op. black; 24.4% of the glass beads (Pl. IIB, R.1, #7) | 11 |
| IIa7 | Circular; op. black; 13.3% of the glass beads | 6 |
| IIa13 | Round; op. white | 3 |
| IIa14 | Circular; op. white | 3 |
| IIa27 | Circular; tsp. emerald green (Pl. IIB, R.1, #5) | 1 |
| IIa37 | Circular; op. aqua blue | 1 |
| IIa40 | Round; op. robin's egg blue | 1 |
| IIa44 | Round; tsp. cerulean blue | 1 |
| IIIa1 | Tubular; op. redwood with op. black core; finished | 2 |
| IIIa3 | Tubular; op. redwood with tsp. apple green core; finished | 5 |
| IIIa8 | Tubular; tsl. oyster white with tsp. light gray core; finished | 1 |
| IIIbb1 | Tubular; op. redwood with op. black core; 3 op. black on op. white stripes; finished | 1 |
| IVa5 | Round; op. redwood with tsp. apple green core | 1 |
| IVa6 | Circular; op. redwood with tsp. apple green core | 1 |
| IVa* | Circular; op. redwood with tsp. bright blue core | 1 |
| WIe* | Truncated cone; tsp. light gold (Pl. IIB, R.1, #4) | 2 |
| Shell | Tubular; wampum; white | 7 |
| Shell | Tubular | 3 |
| Shell | Round | 1 |

## Table 28. Beads of the Second Historic Occupation at the Allen Site (Cnj-28) (n=14).

| Variety | Description | No. |
|---|---|---|
| WId* | Doughnut-shaped; tsl. white (Pl. IIB, R.1, #3) | 1 |
| WId1 | Doughnut-shaped; tsp. amber | 1 |
| WId* | Doughnut-shaped; tsp. citron | 1 |
| WIe* | Truncated cone; tsl. amber | 8 |
| WIIc5 | Pentagonal-faceted; tsp. amber; 5 pressed facets (Pl. IIB, R.2, #2) | 1 |
| WIIc11 | Pentagonal-faceted; tsp. ultramarine; 5 pressed facets (Pl. IIB, R.2, #5) | 1 |
| WIIc12 | Pentagonal-faceted; tsp. bright navy; 5 pressed facets | 1 |

## Table 29. Glass Beads from the Cemetery at the Galligan #2 Site (Cnj-90) (n=3028).

| Variety | Description | No. |
|---|---|---|
| Ia1 | Tubular; op. redwood; finished | 122 |
| Ia2 | Tubular; op. black; finished | 1 |
| IIa5 | Round; tsp. ruby | 38 |
| IIa6 | Round; op. black | 51 |
| IIa7 | Circular; op. black | 594 |
| IIa* | Circular; tsp. light gray (colorless) | 36 |
| IIa12 | Circular; tsl. oyster white | 477 |
| IIa17 | Round; op. light gold | 74 |
| IIa21 | Round; tsl. citron | 21 |
| IIa23 | Round; tsp. bright mint green | 2 |
| IIa27 | Circular; tsp. emerald green; seed beads (Pl. IIB, R.2, #3) | 1015 |
| IIa28 | Round; tsp. dark palm green | 102 |
| IIa* | Oval; tsp. light aqua blue | 1 |
| IIa34 | Circular; tsl. light aqua blue | 19 |
| IIa40 | Round; op. robin's egg blue | 2 |
| IIa44 | Round; tsp. cerulean blue | 2 |
| IIa45 | Circular; tsp. bright copen blue | 44 |
| IIa52 | Round; tsp. ultramarine | 46 |
| IIa54 | Oval; tsp. ultramarine | 14 |
| IIa55 | Round; tsp. bright navy | 4 |
| IIa56 | Circular; tsp. bright navy | 13 |
| IIa57 | Oval; tsp. bright navy | 3 |
| IIb69 | Oval; tsp. bright navy with 4 op. white stripes | 3 |
| IIb'2 | Round; op. black with 7 op. white spiral stripes (Pl. IIB, R.2, #4) | 36 |
| IIbb15 | Oval; op. white with 3 op. lemon yellow on tsp. bright navy stripes | 8 |
| IIj2 | Round; op. black with 3 op. white wavy lines; "Roman beads" | 35 |
| WIb1 | Round; tsp. light gray | 3 |
| WIb2 | Round; op. white | 74 |
| WIb7 | Round; tsp. amber | 4 |
| WIb9 | Round; tsp. dark palm green | 20 |
| WIb* | Round; op. light green | 3 |
| WIb15 | Round; tsp. ultramarine | 2 |
| WIb16 | Round; tsp. bright navy | 3 |
| WIc1 | Oval; op. white | 2 |
| WIIc2 | Pentagonal-faceted; tsp. light gray (colorless); 8 pressed facets | 41 |
| WIIc* | Pentagonal-faceted; op. white; 8 pressed facets | 15 |
| WIIc5 | Pentagonal-faceted; tsp. amber; 8 pressed facets | 64 |
| WIIc7 | Pentagonal-faceted; tsp. teal green; 8 pressed facets (Pl. IIB, R.2, #1) | 1 |
| WIIc10 | Pentagonal-faceted; tsp. bright copen blue; 8 pressed facets | 17 |
| WIIc11 | Pentagonal-faceted; tsp. ultramarine; 8 pressed facets | 2 |
| WIId4 | "Raspberry" bead; tsp. amber | 14 |

**Table 30. The Cold Springs Site (Fda-15) Beads (Surface Material) (n=13).**

| Variety | Description | No. |
|---|---|---|
| IIa7 | Circular; op. black | 3 |
| IIa8 | Oval; op. black | 1 |
| IIb* | Round; tsp. bright navy with 6 op. white stripes | 1 |
| IIbb* | Oval; op. white with 3 op. redwood on op. bright navy stripes | 1 |
| WIb5 | Round; tsl. pale blue (alabaster) | 1 |
| WIc4 | Oval; tsp. light gold | 1 |
| WIc* | Oval; tsp. light gray | 1 |
| WId2 | Doughnut-shaped; tsp. maple | 1 |
| WIIc5 | Pentagonal-faceted; tsp. amber; 5 pressed facets | 1 |
| WIIc10 | Pentagonal-faceted; tsp. bright copen blue; 5 pressed facets | 1 |
| WIIc12 | Pentagonal-faceted; tsp. bright navy; 5 pressed facets | 1 |

**Table 31. The Auriesville Shrine Site (Fda-4) Beads (n=94).**

| Variety | Description | No. |
|---|---|---|
| IIa14 | Circular; op. white | 28 |
| IIa46 | Round; op. shadow blue | 1 |
| IIj2 | Round; op. black with 3 op. white wavy lines; "Roman beads" | 9 |
| WIb3 | Round; tsp. pale blue | 1 |
| WIb4 | Round; tsp. pale blue (opalescent) | 1 |
| WIb5 | Round; tsl. pale blue (alabaster) | 1 |
| WIc2 | Oval; tsp. pale blue (opalescent) | 6 |
| WIc11 | Oval; tsp. ultramarine | 1 |
| WIIc2 | Pentagonal-faceted; tsp. light gray; 5 pressed facets (Pl. IIB, R.2, #6). | 8 |
| WIIc4 | Pentagonal-faceted; tsp. light gold; 5 pressed facets | 13 |
| WIIc6 | Pentagonal-faceted; tsp. cinnamon; 5 pressed facets | 1 |
| WIIc12 | Pentagonal-faceted; tsp. bright navy; 5 pressed facets | 8 |
| WIId6 | "Raspberry" bead; tsp. bright navy (Fig. 16) | 16 |

memorialize the deaths of Fr. Isaac Jogues and Rene Goupil and the birthplace of Katerie Tekakwitha.

General John S. Clark, an antiquarian from Auburn, N.Y., traveled around New York state in the late 19th century making positive, challenging statements concerning locations of various historical events. Clark stated that the Auriesville location was, in fact, the site of Ossernenon, the most easterly Mohawk village in the 1640s, and, therefore, was the spot where Jogues and Goupil lost their lives and Katerie was born. He based his declaration solely on the fact that there was a ravine there (one of many in the Mohawk Valley), and that Auriesville was on a high hill as reported in Jogues' correspondence. Some

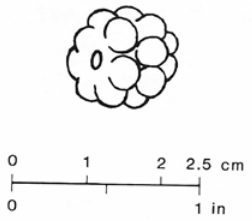


**Figure 16.** Wound glass "raspberry" bead (WIId) (drawing by M.C. Rumrill).

glass beads were also recovered from Indian burials in the immediate area. Qualifications for the proper bead types of the period (1642-46) and the locations of Jogues' and Goupil's deaths have already been discussed, and Katerie's birthplace (1656) was, in all probability, the Printup site. Bead seriations provide both the primary positive and negative evidence necessary to date these events. No evidence has been found that a village or habitation existed at Auriesville and, ironically, the burials with which the beads were found were those of Protestant Mohawk Indians.

The site known as Galligan #2 on the western edge of Fort Plain, N.Y., contains evidence of a Revolutionary War blockhouse and an associated fort, a small 16th-century Mohawk village, a small 17th-century Mohawk village, and an 18th-century cemetery for a nearby Mohawk village dating ca. 1720-50. The glass beads recovered from the cemetery are listed in Table 29. Of these, 74.5% are seed beads. Another 11.8% are wound, of which 6.8% are faceted. Subtracting seed beads from the total, 26.8% of the remainder are faceted. Shell beads include 19 marine-shell runtees 3.8 cm (1.5 in.) in diameter which are decorated and double-drilled transversely for use in necklaces (*see* cover), a conch-shell "Birdman" (*see* cover), and a good many white and purple wampum. Catlinite is well represented by 36 tubular, triangular, circular (Pl. IIB, R.3, #3) and square beads, as well as one turtle (Pl. IIB, R.3, #4), one heron (Pl. IIB, R.3, #5) and 7 beaver (Pl. IIB, R.3, #1) effigies. Three red-slate spacers (Pl. IIB, R.3, #2) are also present. It should also be noted that many of the conical and faceted glass beads are heavily oxidized.

At the Cold Springs (Table 30) and Auriesville Shrine (Table 31) sites, faceted beads comprise 23.1% and 26.6% of the total, respectively.

The Galligan #2, Cold Springs and Auriesville bead assemblages compare in almost all respects to the Seneca Townly-Huntoon site which Charles Wray (1983: 46) dates ca. 1710-45, the Oneida Lanz-Hogan (Ond 2-4) site which Monte Bennett (1982: 22) dates to the 1720-50 period, and the Schoharie Mohawk site of Westheimer Knoll dating to 1710-50. Significant artifacts for this period are ornamental brass finger rings, silver crosses and other silver adornments, and a large number of white clay smoking pipes with RT or "Robert Tippet" in a cartouche on the bowl (Fig. 17).

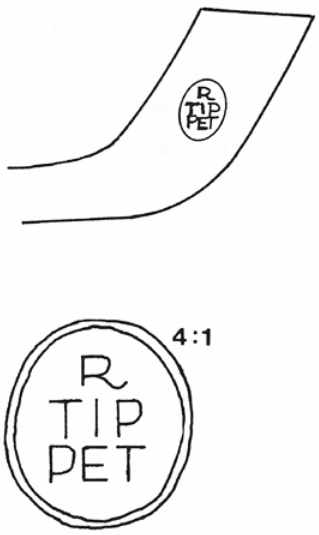


**Figure 17.** White clay pipe bowl by R. Tippet, ca. 1700s (drawing by M.C. Rumrill).

**Seed Bead Period: 1750-1785**

A lack of relevant glass-bead data precludes an inventory for the 1750-85 period. However, the writer concurs with Charles Wray's (1983: 47) assessment:

> By 1710 a trend toward tiny seed beads was underway. These beads were sewn in designs on the leggings and moccasins and later on the upper clothing as well. By the time of the American Revolution, necklaces were scarce while ornamental seed beads were very numerous. After the American Revolution, short tubular black (Ia2) and short tubular white (Ia5) beads became numerous and were used as substitute wampum in belts and sashes and occasionally as necklaces.

## CONCLUSION

Reference has been made throughout this discourse to a revitalization ritual coinciding with village relocation every fifteen years or so. There is no confirmation for this assumption, but the radical changes in glass bead types with each major movement for not only the Mohawk but the other Five Nations Iroquois as well strongly suggest mutual consent, an important part of the basic plan for their alliance. Accurate site chronology would be extremely difficult, if not impossible, without this phenomenon. The glass bead sequence, coupled with other datable objects and documentary references, helps us to understand the chronology and movements of the Mohawk from the mid-16th through the 18th century.

There is no indication that more than a very few glass beads found their way into Mohawk villages prior to ca. 1600. However, long tubular brass beads with small diameters are present just before this date, indicating at least indirect contact with Europeans. During the first quarter of the 17th century, there are many small monochrome glass beads while larger beads are mostly polychrome, especially chevron and gooseberry types. Red dots on blue flush eye beads and blue dots on white flush eyes, as well as "barrel" (flanged-end) beads, are unique to this period. In the second quarter of the 17th century, glass beads are predominantly round and blue in color. Small red beads cased in clear glass and having tiny perforations are diagnostic of this period. Unique and somewhat enigmatic specimens include several varieties of Nueva Cadiz and Florida Cut Crystal beads. White clay smoking pipes with hallmarks on raised heels make their appearance, as do firearm components.

From about 1645 to 1660, tubular beads with rough or unfinished ends predominate. Catlinite beads appear in small quantities, and religious articles — including incised brass Jesuit rings — are present, inferring dates almost exclusively within the 1655-58 period, as chronicled in *The Jesuit Relations* (Thwaites 1896-1901). A small, tubular, light gold bead of glass (Ia7) appears for a very short time beginning about 1660. Flush-heel white clay pipes are present, and villages of the 1660-66 period have no religious artifacts. In 1666, the Marquis de Tracy led soldiers from Canada to destroy Mohawk villages, all of which were located on the south side of the Mohawk River.

Sites of the 1667-82 period are dominated by red glass beads. Cross-and-orb heelmarks on white clay pipes are common and, with the return of the Jesuit missionaries, stamped finger rings with embossed religious and ornamental motifs become numerous. Flintlock firearms with rounded lock parts and gooseneck cocks are the preferred weapon henceforth.

About 1682, the Jesuits were again banished from the Mohawk Valley and religious artifacts disappear with them. Black pea-size beads, black flush eyes with white dots, and "Roman" beads are diagnostic of the 1682-93 period. Wound beads begin to show up in limited quantities, as do white clay pipes with HG-and-crown heelmarks.

In 1693, Frontenac led a military expedition from Canada that again destroyed the Mohawk villages and the inhabitants dispersed to widely scattered areas, eventually discarding longhouse and village life modes for small European-style farms. Wound beads, many of them faceted (type WIIc), predominate until about the mid-18th century when ornamental seed beads prevail.

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# COLOR PLATE CAPTIONS

Cover. *Mohawk Bead Sequence*: Shell "Birdman" and runtees from the Galligan #2 site. Collection of the Fort Plain Museum, Fort Plain, New York (this and the next four photos by D. Rumrill).

Pl. IA. *Mohawk Bead Sequence*: The 1560-1615 Period. **R.1**: 1, tubular brass; 2, shell wampum; 3, shell discoidal; 4, IIa15; 5, IVa13; 6, IIa7. **R.2**: 1, IIa40; 2, IIa* "barrel" bead; 3, IIa6; 4, IVk3; 5, IIb56. **R.3**: 1, IIb18; 2, IVa8; 3, IIb10; 4, IIbb1; 5, white-glass button.

Pl. IB. Mohawk Bead Sequence: The 1615-1630 Period. **R.1**: 1, IVa* red-on-green "barrel" bead; 2, IVb* (blue with 6 white stripes); 3, IVa18; 4, IVb15; 5, IVa1; 6, Ia13; 7, IIa57; 8, IVb* (redwood with 3 black stripes). **R.2**: 1, IIg4; 2, IVk* 5-layer chevron; 3, IIa28; 4, IVb31; 5, IVg1. **R.3**: 1, IVn6; 2, IVb33; 3, IVbb* (blue with red on white stripes); 4, IIbb7; 5, IVn2.

Pl. IIA. *Mohawk Bead Sequence*: The 1630-1682 Period. **R.1**: 1, IVnn4; 2, IIa44; 3, Ibb1; 4, IIa1; 5, IIb56; 6, IVb36. **R.2**: 1, Ia20; 2, Ia1; 3, catlinite; 4, Ia4; 5, Ia19. **R.3**: 1, Ia1; 2, Ia2; 3, Ia5; 4, Ia7; 5, IIa2; 6, Ib3; 7, Ib4; 8, Ib10; 9, Ib12. **R.4**: 1, IIa1; 2, IIa3; 3, IIa2; 4, conch shell; 5, IVa1; 6, IVa5.

Pl. IIB. *Mohawk Bead Sequence*: The 1682-1785 Period. **R.1**: 1, IIj2; 2, IIj1; 3, WId* (white doughnut-shaped); 4, WIe* (lt. gold truncated cone); 5, IIa27; 6, IIg1; 7, IIa6; 8, WId* (black doughnut-shaped). **R.2**: 1, WIIc7; 2, WIIc5; 3, IIa* (assorted "seed" beads); 4, IIb'2; 5, WIIc11; 6, WIIc2. **R.3**: 1, catlinite beaver; 2, red slate spacer; 3, catlinite disc with glass beads; 4, catlinite turtle; 5, catlinite heron.

# BEADS

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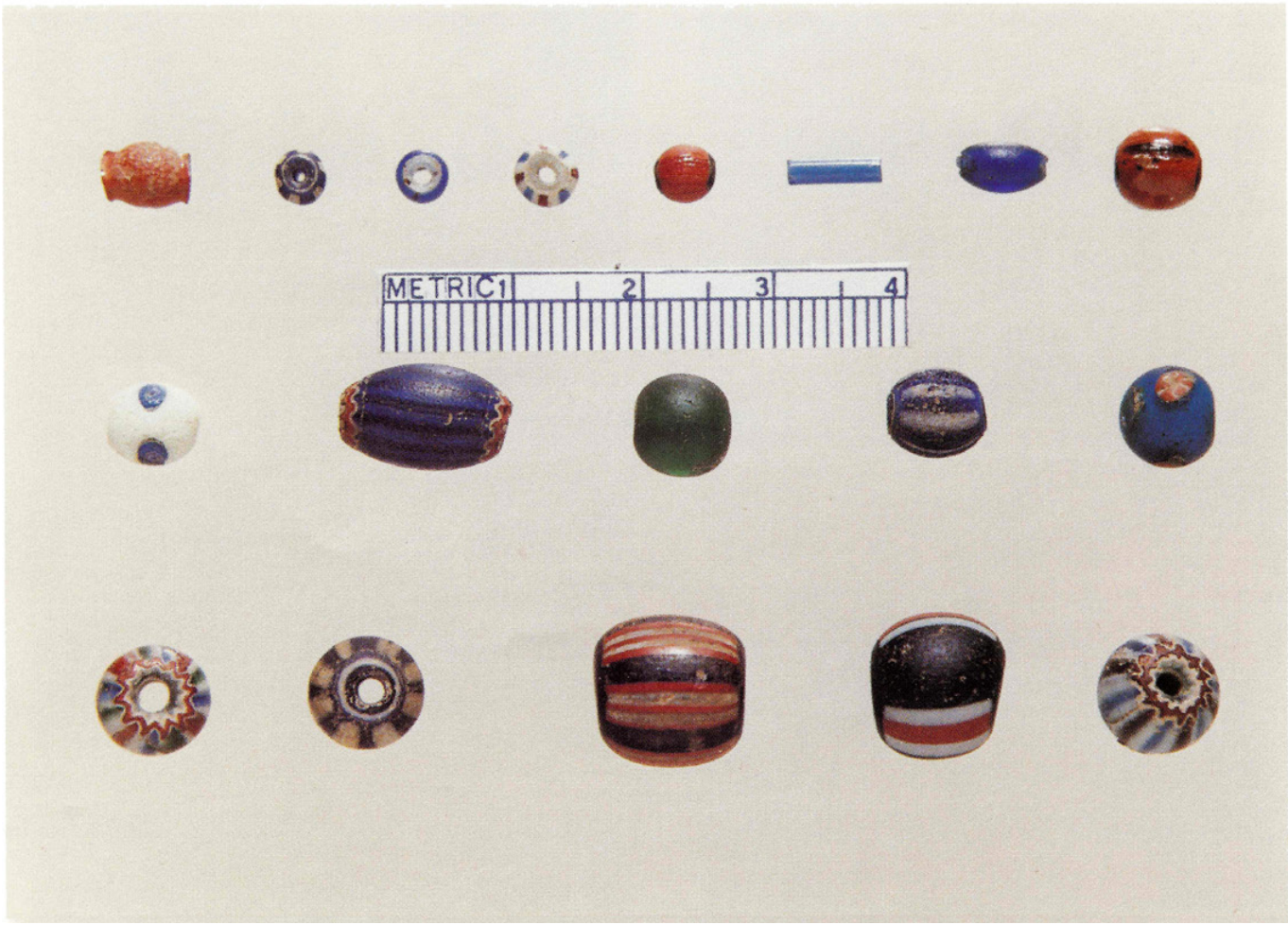
*Mohawk "Birdman" Figurine*


**Plate IA.** *Mohawk bead sequence:* The 1560-1615 period.

(*See* page 3 for full captions)

**Plate IB**. *Mohawk bead sequence*: The 1615-1630 period.



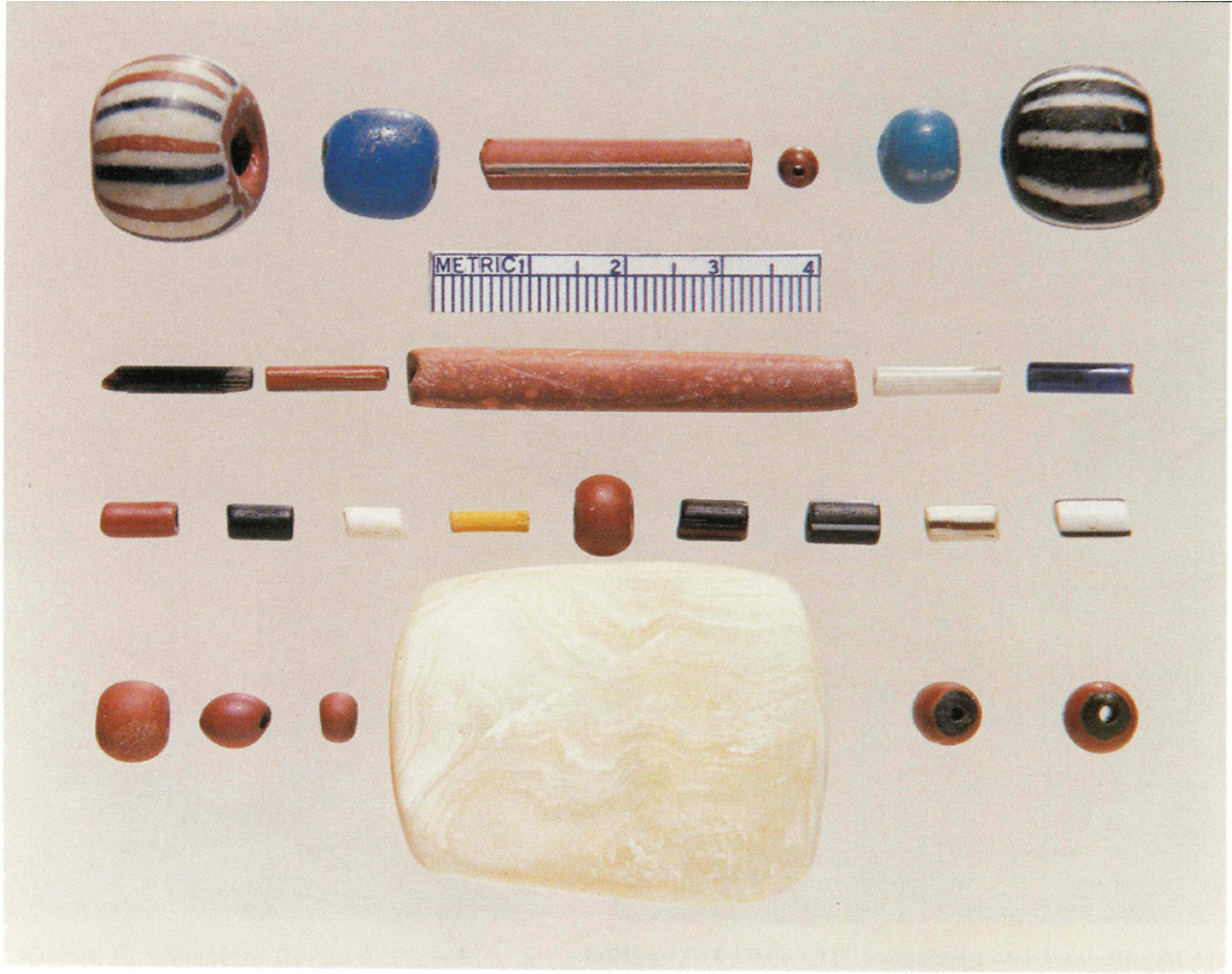



**Plate IIA.** *Mohawk bead sequence*: The 1630-1682 period.

**Plate IIB.** *Mohawk bead sequence*: The 1682-1785 period.

# FRENCH BEADMAKING: AN HISTORICAL PERSPECTIVE EMPHASIZING THE 19th AND 20th CENTURIES

**Marie-José Opper and Howard Opper**

*Beadmaking in France began in pre-Roman times. It reached its zenith in the 19th and 20th centuries when beads of sundry materials and styles were produced in both artisanal workshops and large factories to decorate a multitude of items and to serve as components of fashion jewelry. This article discusses the different beadmakers and their varied products.*

## EARLY FRENCH BEADMAKING

The oldest glass beads found in France come from the sites of megalithic monuments and bring to mind ancient Phoenician, Syrian and Egyptian beads. Phoenician merchants began trading glass beads with the local inhabitants at a time when the people of ancient France had not yet learned to work glass themselves. Artisanal glassmakers established themselves in pre-Roman Gaul, as attested by the tombstone of a Carthaginian glassworker discovered at Lyon (Barrelet 1954: 7). However, it was not until the Roman occupation that the Gauls learned the art of making glass beads. Combed and eye beads, reminiscent of more ancient styles, appeared during the Merovingian era (van der Sleen 1967: 54).

