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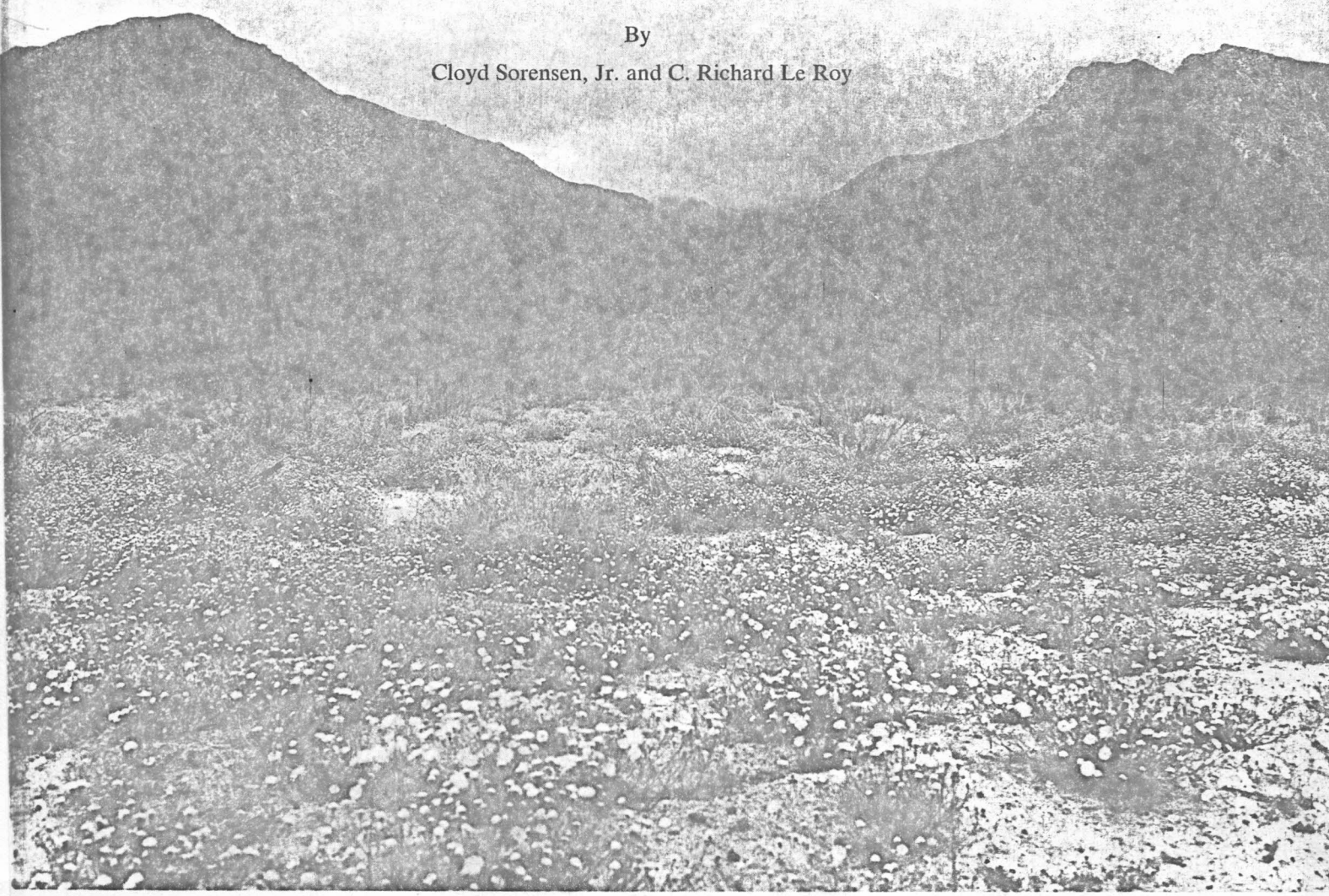
TRADE BEADS:

THE POWERFUL COMPANION OF THE EXPLORER

By

Cloyd Sorensen, Jr. and C. Richard Le Roy



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The search for precious metals, valuables and furs ranked uppermost in the minds of early explorers who were lured into the unknown territories of the New World. Each generation of conquistadors learned that the glass trade bead, and a few other simple trade items, served as the basic medium of communication and exchange. To the native, the bead bespoke of wealth, friendship and economic opportunity. The trader bargained these simple beads with the aborigines for furs, good will, provisions, and sometimes their very lives. The trade bead and other goods gradually brought about, in some areas of the New World, a dependence upon the explorer, trapper, trader, and colonizer.

While the use of glass trade beads is more closely associated with the adventurous and colorful fur trade of North America, these objects also played a little recognized, but highly significant role in the earlier Spanish exploration of the Southwest.

Research suggests that Columbus introduced the first colorful glass European trade beads to the New World as gifts to the natives of San Salvador. And surely between the time of his expeditions, and those of the Spanish conquistadors in the Southwestern United States, some 45 years later, there were introduced into the Valley of Mexico and other focal points, a variety of trade beads.

In the year 1540, the Viceroy Antonio de Mendoza, sent out a wave of conquistadors to search for the Seven Cities of Cibola. From the journals kept by the expedition of Francisco Vásquez de Coronado, there is extracted the first recorded exchange of glass trade beads with the Indians of the Southwest United States. The ill-fated Melchor Díaz, sent to blaze an overland trail now known as El Camino del Diablo, most likely traded beads along the way. And Hernando Alarcón, dispatched by the Viceroy into the Gulf of California to assist Coronado's land expedition, mentioned frequent Indian trade.

From the Zuñi Indian villages, Coronado dispatched Don Pedro de Tovar to explore the five Hopi cities. He traveled through the Petrified Forest, and very likely traded with Indians along the way. Coronado also dispatched his Army Master, García López de Cárdenas, to follow the reported Colorado River, in an attempt to find Alarcón, and obtain supplies. Cárdenas did espy the Grand Canyon, but knowledge of his contact with Indians is limited. Another arm of the Coronado expedition was sent northeast and into the Buffalo Plains under the leadership of Hernando de Alvarado who probably also traded beads to the Indians for their good will, provisions, and other assistance.

Of more certainty are the exchanges made by Juan Rodríguez Cabrillo, in 1542, when he explored the California coast by sea. Each time he put ashore, the crew traded beads and exchanged other gifts with the natives. In 1579, Sir Francis Drake landed on the California coast, north of San Francisco, and probably to show his good will, gave beads to the Indians. Sebastian Vizcaíno who also explored the California coast by sea, in 1602, traded with the natives.

What of the Manila Galleons which sailed from Acapulco, and other Mexican harbors, successfully making their first Pacific circuit in 1566? They navigated the crossings until 1816, averaging an annual round trip to bring back goods from the Philippines. Did Sebastian Vizcaíno who sailed to Japan in 1612-1613, to negotiate Spanish-Japanese trade, bring back enchanting trade beads and goods produced in the Orient? There are dozens of scarcely known Pacific voyages, which when reported about by historians now utilizing the documents, may reveal many surprising answers.

While the great Hudson Bay Company was founded in 1670, it is doubtful if any of their trappers worked their way into the Western regions at this early date. It still remained for the southern Europeans to wend their way up through Mexico, and into the American Southwest in a continuing procession, to conduct the Christianization and colonization.

In 1701, Father Eusebio Francisco Kino made explorations from Mexico to the Colorado River. He baptized natives along the way, and distributed beads and other minor trade items. From the journals and letters of Father Junípero Serra which provide one view of the "Sacred Expeditions" to California in 1769, there is mentioned the bartering with Indians along the route, and in one special instance beads were accepted as sort of an *entrée*.

