A PILOT STUDY OF WICHITA INDIAN ARCHEOLOGY AND ETHNOHISTORY

Final Report To

THE NATIONAL SCIENCE FOUNDATION

Grant GS-964

August 1967

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Assembled by

Robert E. Bell
Edward B. Jelks
W. W. Newcomb

Contributors:

Tyler Bastian
Robert E. Bell
Jay C. Blaine
W. T. Field
Kathleen Gilmore
Inus M. Harris
R. K. Harris
Edward B. Jelks
Harald P. Jensen, Jr.
Dessamae Lorrain
David Lubell
W. W. Newcomb
C. A. Smith, Jr.
J. Ned Woodall

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Trade Beads, Projectile Points, and Knives

by R. K. Harris and Inus Marie Harris

Glass and Shell Trade Beads

The purpose of this paper, which represents several years of research, is threefold.

The first objective is to describe the types of glass and shell beads of non-Indian origin found at certain archeological sites on the Arkansas, Red, Brazos, Sabine, Trinity, and Mississippi Rivers, in Texas, Oklahoma, and Louisiana. Among the sites are twelve of Norteño Focus affiliation, all probably 18th and 19th century village sites of the Tawakoni, Yscanis, Kichai, Taovayas, Waco, or Wichita tribes. Also included in the analysis are six other sites such as European trading posts and contemporaneous non-Wichita Indian villages.

A second purpose of the paper is to determine the dates of appearance and disappearance in the southern plains of various bead types. The third objective is to ascertain, if possible, the nationality of the traders who were supplying the beads to the Indians. Historical documents indicate that the traders of the area were French, Spanish, and perhaps in some cases English. It is not within the scope of the paper to determine the country of manufacture of the beads; present knowledge is not sufficient for sound conclusions in that regard.

In making this study, 106,354 glass beads and 244 shell wampum beads were analyzed. Native-made beads of bone, shell, and metal will not be considered, but it is interesting to note that in contrast to the 106,587 trade beads, there are but

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*We wish to thank the following persons who not only have labored with us from time to time, but also have made available their collections or data for this research: Clifford Ray Allen, Jay C. Blaine, Hiram Gregory, William G. Haag, Henry Hanna, Loyd Harper, Rex Housewright, Mark Huff, M. P. Miroir, Janson McVay, E. J. Ruhland, J. B. Sollberger, Noil Vinson, Frank H. Watt, Clarence Webb, Gene Wilson, and the Jay Winters family. Special thanks are due Fred Wendorf and Joel Shiner, both of whom provided a constant source of encouragement, and to Edward B. Jelks, who permitted us to reproduce here part of his manuscript on glass bead manufacture and structure.

416 native-made beads from the sites studied. This will give one an idea of the change that took place in native crafts when European trade became intense.

Sites Used in the Analysis

The time period represented by the sample of beads is from around 1700 to about 1850. On the basis of changes through time in bead types and of documentation concerning the dates of certain sites, this century and a half has been broken down into five shorter periods as follows:

Period 1: 1700-1740
Period 2: 1740-1767
Period 3: 1767-1820
Period 4: 1820-1836
Period 5: 1836-1850

While some of the sites, it is believed, fall into only one time period, others may span as many as three. For example, the Roseborough Lake Site is thought to date from 1719 to about 1780 and to encompass one full period plus parts of two others. A brief statement about each site follows.

Angola Farm Site (Period 1). This site is located near the mouth of the Red River on the east side of the Mississippi River, in Louisiana. It has been identified as a Tunica village of 1709 to 1729 (Swanton, 1911: 311-313). It was excavated by James A. Ford in 1934 (Ford, 1936: 129-140). The Tunica village was visited by La Harpe in 1719 just before he began his journey up Red River to establish Fort St. Louis de Kadahadacho (Smith, 1958: 78-80). Although not of Wichita affinity, the Angola Farm Site was used in the study as it is known to have been supplied by French traders during the early 18th century. No total count of beads was made, just the number of types present.

Fish Hatchery Site (Period 1). Located on the outskirts of the present city of Natchitoches, Louisiana, this is probably the location of one of the Natchitoches Indian villages that were somewhere near the French Fort of St. Jean Batiste de Natchitoches. It is likely that La Harpe visited this site in 1719 (Harris et al., 1965: 358). Burials containing vessels of Natchitoches Engraved pottery (Suhm, Krieger, and Jelks, 1954: 334) and trade goods of the early 18th century were excavated at the Fish Hatchery Site by Winslow Walker in 1931 (Walker, 1935). Gregory and Webb (1964) and Harrises and Blaines (1965) have reported on beads from the site. A total of 822 Fish Hatchery beads were analyzed in the present study.

Roseborough Lake Site (Periods 1, 2, and 3). This site is located on the south side of the Red River about twelve miles above Texarkana. Fort St. Louis de Kadohadacho, a French military and trading post was established near this location by La Harpe in 1719. The fort survived as a military outpost until shortly after France ceded Louisiana to Spain in 1763, and the trading post continued in operation until about 1780 (Harris et al., 1965: 359; Harris et al., ms). A total of 2,969 beads from Roseborough Lake were analyzed.

Bryson Site (Period 1). This site is located on the Bryson Farm, on the Arkansas River in Kay County, Oklahoma. On the basis of gun parts and other artifacts, the Bryson Site is tentatively assigned to Period 1. The French explorer Claude Du Tisne may have visited the site in 1719. A total of 745 beads from Bryson were analyzed.

Womack Site (Period 1). This site is on the south bank of Red River in Lamar County, Texas. It belongs to the Norteño Focus and may be the place where Du Rivage (of the 1719 La Harpe expedition) secured two Quidehais (Kichai) guides to lead the expedition north to the Tawakonis (Harris et al., 1965: 359-360). A total of 2,126 beads from the Womack Site were analyzed.

Sanders Site (Period 1). Situated on the Red River in Lamar County, Texas, this site is well known as the type site for the Sanders Focus, a prehistoric culture of the Gibson Aspect (Krieger, 1946: 201-218; Suhm, Krieger, and Jelks, 1954: 176-182). But there is also a historic component at Sanders. Trade material is exceptionally scarce; otherwise this component is much like the Womack Site, about 10 miles downriver. The historic component at Sanders has not been reported on in detail, but Duffield and Jelks (1961: 70-71) assigned it to the Norteño Focus. The large quantity of native-made artifacts, together with the scarcity of European trade goods, suggests a Period 1 date. A total of 478 beads from the Sanders Site were analyzed.

The Nacogdoches Collection (Period 1). In addition to beads from the above sites, a bead collection on display in the Old Stone Fort Museum at Nacogdoches, Texas, was included in the analysis of Period 1 specimens. The beads are reported to have come from one or more sites near Nacogdoches, and on the basis of their typology they appear to belong to Period 1. No count of the beads was kept, just the number of types.

Pearson Site (Period 2). This Norteño Focus site, which was located in Rains County, Texas, near the junction of Hooker Creek and the North Fork of the Sabine River, is now flooded by Lake Tawakoni. Johnson and Jelks (1958) discussed the possibility that the Pearson Site might be a Tawakoni and Yscanis village that was visited by Father Calahorra in 1960; however, a firm identification of the site was not possible. In 1960 the

site was excavated by Edward B. Jelks and Lathel F. Duffield, with the assistance of several members of the Dallas Archeological Society including the authors. A report on the excavation has been published (Duffield and Jelks, 1961).

The Pearson Site was probably abandoned around 1765 as Solís reported that the Tawakoni and related tribes lived between the Trinity and Navasota Rivers in 1767 (Forrestal, 1931: 27). A total of 1,860 beads from Pearson were analyzed.

Gilbert Site (Period 2). The Gilbert Site is located on the west side of Lake Fork Creek in Rains County, Texas. It was partially excavated in 1962 as the first excavation project sponsored by the Texas Archeological Society. A report is now in press. Before the society dig, a short preliminary report of tests at the site was published by the authors of the present paper (Harris and Harris, 1962). To date, no historical documents have been found that mention an Indian village in this location; but a large sample of artifacts has been collected from the site, and they clearly indicate a mid-18th century date, probably the third quarter of the century specifically. Evidence of French trade is very heavy. A total of 3,453 beads from Gilbert were analyzed.

Vinson Site (Period 3). The Vinson Site was investigated by the summer field school of the Texas Archeological Society in 1964. A report is being prepared by the Tarrant County Archeological Society, who co-sponsored the dig. Located on Tehuacana Creek in Limestone County, Texas, this site has been identified with the Norteño Focus by Duffield and Jelks (1961: 70). Present evidence suggest that the Vinson Site was occupied during the last quarter of the 18th century and possibly somewhat earlier and/or somewhat later. A total of 1,564 beads from there were analyzed.

Stone Site (Period 3). This site is located on the west bank of the Brazos River above the city of Waco in McLennan County, Texas. Nothing but surface collections have been made at the site, but it appears to belong to the Norteño Focus (Duffield and Jelks, 1961: 70; Harris et al., 1965: 296, 314, 352-353). Surface collections made by Frank H. Watt of Waco and by the authors were used in our study. A total of 139 beads were analyzed.