The manufacture of glass was widespread throughout France during the medieval period. Glass objects were sold by mercers or at local markets. Travelling salesmen also carried them, or they could be purchased directly from the manufacturer in several cities (Foy 1989: 378).

Precious stones were imitated in glass beginning in the 13th century (Barrelet 1954: 43), and Italian glassmakers brought their unique skills to France in the 16th century (Garnier 1886: 115). According to Le Vaillant de la Fieffe (1873), glass rods and *émaux de verre* (opaque glass containing tin oxide) of rich, previously unknown colors appeared at this time.

Working principally with glass and bone, French beadmakers were known as *patenotriers*, and sold all kinds of rosaries and necklaces. Their work was recognized through written authorization from the king, accorded initially in 1569 (Garnier 1886: 143). Certain of the *patenotriers* prepared their own glass rods and *émaux de verre*, which they then formed into beads.

In the 17th and 18th centuries, glassworkers, *émailleurs* (lampworkers specializing in small glass objects; Fig. 1) and *patenotriers* established their sales offices in Paris on rue St. Denis in a building called *Le Renard Rouge* (The Red Fox) where they unloaded and sold their consignments. The *émailleurs* were known in particular for their manufacture of glass imitation pearls. In order to make them, they needed a semi-opaque material called *girasol* that came from Nevers, Neaufles Saint-Martin, Dangu in Normandy, Coudrecieux and Ferté-sur-Oise (Barrelet 1954: 119). In 1686, a Parisian beadmaker named Jacquin began using a nacreous material called *essence d'orient*, derived from the scales of the bleak (*Alburnis alburnis*), a European freshwater fish, for the same purpose (Garnier 1886: 107). These beads were referred to as *perles baroques*.

According to archival documentation, the *émailleurs* also made objects such as butterflies, flowers, and rural and religious scenes which were decorated with all kinds of glass beads (Barrelet 1954: 118). Garnier (1886: 336) refers to "Raux, glassmaker to the king and jewelry merchant, who sold diverse small glass objects including fine bead

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**Figure 1.** *Émailleur* or lampworker; 18th-century engraving from Diderot's *Encyclopédie*.

necklaces and ear pendants on the rue St. Martin" in Paris.

Glass beads imitating emeralds, rubies, quartz, lapis lazuli and other precious stones were also very popular during the 18th century. Nicolas Mazzolao established a royal factory making imitation stones of all colors at Eauplet, near Rouen (Barrelet 1954: 120). Numerous Venetian glassworkers came to work in France after 1797, the date when Venice fell under the control of Napoleon. The Italian beadmaking industry subsided and the number of manufacturers was reduced (Marascutto-Stainer 1991: 64). Glass imitation diamonds were perfected by the German Strass who began working in Paris in the 1770s.

Most of the *émailleurs* and the *patenotriers* of the 18th century ordered the glass rods they needed from specialized glassmakers. Certain kinds of glass were only made at Nevers which exported them throughout France (Barrelet 1954: 119). Other producers of glass rods were Goutté at Chaillot, Lambert and Boyer at Sèvres and Oppenheim at Petit-Quevilly. Using these rods, the towns of Aubermesnil and Villers in Normandy became centers for the manufacture of common glass beads called *rocailles* (Barrelet 1954: 119). As was the case in the Middle Ages, these beads were still sold by mercers. Their role in the 18th century was one of an important corporation whose overall activities were analagous to those of modern department stores (Delpierre 1981: 29). In 1816, a Parisian glassmaker named J.A. Paris succeeded in imitating Venetian glass. He made ingots, rods and tubes of *émaux*, as well as millefiori paperweights.

## 19TH AND 20TH-CENTURY BEADMAKERS

During the 19th and 20th centuries, the French produced beads of many different materials. The bulk of these, notably porcelain or "tile" beads, glass embroidery beads and probably most metal types, were made on a large scale in factories. Other more intricate beads were individually fashioned by artisans operating in workshops or at home.

### Porcelain Beads: The Bapterosses Company

The 19th century saw the appearance of a number of new techniques and materials for the production of beads. Among them was a machine that could make pressed beads quickly and in great quantities, thus making them a lucrative commodity.

Porcelain beads manufactured by the Bapterosses factory in Briare, France, were made according to a procedure known as the "Prosser process," first patented in 1840 by the Englishman Richard Prosser (Sprague 1982: 168). French inventor and entrepreneur J. Felix Bapterosses made significant improvements in the process, and his company had great success distributing porcelain beads from 1864 to 1973. The following information about the man and his process is condensed from a personal communication from Monsieur Jean Bessone (1991), a retired chief officer of the *Compagnie Francaise de l'Afrique de l'Ouest* (C.F.A.O.) which did business with Bapterosses from 1955 to 1973.

The Prosser process was used and improved upon by Bapterosses to the point that, in 1872, the U.S. Patent Office issued him a patent for "improvement in machines in making buttons, beads...." Two new inventions that helped to establish this industry were a powdery "paste" rendered slightly plastic by the addition of milk, and a special muffler furnace or enamel kiln. The new process and the new machine allowed for continuous operation under the direct supervision of a single technician. Before launching

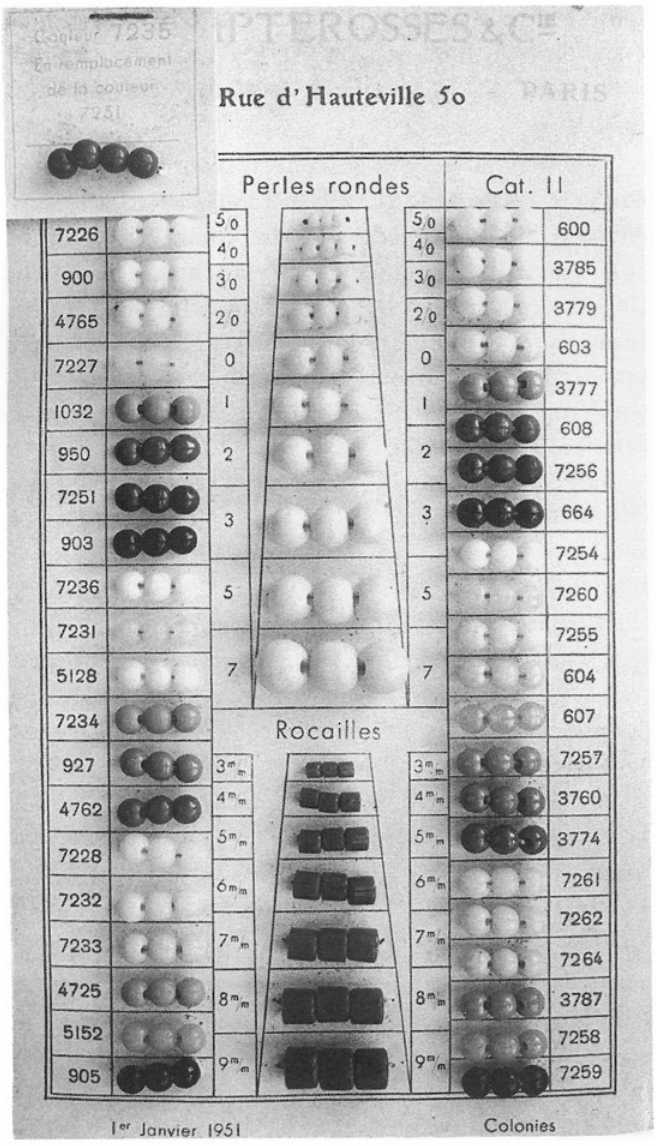


**Figure 2.** Sample card of Bapterosses porcelain beads from 1951 (all photographs by the authors).

into the manufacture of beads, Briare concentrated on making porcelain buttons.

Bapterosses began producing beads in 1864. Already in 1871, variously colored porcelain beads were reported in the inventory of the *Buhan et Teisseire* trading company based in Dakar, Senegal. His success was such that, in a period of only 20 years, the number of workers making beads in the Briare region rose to 1500, and the population of the area increased from 2000 to 5000. Bapterosses beads rapidly took their place with glass beads as part of the traditional stock of articles destined for international export (Fig. 2).

The essential difference between the production of porcelain and glass beads is that porcelain beads involve working with a cold ceramic paste that is molded to shape in presses before firing, whereas glass beads are made from glass initially worked in a molten state.

Molding the porcelain beads in presses, and then firing them in an oven involved a number of operations centering on the preparation of the paste. This was accomplished in the following manner. First, a proportioned mixture of three essential elements — feldspar, calcium fluoride and Fontainebleau sand — had to be prepared. The first two components had to be cleaned, crushed, dried, pulverized and sifted. The mixture was then fused at 1,400°C, cast into water, dried and stockpiled. This material, which resembles crushed glass, was called *calcine*. Next, this material was pulverized and sifted at which point it became known as *pâte*. Finally, a proportioned mixture of differently colored *pâtes* was combined with corrective oxides to produce desired colors during the final firing.

Bapterosses constructed his own generator for the production of electricity in his factory. Other facilities that allowed him to control all the different phases of production and distribution included a printshop, a shop for making containers, a woodlot that provided the primary material for making containers, and a dairy farm that provided the milk required for rendering the porcelain mixture plastic, as well as giving it a pure white color. In addition, Bapterosses established quality control laboratories for each basic product and for each phase of the manufacturing process.

As an adjunct to this autonomous local industry, Bapterosses established a town for the workers near the factory which included a school for the children of the employees, a hospital and church. Each family had its own garden. Bapterosses was also an active participant in the planning of the town offices and the local police force.

From 1955 to 1973, certain agreements allowed Bapterosses and the C.F.A.O. to collaborate very closely in the marketing of beads in West Africa. As the former company's business declined during this

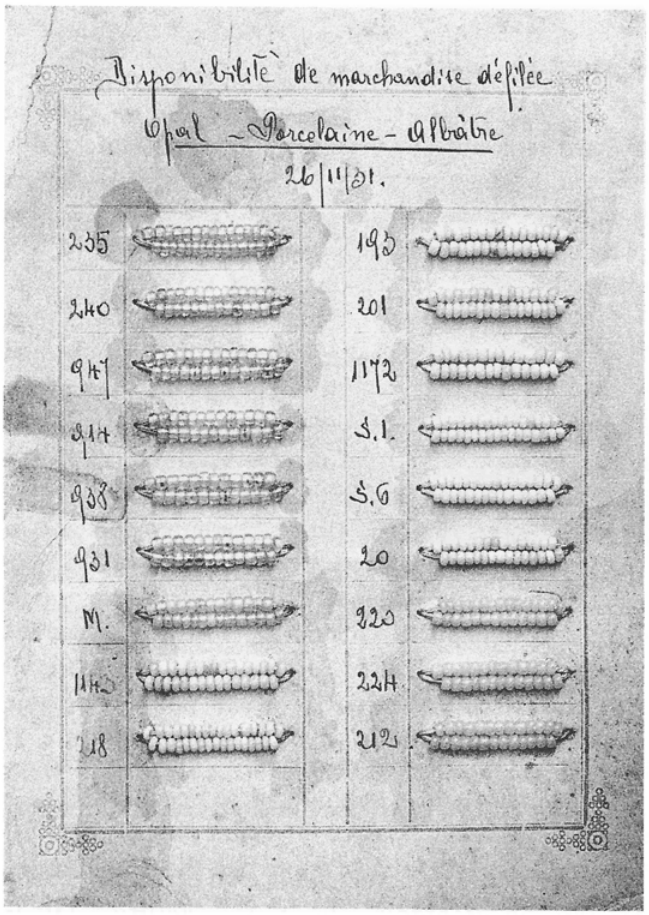


**Figure 3.** Bead sample card dated 1931 from *Etablissements Salvadori et Barbini* (collection of Anita Gumpert).

period, there was a forced reduction of personnel at Briare. As a consequence, the manufacture of beads (impossible to render automatic, thus demanding many workers) was considerably reduced. As a graphic example, 338 tons of Bapterosses beads were handled by the C.F.A.O. in 1959, whereas only 129 tons were sold in 1973. Today, manufacturing activities at Briare are under the control of an American group and center on mosaic tiles. Briare no longer makes beads.

### Glass Rocaille Beads: Etablissements Salvadori

Located at Vaulx-en-Velin, just a few kilometers from the major city of Lyon, *Etablissements Salvadori* manufactures *rocailles* (Fig. 3), a term that defies literal translation. More a category than a type of glass bead, *rocailles* include bugle, seed, pony and crow beads that range from 1.5 mm to 7.0 mm in diameter. Anita Gumpert's (1990) article provides the basis for the following description of the Salvadori industry.

The Salvadoris are descended from Murano glass workers. The factory was established in 1929 by Alfredo Salvadori, and offered some 20 different colors and 10 different sizes of glass beads. Brothers Gérard and Michel Salvadori, along with their cousin Jean-Pierre, inherited the business from their grandfather and currently run the firm. Initially, this was one of several *rocaille* factories in France producing beads for the funeral trade. Other manufacturers included *Compagnie Française pour l'industrie des rocailles* at Chauny in northern France and *La perle idéale* in Paris (closed in 1946 and 1947, respectively), as well as *Société générale pour l'industrie de la verroterie* at Bron and *Établissements Maschio frères* at Villeurbanne in the Lyon suburbs. Although Francis (1988: 49) indicates that the two latter concerns are currently producing beads, they actually went out of business in 1958 and 1950, respectively (Gérard Salvadori 1992: pers. comm.). The fashion of adorning graves with flowers and wreaths made of seed beads mounted on wire (Figs. 4-5) lasted from the 1880s until around World War II.

Today, the Salvadoris export beads throughout the world, even to other countries that produce *rocailles*, such as India, where labor is much cheaper than in France. Extreme care is taken in providing even the smallest beads with a perforation large enough for a needle, whereas seed beads from some Asian countries are often unevenly and narrowly perforated. In the United States, the Salvadoris' most important customers include Native Americans. The company has been able to revive 19th-century beads in colors that are especially appealing to Southwestern tribes. The firm is represented in America by the Bovis Bead Company in Tombstone, Arizona.

The Salvadoris' manufacturing process begins by feeding sand and certain metallic oxides into a furnace. The oxides determine the diaphaneity of the glass. The sand is considered Europe's finest and comes from Fontainbleau, the same site from which Bapterosses gathered its sand. The cycle of glass making starts with the lightest color, white, and goes through about 60 shades, ending with black. It takes

**Figure 4.** Detail of funerary wreath made of *rocailles* mounted on wire, mid 1920s.

several hours at 1,400°C for one batch. After each color, the furnace has to be cooled down and scrubbed.

Until the 1950s, the process of drawing out the gather was done by hand. Now, a machine replaces the two men who ran in opposite directions, each holding one end of the metal rod to which the hollow glass gather was attached. A regulating mechanism sets the speed; the faster it moves, the thinner the tube. Despite this mechanization, Gérard Salvadori remains one of the few masters at drawing canes by hand.

The tubes are subsequently cut into bead-size segments that are placed into a huge bowl-like container with a paste of charcoal and chalk. The container is rocked, forcing the paste into the perforations to prevent their collapse when the tube segments are heated in a tumbler furnace.

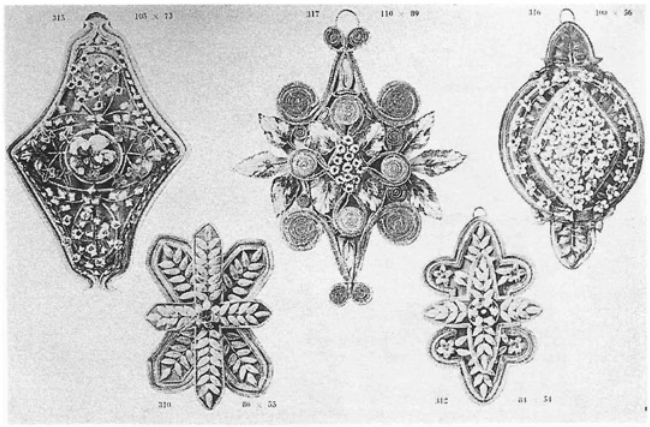

**Figure 5.** Different styles of beaded funerary wreaths from a 1927 catalog.

The latter procedure is extremely delicate, as the shape of the bead hinges on perfect timing. One minute more or less will result in a lopsided or flat bead. After cooling, the beads are placed in a sieve where the paste is removed. Finally, a last check is made on fast-spinning rollers spiked with pins of various thicknesses that pick up the beads as the rollers turn.

No standardized machinery exists for making *rocailles* beads. Each company devises or adapts its own machines for this purpose. The Salvadoris' continued love affair with beads is witnessed by their hands-on running of the firm. For them, the magic of glass has not paled after several generations. Helped by a staff of 20, they follow the intricate process from making the beads to packaging and shipping them with a personal and passionate approach.

## Plastic and Metal Beads

Experiments were conducted with different kinds of plastic materials at the end of the 19th century, and imitations of ivory, amber and horn appeared at the turn of the century. Beads were made from galalith (a milk-based plastic), celluloid, bakelite, and paper soaked in plastic solutions which, when polished, resembled ivory and horn. There were other plastics as well, based on such diverse materials as gelatin, starch, cow's blood and barm (beer yeast) (Fritsch 1926).

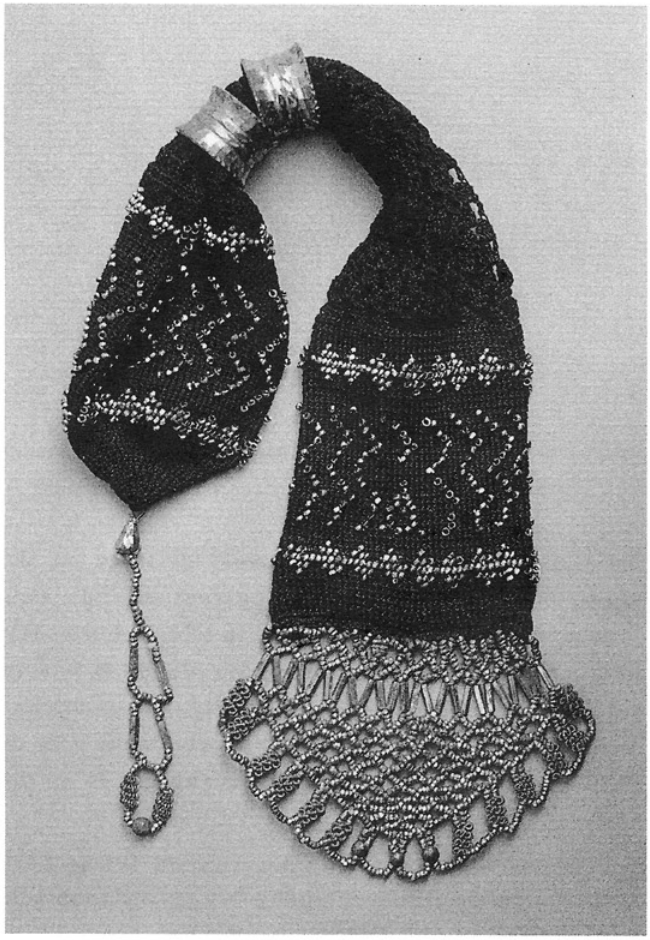

**Figure 6**. Turn-of-the-century purse effectively decorated with cut steel beads. This popular style first appeared in the 1850s.