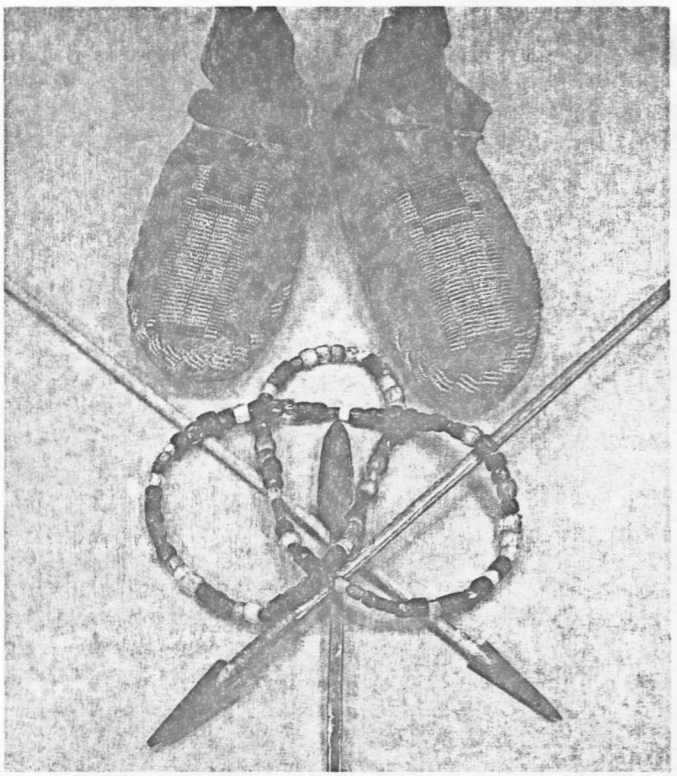
Father Escalante explored the Great Basin, from Santa Fe, New Mexico to as far north as Utah Lake. An entry in his journal dated September 1, 1776, notes that his party bought a little dried buffalo meat from the Indians, giving them glass beads in exchange. On October 16, 1776, after leaving their camp at Arroyo del Taray, today the site of Fort Pearce Springs a few miles southeast of St. George, Utah, they talked to eight Indians who told them the way to the Colorado River and indicated the kind of journey before them. Escalante wrote, "We gave them a present of two hunting knives and to each a string of beads and told them that if one of them would guide us to the river we would pay him."

What has been suggested to this point is the contact between the European and the native; not an overwhelming amount of data but the sum of information available to date. In time the full story of heavy contact during the Spanish period will be known when the numerous voyages into the Pacific and the Gulf of California are better understood; when the dozens of pearl fishing expeditions and military expeditions are chronicled; when the numerous journals and diaries located in libraries and archives can be translated to make more fully known the vast number of Spanish contacts.

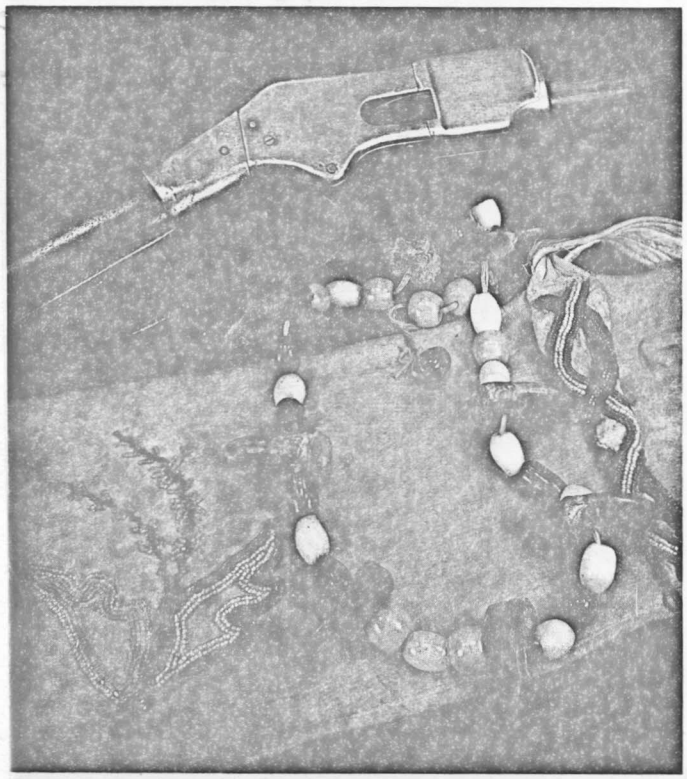
Other nations, too, sought the mythical passages to the "East" and most sought the wealth of the Americas. The French and the Dutch ventured into the Pacific, touching at many ports and islands. In 1728, the first known Russian exploration of North America was made by a Dane, Vitus Bering, who had been called to St. Petersburg, to the Academy of Sciences by Peter the Great, and who worked in the Service of Russia. His discoveries and reports of the wealth of furs along the Pacific Northwest Coast, opened up that region for trading through exploitation of the natives. In 1778, the Englishman, James Cook, made a voyage into the Pacific and told the Western World of the seemingly unlimited fur trade.

In a sense the conquistadors set a pattern for the use of the trade bead as an indispensable part of the goods which could be traded for wealth in whatever form it could be found. The fur trade on the North American continent which mushroomed in the 18th and 19th centuries is viewed as an enlargement or extension of the earlier searches for economic gain. Whole volumes chronicle the history of the fur trade and for purposes here, mention is only made in passing of the Northwest Fur Company formed in 1783, and of the powerful and long-dominating,

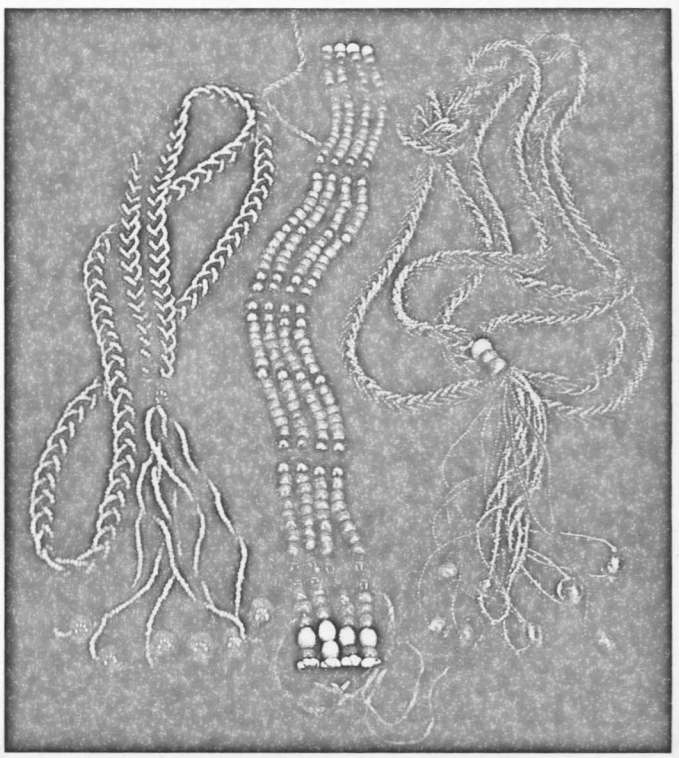
Century-old Mohave doll in a miniature beaded cradle board. Typical use of trade beads. Photos on this page from collection of the author.



Unusual beaded moccasins, probably Plains area, made of Buffalo calfskin. Russian bead types. Iron knife collected in Central Plains; two arrows, in remarkable condition picked up on Custer Battlefield in the Fall of the year of the battle, by an ex-pony express rider; are documented.



Winchester '66, favorite repeating weapon of Indians and frequently called "Yellow Boy." Bear Claw and glass bead necklace on beaded buckskin rifle scabbard.



Necklace on left a modern Mohave; on right a Mohave type of 1860's. Center piece is a beaded choker collected years ago in Plains.

Russian owned Russian-American Fur Company formed in 1799. This firm made the Pacific fur trade extremely competitive with the companies of the Western World, who had longer trade routes, until they were purchased by the American-owned Alaska Commercial Company in 1867.

For all intents, active fur trading in the western United States started with the Lewis and Clark Expedition of 1804, and this party traded beads with the Indians for it is mentioned in the journals that a coarse cheap blue bead, imported from China, was far more valued than the same bead in white. This note suggests that the blue bead had a special significance to the native, perhaps for wearing apparel, or that the market in white beads was simply flooded.

Under the Spanish descended Manuel Lisa, a first-class mountain man, the Missouri Fur Company was formed in 1808, as the first American-owned fur trading company. In that same year the American Fur Company was organized by John Jacob Astor. The fierce competition brought about national and international rivalry, eliminated some companies, brought about mergers or reorganization of other companies.

The backbone of each operation had to be the fur trapper or mountain man who blazed the trails — the individuals who marked the routes, water holes, and mountain passes for the rushing tide of immigrants to the West. Along their wandering paths in search of furs, they left with the Indians countless millions of these glass beads, traded for great fortunes in valuable furs. Some of the most simple of the glass trade beads brought from the Indians as many as two or more beaver pelts for a single bead! A small pouch of beads brought vast fortunes to the traders. The price in lives, however, was equally heavy. The hazardous life of the trapper included disease, starvation, hostile Indians, and accidents which took a toll. The American Fur Company alone lost at least 100 men during its existence. Other major companies fared little better. But — many a mountain man bought his way out of crucial situations with gifts of simple glass trade beads.

