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Nueva Cadiz and associated Beads

HISTORY AND DESCRIPTION

BY

ROBERT K. LIU, PH.D.

A NEW LOOK

BY

ELIZABETH HARRIS

PHOTOGRAPHY BY ROBERT K. LIU

NUEVA CADIZ BEADS
HISTORY AND DESCRIPTION*

Robert K. Liu, Ph.D.

Few beads are as distinctive, easy to identify and date as the Nueva Cadiz, Plain and Twisted. These are cane beads of square cross-section, with or without a twist; most commonly they are in various shades of blue, ranging from robins-egg, 'teal' to dark navy. In eastern Canada, in former Huron territory, there is a variety in opaque 'turkey' or 'brick red.' Dating for any variety of Nueva Cadiz ranges from mid-16th to mid-17th century. Except for specimens in two Portuguese collections, these square cross-section cane beads have only been found in the New World, in Spanish contact sites, except for the red variety, which have a probable French derivation (Fairbanks, 1968). The blue varieties range from northeastern U.S. (New York, Pennsylvania) to Argentina (including sites in Alabama, Florida, Costa Rica, Nicaragua, Dominican Republic, Canal Zone, Ecuador, Brazil, Venezuela, Colombia, Bolivia, and Peru, the largest source) (Fairbanks, 1968). Since the primary report on these beads (Fairbanks, 1968) is not easily accessible, and because some additional information has accumulated, I thought it worthwhile to figure and briefly describe the Nueva Cadiz beads.

Nueva Cadiz beads, of the blue and possibly red varieties, both Plain and Twisted, appear from sites around Lancaster, PA. (Fenstermaker, 1974; Liu, 1974) and possibly the red twisted variety, from upper New York state (Pratt, 1961). When fully documented, these finds can further the distribution record. I have had opportunity to examine one strand of blue cane beads, imported from Africa, which are identical to Nueva Cadiz Plain; the color is 'teal' blue, the condition perfect, and only differs from New World specimens in having a proportionately thicker outer layer of blue glass. Although larger in diameter than most specimens I have examined, the 14mm diameter is within the range cited by Fairbanks (1968). There appears to be at least one other such strand from Africa, but in a much corroded condition. It would be extremely important to determine if these beads are really contemporaneous to the New World speciments, or are later copies of this type. In addition, Fairbanks (1968) reported that twisted specimens which appeared to have inlaid stripes were "...simply the thinning of the surface layer which allows the inner layer to show through." I have examined Peruvian specimens, one of which may show this effect, but at least two do have genuine, inlaid stripes. A 'teal' blue specimen from the study collection of the Museum of the American Indian, New York, has a broad black stripe down the center of the twist; similar specimens have been seen in imported strands from Peru. A dark blue specimen

*Originally printed in Identification section of the Bead Journal, Vol.3, No.3&4, 1978. Reprinted with the permission of the author and publisher.

from coastal Peru has light blue and brick red inlaid stripes at the four edges of the twisted bead. There is the possibility that such beads with inlaid stripes are not contemporaneous with other Nueva Cadiz beads, but their association suggests otherwise.

I thank Anna Roosevelt and U. Vincent Wilcox for permission to study specimens of Nueva Cadiz in the collection of the Museum of the American Indian; Jay Louthian for the gift of Peruvian specimens; Liza Wataghani for the oppotrunity to examine the strand from Africa and Elizabeth J. Harris for extremely valuable bibliographic help.

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NUEVA CADIZ AND ASSOCIATED BEADS

A NEW LOOK

Elizabeth Harris

The beauty of the Nueva Cadiz beads and the mystery of their origin give them a continuing fascination for students of beads. In recent years there has been an increased flow of these beads from Peru. New variations are available for study. It is appropriate, therefore, that we take a new look at the subject.

Fairbanks and Goggins applied the name Nueva Cadiz to all the square cross-section, tube drawn beads that they found in Spanish contact sites(3). Since then, popular usage has limited the name to square cross-section beads of three layer construction with a thin, opaque white, second layer. This limitation is useful and will be followed here.

The function of the white layer is clearly illustrated in beads 10B and C. The probable manufacturing sequence for these beads is as follows. A paraison of dark blue glass was formed and marvered into a square cross-section. Approximately half of each face of the square was then striped with white. Finally, the paraison was given a thin coating of transparent turquoise blue glass, drawn out, and twisted. The turquoise coating is invisible over the dark blue core, but creates a very luminous effect over the white stripes.