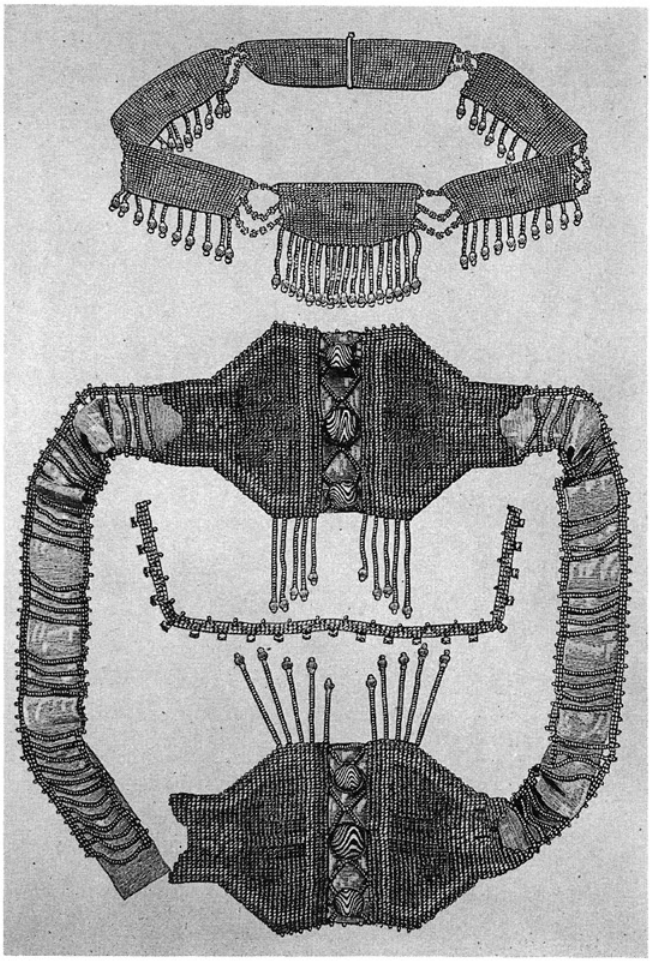

**Figure 7**. Woven necklace with gold melon and aluminum beads (top), and woven Egyptian-style belt with green, gold, pink and garnet-colored metal beads (bottom) (*La perle métallique*, ca. 1920, p. 11).

In 1927, the manufacturer Jean Paisseau took out a full-page advertisement in edition no. 18 of *Parures* (1927: 28) for *la nacrolaque* (nacreous products) made of cellulose acetate. Paisseau had been known as a specialist in imitation pearls since the end of the 19th century.

Metal beads were already in vogue in France during the 1850s when small crocheted purses decorated with cut steel beads (Fig. 6) were popular with men as well as women. This trend continued until the 20th century. Articles were produced on looms, crocheted, knitted, embroidered or made simply by stringing or threading beads. The items included bags, lamp shades, bonnets, laced cushions, clothing and decorated hats, as illustrated in a 1920s album called *La perle métallique* (n.d.) which depicts different uses for metal beads. Both the album and the beads were sold in *magasins de nouveautés* (novelty stores) which began to appear in the first half of the 19th century (Delpierre 1981: 29). The album specifies that rough metal beads began to be used around 1800, and were subsequently refined to the degree needed for them to be successfully incorporated with other materials in the production of beaded objects (Fig. 7). Only the beads manufactured by the *Maison M. Canuet et Cie.* are recommended (Fig. 8). They offered a wide range of colors including gold, silver, steel and aluminum. The shapes of the beads were quite diverse: *unie* (simple), *tailée* (cut), *extra* (hexagonal), *baril* (barrel), *melon*, *pointillée* (stippled), *torse* (truncated) and *tube torse* (truncated tubes). Metal beads of the *Maison Canuet* were also exported, particularly to the United States.

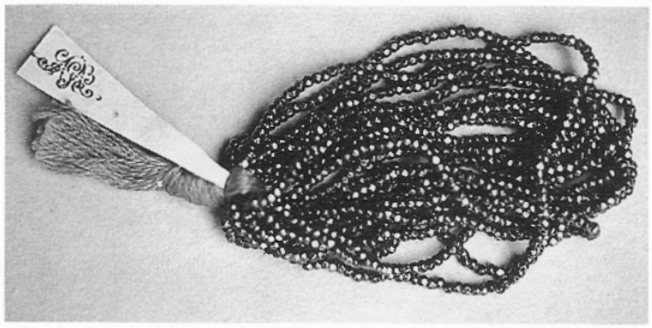

**Figure 8.** Metal beads manufactured by *Maison Canuet*, early 1920s.

## Artisanal Beadmakers

### *Maison Gripoix*

Techniques of bead manufacture in France are often handed down from one generation to another of a family or the employees of a particular glassworks. It is often the case that the chief technician of a given enterprise will purchase it when it goes up for sale. A perfect example of this is *Maison Gasse* which was bought at the end of the 19th century by Augustine Gripoix who retained the original name. This establishment not only specialized in glass beads in imitation of pearl, ruby, emerald, jade and other precious stones, but in preparing sumptuous adornments for artists of Parisian theaters and cabarets. Sarah Bernhardt was a devoted client. Around 1900, numerous well-known couturiers, including Worth, became interested in Augustine Gripoix's costume jewelry.

Suzanne Gripoix succeeded her mother and became a principal supplier for Lanvin, Poiret, Molyneux, Chanel and others. Coco Chanel asked Gripoix to copy certain pieces of her own original jewelry, and it is from this moment on that *Maison Gripoix* began furnishing Chanel with the nacreous glass beads that became her trademark. Suzanne's daughter Josette succeeded her mother in turn, and still runs the business today making glass beads and imitation pearls for *haute couture* (Pl. IIIA). Sacha Guitry commissioned a copy of the necklace worn by the Queen of France for use in the classic film "Si Versailles m'était conté." Curiously, the copy, like the original, was stolen, never to be seen again. *Maison Gripoix's* most celebrated clients include Jean Cocteau, Dior, Balenciaga, Cardin, Givenchy, Lagerfeld, St. Laurent and Loewe, as well as Vivian Leigh, Zsa Zsa Gabor and Sylvie Vartan.

*Maison Gripoix* currently employs five technicians who either work at the establishment or in their homes. The production of beads and jewelry remains artisanal in order to preserve the high quality of the merchandise. Gripoix also specializes in glass flowers, the fabrication process of which remains a secret inherited from the founder.

### *René Lalique*

Between 1891 and 1894, the genius goldsmith René Lalique also made costume jewelry for Sarah Bernhardt for her role as Iseyl and Gismonde. Lalique was "a brilliant master of atmosphere" (Becker 1990: 138). He gradually became more and more involved in glassmaking, his desire being to modernize jewelry. He developed his own special glass, a semi-crystal. He created mold-pressed glass beads of a style whose forms, such as leaves and grapes, were inspired by nature.

### *Louis Rousselet*

One of the most important beadmakers during the period between the two World Wars was Louis Rousselet who employed up to 800 workers.

> Rousselet began making glass and galalith beads, metal settings, clasps and ornaments in 1922. His firm furnished all its glitter to the fabled *Casino de Paris*, *Moulin Rouge* and *Folies Bergères* and made high fashion jewelry for the great couturiers, Chanel among them. Mistinguett, the most renowned and durable of the cabaret performers of the time, was a faithful customer of Rousselet (Gumpert 1988: 5).

Rousselet also made all the costume and high-fashion jewelry for Josephine Baker (Casino de Paris: 1930-2) (Fig. 9). He was truly a master of his trade, producing superb beads in a very distinctive style that utilized an extremely wide range of colors, forms and materials (Pl. IIIB-D). Although production ceased in 1975, his creations can still be purchased at the boutique *Jeanne Danjou*, located in

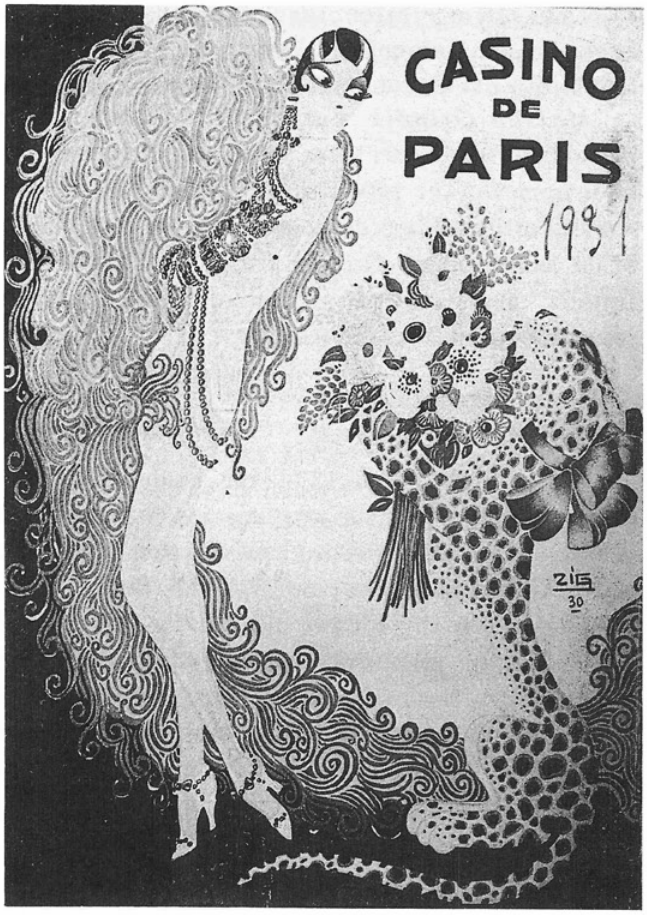


**Figure 9.** Josephine Baker in all her beaded glory on the cover of a 1931 revue of the cabaret Casino de Paris. Beads by Rousselet.

the heart of Paris, where his daughter owns and runs the store.

***Société Alex***

Contemporary with Rousselet was another renowned French beadmaker, Vincent Alexanian. Born in Istanbul at the beginning of the century, he moved to Paris where he began making nacreous beads. In the 1930s, he started producing colored glass beads that he formed into necklaces. He had sales booths at the famous department stores *Galeries Lafayette* and *Printemps*. At that time, he expanded his production line to include beads of gold and silver foil, aventurine, opalescent glass and imitation turquoise, as well as mold-pressed beads in the shape of hearts, scarabs, buddahs, leaves and flowers.

Alexanian created the *Societé Alex* in the 1970s with his two sons Gérard and Franck, utilizing stock

**Figure 10.** Technicians polishing nacreous glass beads in the workshop of Franck Alexanian.

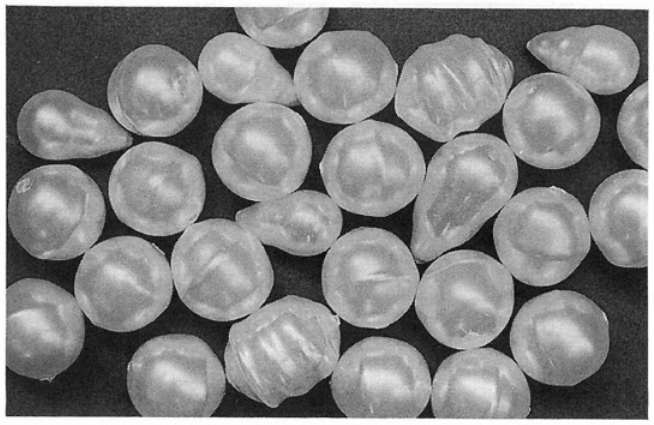

**Figure 11.** Examples of nacreous glass beads by Franck Alexanian (1991).

obtained from Legentil-Crégut, particularly a series of molds for making beads and cabochons. Following the founder's retirement in 1977, the two brothers separated. Franck decided to specialize in nacreous beads made from cotton as well as glass (Figs. 10-11), while Gérard, fascinated by both the manufacture and the history of beads, abandoned his law studies to concentrate full time on his passion: the creation of glass beads and cabochons (Pl. IVA-B). He currently operates an establishment at Loudun in the Loire Valley where he will soon produce his own high-quality glass according to Gilbert Martin's formulae which are in his possession. Gérard has inherited techniques and secrets from his predecessors. He learned how to make imitation granite (Fig. 12 and Pl. IVA), marble and turquoise

**Figure 12.** Gérard Alexanian making imitation granite beads. These are mold-pressed beads made using original Rousselet mixed crushed glass.

from Rousselet. He works with powders and formulae received from Mme. Florent, making compound glass imitations of stones of which his ruby color is particularly rich and striking. His factory, called *Ematec*, employs a dozen workers including two specialists in lampworked beads. Under his guidance, other employees make specialized machines, molds (Fig. 13) and copper tubing for the concern.

**Figure 13.** Old bead molds from Gérard Alexanian's workshop at *Ematec*.

Alexanian works from his clients' individual orders, making beads for the ready-to-wear high-fashion market. He has neither catalogs, bead sample cards nor stock. In his showroom, he displays beads that he has previously manufactured. He can produce just about anything on command: *tourmentées* (tormented), *tortillon* (twisted), *brisées* (curly), *tapées* (beaten), *perles volcaniques* (crystal glass and silver foil covered with colored glass), ruby glass made with gold, "crackle" beads, *gorge de pigeon* (iodized glass made with titanium tetrachloride; Fig. 14), and nacreous beads made with the famous and expensive *essence d'orient* of which the best quality now comes from the United States. One has only to provide an example, a design or a description for him to create and realize a final product. He can complete an order in a two-week period, and there is no minimum order.

Gérard Alexanian uses German, Italian and old French glass rods while waiting for the completion of

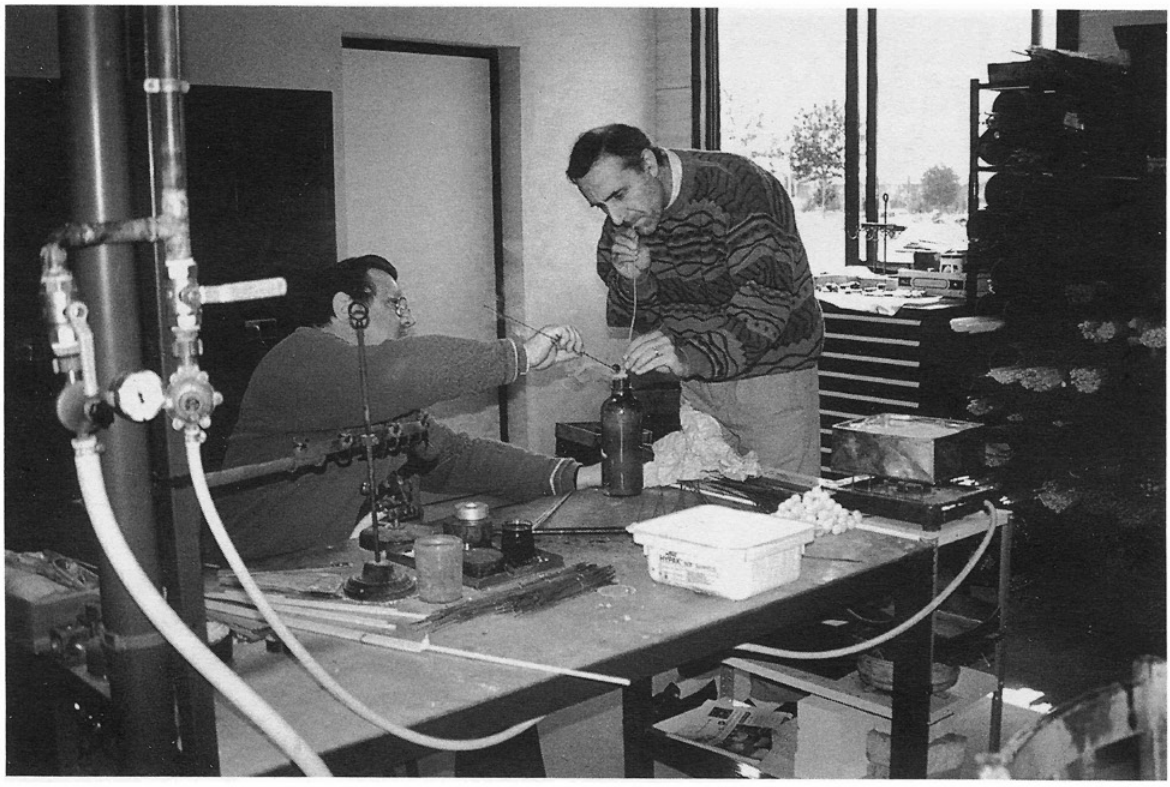

**Figure 14.** Gérard Alexanian and his assistant M. Bollé making a *gorge de pigeon* (iridized glass) bead.

his own glassmaking equipment. His preference, by far, is the old French stock, an example of which is *ramina*, a black glass with a golden sheen which was a specialty of Gilbert Martin. In order to use this particular rod to perfection, Alexanian must pull the bead from the flame and then return it at an extremely precise moment. According to Alexanian, old French glass rods imitating turquoise or carnelian are unique in that they are a heavy glass containing 30% lead. This glass was especially sought after by countries where silver jewelry was sold by weight; the addition of components of this heavy glass made the finished pieces that much more profitable.

### *Other Artisanal Beadmakers*

In the 1920s, imitation pearls were truly à la mode; "necklaces" of them were even glued onto postcards depicting beautiful ladies (Fig. 15). Beadmakers in and around Paris who made nacreous beads from the 1920s to the 1950s include Boucher, Gillot, Gauthier and Stichelbault, as well as Gasse (Fig. 16), Van Laar and Schneider, whose advertisements appeared in edition no. 18 of *Parures* (1927: 2, 4, 31). The Gasse establishment also made many glass beads in imitation of precious stones.

Fritsch (1926: 324-9) reveals how imitation pearls were made at this time:

> The nacreous paste is insufflated with the aid of a pipette into the hollow balls: by turning the balls, this gelatinous material is spread onto the total interior surface of the sphere. It is finished by filling the sphere with paraffin or wax. *Essence d'orient* can be tinted by using saffron or blue colorant. The glass spheres can be preliminarily made iridescent using titanium tetrachloride. These beads are fragile. One of the first improvements was the use of solid glass or *émail* balls. *Essence d'orient* was applied on the surface and then varnished. The second improvement was the replacement of the gelatin with a celluloid solution.

Beginning in the late 1930s, beadmaking workshops saw a large quantity of their beads being used for costume jewelry, *haute couture* and the sumptuous stage designs and stage jewelry of the French theater and the

**Figure 15.** Fashionable postcard with actual imitation pearl necklace, 1920s.

famous cabarets such as *Casino de Paris* and *Folies Bergères.* Beadmakers were numerous, including Rousselet, Alexanian, Vitty, Gripoix and Vologine, who composed and sold necklaces using *volcanique* and imitation turquoise beads. They also made beads from *verre soyeux* (silky glass) whose raw material was supplied by glassmakers Appert and Dalloz. In addition, Mme. Auzou, Roppe, Lucien Jode, Mme. Florent, Kossias, Biat, Gillot, Mme. Duvelle and Mme. Boîte were known beadmakers. Mme. Boîte was noted for her flower beads purchased and used by Vincent Alexanian in his creations (Pl. IVC).

Mme. Duvelle's brother Routier specialized in making glass imitation turquoise beads that he sold in

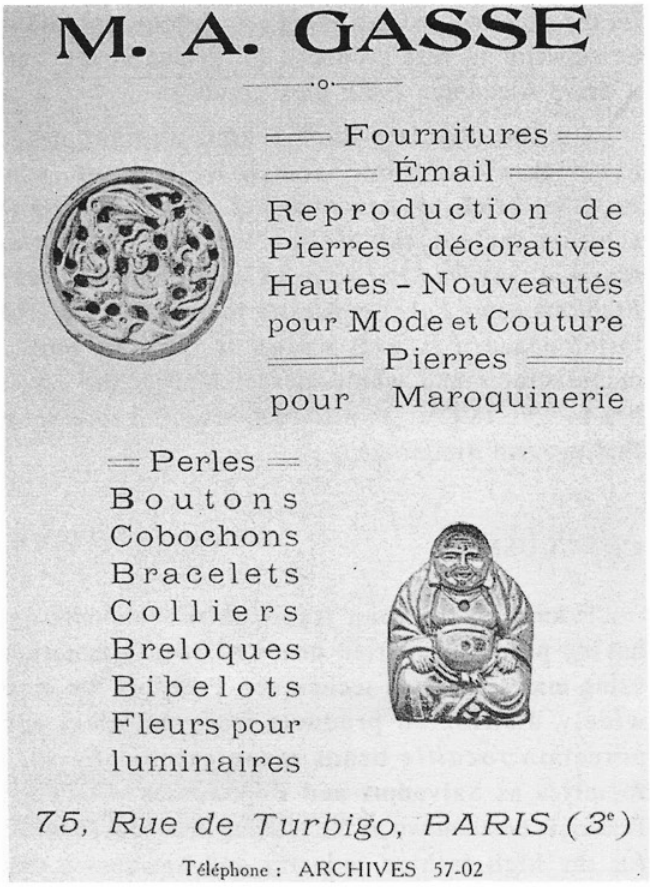


**Figure 16.** Advertisement for beads and bead-related products of the *Maison Gasse* (*Parures*, 1927, December).

Venice. Mme. Boucher, another beadmaker, ran her own workshop from 1932-67 at Montreuil-Bagnolet, employing some 30 technicians. She produced many flower, *volcanique* and *poudrée* (powdered) glass beads, as well as *paillons d'argent* (simple silver-foil beads). She was a supplier to Chanel and to Rousselet who was a close friend of hers.

The workshop of Legentil-Crégut employed a special manufacturing technique: glass rods were crushed and piled on metal plates, heated and fused. The resultant enamel was then applied to copper rods in order to transform them into beads. Legentil-Crégut ended these activities in 1970, at which time the *Société Alex* purchased part of the stock.

During the period between World Wars I and II, French beadmakers purchased their raw material from the specialized glassmaker Gilbert Martin. Martin furnished all of France with his glass rods and also exported them to the United States. He was renowned

for the excellent quality of his glass which was said to be superior to that produced in Venice at the time (Gérard Alexanian 1992: pers. comm.).

On the contemporary scene, another noted beadmaker is Simon, located in Bayonne, who furnishes beads for *haute couture*. Others worthy of mention include the *Maison Waniard* which was renamed *Guegand Perles* in 1970, Claudia Flor, and *Etablissements Lukes et fils*, all located in Paris. The latter concern is well known in Paris as both a manufacturer and wholesaler of high-quality glass beads (Pl. IVD). It also wholesales cabochons, findings and trimmings.

## CONCLUSION

France has a long tradition of beadmaking, having produced myriad beads of sundry materials using many different techniques. Probably the most widely distributed products were the glass and porcelain *rocaille* beads manufactured by such factories as Salvadori and Bapterosses. However, France is best known as the leading producer of beads for the high fashion industry and businesses that relate to it. The high point of this production occurred during the period between the two World Wars. The demand for French beads has since declined due in large part to competition from countries that began making less expensive beads during the 1950s. Nevertheless, as in times past, the *grands couturiers* continue to offer fabulous glass bead necklaces and sumptuous clothing embroidered with beads as part of their collections. Beadmakers still produce imaginative products of high quality whether they are destined for *haute couture*, for the ready-to-wear market (Gripoix, Alexanian and Lukes), or for handicrafts (Salvadori).

Even though creators of French beads and fancy jewelry often remain anonymous, having their products sold under the names of their customers in the high fashion industry, certain among them, such as Rousselet and Josette Gripoix, are recognized and well known. In fact, several recent articles have been written about Madame Gripoix (Kalt 1922; Séguret 1990). Moreover, Gérard Alexanian, who has inherited the techniques and secrets of his predecessors, is breathing new life into the older methods, and his glass creations have established him as one of today's leading French beadmakers.

## ACKNOWLEDGEMENTS

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# COLOR PLATE CAPTIONS

Pl. IIIA. *French Beadmaking*: Glass beads by Josette Gripoix, late 1940s to 1970 (all photographs by Marie-José and Howard Opper).

Pl. IIIB. *French Beadmaking:* Glass imitation turquoise beads by Rousselet, 1930s.

Pl. IIIC. *French Beadmaking*: Glass beads by Rousselet, 1930s.

