BEADS: Journal of the Society of Bead Researchers

Volume 2 (1990) Article 6

1-1-1990

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TRADE BEADS FROM HUDSON'S BAY COMPANY FORT VANCOUVER (1829-1860), VANCOUVER, WASHINGTON

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Archaeological excavations conducted at Hudson's Bay Company Fort Vancouver recovered 100,000+ trade beads of 152 varieties, including 80 varieties of drawn, 57 varieties of wound, 10 varieties of mold-pressed and 3 varieties of blown glass beads, as well as one variety each of "Prosser-molded" ceramic and cut-stone beads. An additional 6000+ beads recovered from excavations at the HBC Kanaka village and riverside complex sites may included 39 additional varieties possibly associated with the HBC occupation: 17 varieties of drawn, 12 varieties of wound, and 5 varieties of mold-pressed glass beads, as well as one variety each of stone, bone, wood, metal, and shell beads. The bead assemblage has contributed to the initial definition of a complex temporal and cultural horizon marker dating from 1829 to 1860 for the Pacific Northwest, and provides insights into mid-19th-century Native-American and Euro-American bead preferences. Analysis of the assemblage demonstrates difficulties inherent in the existing archaeological bead classification system, and suggestions for revisions are discussed.

HISTORICAL BACKGROUND

Begun under a charter granted in 1670 by King Charles II of England, the Hudson's Bay Company (HBC) became the premier trading company operating throughout northern North America concentrating upon the acquisition, trade and marketing of furs. By the 1830s, after firmly establishing its commercial enterprise from coast to coast, the HBC expanded its operation by selling imported manufactured goods and locally made products to Euro-Americans moving into the Red River District of the Canadian prairies, the Willamette Valley of the American Oregon Territory, and the Columbia Plateau of the American Washington Territory. Eventually, these mercantile endeavors evolved into one of the largest commercial enterprises in North America, known in the 20th century as "The Bay."

Two major mercantile centers were operated by the HBC during the mid-19th century: Lower Fort Garry on the banks of the Red River near present-day Winnipeg, Manitoba, and Fort Vancouver on the Columbia River near what is now Portland, Oregon. Fort Vancouver was established in 1824 as the administrative headquarters and primary fur depot for the HBC Western Department. The original stockaded fort was abandoned in 1829 for an expanded establishment a few kilometers to the west and closer to the river (Fig. 1). Between 1824 and 1845, Fort Vancouver retained its prominence as department headquarters, servicing no fewer than 38 forts, stores, houses and warehouses throughout present-day Oregon, Idaho, Washington and British Columbia (Fig. 2).

Operations within the Western Department included: 1) maintaining a network of forts and houses to acquire furs for European and Asian markets; 2) supplying the Russian American Fur Company in southwestern Alaska with agricultural supplies; 3) maintaining mercantile and trading stores in San Francisco and the Sandwich (Hawaiian) Islands; 4) outfitting fur brigades venturing to the northern boundary of the Spanish territory in the American Southwest; and 5) operating a fleet of ships (the Marine Department) along the northwestern coastline.

To support these operations, manufactured goods were imported from London, England, with secondary imports from China via Boston merchantmen trading in the Sandwich Islands to circumvent the Asian trading monopoly of the East India Company, and eventually from New England to avoid import duties

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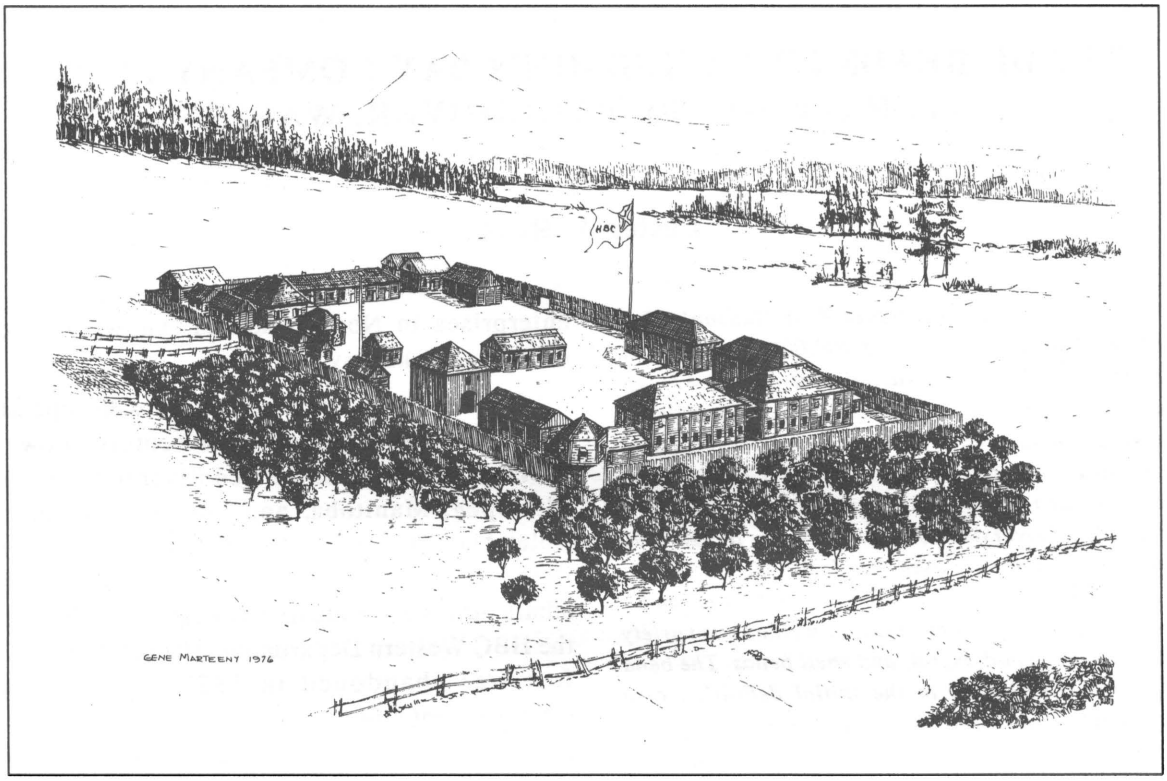


Figure 1. HBC Fort Vancouver as it probably appeared in 1845 (after Ross 1976).

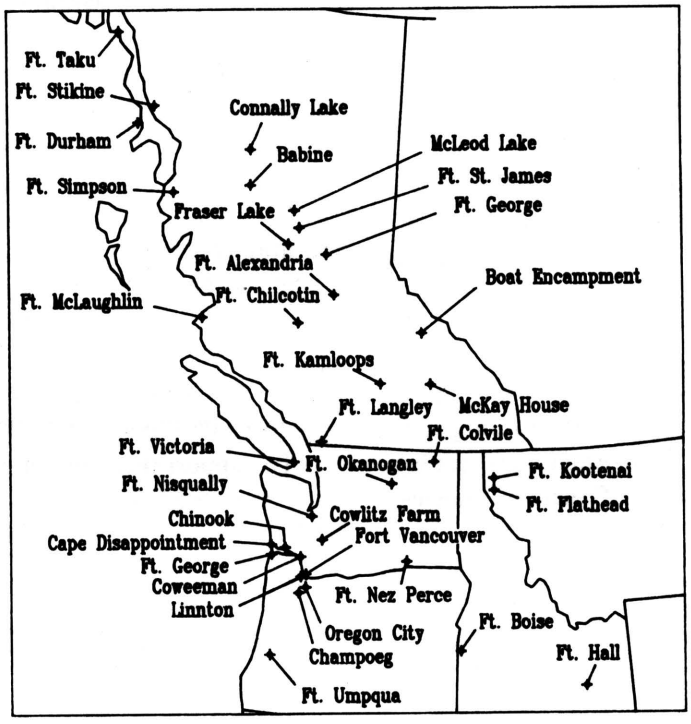


Figure 2. Establishments in the HBC Columbia Department that may have served as distribution centers for trade beads from 1824 to 1845 (after Ross 1976:4).

imposed by the United States when American custom houses were established for the Washington and Oregon Territories (Ross 1976:1-3).

Among the goods imported were tons of glass beads acquired from several suppliers, some of whom also provided commodities other than beads (Ross 1979):

John Towry Burgon and Son, London hardwaremen and gunflint manufacturers; known to have supplied the Company with gunflints, tobacco and snuff boxes, Dutch paper looking glasses, beads and finger rings for outfits 1823-1833 and 1844-1845.

Albert Pelly and Company, London merchant; known to have supplied the Company with beads for outfits 1852-1854, as well as oatmeal for outfits 1849 and 1851-1852.

Jonas Phillips and Sons, London merchants and importers of beads; known to have supplied the Company with beads for outfits 1826-1833 and for some of the outfits of 1843-1850.

Lawrence Phillips and Sons, London merchants and importers of beads; known to have supplied the Company with beads for some of the outfits of 1843-1850.

Octavius Phillips and Company, London colonial and general produce brokers; known to have supplied the Company with beads for some of the outfits of 1843-1850.

J.P. Sturgis and Company, Canton fur merchant; known to have supplied the Company with small blue glass beads for outfit 1828.

Perkins and Company, another Canton fur broker, was requested to acquire Chinese beads (Canada. National Archives. HBC Archives, A.6/21, fol. 88), but whether or not the request was fulfilled is unknown.

Historical terms for glass beads known to have been available in the HBC Columbia Department between 1824 and 1854 include (Ross 1976:227- 228):

- Bunche Beads
  - Barley Corn
    - White
    - Of Colors
  - Cut Glass
    - Crystal
      - White #4
      - Amber #4
      - Yellow #4
      - Green #4
      - Green Blue #4
      - Light Blue Opaqued #4 and #5
      - Blue #4
      - Blue Opaque
      - Lapis Blue #4
      - Lapis #4 and #6
      - Purple #6 and #7
      - Fine Purple #9
    - Brown Garnet
  - Pound Beads
    - Canton or Round Necklace #1, #2, #3 and #4
    - Common Round
      - White
      - Black
      - Clear Green
      - Light Blue
      - Blue
      - Dark Blue
      - White Enamel
        - Large
        - Small
      - Aquamarina Necklace
  - Yard Beads
    - Transparent Green

An example of the quantity and variety of beads imported by the HBC into the Columbia Department is provided in a manifest for a single shipment of beads received in 1844 (Canada. National Archives. HBC Archives, B.223/d/158, fols. 6-32):

30 bundles Aqua marina necklace Beads
240 bundles White barleycorn Beads
87 pounds Large white enamel Beads
290 pounds Small white enamel Beads Sample A
150 bundles Light Blue Cut Glass Beads Number 4
150 bundles Lapies Blue Cut Glass Beads Number 4
100 bundles Light blue cut glass opaqued Beads No. 4
60 bundles Green cut glass Beads Number 4
2 bundles Fine purple cut glass Beads Number 9
30 pounds Common round black Beads
48 pounds Common round dark blue Beads
350 pounds Common round light blue Beads B
200 pounds Common round clear green Beads C
316 pounds Common round white Beads D
69 bundles Sample G Beads

19 bundles Sample H Beads
25 bundles Sample I Beads
46 bundles Sample K Beads
50 bundles Sample L Beads
50 bundles Sample M Beads
100 bundles Sample N Beads
100 pounds Sample O Beads
50 pounds Sample P Beads
50 bundles Sample Q Beads
27 pounds Sample R Beads blue pipe

Of the historic varieties, colors and sizes of beads shipped to the Columbia Department, very few positive correlations can be made with archaeological specimens recovered from excavations conducted at Fort Vancouver. Terminology utilized by the Com-pany to identify beads was relatively non-descript, and the only countries positively identified as bead distribution sources were Great Britain and China; with probable manufacturing sources being China, Bohemia (now part of Czechoslovakia), probably Venice and perhaps Great Britain. John McCullogh (1840:126) observed that "the glass beads sent from England are all imported, principally, we believe, from Venice." Equation of this statement with the beads recovered at Fort Vancouver cannot be verified, but it is assumed that such was the case.

Canton beads were identified as round necklace beads, sold by the pound in four sizes. Bohemian beads consisted of the mold-pressed beads discussed below and identified historically from early 20th-century technical literature (Ross and Pflanz 1989). Venetian beads are assumed because this city was the major bead manufacturing center during the 19th century (e.g., Bussolin 1847). British glass-bead manufacturing during the mid-19th century presumably was limited to a few, very small-scale producers, and the diversity and quantities required by the HBC probably could not have been secured from local manufacturers.

Glass beads imported to Fort Vancouver were sold by the bunche, pound and yard. Beads sold by the bunche were strung according to predetermined lengths (Sprague 1985:92), and were generally relatively large and expensive. Normally, beads sold by the pound were small, sorted in discrete sizes, and re-sold by lesser weights. Beads sold by the yard were strung and sold in strands. Beads excavated at Fort Vancouver undoubtedly represent each of these bead groups, but positive correlations with the historic terminology cannot be accomplished with any degree of certainty.

ARCHAEOLOGICAL EXCAVATIONS AT FORT VANCOUVER

When the National Park Service acquired the site of Fort Vancouver in 1947, nothing remained of the stockade or the buildings. Louis Caywood was the first archaeologist to undertake excavations at the site to identify the dimensions of the stockade and to map the locations of the fort's buildings. Begun in 1947, the work was concluded in 1952 (Caywood 1947, 1948a,b, 1949, 1955). To augment this fieldwork, John Hussey (NPS historian) conducted archival research which initially culminated in two studies (Hussey 1949, 1957). These efforts established the physical dimensions of the site, the wealth of its artifact assemblage and the extent of its historical significance.

During the 1960s, additional archaeological investigations located horse barns to the northeast of the fort (Schumacher 1961), documented stockade features which were to be destroyed during reconstruction (Combes 1966; Larrabee 1966), and located and documented HBC Kanaka village, the settlement occupied by the laborers employed at the fort (Kardas 1970, 1971; Larrabee and Kardas 1968). Beads from these early excavations have not been inventoried in the present study.

With the reconstruction of the northern stockade in the late 1960s, a more ambitious program was undertaken for reconstructing the remainder of the stockade and many of the major structures. In 1970, John Hussey initiated historical-structure reports on the individual buildings (Hussey 1972a,b, 1973a,b, 1974, 1976); and John Hoffman (NPS archaeologist) and Lester Ross (NPS museum specialist) excavated and interpreted the archaeological remains of selected structures (Hoffman 1972, 1974; Hoffman and Ross 1972a,b, 1973a,b,c, 1974a,b, 1975, 1976; Ross 1974, 1975; Ross and Carley 1976; Ross and others 1975). As a part of this program, the Oregon Archaeological Society excavated the fort's sales shop (Steele, Ross and Hibbs 1975). Culminating this research, final

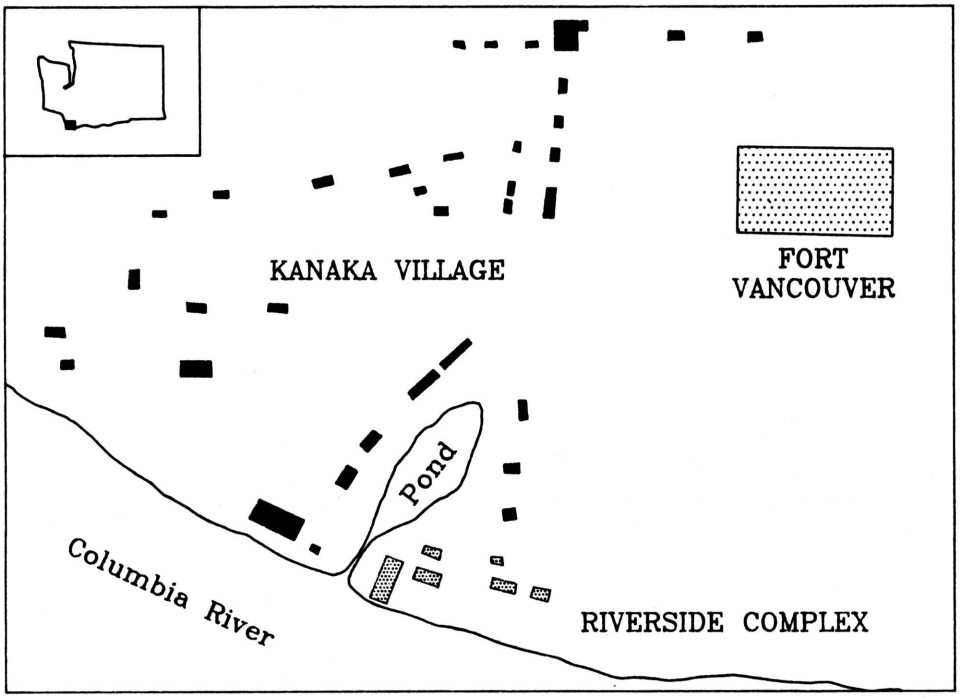


Figure 3. Fort Vancouver, Kanaka village and riverside complex sites, Washington (after Covington's Map of 1846).

reports were completed on the archaeology of the structures (Gray 1978) and the material culture of the site (Ross 1976). Subsequently, Parks Canada documented the history of the commercial suppliers of goods to the Columbia Department (Ross 1979). All of these studies contributed to the recovery, analysis, interpretation and reporting of the trade beads uncovered at Fort Vancouver.

Additional archaeological research was undertaken at the HBC Kanaka village and riverside complex sites (Fig. 3) between 1974 and 1981 (Carley 1982; Chance and Chance 1976; Chance and others 1982; Thomas and Hibbs 1984). Over 6000 beads were recovered from these excavations, generally duplicating varieties from the fort. However, 39 possible new varieties (mostly new colors for previously defined types) were recovered from HBC-period contexts, including glass, stone, bone, wood, metal and shell beads. The author has not examined these beads, and the possible new varieties are identified solely on the basis of published descriptions.

BEAD CLASSIFICATION SYSTEMS

Identification and description of the bead assemblage from Fort Vancouver is based on the classification system developed for archaeologists by Kenneth and Martha Kidd (1970), as modified and expanded by Karlis Karklins (1982, 1985). Additional descriptive nomenclature follows various authors who have addressed specific bead groups and classes (Allen 1983; Ross and Pflanz 1989; Sprague 1983, 1985). Colors are identified using Munsell notations (Munsell Color Company 1966).

The Beads were analyzed for a variety of attributes, following a four-fold, hierarchical classification scheme: 1) material and manufacturing techniques; 2) stylistic class and type attributes, including monochrome vs. polychrome, unfinished vs. finished, and undecorated vs. decorated; 3) stylistic variety attributes, including color, diaphaneity, shape, and type of decoration; and 4) bead sizes as defined from measurements of bead least diameter (LD) and length (L) with statistical samples measured for varieties with the greatest quantities.

In an attempt to conform to the Kidds' revised system of classification, codes for the Kidds' major bead groups are employed to identify beads types (e.g., IIa, WIIIb). However, use of these codes is not completely satisfactory because many attributes are lumped under a single code. To identify types clearly and discriminate specific attributes, letter modifiers have been employed to indicate such attributes as shape, type of decoration and subtle manufacturing techniques (e.g., WIb-*s* to indicate a spherical bead, WIb-*js* to indicate a conjoined spherical bead, WIIi-*sgf* to indicate a spherical bead with ground facets, and WIIIb-*eclcs* to indicate an ellipsoidal bead with combed loops and complex stripes). Finally, to further distinguish relevant attributes at the variety level, additional letter modifiers and variety numbers are employed to signify diaphaneity, short vs. long bead forms, orientation of decoration, and to identify the number of variations of a single bead type or subtype (e.g., IIf-*tps-2* to identify the second variation of a transparent short bead variety, and IVa-*op/ops-3* to identify the third variation of an opaque-on-opaque short bead variety). This allows types, their varieties and their attributes to be identified by a unique code, yet preserves the Kidds' codes for comparative purposes.

Bead descriptions have been organized to present relatively precise information within a tabular format. Thus, the variety descriptions are given in tables, with general technical information provided, when required, in the text. Possible new bead varieties not examined by the author are listed in the text, following a uniform descriptive format. Comparative information regarding the occurrence of bead varieties in other archaeological contexts has neither been exhaustive nor complete for all reported varieties. Rather, varieties which are regarded as unique or possibly significant for geographical, cultural or temporal affiliations have been documented.