Lines 1-3 of Plate I show a type of Nueva Cadiz bead found in eastern Canada and the northeastern United States. All of these beads have a brick red core lightly swirled with brown. The teel blue surface coating is contaminated with the core glass. This darkens and dulls the color and produces the irregular streaking visible on most of the specimens. The diameters of the samples range from 6MM, 1B and 2A, to 9MM, 3B. Most of the samples have recently broken ends. Only 1B at 34MM, 2B at 28MM and 2C at 31MM appear to be intact.

Lines 4 through 10 of Color Plate I give a good sampling of the shades of turquoise blue found in Nueva Cadiz beads from Peru. The bright turquoise of beads 4A and B and the rich ultramarine of 7B and 8B are rare. Lines 11 and 12 show examples of the dark blue versions.

There are two types of striped Nueva Cadiz beads in this study. Beads 10B and C were described in detail above. The second type is illustrated by beads 10A and 12. A third variation of the latter type is known, turquoise blue with brick red stripes on two opposite corners and deep blue on the alternate points. The probable manufacturing sequence for these beads is as follows: A three layer paraison was formed and marvered into a square cross-section. Thin canes of a contrasting color were fused along the corners of the square. The whole was then drawn out and twisted.

As an added decorative note some of the beads from Peru have the corners ground off. Among the turquoise blue beads 4B is the only example. The practice seems to be more common with the dark blue beads. See 11A,B,C,D,F.

PLATE I

LEGEND

The beads shown on lines 1-3 of Plate I and lines 17-24 of Plate II were recovered by G.B. Fenstermaker from a site in Lancaster County, Pennsylvania, that he identifies as early Susquehannock and dates to the mid-16th century. He feels that the beads were traded up the Susquehanna River from Spanish contacts in the Chesapeake Bay area.

The beads on lines 4-12 are from Peru.

All beads on this plate are of three layer, square cross-section, tube drawn construction. A second layer of thin, opaque white glass is present in every case. The individual beads will be described below in terms of the color and opacity of their core glass.

For reference purposes the beads on each line should be considered to be lettered A,B,C, etc. reading from left to right.

Lines 1-3 - All beads, opaque brick red lightly swirled with brown.

Line 4 - A. Clear. B. Transparent light turquoise. C. Transparent medium turquoise.

Line 5 - A. Transparent light blue. B. Translucent medium blue.

Line 6 - A. Translucent medium blue. B. Opaque dark blue.

Line 7 - A. and B. Opaque dark blue.

Line 8 - A. and B. Opaque dark blue.

Line 9 - A,B and C. Opaque green.

Line 10 - A,B and C. Opaque dark blue.