Pl. IIID. *French Beadmaking:* Galalith and bakelite beads by Rousselet, 1930s.

Pl. IVA. *French Beadmaking*: *Gorge de Pigeon*, imitation granite, and gold-ruby glass beads by Gérard Alexanian, 1991.

Pl. IVB. *French Beadmaking:* Various glass beads by Gérard Alexanian, 1980s and early 1990s.

Pl. IVC. French Beadmaking: Glass flower beads by Mme. Duvelle, 1930s.

Pl. IVD. *French Beadmaking:* Glass beads by Lukes et fils, 1992.

Back Cover. *French Beadmaking*: Various 20th-century French beads (photo by H. Opper).

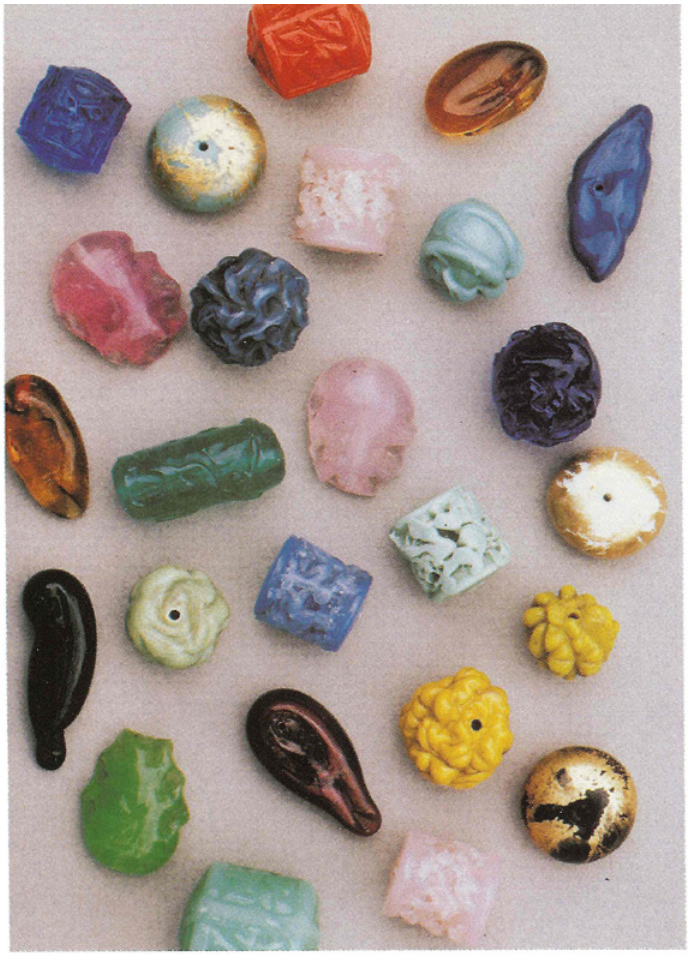

**Plate IIIA.** *French Beadmaking*: Glass beads by Josette Gripoix, late 1940s to 1970.


**Plate IIIB.** *French Beadmaking*: Glass imitation turquoise beads by Rousselet, 1930s.

**Plate IIIC**. *French Beadmaking*: Glass beads by Rousselet, 1930s.

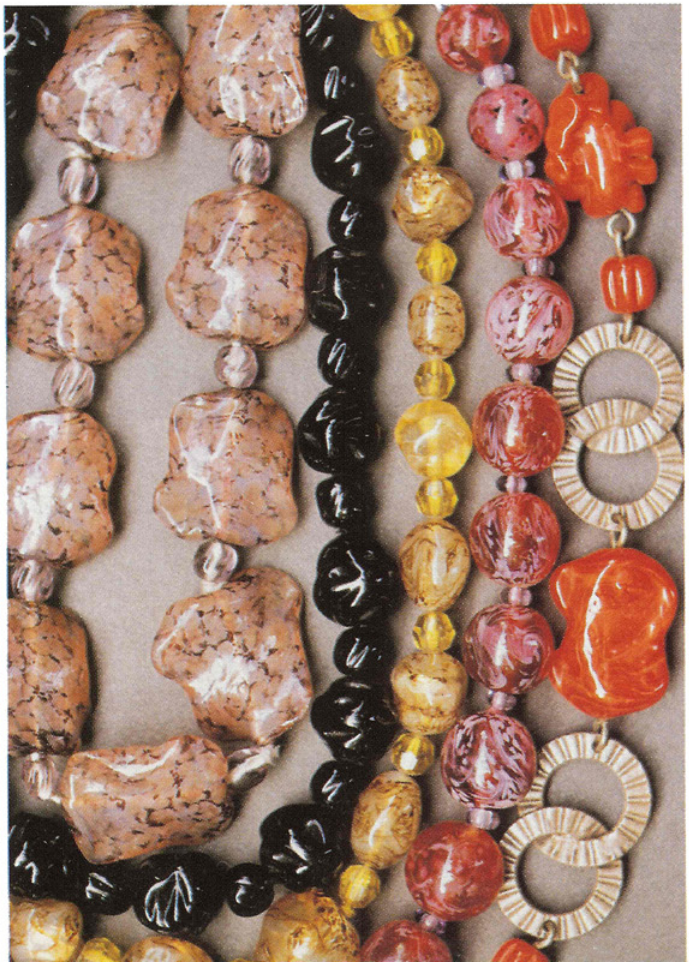

**Plate IIID.** *French Beadmaking*: Galalith and bakelite beads by Rousselet, 1930s.

**Plate IVA.** *French Beadmaking: Gorge de Pigeon* and other glass beads by Gérard Alexanian, 1991.

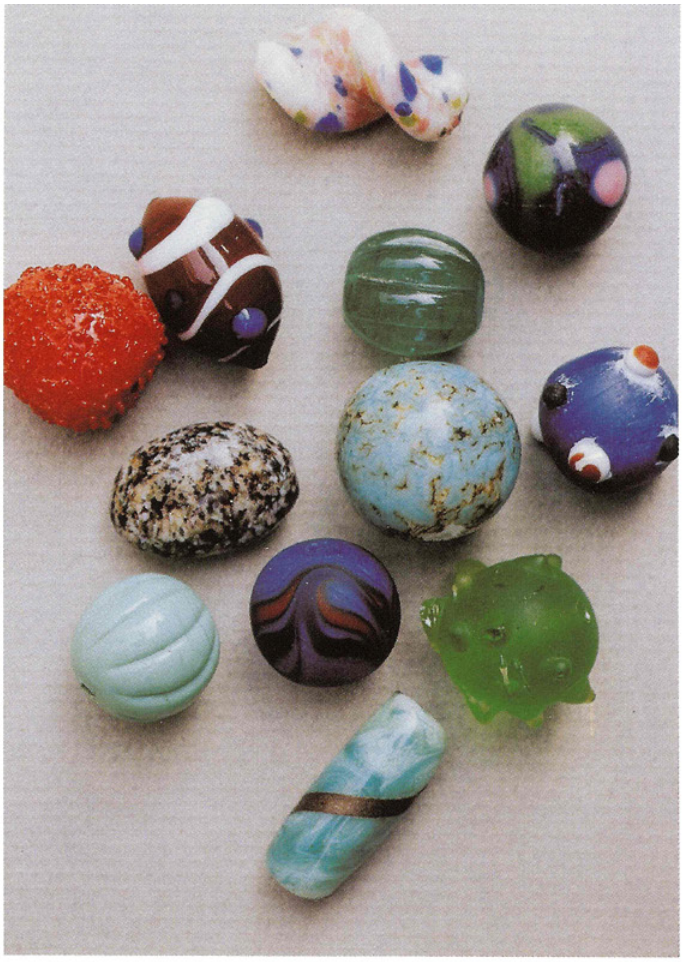

**Plate IVB.** *French Beadmaking*: Various glass beads by Gérard Alexanian, 1980s and early 1990s.

**Plate IVC**. *French Beadmaking*: Glass flower beads by Mme. Duvelle, 1930s.

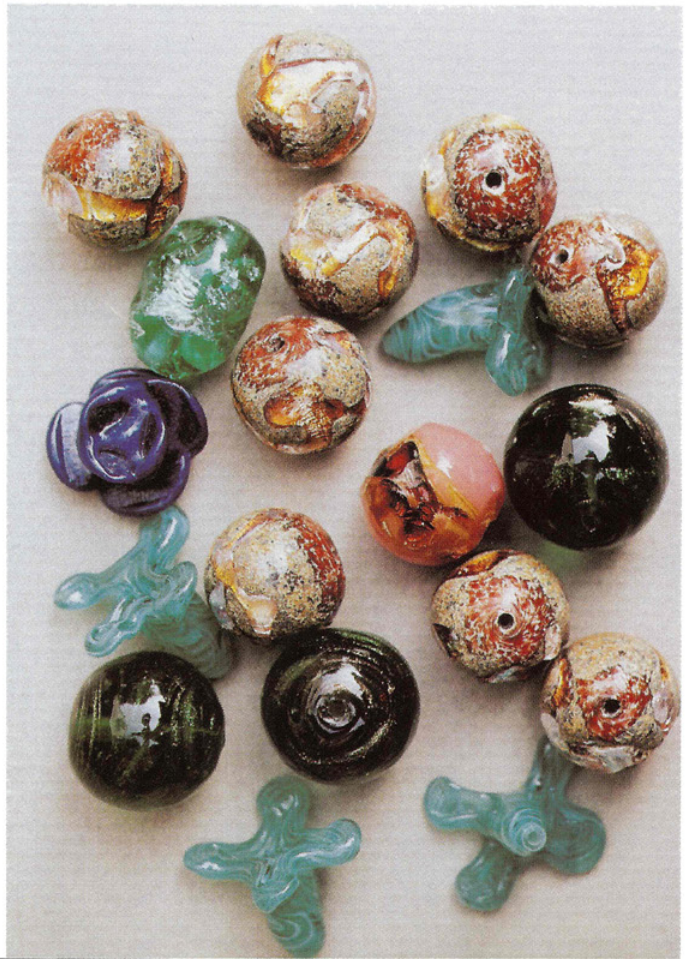

**Plate IVD.** *French Beadmaking*: Glass beads by Lukes et fils, 1992.

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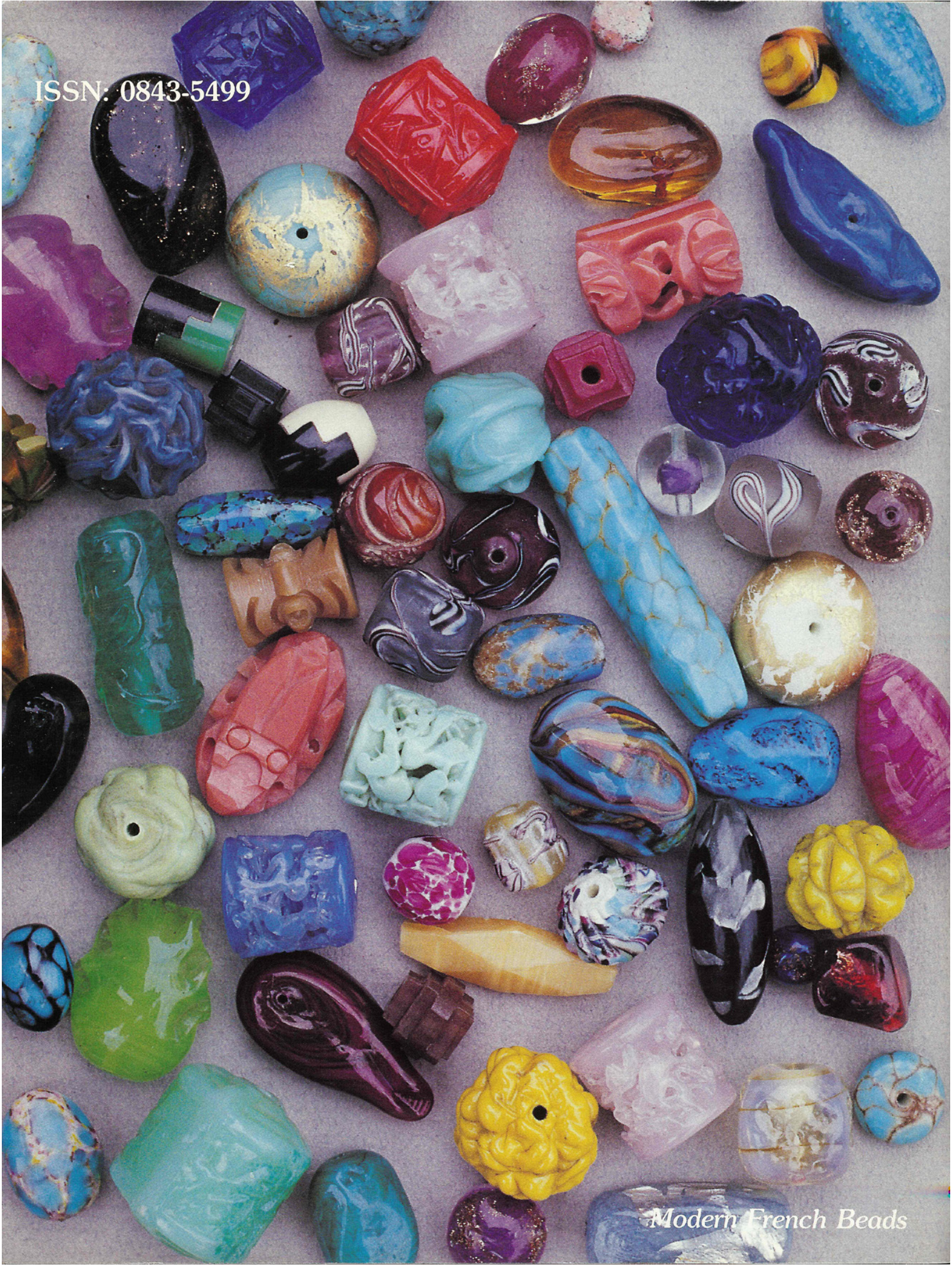

Modern French Beads

# THE BEADS FROM OUDEPOST I, A DUTCH EAST INDIA COMPANY OUTPOST, CAPE, SOUTH AFRICA

**Karlis Karklins and Carmel Schrire**

*The site of a provisioning station operated by the Dutch East India Company near the Cape of Good Hope during the late 17th and early 18th centuries produced a variety of European beads of several materials. A "typical" Dutch bead assemblage of the period, it is significant because it comes from one of very few independently dated bead-producing sites in southern Africa and, as such, will be instrumental in the formulation of a chronology for the beads found in this part of Africa.*

## INTRODUCTION

Oudepost I (33°08' S. lat., 18°02' E. long.) lies about 120 km north of present-day Cape Town, where the Dutch East India Company (VOC) established its initial refreshment station in 1652 to provision and facilitate the East Indies trade. The site (Fig. 1) is situated on the south shore of Langebaan Lagoon at the head of Saldanha Bay. This bay is one of the largest and most protected natural harbors on the African coast, and, as such, served as a refuge for ships battered by the storms that raged at the southermost tip of the continent. Oudepost I was occupied for about 50 years, from 1669 to 1732, with a gap from 1673-1684/86, by a small garrison whose duties were to defend the land and to provision passing ships with fresh water, vegetables, and meat. Their activities involved labor and trade relations with the indigenous pastoral foragers, or Khoikhoi people, and it is these interactions that are reflected in part by the presence of trade beads at the site (Schrire 1990).

The archaeological and documentary investigation of Oudepost I began in 1984, and involved three principal seasons of intensive excavation under the direction of Carmel Schrire (Cruz-Uribe and Schrire 1991; Schrire 1987, 1988, 1990; Schrire and Deacon 1989; Schrire and others 1990) . The site stands on a rocky spur above a small beach near one of the few permanent springs in this relatively dry region. It extends inland from the high water mark for about 70 m (Fig. 1). The living quarters consisted of two main buildings, rudely constructed from local, undressed stone. One, a rectangular two-roomed affair, was identified as the soldiers' lodge; the other, an eccentric structure with several paved rooms, a bastion, and a round embayment on the sea wall, was termed the "fort." Residues that included colonial and indigenous artifacts, as well as large quantities of food remains, lay scattered over the site, concentrating especially in and around the buildings. The loose sandy matrix was riddled with tunnels made by dune mole rats (*Bathyergus suillus*), and analysis of conjoined artifacts confirmed that considerable post-depositional movements of artifacts had occurred over time. This finding, together with the rarity of stratigraphic markers, encouraged us to try and infer a site sequence through an analysis of the large collection of recovered Dutch clay-tobacco pipes (Schrire and others 1990). The robustness of our results suggests that while no single object found in the Oudepost deposits can categorically be provenienced, a general chronological sequence may be inferred and applied to groups of artifacts.

## THE BEAD INVENTORY

The Oudepost I artifact collection contains 173 beads of glass, bone and metal that represent 31 varieties. The glass varieties, represented by those of drawn, wound, and blown manufacture, are described below using an expanded version of the taxonomic

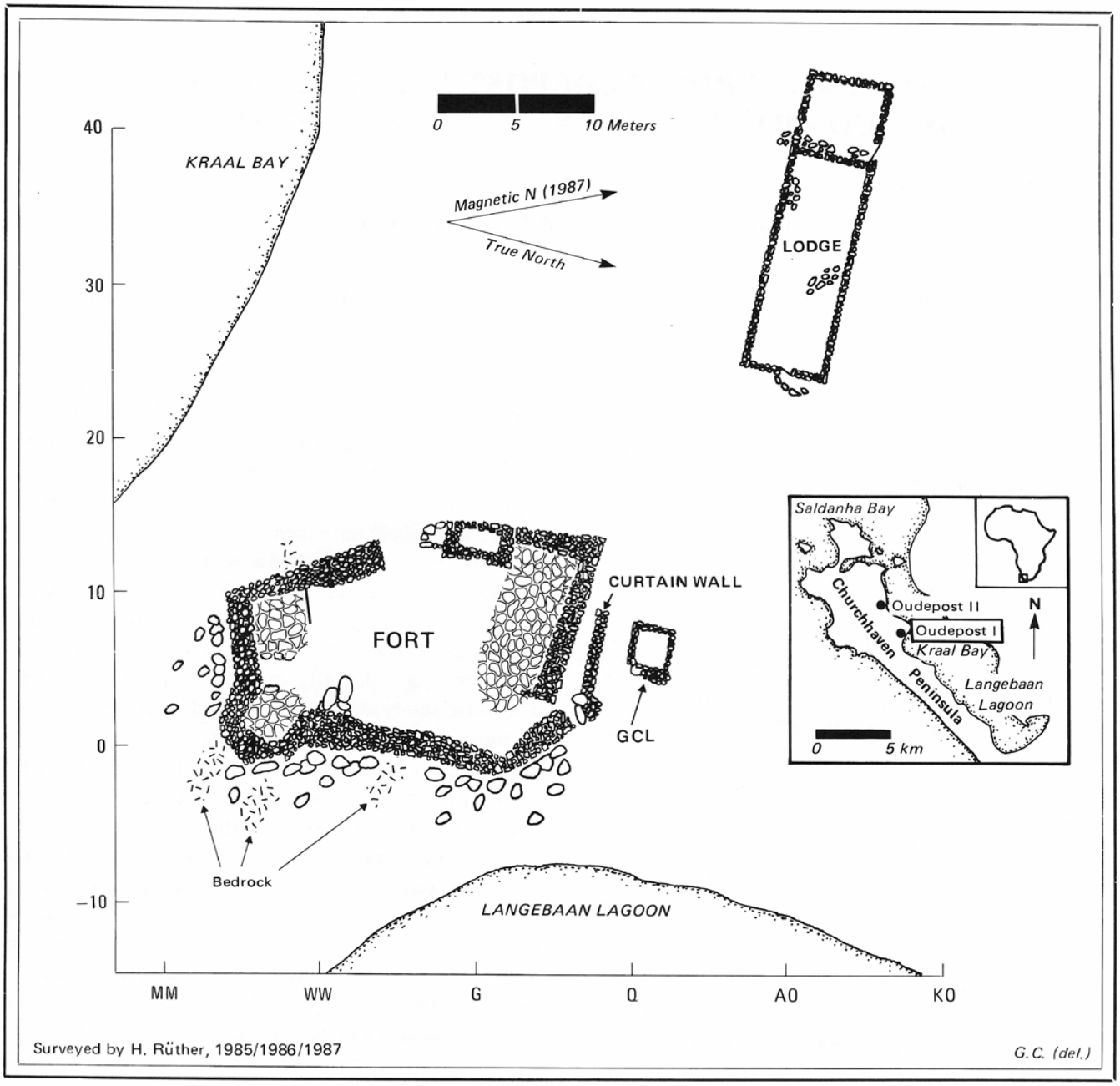


**Figure 1.** Map of the Oudepost I site, Cape, South Africa.

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 (*); two asterisks (**) denote a previously unrecorded type.

While the shape nomenclature is basically self-explanatory, Fig. 2 and a few comments will help clarify some of the terms used. *Oblate* drawn beads equate with the Kidds' "circular" category. The wound *tabular* category (WIIb) is what the Kidds term "flat 'disk' beads." The *pentagonal-faceted* (WIIc) form is equivalent to the Kidd's "facetted five-sided bead," Beck's (1928: 17) "twisted square," and van der Sleen's (1967: 38) "pentagon." Finally, the *raspberry* bead (WIId) is what van der Sleen (1967: 38) calls "mulberry."