Archaeological sizes are defined on the basis of a correlation of least bead diameter to length. When the quantity of beads was relatively high, statistical calculations of mean sizes were computed. However, only a sample of the documentation is reported here and then only as figures illustrating examples of population curves and isoarithms (*see* Hoffman and Ross 1974b, and Ross 1976 for specifics).

FORT VANCOUVER BEAD ASSEMBLAGE

Archaeological excavations conducted within the fort resulted in the recovery of 104,680 trade beads. Of these, 94,877 (90.6%) came from five structural areas (Fig. 4):

Fur Store, with a portion of the building used as the first Indian trade store (structure 16.1), ca. 1829 to 1843-44; second hospital dispensary (structure 15.2), ca. 1829 to ca. 1843-44; and as the second fur store (structure 11.2), ca. 1841-44 to 1849-53. As a fur store, it served both as a storehouse and packing house for imported goods (including beads) and for furs awaiting export. This site produced at least 50,671 trade beads (48.4% of the fort bead assemblage) which reflect the use of the structure as a fur store. Due to the quantity of beads present in the structural area, and because of the time required to sort beads from the bead-sized-gravel matrix, only a representative sample of beads was recovered. All beads larger than "seed" beads were removed from the matrix, and the remaining unsorted matrix is stored for future study at Fort Vancouver National Historic Site.

Sales Shop (structure 31); used ca. 1829 to 1860 as a store for the sale of goods to Euro-American settlers; 22,675 trade beads (21.7% of the fort bead assemblage) were recovered.

Indian Trade Store and Missionary Store; served as the second Indian trade store (structure 16.2) ca. 1829 to 1843-44 for trade with Native Americans. A portion of the building was used as the missionary store (structure 20) ca. 1834-36 to 1843-44, with temporary living quarters and a storehouse for American missionaries. It also served as the third hospital dispensary (structure 15.3), ca. 1843-44 to 1852-53, and the third fur store (structure 11.3), 1849-53 to 1860. There was also a missionary-store privy (structure 44.10) behind the store adjacent to the stockade which was used from ca. 1834-36 to ca. 1860. This building site and associated privy produced 15,235 beads (14.6% of the fort bead assemblage) attributed primarily to the use of the structure as an Indian trade store.

Bachelors' Quarters Privies, including two second bachelors' quarters late privies (structures 44.9.4

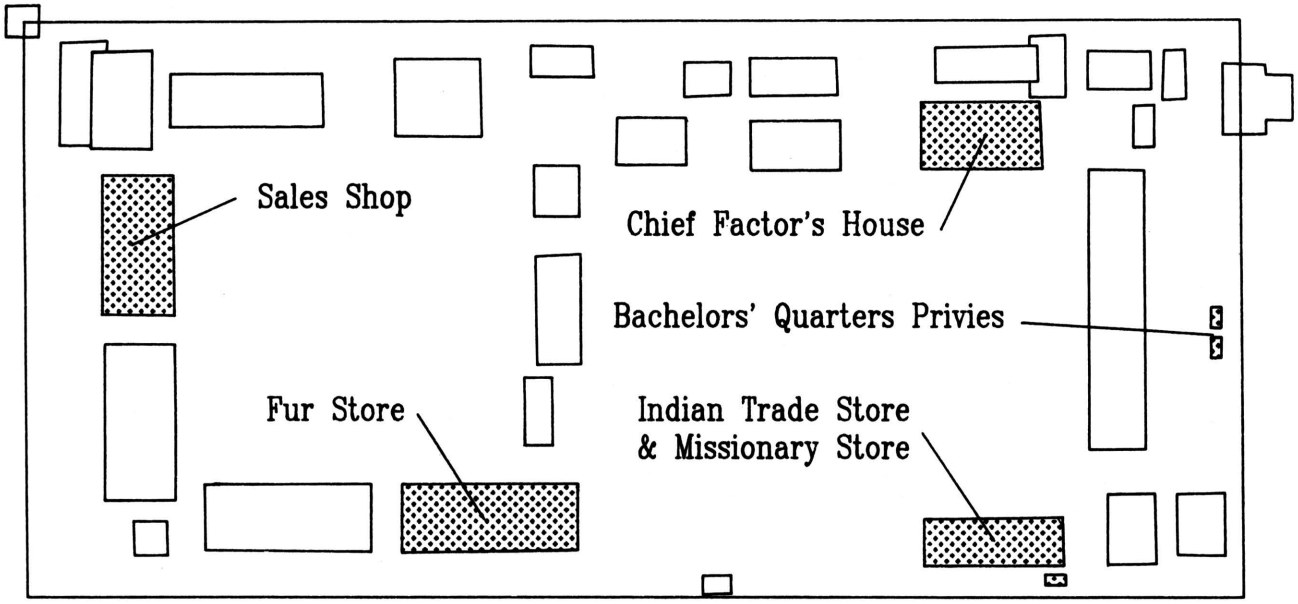


Figure 4. The five major bead-recovery areas within Fort Vancouver (after Ross 1976:23).

and 44.9.5) behind the bachelors' quarters adjacent to the stockade, used ca. 1841 to ca. 1860. Excavations uncovered 5686 trade beads (5.4% of the fort bead assemblage) attributed to the families of the HBC officers who inhabited the bachelors' quarters.

Chief Factor's House, or second chief factor's house (structure 10.2), used 1837-38 to 1860 as the family residence and dining hall for the principal officers and gentlemen of the Columbia Department. Excavations recovered 610 trade beads (<0.001% of the fort bead assemblage) attributed to the families of the principal HBC officers who inhabited the house.

The remaining 9803 beads (9.4% of the fort bead assemblage) came from a variety of structures including the stockades, bakery, wash house, harness shop, kitchen, bastions, blacksmith shop and iron store. Beads associated with these structures were included within the typological classification for the entire fort assemblage, but structure-specific assemblages have not been compared to the above-mentioned assemblages.

Glass Beads (n = 104,677)

Drawn Beads (n = 102,135)

Drawn beads were manufactured from hollow canes drawn from a molten gather of glass. The canes were chopped into bead-length segments for subsequent finishing, sorting and packaging. They are the most common beads at fort Vancouver, comprising 97.6% of the fort bead assemblage. They are grouped into four major classes based on the attributes of monochrome vs. polychrome, and unfinished vs. finished.

Class Dtum – Monochrome Beads with Chopped Ends (n = 276)

Type Ia – Undecorated Cylindrical Beads (n = 33)

These are the simplest of the unfinished monochrome beads. They have circular cross-sections, consist of short to long segments chopped from the drawn canes, and do not appear to have been fire-polished or hot tumbled. Seven varieties are recorded (Pl. Ia-e, Fig. 5, and Table 1). The HBC Kanaka village site produced one possible new variety: opaque, dark purplish blue, long variety (K81 A-9; n = 2), 1.7-1.9 mm (LD) x 9.1-10.5 mm (L) (Thomas and Hibbs 1984:244).

Type If – Complex, Multi-sided Cylindrical Beads with Ground Facets (n = 243)

The tubes used to make these beads were manufactured from a gather of glass that was probably

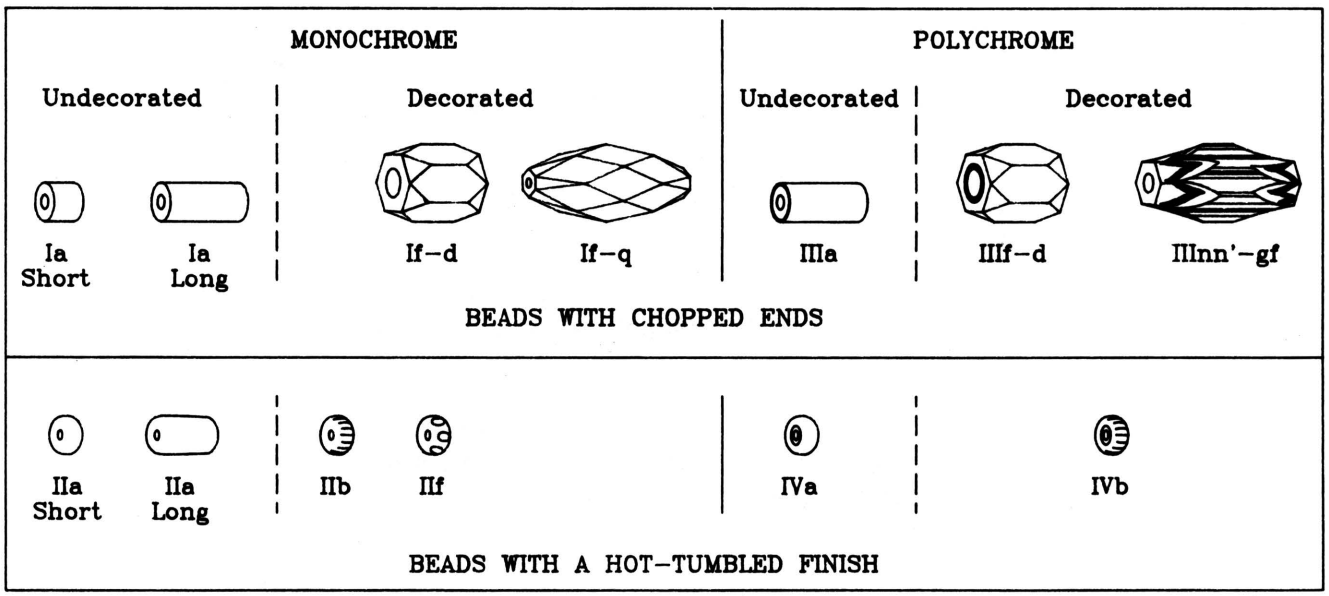


Figure 5. Drawn glass bead types.

pushed into a multi-sided mold to create a polyhedral form, and then drawn into a multi-sided, hollow cane. In an earlier report, it was speculated that the multi-sided shape may have resulted from marvering or an extrusion process (Ross 1976:686, Fig. 338), but no historical evidence for these alternatives has been located. Two subtypes were identified based on the number of rows of facets.

Subtype If-d – Beads with Two Rows of Facets (n = 241). These were manufactured by grinding two rows of facets, consisting of a facet on each corner of each end. This resulted in a 6 or 7-sided bead having 18 or 21 flat surfaces: 6 or 7 molded sides and 12 or 14 ground facets, respectively. Subtype If-d beads, and their polychrome counterparts (*see* subtype IIIf-d), have been referenced variously, and often incorrectly, as "Russian," "Bristol," "Hudson's Bay," "chief" and "ambassador" beads, or described as "cornerless hexagonal, septagonal or octagonal," "short bugle," "multi-faceted" or "cut" beads (e.g., Mille 1975; Pfeiffer 1983:209-10; Woodward 1965:12). Seven varieties of transparent and opaque beads were recorded (Pl. If-l, Fig. 5, and Table 1).

The HBC Kanaka village and riverside complex sites produced five possible new varieties: 1) translucent purple (2.5RP 3/4), long variety (II.3.; n = 1), 3.9 mm (D) x 4.9 mm (L) (Carley 1982:164); 2) transparent pinkish purple (10RP 3/10), short variety (II.b.; n = 7), 5.6-7.0 mm (D) x 4.9-6.0 mm (L) (Chance and others 1982:44; Storm 1976:108); 3) opaque dark blue (7.5PB 3/12), long variety (II.h.; n = 1), 4.7 mm (D) x 5.8 mm (L) (Storm 1976:109); 4) opaque blue (5PB 5/10), short variety (II.14.; n = 1), 8.4 mm (D) x 7.5 mm (L) (Carley 1982:164); and 5) translucent light aqua (2.5B 6/8), short variety (II.1.; n = 1), 4.3 mm (D) x 3.9 mm (L) (Carley 1982:164) .

These facetted beads, along with their polychrome counterparts (*see* subtype IIIf-d), possibly correspond to the historical "cut glass" beads of the HBC. There is a strong correlation between historical and archaeological color groupings, but whereas historical records denote five sizes (#4-7 and #9), only two statistically valid archaeological sizes were observed: 1) small, 4.6-6.8 mm (LD) x 3.5-7.1 mm (L), and 2) large, 6.4-9.6 mm (LD) x 4.4-8.8 mm (L). Generally, these archaeological sizes correspond respectively with 6 and 7-sided beads. Six-sided beads normally occur in the small size, whereas 7-sided beads are always found in the large size. Some varieties have 6-sided beads in the large size, but whenever these large 6-sided beads occur, there are also 7-sided beads. Thus, it appears that size, rather than the number of sides, was the determinant factor for historical groupings of this bead subtype. Since only two sizes were observed, it is possible that the HBC "cut glass" beads (listed historically as sizes #4

Table 1. Drawn Beads, Class Dtum – Monochrome Beads with Chopped Ends.

Type Ia – Undecorated Cylindrical Beads (n = 33)

Variety	Decoration	Diaphaneity	Color	Shape	Size (mm) Least Diameter x Length (Number of Sides)	FOVA Variety Number	Kidds' No.	Quantity	Figure No. Plate No.
Ia-tls-1	Undecorated	Translucent	Yellow 2.5Y8/12	Short	2.2 x 1.3	1085	---	1	Fig. 5
Ia-tpl-1	Undecorated	Transparent	Colorless	Long	---	1091	Ia3	1	Fig. 5
Ia-tll-1	Undecorated	Translucent	Pale Yellowish White 7.5YR8/2	Long	1.8–2.3 x 15.7–23.4	1064	Ia4	2	Fig. 5 Pl. Ia
Ia-tll-2	Undecorated	Translucent	Green 5G4/8	Long	1.7 x 2.0	1066	---	1	Fig. 5 Pl. Ib
Ia-tll-3	Undecorated	Translucent	Yellow 5Y6/8	Long	5.8–7.0 x 9.8–25.9	1001	---	26	Fig. 5 Pl. Ic
Ia-tll-4	Undecorated	Translucent	Dark Purple 5PB2/2	Long	7.0 x 12.3	1020	---	1	Fig. 5 Pl. Id
Ia-opl-1	Undecorated	Opaque	Black N 0.5/	Long	2.0 x 7.7	1007	Ia2	1	Fig. 5 Pl. Ie

Type If – Complex, Multi-sided Cylindrical Beads with Ground Facets (n = 243)

Subtype If-d – Beads with Two Rows of Facets (n = 241)

If-d6/7tps/1-1	Complex; straight, 6–7 molded sides with 2 rows of ground facets	Transparent	Colorless	Short to Long	4.9–5.3 x 4.2–5.2 (6) 7.7 x 6.4 (6) 8.6 x 7.4 (7)	1067	If2	6	Fig. 5 Pl. If
If-d6/7tps/1-2	Complex; straight, 6–7 molded sides with 2 rows of ground facets	Transparent	Amber 10YR5/10	Short to Long	8.3 x 8.8 (6) 7.8–9.9 x 6.5–8.7 (7)	1043	---	17	Fig. 5 Pl. Ig
If-d6/7tps/1-3	Complex; straight, 6–7 molded sides with 2 rows of ground facets	Transparent	Yellowish Green 2.5–7.5G4/8–10	Short to Long	7.7 x 6.0 (6) 8.3–9.0 x 6.5–7.9 (7)	1044 & 1045	If3	9	Fig. 5 Pl. Ih
If-d6/7tps/1-4	Complex; straight, 6–7 molded sides with 2 rows of ground facets	Transparent	Green 2.5–5G3–4/8	Short to Long	6.1 x 5.9 (6) 8.3–8.6 x 7.1–8.6 (6) 7.8–8.8 x 7.6–8.6 (7)	1021 & 1065	If4?	7	Fig. 5 Pl. Ii
If-d7tps-5	Complex; straight, 7 molded sides with 2 rows of ground facets	Transparent	Light Purple 2.5PB6/8	Short	8.0 x 6.1 (7)	1046	---	1	Fig. 5 Pl. Ij
If-d6/7tps/1-6	Complex; straight, 6–7 molded sides with 2 rows of ground facets	Transparent	Dark Purple 7.5PB2/10	Short to Long	4.8–8.6 x 3.5–6.2 (6) 8.1–9.2 x 6.2–8.7 (7)	1002	If5?	42	Fig. 5 Pl. Ik
If-d6/7ops/1-1	Complex; straight, 6–7 molded sides with 2 rows of ground facets	Opaque	Black N 0.5/	Short to Long	4.6–6.7 x 3.6–6.3 (6) 7.0–7.3 x 5.7–6.1 (7)	1057	If1	159	Fig. 5 Pl. Il

Subtype If-q – Beads with Four Rows of Facets (n = 2)

If-q7tpl-1	Complex; straight, 7 molded sides with 4 rows of ground facets	Transparent	Colorless	Long	7.8 x 16.4 (7)	1011	---	1	Fig. 5 Pl. Im
If-q7tpl-2	Complex; straight, 7 molded sides with 4 rows of ground facets	Transparent	Green 2.5BG4/4	Long	5.6 x 16.9 (7)	1017	---	1	Fig. 5 Pl. In

through #9) might denote other groups, classes or types of beads (*see*, especially, mold-pressed beads below).

In the Pacific Northwest, these beads, along with their polychrome equivalents (subtype IIIf-d) have been identified incorrectly as "Russian" facetted beads due to their late 18th and early 19th-century introduction into the Alaskan region by Russian fur traders. The Russian American Fur Company did trade these beads, but the Russians probably did not manufacture them. Arthur Woodward (1965:9) observed:

> Other beads, such as the large ultra marine blue faceted beads found along the coast of southern Alaska and British Columbia and as far south as Washington and Oregon, became "Russian beads", in spite of the fact that original packages of these beads, wrapped in grey coarse paper, were found unopened in the warehouse of the Russian American Fur Company at Sitka in 1867, marked "Brussels". In the latter case it was probably a repackaging job done by an export company in the Belgian city.

Subtypes If-d and IIIf-d beads may represent items manufactured in Bohemia, possibly Venice, but I doubt they are of Russian manufacture. The Russian American Fur Company was not the primary source for the Pacific Northwest, at least for areas beyond Alaska and the region of northern California near the Russian trading site of Fort Ross. In the Pacific Northwest, these bead subtypes are associated primarily with post-1820 fur-trade and Native-American sites, none of which were associated with the Russian trade. It would be just as incorrect to identify them as "Roman" beads because of their association with the Late Roman period site of Corinth in southern Greece (Davidson 1952:294, Pl. 122), or as "Viking" beads because of their association with 10th-century Viking sites in Europe (Klindt-Jensen 1970:170-71).

Subtype If-q – Beads with Four Rows of Facets (n = 2). These were manufactured by grinding four rows of facets, consisting of two rows with a facet on each corner of each end and two rows between the end rows and the molded sides. This resulted in a 7-sided bead having 35 flat surfaces, consisting of 7 molded sides and 28 ground facets. Two varieties of transparent beads were recorded (Pl. Im-n, Fig. 5, and Table 1). Both were recovered from the site of the Indian trade store and missionary store, and may represent an American, rather than HBC, import.

Beads of this subtype have been recovered from mixed 18th and 19th-century contexts on St. Eustatius, Netherlands Antilles (Karklins and Barka 1989:59, 61, and Table 1); the 1832-44 American Fur Company Fort McKenzie (24CH242), Montana (Shumate 1973:Fig. 10); and 1834-75 Fort Laramie, Wyoming (Murray 1964:Pl. II, Vars. 8109 and 8112).

Class Dtup – Polychrome Beads with Chopped Ends (n = 230)

Beads of this class exhibit multi-colored layers produced in at least two manners: intentionally, and fortuitously. Beads with intentionally applied layers were drawn from a gather of glass of one color covered with one or more layers of differently colored glass. Beads with fortuitous layers (generally of the same color hue, but with a different chroma, color value and/or diaphaneity) appear to have been produced naturally when a gather of one color cooled. It is speculated that this phenomenon results as glass cools from its surface to its interior, causing different chemical elements to migrate slower or faster. As coalescing elements "freeze," concentric layers which are brighter or duller, lighter or darker, or more opaque, translucent or transparent than adjacent layers are created. Whether or not beadmakers consciously created polychrome beads to exhibit these traits remains unknown. No historical evidence for Fort Vancouver indicates recognition of this attribute.

Once cooled, the polychrome canes were chopped into bead-length segments for subsequent sorting and packaging. Beads of this class do not appear to have been fire-polished or hot tumbled.