Gas Plant Site (Period 3). Located on the east side of the Brazos below the city of Waco in McLennan County, Texas, the Gas Plant Site was partially excavated by Harald P. Jensen, Jr., as part of the Wichita Project (see Jensen's description of the site elsewhere in this publication). The artifacts from Jensen's excavations were used in the present analysis, as well as a surface collection made by the authors. The site appears to be of Norteño Focus affiliation and probably dates largely or entirely within Period 3. A total of 161 beads from the Gas Plant Site were analyzed.

Spanish Fort Sites (Late Period 2 and Period 3). Several major sites located on opposite sides of Red River in Montague County, Texas, and Jefferson County, Oklahoma, are included under this heading. For several years, the authors, together with Jay C. and Jerrylee Blaine, have made surface collections from both sides of the river. Materials have been cataloged by three separate sites on the Texas side, and by three separate sites on the Oklahoma side. On the Texas side, the three sites are Lower Tucker, Upper Tucker, and Ayres Farm. The Oklahoma sites are Longest (Northwest Portion), Longest (Northeast Portion), and Longest (South Portion). During the fall of 1965 and the early winter of 1966, excavations were carried out at the Upper Tucker Site as part of the Wichita Project. J. Ned Woodall's report on the excavations appears elsewhere in this report. Between the fall of 1965 and the spring of 1967, excavations were conducted at the different areas of the Longest Site. A report by Tyler Bastian on this field work also appears elsewhere in this report. Krieger (1947: 163) mentions glass beads from the Spanish Fort Sites including a description of one type.

The earliest known mention of sites in the Spanish Fort area was in 1759, when a Spanish military expedition attacked a large Taovayas village on the bank of Red River somewhere near the present community of Spanish Fort (Castañeda, 1939: 130; Bolton, 1914: Vol. I, 141; Harper, 1953: 271). Two Taovayas villages on Red River were visited by De Mézières in 1778 (Harper, 1953: 18), and the same or nearby sites were visited by Vial and Fernandez in 1787 and by Marés in 1789 (Harper, 1953: 8). Taovayas sites in the vicinity were also visited in 1808 by a Captain Glass and a Mr. Alexander from Natchitoches (ibid.: 17). The decline of the Taovayas seems to have reached a crisis in 1811, and by 1820 they had abandoned their Red River home and thereafter roamed restlessly between the Wichita Mountains and the Brazos River (ibid.: 18-19).

Bead totals used in the analysis from the Spanish Fort Sites are as follows: Lower Tucker 1,018, Ayers Farm 1,088, Upper Tucker 460, Longest (Northwest Portion) 211, Longest (Northeast Portion) 446, and Longest (South Portion) 3,694: a total of 6,917 for all six sites combined.

Colfax Ferry Site (Late Period 3 and Period 4). This site of the Pascagoula and Biloxi Indians, occupied from about 1787 to about 1825, is located about 30 miles below Natchitoches, Louisiana, on the Red River (Gregory and Webb, 1964: 33-39). The Colfax Ferry Site is used in this paper as some of the bead types there also appear at the Stansbury Site, a Period 3-Period 4 site on the Brazos River in Texas. A total of 38,392 beads from Colfax Ferry were used in this analysis.

Stansbury (or Towash) Site (Periods 3 and 4). This site, which was located on the east side of the Brazos River in Hill County, Texas, is now covered by the waters of Lake Whitney (Stephenson, 1947). It has been identified with a late 18th century village of the Tawakoni (Jelks, ms.) but may be also related to the Towash--or possibly to the Hainai--Indians of the 1830's and 1840's. The total bead sample analyzed is 3,419.

Devils Canyon Site (Period 4). This site is located in the mouth of Devils Canyon, on the north side of the North Fork of Red River in Kiowa County, Oklahoma. The Taovayas Indians were roaming into the Wichita Mountain country as early as 1820 (Harper, 1953: 19), and their occupation of Devils Canyon probably started about that time. The site appears certain to be the location of a Wichita village visited by Col. Henry Dodge on July 21, 1834 (Harper, 1953: 23). Shortly after 1836, the Wichita moved east to the present site of Fort Sill (Hodge, 1910: 949). A total of 43,542 beads were analyzed from this site.

Sheridan Lodge Site (Period 5). This site is located near Ft. Sill in Comanche County, Oklahoma, and dates around 1850 according to a personal communication from Tyler Bastian. It is not known whether the site was occupied by the Wichita or by the Kiowa. No count was made on the number of beads, but only on the number of types.

Colonel Cooper Site (Period 5). This site, located on the Brazos River in Palo Pinto County, Texas, was found during the reconnaissance phase of the Wichita project (see Smith's report elsewhere in this publication). A small surface collection has been made from the site. According to Neighbors (1847: 903-906) and Cooper (ms.) there was a Kichai village at the approximate location of the Colonel Cooper Site between 1847 and 1851. A small collection of glass beads found by the survey party belongs to Period 5.

Methods of Manufacturing Glass Beads*

The major technical problem in the mass production of glass beads is that of finding some simple and practical means of forming the perforations by which the beads are strung.

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*The following sections on glass bead manufacture and structure were written by Edward B. Jelks several years ago when he began, but never completed, a treatise on glass beads. With Jelks' permission, these passages from his manuscript have been slightly revised and inserted in the present paper.

Three basic methods of accomplishing this end have been devised, and all three have been in use for centuries. In this paper we are concerned with only two of the methods, but all three will be described.

One of the methods is to draw out a hollow glass tube and then to break the tube into bead-length sections. A second method is to apply viscous glass around a mandrel or wire by any of several techniques so as to form a bead, after which the mandrel or wire is removed. The third method is to blow a hollow glass sphere, then to puncture its thin walls at two opposite points.

In reference to trade beads, it is suggested that the terms hollow-cane, mandrel-wound, and hollow-sphere be employed respectively as standard names for these three manufacturing methods. Each method is described briefly below, and criteria are given to aid in the recognition of manufacturing methods through examination of the beads themselves.

The Hollow-cane Method

To make hollow-cane beads, the glass blower gathers a mass of molten glass at the end of his blowpipe (this mass is called a paraison by glass workers), blows a bubble into its center, and shapes it into a small cylinder a few inches long. An assistant attaches an iron rod to the end of the cylinder opposite the blowpipe, and he and the glass blower then move at a fast walk in opposite directions, a procedure which draws out the ductile glass into a long, hollow tube termed a cane. The bubble blown into the paraison at the beginning is elongated, along with the viscous glass, so as to form a central hollow which runs the entire length of the cane. A cane produced in this manner may be more than 300 feet long. After the cane has been broken into sections about two feet long to facilitate handling, the breaking of the cane sections into bead-length pieces proceeds in the following manner, as described by Lardner (1832: 183):

> . . . a sharp iron instrument is provided, shaped like a chisel, and securely fixed in a block of wood. Placing the glass tube upon the edge of this tool at the part to be separated; the workman then, with another sharp instrument in his hand, cuts, or rather chips, the cane into pieces of the requisite size; the skill of the man being shown by the uniformity of the size preserved between the different fragments. The minute pieces thus obtained are in the next process thrown into a bowl containing a mixture of sand and wood-ashes, in which they are continually

> stirred about until the perforations in the pieces are all filled by the sand and ashes. This provision is indispensable, in order to prevent the sides from falling together when softened by heat in the next operation.
>
> A metallic vessel with a long handle is then provided, wherein the pieces of glass are placed, together with a further quantity of wood-ashes and sand; and the whole being subjected to heat over a charcoal fire, are continually stirred with a hatchet-shaped spatula. By this simple means the beads acquire their globular form. /This process is here called tumbling./ When this has been imparted, and the beads are again cool, they are agitated in sieves, in order to separate the sand and ashes; this done, they are transferred to other sieves of different degrees of fineness, in order to divide the beads according to their various sizes.

Structurally, hollow-cane beads may be either simple or compound, with layering being the standard technique for fashioning the compound varieties. In making layered beads by the hollow-cane method, the same procedure is followed as described above, except that the initial cylinder, which is shaped from the paraison, is dipped into molten glass of a second color just before the cane is drawn out. As a result, the cane emerges with a veneer of this second kind of glass superposed over the core component. Multiple layers can be formed by additional dippings. (In several archeological reports, each of the different layers in a bead has been called a cane. This, however, is not in accordance with standard usage among glass manufacturers; therefore it is suggested that the term cane be used in reference to the whole tube, whether simple or compound, and layer in reference to the individual concentric components.)

Inlay, usually of stripes in the case of hollow-cane beads, is achieved by laying slender, solid canes of colored glass longitudinally along the surface of the initial cylinder and pressing them in firmly. Then, when the cane is drawn out, the slender inlaid canes are drawn along with it and appear on the finished beads as inlaid stripes. If the tube is twisted as it is drawn, the stripes will come out spiralled around the bead in the manner of stripes around a barber pole.

In cross section the shape of the cane may be round or polygonal. Some of the faceted beads are made from hexagonal canes by cutting or grinding facets on each end of the bead,

leaving the original shape of the cane in the middle (Woodward, 1965: 9).