Colors are designated using common names followed by the appropriate color code in the Munsell

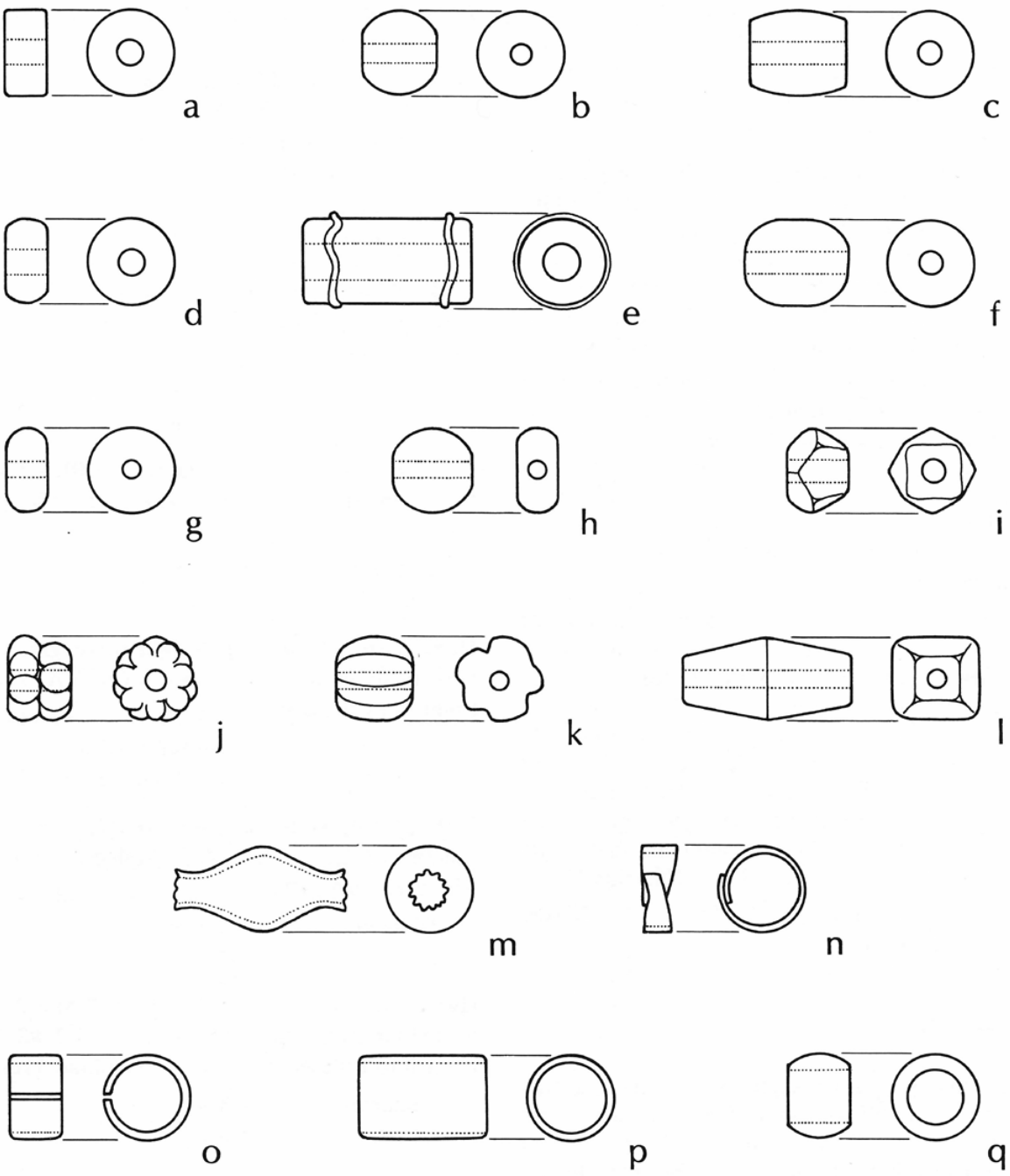


**Figure 2.** Oudepost I bead forms. *Drawn glass*: a, short cylinder; b, globular; c, barrel-shaped; d, oblate; e, cylindrical-decorated. *Wound glass*: f, globular; g, oblate; h, tabular; i, pentagonal-faceted; j, raspberry; k, melon; l, long square truncated convex bicone. *Blown glass*: m, segmented-ellipsoidal(?). *Lead*: n, short cylinder with overlap seam. *Copper*: o, short cylinder with seam; p, long cylinder; q, short barrel (drawing by D. Kappler).

notation system (Munsell Color 1976). Beads exhibiting lightly patinated surfaces were moistened with water to reveal their true color. Those covered with a thick layer of patina were mechanically cleaned in a small area before being moistened.

Diaphaneity is described using the terms opaque (op.), translucent (tsl.) and transparent (tsp.). Opaque beads are impenetrable to light except on the thinnest edges. Specimens that are translucent transmit light but diffuse it so that an object (such as a pin in the perforation) viewed through them is indistinct. A pin in the perforation of a transparent bead is clearly visible.

The size categories used refer to bead diameter and have the following numerical values: very small, under 2 mm; small, 2-4 mm; medium, 4-6 mm; large, 6-10 mm; and very large, over 10 mm. However, as this sizing system provides only a minimum of information, the exact diameter and length range of each variety is also presented to increase the comparative value of this report.

Varieties which have been found at archaeological sites in and around Amsterdam have "Amsterdam" appended to their descriptions, followed by the date of their contexts in quarters of a century. The quarters are identified by the letters a, b, c and d, respectively; e.g., 17c denotes the third quarter of the 17th century. *De Liefde* after the description indicates that the variety was present on the wreck of this Dutch East Indiaman that sank on its way from Amsterdam to Java in 1711 (Karklins 1988).

In the following text, Pl. = color plate, R. = row and # = position in row.

**Drawn Glass Beads**

These consist of short sections of a tube that was drawn out from a hollow gather of molten glass. Their ends were rounded by subsequent heating and agitation. There are 12 varieties represented by 67 specimens.

*Ia - Undecorated Cylindrical Monochrome (Single-layered) Beads*

**Ia16.** Short cylinder; tsl./op. grayish blue (2.5PB 5/4); small size; 1 specimen (Pl. VA, R.1, #1). Flat, possibly ground, ends. Earthy patina.

| | |
|---|---|
| Diameter: | 4.0 mm |
| Length: | 2.1 mm |

*IIa - Undecorated Non-cylindrical Monochrome (Single-layered) Beads*

**IIa1.** Barrel-shaped; op. Indian red (7.5R 3/8); large size; 4 specimens (Pl. VA, R.1, #2-3). These range from short to long forms. Surfaces dull or covered with a flaky brown patina. Amsterdam: 18a.

| | |
|---|---|
| Diameter: | 6.1-7.5 mm |
| Length: | 5.8-7.2 mm |

**IIa2.** Oblate; op. Indian red (7.5R 3/8); small size; 1 specimen (Pl. VA, R.1, #4). Earthy patina. Amsterdam: 17a-18a.

| | |
|---|---|
| Diameter: | 4.0 mm |
| Length: | 2.2 mm |

**IIa6.** Barrel-shaped; op. black (N 1/0); large size; 2 specimens (Pl. VA, R.1 #5). Dull to heavily patinated surface. Amsterdam: 17c-18b.

| | |
|---|---|
| Diameter: | 6.3-8.5 mm |
| Length: | 6.2-8.6 mm |

**IIa*.** Barrel-shaped; op. bright olive green (2.5GY 5/6); medium size; 4 specimens (Pl. VA, R.1, #6-7). Light brownish patina.

| | |
|---|---|
| Diameter: | 4.2-4.8 mm |
| Length: | 3.4-3.9 mm |

**IIa*.** Oblate; tsl. bright blue (5B 5/7); medium size; 1 specimen (Pl. VA, R.2, #1). Eroded surface covered with a whitish patina.

| | |
|---|---|
| Diameter: | 4.2 mm |
| Length: | 2.3 mm |

**IIa56.** Oblate; tsp. bright navy blue (7.5PB 2/7); small to medium size; 4 specimens (Pl. VA, R.2, #2-3). Flaky grayish to iridescent patina. Amsterdam: 17c-18c

| | |
|---|---|
| Diameter: | 2.8-4.6 mm |
| Length: | 1.6-2.7 mm |

*IIb - N*on-cylindrical Monochrome (Single-layered) Beads Decorated with Straight Monochrome Stripes

**IIb*.** Barrel-shaped; op. white (N 9/0) body decorated with 2 op. Indian red (7.5R 3/8) and 2 tsp. bright navy blue (7.5PB 2/7) stripes; medium size; 1 specimen (Pl. VA, R.2, #4). Cased in clear glass. Amsterdam: 18a.

| | |
|---|---|
| Diameter: | 5.4 mm |
| Length: | 4.3 mm |

*III* - Cylindrical Polychrome (Multi-layered) Beads Decorated with Applied Wound Decoration*

**III**.** Cylindrical-decorated; gilded tsp. light gold (2.5Y 7/8) body decorated with a wavy applied filament of op. light gold glass about either end (most of the appliqué has disintegrated leaving only a few traces); small size; 2 specimens (Pl. VA, R.2, #5-6). Well-rounded ends. Dark brown patina. *De Liefde*: 18a.

| | |
|---|---|
| Diameter: | 3.3-3.4 mm |
| Length: | 4.9-6.2 mm |

*IVa - Undecorated Non-cylindrical Polychrome (Multi-layered) Beads*

**IVa*.** Oblate; op. Indian red (7.5R 3/8) outer layer; op. black (N 1/0) core; medium size; 1 specimen (Pl. VA, R.2, #7). Cased in a thin layer of clear glass. Flaky black patina.

| | |
|---|---|
| Diameter: | 4.5 mm |
| Length: | 3.2 mm |

**IVa5.** Globular to barrel-shaped; op. Indian red (7.5R 3/8) outer layer; tsp. yellowish green (10Y 6/8) to bluish green (5G 6/6) core; medium to large size; 10 specimens (Pl. VA, R.3, #1-2). Cased in clear glass. Lightly to heavily patinated. Amsterdam: 17a-18b.

| | |
|---|---|
| Diameter: | 4.5-7.0 mm |
| Length: | 4.5-6.7 mm |

**IVa6.** Oblate; op. Indian red (7.5R 3/8) outer layer; tsp. yellowish green (10Y 6/8) core; small to large size; 36 specimens (Pl. VA, R.3, #3-4). Cased in a thin layer of clear glass. Surface eroded and patinated. Amsterdam: 17a-18b.

| | |
|---|---|
| Diameter: | 3.5-6.9 mm |
| Length: | 2.1-5.3 mm |

**Wound Glass Beads**

Wound beads were made by winding a strand of molten glass about a metal mandrel until the desired size and shape were achieved. The beads were sometimes pressed with small paddles to impart facets or clamped in small two-piece molds if a specialized shape was desired. Thirteen varieties are represented by 80 specimens.

*WIb - Undecorated Globular to Oblate Monochrome (Single-layered) Beads*

**WIb4.** Globular to oblate; tsp./tsl. pale blue or milky white (7.5B 8/2); large to very large size; 8 specimens (Pl. VB, R.1, #1-2). The glass of at least two specimens has a golden cast. Heavily patinated. Amsterdam: 17d-18c.

| | |
|---|---|
| Diameter: | 9.3-17.0+ mm |
| Length: | 6.2-17.2 mm |

**WIb7.** Oblate; tsp. amber (10YR 7/8); very large size; 3 specimens (Pl. VB, R.1, #3). Thick white patina. Amsterdam: 17d-18b.

| | |
|---|---|
| Diameter: | 9.0+-13.2 mm |
| Length: | 7.5 - 8.3 mm |

*WIIb - Undecorated Tabular Beads with Circular Outlines*

This type was made by flattening a round bead parallel to the perforation while it was still in a molten state.

**WIIb*.** Tabular; tsp./tsl. pale blue or milky white (7.5B 8/2) with a golden cast; very large size; 1 specimen (Pl. VB, R.1, #4). Heavy white patina.

| | |
|---|---|
| Width: | 13.0 mm |
| Thickness: | 5.3 mm |
| Length: | 12.0 mm |

*WIIc - Pentagonal-faceted Monochrome (Single-layered) Beads*

These beads exhibit eight pentagonal pressed facets. The ends are square.

**WIIc1.** Pentagonal-faceted; op. black (N 1/0); large to very large size; 4 specimens (Pl. VB, R.1, #5-6). Shiny to dull surfaces. Amsterdam: 17c-17d.

| | |
|---|---|
| Diameter: | 9.4-11.3 mm |
| Length: | 7.1- 8.7 mm |

**WIIc2.** Pentagonal-faceted; tsp. light gray (colorless; N 7/0); very large size; 5 specimens (Pl. VB, R.2, #1-2). The glass of one specimen exhibits a slight lavender (solarized) cast. Light grayish patina. Amsterdam: 17c-18b; *De Liefde*: 18a.

| | |
|---|---|
| Diameter: | 10.0-10.8+ mm |
| Length: | 7.8- 9.2 mm |

**WIIc3.** Pentagonal-faceted; tsl. pale blue or milky white (7.5B 8/2) with an opalescent cast; very large size; 7 specimens (Pl. VB, R.2, #3-4). Whitish patina.

Diameter: 9.7+-11.6 mm
Length: 7.7 -10.5 mm

**WIIc5.** Pentagonal-faceted; tsp. amber (10YR 7/8); very large size; 19 specimens (Pl. VB, R.2, #5-6). The surfaces are eroded and exhibit splotches of white and iridescent patina. Amsterdam: 18a-18b.

Diameter: 10.1-12.8 mm
Length: 7.1-10.0 mm

**WIIc*.** Pentagonal-faceted; tsp. light jade green (10G 6/6); large size; 1 fragmentary specimen (Pl. VB, R.3, #1). Light iridescent patina.

Diameter: 7.7+ mm
Length: 10.0+ mm

**WIIc11.** Pentagonal-faceted; tsp. ultramarine (6.25PB 3/12); large to very large size; 14 specimens (Pl. VB, R.3, #2). Heavy brownish patina. Amsterdam: date uncertain.

Diameter: 8.6-11.4 mm
Length: 7.0-11.2 mm

*WIId - Monochrome "Raspberry" (Single-layered) Beads*

These beads are encircled by two to three rows of six to eight rounded nodes each.

**WIId1.** Raspberry bead; tsp. light gray (colorless; N 7/0); large to very large size; 7 specimens (Pl. VB, R.3, #3-5). Iridescent to white patina. Amsterdam: 17c-18a.

Diameter: 9.2-11.5 mm
Length: 7.0-10.5 mm

**WIId6.** Raspberry bead; tsp. bright navy blue (7.5PB 2/7); large to very large size; 8 specimens (Pl. VB, R.4, #1-2). Iridescent patina.

Diameter: 8.7-11.5 mm
Length: 8.9-11.0 mm

*WIIe - Monochrome "Melon" Beads*

These exhibit several rounded lobes set parallel to the perforation.

**WIIe2.** Melon bead; tsp. light gold (2.5Y 7/8); large size; 1 specimen (Pl. VB, R.4, #3). The bead has four rounded lobes, and a light brownish patina.

Diameter: 6.8 mm
Length: 6.4 mm

*WIIp - Long Square Truncated Convex Bicone Beads*

These are Beck (1928) type IX.D.1.f. beads. They are square-sectioned and have pyramidal ends formed by four trapezoidal pressed facets.

**WIIp*.** Long square truncated convex bicone; tsp. ruby (2.5R 3/10); medium to large size; 2 specimens (Pl. VB, R.4, #4). Thick earthy patina.

Diameter: 5.5-6.2 mm
Length: 7.1-8.0+ mm

**Blown Glass Bead**

The single recovered specimen was produced by blowing one or more oblong bubbles in a section of drawn tubing.

*BId - Undecorated Segmented Monochrome (Single-layered) Bead*

**BId(?)*.** Segmented-ellipsoidal(?); tsp. light gray (colorless; N 7/0); small size; 1 fragmentary specimen. One end has been fire-polished; the other — which is broken — constricts and then flares out again slightly suggesting that the bead may have been segmented originally. Longitudinal bubbles and striae in/on the glass. Earthy patina.

Diameter: 2.6+ mm
Length: 6.5+ mm

**Bone Beads**

These are lathe-turned, and have perforations that were drilled with a parallel-sided bit.

*Globular to oblate*; large size; 2 specimens (Pl. VA, R.3, #5-6). Surfaces are shiny to dull. Amsterdam: 16d-17b.

Diameter: 6.2-9.2 mm
Length: 4.7-7.9 mm

### Lead Bead

This item was formed by rolling a very narrow strip of thin sheet lead into a cylindrical form. The ends overlap.

*Short cylinder;* medium size; 1 specimen (Pl. VA, R.3, #7). Corroded.

| | |
|---|---|
| Diameter: | 5.0 mm |
| Length: | 2.6 mm |

### Copper Beads

The copper beads are all cut from tubing and appear to be of European manufacture. There are 22 specimens representing three shapes.

*Short cylinder;* medium to large size; 11 specimens (Pl. VA, R.4, #1-2). The tube from which these beads were cut had a distinct longitudinal seam. Lightly to heavily corroded.

| | |
|---|---|
| Diameter: | 4.4-6.5 mm |
| Length: | 3.5-4.4 mm |

*Long cylinder*; medium size; 1 specimen (Pl. VA, R.4, #3). This bead consists of a section of tubing of a lighter weight than the former variety and without the seam. Lightly corroded.

| | |
|---|---|
| Diameter: | 4.6 mm |
| Length: | 6.3 mm |

*Short barrel*; small to medium size; 10 specimens (Pl. VA, R.4, #4-7). These were fashioned from light-weight tubing using a lathe that contoured the surface of each bead and then cut almost all the way through the tube where the ends were to be. After the entire tube was segmented, the individual beads were snapped off, occasionally leaving a slight burr at the edge of the perforation. Lightly to heavily corroded. *De Liefde*: 18a.

| | |
|---|---|
| Diameter: | 3.5-4.6 mm |
| Length: | 2.8-3.6 mm |

## DISCUSSION

The Oudepost I bead collection is dominated by small to large oblate beads of drawn manufacture and large to very large pentagonal-faceted beads of wound manufacture. Together they comprise 54% of the collection. The dominant varieties, representing 58% of the collection, are listed in Table 1.

As for color frequency, red beads predominate (red-glass and copper beads make up 44% of the bead collection), followed by white (19%; this group includes the light gray, pale blue/milky white, lead and bone beads), blue (16%), and amber/yellow (15%). Black (3%), green (3%) and decorated (<1%) specimens are rare. A like preference for red and white beads and a low estimation of black beads was noted by Le Vaillant (1790, II: 25) during his travels in South Africa towards the end of the 18th century.

The beads are all of European origin, with the possible exception of the lead specimen that may have been made locally by the soldiers who left ample evidence of leadmongery at the post. The bone beads are distinct from those found in Late Stone Age contexts in South Africa (*see*, for example, Deacon 1984: 172-3) by virtue of being lathe-turned. There is nothing even remotely suggestive of the Indian bead industry, nor of any other Asiatic beadmaking center, although two broken agate rings of probable South-Indian manufacture were unearthed at Oudepost. Where the rest of the collection is concerned, while there is a good possibility that at least some of the drawn glass beads were manufactured in Holland (Karklins 1983: 111-3), the source of the wound-glass, bone and metal specimens remains uncertain. While it is broadly assumed that wound beads like those found at Oudepost are of Dutch manufacture, there is presently no historical or archaeological evidence to confirm this. Only when we have sound comparative material from contemporary bead-producing centers in Europe and Asia will this problem be resolved.

As a collection, the Oudepost beads are consistent with what might be expected to be found at a VOC trading post of the late 17th and early 18th centuries. Of the 118 beads to which we ascribe a date, all encompass the period from 1669-1732 during which the site is documented as being occupied by VOC personnel. This, in turn, is consistent with the fact that 132 specimens (76%) have correlatives at contemporary sites in and around Amsterdam, or on the 1711 wreck of *De Liefde* (Bax and Martin 1974; Karklins 1988).

It should be noted here that the Oudepost beads are not specific to just Dutch sites, nor should they be

**Table 1. The Dominant Bead Varieties at Oudepost I.**

| Kidd Variety | Description | Size | Quantity # | Quantity % |
|---|---|---|---|---|
| IVa6 | Oblate; op. Indian red on tsp. yellowish green | S-L | 36 | 21% |
| WIIc5 | Pentagonal-faceted; tsp. amber | VL | 19 | 11% |
| WIIc11 | Pentagonal-faceted; tsp. ultramarine | L-VL | 14 | 8% |
| Copper | Short cylinder | M-L | 11 | 6% |
| Copper | Short barrel | S-M | 10 | 6% |
| IVa5 | Globular to barrel-shaped; op. Indian red on tsp. yellowish green | S-L | 10 | 6% |
| | Total | | 100 | 58% |

construed, *per se*, as proof of a Dutch presence. Most of the varieties are found at sites occupied or supplied by the English, French, Spanish, Portuguese and Danes over a wide geographical area ranging from the Cape to Greenland, Canada, southern Argentina, and Indonesia (Karklins and Barka 1989: 70). Nevertheless, it is significant that there are no definite bead correlatives between Oudepost I and the 17th-century Portuguese sites investigated in Rhodesia by Garlake (1967, 1969). Certainly none of the distinctive drawn (varieties IIb* and III**) and wound (class WII varieties) beads are represented. There is a similar absence of the distinctive Oudepost beads at Fort Jesus (Kirkman 1974), a major Portuguese trading establishment on the coast of Kenya. The difference in assemblages suggests that the Dutch and Portuguese both obtained their beads from different sources, principally Holland and possibly other European beadmaking centers for the former, and India or some other Asiatic beadmaker for the latter. It may, therefore, eventually be possible to define a "Dutch" bead assemblage for South Africa.

Many of the Oudepost bead varieties have relatively long temporal ranges which prevent particular varieties from being correlated with temporal divisions in a site that was itself only occupied for about 50 years. Consequently, the best we can do is to see whether there was any change in the density of beads over space or time. Beads were most densely distributed in and around the two main structures, with about 1.47 beads/$m^3$ in and around the lodge, and 1.37 inside the fort. The density drops precipitously outside the fort where only 0.15 beads/$m^3$ were found. Since this is also the youngest deposit at Oudepost, the distribution of beads also shows a marked drop over time (Table 2). This pattern is similar to that found in the distribution of other artifacts at Oudepost I, such as clay pipes (Schrire and others 1990), indigenous artifacts (Schrire and Deacon 1989), stoneware and glass. Since the distribution pattern is not restricted to the kinds of commodities that were traded, the decline in bead frequency through time does not, in itself, reflect a diminution in colonial-indigenous trading, though it is certainly likely that trade did drop off in this region in the early 18th century, as the Khoikhoi abrogated their independence to the increasing demands of their European overlords (*see* Elphick 1982, 1985).

Turning to the wider view of bead distribution, archaeological excavations have revealed the occasional copper and glass bead in Later Stone Age contexts in the western Cape. These often occur in the uppermost levels of deeply stratified caves and rock shelters, attesting to the latest use of these sites by indigenous people after trading with Europeans began some 500 years ago (*see*, for example, Deacon and others 1978: 47; Robey 1987: 316). These beads have not been further identified, but several of the Oudepost varieties — most notably the drawn Indian red (IIa1 and IIa2), red-on-green (IVa5 and IVa6) and

## Table 2. Distribution of Beads at Oudepost I.

| Unit* | Drawn | Wound | Blown | Bone | Lead | Copper | no. | no./m$^3$ |
|---|---|---|---|---|---|---|---|---|
| II | 38 | 41 | 1 | - | 1 | 9 | 90 | 1.7 |
| I | 26 | 31 | - | 1 | - | 11 | 69 | 1.3 |
| X | - | 5 | - | 1 | - | - | 6 | 0.1 |
| Total | 64 | 77 | 1 | 2 | 1 | 20 | 165 | 1.1 (ave.) |

(*) Units are listed from the oldest (II) to the youngest (X) according to the stratigraphy inferred in Schrire and others (1990). The table excludes beads whose provenience could not be related to these units.

black (IIa6) beads — occur in Iron Age and later sites over a great portion of Sub-Saharan Africa (*see*, for example, Killick 1990).

The distribution of the distinctive Oudepost bead varieties over Africa is quite restricted considering how many archaeological sites have yielded beads. The nearest site to produce Oudepost-type beads is Welgevallen, a colonial Dutch farm on the perimeter of the town of Stellenbosch which was occupied from around 1720 to 1760. Excavations conducted there between 1976 and 1980 uncovered 34 glass beads of 13 varieties (Vos 1985: 267) including IVa5 (1), WIb4 (10), WIIc2 (5), WIIc5 (2) and WIId1 (1).

In West Africa, the 18th and 19th-century levels at the Clerk's Quarters site in Benin City, Nigeria, contained two specimens of variety WIIc2, as well as several examples of varieties IIa2, IVa* and IVa5 (Connah 1975: 171-7). The investigation of the major Dutch fort at Elmina, Ghana, by Christopher De Corse (1989), produced a vast array of glass beads. A preliminary examination of the material reveals the presence of Oudepost varieties IIa56, IVa5, WIb4, WIIc2, WIIc5, WIId1 and WIIp* (Karklins 1988: pers. observation).