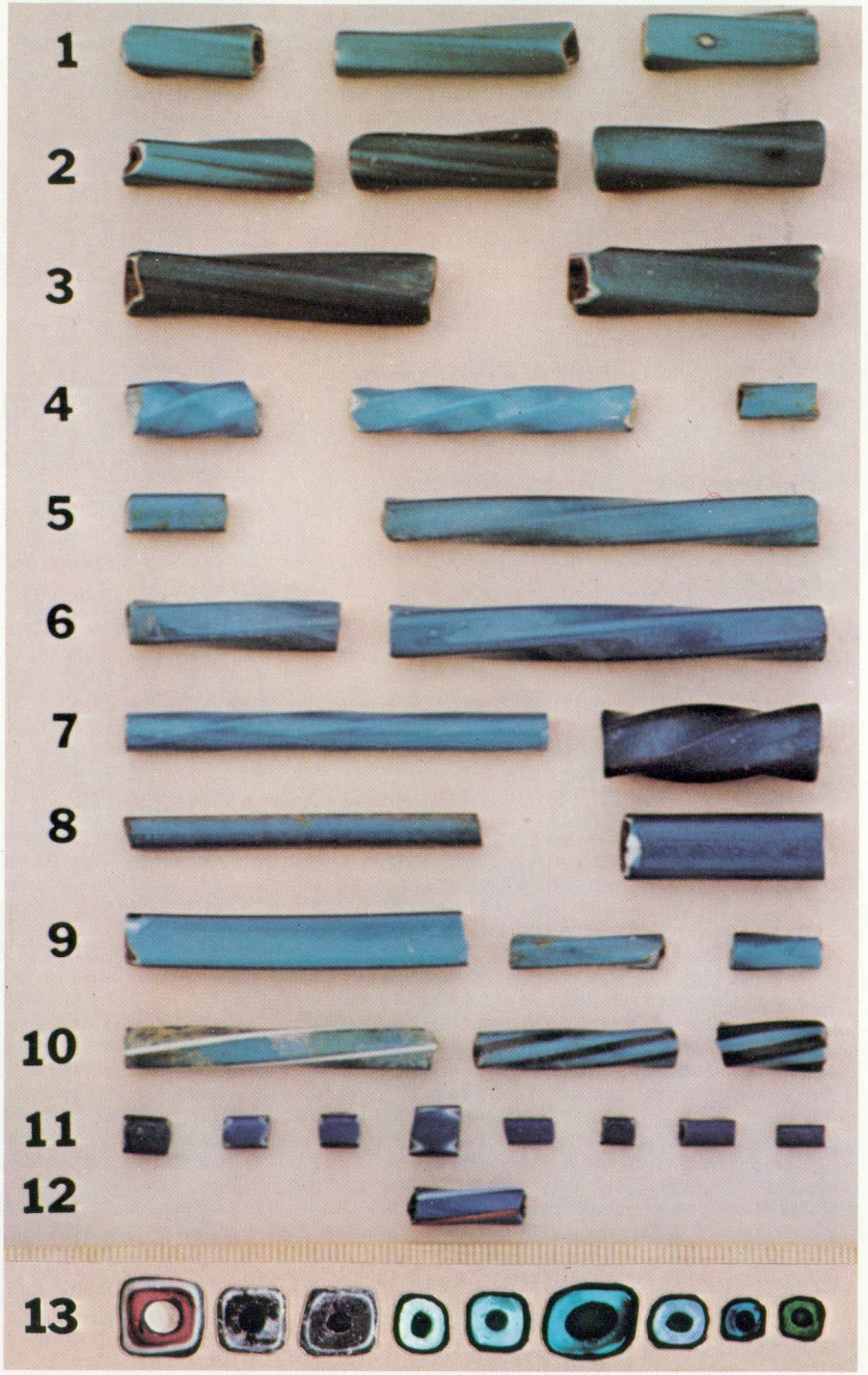
Line 11 - A. Clear. B. Transparent light turquoise. C. Transparent medium turquoise. D. Transparent light blue. E. Translucent medium blue. F. and G. Opaque dark blue. H. Translucent yellow green.

Line 12 - A. Opaque dark blue.

Line 13 - A. Opaque brick red. B. Opaque dark blue. C. Opaque green with brown stain. D. Clear. E. transparent light turquoise. F. Transparent medium turquoise. G. Transparent light blue. H. Translucent medium blue. I. Translucent yellow green. Cross-sections are not to scale.

G. B. Fenstermaker
1986

PLATE I



A variety of different core colors is found among the Peruvian Nueva Cadiz. In addition to the colors shown on Line 13 of Plate I a translucent pale grey is known. There is no discernable relationship between surface color and core color. Exhibit B gives the distribution of the core colors in a random sample.

The core glass of many of the Nueva Cadiz from Peru is discolored with a brown stain. If one stands in front of a window, holds a stained bead vertically and looks obliquely down the hole with a six power glass, light transmitted through the wall of the bead shows the true color. This can be checked against unstained examples. This procedure revealed a core color for which no unstained example was available. A very thin flake of glass struck from the center of one of the beads confirmed that the color is a deep green.

Examples were selected for Color Plate I to show the range of sizes as well as colors available for this study. The diameters of the turquoise blue beads vary from 4MM, 9B, to 10MM, 8B. The longest bead is 6B at 59MM. Short lengths and small diameters are the rule for the dark blue beads. The diameters range from 3MM, 11H, to 7MM, 11D. The lengths vary from 4MM, 11F, to 7MM, 11D and G.

Fairbanks dates the Nueva Cadiz in Spanish contact sites to the 16th and early 17th centuries(3). Pizarro conquered Peru in 1532-33. The flow of beads and other trade goods followed shortly after.