The Mandrel-wound Method

In making beads by this method, molten glass is formed around a mandrel and, after the glass has cooled, the mandrel is removed, leaving a perforation through the bead. We have been unable to locate any detailed description of the techniques by which the glass is actually formed around the mandrel, but probably the mandrel-wound beads were made by rolling a thread or ribbon of molten glass around a revolving mandrel so as to build up the body of the bead, in much the same manner as yarn is rolled onto a spindle. The exact procedure is not clear, but fortunately such knowledge is not requisite for an accurate bead typology.

Since the mandrel-wound method is inefficient--as compared to the hollow-cane method--for making seed beads, it was seldom if ever used for that purpose.

The Hollow-sphere Method

This method, which was possibly invented as early as the 15th century, has been used through the years for the production of imitation pearls and other beads. In this process small spheres are blown and perforated on opposite sides before cooling. Then their interior surfaces are coated with an opaque, iridescent substance. In the 19th century, according to Encyclopaedia Brittannica (9th edition, Vol. 3: 460), the iridescent substance was made from the scales of the bleak (Lenciscus alburnus).

Since hollow-sphere beads are quite fragile, they were probably bartered to Indians only rarely. To date, only two reports have been found by the authors that mention the hollow-sphere variety of bead having been found archeologically in the United States. Peter P. Pratt (1961: 15 & No. 97 on color plates) is evidently describing hollow-sphere beads in the following passage (in reference to four beads from the Whitney Site, apparently somewhere in New York State): ". . . like imitation pearls; they have outer layer about 1/64th inch thick The inner core has decomposed making these beads very fragile." The other reference is by Hiram Gregory and Clarence Webb (1964: 39) who describe five different types of hollow-sphere beads from the Colfax Ferry Site in Louisiana.

Of the 184 types of glass beads recognized here, the following types were made from hollow canes: Nos. 1 through 39; Nos. 44 through 51; Nos. 55 through 87; Nos. 90 through 92; Nos. 96 through 99; Nos. 113 through 123; Nos. 125 through 140; Nos. 146 through 153; Nos. 155 through 157; Nos. 159 through 168; Nos. 170 through 172; and Nos. 174 through 183. The others were made either by the mandrel-wound method or were molded. Based on these data, it appears, therefore, that the hollow-cane method of bead manufacture was the most popular method from 1700 to 1850.

Many of the larger trade beads are mandrel-wound. Most, or possibly all, molded trade beads were also formed around mandrels; so molding may be considered a special technique of the mandrel method. The surfaces of many mandrel-wound beads are smoothed, polished, or faceted. This was probably done with small paddle-shaped tools while the mandrel was being rotated and the bead still plastic; for faceting, the mandrel would be stopped and facets pressed while the bead was plastic.

Structure

In spite of their small size, some glass beads are made up of numerous structural components. Most striped Cornaline d'Aleppo beads (Types 67 and 68 herein), for example, contain at least 38 distinct structural elements: three sets of stripes, each set consisting of three separate stripes, and each stripe made up of four or five tiny glass rods (minimum of 36 tiny rods); plus a core of green glass, a layer of opaque red glass, and sometimes a thin veneer of transparent glass on the surface.

In this study the beads were classified into three categories on the basis of structure: simple, compound, and complex.

Simple beads are those composed of a monolithic, structurally undifferentiated mass of glass. Both hollow-cane and mandrel-wound forms are common.

Compound beads are those consisting of two or more concentric layers of glass, one over the other. These are normally hollow-cane beads.

Complex beads are those having decorative designs made of tiny glass elements that are pressed into the bead.

Glass Bead Type Descriptions*

In the following descriptions, a standard color chart (Bustanoby, 1947: 28-29, Plate 8) has been used to indicate the hues of the beads. It should be noted that bead surfaces are frequently altered by age and weathering, and it is sometimes difficult to determine the original color. However, the color can often be restored by immersing the bead in a weak solution of muriatic acid for about two hours and then washing it in water. It is surprising how many beads that would have otherwise been classified as dirty white turn out to be red, green, yellow, or blue when cleaned.

General terms are used to describe the bead shapes: barrel shaped, donut shaped, round, and tube shaped (bugle). Some of the larger (necklace) beads are described as being olive shaped. This term was taken from an early 18th century document (Thwaites, 1959: 143) and was apparently widely used by the French to describe certain of the trade beads.

There is documentary evidence that Indians used the larger beads mainly for necklaces and the small and medium-sized ones principally on skins, garters, and the like. The large beads will here be referred to as necklace beads, the medium and small ones as garter beads. The beads were sorted into size groups as follows:

0-2 mm. = extra small
2-4 mm. = small
4-6 mm. = medium
over 6 mm. = large

(The measurements are for bead diameter, perpendicular to the hole axis. The length is disregarded in this classification.)

At the end of each type description, it will be indicated whether the bead is tumbled (that is, in the manufacturing process as described above), untumbled (with ends left sharp), and/or twisted (while the hot canes were being stretched lengthwise). The abbreviations T, UT, and TW will be used to indicate the respective processes.

No. 1. Large, white, opaque, olive-shaped necklace bead of simple construction. The glass is porcelain-like in texture. T

No. 2. Large, white, opaque, elongated, olive-shaped necklace bead of simple construction. The glass is porcelain-like in texture. T

* Bead types illustrated in Figures V-2 and V-3.

No. 3. Large, white, opaque, round necklace bead of simple construction. The glass is porcelain-like in texture. T.

No. 4. Large, white, opaque, barrel-shaped necklace bead of compound construction. The inner layer of glass has a porcelain-like texture, while the outer layer is clear glass but has a slightly frosted appearance, probably due to age. T.

No. 5. Medium, white, opaque, barrel-shaped garter bead, of compound construction. The inner layer of glass has a porcelain-like texture, while the outer layer is clear glass but has a slightly frosted appearance, probably due to age. T.

No. 6. Medium, white, opaque, olive-shaped garter bead of simple construction. The glass is porcelain-like in texture. T.

No. 7. Large, grayish-white, semitranslucent, olive-shaped necklace bead of simple construction. The glass has a frosted-like appearance. T.

No. 8. Large, light grayish-white, semitranslucent, donut-shaped necklace bead of simple construction. The glass has a frosted-like appearance similar to No. 7. T.

No. 9. Large, Peacock Blue, opaque, elongated, olive-shaped necklace bead of simple construction. The glass has fine lines running lengthwise with the bead, giving it a texture reminiscent of stripped sugarcane. T.

No. 10. Large, Peacock Blue, opaque, barrel-shaped necklace bead of simple construction. The glass has fine lines running lengthwise with the bead, giving it a texture reminiscent of stripped sugarcane. T.

No. 11. Medium, Peacock Blue, opaque, barrel-shaped garter bead of simple construction. The glass has fine lines running lengthwise with the bead, giving it a texture reminiscent of stripped sugarcane. T.

No. 12. Large, Turquoise Blue, opaque, olive-shaped necklace bead of simple construction. The glass is porcelain-like in texture. T.

No. 13. Large, dark Bluebird Blue, translucent, olive-shaped necklace bead of simple construction. The glass is often cane-like in appearance. T.

No. 14. Medium, dark Bluebird Blue, translucent, olive-shaped garter bead of simple construction. T.

No. 15. Medium, Gobelin Blue, opaque, barrel-shaped garter bead of simple construction. The glass is porcelain-like in texture. T.

No. 16. Large, clear, olive-shaped necklace bead of simple construction. The glass is clear but, due to age, sometimes appears frosted. T.

No. 17. Large, black, opaque, olive-shaped necklace bead of simple construction. The glass is somewhat cane-like in appearance. T.

No. 18. Large, black, opaque, round necklace bead of simple construction. The glass is porcelain-like in appearance. T.

No. 19. Large, Dandelion Yellow, opaque, barrel-shaped necklace bead of simple construction. The glass is porcelain-like in texture. T.

No. 20. Large, white, opaque, elongated, olive-shaped necklace bead of complex construction. The bead surface is covered with four dark blue stripes which are evenly spaced and parallel the long axis. The white glass is porcelain-like in texture. T.

No. 21. Large, white, opaque, olive-shaped necklace bead of complex construction. The bead surface is covered with three blue stripes which are evenly spaced and parallel to the long axis. The white glass is porcelain-like in texture. T.

No. 22. Large, white, opaque, olive-shaped necklace bead of complex construction. The bead surface is covered with two red and two blue alternating stripes. The white glass is porcelain-like in texture. T.

No. 23. Large, bluish-white, opaque, olive-shaped necklace bead of complex construction. The bead surface is covered with three longitudinal sets of three blue stripes spaced evenly around the bead. The bluish-white glass is porcelain-like in texture. T.

No. 24. Large, white, opaque, olive-shaped necklace bead of complex construction. Extending longitudinally across the surface of the bead are three sets of stripes, each of which is composed of two red stripes, and between these, a blue stripe. The white glass is porcelain-like in texture. T.

No. 25. Large, white, opaque, olive-shaped necklace bead of complex construction. The bead surface is covered with three sets of stripes, and between these, a blue stripe. The white glass is porcelain-like in texture. T.

No. 26. Large, white, opaque, olive-shaped necklace bead of complex construction. The bead surface is covered with three sets of three blue stripes which are twisted in an S-shape around the bead. The white glass is porcelain-like in texture. The inner layer of glass is bluish-white. TW. T.