A necklace removed from the grave of "a renowned chief" around the turn of the century at Mansu, a town on the route between Elmina and Kumasi in southern Ghana, is composed of 13 glass and ostrich-eggshell varieties including WIb4, WIIc2, WIIc5, WIId1 and a long form of variety Ia16 (Karklins 1987: pers. observation; Read 1905). The interment likely dates to the late 17th or 18th century (Karklins and Barka 1989: 74), and the beads were almost certainly acquired from the Dutch at Elmina.

In North America, the distinctive wound beads found at Oudepost are diagnostic of George Quimby's (1966: 85-7) Middle Historic Period which extends from 1670 to 1760. More precise dates for the various types are provided in Karklins and Barka (1989: 74).

We turn finally to the function of beads at the Cape of Good Hope during the occupation of Oudepost I. The Dutch were involved in trading relations with the indigenous people at the Cape for half a century before they established their first settlement there in 1652. The Cape was an important provisioning stop on the long voyage between Holland and the East, where the sailors received fresh water, herbs and, above all, fresh meat. Meat was provided by the local Khoikhoi or Hottentot people, pastoral foragers who maintained herds of fat-tailed sheep and cattle. Unlike the Dutch-Amerind fur trade in North America that focused on wild animals, the Cape exchanges centered on domesticated stock (Schrire and Merwick 1991). Consequently firearms did not need to be a crucial element in trade, and the Dutch were even reluctant to trade in iron, lest the Khoikhoi turn benign tools into deadly weapons. Instead, the main goods that greased European access to Khoikhoi resources were liquor, tobacco, pipes, copper trinkets, and beads (Fig. 3). Around 1676, glass beads were weighed by *mas*, a measure equivalent to about 38 grams, while copper beads were traded in bunches of five chains, each chain holding one hundred beads (Leibbrandt 1902: 277). A shipment of four *massen* of sorted beads was made to


**Figure 3.** Hottentot fishing practices and colonial exchange at the Cape of Good Hope (Kolbe 1745).

Oudepost in 1669 (VOC 4004), and six pounds of glass beads and one thousand copper beads were sent there a few years later (VOC 4047).

Different varieties of beads had different purposes and values depending on the types of interactions taking place, as well as the social status of the recipients. Red beads were used to buy cattle (Thom 1958: 433), and copper necklaces were also sent annually to the Khoikhoi in the cattle trade (Schapera and Farrington 1933: 109). A memorandum of 1661 itemizes the beads presented to a hierarchy of Khoikhoi chiefs. It lists 24 varieties, including red beads for cattle, as well as violet, orange and milk-white beads, blue ones sparkling like crystal, and green beads speckled with yellow. The paramount chief was entitled to 16 of the varieties, his sons to 14, and the captains, at the bottom of the ranking system, to only nine of them (Thom 1958: 432-3).

Beads were apparently worn mainly by women. A 1673 description notes that "almost all, except the very poor, wear necklaces of coral, glass, or bronze beads. These they acquire from the Noble Company in exchange for prime cattle" (Schapera and Farrington 1933: 119). More details appear in a sketch that recently surfaced in the South African Library in Cape Town. Part of an anonymous set of drawings of Khoikhoi people at the Cape around the turn of the 17th century, the drawing (INIL 6253) — which depicts Khoikhoi women — is annotated as follows:

> Around the neck they have the beads preferably 6 thick and in several rows in space. Copper ones are most favored, then glass and of many colors mixed together. Around the body they prefer large ones or also small round discs of ostrich eggs. Around the arms and hands they wear the smallest beads (Smith 1991: 101).

The colonists and Khoikhoi were, therefore, engaged in exchanges at Oudepost that included food, iron, clothing, stock, tobacco, liquor and beads. Of all

these items, beads speak most explicitly of trade. In addition, the Oudepost beads confirm the identity and age of the VOC occupation. As historical archaeology proceeds in this part of the world, more information will emerge about the typology of the beads imported here, and their distribution over time and space.

## ACKNOWLEDGEMENTS

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# COLOR PLATE CAPTIONS

Pl. VA. *Oudepost I*: Drawn glass, bone and metal beads. **R.1**: 1, Ia16; 2-3, IIa1; 4, IIa2, 5, IIa6; 6-7, IIa* - bright olive green. **R.2**: 1, IIa* - bright blue; 2-3, IIa56; 4, IIb*; 5-6, III**; 7, IVa*. **R.3**: 1-2, IVa5; 3-4, IVa6; 5-6, bone beads; 7, lead bead. **R.4**: 1-2, short cylinder copper beads; 3, long cylinder copper bead; 4-7, short barrel copper bead (this and the next photo by R. Chan and K. Karklins).

Pl. VB. *Oudepost I*: Wound glass beads. **R.1**: 1-2, WIb4; 3, WIb7; 4, WIIb*; 5-6, WIIc1. **R.2:** 1-2, WIIc2; 3-4, WIIc3; 5-6, WIIc5. **R.3**: 1, WIIc*; 2, WIIc11; 3-5, WIId1. **R.4**: 1-2, WIId6; 3, WIIe2; 4, WIIp*.

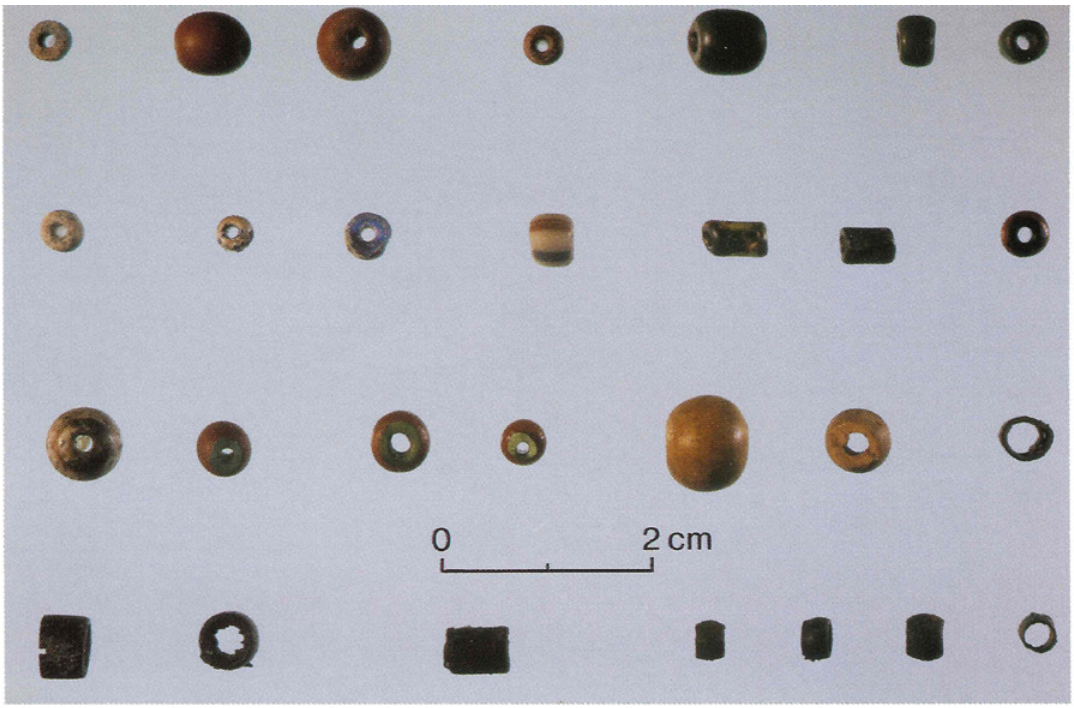


**Plate VA.** *Oudepost I*: Drawn glass, bone and metal beads.

(See page 3 for full captions)

**Plate VB.** *Oudepost I*: Wound glass beads.

# L'IMPIRARESSA: THE VENETIAN BEAD STRINGER

**Irene Ninni**
**Translated by Lucy Segatti**

*In 1893, Irene Ninni published a succinct account of a large but little-known group of Venetian women called* impiraresse *or bead stringers whose task it was to thread the glass beads produced on Murano and form them into hanks for the world market. The original Italian text is provided, along with an English translation. Two late 19th-century paintings by John Singer Sargent provide a rare glimpse of the bead stringers at work.*

## EDITOR'S INTRODUCTION

Prior to the advent of automatic bead stringing machines, countless Venetian women spent their lives stringing glass beads for the drawn-bead manufacturers on the nearby island of Murano. Yet the only published historical account of these women and their vocation is a slim, obscure monograph by Irene Ninni called *L'Impirarresa* which was published in 1893 by Longhia Montanari of Venice. It provides rare details about the bead stringers, their specialized skills, paraphernalia and vocabulary. Almost half the monograph is devoted to the ditties the stringers sang while at work, revealing how important they were in dispelling the boredom induced by the repetitive task that they performed for many long hours each day.

What follows is the Italian text of Ninni's monograph, accompanied by an English translation. No illustrations graced the original volume. The two paintings reproduced herein, both by the American painter John Singer Sargent, are the only known depictions of late 19th-century bead stringers. Olive Jones and Jamey D. Allen are thanked for bringing them to the attention of the editor. Gratitude is also expressed to Dr. Maria Teresa Sega and Dr. Astone Gasparetto, both of Venice, for making available a copy of Ninni's monograph.

## L'impiraressa

Fin dai più remoti tempi, e presso tutte le nazioni, ebbero le perle il vanto di colpire prodigiosamente la fantasia del popolo. Massimamente la donna, che ha l'intuizione di discernere ciò che melio l'adorna, dette sempre la preferenza alla perla, sia dessa dissepolta dagli abissi del mare o semplicemente il prodotto meraviglioso dell'arte vetraria.

Senza fermarsi ai popoli selvaggi, che più d'una volta rimasero estasiati e quasi vinti sotto l'attrazione di questi globetti colorati e a quegli orientali, che adornano di perle i loro esseri favoriti, cioè le donne ed i cavalli, vediamo quanto sono tenute in conto anche fra noi.

## The Bead Stringer

Since time immemorial and in virtually every country, beads have been known to capture people's imaginations. Women especially, who know what best becomes them, always preferred pearls, whether these were plucked from the ocean depths or simply the marvelous product of the glassmaking art.

Aside from aboriginal peoples, who more than once were overcome and almost won over by the attraction of these colored spheres, or the peoples in the East, who used beads to adorn their favorite possessions, namely their women and horses, beads are highly valued even in our society.

Dalla più modesta fanciulla, alla più ricca signora, non v'è donna che non abbia portato in vita sua qualche vezzo di perle; — la giovane del contado di Treviso je preferisce al corallo ed al granato, e la sposa chioggiotta viene espressamente a Venezia per compararsi il *filo de perle bianche* che la renderà più bella nel sospirato giorno di nozze.

Anche nei lavori muliebri l'industria delle conterie fu tenuta in gran pregio, specialmente anni sono.

Chi di noi non ricorda, rovistando da fanciulli, nei vecchi armadi e cassettoni già messi in disuso, d'aver trovato borselline, cinture, cuscinetti e tanti altri ninnoli, eseguiti in perle, lavoro paziente delle nostre nonne e prozie? E con la smania di distruzione propria ai bambini, chi di noi non s'è servita di quelle perle per formarsi delle lunghe collane, anelli e braccialetti?

Passano per tante mani e servono ad usi così disparati fra loro! Nelle carceri, negli ospedali, nei conventi, esse sono il passatempo e l'occupazione di tanti infelici. Infilate per sottilissimi fili di ferro esse vengono a formare mazzi di fiori, cornici, cestine, ecc. Persino nei cimiteri, sulla tomba del povero, si vede quanto è prediletta la corona di perle, e forse non lo sarà tanto perchè meno dispendiosa e di maggior durata, quanto perchè è formata dalle mani pietose dell'offerente.

E pensando al grande commercio delle perle, pel quale Venezia ha fama mondiale, ed ai diversi usi a cui vengono destinate, corre il pensiero a chi con tanta pazienza le passa tutte pel filo. S'intende parlare di quella piccola industria tanto diffusa fra le nostre popolane, che vien chiamata quella dell'*impira perle* o dell'*impiraressa*.

A tal'uopo essa si reca alle Fabbriche vetrarie, nella vicina isoletta di Murano, si fa consegnare quante casse di perle le abbisogna, che vengono pesate prima di portarsele a casa, e le ritorna alla fabbrica, infilate tutte a mazzi uguali. Controllate severamente che siano dal direttore (*dal paron*) ne riceve la tenue mercede.

Ed è cosa interessante e curiosa per chi osserva Venezia con occhio d'artista, e più pel forestiero, veder a volte passar via pei canali, un *sandoleto*, con entrovi una popolana, dal portamento naturalmente

From the humblest young girl to the wealthiest lady, no woman can claim to never have worn ornamental beads in her lifetime. The girl from the Treviso countryside prefers coral and garnet beads, while brides from Chioggia come to Venice just to buy a string of white beads to make them look more beautiful on their wedding day.

The bead industry has also been very important in women's handicrafts, especially in years gone by.

Who among us does not recall rummaging through old discarded armoires and trunks as children and coming across wallets, belts, cushions and many other trinkets all made of beads — the product of the patient labor of our grandmothers and great aunts. And given children's destructive instincts, who among us did not use those beads to make ourselves long necklaces, rings and bracelets?

Beads change many hands and are used for many different purposes! In jails, hospitals, and convents, they provide a hobby and occupation for many unhappy souls. Strung on the finest of wire, they are made into bouquets of flowers, picture frames, baskets, and so on. Even in cemeteries, wreaths made from beads are very popular on the tombstones of loved ones, not only because they are less expensive and last longer, but also because they are made by the devout hands of the bereaved themselves.

Considering the great trade in beads, for which Venice is world-renowned, and their different uses, one cannot help but think of the women who patiently string the beads one by one. This fairly common occupation among our working class is called *impira perle* or *impiraressa* [bead stringer].

The bead stringers visit the glassmaking factories on the nearby island of Murano to pick up as many crates of beads as needed. These are weighed before being taken home by the bead stringers, who then return them to the factory, all strung in equal bunches. After a fastidious inspection of their work by the foreman (*dal paron*), the stringers are paid a meager wage.

An interesting and strange sight for anyone observing Venice through an artist's eye, and even more so for foreigners, is that of a *sandoleto* on a canal carrying a worker woman, with a naturally majestic

maestoso, attorniata da casse e da cassettine riempite di perle, d'ogni forma e colore, scintillanti al sole a guisa di gemme.

La si direbbe una regina insciente fra i suoi tesori, mentre per quella veneziana è là ogni suo provento, ogni sua risorsa. E non pertanto, questa semplicissima industria, si divide essa pure in due categorie distinte fra loro, cioè: quella dell'*impiraressa de perle* detta «*man d'opara in tondo e in fin*» e quella *dell'impiraressa de pive* (cannelline di vetro fragili e lunghe) o «*man d'opara in grosso*», tenuta in minor conto della prima.

Le perle, che sono la mercanzia dell'operaia, e che specialmente fuori di Venezia sono conosciute col nome di *margheritine* (1), a seconda della loro forma e colore, acquistano nome diverso, così havvi la perla:

Acqua marina
Arzentina o Ciaro de luna
Çeleste
Çeleste incolorìo
Crestal
Viola
Verde pomo
Verde fogia
Verde botiglia
Perseghin
Brù (bleu)
Smalto
Negra
Ortensia
Gazìa
Riosa
Girasol
Sorze
Zalo capon
Turca (di color celeste, forse perchè ad imitazione delle turchesi)
Macà

(1) Seppi dal Chiarissimo Sig. avv. G. Amalfi che a Napoli e nei dintorni le lavoratrici in perle vengono chiamate *margaritaie*.

bearing, surrounded by cases and boxes full of beads, of every shape and color, shining in the sun like gems.

She could be mistaken for a queen, sitting oblivious among her treasures while, in fact, that Venetian woman depends on those beads for her livelihood, her entire income. This very simple industry is divided into two different categories: *stringers of beads* (*man d'opara in tondo e in fin*), and *stringers of bugles* (little canes of glass, fragile and long) or *man d'opara in grosso*, which is considered less prestigious than the former.

The beads, which are the worker woman's merchandise, and which outside Venice in particular are known as *margheritine* (1), each bear a name reflecting their shape and color:

Aquamarine
Silvery or Moonlight
Light blue
Sky blue
Crystal
Violet
Apple green
Leaf green
Bottle green
Chocolate
Blue
Enamel
Black
Hydrangea
Mimosa
Laughter
Sunflower
Drops
Gurnard yellow
Turquoise (light blue, so named perhaps because it imitates turquoise)
Facetted

(1) I was informed by Mr. G. Amalfi, Esq., that in Naples and surrounding area, beadworkers are called *margaritaie*.

Rigà

Rubin, Corniola e Corniolin.

Queste tre ultime sono più costose, perchè mi dissero contenenti oro di zecchino; vengono poi i Pipioti, i Pipiotini, che invece d'aver forma rotonda l'hanno bislunga, le Canele ecc.

*Streti* sono tutte quelle perle che non passano per l'ago.

*Orba* è la perla priva di buco.

*Storti* se non hanno la debita forma.

*Fondi* sono le perle spezzate.

*Perla co' l'anema* è quella avente la parte interna di altro colore.

*Buratini* sono chiamate quelle rare perle d'altra tinta che accidentalmente si trovano fra quelle con cui si lavora.

*Spolvaro o Semola* qualunque sostanza eterogenea che si trovi fra le perle, come sabbia, crusca, ecc.

Gli istrumenti di somma necessità per *l'impiraressa* sono:

LA SESSOLA

Specie di gottazza di forma oblunga, che viene tenuta sulle ginocchia di chi lavora, e dove vengono poste le perle [Fig. 1]. Ad un lato della *sessola* sonvi incisi due segni:

*La misura longa* di 42 cent. circa.

*La misura curta* di 32 cent. circa.

I AGHI

Sottilissimi fili d'accaio spuntati, con cruna, lunghi 18 cent. circa e dei quali vi sono sette grossezze.

LA BUSTA

Rozzo astuccio di carta con guaina (*el fodro*) fatto dalle stesse popolane a mo' di libro. In ogni pagina, v'ha un numero progressivo fino al sette, e là vengono riposti ordinatamente gli aghi.

Striped

Ruby, Carnelian and Carnelian cherry.

The last three are the most esteemed, because they reportedly contain pure gold; next are the *Pipioti* and *Pipiotini*, which instead of being round are oblong, the *Canele*, and so on.

*Streti* [narrow] are those beads that cannot be threaded on a needle.

*Orba* [blind] is a bead without a hole.

*Storti* [crooked] are the beads that are misshapen.

*Fondi* [dregs] are broken beads.

*Perla co' l'anema* [bead with a heart] is a bead with a different colored core.

*Buratini* [puppets] is the name given to the rare beads of a different color that accidentally are mixed with those being strung.

*Spolvaro* or *Semola* [dust or chaff] refers to any miscellaneous matter found with the beads, such as sand, dust, etc.

A bead stringer's indispensable tools are:

THE WOODEN SCOOP

A type of oblong scoop containing beads, which the stringer keeps on her lap [Fig. 1]. Two legends are incised on one side of the scoop:

*The long measure* is about 42 centimeters.

*The short measure* is about 32 centimeters.

THE NEEDLES

Very fine, blunt steel needles, measuring about 18 centimeters in length, with an eye, and available in seven different sizes.

THE CARDBOARD CASE

A rough needle case of paper with a sheath (*el fodro*) made by the worker women themselves in the form of a book. Each page is numbered consecutively up to seven for the purpose of storing their needles according to size.

**Figure 1.** "Venetian Bead Stringers," by John Singer Sargent (1856-1925), attributed 1880-82, oil on canvas; Albright-Knox Art Gallery, Buffalo, NY; Friends of the Albright Art Gallery Fund, 1916. This painting depicts a bead stringer at work accompanied by two friends. The stringer dreamily smooths the beads in the *sessola* or wooden scoop she holds in her lap. The women's faces reveal that their thoughts are far from the task being performed in the dimly lit hallway.

## LE SEDÈTE E LE ASSÈTE

Filo apposito di lino, per infilar perle. Il primo è più fino e più lucido, somigliante a seta (*seda* da quì il nome).

L'*impiraressa* che si dispone al lavoro, prende una matassa intera, la taglia per aprirla, e così aperta è lunga approssimativamente due metri, e vien detta *una longa*. Da una parte il filo viene passato per la cruna degli aghi, si fa un nodo e si attortiglia il capo, (*se fa un gropo e se intorcola el cao*) e dal lato opposto si

## LE SEDÈTE AND LE ASSÈTE

Special flax thread for threading beads. The first is finer and shinier, resembling silk (*seda*, after which it is named).

The *impiraressa* begins her work using a whole skein, which must be cut to start. Once opened, the skein measures about two meters, and is called *una longa*. One end of the thread is passed through the eye of the needle, knotted and the end twisted (*se fa un gropo e se intorcola el cao*), and the opposite end of

**Figure 2.** "The Bead Stringers of Venice," by John Singer Sargent, oil on canvas; cat. no. 921, National Gallery of Ireland, Dublin. A less somber view of beads stringers at work.

unisce la fine della matassa, formando una specie d'occhiello detto *asola*.

Tutti gli aghi infilati, che dal numero di 40 possono arrivare fino al numero di 60 si tengono con le tre prime dita della mano destra, formando un ventaglio, cioè *la palmeta*, che viene immersa velocemente nella *sessola* riempita di perle. La mano sinistra intanto, appoggia leggera sulla *palmeta* accompagnandone gli aghi.

Allorchè è riempita totalmente di perle l'*impiraressa* ha fatto un'*agada*. Due *agae* formano un *marin*, cioè quella data quantità di perle infilate, che viene misurata ad un lato della *sessola*, dove sono incisi i due segni suaccennati. Il *marin* consta di 40 *filze* cioè di 40 fili di perle.

Quando l'*impiraressa* ha finito il primo *marin* forma, sulla stessa *longa*, un laccio detto *galan*, ne

the skein is looped forming a kind of eyelet called an *asola*.

All the threaded needles, which can number from 40 to 60, are held in the first three fingers of the right hand, thus forming a fan or *palmeta*, which is quickly dipped into the wooden scoop full of beads. At the same time, the left hand rests lightly on the *palmeta* and accompanies the needles.

Once [the fan is] completely full of beads, the *impiraressa* has made an *agada* or "needleful." Two *agade* make a *marin*, which is the given quantity of threaded beads that is measured on the side of the wooden scoop, against the incised marks mentioned above. A *marin* consists of 40 *filze* or 40 threads of beads.

When the *impiraressa* has finished the first *marin*, she ties a slip knot called a *galan* in the *longa*, and

ricomincia un altro, e così via fino al termine della matassa, la quale porta a un dipresso dieci *agae* cioè cinque *marini*. Con le forbici allora, taglia il *galan*, ne attortiglia i due capi, facendo un picciolo detto *manego del marin*. Talvolta vi unisce del filo argentato ed allora si chiama *marin inarzentà*.

Dalla parte opposta al *manego* si fa il *coleto* ossia si legano assieme con un filo rosso una data quantità di filze secondo il numero già prescritto dal *paron*.

Si dice *colana* quando il *coleto* lega cinque filze.

*El mazzo* è formato da quattro *colane*.

*Mazzo intiero* quando è composto da 240 filze.