Type IIIa – Undecorated Cylindrical Beads (n = 4)

These have circular cross-sections with a thick core and a very thin covering. One variety is recorded (Pl. Io, Fig. 5, and Table 2).

Type IIIf – Complex, Multi-sided Cylindrical Beads with Ground Facets (n = 225)

These are fortuitously layered, polychrome beads, created in the same manner as the equivalent type If discussed above. One subtype is recorded.

Table 2. Drawn Beads, Class Dtup – Polychrome Beads with Chopped Ends.

Type IIIa – Undecorated Cylindrical Beads (n = 4)

Variety	Decoration	Diaphaneity	Color	Shape	Size (mm) Least Diameter x Length (Number of Sides)	FOVA Variety Number	Kidds' No.	Quantity	Figure No. Plate No.
IIIa-tp/opl-1	Undecorated	Transparent on Opaque	Thin Colorless on Thick White N 9/	Long	6.1–7.5 x 12.1–25.7	1024	---	4	Fig. 5 Pl. Io

Type IIIf – Complex, Multi-sided Cylindrical Beads with Ground Facets (n = 225)

Subtype IIIf-d – Beads with Two Rows of Facets (n = 225)

IIIf-d6/7tp/tls/l-1	Complex; straight, 6–7 molded sides with 2 rows of ground facets	Transparent alternating/w Translucent	Colorless alternating/w White N 9/	Short to Long	4.7–5.6 x 4.1–7.1 (6) 7.3–7.8 x 5.8–7.8 (6) 8.4–9.1 x 7.6–8.3 (7)	1036	IIIf1	25	Fig. 5 Pl. Ip
IIIf-d6/7tp/tls-2	Complex; straight, 6–7 molded sides with 2 rows of ground facets	Transparent alternating/w Translucent	Light Purple 5PB3/6 alternating/w Light Purple 5PB6/6	Short	7.4–7.5 x 6.2–7.2 (6) 8.2 x 6.7 (7)	1079	---	3	Fig. 5 Pl. Iq
IIIf-d6/7tp/tls/l-3	Complex; straight, 6–7 molded sides with 2 rows of ground facets	Transparent alternating/w Translucent	Dark Purple 7.5PB3/10–max alternating/w Light Purple 7.5PB6–7/6	Short to Long	4.8–6.2 x 4.5–6.3 (6) 6.5–8.1 x 6.0–8.0 (6) 7.5–9.4 x 5.8–8.5 (7)	1018, 1035, 1077 & 1078	---	102	Fig. 5 Pl. Ir
IIIf-d7op/ops/l-1	Complex; straight, 6–7 molded sides with 2 rows of ground facets	Opaque alternating/w Opaque	Light Blue 7.5B7/4 alternating/w Light Blue 7.5B8/4	Short to Long	7.4–9.6 x 6.0–8.8 (7)	1030	---	29	Fig. 5 Pl. Is
IIIf-d7op/ops/l-2	Complex; straight, 6–7 molded sides with 2 rows of ground facets	Opaque alternating/w Opaque	Purple 5–7.5PB4–5/8–10 alternating/w Light Purple 5–7.5PB5–6/6–10	Short to Long	6.4–9.4 x 4.4–8.8 (7)	1031, 1032 & 1033	---	58	Fig. 5 Pl. It
IIIf-d7op/ops/l-3	Complex; straight, 6–7 molded sides with 2 rows of ground facets	Opaque alternating/w Opaque	Dark Purple 7.5PB3/10 alternating/w Light Purple 7.5PB5/10	Short to Long	7.6–8.9 x 6.6–7.8 (7)	1034	---	8	Fig. 5 Pl. Iu

Type IIInn'-gf – Complex "Chevron" Beads with Complex Straight Stripes and Ground Facets (n = 1)

IInn'-gf-1	12 ground facets (6 at each end) over 2 complex stripes alternating with 2 complex stripes on a plain layer on a 12-grooved molded layer on a plain layer on a 12-grooved molded core	2 opaque on opaque stripes alternating with 2 opaque on opaque stripes on translucent plain layer on opaque molded layer on opaque plain layer on opaque molded core	2 Narrow Black N 0.5/ on Wide Yellow 10YR6/8 Stripes alternating with 2 Narrow Yellow 10YR6/8 on Wide Red 7.5R3/10 Stripes on Green Plain Layer 2.5BG3/8 on White N 9/ Molded Layer on Red Plain Layer 7.5R3/10 on White N 9/ Molded Core	Long	12.4 x 20.1	1039	---	1	Fig. 5 Pl. Iv

Subtype IIIf-d – Beads with Two Rows of Facets (n = 225). Six varieties of transparent and opaque beads are recorded (Pl. Ip-u, Fig. 5, and Table 2).

The HBC Kanaka village site produced two possible new varieties: 1) translucent light blue (2.5B 5/6), short variety (II.a.; n = 1), 8.8 mm (D) x 7.0 mm (L) (Storm 1976:108); and 2) opaque milky (5YR 9/1), short variety (II.d. and II.e.; n = 2), in two sizes: 6.0 mm (D) x 5.0 mm (L), and 9.0 mm (D) x 7.5 mm (L) (Storm 1976:108).

For a further discussion on this bead subtype, its sizes and cultural affiliation, *see* subtype If-d above.

Type IIInn'-gf – Complex "Chevron" Beads with Complex Straight Stripes and Ground Facets (n = 1)

This is a polychrome specimen, best identified as a hybrid-cane rosetta bead, often referred to as a "chevron" (after Allen 1983). It was manufactured by alternately pushing a gather of glass of one color into a twelve-pointed star mold, then covering it with a layer of glass of a second color and later a third. Complex straight stripes were next laid onto the gather, and the entire mass was drawn into a hollow cane. Finally, the cane was chopped into bead-length segments and six facets were ground at each end forming a bead with a circular cross-section and 12 facets. One variety is recorded (Pl. Iv, Fig. 5, and Table 2).

Class Dtfm – Monochrome Beads with a Hot-tumbled Finish (n = 72,959)

These are hot-tumbled versions of class Dtum beads. After the drawn canes were cut into

Table 3. Drawn Beads, Class Dtfm – Monochrome Beads with a Hot-tumbled Finish.

Type IIa – Undecorated "Cylindrical" Beads (n = 72,410)

Variety	Decoration	Diaphaneity	Color	Shape	Size (mm) Least Diameter x Length	FOVA Variety Number	Kidds' No.	Quantity	Figure No. Plate No.
IIa-tps-1	Undecorated	Transparent	Colorless	Short	2.0–4.3 x 2.0–4.5	1060	----	74	Fig. 5 Pl. IIa
IIa-tps-2	Undecorated	Transparent	Dark Red 7.5R3/12	Short	1.5–2.6 x 0.9–1.9	1027	----	734	Fig. 5 Pl. IIb
IIa-tps-3	Undecorated	Transparent	Red 5R5/12	Short	1.4–1.5 x 0.8–0.9	1071	----	3	Fig. 5 Pl. IIc
IIa-tps-4	Undecorated	Transparent	Amber 7.5YR6/10	Short	1.3–1.4 x 0.8–1.0	1022	----	4	Fig. 5 Pl. IId
IIa-tps-5	Undecorated	Transparent	Yellow 2.5Y8/8	Short	1.3 x 0.8	1090	----	1	Fig. 5 Pl. IIe
IIa-tps-6	Undecorated	Transparent	Yellowish Green 2.5G3–4/6–8	Short	2.1–3.9 x 1.1–2.5	1061	----	3,855	Fig. 5 Pl. IIf
IIa-tps-7	Undecorated	Transparent	Green 5–10G3–4/6–8	Short	2.0–4.3 x 1.0–3.9	1016	IIa27?	7,382	Fig. 5 Pl IIg
IIa-tps-8	Undecorated	Transparent	Blue 2.5B3/6	Short	1.3 x 0.9–1.0 2.2–3.0 x 1.4–2.0	1074 & 1075	----	65	Fig. 5 Pl. IIh
IIa-tps-9	Undecorated	Transparent	Dark Purple 5PB2/4	Short	6.7–8.5 x 4.9–9.0	1049	----	8	Fig. 5 Pl. IIi
IIa-tps-10	Undecorated	Transparent	Purple 5–7.5PB2/6–8	Short	1.8–3.3 x 1.3–2.2	1025, 1026 & 1047	IIa56	607	Fig. 5 Pl. IIj
IIa-tls-1	Undecorated	Translucent	White N 8/	Short	1.3–1.8 x 1.0–1.2	1009	IIa12	10	Fig. 5 Pl. IIk
IIa-tls-2	Undecorated	Translucent	Yellow 5Y8.5/6	Short	1.2–1.4 x 0.8–1.0	1023	----	18	Fig. 5 Pl. III
IIa-tls-3	Undecorated	Translucent	Bluish Green 10BG4/4	Short	8.1 x 7.3	1006	----	1	Fig. 5 Pl. IIm
IIa-tls-4	Undecorated	Translucent	Blue 7.5–10BG–2.5–10B3–6/2–10	Short	1.2–3.0 x 1.2–2.5 2.4–4.1 x 1.7–3.7 3.2–5.3 x 2.5–5.9	1063	----	22,528	Fig. 5 Pl. IIn

Table 3 (Contd.)

Type IIa – Undecorated "Cylindrical" Beads

Variety	Decoration	Diaphaneity	Color	Shape	Size (mm) Least Diameter x Length	FOVA Variety Number	Kidds' No.	Quantity	Figure No. Plate No.
IIa-ops-1	Undecorated	Opaque	White N 9/	Short	1.1-1.8 x 0.7-1.4 1.5-2.4 x 1.0-2.0 1.9-3.0 x 1.4-2.6 2.6-3.3 x 1.7-2.6	1003	IIa14	31,279	Fig. 5 Fig. 7 Pl. IIo
IIa-ops-2	Undecorated	Opaque	Black N 0.5/	Short	1.8-5.3 x 1.0-4.1	1050	IIa7	331	Fig. 5 Pl. IIp
IIa-ops-3	Undecorated	Opaque	Dark Brownish Red 5R3/6	Short	2.8 x 1.8	1008	---	1	Fig. 5 Pl. IIq
IIa-ops-4	Undecorated	Opaque	Brownish Red 7.5R3/6	Short	1.5-2.0 x 1.1-1.7 1.9-2.8 x 1.3-2.2	1051	IIa2	464	Fig. 5 Fig. 6 Pl. IIr
IIa-ops-5	Undecorated	Opaque	Amber 5YR6/10	Short	1.0-1.2 x 1.2-1.4 2.6-3.2 x 1.7-2.1	1052	IIa19?	14	Fig. 5 Pl. IIs
IIa-ops-6	Undecorated	Opaque	Yellowish Amber 10YR6/10	Short	2.2-2.3 x 1.1-1.3	1084	IIa19?	2	Fig. 5 Pl. IIt
IIa-ops-7	Undecorated	Opaque	Yellow 7.5Y8.5/10	Short	1.2-1.8 x 0.9-1.3 2.6-3.5 x 2.3-2.7	1004	---	2,477	Fig. 5 Pl. IIu
IIa-ops-8	Undecorated	Opaque	Greenish Yellow 5GY6/8	Short	1.4 x 1.0	1019	---	1	Fig. 5 Pl. IIv
IIa-ops-9	Undecorated	Opaque	Yellowish Green 10GY5/6	Short	1.3-1.8 x 1.0-1.3	1076	---	16	Fig. 5 Pl. IIw
IIa-ops-10	Undecorated	Opaque	Green 2.5G3-4/6-8 with White speckles N 7.5/	Short	2.7-3.4 x 2.2-2.4 4.1-5.4 x 2.8-4.7	1053	---	51	Fig. 5 Pl. IIx
IIa-ops-11	Undecorated	Opaque	Bluish Green 10G7/6	Short	1.3-1.7 x 0.9-1.3	1062	---	556	Fig. 5 Pl. IIy
IIa-ops-12	Undecorated	Opaque	Blue 10B6/4	Short	1.2-1.5 x 0.7-1.1	1010	---	13	Fig. 5 Pl. IIz
IIa-ops-13	Undecorated	Opaque	Grayish Blue 10B6/4	Short	3.6 x 3.9	1073	---	1	Fig. 5 Pl. IIaa
IIa-ops-14	Undecorated	Opaque	Light Purplish Blue 2.5PB7/2	Short	2.1-2.7 x 1.4-2.1	1054	---	28	Fig. 5 Pl. IIbb
IIa-ops-15	Undecorated	Opaque	Dark Purplish Blue 2.5PB4/4	Short	3.3 x 2.2	1081	IIa47	1	Fig. 5 Pl. IIcc
IIa-ops-16	Undecorated	Opaque	Light Purplish Blue 5PB6/4	Short	1.2-1.6 x 0.9-1.1	1068	---	7	Fig. 5 Pl. IIdd
IIa-ops-17	Undecorated	Opaque	Bluish Purple 5PB5/8	Short	1.5-2.0 x 0.8-1.3	1055	---	171	Fig. 5 Pl. IIee
IIa-ops-18	Undecorated	Opaque	Dark Bluish Purple 7.5PB4/10	Short	1.3-1.6 x 1.0-1.3	1056	---	19	Fig. 5 Pl. IIff
IIa-ops-19	Undecorated	Opaque	Dark Purple 5-7.5PB2-3/6	Short to Long	2.0-4.5 x 1.7-3.2	1012 & 1083	---	1601	Fig. 5 Pl. IIgg
IIa-ops-20	Undecorated	Opaque	Purple 2.5P7/4	Short	1.6 x 1.1	1013	---	1	Fig. 5 Pl. IIhh
IIa-ops-21	Undecorated	Opaque	Light Purple 7.5P7/6	Short	1.1 x 0.9	1014	---	1	Fig. 5
IIa-ops-22	Undecorated	Opaque	Light Reddish Purple 10P8/4	Short	1.0-1.3 x 0.9-1.1	1069	---	9	Fig. 5 Pl. IIii
IIa-ops-23	Undecorated	Opaque	Pink 7.5RP5-6/8-10	Short	1.1-1.3 x 1.0-1.5 3.1 x 2.3	1015	---	55	Fig. 5 Pl. IIjj
IIa-opl-1	Undecorated	Opaque	Dark Blue 2.5B3/6	Long	7.0-8.8 x 7.0-10.2	1041	---	15	Fig. 5 Pl. IIkk
IIa-opl/s-2	Undecorated	Opaque	Blue 5B5/8	Long to Short	6.7-7.3 x 6.3-8.6	1042	---	6	Fig. 5 Pl. IIll

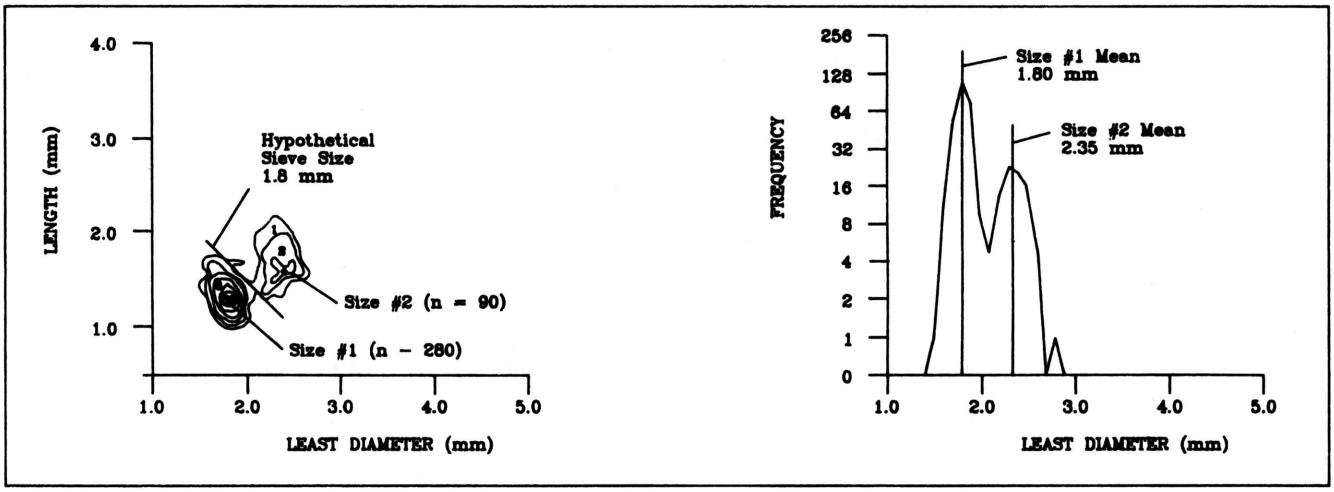


Figure 6. Hypothetical sizes of variety IIa-ops-4 beads (after Ross 1976:718-19).

bead-length segments, they were tumbled over a fire in a rotating container which, during the period that Fort Vancouver was occupied, may have contained ash and sand (Hoppe and Hornschuch 1818), sand and charcoal (Bussolin 1847), or plaster and graphite, or clay and charcoal dust (Francis 1979:10).

Type IIa – Undecorated "Cylindrical" Beads (n = 72,410)

The simplest type of finished, monochrome, drawn bead is an undecorated one with a circular cross-section. It is the most common type at Fort Vancouver (69.2% of the fort bead assemblage), and exists in two forms: short (with a torus to round shape) and long (with a rounded cylindrical shape). It is composed of transparent, translucent, and opaque glass. Thirty-nine varieties are recorded (Pl. IIa-ll, Fig. 5, and Table 3).

The HBC Kanaka village site produced three possible new varieties: 1) translucent greenish blue, short variety (K81 A-1; n = 1), 2.4 mm (LD) x 2.0 mm (L) (Thomas and Hibbs 1984:502); 2) translucent blue, long variety (K81 A-8; n = 1), 4.4 mm (LD) x 8.3 mm (L) (Thomas and Hibbs 1984:244); and 3) translucent dark purple, short variety (K81 A-2; n = 2), 2.7-3.0 mm (LD) x 2.6-2.7 mm (L) (Thomas and Hibbs 1984:502).

Because of the high frequency of many of the bead varieties at the fort, it is often possible to calculate relatively tightly defined sizes. Typically, a single bead variety occurs in a single size, as defined by the correlation of least diameter (LD) to length (L). Occasionally, two sizes exist (Fig. 6), and sometimes even three to four sizes (Fig. 7). Sizes tend to occur at regular intervals (e.g., a 0.8 mm interval for variety IIa-tls-4, and a 0.45-0.56 mm interval for variety IIa-ops-1). To obtain sizes measured to such fine intervals, beadmakers sorted beads by sieving, using stacked, graded wire screens (Bussolin 1847) with mesh openings decreasing 0.4 to 0.8 mm per screen. Hand-sorting might have resulted in the creation of these subtle and regular sizes, but it would have been labor intensive, more costly and perhaps not as accurate.

Type IIb – "Cylindrical" Beads with Simple Straight Stripes (n = 81)

These have simple stripes ranging in number from 4 to 26. Three varieties are recorded (Pl. Iw-y, Fig. 5, and Table 4).

Type IIf – "Cylindrical" Beads with Ground Facets (n = 468)

These are monochrome "seed" beads (type IIa beads) with 2 to 6 randomly ground facets. Three varieties are recorded (Pl. Iz-bb, Fig. 5, and Table 4).

The HBC listed "brown garnet" beads that might possibly represent this bead type. However, only red, dark purplish red and black specimens were excavated at the fort.