The concentration of the beads in Peru can be attributed to several interrelated factors. The first of these was the establishment of a well organized trade route. The wealth of Peru was shipped to Panama City and then carried on pack animals over the Golden Road, first to Nombre de Dios, then later to Portobello on the Caribbean Coast(19). In May or June the Spanish treasure fleet and other merchant vessels rendezvoused there to participate in the famous Portobello Fair(19). European goods in considerable quantity were unloaded, packed back to Panama, and shipped to Peru. Distribution within Peru was simplified by the existence of urban centers of population. Finally, the turquoise and dark blue colors were undoubtedly very attractive to the Indian population, echoing their use of native turquoise and lapis. Gallo shows several necklaces of Nueva Cadiz bead with Spanish goldwork illustrating that the Spanish also valued these beads(5).

Dating of the red core Nueva Cadiz in eastern Canada and the northeastern United States is more complex. In the 16th century the only regular bead trade north of Florida was in the Gaspé area of Quebec. The cod fishermen who dried their catch on shore brought beads and other goods to trade for furs(15). The other 16th century contacts were in the area of the Carolina Banks where there was one French, two Spanish, and two English attempts at colonization. All of which failed. In the same period an attempt to establish a Spanish mission on the Chesapeake Bay also failed(15). In the northeastern United States, that is from the Gulf of St. Lawrence south to the Carolina Banks, there were only a few random contacts by explorers(15). These few contacts can hardly have infused many beads into the area. Also, the extent to which beads

entered the area through inter-tribal trade from Gaspé and the Carolinas is unknowable. With the founding of Jamestown in 1607 and Quebec in 1608 begins the period of regular trade in eastern Canada and the eastern United States. These dates form a realistic early horizon for beads in the area.

The early date of the Nueva Cadiz beads may explain why so few have appeared among the flood of beads from Africa. The slave trade reached its height in the late 17th and 18th centuries(19). The real economic exploitation of Africa was begun even later. By these dates the production of Nueva Cadiz had apparently ceased.

It is worthwhile to record the few beads from Africa of which we have any knowledge. Dr. Liu describes two strings, the largest number of which I am aware. A single bead similar to 11D is in the collection of Michael Heide. The only one he has found in 15 years of importing and collecting. Three very battered fragments of beads approaching 14MM in diameter with opaque pale grey cores were observed in the stock of Ann Maurice, the Berkeley dealer. They were in heirloom strands of large beads from Mali accompanied by van der Sleen's pentagonal tubes and pentagonal beads. The round cross-section examples, 14C and D, were found in a large box of sweepings from an unnamed West African bead market.

Only a limited variety of beads associated with the Nueva Cadiz beads from Peru were available for this study. We do not know if they are truly representative of the range of beads in Peru or represent what the guaqueros think are worth bringing to market. In any case, the association with the Nueva Cadiz must be viewed with some reservation because all the beads are from unscientific digs. The most common is a square cross-section monochrome dark blue tube, 16C and D. The next most common are the small chevrons with faceted ends, 15A, and a green glass bead made by a very primitive technique, 15E(8)(12). Beads 15C and D are single specimens and have close parallels with beads from late 17th and 18th century sites in the eastern United States(7)(17). Beads 16A and B also occur in translucent monochrome blue green glass and beads similar to 18C, D,E and 20A are known from other collections.

The red core beads from Pennsylvania were found with a rich assortment of other beads as shown on Plate II, Lines 17-24. There are remarkably few parallels with the beads from Peru; only the small chevron with ground ends, 23E; the square cross-section monochrome blue tube, 18A; and the three layer dark blue bead, 22B.

The big question is, of course, who made the Nueva Cadiz beads. Venice as the source has never been seriously considered because of the very limited distribution of the beads. Fairbanks and Goggins attributed them to Spain(3). Other students of beads do not consider this a likely source since there exists no tradition of Spanish bead making. The Nueva Cadiz is a highly sophisticated bead, the product of an advanced technology.

To determine if their chemical composition would offer any clues as to their source, an energy dispersive X-ray analysis was made of nine Nueva Cadiz and three associated