One must not assume though that the trapper's life was all work, or that the trade bead assumed solely an economic purpose. Washington Irving's book, published in 1843, discussing the adventures of Captain Bonneville, notes that the trapper purchased favors of a Shoshoni fair one, with strings of gay beads. From Pierre Antoine Tabeau's narratives of the Indians' use of the trade beads, he described the dress of a Sioux, mentioning a collar of bear claws, between which were hung little tassels of blue beads. "Sioux women know the value of their favors," he wrote, "the most inflexible is not proof against a prize of vermillion and of twenty strands of blue beads." The pages of journals and accounts suggest that the power of the trade bead was purposeful and powerful indeed.

When "trade beads" are mentioned the tendency with those unfamiliar is to think of the term "wampum." For the record, technically wampum beads are small cylindrical, smoothly shaped shells, approximately ¼" long, and ⅛" in diameter, and white or purple in color. These shell beads are made from the hard clam. Such beads are al most nonexistent in pre-historic Indian sites in the Eastern United States, and for all intent were made by settlers and traded to the Indians, particularly between 1600 and 1800 The bulk of the wampum traded in this country was made by John W. Campbell, and his decendants, from the 1700's until the early 1900's, in New Jersey.

On the other hand the word "bead" derived from the Middle English word, *bede,* means prayer and includes shell, bone, stone, copper, and glass, used by man as decorations and ornaments for thousands of years. Complexly decorated glass beads have been discovered by archaeologists, as far back as the 19th and 20th Egyptian Dynasties ranging from 1146 to 1100 B.C. The ancient Egyptians used glass beads as ornaments and decoration on mummy cases. Beads were also used by the Romans and Saxons.

The majority of all glass beads traded on the American continent, from Coronado's time until the middle 1800's were made in the glass factories of Murano, Venice, where known manufacture of glass beads dates back to the 11th century A.D. The Venetians were extremely jealous of their bead-making monopoly. For centuries it had been a major export of the tiny republic. To prevent the defection of skilled glass workers of Venice, the Senate of the Republic of Venice, in 1673, issued a decree stating that any glass workman or artist who transported his art into a foreign country, would be sent an order to return. If he did not obey the order, his nearest relatives would be imprisoned. If he did return the errant worker would be pardoned, and a job would be found for him in Venice. If, in spite of the imprisonment of his relatives, he still determined to live abroad, an emissary would be ordered to kill him. After the death of the artisan, his relatives would be set at liberty.

The decree did not stop the defection of glass workers. In the 1600's, there were glass factories producing trade beads in Sweden, France, England, and Amsterdam. Many of the beads in these countries show a marked resemblance to the craftsmanship of the Venetian beads. A known bead factory built in Amsterdam in 1608, operated until 1680, but there is no known physical means to determine if beads of this period were made in Amsterdam or Venice. It is possible, however, through chemical analysis, to determine a difference. The Venetian beads had a high percentage of sodium, with very little potassium. The Amsterdam beads, where potash was used, showed a high potassium content, up to 23% of the glass, with little sodium.

At Tel El Amarna, now but a collection of ruins and rock tombs in Upper Egypt, the earliest known glass factory existed and dates from the XVIIIth Dynasty. The Venetian trade beads most familiar in the western United States, often show little change from beads made two thousand years before. The Venetian workers copied the designs and methods used in Egypt and Mesopotamia.

Glass trade beads can be divided into four classifications, dependent on the method of manufacture:

1. Those made from drawn glass tubing;
2. Those made by winding glass around an iron mandrel [cylindrical bar];

3. Those made of pressed glass, or molded glass;
4. Those made of blown glass.

Tubular beads, or the beads made from drawing glass tubing are sometimes called bugles or cane and were made by hand, with a simple but rather ingenious method. A mass of molten glass was picked up on a pipe, and blown to have a central air cavity. With this pressure maintained to keep the cavity from collapsing, the mass was then picked up at one end with an iron rod, and run across the factory floor as fast as the worker could carry it, until it solidified. These drawn tubings were then sorted into lengths and sizes, and finally cut into the desired lengths and then frequently tumbled in a small furnace, not unlike a hand cement mixer, until the corners and edges were rounded. Most of the common beads, especially the small beads used for the intricate bead work done in the last century by the American Indians, were made by this method. Very complex multi-colored beads could be made using the tube method by simply mixing two or more colors of glass together, stirring, twisting, or folding and then drawing the tubes. Very intricate designs and patterns could be created by the experienced glass worker. Because of the nature of their manufacture, cane or tube beads will show a slight taper in diameter, the longer they are the more the diameter of the ends will differ.

The wire wound or mandrel beads, were made by heating a thin stick of glass until it had much the consistency of toffee, and was then wound around the wire mandrel. Because of this process the spiral marks are often visible in the glass bead. Frequently there is a projection on the end of the bead showing where this thin fluid thread was broken off. Often these beads were reheated for further decoration. By this method most of the complex, polychrome Venetian beads were made. Many had inlaid or raised designs added in another stage of manufacture. This method was simple but time consuming and many were made in the homes of the Venetians on some sort of contract with the glass factories.

The molded beads were made by taking a small piece of fluid glass and pressing it into a mold, or by shaping it with a tool. Some of the multi-sided beads are made this way, and the various sides are pressed with a flat instrument, such as a spatula. Again, the color and decorations of these beads, depend on the whim of the glass worker. Glasses of several colors can be partially mixed together, and then molded giving a swirled and sometimes zig-zag color design.

The blown glass beads are actually small bubbles or a short portion of a tube of glass, that is, blown into a bead, either as a round smooth ball, or in some cases blowing it into a mold for a more complicated or decorative form. Again the decorations of these beads can be varied by making strips of various colors of glass arranged in folds or parallel lines, and partially fusing them before the bead was made.

While the bulk of all trade beads traded to the Western Indians were glass, there were other materials used, including brass, and copper molded beads, twisted copper wire beads, and sometimes iron or steel beads. Occasionally beads were carved from ivory or tusk, and a few Europeans made bone pipe beads, as well as the shell wampum.

There has never been a universally accepted system for classification or nomenclature of glass trade beads. In 1926, Horace C. Beck read a paper which was published by the Society of Antiquaries of London two years later. He presented a very thorough and workable system applicable to beads of all regions. It covered in detail all systems of nomenclature and classification, but the article seems scarcely known today. Archaeologists reporting finds on their field records simply make note of the discovery of a trade bead, reflect that it is of a certain color and material without more specific classification data. Collectors, too, apply names to beads, on the basis of their having been found in a certain area. An example is the White Arkansas trade bead. This type is also found in central California where they are called "quartz" beads. The "Russian" trade bead has different titles for different collectors. While there is no evidence that beads were manufactured in Russia, many of these so-called "Russian" beads found in Indian villages along the Northwest coast have but one common denominator: their deep blue color. It is debatable whether they were actually the cut-faceted or the globular round beads that were traded by the Russians, and no doubt manufactured in Venice. Another common error is noted in the sky blue opaque, round bead, often called the "Canton" bead and at other times the "Chinese" trade bead. This type, no doubt known by a half-dozen other aliases to collectors, was not made in China, but was imported to Canton by a British company and exported again to the various fur traders. Another classic error in bead nomenclature is the satin light blue, opaque, nearly globular, Venetian bead, sometimes called the "padre" bead, the "olive" bead, and the "Pima," or "Papago," trade bead. This bead is believed traded by Coronado and the first padres who visited among the Indians of the Southwest. This particular type is found in Pima shrines.

There are several famous and well-defined beads. One is the "Hudson's Bay" trade bead or the "Cornaline d' Aleppo" bead, which is thought to have been manufactured and traded in the period 1600 to 1725, perhaps even into the 1800's. This bead is characterized by an opaque, brick red exterior over what appears at first glance to be a black interior, but when viewed with transmitted light, its center is from light to dark translucent green. These beads have been found scattered widely over the entire United States and Canada, and are from very early sites. A later type of the Hudson's Bay bead has a translucent bright red exterior, with an opaque white, sometimes yellow, and rarely pink, interior. These are sometimes called "white hearts," and first appeared in western American sites dating in the middle 1800's. The smaller white hearts, about 3/16" were used by the Blackfeet Indians for children's necklaces and were called "under white beads."

The Blackfeet were fond of a large blue bead with a raised pattern of meandering lines and flower buds of red and white. These necklace beads were called "skunk"

beads and a necklace of them was worth a good horse and a robe.

The Blackfeet also used a bead they called the "Crow" bead that was an irregular mandrel wound, monochrome, opaque bead over ¼" in diameter and usually a light blue. Less desirable but also available were medium blue, pale green, light red and black "Crow" beads.