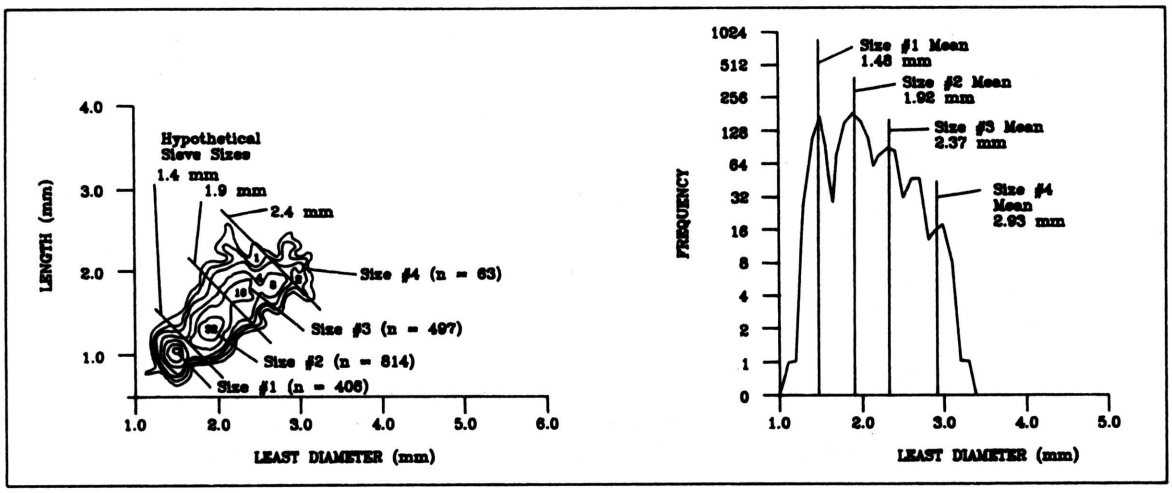


Figure 7. Hypothetical sizes of variety IIa-ops-1 beads (after Ross 1976:713-14).

Table 4. Drawn Beads, Class Dtfm – Monochrome Beads with a Hot-tumbled Finish.

Type IIb – "Cylindrical" Beads with Simple Straight Stripes (n = 81)

Variety	Decoration	Diaphaneity	Color	Shape	Size (mm) Least Diameter x Length	FOVA Variety Number	Kidds' No.	Quantity	Figure No. Plate No.
IIb-op/tps-1	11-17 simple, straight stripes	Opaque Stripes on Transparent	White Stripes N 8/ on Colorless	Short	5.5-6.6 x 3.5-6.1	1048	----	9	Fig. 5 Pl. Iw
IIb-op/ops-1	4 simple, straight stripes	Opaque Stripes on Opaque	Purple Stripes 7.5PB4/6 on White N 8/	Short	2.4-3.0 x 1.4-2.6	1028	----	70	Fig. 5 Pl. Ix
IIb-op/tpl-1	26 simple, straight stripes	Opaque Stripes on Transparent	White Stripes N 8/ on Purple 7.5PB2/6	Long	6.9 x 7.0 8.9 x 12.9	1029	----	2	Fig. 5 Pl. Iy

Type IIf – "Cylindrical" Beads with Ground Facets (n = 468)

IIf-tps-1	2-6 randomly ground facets	Transparent	Red 7.5R3/12	Short	1.9-2.9 x 1.3-2.1	1058	----	107	Fig. 5 Pl. Iz
IIf-tps-2 (beads often fused in pairs)	2-5 randomly ground facets	Transparent	Dark Purplish Red 7.5RP2/8	Short	2.2-4.2 x 1.6-3.7	1059	----	359	Fig. 5 Pl. Iaa
IIf-ops-1	2 randomly ground facets	Opaque	Black N 0.5/	Short	2.8-3.0 x 1.8-2.2	1005	----	2	Fig. 5 Pl. Ibb

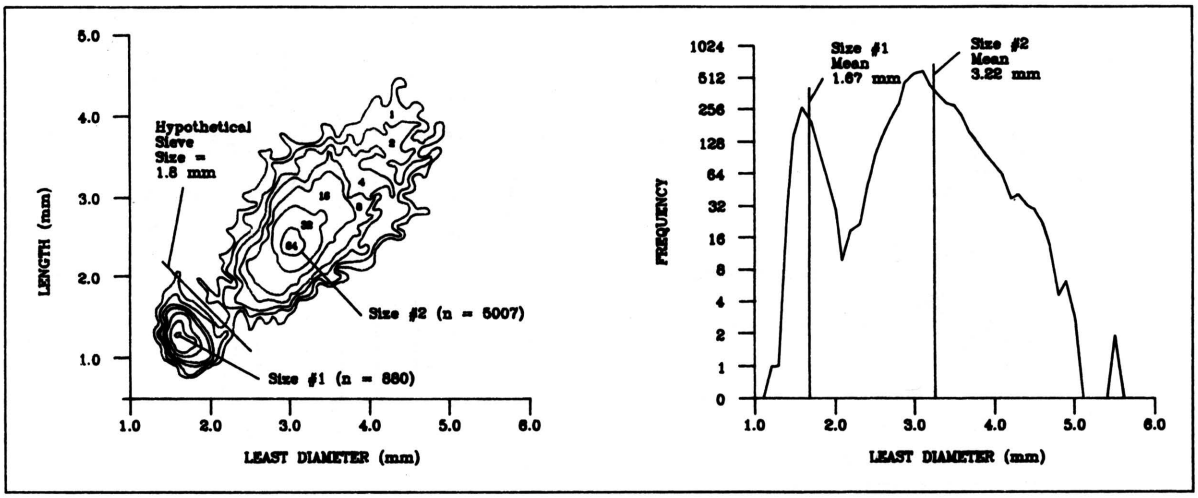


Figure 8. Hypothetical sizes of variety IIa-op/ops-1 beads (after Ross 1976:729-30).

Class Dtfp – Polychrome Beads with a Hot-tumbled Finish (n = 28,670)

These are hot-tumbled versions of class Dtup beads. Both intentionally and fortuitously layered polychromes (*see* class Dtup above) are recorded.

Type IVa – Undecorated "Cylindrical" Beads (n = 28,662)

This is the second most common bead type recovered (27.4% of the fort bead assemblage) with eight varieties recorded (Pl. Icc-jj, Fig. 5, and Table 5). Two varieties, IVa-op/tls-1 and IVa-op/ops-1, are fortuitously layered.

The HBC Kanaka village site produced six possible new varieties: 1) transparent purplish blue on opaque light blue, short variety (K81 A-6; n = 1), 5.0 mm (LD) x 4.3 mm (L) (Thomas and Hibbs 1984:244); 2) translucent blue on opaque green, short variety (K81 A-3; n = 1), 5.0 mm (LD) x 4.3 mm (L) (Thomas and Hibbs 1984:502); 3) translucent purple on opaque green, short variety (K81 A-4; n = 1), 2.4 mm (LD) x 1.8 mm (L) (Thomas and Hibbs 1984:502); 4) opaque black on opaque dark grey, short variety (K81 A-5; n = 1), measuring 4.2 mm (LD) x 3.3 mm (L) (Thomas and Hibbs 1984:244); 5) opaque grayish blue on opaque blue, short variety (K81 A-10; n = 5), 1.5-1.7 mm (LD) x 1.1-1.2 mm (L) (Thomas and Hibbs 1984:244); and 6) opaque purplish blue on opaque light blue, short variety (K81 A-7; n = 1), 4.7 mm (LD) x 4.1 mm (L) (Thomas and Hibbs 1984:244).

Only one variety (IVa-op/ops-1) from the fort occurs in sufficiently large numbers to allow multiple sizes to be defined (Fig. 8). The smaller size of this variety is tightly defined, while the larger size represents multiple, combined sizes which cannot be further subdivided.

The red-on-white (IVa-tp/ops-1), red-on-yellow (IVa-tp/ops-2), red-on-light pink (IVa-tl/ops-1), and brownish red-on-green (IVa-op/tps-1) varieties are often termed "cornaline d'Aleppo" or "Hudson's Bay Company" beads (e.g., Jenkins 1975; Mille 1975). They are commonly associated with Native-American sites, and are especially common during the early and mid-19th century.

Type IVb – "Cylindrical" Beads with Simple Straight Stripes (n = 8)

These exhibit 4 to 6 simple stripes. Three varieties are recorded (Pl. Ikk-mm, Fig. 5, and Table 5).

Wound Beads (n = 2371)

Simple wound beads were manufactured individually or conjoined (probably accidentally) by wrapping or winding molten glass around a rotating mandrel, such as a wire, rod, or straw coated with a clay slip. They were then removed from the shafts, annealed, cleaned, sorted and packaged. Complex and decorated wound beads were altered by molding or shaping, by applying stripes, by facetting, etc.

Table 5. Drawn Beads, Class Dtfp – Polychrome Beads with a Hot-tumbled Finish.

Type IVa – Undecorated "Cylindrical" Beads (n = 28,662)

Variety	Decoration	Diaphaneity	Color	Shape	Size (mm) Least Diameter x Length	FOVA Variety Number	Kidds' No.	Quantity	Figure No. Plate No.
IVa-tp/ops-1	Undecorated	Transparent on Opaque	Red 6.25R3/12 on White N 9.5/	Short	2.3–3.6 x 1.6–2.5	1037	----	37	Fig. 5 Pl. Icc
IVa-tp/ops-2	Undecorated	Transparent on Opaque	Red 10R4/8 on Yellow 5Y8.5/8	Short	1.8–1.9 x 1.1–1.3	1072	----	2	Fig. 5 Pl. Idd
IVa-tl/ops-1	Undecorated	Translucent on Opaque	Red 5R3/10 on Light Pink 10RP8/2	Short	4.4–5.1 x 3.0–4.0	1068	----	74	Fig. 5 Pl. Iee
IVa-op/tps-1	Undecorated	Opaque on Transparent	Brownish Red 7.5R3/6 on Green 10GY6/6	Short	1.9–2.8 x 1.1–2.2 2.6–3.7 x 2.2–2.9	1038	IVa6	529	Fig. 5 Pl. Iff
IVa-op/tls-1	Undecorated	Opaque on Translucent	Blue 7.5B7/4 on Blue 7.5B5/6	Short	1.9–2.1 x 1.0–1.8	1062	----	2	Fig. 5 Pl. Igg
IVa-op/ops-1	Undecorated	Opaque on Opaque	White 10Y9/1 on White 10Y8.5/1	Short	1.2–2.2 x 0.7–2.1 1.6–5.5 x 1.3–5.0 8.4–10.4 x 6.5–7.4	1040	----	28,014	Fig. 5 Fig. 8 Pl. Ihh
IVa-op/ops-2	Undecorated	Opaque on Opaque	White 10Y8.5/1 on Gray N 5.5/	Short	2.2–2.6 x 1.6–1.7	1069	----	2	Fig. 5 Pl. Iii
IVa-op/ops-3	Undecorated	Opaque on Opaque	White 10Y8.5/1 on Dark Brown 10YR3/2	Short	2.9–4.3 x 1.8–3.2	1060	----	2	Fig. 5 Pl. Ijj

Type IVb – "Cylindrical" Beads with Simple Straight Stripes (n = 8)

IVb-op/op/ops-1	4 simple, straight stripes	Opaque Stripes on Opaque on Opaque	Purple Stripes 5/PB2-3/4-6 on White N 9/–5PB6/1 on Purple 5PB6–8/2–6	Short	2.5–2.9 x 1.7–2.5	1070 & 1067	----	6	Fig. 5 Pl. Ikk
IVb-op/op/ops-2	6 simple, straight stripes	Opaque Stripes on Opaque on Opaque	Purple Stripes 5PB4/6 on White 5PB8/1 on Light Purple 5PB7/2	Short	4.6 x 3.6	1066	----	1	Fig. 5 Pl. Ill
IVb-op/op/opl-1	4 simple, straight stripes	Opaque Stripes on Opaque on Opaque	Pink Stripes 10RP6/6 on White 10RP9/2 on Light Pink 10RP7/2	Long	2.5 x 2.7	1092	----	1	Fig. 5 Pl. Imm

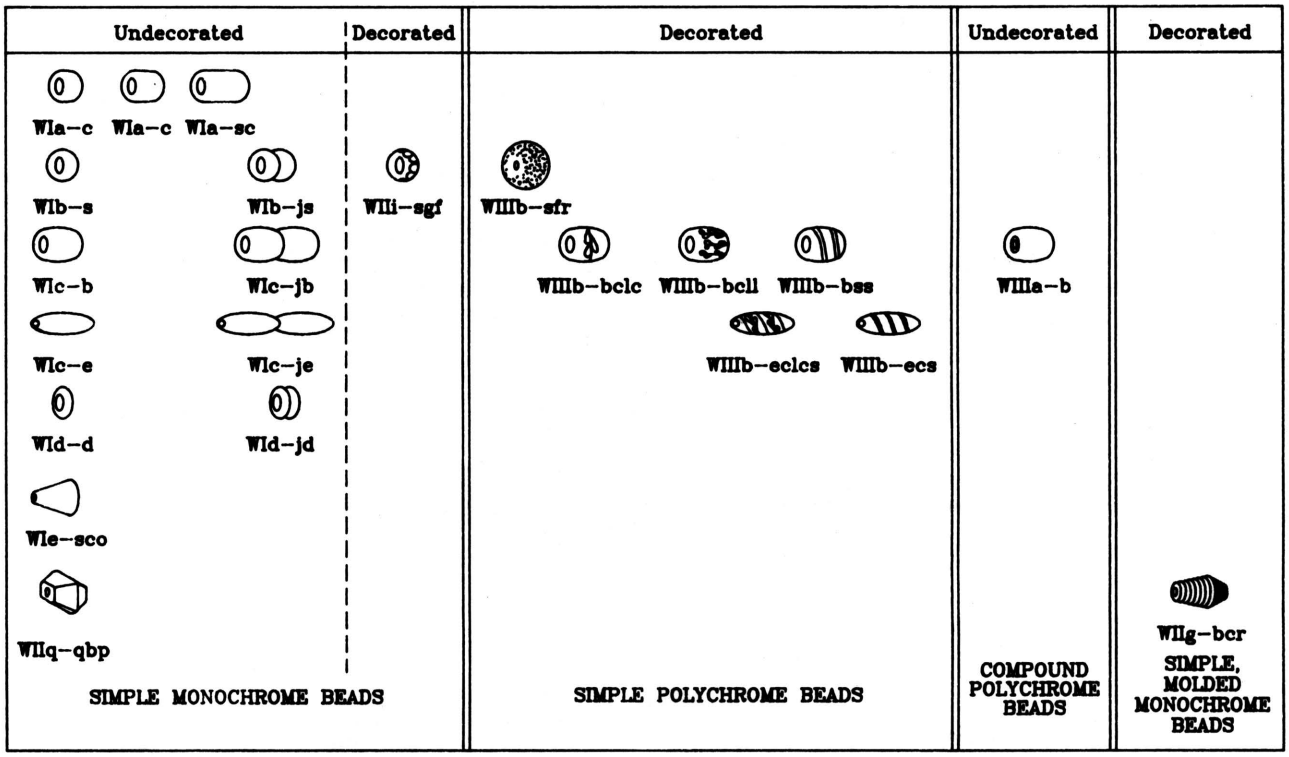


Figure 9. Wound bead types.

Wound beads comprise the second most common group at Fort Vancouver (2.3% of the fort bead assemblage), and are grouped into three major classes on the basis of manufacturing technique.

Class Wsm – Simple Monochrome Beads (n = 2359)

These exhibit a monochrome body, either undecorated, shaped or facetted.

Type WIa-c – Undecorated "Cylindrical" Beads (n = 25)

These are roughly cylindrical with no decoration. Six varieties are recorded (Pl. IIIa-f, Fig. 9, and Table 6).

The HBC Kanaka village and riverside complex sites produced six possible new varieties: 1) translucent amber (2.5YR 3/8), short variety (III.12.; n = 1), 7.0 mm (D) x 5.1 mm (L) (Carley 1982:165); 2) translucent purple (10P 2/4), short variety (III.11.; n = 1), 6.7 mm (L) x 4.6 (L) (Carley 1982:165); 3) opaque blue (7.5PB 2-3/10), short variety (III.21. and III.22.; n = 3), in two sizes measuring 5.0 mm (D) x 2.4 mm (L) and 7.1 mm (D) x 3.6-3.9 mm (L) (Carley 1982:165); 4) opaque turquoise (2.5B 3/8), short variety (III.4.; n = 2), 3.8-4.7 mm (D) x 2.3-3.2 mm (L) (Carley 1982:164); 5) opaque white (5Y 8.5/1), short variety (III.15.; n = 1), 6.6 mm (D) x 5.3 mm (L) (Carley 1982:165); and 6) opaque black (N 1.5/), short variety (III.16.; n = 1, and K81 B-1; n = 5), 6.2-7.1 mm (LD) x 4.0-5.7 mm (L) (Carley 1982:165; Thomas and Hibbs 1984:245).

Type WIa-sc – Undecorated, Shaped, Cylindrical Beads (n = 1)

The single specimen was shaped purposefully into a well-formed, rounded cylinder, possibly by turning the glass against a mold prior to its removal from the mandrel. If it was turn molded, then it may represent a type WIIg bead with a simple, rather than "elaborate," shape. One variety is recorded (Pl. IIIg, Fig. 9, and Table 6).

Type WIb-s – Undecorated "Spherical" Beads (n = 2244)

These are roughly spherical with no decoration, and the most common type of wound bead at the fort with 14 varieties being recorded (Pl. IIIh-u, Fig. 9, and Table 6).

Table 6. Wound Beads, Class Wsm – Simple Monochrome Beads.

Type WIa-c – Undecorated "Cylindrical" Beads (n = 25)

Variety	Decoration	Diaphaneity	Color	Shape	Size (mm) Least Diameter x Length	FOVA Variety Number	Kidds' No.	Quantity	Figure No. Plate No.
WIa-ctls/l-1	Undecorated	Translucent	Blue 2.5B4/6	Short to Long	8.2–8.5 x 6.1–7.1 8.2–9.5 x 9.5–10.9	2013	----	12	Fig. 9 Pl. IIIa
WIa-cop.-1	Undecorated	Opaque	White N 8.5/	----	10.4 x ----	2045	WIa3	1	Fig. 9 Pl. IIIb
WIa-cops-1	Undecorated	Opaque	Green 10G5/4	Short	8.1 x 7.2	2060	----	1	Fig. 9 Pl. IIIc
WIa-copl-1	Undecorated	Opaque	Greenish Blue 10BG4/6	Long	8.5–8.9 x 11.5–11.8	2043	----	6	Fig. 9 Pl. IIId
WIa-copl-2	Undecorated	Opaque	Dark Blue 7.5B4/4	Long	6.6–6.9 x 10.9–11.6	2014	----	3	Fig. 9 Pl. IIIe
WIa-copl-3	Undecorated	Opaque	Light Blue 7.5B5/6	Long	4.4–4.9 x 6.4–7.2	2065	----	2	Fig. 9 Pl. IIIf

Type WIa-sc – Undecorated, Shaped, Cylindrical Beads (n = 1)

Variety	Decoration	Diaphaneity	Color	Shape	Size (mm) Least Diameter x Length	FOVA Variety Number	Kidds' No.	Quantity	Figure No. Plate No.
WIa-scopl-1	Shaped by turning against a mold	Opaque	Blue 10B4/6	Long	7.1 x 14.8	2001	----	1	Fig. 9 Pl. IIIg

Type WIb-s – Undecorated "Spherical" Beads (n = 2244)

Variety	Decoration	Diaphaneity	Color	Shape	Size (mm) Least Diameter x Length	FOVA Variety Number	Kidds' No.	Quantity	Figure No. Plate No.
WIb-stps-1	Undecorated	Transparent	Red 3.75R4/4	Short	12.0 x 9.0	2036	----	1	Fig. 9 Pl. IIIh
WIb-stps/l-2	Undecorated	Transparent	Dark Red 5R2/6	Short to Long	4.4–6.8 x 4.8–8.4	2046	----	7	Fig. 9 Pl. IIIi
WIb-stps/l-3	Undecorated	Transparent	Blue 10BG–2.5–5B3–4/4–6	Short to Long	4.9–8.4 x 3.7–8.4	2004 & 2005	----	743	Fig. 9 Pl. IIIj
WIb-stps-4	Undecorated	Transparent	Purplish Blue 2.5PB4/10	Short	17.5 x 14.5	2066	----	1	Fig. 9 Pl. IIIk
WIb-stps-5	Undecorated	Transparent	Dark Purplish Blue 2.5PB3/10	Short	6.2–7.1 x 5.1–6.3	2033	----	8	Fig. 9 Pl. IIIl
WIb-stps-6	Undecorated	Transparent	Purple 7.5PB3/10	Short	5.5 x 4.2	2062	WIb15?	1	Fig. 9 Pl. IIIm
WIb-stps-7	Undecorated	Transparent	Dark Purple 10PB2/8	Short	11.3 x 9.4	2022	WIb16?	1	Fig. 9 Pl. IIIn
WIb-stls-1	Undecorated	Translucent	White N 8.5/	Short	6.3–12.0 x 4.0–10.6	2016	WIb5?	5	Fig. 9 Pl. IIIo
WIb-stls-2	Undecorated	Translucent	Purplish Blue 2.5PB4/8	Short	7.5–9.0 x 7.4–8.5	2023	----	2	Fig. 9 Pl. IIIp
WIb-stls-3	Undecorated	Translucent	Pink 10RP4/6	Short	8.4–9.7 x 6.5–8.5	2006	----	3	Fig. 9 Pl. IIIq
WIb-sops-1	Undecorated	Opaque	Dark Green 10G2/1	Short	6.4 x 5.1	2063	----	1	Fig. 9 Pl. IIIr
WIb-stp/tl/ops/l-2	Undecorated	Transparent Translucent Opaque	Blue 2.5–10B4–6/4–8	Short to Long	3.1–6.3 x 2.6–6.4 8.5–10.4 x 7.3–9.5	2002, 2018, 2037, 2042 & 2056	WIb10 WIb11 WIb12	1465	Fig. 9 Pl. IIIs
WIb-sops-3	Undecorated	Opaque	Purple 5–7.5PB2–3/8–10	Short	12.3–13.4 x 11.1–12.4	2006	WIb14?	5	Fig. 9 Pl. IIIt
WIb-sops-4	Undecorated	Opaque	Dark Purple 7.5PB3/6	Short	11.6 x 10.6	2015	----	1	Fig. 9 Pl. IIIu

Type WIb-js – Conjoined, Undecorated "Spherical" Beads (n = 1)

Variety	Decoration	Diaphaneity	Color	Shape	Size (mm) Least Diameter x Length	FOVA Variety Number	Kidds' No.	Quantity	Figure No. Plate No.
WIb-jstpl-1 (conjoined variety WIb-stps/l-3)	Undecorated	Transparent	Blue 10BG–2.5B3–4/4–6	Long	6.7 x 12.3	2050	----	1	Fig. 9 Pl. IIIv

The HBC riverside complex site produced two possible new varieties: 1) opaque white (N 9.5/-5Y 9/1), short variety (III.14.; n = 1), 5.0 mm (D) x 4.2 mm (L) (Carley 1982:165); and 2) opaque yellow (5Y 7/10), short variety (III.10. and III.17.; n = 2), in two sizes: 6.2 mm (D) x 5.1 mm (L) and 15.9 mm (D) and 14.3 mm (L) (Carley 1982:165).