No. 27. Large, white, opaque, olive-shaped necklace bead of complex construction. The surface of the bead is covered with six more or less evenly spaced blue stripes which are twisted around the bead in an S-shape. The white glass is porcelain-like in texture. TW. T.

No. 28. Large, white, opaque, olive-shaped necklace bead of complex construction. The bead surface is covered with six rather evenly distributed red stripes which are twisted around the bead in an S-shape. The white glass is porcelain-like in texture. TW. T.

No. 29. Large, Emerald Green, translucent, barrel-shaped necklace bead of complex construction. The bead surface is covered with eight white stripes, rather evenly spaced and parallel to the long axis. T.

No. 30. Large, Brittany Blue, opaque, elongated, olive-shaped necklace bead of complex construction. The surface of the bead is covered with three evenly spaced sets of stripes, each of which is composed of two white stripes, and between these, a red stripe. T.

No. 31. Large, dark Bluebird Blue, translucent, olive-shaped necklace bead of complex construction. The surface of the bead is covered with five white stripes, twisted S-like around the bead. TW. T.

No. 32. Large, dark Bluebird Blue, translucent, olive-shaped necklace bead of complex construction. Parallel to the long axis of the bead are more or less evenly spaced crescent-like white stripes. T.

No. 33. Large, dark Bluebird Blue, translucent, olive-shaped necklace bead of complex construction. The surface of the bead is covered with three sets of stripes, each of which is composed of two white stripes and, between these, a red stripe. T.

No. 34. Large, dark Bluebird Blue, translucent, barrel-shaped necklace bead of complex construction. The surface of the bead is covered with eight evenly spaced white stripes. T.

No. 35. Large, clear, donut shaped necklace bead of complex construction. Eight twisted white stripes appear embedded in the body of the glass. In making this bead, a layer of clear glass was used for the core, then the white stripes were pressed into the surface of glass, and another layer of clear glass was added to finish the bead. The white stripes are twisted in S fashion. TW. T.

No. 36. Large, clear, barrel-shaped necklace bead of complex construction. The surface of the bead is covered with twelve white stripes running lengthwise with the bead. The surface of this bead type, like that of No. 35, sometimes appears frosted, probably due to age. This type is often called the "gooseberry bead." T.

No. 37. Large, black, opaque, barrel-shaped necklace bead of complex construction. The surface is covered with eight white longitudinal stripes, spaced more or less evenly. The black glass is porcelain-like in texture. T.

No. 38. Large, black, opaque, donut-shaped necklace bead of complex construction. The surface of the bead is covered with eight white stripes twisted around the bead in an S pattern. The black glass is porcelain-like in texture. TW. T.

No. 39. Large, black, opaque, round necklace bead of complex construction. The surface of the bead is covered with six ivory-colored, crescent-shaped stripes which run perpendicular to the core. The black glass is porcelain-like in texture. T.

No. 40. Large, Bluebird Blue, translucent, eight-faceted necklace bead of mandrel-wound, pressed facet, simple construction. The surface of the glass sometimes appears to be frosted, probably due to age.

No. 41. Large, milk-glass, eight-faceted necklace bead of mandrel-wound, pressed facet, simple construction. The surface sometimes appears frosted, probably due to age.

No. 42. Large, clear, barrel-shaped necklace bead of mandrel-wound, probably pressed facet, simple construction. The surface resembles that of hobnail glass. This type is often called the "mulberry bead."

No. 43. Large, clear, barrel-shaped necklace bead of mandrel-wound, probably pressed facet, simple construction. The surface is pressed into six spiral-shaped elements which give a corrugated effect.

No. 44. Small, white, opaque, donut-shaped garter bead of simple construction. The glass has a porcelain-like texture. T.

No. 45. Small, white, opaque, donut-shaped garter bead of compound construction. The inner layer has a porcelain-like texture, and the outer layer is clear but has a slightly frosted appearance, probably due to age. T.

No. 46. Small, Peacock Blue, opaque, donut shaped garter bead of simple construction. The glass of this bead has a sugarcane-like texture. T.

No. 47. Small, Gobelin Blue, opaque, donut-shaped garter bead of simple construction. The glass has a porcelain-like texture. T.

No. 48. Small, dark Bluebird Blue, translucent, donut-shaped garter bead of simple construction. T.

No. 49. Small, clear, donut-shaped garter bead of simple construction. T.

No. 50. Small, black, opaque, donut-shaped garter bead of simple construction. The glass is porcelain-like in texture. T.

No. 51. Small, red, opaque (outer layer), donut-shaped garter bead of compound construction. The outer layer of opaque glass is brick red, and the inner layer is a translucent light green. This bead is generally referred to as "Cornaline d'Aleppo." T.

No. 52. Large, amber, translucent, barrel-shaped necklace bead of mandrel-wound simple construction.

No. 53. Large, milk-glass, translucent, round necklace bead of mandrel-wound construction.

No. 54. Large, milk-glass, translucent, olive-shaped necklace bead of mandrel-wound simple construction.

No. 55. Large, red, opaque (outer layer), tube-shaped (bugle) necklace bead of compound construction. The outer layer of opaque glass is brick red and the inner layer is a translucent light green. This bead is generally referred to as "Cornaline d'Aleppo," but in this case the bead stock was broken into tube-shaped beads. T.

No. 56. Small, Brittany Blue, opaque, tube-shaped (bugle) garter or necklace bead, of simple construction. The glass is porcelain-like in texture. T.

No. 57. Small, red, opaque (outer layer), tube-shaped (bugle) garter or necklace bead of compound construction. The outer layer of opaque glass is brick red and the inner layer is translucent light green. This bead is the same as No. 55 except the diameter equals that of a small size bead. T.

No. 58. Extra small, red, opaque (outer layer) tube-shaped (bugle), garter or necklace bead of compound construction. The outer layer of opaque glass is brick red and the inner layer is translucent green. This bead is the same as No. 55, except the diameter is approximately one millimeter. T.

No. 59. Large, red, opaque (outer layer), tube-shaped (bugle) necklace bead of compound construction. The outer layer of opaque glass is brick red and the inner layer is a translucent light green. This bead is the same as No. 55, with the exception of the extra large diameter. Beads No. 57, 58, and 59 are generally referred to as "Cornaline d'Aleppo." T.

No. 60. Small, Gobelin Blue opaque tube-shaped (bugle) garter or necklace bead of simple construction. The glass is porcelain-like in texture. T.

No. 61. Small, dark Bluebird Blue, translucent, tube-shaped (bugle) garter or necklace bead of simple construction. T.

No. 62. Small, Fern Green, opaque tube-shaped (bugle) garter or necklace bead of simple construction. The glass is porcelain-like in texture. T.

No. 63. Small, Colonial Yellow, translucent, tube-shaped (bugle) garter or necklace bead of simple construction. T.

No. 64. Small, white, opaque, tube-shaped (bugle) garter or necklace bead of simple construction. T.

No. 65. Small, white, opaque, tube-shaped (short bugle) garter or necklace bead of compound construction. The inner layer has a porcelain-like texture while the outer layer has a slightly frosted appearance. UT.

No. 66. Small, black, opaque, tube-shaped (bugle) garter or necklace bead of simple construction. The glass of this bead is porcelain-like in texture. UT.

No. 67. Small, red, opaque (outer layer), tube-shaped (bugle) garter or necklace bead of complex construction. The

surface of the bead is covered with three evenly spaced sets of stripes, each of which is composed of two white stripes, and between these, a red stripe. The inner layer is translucent light green. This appears to be a variety of "Cornaline d'Aleppo" with addition of stripes. T.

No. 68. Small, red, opaque (outer layer), tube-shaped (bugle) garter or necklace bead of complex construction. The surface of the bead is covered with three evenly spaced sets of stripes, each of which is composed of two white stripes and, between these, a chocolate brown stripe. The inner layer is translucent light green. This appears to be a variety of "Cornaline d'Aleppo" with the addition of stripes. T.

No. 69. Small, dark amber, opaque, tube-shaped (bugle) garter or necklace bead of complex construction. The surface is covered with nine alternating red and white stripes which run parallel to the long axis of the bead. T.

No. 70. Small, dark Bluebird Blue, translucent, tube-shaped (bugle) garter or necklace bead of complex construction. The surface of the bead is covered with three evenly spaced sets of stripes, each of which is composed of two white stripes, and between these, a red stripe. T.

No. 71. Small, Peacock Blue, opaque, tube-shaped (bugle) garter or necklace bead of complex construction. The surface of the bead is covered with three evenly spaced white stripes. UT.

No. 72. Small, dark Bluebird Blue, translucent, tube-shaped (bugle) garter or necklace bead of complex construction. The surface of the bead is covered with four alternating red and white stripes which are evenly spaced. T.

No. 73. Small, bluish-white, opaque, tube-shaped (bugle) garter or necklace bead of complex construction. The surface is covered with three blue stripes evenly spaced around the bead. T.

No. 74. Small, white, opaque, tube-shaped (bugle) garter or necklace bead of complex construction. The bead surface is covered with three chocolate brown stripes, evenly spaced around the bead. UT.

No. 75. Large, Colonial Yellow, opaque, olive-shaped necklace bead of simple construction. The glass is somewhat cane-like in texture and has numerous bubbles throughout. T.