The Russian bead commonly traded along the Northwest coast and frequently found in southern California, appears to be a faceted or cut glass deep blue translucent bead rather than the smooth, round translucent bead sometimes called the Russian bead. This round blue bead, appears to be of Chinese manufacture dating in the late 1800's. The faceted Russian bead was probably first traded in the very early 1800's, by the Russian-American Fur Company. There have been some blue glass faceted beads discovered in the eastern United States, which are of much cruder design, that date to the year 1710.

The highly decorated polychrome Venetian beads mentioned under mandrel wound beads were highly sought after by the Crow Indians of Montana. These beautiful beads are the ultimate in glass bead art. Many have flower designs; others are colorfully inlaid or have raised designs. Some have been found with gold leaf decorations.

Many glass beads were made to imitate natural designs or materials. Some examples are the colorless "gooseberry" and knobby "raspberry" bead, excavated at the Natchitoches, Louisiana sites occupied between 1714 and 1820. "Corn kernel" beads have been excavated in North America made of red, yellow, and green glass. Another well-known imitation glass bead is the "barleycorn" resembling the barley seed that was in use in the late 1700's, and known to have been made in translucent wine red, and green. At the Whitman Mission National Historic Site near Walla Walla, Washington, archaeologists excavated two opaque light blue-grey flat beads that looked like five petaled flowers. These beads showed definite mold marks and were taken from a soil layer dated between 1848 and 1855. Some years ago at San Luis Rey Mission, in Southern California, a single translucent bright green bead was excavated which appears to be a tiny melon with ridges. In the author's collection there is a very old Navaho leather pouch, with a very large opaque green bead hanging from the draw string, which looks to be a perfect imitation of a green pepper.

One of the rarest and yet fairly modern imitation beads, which is highly sought after by bead collectors, is the "Hubbell" bead imported by Lorenzo Hubbell, at the Ganado Trading Post in Arizona. They closely resemble the finest turquoise. These beads were made for a short time in Czechoslovakia apparently exclusively for the Hubbell post around 1915. Today one can show an older Navaho a string of these beautiful beads and the instant comment is, "Ah, Hubbell beads!" The idea caught on fast with the Navaho, so much so, that they would pawn their valuable turquoise and wear the imitation glass beads. The scarcity of Hubbell beads may be attributed to their reported use as a substitution for the more valuable turquoise in burials.

Perhaps the most famous of all beads to collectors, and sometimes called the aristocrat of beads, is the "star" bead, the "sun" bead, the "chevron" bead, or the "cane chevron" bead. This colorful object has been found in almost all parts of the North American Continent and in many parts of the world. It is extremely rare, however, and understandably, due to its complex method of manufacture. It has been found in sizes ranging from 2½" to as small as ⅓". The diameter is generally less than the length. It is made by the arrangement of three or more colors in concentric layers, including a deep cobalt blue, an opaque brick red, a pale green transparent glass, and sometimes an opaque yellow. The main layers of colors are divided by thin inner layers of opaque white glass. By one of several methods, the dividing surfaces of white have been worked into a series of chevrons or zig-zags. In most all cases these zig-zags form a twelve pointed star on the ends of the beads. In a few cases the chevrons on the sides of the bead are dragged laterally, so they resemble the teeth on a circular saw. In this case they are called wire-drawn chevron beads. The colorful red, white, and blue chevron bead is the ultimate in polychrome glass bead manufacture.

Most of the early trade beads were rather crude, large, and of the necklace variety. Gradually the Indians began to decorate their belongings and apparel with strings or tassels of these beads. Finally with the introduction of more of the smaller varieties of beads, the art of loom weaving began to develop.

Probably the first use of these small glass trade beads was for making simple sashes. First using colored beads at random, plain patterns began to develop from various sorted colors.

One of the very earliest known pieces of Indian beadwork known in the United States today is a sash on a colorful and intricately engraved French powder horn, dating to the early 1700's. The opaque beads, of about ⅛" diameter are woven into a sash of about 2½" in width, with twisted buffalo hair.

In the very early 1800's these ⅛" "pony" beads, so named because they were first brought in by the traders on pony pack trains, made their appearance on the western plains. Their first use took the place of the porcupine quill work that decorated the apparel of the early Plains Indians. The first designs were very simple geometric lines.

A smaller Venetian bead known as the "seed" bead first appeared in the Eastern United States in the very early 1700's. By 1840 this bead was in extensive use on the plains and has continued to adorn the classic pieces of Indian beadwork until modern times.

The first "seed" beads were rather irregular opaque, hand made Venetian beads available in a great variety of colors. The colors and shades of the older beads were richer and softer than those of the more modern. The later variety are much more even and regular in size.

In the middle 1800's the Venetian craftsmen lost their 700 year Old World monopoly and their main competition came from Bohemia (Czechslovakia). It is almost impossible without considerable experience, to tell the difference between the Venetian and the Czech beads except the

colors of the latter are sometimes brighter and the whites have a bluish cast to them. About the same time France, England, and Belgium also began to export beads.

Because the "seed" beads came late in western history, there are a great many surviving examples of the beadwork accomplished by the American Indians using these tiny beads. Much written information and material is available on beads and beadwork of this period. It is possible for experts to look at a beaded Sioux pipe bag and tell from the design and the type of stitch the beads were fastened to the leather with, and depending on use of thread or sinew, date the bag within a few years of the time some patient squaw created the work of art.

A great number of Indian tribes used beads. Some did loom weaving and others beaded their clothing, both on leather and trade cloths. Each major tribe had special designs and methods of attaching the beads.

The number of seed beads used in North America are beyond computation. The author has in his collection a fully beaded Sioux cradle board, made in the 1840's, that has a very conservatively estimated 228,000 tiny irregular seed beads, all fastened to the buffalo hide backing with sinew. This piece of classic work averages 380 seed beads per square inch, with over 600 square inches of fully beaded surface.

There is very little recorded information on the larger necklace types of trade beads, their exact methods of manufacture, their specific uses or even the details of their distribution. One major problem is that the design of a bead may have been the same for several hundred years. It can be possible with concentrated study to determine some order of trade route distribution from a few particular beads known and dated from scientific excavations, but an enormous amount of research and work remains to be done. The surface of trade bead research and knowledge, despite a large amount of literature, has scarcely been scratched.

Hopefully one day soon the history of the durable glass beads found in the American West, which have survived to baffle and intrigue the archaeologists, will be given far more serious cause for study. The dating, and identification will reveal a wealth of historical data badly needed for a better understanding of trade routes and contacts between various groups of peoples. For the present we can be sure that without these very important and enticing glass beads, which communicated friendship, the opening of the American West could very well have been quite different.

BIBLIOGRAPHICAL NOTE

The extensive "Bibliography on Beads," compiled by Dr. Alfred Buehler and Dr. Kenneth Kidd et. al., in 1962 is extremely useful for the elusive documentation of glass beads, and we wish to thank the Corning Museum of Glass, at Corning, New York, for their most helpful assistance in providing information for us. The article titled "Classification and Nomenclature of Beads and Pendants," by Horace C. Beck, in *Archaeologia*, vol. LXXVII (1928), pp. 1-76, ought to be the standard guide for all descriptions for the trade beads. Other works and articles of value are, William C. Orchard, *Beads and Beadwork of the American Indian,* published by the Heye Foundation, first in 1929, and more recently reprinted; Carrie A. Lyford, *Quill and Beadwork of the Western Sioux,* (1940); and John C. Ewers, *Blackfeet Crafts,* (1945). Of invaluable help to writing this brief article were the April 1968 issue of *Nebraskaland;* Philip W. Whiteley's article, "Trade Beads among the American Indians," in the (1951) volume 7, of the *Denver Westerner's Brandbook;* the Oregon Archaeological Society Publication, "Indian Trade Goods," by Arthur Woodward (in 1965), and Robert A. Murray's "Glass Trade Beads at Fort Laramie," *Wyoming Archaeologist* (Fall 1964). Finally, the fine work by Peter P. Pratt, *Oneida Iroquois Glass Trade Bead Sequence, 1585-1745,* Fort Stanwix Museum, Rome, N.Y., is of much value.

Because the nomenclature and classification of trade beads vary, especially with the local areas in which they are found, the authors here, are using the most common names and terms. The dates, when given, and the sites found, are the results of the authors' knowledge from research and study of dated archeological materials, observations of old crafts and the study of early publications and pictures. Unless otherwise stated, all glass beads are considered to be Venetian or influenced by Venetian craftsmanship.

Since glass trade bead research is still in its infancy, the dates given are certainly subject to revision. The authors welcome all information and criticism.