Variety WIb-stp/tl/ops/l-2 beads are the most common of the wound beads at Fort Vancouver, and represent one of the most significant historical beads found in the Pacific Northwest. It is speculated that this variety represents one style of the "large blue China or Canton beads" imported by Lewis and Clark, the Pacific Fur Company, the Northwest Fur Company and the HBC. Historically, Chinese beads were identified commonly as "Canton Beads, No. 1, 2, 3, 4 or 1st, 2nd, 3rd, or 4th size" or "large blue China or Canton beads" (Coues 1897[2]:753, 822, 905, 909; Jackson 1962:74, Meriwether Lewis's 1803 list of requirements). For a one-year period, 1836-37, Chinese imports and exports to and from Great Britain and America show that 10 chests of beads were imported from Great Britain and 1345 chests exported to Great Britain, while no beads were either imported from or exported to America (McCullogh 1840 [supplement]:31).

Archaeologically, this wound variety is the most common at the early 19th-century sites in the Pacific Northwest (e.g., Combes 1964; Rodeffer and Rodeffer 1972: Nisqually John Talus site). Three sizes were identified at one archaeological site on the Oregon coast (35CS1, Bullard Beach): 1) 3.9-5.4 mm (D) x 2.4-4.6 mm (L), with a mean size of 4.54 mm (D) x 3.65 mm (L); 2) 6.3-10.0 mm (D) x 5.2-9.0 mm (L), with a mean size of 8.57 mm (D) x 7.43 mm (L), and 3) 12.7 mm (D) by 8.8 mm (L). The average metric interval between the means is 4.0 mm, and it is hypothesized that these sizes correspond to historical sizes #1, #2 and #3, and that a fourth size, measuring approximately 16.5 mm (D) x 14.0 mm (L), should be found to correspond to size #4.

Type WIb-js – Conjoined, Undecorated "Spherical" Beads (n = 1)

This is a pair of type WIb-s beads which touched on the mandrel during manufacture and became fused. One variety is recorded (Pl. IIIv, Fig. 9, and Table 6). A similar variety was recovered from 1809-68 Mission San Jose (CA-ALA-1) (Dietz 1983:196, Fig. 19).

Type WIc-b – Undecorated Barrel-shaped Beads (n = 29)

These are roughly barrel-shaped with no decoration. Eight varieties are recorded (Pl. IIIw-dd, Fig. 9, and Table 7), and all are of the short and short to long forms with no purely long varieties.

The HBC Kanaka village site produced two possible new varieties: 1) transparent dark bluish green, long variety (K81 B-3; n = 1), 5.4 mm (LD) x 7.7 mm (L) (Thomas and Hibbs 1984:245); and 2) translucent white, long variety (K81 B-2; n = 1), 5.5 mm (LD) x 11.5 mm (L) (Thomas and Hibbs 1984:245).

Type WIc-jb – Conjoined, Undecorated Barrel-shaped Beads (n = 2)

These represent a paired version of type WIc-b beads which touched one another during manufacture and became fused. One variety is recorded (Pl. IIIee, Fig. 9, and Table 7).

Type WIc-e – Undecorated "Ellipsoidal" Beads (n = 39)

These are roughly ellipsoidal with no decoration. There are seven varieties (Pl. IIIff-ll, Fig. 9, and Table 7).

Type WIc-je – Conjoined, Undecorated "Ellipsoidal" Beads (n = 1)

This is a pair of type WIc-e beads which fused during manufacture. One variety is recorded (Pl. IIImm, Fig. 9, and Table 7).

Type WId-d – Undecorated "Doughnut-shaped" Beads (n = 11)

These are roughly doughnut-shaped with no decoration. Three varieties are recorded (Pl. IVa-c, Fig. 9, and Table 8).

Type WId-jd – Conjoined, Undecorated "Doughnut-shaped" Beads (n = 2)

These are paired type WId-d beads which fused during manufacture. One variety is recorded (Pl. IVd, Fig. 9, and Table 8).

Table 7. Wound Beads, Class Wsm – Simple Monochrome Beads.

Type WIc-b – Undecorated Barrel-shaped Beads (n = 29)

Variety	Decoration	Diaphaneity	Color	Shape	Size (mm) Least Diameter x Length	FOVA Variety Number	Kidds' No.	Quantity	Figure No. Plate No.
WIc-btps-1	Undecorated	Transparent	Colorless	Short	6.2–9.8 x 5.6–7.7	2044	---	4	Fig. 9 Pl. IIIw
WIc-btps/1-2	Undecorated	Transparent	Reddish Amber 10R2/6	Short to Long	7.4–9.8 x 8.2–9.8	2010	---	2	Fig. 9 Pl. IIIx
WIc-btps/1-3	Undecorated	Transparent	Amber 2.5YR4/10	Short to Long	9.5–10.4 x 8.3–10.7	2057	---	8	Fig. 9 Pl. IIIy
WIc-btps/1-4	Undecorated	Transparent	Light Amber 7.5YR5/10	Short to Long	6.5–9.7 x 6.0–11.4	2011	---	10	Fig. 9 Pl. IIIz
WIc-btps-5	Undecorated	Transparent	Green 2.5G4/6	Short	5.9–6.4 x 5.0–5.7	2051	---	2	Fig. 9 Pl. IIIaa
WIc-btps-6	Undecorated	Transparent	Purplish Blue 5PB3/10	Short	6.0 x 6.0	2052	WIc11	1	Fig. 9 Pl. IIIbb
WIc-bops-1	Undecorated	Opaque	White N 8/	Short	6.5 x 6.5	2041	---	1	Fig. 9 Pl. IIIcc
WIc-bops-2	Undecorated	Opaque	Black N 0.5/	Short	7.5 x 6.2	2030	---	1	Fig. 9 Pl. IIIdd

Type WIc-jb – Conjoined, Undecorated Barrel-shaped Beads (n = 2)

WIc-jbtpl-1 (conjoined variety WIc-btps/1-4)	Undecorated	Transparent	Light Amber 7.5YR5/10	Long	8.5–9.6 x 19.1–19.4	2059	---	2	Fig. 9 Pl. IIIee

Type WIc-e – Undecorated "Ellipsoidal" Beads (n = 39)

WIc-etpl-1	Undecorated	Transparent	Red 5R4/10	Long	6.8 x 12.7	2019	---	1	Fig. 9 Pl. IIIff
WIc-etpl-2	Undecorated	Transparent	Dark Red 5R2/8	Long	4.7–5.5 x 7.9–9.2	2032	---	8	Fig. 9 Pl. IIIgg
WIc-etll-1	Undecorated	Translucent	Yellow 7.5Y7/6	Long	5.3 x 9.5	2021	---	1	Fig. 9 Pl. IIIhh
WIc-etll-2	Undecorated	Translucent	Blue 2.5–5B5/6	Long	4.3–5.1 x 6.9–9.1	2039	---	3	Fig. 9 Pl. IIIii
WIc-eopl-1	Undecorated	Opaque	White N 9.5/	Long	4.6–5.4 x 7.8–9.2	2009	WIc1	22	Fig. 9 Pl. IIIjj
WIc-eopl-2	Undecorated	Opaque	Bluish Green 2.5BG5/4	Long	4.5–5.0 x 7.4–9.1	2067	---	2	Fig. 9 Pl. IIIkk
WIc-eopl-3	Undecorated	Opaque	Blue 10B4/6	Long	7.1–7.6 x 10.4–11.4	2003	---	2	Fig. 9 Pl. IIIl

Type WIc-je – Conjoined, Undecorated "Ellipsoidal" Beads (n = 1)

WIc-jetpl-1 (conjoined variety WIc-etpl-2)	Undecorated	Transparent	Dark Red 5R2/8	Long	4.5 x 15.9	2064	---	1	Fig. 9 Pl. IIImm

Table 8. Wound Beads, Class Wsm – Simple Monochrome Beads.

Type WId-d – Undecorated "Doughnut-shaped" Beads (n = 11)

Variety	Decoration	Diaphaneity	Color	Shape	Size (mm) Least Diameter x Length (Number of Sides)	FOVA Variety Number	Kidds' No.	Quantity	Figure No. Plate No.
WId-dtps-1	Undecorated	Transparent	Amber 2.5YR4/10	Short	7.0–11.0 x 4.2–9.0	2035	WId1?	2	Fig. 9 Pl. IVa
WId-dtps-2	Undecorated	Transparent	Purple 5–7.5PB2/8–max	Short	4.6–7.5 x 3.2–7.0	2007	WId4?	8	Fig. 9 Pl. IVb
WId-dtls-1	Undecorated	Translucent	Blue 2.5B5/4	Short	5.1 x 2.7	2027	---	1	Fig. 9 Pl. IVc

Type WId-jd – Conjoined, Undecorated "Doughnut-shaped" Beads (n = 2)

WId-jdtll-1 (conjoined variety WId-dtls-1)	Undecorated	Translucent	Blue 2.5B5/4	Long	5.0 x 6.6–7.5	2047	---	2	Fig. 9 Pl. IVd

Type WIe-sco – Undecorated, Shaped, Conical Beads (n = 1)

WIe-scoopl-1	Shaped by turning against a mold?	Opaque	White N 9.5/	Long	5.3 x 6.7	2048	---	1	Fig. 9 Pl. IVe

Type WIIq-qbp – Quadrilateral "Bi-pyramidal" Beads (n = 1)

WIIq-qbptpl-1	8 facets on 4 sides made by pressing	Transparent	Red ---	Long	5.0 x 8.7 (4)	2061	---	1	Fig. 9 Pl. IVf

Type WIIi-sgf – "Spherical" Beads with Ground Facets (n = 1)

WIIi-sgftls-1	12 randomly ground facets	Translucent	Blue 10B4/8	Short	8.3 x 6.8	2020	---	1	Fig. 9 Pl. IVg
WIIi-sgfops-1	12 randomly ground facets	Opaque	Dark Bluish Green 5BG2/2	Short	8.3 x 6.6	2012	---	1	Fig. 9 Pl. IVh

Type WIe-sco – Undecorated, Shaped, Conical Beads (n = 1)

The specimen was purposefully shaped into a well-formed cone, probably by turning the glass against a mold prior to removal from the mandrel. If it was turn molded, then it may represent a type WIIg bead with a simple, rather than "elaborate," shape. One variety is recorded (Pl. IVe, Fig. 9, and Table 8).

The HBC Kanaka village site produced one possible new variety: opaque red (2.5R 4/12), long variety (III.c.; n = 1), 6.0 mm (MD) x 8.5 mm (L) (Storm 1976:109).

Type WIIq-qbp – Quadrilateral "Bi-pyramidal" Beads (n = 1)

A flat-sided tool was employed to shape this bead into a roughly bi-pyramidal shape with four sides (or eight shaped facets). One variety is recorded (Pl. IVf, Fig. 9, and Table 8). Beads of a similar form, but turquoise green in color, were recovered from 1834-75 Fort Laramie, Wyoming (Murray 1964:Pl. III, Var. 8079).

Type WIIi-sgf – "Spherical" Beads with Ground Facets (n = 2)

These are roughly spherical, with 12 facets randomly ground around their circumference. Two varieties are recorded (Pl. IVg-h, Fig. 9, and Table 8).

Class Wsp – Simple Polychrome Beads (n = 8)

These consist of a monochrome body with inlaid monochrome or polychrome decoration.

Type WIIIb-sfr – Fritted "Spherical" Beads (n = 1)

After a roughly spherical bead was wound (perhaps on a ferrous mandrel, as the interior of the perforation is blackened), numerous small chips of glass were pressed into its surface. It appears that upon cooling, the surface was polished or tumbled, not fire-polished, as the surfaces of the colored chips are relatively flat rather than rounded. One variety is recorded (Pl. IVi, Fig. 9, and Table 9).

Type WIIIb-bcl – Barrel-shaped Beads with Combed Loops (n = 3)

These are roughly barrel-shaped, and were decora- ted by trailing molten glass onto the viscous surface, and then dragging a wire through the appliqué to form either a single string of combed loops around the circumfer- ence, or four longitudinal strings of combed loops. Three varieties are recorded (Pl. IVj-l, Fig. 9, and Table 9).

Type WIIIb-eclcs – "Ellipsoidal" Beads with Combed Loops and Complex Stripes (n = 2)

Roughly ellipsoidal in shape, these beads were decorated with a single, spiral string of combed loops and a single, spiral, complex stripe. The combed loops were made by trailing molten glass onto the viscous surface, and then dragging a wire through the appliqué. The complex stripe is of two colors. One variety is recorded (Pl. IVm, Fig. 9, and Table 9).

Type WIIIb-bss – Barrel-shaped Beads with a Simple Stripe (n = 1)

A roughly barrel-shaped bead with a relatively broad, flat stripe (the same color as the body) spiralled around the body. One variety is recorded (Pl. IVn, Fig. 9, and Table 9).

Type WIIIb-ecs – "Ellipsoidal" Beads with a Complex Stripe (n = 1)

This bead is roughly ellipsoidal in shape with a complex, twisted, polychrome stripe spiralled around and pressed into the body. One variety is recorded (Pl. IVo, Fig. 9, and Table 9). What may be an identical variety was recovered from 1834-75 Fort Laramie, Wyoming (Murray 1964:Pl. III, Var. 8081).

Class Wcp – Compound Polychrome Beads (n = 2)

These were manufactured by winding or wrapping one color of glass onto a wound core of another color.

Type WIIIa-b – Undecorated Barrel-shaped Beads (n = 2)

These are roughly barrel-shaped without decoration. One variety is recorded (Pl. IVp, Fig. 9, and Table 10).

Class Wsmm – Simple, Molded Monochrome Beads (n = 2)

These were manufactured by winding glass on a mandrel and then, by using an open mold, the decoration was pressed into the surface while the glass turned, or a pinching tool with molded faces similar to a bullet mold was used to impart the decoration while the glass was stationary.

Type WIIg-bcr – Ringed, Truncated, Bi-conical Beads (n = 2)

These have 12 molded rings circumscribing the surface which appear to have been created by turning the glass against an open mold. Two varieties are recorded (Pl. IVq, Fig. 9, and Table 10).

Possible Type WIIg-smf – "Spherical" Beads with Molded Facets

This bead type is described as a "wire-wound pressed bead" with facets. It may be a mold-pressed bead with molded facets. No examples of this type were recorded within the fort. However, the HBC riverside complex site produced one variety: translucent red (5R 3/10), short variety (VII.1.; n = 1), 3.6 mm (D) x 3.1 mm (L) (Carley 1982:166).

Mold-pressed Beads (n = 166)

These were manufactured by pinching or pressing molten glass in a two-part mold. The hole was produced by pushing a pin into the mold and through the glass.

Class MPsm – Simple Monochrome Beads (n = 166)

Table 9. Wound Beads, Class Wsp – Simple Polychrome Beads.

Type WIIIb-sfr – Fritted "Spherical" Beads (n = 1)

Variety	Decoration	Diaphaneity	Color	Shape	Size (mm) Least Diameter x Length	FOVA Variety Number	Kidds' No.	Quantity	Figure No. Plate No.
WIIIb-sfrop.-1	Multi-colored glass chips marvered into the entire surface and polished or tumbled smooth	Opaque & Opaque on Opaque	Purple 10PB2/8 and Pink 2.5RP6/8 Chips on White N 9.5/	---	---	2054	---	1	Fig. 9 Pl. IVi

Type WIIIb-bcl – Barrel-shaped Beads with Combed Loops (n = 3)

WIIIb-bclcop/tpl-1	1 circumferential string of combed loops	Opaque String on Transparent	White N 9/ String on Green 5G2/6	Long	10.3 x 10.5	2040	---	1	Fig. 9 Pl. IVj
WIIIb-bclcop/tps-2	1 circumferential string of combed loops	Opaque String on Transparent	White N 9/ String on Dark Purple 7.5PB2/4	Short	8.2 x 7.1	2034	---	1	Fig. 9 Pl. IVk
WIIIb-bcllt1/opl-1	4 longitudinal strings of combed loops including 2 alternating single-color strings	Translucent Strings on Opaque	2 Red 5R3/8 Strings and 2 Purple 5PB2/6 Strings on White N 9/	Long	8.8 x 10.0	2068	---	1	Fig. 9 Pl. IVl

Type WIIIb-eclcs – "Ellipsoidal" Beads with Combed Loops and Complex Stripes (n = 2)

WIIIb-eclcstl/opl-1	Complex, spiral stripe with 1 spiral string of combed loops	Translucent on Opaque Stripe with Translucent String on Opaque	Red 5R4/10 on White N 9/ Stripe with Green 5G3/8 String on White N 8.5/	Long	9.7–10.3 x 22.0	2024	---	2	Fig. 9 Pl. IVm

Type WIIIb-bss – Barrel-shaped Beads with a Simple Stripe (n = 1)

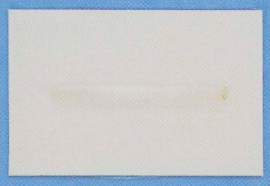
WIIIb-bssop/tll-1	Simple spiral stripe	Opaque Stripe on Translucent	Red 7.5R4/12 Stripe on Red 7.5R4/12	Long	8.8 x 11.1	2058	---	1	Fig. 9 Pl. IVn

Type WIIIb-ecs – "Ellipsoidal" Beads with a Complex Stripe (n = 1)

WIIIb-ecsop/tpl-1	Complex, twisted spiral stripe	Opaque on Opaque on Opaque Stripe on Transparent	Red 5R4/6, White N 9/ and Blue 5PB4/4 Stripe on Red 7.5R2/6	Long	8.2 x 15.5	2031	WIIId1?	1	Fig. 9 Pl. IVo

Type MPIIa-sppgf – "Spherical" Beads with a Bi-conical Punched Perforation and Ground Facets (n = 166)