No. 76. Large, black, opaque, donut-shaped necklace bead of simple construction. The glass is porcelain-like in texture. T.

No. 77. Large, dark Bluebird Blue, translucent, donut-shaped necklace bead of simple construction. T.

No. 78. Medium, pearly white, opaque, donut-shaped garter bead of simple construction. T.

No. 79. Small Sky Blue, opaque, donut-shaped garter bead of simple construction. T.

No. 80. Small, Peacock Blue, translucent donut to barrel-shaped garter bead of simple construction. T.

No. 81. Small, Colonial Yellow to Brass colored, opaque, donut-shaped garter bead of simple construction. The glass often has a cane-like texture. T.

No. 82. Small, Colonial Yellow to Brass colored, translucent donut-shaped garter bead of simple construction. T.

No. 83. Small, Emerald Green, translucent, donut-shaped garter bead of simple construction. T.

No. 84. Small, Emerald Green, opaque, donut-shaped garter bead of simple construction. The glass sometimes has a cane-like texture. T.

No. 85. Large, Emerald Green, translucent, barrel-shaped necklace bead of simple construction. T.

No. 86. Large, brick red, opaque, donut-shaped necklace bead of compound construction. The outer layer of glass is brick red, and the inner layer is translucent light green. This bead is generally referred to as "Cornaline d'Aleppo." T.

No. 87. Small, brick red, opaque, donut-shaped garter bead of compound construction. T.

No. 88. Large, Emerald Green, translucent, teardrop-shaped, faceted necklace bead of simple construction. The bead has a square hole and the surface has 6 pressed facets.

No. 89. Large, dark Bluebird Blue, translucent, teardrop-shaped, faceted necklace bead of simple construction. The bead has a square hole and the surface has 6 pressed facets.

No. 90. Medium, bluish-white, opaque, donut-shaped garter bead of complex construction. On the surface of the bead are four rather evenly spaced blue stripes. T.

No. 91. Small, black, opaque, donut-shaped garter bead of complex construction. The bead surface is covered with four rather evenly spaced white stripes. The black glass is porcelain-like in texture. T.

No. 92. Large, black, opaque, donut-shaped necklace bead of complex construction. On the surface are 5 pairs of rather evenly spaced white stripes. The black glass is porcelain-like in texture. T.

No. 93. Large, milk-glass, translucent, donut-shaped necklace bead of mandrel-wound simple construction.

No. 94. Large, amber, translucent, donut-shaped necklace bead of mandrel-wound simple construction.

No. 95. Large, Olive Green, translucent, donut-shaped necklace bead of mandrel-wound simple construction.

No. 96. Medium, black, opaque, donut-shaped garter bead of simple construction. The glass is porcelain-like in texture. T.

No. 97. Large, Colonial Yellow, semitranslucent, barrel-shaped necklace bead of simple construction. T.

No. 98. Medium, Colonial Yellow, semitranslucent, donut-shaped, garter bead of simple construction. T.

No. 99. Medium, Brick Red, opaque, donut-shaped garter bead of compound construction. The inner layer is translucent green. This type is generally referred to as "Cornaline d'Aleppo." T.

No. 100. Large, Harvard Crimson, semitranslucent, elongated or tube-shaped necklace bead of mandrel-wound simple construction.

No. 101. Medium, white, opaque, olive-shaped necklace or garter bead of mandrel-wound simple construction.

No. 102. Medium, white, opaque, olive-shaped necklace or garter bead of mandrel-wound simple construction. The surface has four pressed facets.

No. 103. Medium, Harvard Crimson, translucent, olive-shaped garter or necklace bead of mandrel-wound simple construction.

No. 104. Medium, Harvard Crimson, translucent, olive-shaped necklace or garter bead of mandrel-wound simple construction. The surface of the bead has four pressed facets.

No. 105. Medium, pink and white, opaque necklace or garter bead of mandrel-wound construction. The surface of the bead has three pressed facets. It appears that two colors of hot glass threads (one pink and the other white) were wound on to the mandrel at the same time, giving the bead a marbled appearance.

No. 106. Medium, turquoise, opaque, olive-shaped necklace or garter bead of mandrel-wound compound construction. The outer layer of glass is turquoise and the inner layer is white. The surface of this type is nearly always badly pitted.

No. 107. Medium, dark Bluebird Blue, semitranslucent, olive-shaped necklace or garter bead of mandrel-wound simple construction.

No. 108. Medium, Black, olive-shaped, opaque necklace or garter bead of mandrel-wound simple construction.

No. 109. Medium, Turquoise, olive-shaped, opaque necklace or garter bead of mandrel-wound simple construction.

No. 110. Medium, Pumpkin Yellow, olive-shaped, opaque necklace or garter bead of mandrel-wound simple construction.

No. 111. Large, Grape, donut-shaped, opaque necklace bead of mandrel-wound compound construction. The inner layer of glass is thin and Cornflower Blue in color.

No. 112. Large, Grape, opaque necklace bead of mandrel-wound simple construction. The surface of the glass has five pressed facets.

No. 113. Large, Emerald Green, barrel-shaped necklace bead of complex construction. On the surface of the bead are five longitudinal sets of stripes, each of which is composed of two white stripes, and between these, a brick red stripe. Beneath the decorated surface is a thin layer of white opaque glass. The core is made of a thick layer of Delft Blue opaque glass. T.

No. 114. Large, dark Delft Blue, barrel-shaped necklace bead of complex construction. The surface of the bead is covered with five longitudinal sets of white stripes, and between these is a wider brick red stripe. The inner layer or core of the bead is a very light shade of Delft Blue semitranslucent glass. T.

No. 115. Medium, Bluebird Blue, donut-shaped, translucent necklace or garter bead of complex construction. On the surface are four rather evenly spaced white stripes which run parallel with the axis of the bead core. T.

No. 116. Small, black, opaque donut-shaped garter bead of complex construction. The surface is decorated with six rather unevenly spaced brick-red stripes. The black glass is porcelain-like in texture. T.

No. 117. Small, white, opaque, donut-shaped garter bead of complex construction. The surface is decorated with four brick-red stripes which run parallel with the bead axis. T.

No. 118. Small, white, opaque, donut-shaped garter bead of complex construction. Two red stripes and two blue stripes alternate around the bead, the stripes running parallel with the bead axis. T.

No. 119. Medium, white, opaque, donut-shaped garter bead of complex construction. On the surface are two red, two green, and two blue alternating stripes that run parallel with the bead axis. T.

No. 120. Medium, brick red, opaque, barrel-shaped garter bead of complex construction. There are four rather evenly spaced white stripes running parallel to the bead axis. The inner layer of glass is translucent light green. This appears to be a variety of "Cornaline d'Aleppo" with white stripes. T.

No. 121. Large, white, opaque, barrel-shaped necklace bead of complex construction. There are two pair of red stripes and two pair of blue stripes alternating around the bead. The stripes run parallel to the bead axis. The white glass is porcelain-like in texture. T.

No. 122. Medium, white, opaque, barrel-shaped garter or necklace bead of complex construction. Two red and two green stripes alternate around the bead. The stripes run parallel to the bead axis. The white glass is porcelain-like in texture. T.

No. 123. Medium, black, opaque, donut-shaped garter bead of complex construction. There are two red and two white stripes alternating around the bead. The stripes run parallel to the bead axis. T.

No. 124. Large, white, opaque, olive-shaped necklace bead of complex mandrel-wound construction. On the bead surface is a blue floral pattern.

No. 125. Extra small, Mint Green, opaque, donut-shaped garter bead of simple construction. T.

No. 126. Extra small, Bluebird Blue, opaque, donut-shaped garter bead of simple construction. T.

No. 127. Extra small, milk white, translucent, donut-shaped garter bead of simple construction. T.

No. 128. Extra small, white, opaque, donut-shaped garter bead of simple construction. T.

No. 129. Large, dark Bluebird Blue, barrel-shaped, translucent necklace bead of compound construction. The outer layer of glass has approximately 16 to 20 facets. The inner layer of glass is blue-white in color. The hollow cane used in this type of bead was hexagonal in cross section. After a piece was cut off the cane, approximately 6 facets were cut on each end of the bead. This would leave 6 facets around the center from the original shape of the cane.

No. 130. Large, dark Bluebird Blue, barrel-shaped, translucent faceted necklace bead of simple construction. There are 16 to 20 facets on the surface of the bead. This bead was made in the same way as Bead No. 129.

No. 131. Large, Fern Green, barrel-shaped, translucent necklace bead of faceted simple construction. The surface of the bead has six facets. The hollow cane used in this type of bead was hexagonal in cross section. The facets were not cut on each end as was done in making Bead No. 129. In fact, this bead is only a short section of the original cane.

No. 132. Large, milk glass, translucent, barrel-shaped necklace bead of compound, faceted construction. The outer layer of glass has approximately 16 to 20 facets. The inner layer is milk-white in color. This bead was made in the same way as Bead No. 129.

No. 133. Large, Ruby Red, translucent, somewhat irregular round-shaped necklace bead of simple construction. The surface of the bead has approximately 16 facets. The facets were probably cut.

No. 134. Small, dark Amber, barrel-shaped, translucent, faceted garter bead of simple construction. The facets appear to be pressed and vary from four to eight in number.