*Giardineto* è l'unione di diversi *marini* di colore differente tra loro.

Meschino è il guadagno delle *impiraresse* pensando alla fatica materiale di queste poverette, che dall'alba a tarda ora di notte stanno sedute con la *sessola* sulle ginocchia [Fig. 2], e non ricavano che una lira al giorno. Senza contare che spesse volte all'estate *no i mete fogo*, cioè nelle fabbriche non accendono le fornaci ed allora manca ad esse il lavoro.

L'*impiraressa* veneziana ha la ferma convinzione, che lungi di qui, dove si spediscono le perle, i ricchi si valgono dell'opera sua, disponendo i *mazzi* e i *marini* in lunghi festoni nelle loro sale, sostituendoli ai quadri, alle tappezzerie e ad ogni opera d'arte.

Oltre che lavorare in casa, vi sono scuole apposite per le giovani *impiraresse*, dove la direttrice, *la mistra*, non soltanto insegna alle sue allieve, ma anche le paga.

E non parmi fuori di luogo, riportare alcune villotte, non ancora credo notate, od almeno con qualche variante, con le quali le nostre belle e facete veneziane accompagnano il lavoro.

1. La senta cara mistra
   I lavori xe cativi,
   La sentirà i sospiri,
   Co la li tira su.
   Lavoro diese aghi,
   Zogo la plavoleta,

begins another one, and so on until she has finished the entire skein, which gives about ten *agade* or five *marin*. Next she cuts the *galan* with scissors, twists the two ends, making a loop called a *manego del marin* [handle of the *marin*]. Sometimes she adds some silver thread to make what is called a *marin inarzentà* [silvery *marin*].

The end opposite to the *manego* is made into a *coleto* [collar]; that is, a red thread is used to tie together a given number of strings of beads as specified by the *paron* [the boss].

When the *coleto* ties together five strings of beads, it is called a *colana*.

*A mazzo* consists of four *colane*.

A *mazzo intiero* is made up of 240 strings of beads.

A *giardineto* is the joining of many *marini* of different colors.

The *impiraresse* earn a mere pittance considering the physical strain of sitting from dawn to the late hours of the night with a wooden scoop on their knees [Fig. 2], for just one lira a day. Moreover, often in the summer months, the furnaces in the [bead] factories are not lit and there is no work.

However, the Venetian *impiraressa* knows that far from here where the beads are shipped, the wealthy are enjoying the fruits of her labor, arranging the *mazzi* and *marini* in long festoons in their living rooms, indeed substituting these for paintings, tapestries, and other works of art.

Besides working in their homes, young *impiraresse* may attend special schools where in addition to learning, they are paid by the instructor, *la mistra*.

And here it appears appropriate to share some folk songs, which have not yet been recorded, or at least are variations, that our lovely witty Venetians sing while working.

1. Listen dear teacher,
   The work is hard,
   Listen to the sighs
   That we draw.
   I work with ten needles,
   And my beads

Sentada in caregheta
Par farme zo un mazzon.

2. No so se sia l'amor che me consuma,
No se sia dal tropo lavorare,
In quanto al lavorar, lavoro poco,
Sarà l'amor che me fa consumare.

3. El me moroso dove mai ch'el sia,
Lu sarà in mar, e mi so a casa mia,
E lu xe in mar che tirarà i so spaghi,
E mi so a casa mia che impiro i aghi,
E lu xe in mar che spiegarà le vele,
E mi so a casa mia che impiro perle.

4. E la mia mama me l'à sempre dito,
No praticar fia mia, ste amighe care,
Che de sinçiere le te mostra el cuore,
E a drio le te falsisa a tute le ore.

5. Fortuna me consiglistu che mora?
Che mora, zovaneta inamorata?
E la fortuna me risponde alora,
«Vivi pur bela, ch'el to ben te adora.»

6. E vustu che t'insegna a far l'amore?
Col vien arento no starlo vardare,
E daghe un'ociadina sote via,
Questo xe el megio amor che al mondo sia.

7. Costa, ben mio, l'onor si no la roba,
Che par l'onor mi perdaria la vita,
E perdaria la vita, meto pegno,
Torme l'onor a mi no ti xe degno.

8. El ben che te voleva gera massa,
Mi lo tegniva sconto drento al cuore,
Ma ai omeni crudeli, inganatori,
Se vede el viso o no se vede i cuori.

9. Vogime ben, ben mio, sta setimana,
Ai do de l'altra parte e vago via;
Mi me ne vado, e vado a la lontana,
Vogime ancora ben sta setimana.

10. Anima mia, sta saldo a la batalgia,
Che par un colpo un albaro no casca,
Che par un colpo no casca colona,
Ne par un baso no se aquista dona.

Balanced carefully on my knees,
To make a bunch of strung beads.

2. I don't know if it is love that consumes me,
I don't know if it is the long hard work,
As for the work, I don't work much,
It must be love that consumes me.

3. Oh, where is my lover, where could he be,
He must be on the sea, and here I am home alone,
He must be on the sea drawing in the nets,
And here I am at home threading needles,
He must be on the sea setting sail,
And here I am at home stringing beads.

4. My dear mother always told me,
Don't spend time with these dear friends,
Who pretend to bare their souls,
And behind your back betray you at every chance.

5. Oh Fate, are you telling me that I should die?
That I should die young and in love?
And Fate answers me then,
"Live on my beauty, for your lover adores you."

6. And shall I tell you how to show your love?
When he returns don't stand watching him,
Give him just a glance,
This is the best love in the world.

7. Honor is dear, my heart, it cannot be stolen,
For honor I would give my life,
And in giving my life, I give my all,
So return to me my honor of which you are not worthy.

8. Of the love I had for you, you were not worthy,
I kept it safe in my heart,
But cruel deceitful men,
Show their faces but not their hearts.

9. Love me, my heart, this week,
For next week I am leaving;
I am leaving to go far away,
Love me still for this week.

10. My soul, stand firm,
A single blow does not fell a tree,
A single blow does not fell a pillar,
And a single kiss does not win a woman.

11. Va là, va là, vate butar in rio,
Muso ma! costumà, muso da rana,
E muso da scartosso sobugio,
Che darte risposta a ti perdo del mio.

12. Bela no te tegnir tanto da granda,
Che semo de le basse condizione,
No te tegnir da granda e da regina
Savemo che ti è nata povarina.

13. Nina xe qua l'inverno,
La neve, el giazzo, el vento,
Tiremose qua drento
Che l'inverno passarà.

14. Quanti cuori contenti ghe saria
Se avesse da lassiar quel moro belo,
Tuti sti cuori marzi se consola,
Ma el moro belo lo gò par mi sola.

15. Ti credi che par ti vogia morire?
Gnanca se vedo la crose sul leto,
La crose sul leto e i preti par de fora,
Ti credi che par ti la bionda mora.

16. No posso più la note andar a spasso
Che gò fin a contrario anca la luna,
Favo l'amor co' gero più regazza,
Adesso a far l'amor no gò fortuna.

17. Questa è la cale de la me morosa,
Che tante volte la me la fa fare,
La me fa far 'na vita dolerosa,
Anema mia fa presto che te sposa.

18. Go' ciapà sono duro l'altra note,
Squasi, squasi ò dormio infin a zorno,
Tanti gali intorno, intorno,
Fasseva chirichì, curucucù!

19. Vogime ben, no starme abandonare,
No darme altri martei de più nel cuore,
No basta dei martei che gò tra el zorno,
Anca la note gò da sospirare.

20. Finestre che de note xe serate,
Al zorno averte par farme morire,
Finestre, quanto mai ve gò mirate,
In fra dei pianti, lagrime e sospiri!

21. Sospiro mio, va in brazo del mio bene,
Va in brazo del mio ben e lo saludi,

11. Go, go throw yourself into a river,
You wretch! You lizard,
You author of shameful deceit,
In answering you, I lose myself.

12. My beauty, don't be so proud,
We are lowly people,
Don't act so proud and queenly,
We know you were born poor.

13. Girl, winter has arrived,
Snow, ice and wind,
Let's huddle inside here,
And wait for winter to pass.

14. How many hearts would be happy,
If I were to leave that handsome dark man,
All those envious hearts would be happy,
But that handsome dark man is mine alone.

15. Do you think that I would die for you?
Not even if the cross were on the bed,
The cross were on the bed and the priest outside waiting,
Would this blonde die for you.

16. I can no longer go walking at night,
Even the moon makes me bitter,
I had love when I was a young girl,
But now I have no luck in love.

17. This is the lane where my lover lives,
And which she has made me walk many a time,
She makes me live in great sadness,
My soul, let me marry you soon.

18. I slept soundly the other night,
Almost, almost slept until daylight,
All the roosters were singing, singing,
Cockle-doodle-doo, cockle-doodle-dee!

19. Love me and don't leave me,
Don't hurt my heart anymore,
I suffer enough during the day,
And even at night you make me sigh.

20. Windows closed at night,
Open during the day to cause me pain,
Windows, how many times have I looked at you,
In the midst of crying, tears and sighs!

21. Oh, let my sighs embrace my loved one,
Embrace my loved one and tell him good day,

Va lo saludi, e vaghe dir ch'el vegna,
Ch'el m'à fato l'amor ch'el me mantegna.

22. Tuti me dise che so piçenina
Che tuto el zorno el me fa giocolare,
El me fa giocolar sera e matina,
Feliçe chi à la dona piçenina.

23. Senti: sto fazoleto che ti à al colo,
L'àstu robato, o l'àstu tolto a nolo?
No l'ò robà, ne lo' gò tolto a nolo,
El moro belo me l'à messo al colo.

24. O bionda bela da la man de çera
El moro belo te darà la vera;
El te darà la vera e anca l'anelo,
Ti sarà sposa del to moro belo.

25. Viva sta compagnia tanto onorata
E tuti quanti quei che ben m'intende!
Staremo alegramente sta giornata,
E col nome de Dio, nessun se ofende.

Say good day and ask him to come to me,
For he has loved me and may he keep me.

22. Everyone tells me that I am little,
That all day he makes me play,
He makes me play night and day,
Happy that he has a little wife.

23. Listen, that handkerchief around your neck,
Did you steal it or did you borrow it?
I didn't steal it and I didn't borrow it,
My handsome loved one placed it around my neck.

24. O, lovely blonde, hold out your lily hand,
For the handsome dark man will give you a wedding ring,
He'll give you a wedding ring and even an engagement ring,
You will be the bride of your handsome man.

25. Long life to these fine companions,
And to all those listening to me!
Today we celebrate,
And God-willing, no one will be sad.

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# BOOK REVIEWS

*Beads and Beadwork of West and Central Africa.* **Margret Carey**. *Shire Ethnography* No. 21, Shire Publications, Princes Risborough, Buckinghamshire, U.K., 1991. 56 pp., 45 figs., 1 map, index. £3.95.

A companion to Ms Carey's "Beads and Beadwork of East and South Africa" (*Shire Ethnography* No. 3), this is one of several books in a series "intended for students of ethnography and the interested layman." As such, this volume provides a wide range of bead and bead-related information pertaining to an extremely large area of the African continent. An introduction to the various bead types utilized in the study area is followed by a discussion of the beads and beadwork of the following areas: Senegal, The Sahel and Ghana; Nigeria; The Bight of Biafra to Gabon; and Zaire and Angola. One of the keys to success in producing a general work such as this is to treat all of the sub-topics in a manner that allows each one to be proportionally representative within the larger context of the general subject. Given the wide diversity of information offered in this book, the author has succeeded in presenting certain basic facts in a format that is relatively easy to follow.

The text is fluid, the explanations appear to be correct, and most of the essential information regarding the topic of beads and beadwork in this part of the world is included. The photos, even though all but the cover are in black and white, give valuable support to the text, and attest to the talents of African artisans; e.g., the "belts" from Sierra Leone, Republic of the Congo, Gabon, Zaire and Cameroon. Also of interest are the photos of royal stools of chiseled wood covered with beads from Cameroon and the well-known beaded calabashes that, in former times, contained the remains of the skulls of deceased kings.

In her discussion of beads and their uses in Cameroon, Ms Carey has unfortunately forgotten to mention the very important transparent drawn glass beads with longitudinal white stripes which, in Cameroon, are among the most precious of beads. They are worn mostly by kings and royalty in necklaces of one or several strands, alternating with large "chevron" beads. These assemblages are also sometimes used by important high-ranking persons other than royalty during certain celebrations and gatherings. The value of these time-honored drawn-glass beads is extremely high (Harter 1981).

Other troublesome gaps in this book concern the countries of Mali and Mauritania which are hardly mentioned at all. In particular, and despite their centuries-old importance in Mauritanian customs, beads of amazonite (a greenish variety of feldspar) have been completely overlooked in the section concerning beadmaking in West Africa. This is an extremely significant subject that has been well researched and documented (Mauny 1956), and deserves mention even in a general work such as this. Amazonite beads have been held in very high regard since prehistoric times, and continue to be avidly sought to this day by certain populations inhabiting the Sahara from Mauritania to Chad.

Concerning information about the fabrication of glass beads in Nigeria, Ghana and Mauritania, the author's presentation is clear and explicit for those readers who are being exposed to African techniques for the first time. The photo of a terra-cotta mold for making beads from Ghana is very informative. Nevertheless, it is important to note that the fabrication of beads using inexpensive crushed glass beads from Europe is also practiced to a great extent in Ivory Coast as well. In this part of West Africa, women who are ill wear these African-made beads around the ankles as a way to cure their maladies.

Also concerning Mauritania, Ms Carey describes glass beads made in and around the towns of Kiffa and Oualata as resembling millefiori beads from Venice. It may be true that certain styles resemble the millefiori motif, but an even more significant number

of the beads, especially those which are triangular in shape, have their own unique styles and motifs. The author also states that Kiffa and Oualata beads have a central core made of "white glass powder paste" (page 16). This is not the only technique used: a large number of beads are fabricated simply by using an inexpensive monochrome European glass bead as a core onto which differently colored powdered-glass pastes are applied to form the outer layer of decoration. A simple piece of bottle glass, ground to the proper form and polished, is also sometimes used as a core.

Another omission worth mentioning concerns the incomparable beads made from the wood of "faux-ebene" trees that grow along and near the Senegal River. They are inlaid with fine silver threads in motifs that protect against the evil eye and are worn principally in Mauritania. Also, beads made of scented paste, popular throughout Africa, especially in Senegal, Mali, Mauritania and Togo, represent a very important subject that is not mentioned either.

In the description of Prosser-molded or "tile" beads on page 9, the author writes that "most of these beads come from Czechoslovakia." It is important to note the Bapterosses Company of France was, from the late 1860s to the 1970s, among the principal suppliers of this type of bead to West and Central Africa. In particular, toward the end of the 19th century, Bapterosses beads were in great demand in the Congo (Fourneau 1954). These same beads were appreciated throughout Africa for their quality, form and color for many years (Bessone 1987).

Although the above-mentioned omissions, among others, may be deemed important enough to have been included in this book, it should be noted that any work with such an enormous scope might be considered to have gaps in the information it provides.

*Beads and Beadwork of West and Central Africa* is interesting because of the author's well-chosen research sources, as well as its inexpensive price, especially for "the interested layman" who is being exposed to the subject for the first time. However, for many, including scholars and researchers, the book risks being a point of frustration because of its weak bibliography that significantly reduces the potential value of the general information contained within. The omission of specific reference information concerning the "useful articles and monographs" on page 55 is extremely limiting to those who read her book and desire to further their knowledge of this most interesting subject. Although it is stated that "many interesting articles can be found," there is no way to follow up on this fact, leaving the reader hungering for more but with no further hope to satisfy the hunger.

Finally, it should be noted that IFAN, mentioned in the book as the *Institut Français d'Afrique Noire*, was renamed the *Institut Fondamental d'Afrique Noire* after Senegal's independence in 1958. This may not appear significant to those who are unaware of the institute and its overall mission, but to those who are, this incorrect name will surely be the subject of some concern.

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*Shell Bead and Ornament Exchange Networks Between California and the Western Great Basin.*

**James A. Bennyhoff and Richard E. Hughes.** *Anthropological Papers of the American Museum of Natural History*, Vol. 64, Part 2, New

York, 1987. 96 pp., 14 figs., 13 tables. $10.50 (paper).

For archaeologists in California and the Great Basin, the publication of Bennyhoff and Hughes' *Shell Bead and Ornament Exchange Networks Between California and the Western Great Basin* was anxiously awaited and long overdue. While the discussion of shell beads and ornaments in the western Great Basin is the ultimate goal of the text, the primary use of the publication will be the typology and classification procedures for identifying *Olivella* shell beads and shell ornaments. Indeed, Chapter 1, which comprises the bulk of the publication (63 pages), consists of a synopsis of shell bead and ornament typologies for California and the Great Basin as developed by the senior author over the past 30 years. The remaining discussion of shell exchange is 15 pages long and is followed by eight pages of an appendix providing provenience information on the California and Great Basin shell beads discussed in the text.

The original purpose of the monograph was to report on the shell beads and ornaments from Gatecliff Shelter, Nevada, one site within the larger Monitor Valley research project directed by David H. Thomas. In the process of comparing the bead and ornament data from Gatecliff with other assemblages in the Great Basin, Bennyhoff and Hughes realized that the original standard for comparing shell beads and ornaments (Bennyhoff and Heizer 1958) was inadequate. A significant amount of new information had accumulated during the past two decades regarding the distribution and dating of shell assemblages. Their goal, consequently, was to "quantify and objectify the classification process in the hope that this would encourage standardization of reporting" (p. 83).

The beginning of Chapter 1 provides a brief review and critique of the two major *Olivella*-shell bead typologies previously used by researchers in California prehistory: Lillard, Heizer and Fenenga (1939), later revised by Gifford (1947) and Beardsley (1954). Rather than augmenting one of the previous typologies, Bennyhoff and Hughes chose to create a new one that could be expanded more easily. Table 1 provides a useful comparison of Bennyhoff and Hughes' classification with the earlier typologies.

As Bennyhoff and Hughes readily admit, their classification is of the "splitting" not "lumping" variety. Beads are classified based on their form. Nonetheless, the authors are attempting to provide basic metrics and description-of-form variations to identify "cultural associations through time and space" (p. 86). Beads are measured according to a standard orientation of the *Olivella* shell, spire up and canal down. Growth lines are always vertical so that length and width measurements are not confused. A diagram illustrates the parts of the shell and examples of the location of certain bead forms taken from different parts of the shell. The diagram and accompanying glossary are helpful for the novice researcher.

The synopsis provides standard measurements in millimeters for bead diameter, length, width, curvature, thickness, and perforation diameter, as appropriate to a particular form. The description of the Class frequently makes reference to the site or location within California for which the type is most clearly represented. No numbers are given, however, for how many of the beads from these sites were measured in developing the standard measurements, including the size range and mean perforation diameter. Presumably this information could be retrieved by checking the collections for the particular sites illustrated in the drawings for each type. The source and temporal significance of each Class and subclass is discussed. This is followed by a brief discussion of the Great Basin occurrences referenced to a table that indicates the site number(s) and estimated time period for that particular bead form. When the information is available, the authors indicate whether the beads were recovered from a burial or midden.

I have used this classification system for typing *Olivella* beads recovered from several sites throughout California, and have had few difficulties with the basic procedures for measuring and classifying bead types. The collections were all from loose associations within a midden, not from grave lots that had been radiocarbon dated or seriated. One bead form proved difficult to type, however, and it suggests some problems with the typology that need to be clarified through future studies.

The one difficulty I had in applying the classification was distinguishing between Class L and

M rectangular bead forms. As the artifacts were recovered from a midden and the measurements for the beads had a wide range, it was difficult to determine where the break should be in determining whether the beads were Thick Rectangles (L) or Thin Rectangles (M). To illustrate this problem, consider the measurements given for each form. The subclass L2 Small Thick Rectangle has a length range of 5.0-10.0 mm, a width of 4.0-9.0 mm, and a perforation diameter range of 1.5-2.5 mm. A mean of these is given, with no total number provided for how many beads were measured and from what collections to derive these size ranges. Although the form is labeled "Thick Rectangle," no measurement is given for the thickness of the bead. Subclass M1a Normal Sequin has measurements presented in a slightly different format. The size ranges from a length of 5.0 mm and a width of 4.0 mm up to a length of 12.0 mm and a width of 6.0 mm. The modal size is given rather than the mean. The perforation diameter is given as 1.0 mm "normally." It is not clear whether "normally" should be taken as a mean for some unknown number of specimens measured. Again, no measurements are given for the thickness of this "Thin Rectangle."

Why should anyone be interested in splitting hairs over this issue? It is important because the temporal significance for both subclasses is quite different. L2 is listed as occurring in the Early period (ca. 2000-200 B.C.) whereas M1a is a marker type for Phase 1 of the Late period (ca. A.D. 700-1500). So how does a researcher decide whether the bead forms at this site represent a multicomponent or single component occupation? Obviously, other lines of evidence, such as absolute dating of the deposit and features, need to be brought to bear on this problem before blindly accepting that the bead typology provides reliable temporal indicators of specific periods of occupation (Hartzell, in press). Clearly, more research is needed to identify the metric criteria that distinguish convergent forms if the classification is to have any meaningful temporal significance.

Several critical problems need to be addressed if this classification system is to be used by other researchers with a fair degree of confidence. First, standard reporting on the number of specimens used to develop the metric criteria needs to be presented. Second, the basis for selecting the metric criteria needs to be explicit and justified. For example, why is modal size, range, or mean used interchangeably when reporting measurements for different classes? Third, provenience information used to form the basis of the typology needs to be presented, along with a discussion of the reliability of the dating. A number of sites discussed by the authors were excavated many years ago. The dating and grave lot seriation information is not always available or well justified. Therefore, problems with dating need to be made explicit.

Finally, one must bear in mind that Bennyhoff and Hughes' interpretation that shell bead and ornament trade between the Great Basin and California was at a peak during the Early period (ca. 2000-200 B.C.) based on the total number of beads recovered from Great Basin sites to date must be taken with a great deal of caution. The total number of beads recovered and identified from any temporally significant context is quite small and statistically insignificant. The meaningfulness of the classification must be considered in light of the minimal information provided about the sample size and reliability of the dating on the bead types that form the basis of the overall classification.

Having pointed out the problems with the monograph, let me emphasize what I believe are the strengths of this publication. Bennyhoff and Hughes provide the first clear metric criteria for beginning to organize data on *Olivella*-shell beads. The typology is clear and easy to use. The principal data used to form the basis of the metric criteria distinguishing the types are given in the text by reference to site numbers. Thus, researchers can locate the primary data and conduct further studies to clarify problems such as those presented above for Class L and M rectangular bead forms. The concluding discussion of California Trade Centers draws on a number of sources of information and will undoubtedly form the basis for future studies and comparisons. Bennyhoff and Hughes, whether intentionally or not, have clearly pointed out the lines of research we will need to conduct to clarify many of the problems facing Californian and Great Basin researchers using shell beads and ornaments as temporal indicators.

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## *Glass Trade Beads in the Northeast, and Including Aboriginal Bead Industries.*

**Gary L. Fogelman**. *The Pennsylvania Artifact Series, Booklet* No. 70, Fogelman Publishing Company, Turbotville, Pennsylvania, 1991. i-iv + 44 pp., 29 figs., folded-in color poster. $15.00 (paper).