These were probably manufactured in Bohemia (part of present-day Czechoslovakia) and, during the first half of the 19th century, were molded individually or in pairs by pressing glass in iron tongs equipped with opposing hemispherical cavities. Perforations were partially formed by either a tapered pin that appears to have been an integral part of one cavity (Ross 1974:17 and Fig. 3, 1976:759-62), or by a pin inserted through one cavity (Anonymous 1913; Pešatová 1965; Ross and Pflanz 1989). The former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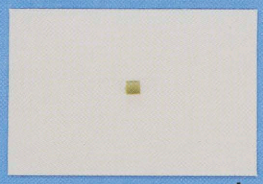
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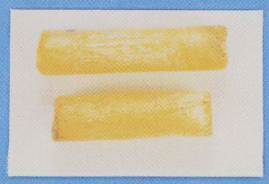
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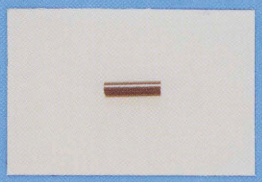
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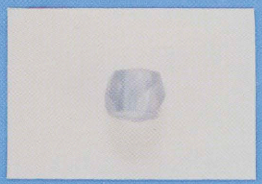
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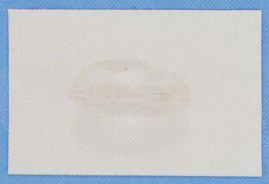
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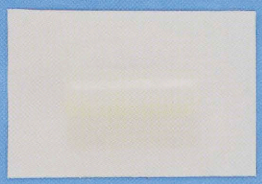
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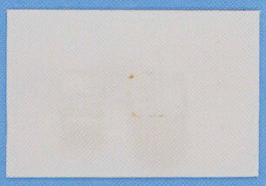
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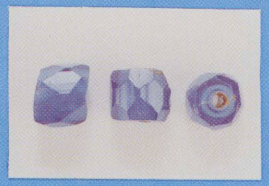
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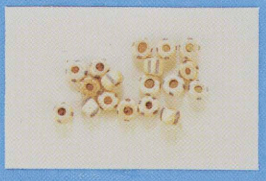
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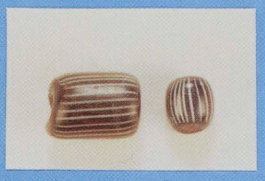
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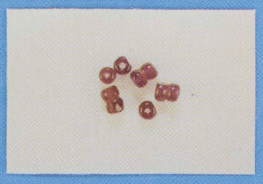
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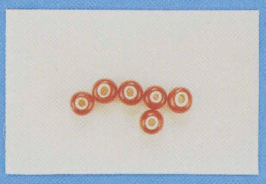
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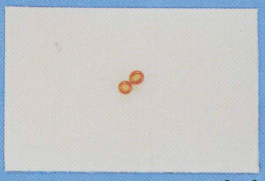
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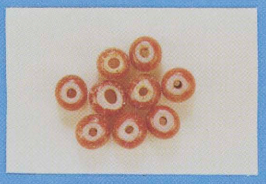
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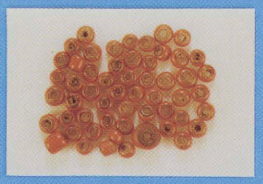
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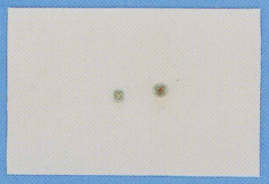
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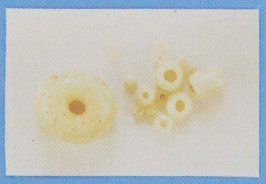
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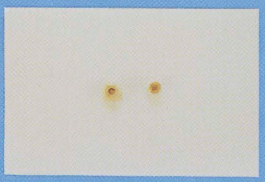
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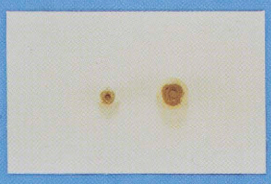
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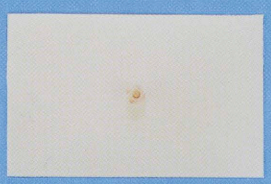
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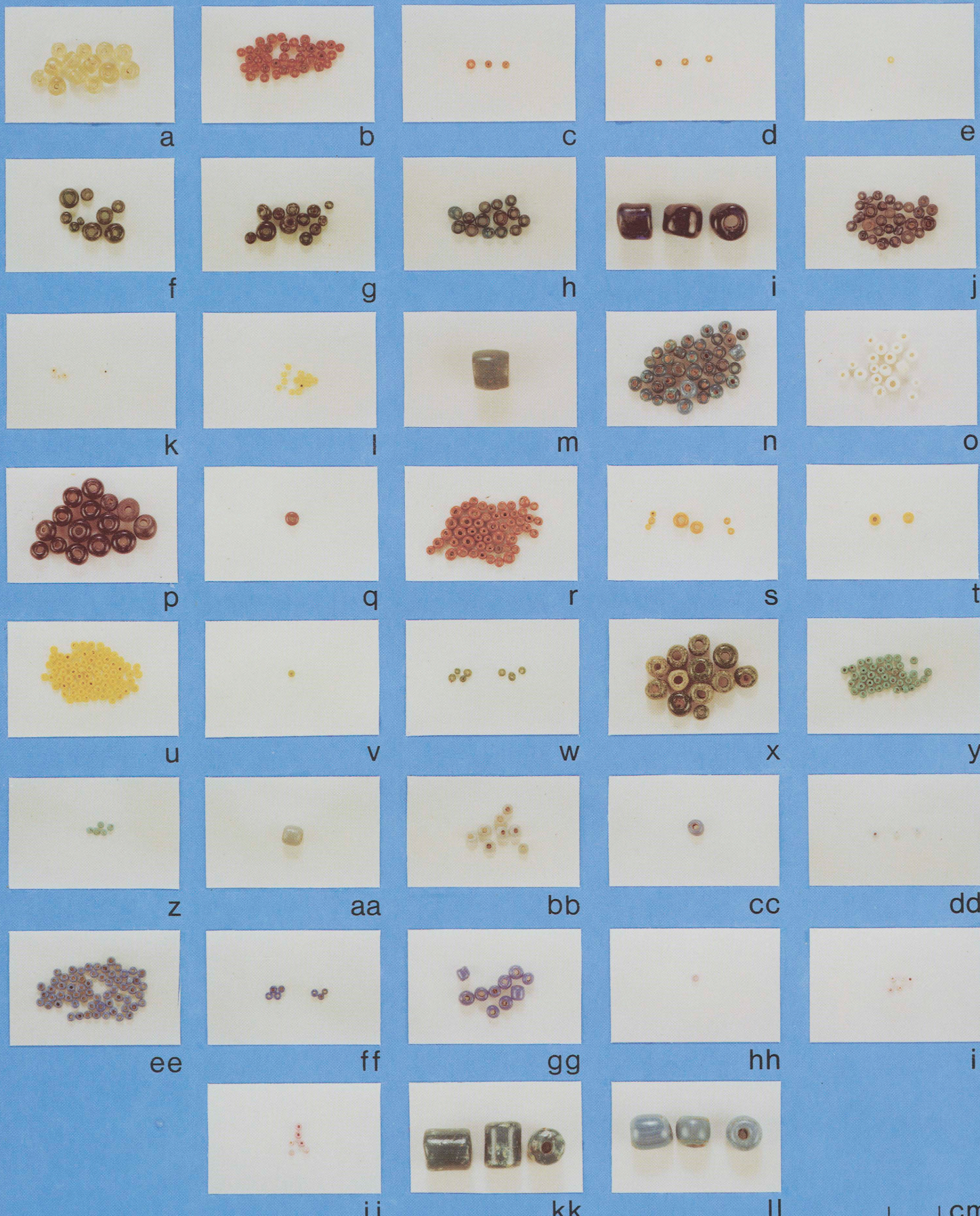
See page 2 for plate captions

cm

FORT VANCOUVER

PLATE II



FORT VANCOUVER

PLATE III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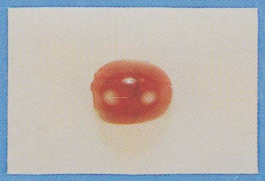
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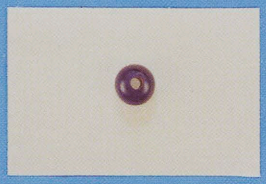
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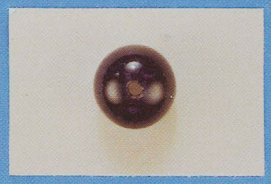
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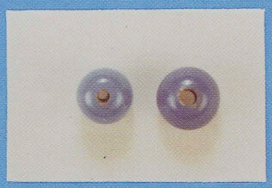
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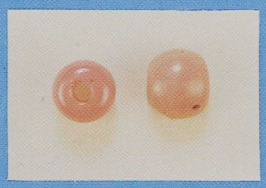
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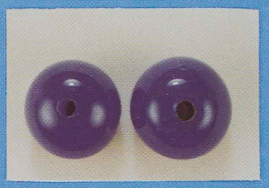
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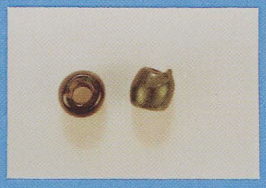
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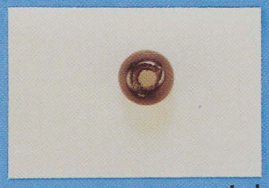
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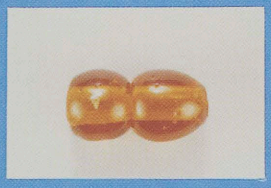
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FORT VANCOUVER

PLATE IV


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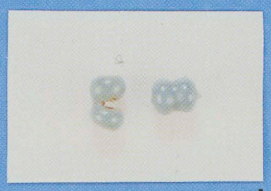
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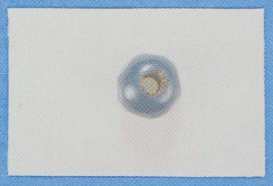
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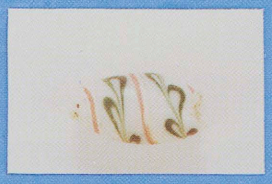
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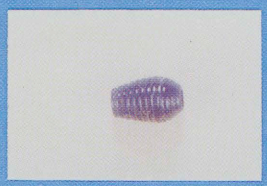
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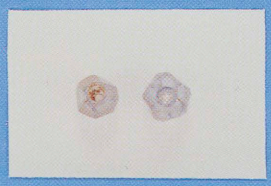
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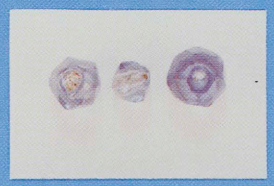
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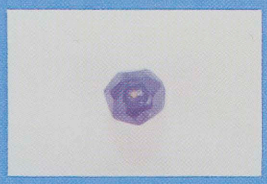
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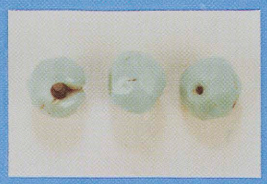
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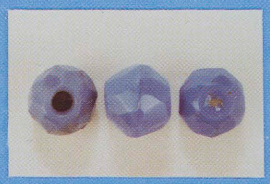
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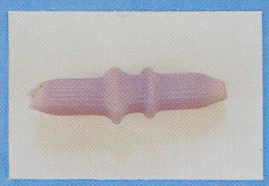
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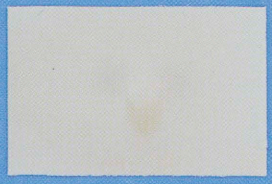
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Table 10. Wound Beads, Class Wcp – Compound Polychrome Beads.

Type WIIIa-b – Undecorated Barrel-shaped Beads (n = 2)

Variety	Decoration	Diaphaneity	Color	Shape	Size (mm) Least Diameter x Length	FOVA Variety Number	Kidds' No.	Quantity	Figure No. Plate No.
WIIIa-btp/opl-1	Undecorated	Transparent on Opaque	Red 5R3/10 on White 5R8/1	Long	10.1 x 10.6	2049	---	2	Fig. 9 Pl. IVp

Class Wsmm – Simple, Molded Monochrome Beads.

Type WIIg-bcr – Ringed, Truncated, Bi-conical Beads (n = 2)

WIIg-bcrop.-1	12 rings circumscribing bead	Opaque	White N 8.5/	---	---	2053	---	1	---
WIIg-bcropl-2	12 rings circumscribing bead	Opaque	Purple 7.5PB3/8	Long	6.3 x 9.5	2038	---	1	Fig. 9 Pl. IVq

appears to have been the method employed for the recovered beads. Upon removal from the mold, the preform had a partially formed perforation and a mold seam around its circumference with fine glass fins protruding from it. Facets were subsequently ground on the bead, thus removing the fins (the fins could also be removed prior to facetting by sieving or abrasion), and the incomplete perforation was punched through, forming a roughly spherical facetted bead with a bi-conical perforation.

A few specimens from the fort exhibit a vertical cleft (e.g., Pl. IVy), possibly caused by an insufficient amount of glass that did not completely fill the lower hemisphere of the mold as glass flowed around the tapered stationary pin or as a pin was inserted to form the perforation. It may also be that this cleft was produced by a three-part mold, although no historical evidence for such a mold has been found.

These beads emulate the appearance of cut crystal or cut jewelry beads, and the products from the Bohemian industry were collectively referred to as artificial jewelry. In addition, "unfinished" beads (those with an incomplete perforation) could be used as heads for hat pins. Just such an "unfinished" bead was excavated at 1849-1900 Old Sacramento, California (Motz and Schulz 1980:57, Type 49, Fig. 4e).

Among collectors, beads similar to these, but of later manufacture, are called "cut," "Czech," or "vaseline" beads (e.g., Johnson 1975), presumably for their technique of manufacture emulating cut stone beads, country of manufacture and glossy appearance, respectively. The early varieties from the fort were probably manufactured in Bohemia, but lack the high polish exhibited by later varieties. This glossy finish may have been created by placing the beads in an acid bath, similar to the 20th-century technique used to polish cut lead-crystal glassware (Jones and others 1985:55, 56). Assumedly, if such a bath was employed for later beads, it was not used in the mid-19th century.

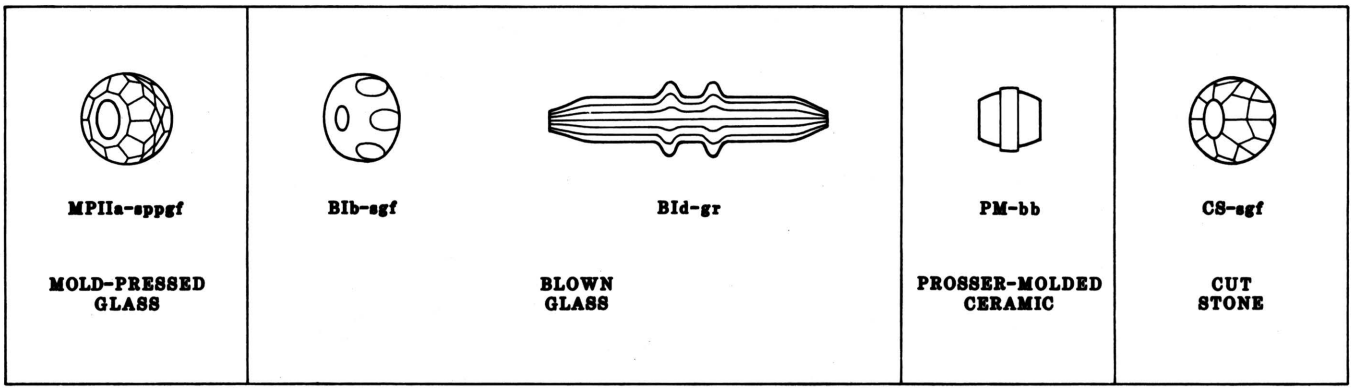

Figure 10. Other Fort Vancouver bead types.

Ten varieties are recorded (Pl. IVr-z, Fig. 10, and Table 11), with perhaps six sizes being identified. Because these beads are molded, it is likely that discrete sizes were intentionally manufactured. However, sizes identified for the fort do not support definition of uniform intervals between sizes, nor do they support definition of definitive sizes. Speculatively, if discrete sizes do exist, they are based upon 1-mm intervals with apparent sizes of 5, 6, 7, 8, 9, 10 and 16 mm represented at the fort. These beads may have been identified by the HBC as "cut glass" beads, but there is only a moderate correlation between historical and archaeological color groupings. The historical color groupings are more indicative of subtypes If-d and IIIf-d (discussed above). While historical records denote five sizes of "cut beads" (#4-7 and #9), there may be seven sizes for the type MPIIa-sppgf beads. Finally, there is no correlation between the sizes of these facetted, mold-pressed beads and the facetted, multi-sided drawn beads (subtypes If-d and IIIf-d).

The HBC Kanaka village site produced two possible new varieties: 1) transparent amber (7.5YR 3/4), short to long variety (IV.d.; n = 1), 7.8 mm (D) x 7.9 mm (L) (Chance and others 1982:46); and 2) transparent purple, short variety (K81 C-1; n = 1), 9.8 mm (LD) x 8.2 mm (L) (Thomas and Hibbs 1984:246).

Type MPIIa-sppgf beads have been reported from several other archaeological sites in North America. The earliest-known specimen came from a post-1804 to pre-1835 context at Santa Ines Mission (CA-SBR-518), California (Ross 1989a:156, Type MPIIa-2). The ca. 1829-67 American Fur Company Fort Union site (32WI17), North Dakota, produced seven varieties (Ross 1989b). In addition, one variety was found at the 19th-century Rosary site, Quebec, Canada (Lee 1966), and another may have been uncovered at 1803-78 Fort William, Ontario, Canada (Karklins 1973).

Possible Type MPIIa-smf – "Spherical" Beads with Molded Facets

These may have been manufactured in a two-piece mold equipped with opposing, facetted, hemispherical cavities. Perforations were probably formed by inserting a tapered or straight pin through both cavities (Ross and Pflanz 1989). Although no examples of this type were recorded at the fort, the HBC Kanaka village site reportedly produced three varieties: 1) opaque black, short variety (V.c; n = 1), 8.0 mm (D) x 7.5 mm (L) (Chance and others 1982:46); 2) opaque bright Chinese red (5R 4/14), short variety (V.b.; n = 1), 7.8 mm (D) x 6.5 mm (L) (Chance and others 1982:46); and 3) opaque medium blue (6.25PB 4/12), short variety (V.a.; n = 3), 8.3-9.5 mm (D) x 7.4-7.8 mm (L) (Chance and others 1982:46).

If these are mold-pressed beads with molded facets then comparative data from other North American sites suggest that they may represent a late period of occupation (ca. 1850s or later) (Ross 1988).

Blown Beads (n = 5)

Blown beads were created by various techniques (Karklins 1982:98). Those from the fort were freeblown, and blown in a mold.

Table 11. Mold-pressed Beads, Class MPsm – Simple Monochrome Beads.