* * *

COLOR PLATE NO. I

#1. Opaque, light blue mandrel wound bead showing spiral marks and sometimes streaks of darker blue, has a satin-like finish. Usually called the "Padre" or occasionally the "Pima" bead. Frequently found in the 16th Century Pima contact sites in the Southwest. Evidence indicates this may be the bead the early conquistadors and padres traded to the Southwest Indians. A very rare bead found most often in old Pima shrines. Occasionally found scattered throughout the West, including the Columbia River area. It is thought they were highly prized by the Indians and often handed down from one generation to the next.

#2. Medium delft blue opaque mandrel wound bead, showing spiral marks, sometimes called the "Pima" bead, found in early Spanish contact sites of the Southwest. May possibly be as early as the "Padre" bead shown in #1. Lacks the satin-like finish of the "Padre" bead.

#3. Large white to ivory irregular shaped bead found in many early sites in the West, frequently called a "China" bead, "quartz" bead, and sometimes erroneously, a "pony" bead or "California trade bead." They appear to be porcelain or China but are glass, probably tube or cane drawn, cut and then hot-tumbled. Many show tiny pits on the ends around the holes. Probably traded early by the Hudson's Bay Company. Frequently found in excavations with the early Hudson's Bay or the "Cornaline d' Aleppo." A rather common bead possibly dated as early as 1600. Often found in great numbers from old southwest cremations.

#4. A deep brick-red, opaque bead, usually a composite of two red colors showing a resemblance to wood grain. These glass beads appeared very early in the eastern sites and some have been dated in the late 1500's. They are very rare in the West.

#5. Varieties of the "Cornaline d' Aleppo," commonly known as the "Hudson's Bay" bead, sometimes the "California trade bead" and frequently excavated along with the white "quartz" bead shown as #3. They are found scattered throughout most of North America, and are dated usually from 1600 to about 1725, but possibly as late in some areas as the very early 1800's. They were made in many sizes, from large necklace beads down to very small seed beads (about 1/16 inch in diameter), as well as "canes" or "tubes." They are characterized by an opaque brick-red exterior over a translucent green interior. The tubes or cane varieties appear to be the earliest forms in many eastern sites. This bead is quite commonly found in central California, especially in the San Joaquin Valley.

#6 through #13. Various types of "candy stripes." Very rare in most western sites, but frequently found in early 1600's eastern sites and occasionally in the plains area. Usually tube drawn, broken into sizes and then hot-tumbled. Some are basic composites of two or more colors. Can be very early to quiet recent. The more recent "candy stripes" are usually not composites of two or more colors and their colors are not as rich or deep. Bead #13 is also a "star" or "chevron" with a 12-pointed star design on the ends.

#14. Small "star" or "chevron" bead. Extremely rare. The aristocrat of all glass trade beads. Fashioned by Venetian craftsmen for hundreds of years. Rarely found, but examples have been discovered throughout all of the Americas. Almost always the ends show a star design consisting of twelve points, thus the name "star." Usually found in 16th or 17th Century sites. Sometimes has a fourth color usually yellow and rarely green.

#15. "Bugles," "tubes," or "cane" drawn beads, usually very old and frequently the basis for a more complex bead manufacture. Not commonly used because of their fragility. Sometimes exported to other countries from Venice, as long canes, used to make other beads. A micrometer shows taper of the diameter because of their manufacture. The center one, (black), has four sides, probably made by pressing or molding while hot. The top blue-grey tube is a composite of two colors of blue.

#16. A painted or lacquered imitation coral bead. A lacquer is painted over a translucent mandrel wound glass bead. Not common, but found in the West, sometimes on old garments, necklaces, or other crafts. Thought to have been made in Bohemia around 1860, before there was any natural coral-colored glass. One example was found in the excavations of Fort Laramie. The authors have also seen this type of bead on very old Mojave necklaces.

#17. A medium blue translucent mandrel wound bead, possibly as early as 1900's, but not common.

#18. Transparent, large mandrel wound green bead with a larger than average hole. Color is rare. This particular bead was found in California, in the western Mojave Desert, possibly dates as early as 1820.

#19. Transparent amber, mandrel wound bead. Rare Color. Occasionally found throughout the West in 1800's sites.

#20. Opaque blue, simple mandrel wound bead, frequently seen with uneven or irregular shapes. Not common. Little information available.

#21. Opaque mandrel wound simple bead of a rare yellow; little information available.

#22. A sky-blue opaque, mandrel wound, fairly recent bead. Possibly Bohemian or Czech, of the early 1900's. Quite common.

#23. A transparent medium blue, mandrel wound fairly common bead, possibly recent, through early 1900's and probably Bohemian or Czechoslovakian.

#24. Translucent skim-milk color, mandrel wound. The faint bluish tint suggests Bohemian manufacture, from late 1800's to early 1900's.

#25. Translucent light blue mandrel wound, not common color. Probably early 1900's, and likely Bohemian in manufacture.

#26. "Bugles," "cane," "drawn tubes." Top bead is a black tube with extremely small hole, showing a grey stripe. Beads of short cane usually opaque, with stripes are frequently found in early 1600 eastern sites. Second from the top with red stripes, is a tube or cane bead showing smoothly rounded ends, suggesting being hot-tumbled. Third from the top is a transparent blue bugle with rough ends, dating to possibly the early 1900's. Bottom is an opaque brick-red cane, resembling, and sometimes called "imitation pipe stone." It is an early type, possibly dating to the 1600's in the eastern sites. Rare in the western sites and quite fragile.

#27. Medium opaque royal blue, short cane type, broken from canes and then hot-tumbled. Resembles many beads from late 1800 to early 1900 sites, but not common in color.

#28. Teal blue composite tube with opaque white inner core. Could be an old type. Little information is available.

#29. Red opaque, extremely rare, cane type bead taken from an old Navajo necklace, with old style silver beads. Shows age, and probably pre-1900. Has small hole.

#30. Black irregular tube or cane bead, a rare color and not common in the western states. Probably late 1800's.

#31. Small pink, irregular shape and a rare color. Taken from a necklace collected in the plains area years ago. Probably dates to the mid 1800's. Little other information.

#32. Wampum, cylinder-shaped bead, made by Anglo-Americans from the shell of the mature hard clam found off the coast