No. 135. Small, Pimento, translucent, donut-shaped garter bead of faceted, simple construction. The hollow cane used to make this bead was hexagonal in cross section; therefore the bead has six facets.

No. 136. Large, clear, barrel-shaped necklace bead of simple construction. T.

No. 137. Medium, white, opaque, barrel-shaped garter bead of simple construction. T.

No. 138. Medium, Peacock Blue, translucent, barrel-shaped garter bead of simple construction. T.

No. 139. Large, barrel-shaped, clear necklace bead of simple, faceted construction. There are approximately 16 to 20 facets on the surface of the bead. This bead was made in the same way as Bead No. 129.

No. 140. Small, Turquoise, opaque, donut-shaped garter bead of simple construction. T.

No. 141. Medium, milk glass, semitranslucent, ovoid garter or necklace bead of mandrel-wound simple construction.

No. 142. Medium, dark Bluebird Blue, translucent, ovoid garter or necklace bead of mandrel-wound simple construction.

No. 143. Medium Emerald Green, translucent, ovoid garter or necklace bead of mandrel-wound simple construction.

No. 144. Medium, Harvard Crimson, translucent, ovoid garter or necklace bead of mandrel-wound simple construction.

No. 145. Large, Turquoise, opaque, round necklace bead of mandrel-wound simple construction.

No. 146. Large, Bottle Green, semitranslucent, olive-shaped necklace bead of simple construction. T.

No. 147. Large, Bluebird Blue, translucent, round, faceted necklace bead of simple construction. This bead has approximately 30 facets, and they appear to be cut facets.

No. 148. Medium, light pink, translucent, round, faceted necklace or garter bead of simple construction. This bead has approximately 16 facets which appear to be cut.

No. 149. Extra small, black, opaque, tube-shaped (bugle) garter bead of faceted, simple construction. The hollow cane used to make this bead was hexagonal in cross section; therefore the bead has six facets. T.

No. 150. Extra small, clear, donut-shaped garter bead of faceted, simple construction. The hollow cane used to make this bead was hexagonal in cross section, producing six facets. T.

No. 151. Extra small, Fern Green, translucent, donut-shaped garter bead of faceted, simple construction. The hollow

cane used to make this bead was hexagonal in cross section; therefore the bead has six facets. T.

No. 152. Extra small, Independence Blue, opaque, donut-shaped garter bead of faceted, simple construction. The hollow cane used to make this bead was hexagonal in cross section; therefore the bead has six facets. T.

No. 153. Extra small, black opaque, donut-shaped garter bead of faceted, simple construction. The hollow cane used to make this bead was hexagonal in cross section; therefore the bead has six facets. T.

No. 154. Large, Harvard Crimson, translucent (outer layer), olive-shaped necklace bead of compound, mandrel-wound construction. The inner layer of glass is opaque white.

No. 155. Extra small, Peacock Blue, opaque, donut-shaped garter bead of simple construction. The glass has fine lines running lengthwise with the bead, giving it a texture reminiscent of stripped sugarcane. T.

No. 156. Large, barrel-shaped, Magenta, translucent necklace bead of simple, faceted construction. There are usually 16 to 20 facets on the surface of the bead. This bead was made in the same way as No. 129.

No. 157. Small, Magenta, opaque, tube-shaped (bugle) garter or necklace bead of simple construction. The glass is porcelain-like in texture. T.

No. 158. Medium, Emerald Green, translucent, olive-shaped necklace or garter bead of mandrel-wound simple construction.

No. 159. Large, Sky Blue, opaque, round necklace bead of simple construction. The bead usually has a ridge around the circumference as if it might be of pressed construction.

No. 160. Medium, Sunflower Yellow, translucent, round garter or necklace bead of simple construction.

No. 161. Small, Pimento, opaque, round garter bead of simple construction.

No. 162. Large, Black, olive-shaped necklace bead of complex construction. The surface of the bead is covered with a wavy spiral of cream-colored glass rod.

No. 163. Large, amber, semitranslucent, tube-shaped necklace bead of complex construction. The surface of the bead is covered with twisted copper-colored stripes. TW. UT.

No. 164. Medium, Bluebird Blue, translucent, barrel-shaped garter bead of simple construction. T.

No. 165. Medium, white, opaque, donut-shaped garter bead of compound construction. The outer layer of glass is white and is porcelain-like in texture. The inner layer is a very pale yellow in color and contains many small bubbles. T.

No. 166. Extra small, Mint Green, translucent, donut-shaped garter bead of faceted, simple construction. The hollow cane used to make this bead was hexagonal in cross section; therefore the surface of the bead has six facets. T.

No. 167. Large, light pink, translucent, olive-shaped necklace bead of faceted, simple construction. The surface of the bead is covered with 20 facets.

No. 168. Small, Navy Blue, opaque, round garter bead of simple construction.

No. 169. Medium, dark Bluebird Blue, semitranslucent, "somewhat" olive-shaped necklace or garter bead of mandrel-wound, pressed facet, simple construction. There are eight pressed facets.

No. 170. Large, black, barrel-shaped, opaque, faceted necklace bead of simple construction. There are generally from 16 to 20 facets. The hollow cane used in this type of bead was hexagonal in cross section. The facets were cut in the same manner as No. 129.

No. 171. Large, barrel-shaped, Emerald Green, translucent, faceted necklace bead of simple construction. There are usually 16 to 20 facets. This bead was made in the same way as No. 129.

No. 172. Large, round, clear, faceted necklace bead of simple construction. This bead has approximately 30 facets which appear to be cut. The surface is slightly frosted, probably from age.

No. 173. Large, clear, round, pressed facet over Harvard Crimson, mandrel-wound necklace bead of compound construction. The outer layer has a five-pointed star pressed in each end of the bead, and the surface is frosted due to age. The inner Harvard Crimson bead is olive-shaped, and translucent, and is listed as No. 103 on the Bead Chart. In reality, this is a bead built over another bead.

No. 174. Extra small, Harvard Crimson, translucent (outer layer), donut-shaped garter bead of compound construction. The inner layer of glass is opaque white. T.

No. 175. Extra small, Colonial Yellow, opaque, donut-shaped garter bead of simple construction. T.

No. 176. Extra small, Harvard Crimson, translucent donut-shaped garter bead of simple construction. T.

No. 177. Extra small, Baby Pink, opaque, donut-shaped garter bead of simple construction. T.

No. 178. Extra small, Sky Blue, opaque, donut-shaped garter bead of simple construction. T.

No. 179. Extra small, Independence Blue, opaque, donut-shaped garter bead of simple construction. T.

No. 180. Extra small, Yale Blue, translucent, donut-shaped garter bead of simple construction. T.

No. 181. Extra small, Fern Green, opaque, donut-shaped garter bead of simple construction. T.

No. 182. Extra small, light pink, translucent, donut-shaped garter bead of simple construction. T.

No. 183. Small, dark Bluebird Blue, translucent, tube-shaped (bugle) garter bead of simple construction. T.

No. 184. Large, dark Bluebird Blue, translucent, flattened oval necklace bead of simple, molded construction. The bead appears to have been made in a two piece mold, with facets in each side of the mold. There are 20 facets on each side, making a total of 40 facets on the completed bead. The bead has two holes for stringing, not on center but offset to one side.

Type Descriptions for Shell Trade Beads

No. 1. Small, white or purple banded, tube-shaped bead. The drilled hole is very uniform in size through the bead and probably was made with a metal drill as it does not appear hour-glass-shaped like typical Indian drilling. The bead is about 12 millimeters long.

No. 2. Small, white or purple banded, tube-shaped bead made from shell. The hole is of uniform diameter throughout. Length is about 6 millimeters.

Both of these shell beads have been identified by Arthur Woodward as shell wampum (personal communication).

Discussion of Glass Bead Types

In this section, the utility of bead types as time markers will be discussed. Some bead types are not definitive of a certain time period, but extend through three or four of the periods recognized here. For example, some types of small garter beads may be present in about the same percentage from about 1700 to around 1836. In general, it can be said that the most definitive bead types are the medium- and large-size complex, striped ones and the medium- and large-size faceted forms. Sometimes a bead type may come into the trade in large numbers in a certain time period, and drop down to very small numbers in the following time periods. Where only one specimen of a type (Type No. 19, for example) is known from the area, it will not be discussed, due to lack of information.

Period 1 (1700 to 1740)

Types 1-18, 20-43, and 52-54 appear to be characteristic of this period. These types match, almost type for type, between the Womack Site and the Angola Farm Site, and many of them match types from the Fish Hatchery, Roseborough Lake, Bryson, Sanders, and Nacogdoches Sites. Most of the above types are found in large numbers during this period with the exception of some of the rarer stripes and facets which are present only in small numbers at any site. Types 16-22, 24, 25, 27-39, 42, 43, and 52 do not occur at sites dating after Period 1.

In the small garter beads, Types 44-46 and 48-51 are present beginning in Period 1 and extending through Period 4, or from around 1700 to 1836.

During Period 1, the main source of the trade seems to have been the French settlements in Louisiana.

Period 2 (1740 to 1767)

Types 1-15, 23, 26, 40, 41, 53, and 54 are still in the trade from Period 1 but are found in reduced numbers. Small garter bead Types 44-46 and 48-51 are still present in large numbers. Types 2, 6-8, 12-15, 47, and 56 do not appear in the trade after 1767 (the end of Period 2).