Type MPIIa-sppgf – "Spherical" Beads with a Bi-conical, Punched Perforation and Ground Facets (n = 166)

Variety	Decoration	Diaphaneity	Color	Shape	Size (mm) Least Diameter x Length	FOVA Variety Number	Kidds' No.	Quantity	Figure No. Plate No.
MPIIa-sppgftps-1	35–54 randomly ground facets	Transparent	Colorless	Short	6.0 x 5.4 7.6 x 7.3 8.9–9.8 x 7.5–8.9	3009	---	4	Fig. 10 Pl. IVr
MPIIa-sppgftps/l-2	35–54 randomly ground facets	Transparent	White N 7/	Short to Long	5.6 x 5.9 9.0 x 8.8 10.7 x 10.1	3006	---	3	Fig. 10 Pl. IVs
MPIIa-sppgftps-3	35–54 randomly ground facets	Transparent	Red 5R2/8	Short	6.5–7.1 x 6.4 7.9 x 7.4	3007	---	3	Fig. 10 Pl. IVt
MPIIa-sppgftp.-4	35–54 randomly ground facets	Transparent	Green 7.5G4/8	---	---	3008	---	2	Fig. 10
MPIIa-sppgftps-5	35–54 randomly ground facets	Transparent	Light Purplish Blue 7.5PB5/6	Short	5.7–6.4 x 5.3–5.9	3013	---	2	Fig. 10 Pl. IVu
MPIIa-sppgftps/l-6	35–54 randomly ground facets	Transparent	Purplish Blue 7.5PB4/10	Short to Long	5.0 x 5.3 7.2–7.5 x 6.3–6.8 9.5 x 8.1 16.4 x 15.3	3011	---	6	Fig. 10 Pl. IVv
MPIIa-sppgftps-7	35–54 randomly ground facets	Transparent	Dark Purplish Blue 7.5PB3/12	Short	7.6 x 7.2	3010	---	1	Fig. 10 Pl. IVw
MPIIa-sppgfops-1	35–54 randomly ground facets	Opaque	Black N 0.5/	Short	5.3–5.8 x 5.3–5.4 6.9–7.0 x 6.3–6.4 8.2–8.9 x 7.1–7.4 9.1 x 8.8 10.5 x 9.3	3001	---	9	Fig. 10 Pl. IVx
MPIIa-sppgfops-2	35–54 randomly ground facets	Opaque	Light Greenish Blue 2.5B8/4	Short	7.7–8.9 x 6.5–8.1	3002	---	71	Fig. 10 Pl. IVy
MPIIa-sppgfops-3	35–54 randomly ground facets	Opaque	Purplish Blue 5PB4–6/6–8	Short	8.0–10.0 x 7.0–9.3	3003, 3004 & 3005	---	65	Fig. 10 Pl. IVz

Class Bsm – Simple Monochrome Beads (n = 1)

Type BIb-sgf – Spherical Beads with Ground Facets (n = 1)

This type was manufactured by freeblowing glass beads either individually or in a series. Facets were subsequently randomly ground on the surface. One variety is recorded (Fig. 10 and Table 12). Similar varieties have been reported from 1834-75 Fort Laramie, Wyoming (Murray 1964:Pl. IV, Var. 8126), and 1849-1900 Old Sacramento, California (Motz and Schulz 1980:58, Type 55, and Fig. 4h).

Class BMsm – Simple, Blown-molded, Monochrome Beads (n = 4)

Type BId-gr – Grooved Segmented Beads (n = 4)

These were manufactured by inserting a thin-walled drawn or blown tube, sealed at one end and in a plastic state, into a two-part mold with 12 longitudinal ridges and then blowing into the tube to impart the design. Such a mold may have had multiple cavities, requiring the tube to be snapped into bead segments. Once removed from the mold, two upsets were created in each tube by reheating a portion at a time, and blowing and pushing the two ends towards the center. Two varieties are recorded (Pl. IVaa-bb, Fig. 10, and Table 12).

Table 12. Blown Beads, Class Bsm – Monochrome Beads.

Type BIb-sgf – Spherical Beads with Ground Facets (n = 1)

Variety	Decoration	Diaphaneity	Color	Shape	Size (mm) Least Diameter x Length	FOVA Variety Number	Kidds' No.	Quantity	Figure No. Plate No.
BIb-sgftl.-1	Unknown number of randomly ground facets	Translucent	Purplish Red 10RP5/12	---	---	4001	---	1	Fig. 10

Class BMsm – Simple, Blown-molded, Monochrome Beads.

Type BId-gr – Grooved, Segmented Beads (n = 4)

BId-grtll-1	25 molded, longitudinal grooves with 2 upsets	Translucent	White N 8/	Long	6.5 x 20.5	4003	---	1	Fig. 10 Pl. IVaa
BId-grtll-2	25 molded, longitudinal grooves with 2 upsets	Translucent	Purple 5P4/4	Long	6.2-8.6 x 15.7-27.5	4002	---	3	Fig. 10 Pl. IVbb

Ceramic Beads (n = 1)

Ceramic beads are distinguished from glass beads on the basis of their composition and manufacturing techniques. Glass beads are generally manufactured from a molten gather that is shaped into a finished form, but may be manufactured by pressing and melting or fusing broken, crushed or powdered glass in a mold. Ceramic beads are manufactured from a dry or moist powder that is packed into a mold, subsequently removed from the mold and fired, with or without a glaze or slip.

"Prosser-molded" Beads (n = 1)

Beads of this group, also referred to as tile beads, may have been manufactured variously by pressing a dry or moist mixture of powdered clay, flint, feldspar, metallic oxides and "other earthy materials" in a mold. Upon removal from the mold, the bead would have been bisque fired. Whether this firing produced the glossy surface of the single bead at the fort, or whether the bead was subsequently glazed and glost fired is not known. Historical accounts of the "Prosser" techniques indicate that after bisque firing, the molded objects could be decorated, fired again, glazed and fired for the final time (Sprague 1983). The process was originally patented in 1840 by Richard Prosser, but may have been invented in 1832 by his brother Thomas, who claimed to have made the first button by this process in 1837. The process was used in Great Britain, America, France and Bohemia from the 19th century onwards, and was employed primarily for the manufacture of "china" or "calico" buttons (Sprague 1983).

Class PMsm – Simple Monochrome Beads (n = 1)

Type PM-bb – Banded, Barrel-shaped Beads (n = 1)

The single recorded bead (Pl. IVcc, Fig. 10, and Table 13) is barrel-shaped with a relatively broad band circumscribing the middle. It may be an intrusive find related to the U.S. Army's occupation of the fort after 1860.

The HBC Kanaka village site produced two new varieties: 1) opaque light blue (7.5B 8/4), variety

(VI.b.; n = 2), 6.3-6.4 mm (D) (Chance and others 1982:46); and 2) opaque black, variety (VI.c.; n = 1), 7.1 mm (D) (Chance and others 1982:47). These beads all came from a post-HBC context associated with the U.S. Army occupation (post-1849) (Chance and others 1982: 39), suggesting that all "Prosser-molded" beads from sites in the vicinity may date to the post-HBC period.

Stone Beads (n = 2)

Stone beads found in the Pacific Northwest are generally of Native-American manufacture. However, the two beads recovered from the fort were probably imported from Europe.

Cut-stone Beads (n = 2)

Class CSp - Polychrome Beads (n = 2)

Type CSp-sgf – "Spherical" Beads with Ground Facets (n = 2)

These were cut from a cryptocrystalline silicate, probably agate. One variety is recorded (Fig. 10 and Table 14).

Ground-stone Beads

Unclassified Steatite Beads

Untyped, Flat Disc Beads

The Kanaka village site produced a flat disc bead of steatite that was of prehistoric Native-American origin. It measured 8.1 mm (D) x 1.3 mm (L) (Chance and others 1982:47).

Beads of Other Materials

Although none were recovered from Fort Vancouver, beads of materials other than glass, ceramic and stone were recovered from the HBC Kanaka village and riverside complex sites.

Bone Beads

The HBC riverside complex site produced an ellipsoidal specimen, presumably of Native-American manufacture (Carley 1982:166).

Wood Beads

A string-wound, wooden, yellowish brown, barrel-shaped bead of presumed Euro-American manufacture was found at the HBC riverside complex site. (Carley 1982:166).

Metal Beads

The HBC Kanaka village site yielded two undescribed metal beads, presumably of Euro-American origin (Thomas and Hibbs 1984: 169).

Shell Beads

The village site also produced an undescribed shell bead of probable Native-American manufacture (Thomas and Hibbs 1984:479).

SPATIAL AND TEMPORAL INTRASITE COMPARISONS

The bead assemblage from Fort Vancouver is indicative of the diversity of beads imported by the HBC to the Pacific Northwest from 1829 to 1860, and can serve to construct an initial archaeological horizon marker for other sites of the same period. For an initial definition of the HBC 1829-60 bead horizon marker, bead varieties from the fort with more than 20 specimens have been selected, resulting in a construct of 36 varieties, 10 types, 6 classes and 3 manufacturing groups which comprise 99.6% of the fort assemblage:

Drawn Beads

Monochrome Beads with Chopped Ends

Undecorated Cylindrical Beads

Table 13. "Prosser-molded" Ceramic Beads, Class PMsm – Simple Monochrome Beads.

Type PM-bb – Banded, Barrel-shaped Beads (n = 1)

Variety	Decoration	Diaphaneity	Color	Shape	Size (mm) Least Diameter x Length	FOVA Variety Number	Kidds' No.	Quantity	Figure No. Plate No.
PM-bbops-1	Molded band circumscribing bead	Opaque	White N 8.5/	Short	4.9 x 4.8	5001	---	1	Fig. 10 Pl. IVcc

Table 14. Cut-stone Beads, Class CSp – Polychrome Beads

Type CSp-sgf – "Spherical" Beads with Ground Facets (n = 2)

Variety	Decoration	Diaphaneity	Color	Shape	Size (mm) Least Diameter x Length	FOVA Variety Number	Kidds' No.	Quantity	Figure No.
CSp-sgftls-1	Agate bead with 28–48 randomly ground facets	Translucent	Colorless with Orange Tip 2.5YR5/14	Short	6.6–8.0 x 6.5–7.6	6001	---	2	Fig. 10

Yellow (Ia-tll-3)
Complex, Multi-sided Cylindrical Beads with Ground Facets
Beads with Two Rows of Facets
Dark Purple (If-d6/7tps/l-6)
Black (If-d6/7ops/l-1)
Polychrome Beads with Chopped Ends
Complex, Multi-sided Cylindrical Beads with Ground Facets
Beads with Two Rows of Facets
Colorless (IIIf-d6/7tp/tls/l-1)
Light blue (IIIf-d7op/ops/l-1
Purple (IIIf-d7op/ops/l-2)
Dark purple (IIIf-d6/7tp/tls/l-3)
Monochrome Beads with a Hot-Tumbled Finish
Undecorated "Cylindrical" Beads
Colorless (IIa-tps-1)
White (IIa-ops-1)
Black (IIa-ops-2)
Dark red (IIa-tps-2)
Brownish red (IIa-ops-4)
Yellow (IIa-ops-7)
Yellowish green (IIa-tps-6)
Green (IIa-tps-7 and IIa-ops-10)
Bluish green (IIa-ops-11)
Blue (IIa-tps-8 and IIa-tls-4)
Light purplish blue (IIa-ops-14)
Bluish purple (IIa-ops-17)
Purple (IIa-tps-10)
Dark purple IIa-ops-19)
Pink (IIa-ops-23)
"Cylindrical" Beads with Simple Straight Stripes
White with four purple stripes (IIb-op/ops-1)
"Cylindrical" Beads with Ground Facets
Red (IIf-tps-1)
Dark purplish red (IIf-tps-2)
Polychrome Beads with a Hot-tumbled Finish
Undecorated "Cylindrical" Beads
Red-on-white (IVa-tp/ops-1)
Red-on-light pink (IVa-tl/ops-1)

Brownish red-on-green (IVa-op/tps-1)
White-on-white (IVa-op/ops-1)
Wound Beads
Simple Monochrome Beads
Undecorated "Spherical" Beads
Blue (WIb-stps/l-3 and WIb-stp/tl/ops/l-2)
Undecorated "Ellipsoidal" Beads
White (WIc-eopl-1)
Mold-Pressed Beads
Simple Monochrome Beads
"Spherical" Beads with a Bi-conical Punched Perforation and Ground Facets
Light greenish blue (MPIIa-sppgfops-2)
Purplish blue (MPIIa-sppgfops-3)

This horizon marker is dominated by undecorated, monochrome drawn and wound beads, followed in frequency by undecorated polychrome drawn beads and facetted, monochrome drawn and mold-pressed beads. Decorated beads are notably infrequent in the fort assemblage, possibly reflecting a relatively high value. The remaining 0.4% of the fort assemblage consists of 116 varieties, 40 types, 13 classes and 6 manufacturing groups, representing unique specimens possibly associated with the horizon marker. Of the possible 39 new varieties reported for the HBC Kanaka village and riverside complex sites, none were represented by more than seven specimens. Adding these to the unique varieties from the fort, there may be as many as 155 unique varieties associated with the horizon marker. Spatial and temporal analysis of the 36 common varieties found at the fort indicate that not all varieties remained common throughout the 30-year occupation.

The fort assemblage is dominated by two bead types (IIa and IVa; Fig. 11), including undecorated, monochrome and polychrome, hot-tumbled drawn beads in white and blue (85% of the fort assemblage). The prevalence of white and blue beads reflects the preference of Native Americans for beads that simulate white and purple shell beads which were the most common items of Native-American exchange. The four most common colors at the fort are white/colorless, blue, green and purple (Fig. 12), matching the relative frequencies reported for various historic inventories of the mid-1840s (Hussey 1972a, b, 1976). From surviving inventories it is also apparent that white and blue beads retained their popularity throughout the entire 30-year period of the fort, whereas green and red beads declined in popularity during the last 15 years. A wide variety of purple beads appears in later assemblages, possibly replacing red ones in popularity. Stylistically, there are two major varieties of white beads (IIa-ops-1 and IVa-op/ops-1), with the polychrome seven times as common as the monochrome in early assemblages, and the monochrome four times as common as the polychrome in the later period. These differences in color frequencies may reflect changing color and stylistic preferences, or changes in procurement from various bead suppliers. Similar changes should be reflected at other sites in the Pacific Northwest.

Prior to 1844, bead types other than drawn were uncommon at the fort; wound and mold-pressed beads became more popular between 1844 and 1852. A comparison of relative percentages of beads from the five major bead-producing areas to the entire fort bead assemblage reveals:

1) The sales shop and Indian trade store exhibit similar attributes, especially relatively high percentages of monochrome (83.3% and 83.5%, respectively, to 72.4%), opaque (73.0% and 82.9%, respectively, to 64.8%), white and purple beads (Fig. 12), and low to moderate percentages of red, yellow, green (Fig. 12) and decorated beads (0.5% and 1.3%, respectively, to 1.2%).
2) The fur store had a high percentage of polychrome beads (43.9% to 27.6%), and a low percentage of spherical (1.1% to 2.3%) and yellow beads (Fig. 12).
3) The chief factor's house had a high percentage of monochrome (90.3% to 72.4%), decorated (9.2% to 1.2%), spherical (7.7% to 2.3%), opaque (87.7% to 64.8%), white and purple beads (Fig. 12) , and a low percentage of yellow, green and blue beads (Fig. 12).
4) The bachelors' quarters privies had a high to very high percentage of monochrome (98.3% to 72.4%), opaque (95.1% to 64.8%), and yellow beads (Fig. 12), with a low percentage of wound (Fig. 11), spherical (trace to 2.3%), transparent (3.8% to 13.5%), translucent (1.1% to 21.7%), white and blue beads (Fig. 12).

Reasons for these relative differences are not readily apparent, especially because particularistic

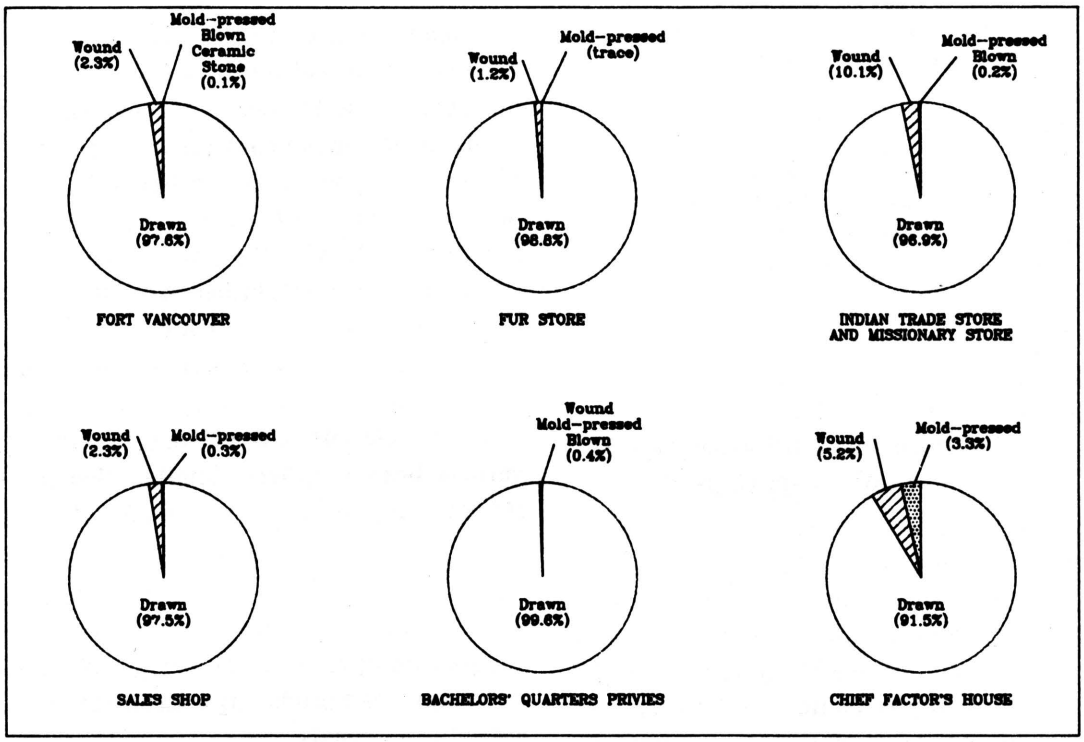

Figure 11. Percentage comparisons of bead types at Fort Vancouver.

events, such as the loss of an entire strand of one variety and color, could account for fluctuations of attributes at any of the structural areas. Contrasting the similarities of the sales-shop and trade-store assemblages to the fur-store assemblage suggests that beads sold within the fort, as opposed to beads repacked for shipment to outlying posts, included the more desirable bead varieties. Thus, more opaque monochrome beads were kept at the fort, while less desirable beads were shipped elsewhere.

The perceived differences require further analysis of tightly dated contexts at the fort, compared to sites around the fort and to other sites in the Pacific Northwest. Initial comparisons signify that there are useful interpretations to be gleaned from comparative attribute analyses. However, until bead attributes are consistently identified for the archaeological assemblages outside the fort, substantive conclusions cannot be reached. The lack of published comparative information for the HBC Kanaka village and riverside complex sites also mirrors difficulties for comparative studies among sites across North America, indicating the need for a standardized nomenclature.

EVALUATION OF THE KIDDS' BEAD CLASSIFICATION SYSTEM

With "some temerity," Kenneth and Martha Kidd, in 1970, proposed a classification system for glass beads for the use of archaeologists that they hoped would allow glass beads to be more easily recognized, properly identified and classified. It was "designed to be infinitely extensible," being based on the processes of manufacture as well as shape, size, color and diaphaneity (Kidd and Kidd 1970:47-8). A few shortcomings of the system were subsequently noted (Hoffman and Ross 1974b:70-4; Karklins 1971; Sprague 1971), and formal revisions were suggested (e.g., Allen 1983; Karklins 1982, 1985; Spector 1974, 1976; Sprague 1983, 1985).