EXHIBIT A

ENERGY DISPERSIVE X-RAY ANALYSIS

BEAD NUMBER	DESCRIPTION OF BEAD	SOURCE	ELEMENTS - WEIGHT PERCENT									
			(Na) SODIUM	(Mg) MAGNESIUM	(Al) ALUMINUM	(Si) SILICON	(K) POTASSIUM	(Ca) CALCIUM	(Fe) IRON	(Zn) ZINC	(Pb) LEAD	(Cl) CLORINE
17A	Square, brick red	Penn.	12	2	3	73	2	8	0.4	-	0.3	1
21A	Round, brick red	Penn.	8	1	2	70	6	8	2	2	2	1
8B	N.C., dark blue core	Peru	6	1	-	76	5	8	0.2	3	0.3	1
12	N.C., striped, dk.bl.core	Peru	6	1	-	80	4	7	0.5	1	0.9	1
1A	N.C., brick red core	Penn.	5	1	3	75	5	6	0.7	3	0.4	1
14C	Round, pale turquoise core	Africa	5	-	2	77	5	7	0.5	3	0.3	1
7B	N.C., dark blue core	Peru	4	1	2	89	1	2	0.2	1	0.7	1
6B	N.C., dark blue core	Peru	2	1	4	85	3	3	0.8	2	0.5	1
9C	N.C., green core	Peru	1	1	-	85	3	7	0.2	3	0.4	1
5A	N.C., light blue core	Peru	-	1	-	92	2	3	0.2	2	0.3	1
4A	N.C., clear core	Peru	-	1	-	90	1	5	0.2	2	0.3	1
10A	N.C., striped, dk.bl.core	Peru	-	1	2	91	1	3	0.3	1	0.4	-

NOTES ON ANALYSIS PROCEDURE. An energy dispersive X-ray microprobe analysis was conducted on the outer surface of twelve beads. The analysis was conducted using an area scan at the lowest magnification to average over the largest possible area. The area analysed was about 0.1 inch by 0.1 inch and the probe penetrates about 0.00004 inch into the surface. Two areas were measured on each bead and if the peaks were significantly different a third area was measured. The peak height ratios were than averaged. The peak heights were converted to concentration by running standards. The results, except for iron and lead, were rounded to the nearest whole number. The calculation assumed that fluorescence and absorbtion had negligible effects on the peak heights in the beads.

Analysis by EMS Laboratories, Hawthorne, CA. A.J. Kolk, Jr., Technical Director.

EXHIBIT B

DISTRIBUTION OF CORE COLORS
IN A RANDOM SAMPLE OF NUEVA CADIZ BEADS FROM PERU

surface color of bead	total sample	COLOR OF CORE GLASS								
		clear	tp. lt. grey	tp. lt. turq.	tl. md. turq.	tp. lt. blue	tl. med. blue	op. dk. blue	tl.yel.green	op. green
turquoise	251	2	5	22	23	1	19	84	-	95
dark blue	46	2	-	2	1	2	1	37	1	-

beads. The results are shown in Exhibit A. The beads have been listed in the order of their sodium content with the highest first. A heavy line has been drawn across the chart at the point that the amount of sodium becomes less than the amount of potassium. It is assumed that the beads above the line are made of soda-lime glass and those below the line of potash-lime glass. The red core Nueva Cadiz has equal amounts of sodium and potassium, but since the other beads from Pennsylvania definitely belong to the soda-lime group, it is logical to include it, too. The bead from Africa also has equal amounts of the two alkalis. This bead is anomalous in other ways as will be discussed later.

Visual inspection is enough to convince one that the red core Nueva Cadiz is the product of a different industry than the beads from Peru. It is crudely made in comparison. Fairbanks suggested that they were French(3). An English source has been posited for two soda-lime beads, not Nueva Cadiz, from Burr's Hill, a 17th century site in New Jersey(6). Certainly, the Dutch bead industry remains a likely contender (22). All of these bead industries had access to the area of North America where the beads are found. Unfortunately we do not have enough information about the beads made in these three countries during the 16th and 17th centuries to carry our identification to a conclusion.

The soda-potash beads from Peru confirm that the beads were not made in the Iberian Penninsula. The Spanish made soda-lime glass in their home territory(4). However, during this period the Spanish Empire included the southern half of Italy, portions of France, and the Low Countries(2).

As early as the 10th century potash-lime glass was produced in the inland portions of France, England and Germany (21). Spain was in conflict with France and England during this period. So these countries are not a likely source of trade goods for the Spanish. Considering our ignorance of what and where French beads were made, the areas of France under Spanish rule must remain a possible source of the beads.

We do not believe tube drawn beads were made in the Low Countries as early as the 16th century(23). However, these countries served as a transshipment point for beads made elsewhere in Europe(23). Germany, then, becomes a very possible source. Karklins describes several beads from Boeren-Wetering in the van der Sleen collection that are obviously Nueva Cadiz demonstrating that they were in the area(9). Again a definite answer awaits more research in Europe.