A few new bead types come into the trade during Period 2. Some of these are tube (or bugle) beads: Types 57, 59-62, and 66-69. Other new types are Nos. 76-87, 90-92, 96, 97, 99, and 164.

Type 88 (green) is present in Period 2 at the Pearson Site in a single specimen. Type 89 (blue) is present at the Longest Site (south area) in a single specimen. The authors have seen this same form in black from the site of Presidio San Luis de las Amarillas. These beads have been examined by two Catholic priests, and both are of the opinion that this form is probably a rosary bead.

During Period 2 the source of the beads seems to be through the French trade from Louisiana.

Period 3 (1767 to 1820)

During this period a few of the earlier types from Period 1 are present, but usually in very small numbers. These are as follows: Nos. 1, 3-5, 9-11, 23, 26, 40, 41, and 53. Also, a few of the types from Period 2 are present in smaller numbers. These types are as follows: Nos. 57, 61, 67, 77, 81, 82, 96, 99, and 164. A few types present in Period 2 appear in Period 3 in slightly larger numbers. These types are as follows: Nos. 66, 83, and 84.

Small garter bead Types 44-46 and 48-51 are present during Period 3 in about the same numbers as during Periods 1 and 2. Small garter bead Types 81-84 seem to decrease in numbers in Period 3 sites except, at the Vinson Site.

It is the opinion of the authors, based on historical research and on the types of artifacts present, that occupation of the Roseborough Lake Site ended around 1780. In the following discussion we will assume a cut-off date of 1780 for that site. New bead types appearing in the trade during Period 3 at the Roseborough Lake Site (that is, before 1780) are as follows: Nos. 64, 65, 98, 101-104, 106-108, 115, 118, 137 and 138. New bead types appearing in the trade during Period 3, after 1780, are as follows: Nos. 95, 96, 100, 109, 111, 112, 113, 114, 116, 117, 119, 120, 122, 124, 129, 132, 134, 136, 146, 147, 170, 183, and 184. Nos. 116-118 are complex small garter beads and are found only in Period 3 sites.

During Period 3, several new types of small garter beads occur in the trade. These types are extra small garter beads (2 mm. or less in diameter). Two of the types (Nos. 128 and 155) come into the trade before the Roseborough Lake Site is abandoned. The other types appear to enter the trade after the abandonment of the Roseborough Lake Site. These are Nos. 125, 126, 127, and 179.

The source of trade during Period 3 seems to be mostly French; however, some English, Spanish, and possible Anglo-American trade may enter the picture. This needs further research.

Period 4 (1820 to 1836)

During this period some of the Period 1 types (nos. 4, 5, 10, 11, and 54) are present, but in very small numbers. The small garter beads (Nos. 44-46 and 48-51) which have been in large numbers from Period 1 through Period 3 are in very large numbers in some sites of Period 4. By the end of Period 4, these small garter beads seem to have completely disappeared from the trade. Small garter bead Types 79, 82, and 84 from Periods 2 and 3 remain rather constant through Period 4 and then completely disappear. Small garter bead Types 80, 81, 83, and 84 increase in numbers during Period 4, then completely disappear. Extra small garter bead Type 155 increases greatly during Period 4 and completely disappears at the end of the period. Small garter bead Type 128 increases strongly during Period 4.

New bead types coming into the trade during Period 4 are as follows: Nos. 58, 110, 121, 123, 130, 131, 133, 135, 140-145, 148-154, 156-163, 166-168, 171, and 176.

During Period 4, the source of the trade is probably Anglo-American, English, or Spanish; however, more research is needed on this.

Period 5 (1836 to 1850)

During this period, only one site (Sheridan Lodge) has been analyzed in this study, and all the types are probably not complete. When the Wichita sites near Lawton and Rush Springs are located and excavated, the history of trade relations with the Wichita-speaking people will be more complete. However, a few remarks can be made at this time.

According to Tyler Bastian of the Museum of the Great Plains, extra small garter beads can be found at the Sheridan Lake Site in very large numbers--several thousand can be found from one six-inch level of a five-foot square. Types 128, 176, 177, and 179 which appeared during Periods 3 and 4 are found in extremely large numbers in Period 5. New types of extra small garter beads appearing during Period 5 are as follows: Nos. 174, 175, 178, 180, 181, and 182. Nothing is known at present about the larger beads.

The source of trade during Period 5 is probably mostly Anglo-American.

Discussion of Shell Wampum

The wampum beads found in some of the Norteño Sites match in lengths and colors the shell wampum from the eastern part of the United States.

According to Hodge (1910: 906) a piece of white wampum 6 mm. long was worth only half as much as a piece of dark (purple) wampum of the same length.

Shell wampum appears during Period 3 in our area at the Roseborough Lake Site (probably abandoned around 1780). It is present in all of the Spanish Fort sites on both sides of Red River, as well as in the Devils Canyon Site (Period 4). Wampum began to decline around 1830 (Arthur Woodward, personal communication, 1966); to date, shell wampum has been found in only one Period 5 site (1836-1850) in our area--the Colonel Cooper Site, which appears to date around 1850.

It is well known that attempts were made by the white traders to pass off glass beads to the Indians as shell wampum. Types 64, 65, 66, 157, and 183 which appear in Periods 3 and 4 were probably designed to imitate wampum.

Wampum Pipes

Although shell wampum hair pipes are not considered in this analysis, five specimens have been found at the Devils Canyon Site (Period 4). These pipes were used as hair ornaments and in making breastplates. Wampum shell beads began to decline about 1830 and soon died out; however, wampum pipes continued on in large numbers until the end of the trade.

Problems for Further Research

Some of the unsolved problems of trade bead research will be mentioned before closing.

Intense research is needed on the history of bead manufacture and trade routes of such countries as Belgium, England, France, Italy, and Spain.

Research is needed concerning the preferred colors in the area involved. For example, it has been noticed that in the small number of Norteño Focus burials found to date there seems to be a preference for blue and white glass beads. And the scarcity of yellow beads in Norteño Focus sites is striking in comparison to their relative abundance in other sites of

comparable date. Cultural selectivity on the part of the Wichita tribes was probably the major factor in determining what color beads were traded into the area.

The problems involved in trying to determine the countries where beads were manufactured between 1700 and 1850 are especially perplexing. Woodward (1965: 4) states, "In general, the bulk of the glass beads, traded on the North American continent from the 16th until around the first half of the 19th centuries, were made in the glass factories of Murano, Venice." This is undoubtedly an accurate statement with regard to the trade beads of the 16th, 17th, and early 18th centuries, but it evidently does not apply to the period of our particular concern: 1700-1850. For with the fall of the commercial Republic of Venice in the ~~1830's~~ 1730's, the glass production of Murano declined drastically, until by about 1735 what had once been a flourishing enterprise supporting 300 glass houses was quickly reduced to less than 20 (Rogers and Beard, 1937: 40). During that time many of the Italian bead makers fled to other European countries, including England, France, and Spain, where some of them were employed in glass factories. Because of the secrecy of the guilds that surrounded the manufacture of beads, it will be extremely difficult--perhaps impossible--ever to unravel the historical details concerning the places where 18th and 19th century trade beads were manufactured. Possibly the changes in bead types between Periods 1 and 2 reflect this shift in locus of manufacture.

Metal Projectile Points

Numerous specimens of native-made metal projectile points have been recovered from the various historic sites in the Spanish Fort area, on both sides of Red River. All of them are made of iron or brass obtained from Europeans. The iron points appear to have been made from flattened sections of gun barrels, from gun furniture (finials, butt plates, trigger guards, and the like), from knife blades, and from bridle parts. The brass points appear to have been made from kettle fragments and gun furniture.

In this preliminary description, only the metal projectile points found during the excavation of the Upper Tucker and Longest Sites will be considered. There are 12 specimens from Upper Tucker and 35 from Longest. One formal arrow point type is recognized in the sample: the Benton type, named in honor of the late Joe Benton, a pioneer cattle and oil man of Nocona, Texas, who with his wife and daughter for many years made extensive collections from the Spanish Fort sites in both Texas and Oklahoma. A detailed description of the type by the

present authors will appear in the Gilbert Site report, now in press (Bulletin of the Texas Archeological Society, Vol. 37).

Benton Type A

This is a diamond-shaped projectile point with its maximum width approximately equidistant between base and tip. The lateral edges of both base and stem are essentially straight. The blade edges are honed sharp. Irregular, hacked notches along the stem edges evidently functioned to facilitate hafting. Of the 12 metal points found at Upper Tucker, three (one of brass and two of iron) are Benton Type A (Fig. 54, a). Seventeen of the 35 metal points from Longest (Fig. 54, d-g) are Benton Type A. Three are brass, 14 iron.

Benton Type B

Type B is similar to Type A in all respects except that the stem edges are concave instead of straight. There are five Benton Type B points from Upper Tucker, all made of iron (Fig. 54, b), and eight (one of brass, seven of iron) from Longest (Fig. 54, h-i).

In addition to the Benton type, there are four metal projectile points from Upper Tucker (all of iron) and ten from Longest (five of iron and five of brass). These include both stemmed and nonstemmed triangular forms. Examples are illustrated in Figure 54,c, j-k.