In 1937, Gerald B. Fenstermaker published an article in *The Pennsylvania Archaeologist*, the newly established Bulletin of the Society for Pennsylvania Archaeology, entitled "Indian Glass Trade Beads." The purpose of this article was to describe the distinctive styles of glass beads found in Lancaster County and to correlate them with the known historic periods, beadmakers and traders. Included in the article was a chart depicting the "Evolution of Indian Beads," as well as drawings of several reconstructed necklaces (Fenstermaker 1937:73-5). While the scholarship on glass beads and their role in the culture of Native Americans has advanced considerably since Fenstermaker's day, the popularity of this approach remains undiminished. Gary Fogelman's glossy booklet is the most recent addition to this literature.

The author's goals are ambitious. In a brief "Intent" section, he outlines four basic purposes for this booklet and its accompanying poster: 1) to familiarize the reader with a complex topic (glass trade beads); 2) to provide a "glimpse" of native beadmaking; 3) to look at how trade goods were assimilated into native culture; and 4) to put both glass trade beads and native-made beads into "a chronological perspective." These are daunting challenges for any bead researcher. Not surprisingly, the results of Fogelman's effort are mixed.

Fogelman divides his text into ten parts. Each ostensibly covers a particular subtopic. Some of these subsections are quite useful; other are, frankly, awful. Let's start with the good news. Fogelman is on firmest ground when discussing glass beads. Part III provides a review of previous classification systems and problems in bead research. Part IV summarizes manufacturing techniques, while Part V discusses bead terminology and includes an interesting compilation of the slang terms used in bead description. Part VI is a reprint of the classification system for glass beads developed by Kenneth and Martha Ann Kidd. Originally published by Parks Canada in 1970, the Kidd system, as amended by Karlis Karklins (1985), has become the standard for describing glass beads in northeastern North America. By making this information more broadly available, Fogelman has performed a valuable service to both collectors and scholars — helping us to speak the same descriptive language. Unfortunately, the Kidds' color plates were not reprinted along with the descriptions.

On the not-so-good side, there are several weak sections. Part I is an ill-fated effort to discuss native beads pre and post European contact. This is a large and complex topic, and Fogelman's choppy, shallow

account of native bead "industries" is just not adequate to the task. Part II, An Overview on Glass Beads in the Northeast, and Part VII, Glass Beads Throughout the Northeast, are largely redundant and, though more substantial, suffer from the same superficial, discursive style that plagues Part I. Superficial is the kindest word for Part VIII, Native Use of Glass Beads.

What differentiates this booklet from other surveys of glass beads is the large (30 x 20 in.) folded-in color poster. Like the booklet, this is an ambitious attempt, one with definite strengths and weaknesses. Essentially, the poster duplicates the information contained in the booklet but with an emphasis on visual rather than textual presentation. Nonetheless, there is a great deal of repetition. Part IX of the booklet is a discussion of the beads used on the poster and includes yet another statement of intent, chronological trends, and most commonly occurring types, all of which is then reprinted on the poster itself. Apparently, this was done so that the poster could be sold on its own, without the accompanying booklet. When used together, however, the impression is of too little information repeated too many times.

The poster's strong point is showing what these beads, both European and native, really look like. In general, the quality of illustration is good. Both a 2-inch and a 5-cm ruler are included for scale. While these suggest that the reproduction was 1 to 1, several beads seem to me to be somewhat larger than actual size. The clarity is pretty good and the printed color values are well matched to those of the beads themselves. The poster gives one an excellent sense of the beads used in north-eastern North America from the 16th through the 18th century. Only seeing actual specimens would be better.

Unfortunately, the poster, like the text, is marred by problems. There are some mistakes. The examples labelled as "whelk shell" and "elk molar" are neither, while the bead identified as drawn variety IIbb3 in the 1600 time-range section is actually a wound specimen (WIIIb) of 19th-century vintage. Many of the chronological placements also seem wrong to me. For example, "Roman" beads (IIj series) as well as the wound "raspberry" beads (WIId series) are, to my knowledge, early 18th-century styles, not mid-17th century. On the other hand, long drawn beads of multi-layered construction, both with (IIIb-IIIbb') and without (IIIa) stripes, are more typical of the mid-17th century than where the poster places them early in the 18th century. There are also many specific chronological assignments that seem questionable. It is unlikely, for example, that beads made from European "Kaolin [sic] pipe stems" date from the late 16th century. Given the effort and cost that undoubtedly went into this poster, it does seem that more care might have been taken to get things right. It is not a good sign when illustrated specimens are followed by the disclaimer "Doesn't belong here."

For all its advantages, the poster approach also has inherent liabilities. Beads are good time markers, but by pigeon holing them into specific time slots, one loses any sense of which varieties were ephemeral and which continued over a long period of time. The poster approach tends to gloss over such distinctions. Another, more serious, distortion is the impression that the chronological distribution of beads illustrated on the poster is spatially valid as well. This is clearly not the case. The bead assemblage that occurs on early 17th-century Iroquois sites in New York state is not the same as that found on Huron sites in Ontario or Algonkian sites in coastal New England. Different native groups received different beads from different European sources at the same time. The poster simply mushes all of them together.

Clearly, this is a publication aimed at collectors rather than scholars. That's fine. It is essential that good information on beads, or any other artifact type, not be locked away in obscure professional publications. In this sense, Fogelman's work provides a needed and useful contribution to the literature on beads. Nonetheless, substantial problems undercut this effort. There are some surprising omissions in the References, even for a popular publication. These include Karklins and Sprague (1980, 1987), as well as other studies that discuss and illustrate (in color) glass beads. Stone (1974) and Deagan (1987) are two examples. Omissions are bound to happen, but they are less forgivable when the author aspires to be "comprehensive, accurate, [and] up to date" (p. ii). The other great annoyance about this booklet is its carelessness. The writing is too chatty and familiar. The illustrations, aside from the poster, are little more than cartoons, and the whole production has a slapdash quality to it. This is not a matter of amateur versus professional work; it is a question of doing the work well.

In sum, this booklet attempts a great deal, but succeeds only occasionally in achieving it. A little time and a lot more attention to detail would have made this useful publication a much more valuable one.

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*Beads from the West African Trade Series.*
Volume V, "Russian Blues, Faceted and Fancy Beads from the West African Trade," 1989. 10 pp. of text, 34 pp. of color plates. $15.00 (paper).
Volume VI, "Millefiori Beads from the West African Trade," 1991. 20 pp. of text, 68 pp. of color plates. $25.00 (paper).

**John Picard and Ruth Picard.** Picard African Imports, 9310 Los Prados, Carmel, California 93923.

These are the two latest volumes in the spectacular series on *Beads from the West African Trade* by the Picards. They are the largest volumes to date and the most informative. There is little question that they present the best color photography in the bead field, showing beads singly or in strands in full size and often enlarged.

Those who have been following this series can only be pleased that it gets better all the time. More information is presented, more details on the beads given, and guest authors (Elizabeth Harris for Volume V, and Jamey Allen for Volume VI) are being invited to provide historical or technical details about the beads.

As impressive as these works are, however, there are a few points which this reviewer believes would make them even more valuable as research tools without sacrificing any of their sumptuous format. In these remarks it is necessary to consider four separate works: the work in the two volumes by the Picards, and the essays by Harris and Allen.

The first point is that there is a responsibility inherent in publishing the names of beads which inevitably become part of the nomenclature. Where there is no historical justification for a name and where it can be misleading, it should be avoided. Though the weak foundations of these names were noted in the text, it would be best to expunge "French Ambassador Bead" and "Lewis and Clark Bead," for example.

This is especially true in the case of "Russian beads." A term apparently coined by Alaskan collectors, it is most confusing to neophytes who naturally assume that the beads were made in Russia. Not only were they not, but there is no evidence for them being brought to Alaska by the Russians. They were not introduced until well after the Russians began getting their stocks of beads from Yankee skippers and the Hudson's Bay Company.

Harris' essay, while quite good on most manufacturing points, loses much of its value by devoting nearly half its length to a short history of Alaska — far from the West African focus of the series — apparently in a vain attempt to justify the name "Russian bead." There were also several historical inaccuracies. Cook did not turn south soon after Nookta Sound, but sailed all the way north through the Bering Strait and explored some of the Alaskan north coast before he was forced to leave. English participation in the trade did not end with the War of 1812; as Harris herself admits, the Hudson's Bay Company was a major participant in the trade — it was an English concern. As for company names, it was the Russian-American Company, not the Russian American Fur Company.

A few things may also be noted in Harris' essay in regard to "Vaseline" beads. Czech tong molds were invented in the early 1700s, not 1800s. While she identified why collectors call these beads "Vaseline," she ought to have mentioned that uranium was discovered in Bohemia, soon tried in glass and was a major ingredient of many Czech beads for a long time. Yes, the beads do fluoresce. There were also several variations re the placement of the mold seam, and the numbers, types and position of the facets.

A second point it that the value of each volume would be enhanced if it were limited to the confines of the title. In the millefiori volume, for example, there are quite a number of beads which are neither millefioris, nor have any mosaic elements on them. I see no justification for the various trail-decorated beads being included (#682 is not trail decorated but of swirled glass, a product of the 1930s).

Additionally, beads not in the West African trade ought not to be included. If the volumes are going to serve as reference points for particular beads in this trade, the inclusion of other types of beads or beads from other sources is confusing. The Picards do give us this information, but many casual and even some studious readers will not plow through their long and complex captions to find this out.

Concerning the ancient beads from West Africa decorated with mosaic chips, the Picards are rightly skeptical of Dubin's ascription to Roman or Ptolemaic times, but have made a serious error in tentatively ascribing them to "middle-to-late Islamic dating from 300 to 600 AD" (p. 8). The Islamic period did not commence until the Hegira in A.D. 622. These beads are Early Islamic from the time the trans-Saharan trade was opened about the 9th century until the destruction of the major Middle Eastern glass beadmaking centers in the 12th and 13th centuries.

Allen's essay on manufacturing mosaic elements is generally good but for two points. I hope no one attempts to follow his instructions of "joining together cold preformed units with a hot and molten quantity of glass" (p. 6) or they will be in for a nasty surprise. When glass is fused to glass both pieces must be hot (not molten or liquid, but semi-viscous). This includes the placing of *murrine* (slices of mosaic canes) onto the core of millefiori beads.

There is also an important third way to make mosaic elements, a technique I have called the "hot strip method." It consists of laying strips of hot glass upon a gather of hot glass, color by color, building up a pattern. This is how Indian millefiories are made, and is the most likely method used to make most mosaic elements in ancient times.

Finally, the value of this series would be much enhanced if the beads were placed in some sort of logical order. Simply putting them on pages helter-skelter gives us the beads, but much more information would be conveyed if there were some sort of meaningful sequence. For example, the Picards are in an excellent position to record the people and places where particular beads are used. West Africa is a huge geographical area, and it is well known that some people and/or nations favor certain beads over others, or at least were the recipients of them. One can distinguish some communities by their beads. If beads used by one group of people were put together and so labeled (exceptions being noted as well), this would add to the utility and contribution of the series.

In the millefiori volume, there was a very important chance to significantly add to our understanding of these beads by ordering them

logically. Pages 70 through 87 are beads found on the cards of the J.F. Sick & Co. in the Royal Tropical Institute of Amsterdam. The Picards have been studying these sample cards for some time and have advanced what appears to be a correct interpretation of their chronological order. Why were the beads not shown in this order? It they had been, would any meaningful pattern have arisen from this simple and rational arrangement? The answer is an emphatic Yes! On the pages indicated are 350 millefiori/mosaic beads dating from before World War I, and 298 from the period 1920 to 1931. Of the 350 pre-World War I beads, no less than 88.9% have composite (I much prefer the term "bundled" because of the many meanings of "composite") *murrine*, made by bundling together monochrome glass canes to build up the design; only 6.6% have molded ones at this time. After the war, only 9.7% of the beads have composite (bundled) designs, while 68.1% are molded and 22.1% are cased (layered). Moreover, two thirds of the later composite/bundled chips are on beads made from 1920 to 1925, and six of the remaining ten are used very sparingly on beads in 1927, with none used after 1929.

Assuming the dating is correct, and there seems no reason not to, and keeping in mind the hazards of using sample cards (though these are from a well-dated and carefully curated set), this means that the composite/bundled mosaic chips on millefioris are virtually all from the early decades of this century, while molded ones do not come into their own until after the Great War.

This strikes me as very important. The dating of beads is a crucial fact about them. The figures are so overwhelmingly lopsided that unless a serious attempt were made to skew the data presented in this book (and there is no reason to think that this was done), the pattern is quite clear. This, then, solves the mystery which has existed for many years as to why there is a difference between these two methods for making mosaic canes: the difference is chronological.

Are there other chronological differences between these beads? For one, there is a clear ascendancy of simple cased *murrine* over time: only one is recorded before World War I, 15 in the next six years, and then 50 in the last six years. What about added stripes, the laying of canes lengthwise, and so on? There may also be patterns here, but the hodgepodge method of arranging the beads has prevented me from pursuing them.

The point is this: the Picard's volumes, in particular the one on millefiori beads, contain a great deal of data, enough apparently to clear up what has long been a major problem in the understanding of these beads. But this ought to be the task of the authors to elucidate, not a reviewer, who spent nearly a day flipping back and forth through the unorganized presentation. Had the beads been put in simple chronological order, this distinction and any other possible ones would have jumped off the page and been immediately clear to everyone.

In sum, these are wonderful books and are recommended to anyone with a serious interest in beads or to those who just like to look at them. There is room for improvement, but the improvements that have already been made in the series lend strength to the belief that we will see future volumes being even more valuable than those published thus far.

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*Glass in Jewelry: Hidden Artistry in Glass.*
**Sibylle Jargstorf**. Schiffer Publishing Ltd., West Chester, Pennsylvania, 1991. 176 pp., 284 color figs., 35 b&w figs., index. $29.95/ £24.95 (paper).

The book list of Schiffer Publishing comprises a wide range of subjects, almost all on "collectibles" and, as such, they are well illustrated and include value guides. They are aimed at the intelligent collector, rather than the academic reader. This book, written by a trained chemist from Braunschweig, Germany, is more scholarly than many books published by Schiffer, although, from the student's viewpoint, it is marred by the nearly total lack of sources for the archival illustrations used and the lack

of reference citations, apart from a few footnotes in tiny print. There is hardly any indication of the ownership of the illustrated pieces, which include beads and beadwork in variety, as well as brooches and miniature mosaic jewerly. The references are mostly in German and it seems likely that the original manuscript was in that language, though no translator's credit is given.

This book's scope is obviously not confined to beads, although a very high proportion of the illustrations and subject matter deals with them. Nothing is presented on the jewelry or beads of India or China; the focus is on jewelry made in Venice (Murano) and central Europe. There is some allusion to glass beads made in antiquity, or to some of the more noteworthy beads made for the overseas trade, such as white hearts, chevrons and millefioris.

The illustrations, mostly in color, often four to a page, are outstandingly good, and alone make the book worth the high price in sterling. There are a few cases where the color register is suspect, as on p. 15 where a beaded notebook cover and a detail of the same are in different shades, while the historical black-and-white photographs of German women wearing jewelry or beaded dress ornament are mostly too dark to serve any useful purpose (that on p. 154 is perhaps the worst). Some duplication occurs; e.g., on pages 22 and 44, and 24 and 49. The absence of a scale in the photographs is a pity, though it is usually possible to infer that the subject is shown actual size, or double that. Detailed closeups of cut-glass, molded or faceted beads, some with 96 or 117 facets, and photographs showing the different varieties of glass used (bicolored, satin, uranium, filigree, aventurine and iridescent, to name just a few) make the book a joy to leaf through. The use of complementary mounts or backgrounds adds to the visual pleasure.

Bead colors are covered in a short note on the seed beads produced in great quantity for knitwork and embroidery in the early 19th century. By the 1830s the beadmakers of Murano claimed to make 150 different shades, including five basic whites: alabaster, chalk, milk, opal and porcelain, in sizes from one to nine millimeters. Bohemia also developed a wide range of colors. One manufacturer exhibited 105 different colors in 1873, while a group of glass recipes from 1892 included 21 varieties of yellow which, to judge from the ingredients, must really have differed. One wonders how the Munsell color charts would have coped.

"Bohemian" glassworking is given detailed coverage. Two maps on pp. 37-38, and Chapter 5, sub-headed "Bead- and Gem-making in Bavaria/Thuringia/Bohemia/Silesia," together with many other references throughout the text, give a good picture of beadmaking in central Europe, naming some of the glassmakers and their products, and describing the exploitation of the many cottage workers. Peter Francis, Jr's. *Czech Bead Story* (1979) and his densely written later account in *The Glass Trade Beads of Europe* (1988) are still the best review of this area of bead production, but the present book does illustrate gems and beads made for the European and American fashion market up to the late 1950s, and shows the work of some of the fashion designers.

Sybille Jargstorf's training as a chemist means that there are useful and welcome technical explanations of the glass or beadmaking processes, such as opaline/alabaster glass (p. 14), white-heart beads (p. 29), aventurine or goldstone glass (Chapter 11), and the making of false pearls and coral or gold hollow-glass beads (pp. 135-6). Full attention is given to beadmaking equipment in the longest chapter (Chapter 6, "How the Beads are Made") which is illustrated with line engravings of lampworking devices, pressing tools and a faceting machine (but frustratingly, the lettered parts are not explained in the captions, and no sources are given for the drawings). Photographs of bundles of drawn tubes and canes, lampworking in the E. Moretti workshops on Murano and in the Schuhmeyer workshop in Neu-Gablonz, details of blown beads, satin-glass beads, pressed, faceted, iridescent and fancy beads in variety complement the text with its explanations of how certain effects were achieved. There is one word, "protoberas," which may be a geological term, that occurs on page 37. The material is clearly a substance of volcanic origin used in the making of black beads in the Fichtel mountains of Bavaria. It is not defined in the *Oxford Dictionary* or *Encyclopedia Britannica*, and I would have liked more information on it since there is quite a range of volcanic substances that might have been used to make black glass.

Chapter 9, "Millefiori Jewelry," sketches in the antiquity of this aspect of glassworking which goes back to the first century B.C. (though, surprisingly,

there is no reference to Anglo-Saxon millefiori), and reviews the work of the little-known German Dr. Fuss in 1833, and of Domenico Bussolin in 1836 (his factory opened in 1838) in rediscovering the lost art of mosaic glassmaking. The theory seems to have been worked out by Count Caylus (in 1752) and put into practice in 1766 by Reiffenstein, whose analysis of an antique portrait cane is quoted. Illustrations include 19th-century and modern millefiori beads, a drawing of antique beads (probably from Alexandria) including mosaic and portrait canes, and a portrait cane of Garibaldi.

The chapter on "Aventurine Jewelry" illustrates beads, brooches and bracelets featuring this beautiful glass, first recorded in 1644, and named from *aventura*: risk or chance, from the uncertainty that the mixture would come out correctly. The chemistry of copper and its behavior as an element in the making of differently colored glasses is explained, with the wry observation that the practical experience of Muranese glassmakers was superior to that of German chemists and glass manufacturers.

The chapters on "Once Fashionable Jewelry" and "Modern Designs in Glass Jewelry" provide valuable documentation for what one might term recent, as well as tomorrow's antiques. The pieces illustrated are almost entirely from Silesia or Germany; Lalique and Tiffany get only a brief reference, and the Dior necklace on p. 172 originated in Neu-Gablonz. One's pleasure in browsing over the jewelry stalls at bazaars and antique fairs is enhanced by knowing rather more about recent glass-bead jewelry than before.

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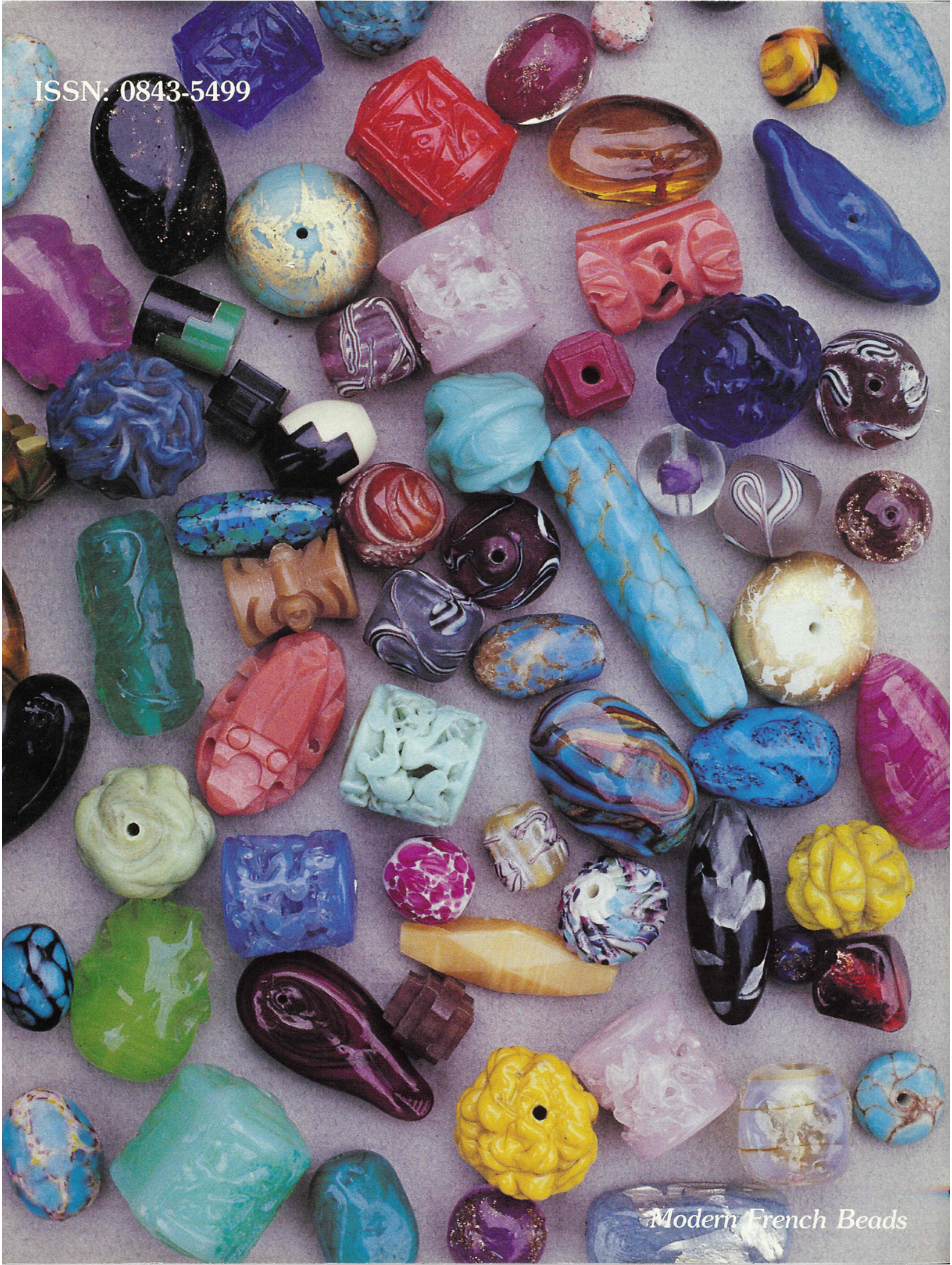

Modern French Beads