Applying the Kidds' system to the beads from Fort Vancouver, five major problems became apparent (Hoffman and Ross 1974b:70-4): 1) Under what conditions were color descriptions obtained, and how could color variability within "natural" bead groupings be incorporated into the system?; 2) What were the working definitions for bead shapes, and how

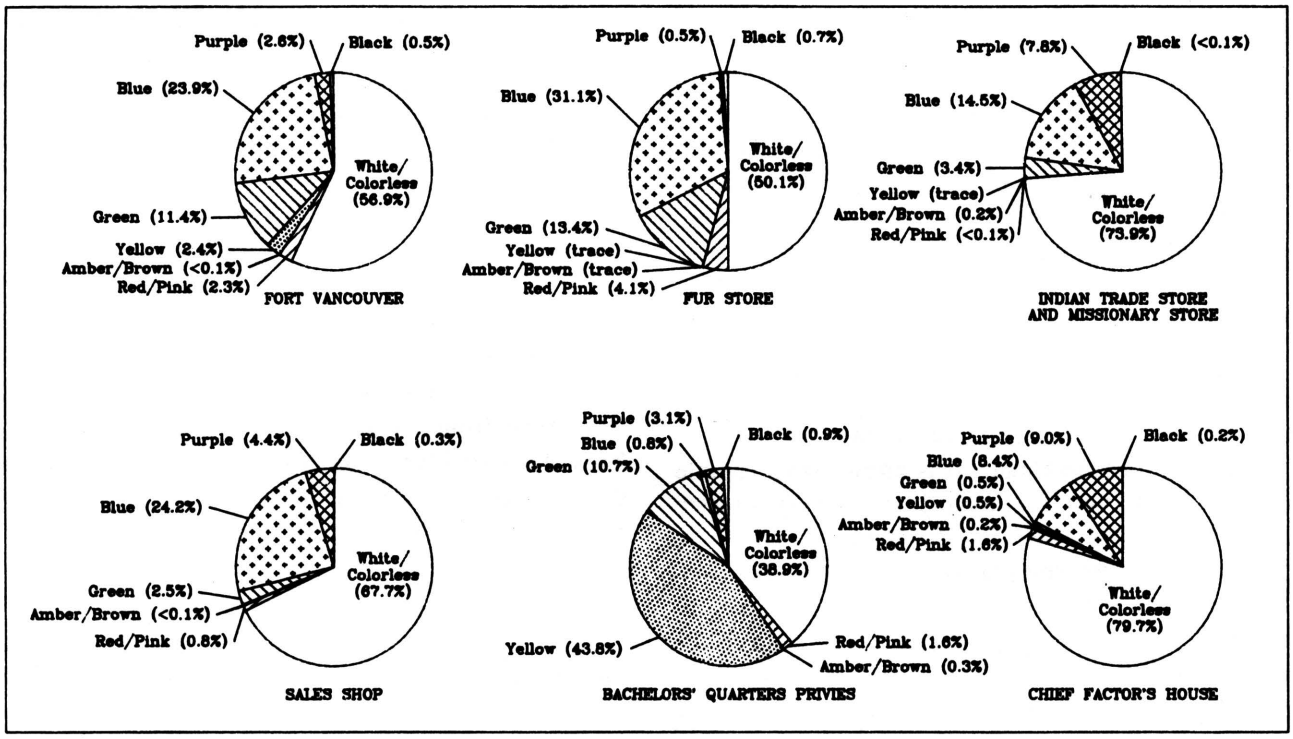

Figure 12. Percentage comparisons of bead colors at Fort Vancouver.

could "natural" population variables be handled without crosscutting arbitrary system groupings?; 3) How could "natural" size populations be effectively recorded within the system?; 4) How could new manufacturing groups be incorporated into the system?; and 5) How could new bead varieties be distinguished effectively from previously identified varieties, and subsequently incorporated into the system?

Some of these issues have been addressed by revisions suggested by Karlis Karklins (1982, 1985), such as new manufacturing groups being identified with new nomenclature. However, many of the existing classification categories combine multiple discrete attributes or assume some unique combinations of attributes. If a bead with one or two additional or different attributes is encountered, an entire class may require revamping. The classification of beads for Fort Vancouver uses a combination of the Kidds' nomenclature and attribute-specific nomenclature to preserve as much discrete data as possible. Unfortunately, the resultant typology lacks simplicity and forces beads into group hierarchies based on the selection of one or more unique attributes over others. As the correlations of attributes with specific historic structures within Fort Vancouver indicate, certain attributes, such as the presence or absence of decoration or the exact shape of a bead, must be clearly indicated for quantitative comparisons.

Many of the historical bead terms observed on manifests and inventories could not be correlated positively with archaeological types or varieties at Fort Vancouver. In their attempt to address bead sizes, Kenneth and Martha Kidd (1970:47) state that historical bead terminology is of "no assistance to the archaeologist in classifying archaeological specimens." Interpreted within its most restrictive sense, this statement is supported by the research conducted at Fort Vancouver; but historical terminology has been highly useful for interpreting the defined varieties. For example, a few varieties and sizes have been hypothesized as being beads of Chinese manufacture, and archaeological bead sizes have been hypothetically correlated with historical sizes. Thus, while archaeological bead classification may create groupings dissimilar to historical groups, there are instances where hypothetical historical sizes may be defined and used for cultural interpretations.

RECOMMENDATIONS FOR A REVISED BEAD CLASSIFICATION SYSTEM

When the Kidds' system is replaced, the revision must explicitly identify discrete attributes of a specific bead or bead variety. The Kidds occasionally used unique letters to identify specific attributes (e.g., "f" for facetting), and a revised system should expand upon this approach to cover all attributes (e.g., "gf" for ground facets, "mf" for molded facets).

The Kidds' use of the terms "very small" to "very large" to identify bead sizes masks "natural" size populations identified in relatively large archaeological assemblages. It is known from sample cards that beads were sold historically in very discrete sizes, albeit ones that vary from manufacturer to manufacturer. The sample measurements of beads from Fort Vancouver demonstrate that unique, uniform sizes can also be distinguished in archaeological assemblages. It is possible that such metric data will eventually result in the recognition of sizes that can be attributed to specific bead-manufacturing centers, thus helping to determine a bead's country of origin. If researchers record only such relative size attributes as "very small," then potentially significant data will be lost.

The same may be stated for the sizes of bead perforations. Perforation sizes were not recorded at Fort Vancouver. Historical photographs of bead-manufacturing equipment in Venice at the turn of the 20th century (Liu 1986:51, Fig. 5) reveal that drums covered with fine upstanding wires were used to pick up beads for subsequent stringing. Such a device would pick up beads with perforations large enough for stringing, while beads with smaller or occluded perforations would be left behind. Thus, only beads that had perforations large enough to be picked up would be marketed. The remaining beads would presumably be remelted, or discarded. From this observation, it would appear appropriate that beads of different sizes, and possibly intended for different applications, might be sorted by perforation size. Roderick Sprague (1985:99) argued that perforation diameters of archaeological specimens should be measured "until more is known about bead manufacture and dating," while Karlis Karklins (1985:113) stated that "the size of the perforation has not been found to be significant." If bead manufacturers only used perforation sorting to separate beads with open vs. occluded perforations, then measurements taken by researchers will be meaningless. However, if manufacturers sorted beads by perforation size, there may be a culturally-significant reason relevant to the use of beads.

CONCLUSIONS

The bead assemblage from Fort Vancouver provides an excellent type collection for identifying cultural and temporal affiliations for the Pacific Northwest from 1829 to 1860. The assemblage has been used to infer a complex horizon marker for dating other sites in the Northwest. This horizon marker includes undecorated, monochrome drawn and wound beads, undecorated polychrome drawn beads, and facetted, monochrome drawn and mold-pressed beads. Decorated beads are notably infrequent in the fort assemblage, probably due to their relatively high value.

Subtle changes in preferred bead colors and styles during the 30-year period suggest that white-on-white drawn beads may have been common prior to the mid-1840s, with purple beads and monochrome white beads becoming common after the mid-1840s. There may be other subtle variations, such as the appearance of mold-pressed beads with ground facets and punched perforations after the mid-1830s, and the introduction of mold-pressed beads with molded facets possibly after the 1850s. Definitely, the appearance of "Prosser-molded" beads coincides with their 1840 patent date, but their presence may also signify a post-1850s American origin, rather than an HBC or British source. Similarly, the presence of multi-sided drawn beads with four rows of ground facets may also signify an American rather than British source.

Correlations of historical bead terms from HBC documents with archaeological groupings have been limited. "Cut glass" beads appear to compare favorably on the basis of color with facetted, multi-sided drawn beads (subtypes If-d and IIIf-d), and may include facetted, mold-pressed beads (type MPIIa-sppgf). "Canton" beads appear to represent blue "spherical" wound beads. The only countries positively identified as bead distribution points for Fort Vancouver are Great Britain and China, and

perhaps the United States. Probable manufacturing sources include China and Bohemia (now part of Czechoslovakia), probably Venice, and perhaps Great Britain.

Size analysis of the hot-tumbled drawn beads indicates that "seed" beads were sized by sieving, and evidence from discrete varieties indicates that at least two intervals existed, 0.5 mm and 0.8 mm. Discrete sizes for wound beads are generally non-demonstrable, except for the three sizes of blue "spherical" wound ("Canton") beads which have 4-mm intervals between sizes. If sizes exist for the facetted mold-pressed beads, they may be based upon 1-mm intervals. As with the all-molded beads, sizes are generally determined by the size of the mold. However, mold sizes may not be based on uniform intervals and, until more specimens are measured, identification of mold sizes will be speculative. Size analysis of "Prosser-molded" beads may provide the best evidence for the existence and definition of mold sizes.

Techniques for classifying beads from archaeological contexts have advanced significantly since the introduction of the Kidds' (1970) classification system. As use of the system has demonstrated, there is a need to constantly reexamine the manufacturing groups and classes that are presently recognized. Typologies founded on less than a clear understanding of the techniques used by beadmakers are prone to create confusion in comparative studies. Likewise, typologies that lump or ignore relevant attributes are prone to obscure significant historical observations. The Kidds' system initiated the accurate classification of archaeological bead assemblages, and reasons for its improvement have been well defined over the past 30 years, with a few derived from the analysis of the Fort Vancouver assemblage. Even with the revisions and modifications adopted in the present classification, major improvements must be addressed, especially a standardized nomenclature that will allow specific attributes of manufacture and decoration to be clearly described.

ACKNOWLEDGEMENTS

From the initiation of my research on the beads of Fort Vancouver in 1970, Dr. Roderick Sprague has provided constant advice on the identification of beads, especially the troublesome groups and classes that had not been adequately described previously. Similarly, Karlis Karklins provided copies of numerous references for unique groups, classes and types, helped to refine technical language regarding manufacturing techniques, and provided substantive criticism and editorial suggestions for this article. Thank you both for your assistance and encouragement. Finally (or firstly as the case may be), my appreciation to Peggy Sasano Baker, Gary Baker, Caroline Carley, Charles Hibbs, and my wife, Caren, for their eye-straining efforts in sorting, cataloging and identifying the colors of the 100,000+ beads from Fort Vancouver.

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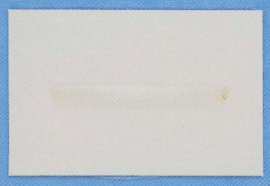
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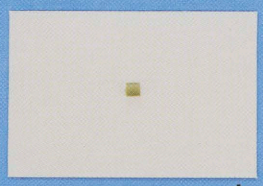
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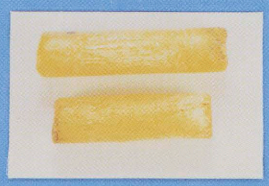
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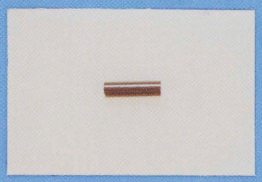
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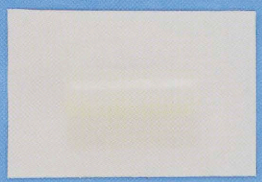
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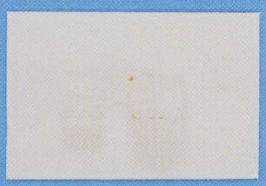
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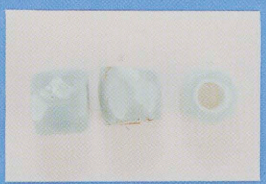
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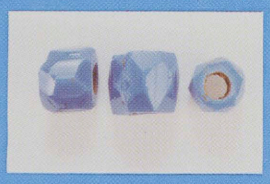
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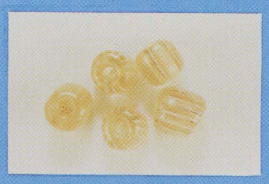
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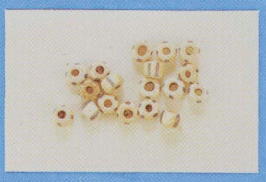
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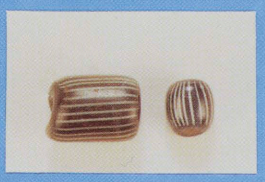
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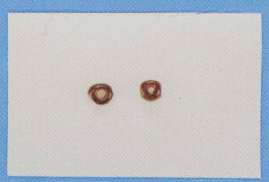
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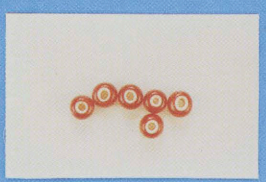
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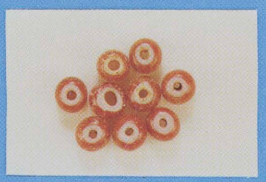
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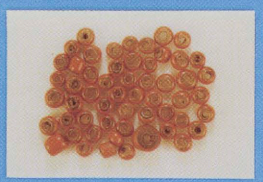
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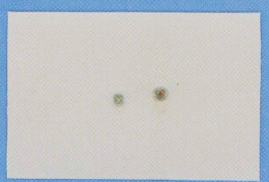
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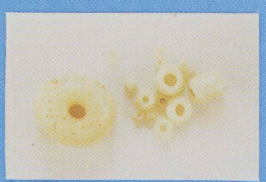
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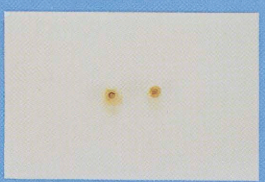
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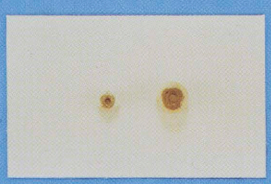
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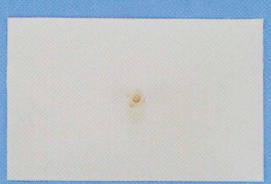
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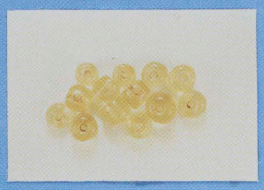
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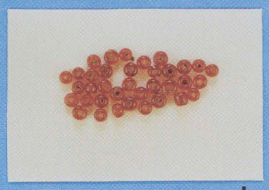
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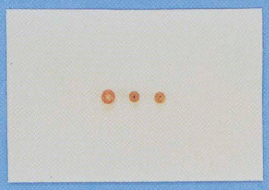
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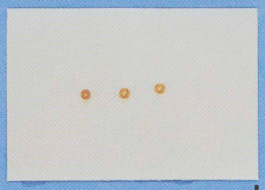
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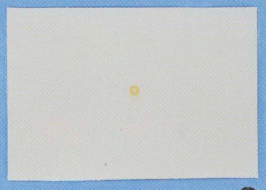
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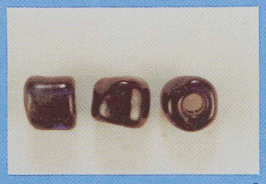
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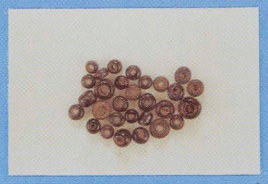
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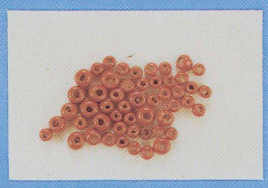
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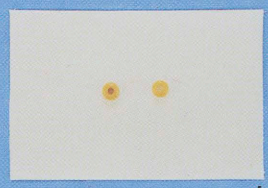
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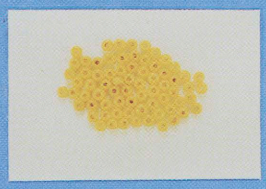
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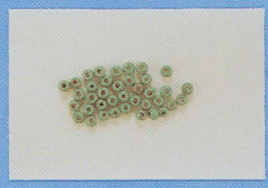
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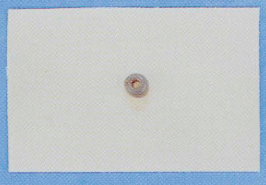
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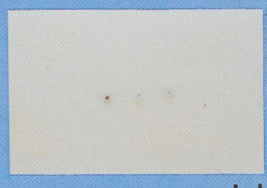
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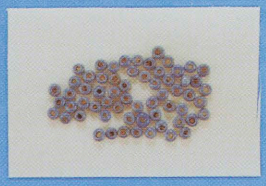
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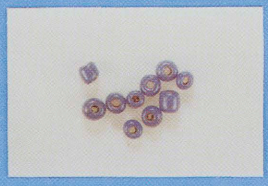
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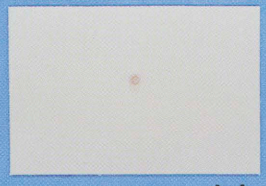
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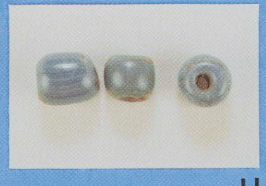
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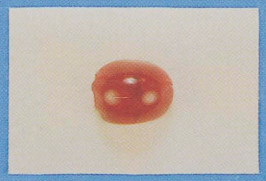
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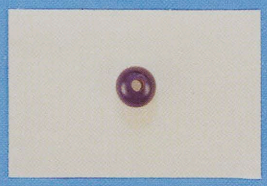
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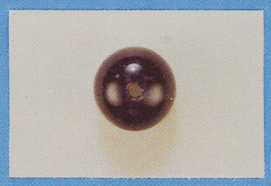
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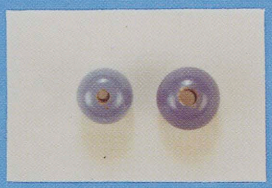
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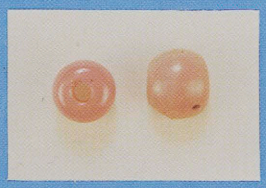
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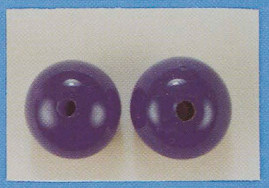
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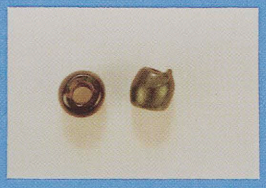
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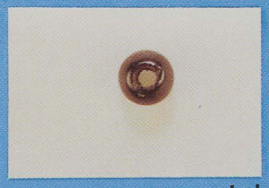
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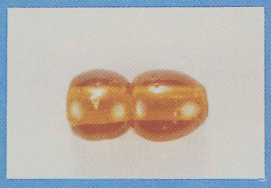
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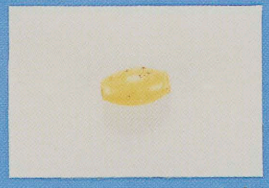
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ii


jj


kk


ll

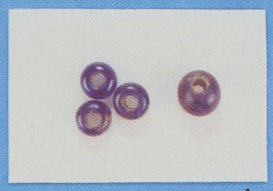

mm

cm

FORT VANCOUVER

PLATE IV


a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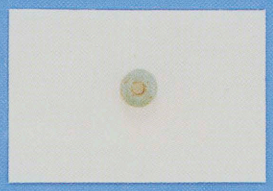
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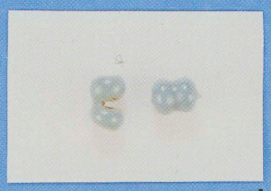
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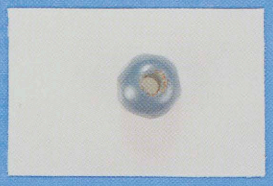
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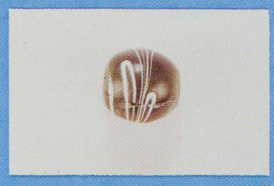
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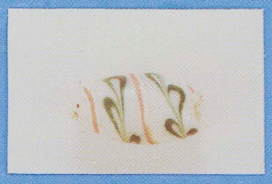
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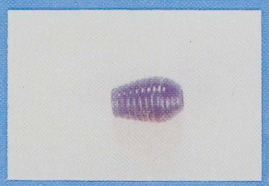
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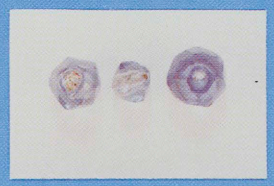
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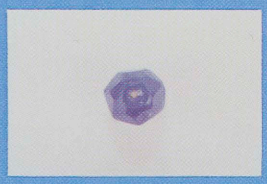
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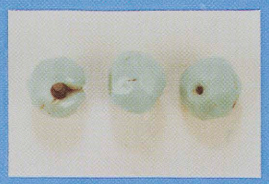
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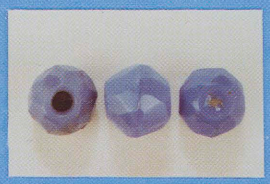
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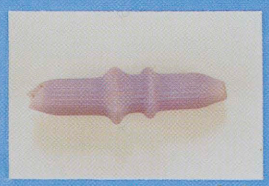
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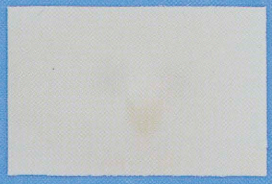
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