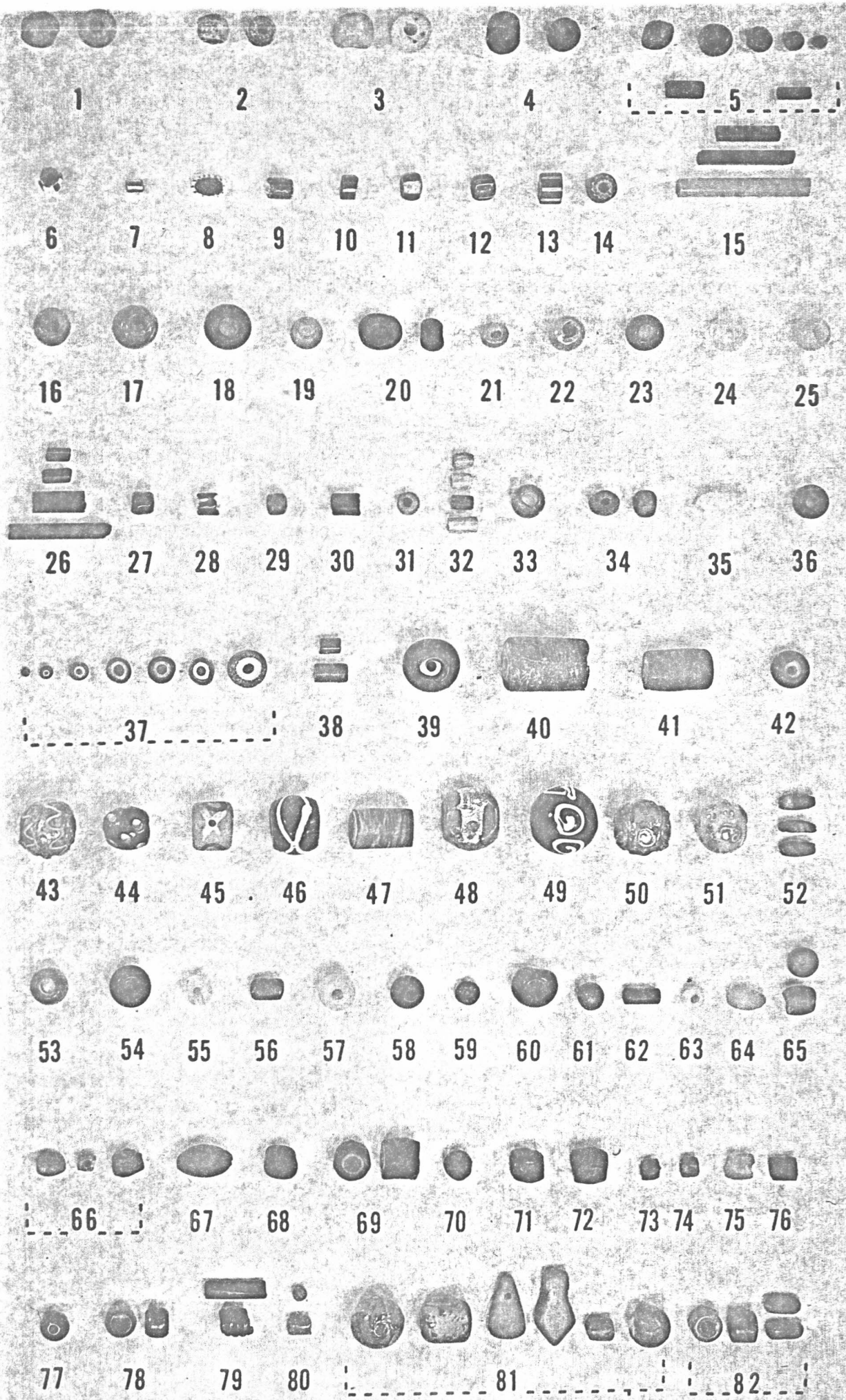

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PLATE NO. 1

of the New England States. Originally the Indians used wood that was stained white or black. White is the most common color, but purple was the most valued by the Indians. At one time it was said that a pound of purple wampum was equal to a pound of silver. Not too common in the West, but fairly plentiful in the East. To early 1600's.

#33. Transparent medium green, mandrel wound bead, probably early 1900's, and possibly Bohemian or Czech manufacture. Quite rare color.

#34. Medium blue opaque, irregular bead with a small hole, from a necklace collected in the plains area with bead #31. Quite rare. Possibly the mid-1800's.

#35. Translucent white peanut-shaped, mandrel wound bead, showing faint spiral marks. From a plains necklace, possibly mid-1800's. Very rare in the West.

#36. Transparent medium to dark blue, mandrel wound, possibly early 1900's and Bohemian or Czech manufacture. Quite common in West.

#37. "White hearts," "under-whites," "late Hudson's Bay," "California trade beads," transparent to translucent red or orange exterior over an opaque white, rarely yellow or pink core. One of the more common beads, probably manufactured from cane and then hot-tumbled. Bead on the extreme left is typical size of the "seed" bead (1/16th inch); the second from left is typical size of the "pony" bead (1/8th inch). Fourth bead from left has a slightly pink core, fifth bead from left has probably been in a cremation fire. Large bead on far right was a surface find on the Southern California desert, near the old Butterfield Stage Road in San Felipe Valley. This type of bead is very common in Central and North America. There are many sizes, shapes and color variations. Evidence points to the early 1840's as first trade date in the western states. Was popular with almost all of the Indians and found in all trade areas in the western United States.

#38. "Bugles, "cane" or "tubes." Small tubular variations of the later "Hudson's Bay" or "white heart" bead. Not common, but found throughout the West. Mid 1800's.

#39. Another variation of the "white heart" bead. This bead is very rare mandrel wound transparent red exterior over a white opaque core. Sample found in the lower Columbia River area. Mid 1800's.

#40. A cylinder-shaped variation of the "late Hudson's Bay" or "white heart" beads shown as #37 and #38. The complex mandrel wound translucent red is over an opaque yellow core. Evidence points to this bead being possibly earlier than the same types with the white core. A rare bead most often found in central California, dating to the mid-1800's or earlier. This specimen is 2 cm. long.

#41. Smaller variety of bead shown as #40.

#42. A flat, doughnut-shaped, translucent red mandrel wound over a yellow core. A very rare variety of types #40 and #41. This specimen collected on lower Columbia River years ago. Dates to mid-1800's or earlier.

#43. Venetian polychrome, highly decorated, showing a greenish metalic gilt base over a mandrel wound core of greyish translucent glass. Glass threads of yellow and light blue raised around the surface, showing considerable wear and probably dating to the late 1800's. A type frequently made in the homes of the Venetians.

#44. A typical "eye" bead, showing composite blue and white eyes impressed in a black mandrel wound base. The "eye bead" design goes back to the ancient Egyptian glass beads. To some Indians the "eye" in such a bead had some type of mystical significance and were valued highly. Probably dates to early 1800's or before.

#45. Unglazed light blue mandrel wound bead with the ends pressed flat with black and white designs pressed flush into the surface. This particular bead could be considered a variation of the "skunk" bead. It shows much age and could be of the late 1700's or before.

#46. Black mandrel wound bead with the ends pressed flat and a slightly raised, but impressed white linear design showing occasional flecks of blue. Also has brown to reddish brown eyes impressed at various positions. Could be a variation of the "skunk" bead. Dates to the early 1800's or before.

#47. Cylindrical, mandrel wound polychrome, showing a swirled multi-color design with little glaze. This bead shows a very old type of design and manufacture and could pre-date Venetian manufacture. Taken from a very old string of polychromes with many of the early Hudson's Bay or "Cornaline d' Aleppo" beads strung with it. Possible dating to at least 1725.

#48. Mandrel wound light blue opaque base with gold gilt and red eye impressed while in a hot semi-plastic state and the sides pressed flat. Probably dating into mid-1800's.

#49. Round polychrome black like #46 with inlaid white and blue meandering lines, a possible variation of the "skunk" bead. Probably dating to the early 1800's.

#50. Tan polychrome over an opaque pink mandrel wound base with raised blue eyes impressed. Pink flowers with yellow and amber raised linear designs. Possibly dating to the early 1800's.

#51. Yellow polychrome mandrel wound opaque base with flowers of blue, white and pink impressed flush into surface and a band of gold gilt. Probably dated from the 1860's to 1880's.

#52. "Barleycorn" polychromes, unusual small, thin size, colors swirled and made by molding or pressing the sides flat white hot. These beads were taken from a very old Plains area necklace. A very rare type of bead possibly dating to the mid-1800's. No other information or examples available.

#53. Light green mandrel wound transparent bead, probably dating to late 1800's or early 1900's and possibly Bohemian or Czech manufacture.

#54. Dark blue translucent mandrel wound, doughnut shaped bead with a rather large hole. This bead and its variations are quite common in western sites. Probably dates to at least the mid-1800's in western states. Taken from a Plains area necklace collected years ago. Strung with other beads including white peanut-shaped bead #35.

#55. Nearly opaque white with slight equatorial ridge, suggesting mold marks. From an old Plain area necklace, probably dating to the early 1870's or slightly before.

#56. Slightly translucent turquoise blue with many tiny air bubbles. Rounded ends suggest hot tumbling after being broken from a longer cane. This particular color and material is quite common in western sites. Great numbers of this type in many varieties have shown up in early 1800's western sites.

#57. Nearly opaque white probably mandrel wound. This particular bead is not common, but found occasionally scattered throughout the western states. Sample here was a surface find on the lower Columbia River and probably dates to the mid-1800's.

#58. Mandrel wound opaque dark blue showing faint spiral marks. This globular bead taken from an old Plains area necklace along with beads #35 and #54. Considered quite rare. Probably dates to mid-1800's.

#59. Translucent aquamarine doughnut shape, probably made from drawn cane and hot tumbled. The many variations of the material and color of this bead are very common in the western states and the material used is the common denominator for countless numbers of trade beads. The authors have seen a great number of beads of this type and material in a variety of sizes and shapes including very large cylinders from many western sites. Would generally date this type to the 1820's or earlier.

#60. A large, black, irregular mandrel wound bead. Black beads are rare in the western states probably because of the Indians' color symbolism. Understandably black represented death, night, etc. and was rarely used. This particular bead from the Sacramento area where apparently more black beads were used than any other western area. Would date to around the gold rush of mid-1800's.

#61. A medium light blue mandrel wound opaque bead, very similar to the "padre" bead shown as #1. It shows spiral marks and had a rather small hole. This specimen was a pick-up on the lower Columbia River many years ago and would date into the early 1800's or before.

#62. A cane or tubular opaque blue bead taken from a very old Plains Indian necklace. It was hot tumbled after breaking from a longer cane. A rare bead in the western states but common in the eastern sites of the early 1600's. Closely resembles the ancient Egyptian beads which for the most part were small tubes. Probably dating to early 1800's in western sites.

#63. A bright opaque white bead, probably cane origin and slightly larger than the "porcelain" or "China" white "pony" beads. Brighter finish than the first "pony" beads and probably dates to the mid-1800's or later.

#64. An opaque mandrel wound yellow bead, showing faint spiral marks and many tiny air bubbles, ellipsoid shape and extremely rare because of the yellow color. From a collection of several thousand beads from the western Mohave Desert in California, this is the only yellow bead found. Probably dates to very early 1800's or before.