Benton points have been found at most of the Norteño Focus sites, and they seem to have been a standard form used by the Wichita tribes. Iron appears to have been the preferred metal for projectile points in the southern plains, especially in the later part of the historic period.

Metal Knives

During excavation at the Upper Tucker and Longest Sites, several metal knives and knife fragments were found. Knife blades are important to typological studies of European trade goods because they are not only stylized, but also because they often bear makers' marks beneath their coating of rust which can sometimes be brought out by careful cleaning.

Three small fragments of metal knives were found during excavation of the Upper Tucker Site. Two of them--both case knife fragments--came from the fill above the floor of Feature 1A; the other, a blade tip, was a surface find. All three are too fragmentary for typological classification. One specimen (Fig. 54, l) has had both its blade and handle cut away, leaving only the center boss. The blade and handle portions perhaps were made into metal projectile points. Points made from knife fragments are known from Norteño Focus sites.

Recovered from the Longest Site were one nearly complete clasp knife, one complete knife blade, one nearly complete blade, and three blade fragments. In the fill of House 1 was found an almost complete clasp knife with the blade folded into the handle (Fig. 54, m). The maximum length is 94 mm., the maximum width 27 mm. It is impossible to clean the knife as it has almost completely oxidized. This knife is of a type very much like our present-day pocket knives. A few flecks of a bone handle can be seen in the rust. A clasp knife of much the same form was found in the excavation of Queen's Battery at Signal Hill, St. John's, Newfoundland, dating from the early 19th century (E. B. Jelks, personal communication, 1965). Both of these knives are probably of English manufacture. They do not fit the typical French knife pattern.

A small clasp-knife fragment of the above type (Fig. 54,n) was found in the plow zone at the Longest Site.

A complete knife blade (Fig. 54, o), found in Feature 19 at Longest, is 105 mm. long, 12 mm. wide, and from 1 to 2 mm. thick. It is an example of French clasp knife Type 3 as defined by Harris, Harris, Blaine, and Blaine (1965: 348-350). When cleaned in an acid solution, letters and emblems were found stamped near the proximal end, on the left side of the blade. The top group of letters forms the name H U G U E S, but only the first letter of the bottom name can be read, and it is a P. Turned at an angle of 90 degrees to the letters were parts of two emblems: a fleur-de-lis in front of the name and part of a heart-shaped element following the name. A fragment of knife blade stamped with the same name was found at the Ayres Site, on the Texas side of Spanish Fort Bend, by Jay C. Blaine (personal communication).

On the floor of House 1 at the Longest Site was found the blade of a case knife with part of the handle missing (Fig. 54, p). It is 110 mm. long and 15 mm. wide. It was cleaned with a weak acid solution, but no maker's mark was found, perhaps because of heavy oxidation.

Two small fragments of knife blades were found in the fill of House 1, but both were too small for typological identification.

TYPE			SIZE
1	S	19A2-1	L
2	S	19A2-1 M	L
3	S	19A2-1	L
4	CP	19A2-1	L
5	CP	19A2-1	M
6	S	19A2-1	M
7	S	19A2-1	L
8	S	19A2-1	L
9	S	Ra3 1	L
10	S	19A2-1	L
11	S	Ra3 1	M
12	S	Ra3 2	L
13	S	19A2-1	L
14	S	19A2-1 G	M
15	S	19A2-1 Q	M
16	S	19A2-1	L
17	S	19A2-1	L
18	S	19A2-1 C	L
19	S	19A2-1	L
20	CX	19A2-1 J	L
21	CX	19A2-1	L
22	CX	19A2-1	L
23	CX	19A2-1	L
24	CX	19A2-1	L
25	CX	19A2-1	L
26	CX	Ra3 2	L
27	CX	19A2-1	L
28	CX	19A2-1	L
29	CX	19A2-1 K	L
30	CX	19A2-1 I	L
31	CX	19A2-1	L
32	CX	19A2-1	L
33	CX	19A2-1	L
34	CX	19A2-1	L
35	CX	19A2-1	L
36	CX	19A2-1	L
37	CX	19A2-1	L
38	CX	19A2-1	L
39	CX	19A2-1	L
40	MPF S	19A2-1	L
41	MPF S	Ra3 1	L
42	MFS	19A2-1	L
43	MFS	19A2-1	L
44	S	19A2-1	S
45	CP	19A2-1	S
46	S	19A2-1	S
47	S	19A2-1	S
48	S	19A2-1	S
49	S	19A2-1	S
50	S	19A2-1	S
51	CP	19A2-1 C	S
52	MS	19A2-1	L
53	MS	19A2-1	L
54	MS	19A2-1	L
55	CP	19A2-1	L
56	S	19A2-1	S
57	CP	Ra3 1	S
58	CP	39B1-1	S
59	CP	39B1-1	L
60	S	20B8-8	S
61	S	20B8-8	S
62	S	Ra3 8	S
63	S	20B8-8	S
64	S	17A3-1	S
65	CP	17A3-1	S
66	S	17A3-1	S
67	CX	20B8-8	S
68	CX	Ra2	S
69	CX	Ra3 5	S
70	CX	20B8-8	S
71	CX	17A3-1	S
72	CX	17A3-1	S
73	CX	17A3-6 M	S
74	CX	17A3-6 M	S
75	S	Li1	L
76	S	Ra2	L
77	S	Ra3 14	L
78	S	Ra3 2	M
79	S	Ra3 1	S
80	S	Ra3 1	S
81	S	Ra3 3	S
82	S	Ra3 3	S
83	S	Ra3 1	S
84	S	Ra3 3	S
85	S	Ra3 5	L
86	CP	Ra3 7	L
87	CP	Ra3 1	S
88	PF	Ra2	L
89	PF	17A3-6 Y	L
90	CX	Ra2	M
91	CX	Ra2	S
92	CX	Ra2	L
93	MS	17A3-3	L
94	MS	17A3-3	L
95	MS	17A3-6 M	L
96	S	17A3-6 Y	M

FIG. 52

TYPE			SIZE
97	S	17A3-1	L
98	S	17A3-6 Y	M
99	CP	17A3-6 M	M
100	MS	17A3-1	L
101	MS	20B8-8	M
102	MPF	17A3-6 M	M
103	MS	39B1-1	M
104	MPFS	17A3-6 M	M
105	MPFS	20B8-8	M
106	M CP	17A3-6 M	M
107	MS	39B1-1	M
108	MS	39B1-1	M
109	MS	17A3-6 M	M
110	MS	39B1-1	M
111	M CP	17A3-1	L
112	M PF	17A3-1	L
113	CX	17A3-6 M	L
114	CX	17A3-3	L
115	CX	17A3-1	M
116	CX	Li 1	S
117	CX	17A3-6 M	S
118	CX	20B8-8	S
119	CX	17A3-1	M
120	CX	17A3-6 M	M
121	CX	39B1-1	L
122	CX	39B1-1	M
123	CX	39B1-1	M
124	CXM	17A3-6 M	L
125	S	17A3-6 M	ES
126	S	17A3-6 M	ES
127	S	17A3-6 M	ES
128	S	17A3-6 M	ES
129	CP-F	17A3-1	L
130	SF	39B1-1	L
131	SF	39B1-1	L
132	CRF	17A3-6 M	L
133	SF	39B1-1	L
134	SF	17A3-6 M	S
135	SF	39B1-1	S
136	S	39B1-1	L
137	S	39B1-1	M
138	S	39B1-1	M
139	SF	17A3-6 M	L
140	S	39B1-1	S
141	MS	34Ki. 1	M
142	MS	34Ki.-1	M
143	MS	34Ki. 1	M
144	MS	34Ki. 1	M
145	MS	34 Ki. 1	L
146	S	34 Ki. 1	L
147	SF	34 Ki. 1	L
148	SF	34Ki. 1	M
149	SF	BLACK 34Ki. 1	ES
150	SF	34Ki. 1	ES
151	SF	34 Ki. 1	ES
152	SF	BLUE 34Ki. 1	ES
153	SF	BLACK 34Ki. 1	ES
154	CP M	34Ki. 1	L
155	S	39B9-2	ES
156	SF	34Ki. 1	L
157	S	34Ki. 1	M
158	MS	34Ki. 1	M
159	S	34Ki. 1	L
160	S	34Ki. 1	M
161	S	34Ki. 1	S
162	CX	34Ki. 1	L
163	S	34Ki. 1	L
164	S	39B5-1	M
165	CP	17A3-6 M	M
166	SF	34Ki. 1	ES
167	SF	34Ki. 1	L
168	S	34Ki. 1	S
169	MF S	20B8-8	M
170	SF	34Ki. 1	L
171	SF	34Ki. 1	L
172	SF	34WG19	L
173	SPF/MS	34WG19	L
174	CP	34CM161	ES
175	S	34CM161	ES
176	S	34CM161	ES
177	S	34CM161	S
178	S	34CM161	ES
179	S	34CM161	ES
180	S	34CM161	ES
181	S	34CM161	ES
182	S	34CM161	ES
183	S	17A3-1	S
184	SPF	34JF1 1320	L
1	SHELL	17A3-6 M	S
2	SHELL	17A3-6 M	S

FIG. 53