The three beads from Peru and the one from Africa that fell in the soda-lime group are in particularly good condition suggesting that they belong to a later generation of beads. To test this hypothesis the African bead and 8B were tested for the presence of antimony using an electron microprobe. A significant amount was found in the African bead but none in 8B. It is believed that this element became a deliberate additive in glassmaking in the 17th century(1). This preserves a possible 16th century date for our Peruvian beads.

Do the three well made soda-lime Nueva Cadiz indicate the existence of a third source for these beads? Not necessarily. Both alkalis were derived from plant ash. It was not until the 18th century that the difference between the two was recognized(21). The soda producing ash was exported from the Mediterranean area including Spain(21). A return to soda glass in the 15th and 16th centuries has been noted in some areas that had been making potash glass(21). It is possible, therefore, that these beads came from the same industry as the other beads from Peru.

The source of Nueva Cadiz beads remains a mystery. It is hoped that this brief study has suggested some new possibilities and will inspire continued research on the subject.

Much thanks are due to Michael A. Lasky who, over a period of several years, combed the bead resources of Peru for the variant forms of Nueva Cadiz that made this study possible; to G.B. Fenstermaker for the loan of the red core beads from Pennsylvania, without which no study of Nueva Cadiz would be complete; to Gabrielle Liese and Robert K. Liu for the loan of beads from their collections; to Edith Arlen who allowed me to use her stock for the core color distribution study; and to Sally Lopez and Jamey Allen for important contributions to the bibliography.