#65. Light lavender translucent, irregular shaped bead, with a beveled hole on each end, or what is called a chamfered perforation. From the western Mohave Desert. A very rare bead because of the color and also the chamfered hole. Probably very early 1800's or before.

#66. "Barleycorn" beads, an unusual bead made of pressed or molded glass often with slight to marked longitudinal ridges. The common colors for this quite rare bead are transparent red (two on left) and green (on right). Old records also list white, blue and sometimes yellow. These beads date from the mid-1700's to the mid-1800's. They apparently were quite widely traded, according to early reports, but today they are a rare find. These specimens collected in western Mohave Desert in California.

#67. A rare translucent red ellipsoid bead that is more often found in other translucent colors. Specimen from California's western Mohave Desert. Dates to early 1800's.

#68. A dark translucent blue, rather irregular in shape and probably cane drawn, cut and then hot-tumbled to round off ends. Frequently seen in various sizes and shapes in western sites. This specimen from the western Mohave Desert in California. Early 1800's or before.

#69. Cut-faceted composite cane drawn, transparent dark blue over a lighted translucent blue core. Frequently called the "Russian" bead and was probably one of the Venetian trade beads used by the Russian American Fur Company of the Northwest Coast. It apparently was not used exclusively by the Russians because it is a fairly common find in most western sites. Quite often only the ends were faceted using hexagonal drawn tubing, thus giving an overall faceted appearance. The bead on the left was a surface find in southern California's San Felipe Valley along the old Southern Immigrant or Gila Trail. Probably dates from the early 1840's, or possibly to the 1820's.

#70. Transparent ruby red with many irregular hand cut facets. All specimens seen have been cut so as to form an equatorial ridge. Has an obvious and unique tapered or conical hole with the end of the smallest perforation cut flat or slightly concave. A very rare and mysterious bead, but found occasionally throughout the West. Specimens known to have been found in Washington at Fort Walla Walla, the Whitman Mission, California's Mohave Desert to south central Arizona. Seen in light opaque blue, opaque white, semi-translucent bluish-white, transparent wine red and light to dark transparent amber. The one bluish white specimen suggests possible Bohemian manufacture, dating possibly at 1840. This specimen from the Mohave Desert.

#71. A deep green transparent "Russian," probably made of hexagonal tubing with just the ends cut or faceted. A rare color variation of the "Russian" bead found in this case, along the old Southern "Immigrant Trail," in Southern California's San Felipe Valley. Early 1800's or before, shown up occasionally in many western sites.

#72. A deep blue transparent "Russian," often crudely broken from hexagonal tube with only the ends faceted, giving a multi-facet bead. In the authors' opinion this is probably the true "Russian" bead, traded by the Russian-American Fur Company along the northwest coast in the late 1700's and early 1800's. It is the authors' opinion this bead predates the "Russian" blue with the lighter blue concentric circle around the hole. "Russian" type beads generally are transparent shades of blue and occasionally opaque white and clear, rarely transparent shades of green, red, or lavender.

#73. A small example of the later "Russian" bead shown in #69, with a lighter concentric translucent blue surrounding the hole, probably dating in the mid-1800's.

#74. A light blue "Russian" type bead, with faceted ends and similar to bead #72.

#75. A transparent amber, crudely faceted bead, where again only the ends of the bead are cut after being broken from a longer tube. This particular bead collected in the plains area, and probably dates into the middle 1800's. Fairly rare color.

#76. A broken, uncut, hexagonal tube. Was probably traded as is, without hot-tumbling or cutting the ends. Fairly common in western states and probably dating from the early 1800's or before.

#77. A steel or iron bead. Because this is iron, this bead rusts easily, and therefore is not likely to survive extended periods of weathering. Consequently it is a very rare bead. This particular sample was taken from a necklace that was purchased years ago from a Taos Indian who said that he had traded for it from a Kiowa Indian. It was strung with bone pipe and mescal beans. Since there is no archeological evidence to help date these beads, there is very little information available.

#78. Brass bead, sometimes called a "French" brass bead, many types dating back to pre-1800's. The earliest brass beads show slightly beveled holes, or sometimes crudely cut holes. They were commonly traded by the Hudson's Bay Company and some filtered into the plains area. They appear in many Plains In-

dian paintings and photographs and were traded as far south as Arizona and New Mexico. They were restrung by the Pueblo Indians on occasion, and used in conjunction with the brass and silver double barred cross, commonly referred to as the French Lorraine Cross. A highly prized bead both by Indians and collectors and quite a rare find in the field.

#79. Copper beads. The top is a rolled sheet or trade copper bead, very early. Probably late 1700's or early 1800's and possibly from Lewis and Clark's Expedition. This bead was collected on the lower Columbia River years ago. Since native copper was available to many American Indians, some of the copper beads could be Pre-Historic. Generally they are extremely rare and seem to be the most common in the Northwest. The bottom is a spiraled or twisted copper-wire bead. The wire appears to be square wire, but this could be accomplished by hammering.

#80. Mediterranean coral beads, known from the early journals to have been traded occasionally by the Spanish explorers and, of course, are still available today.

#81. Hubbell beads, apparently manufactured in Czechoslovakia, probably after WWI, and traded by Lorenzo Hubbell, at his Granado Trading Post in Arizona. While these beads are not extremely old, they are highly prized by both Indians and collectors. They are a white china type core bead, with a thin glass slip externally, some showing swirled colors, making the bead resemble turquoise.

#82. Imitation coral beads, probably dating from the early 1900's. These particular beads were taken from necklaces strung with Hubbell beads. The beads on the far right are called "Toggle" beads. If the center of the bead is noticeably smaller, they are called "dumb-bell toggle" beads.

COLOR PLATE NO. II

#1. Translucent blue mandrel wound with very large hand-cut facets and squared ends. This type of bead has been excavated in the eastern sites, dating in the early 1700's This sample was taken from the bottom of an Ojibwa pouch and bandolier. It was a single bead hanging from one of the wool tassels and shows great age. Extremely rare in western sites.

#2. A clear faceted "Russian" type bead, transparent over a concentric core of translucent white. Probably dates with other "Russian" beads of this type, around 1840.

#3. "Chinese" or better known as "Peking" beads. These four were taken from original strings reportedly found in a long-closed Portland warehouse. Each string bore a paper tag saying, "China." Possible date very early 1900's. Came too late to have extensive trade use.

#4. Cobalt blue transparent mandrel wound large bead. No information is available.

#5. "Chinese" or "Peking" type beads. Most of the "Peking," round or globular beads, are characterized by straight, almost drilled perforations with sharp ragged edges around the hole, and usually an odd translucense. Probably very early 1900 or late 1800.

#6. Ellipsoid, opaque Chinese, probably Peking glass beads. These particular beads have shown up in some of the later northwest coast sites and they are the same beads often seen on very old wicker sewing baskets. Few filtered into the plains. Late 1800's to early 1900's.

#7. These beads are all molded, showing an equatorial band or ridge as a mold mark. They are probably from the 1900's but possibly the late 1800's. Not common as trade beads. No information available.

#8. Transparent deep red, round and nearly diamond shaped in cross-section, molded bead, very crudely done. Specimen found at site of old Fort Mohave in Arizona on the Colorado River. It appears to be a very rare bead, perhaps an early molded bead of the mid-1800's.

#9. Opaque, deep blue molded bead, showing even molded facets. Beads of this type are not common in the western sites, perhaps most often seen as an opaque black. This specimen taken from an old Plains necklace, possibly dating in the mid-1800's.

#10. An unusual amber, transparent molded bead with a raised linear design. Very unusual shape and design. No information available.

#11. Opaque, very bright red showing an equitorial mold mark, characterized by very even molded facets that are not sharp. Similar in design to bead #9.

#12. A rare black blown glass and molded bead. The two projections on the ends characterize it as a blown bead. They are very fragile. Beads of this construction were excavated at Fort Laramie, Wyoming, but generally are extremely rare in western sites. Possible date, mid-1800's.

#13. An opaque bright green molded bead resembling an eight petaled flower taken from an old necklace, origin unknown. No other information is available.

#14. A jet black multi-faceted bead, showing mold marks as well as some hand cutting of the facets. Not a common bead in the western states, but shows up occasionally; possibly late 1800's. No other information available.

#15. A light amber molded bead diamond shaped in cross section, having slight facets and an unusual tapered hole. This particular bead was excavated in Guatamala, along with "white-heart" beads. Probably mid to late 1800's.

#16. A light amber molded bead showing definite mold marks and an uneven surface. This bead also excavated in Guatamala. No information available.