PLATE II

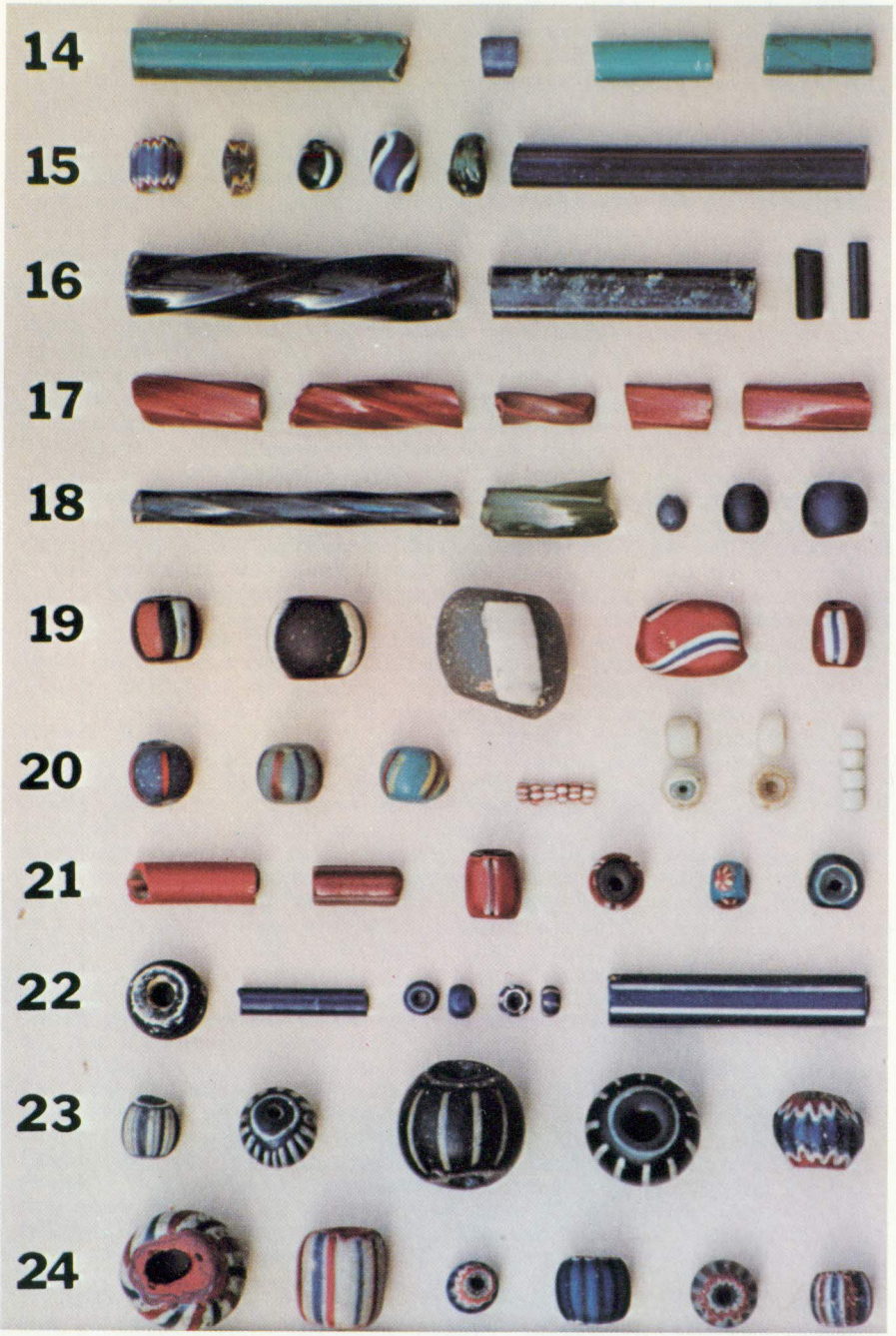


PLATE II

LEGEND

Please see Legend, Plate I, for general note concerning beads on Lines 17-24.

All beads on Plate II are of tube drawn construction except 15-E. Rounded beads have been hot tumbled except 15-A, B and E, 23-E. The colors of multi-layer beads are listed beginning with the outer layer.

Line 14 - A. Three layer; turquoise, white, transparent medium turquoise core, Peru. B. Three layer; dark blue, white, clear core, Peru. C. Three layer; turquoise, white, opaque pale turquoise core, Africa. D. Three layer; turquoise, white, opaque blue grey core, Africa.

Line 15 - All beads from Peru. A. Seven-layer chevron; deep blue, white, brick red, white, translucent turquoise, white, transparent pale grey core. Ground ends. B. Seven layer, square cross-section, chevron; deep blue, white, brick red, white, translucent pale grey, white, translucent pale grey core. Ground ends. C. Monochrome black, white stripes. D. Monochrome white, deep blue stripes. E. Translucent blue green glass, made by primitive molding method. F. Square cross-section, monochrome translucent blue.

Line 16 - All beads from Peru. A-D. Square cross-section, monochrome, translucent dark blue.

Line 17 - A-E. Two layer, square cross-section; clear, opaque brick red. A,B,D and E are fragments.

Line 18 - A. Square cross-section, monochrome translucent blue. B. Square cross-section, monochrome, transparent light green. Fragment. C. Monochrome, opaque blue. D-E. Monochrome translucent blue.

Line 19 - A. Monochrome opaque black, brick red and white stripes. B. Monochrome opaque black, white stripes. C. Monochrome opaque grey green white stripes. D. Flattened, monochrome opaque brick red, spiraled black and white stripes. E. Monochrome, opaque brick red, black and white stripes.

Line 20 - A. Monochrome, opaque blue, brick red stripes. B. Monochrome, opaque grey green, brick red and blue stripes. C. Monochrome, opaque turquoise, spiraled yellow and brick red stripes. D. Seed beads, three layer; clear, red and white stripes, clear core. E. Two layer; opaque white, transparent turquoise core. F. Two layer; opaque white, clear glass core. G. Two layer; opaque white, clear glass core.

Line 21 - A. Two layer; opaque brick red, greenish yellow core. B. Two layer; opaque brick red striped with tan, translucent medium blue core. C-D. Two layer; opaque brick red striped with black and white, transparent yellow green core. E,F. Three layer, transparent deep turquoise inlaid with three slices of red and white fancy cane, opaque white, transparent deep turquoise core.

Line 22 - All beads are three layer. A-D. Translucent deep blue, opaque white, translucent deep blue core. E-G. Translucent deep blue striped with white, opaque white, translucent deep blue core.

Line 23 - A,B. Three layer; opaque deep blue striped with white, opaque white, opaque deep blue. C,D. Three layer; opaque black with white stripes, opaque white, opaque black. E. Five layer chevron; deep blue, white, brick red, white transparent grey green core. Ground ends.

Line 24 - A,B. Four layer chevron; white striped with brick red and deep blue, brick red, white, brick red. C. Four layer chevron; deep blue, white, brick red, transparent grey circular core. D. Five layer chevron; deep blue, white, brick red, white, transparent grey core. E,F. Five layer chevron; clear, white striped with brick red and deep blue, brick red, white, transparent grey core.

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