#17. Imitation pearl, showing slight equitorial mold marks. Imitation pearls are extremely rare in Indian sites, but they have been discovered in most parts of the United States, including Fort Laramie excavations. Perhaps they may have been more plentiful in older sites but the elements probably soon wore off the pearlescent lacquer, and the remaining white glass opaque bead is found. This sample excavated at Guatamala. Probably dates mid to late 1800's.

#18. Translucent deep blue globular bead, that is sometimes called the "Russian" bead by some collectors. This bead is mandrel wound and appears to be of European manufacture. Probably dating to the very early 1800's or perhaps as early as the late 1700's. Could possibly have been traded along with the faceted "Russian" beads.

#19. Molded "toggle" beads. Opaque green on left is "dumb-bell" toggle; center is opaque red; right is an opaque orange. Beads of this type probably date to the early 1900's and are sometimes strung by Pueblo Indians today as imitation coral. Toggle beads have shown up in the eastern sites in the late 1500's and 1600's.

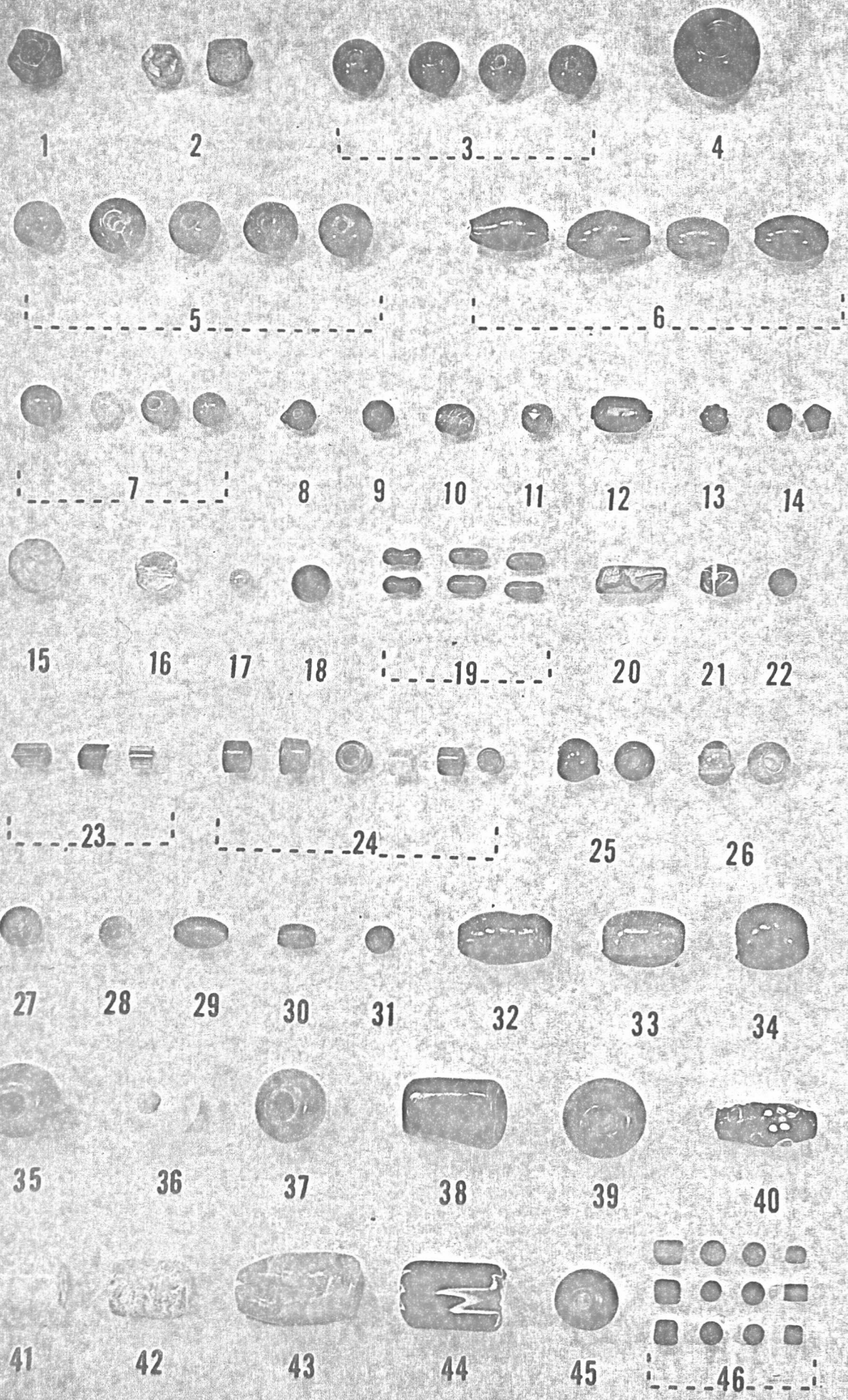
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PLATE NO. 2

#20. Rectangular light green opaque base, polychrome, probably molded with multi-color glass decorations impressed flush with the surface. An unusual shape and color, probably mid-1800's. No other information available.

#21. Mandrel wound transparent red with white to faint baby blue meandering lines. This bead probably dates to the early 1800's and is rare but occasionally examples are found in western sites, including the Whitman Mission at Walla Walla, Washington, and the Yokuts Indian Cemetery near Bakersfield, California. This sample from Guatamala.

#22. Light ruby-red, nearly transparent globular bead, with a rather small hole. A rather unusual color in western sites. This sample from the western Mojave Desert, probably dating early 1800's.

#23. Simple cane drawn, roughly broken ends, gold, green, and silver. The gold and silver are painted inside. The green is a deep kelly green, transparent glass. The metalic painted tubular beads date from approximately 1885 and were in use until the early 1900's. The gold or gilt painted, on the left, was taken from a woodland's beaded pouch and bandolier.

#24. Short square, probably cane or tube drawn opaque beads. Fairly common in more recent Indian bead work and probably dates from the early 1900's to the present. Note extreme taper of the green bead second from the left, caused by the tube drawing process.

#25. Crude mandrel wound transparent lavender bead, probably Bohemian, late 1800's to early 1900's.

#26. Crude mandrel wound transparent light amber bead, probably Bohemian. Late 1800's to early 1900's.

#27. Deep amber mandrel wound transparent bead, probably Bohemian in manufacture. This sample taken from a Mojave doll at least 85 years old. Possible dating of this bead is the later 1800's.

#28. Mandrel wound translucent light orange bead, taken from a Mojave doll, as in #27. Possibly late 1800's.

#29. Ellipsoid, slightly translucent, turquoise blue bead of a fairly common color and material. Found in the western states in quite early sites. This bead collected from the lower Columbia River, dates probably into the middle or early 1800's.

#30. Greenish-turquoise opaque mandrel wound glass bead with lighter colored flecks and streaks. A rather common bead type found in western sites and dating into the early 1800's. Collected on the lower Columbia River.

#31. Transparent medium blue, probably mandrel wound and very even. Found on the Columbia River and seen in great quantities in many western sites. Dating from the early 1700's to possibly the late 1800's.

#32. Peanut shaped semi-translucent dark blue mandrel wound bead, showing light specks of impurities in the glass. Origin unknown. Possibly dating to the mid-1800's.

#33. Mandrel wound transparent medium green with a great number of bubbles and impurities showing in the glass. Origin is unknown; possibly Chinese of the late 1800's or early 1900's.

#34. Cobalt blue mandrel wound translucent bead showing air bubbles and white impurities in the glass. Possibly Bohemian in manufacture. Date, late 1800's or early 1900's.

#35. Opaque light blue large mandrel wound bead, dating to the late 1800's or early 1900's.

#36. Opaque white, the same as #35.

#37. Opaque bright green, the same as #35 and #36. Beads of this type are sometimes seen on old plains area Indian necklaces, also in red and darker blue. One example from the northern plains, had innumerable colors of these larger beads strung with bear claws.

#38. Large blue unusual, almost bell shaped bead with a very obviously tapered or conical hole, and many air bubbles. No information available.

#39. Medium blue mandrel wound transparent bead, similar in construction to the opaque beads, shown as #35, #36 and #37. No information available. Probably early 1900's.

#40. Blue over a greyish-clear mandrel wound base with gold, pink, blue, and white flowers and eyes impressed but raised, along with a raised linear design. This bead found near San Juan Capistrano Mission in Southern California. Probably dates from late 1700's to early 1800's.

#41. Mandrel wound opaque white large cylinder. Quite rare. Found scattered throughout western sites. Especially seen along the northwest coast, and quite often in Central California, in the upper San Joaquin Valley. Two cm. long. Late 1700's to early 1800's.

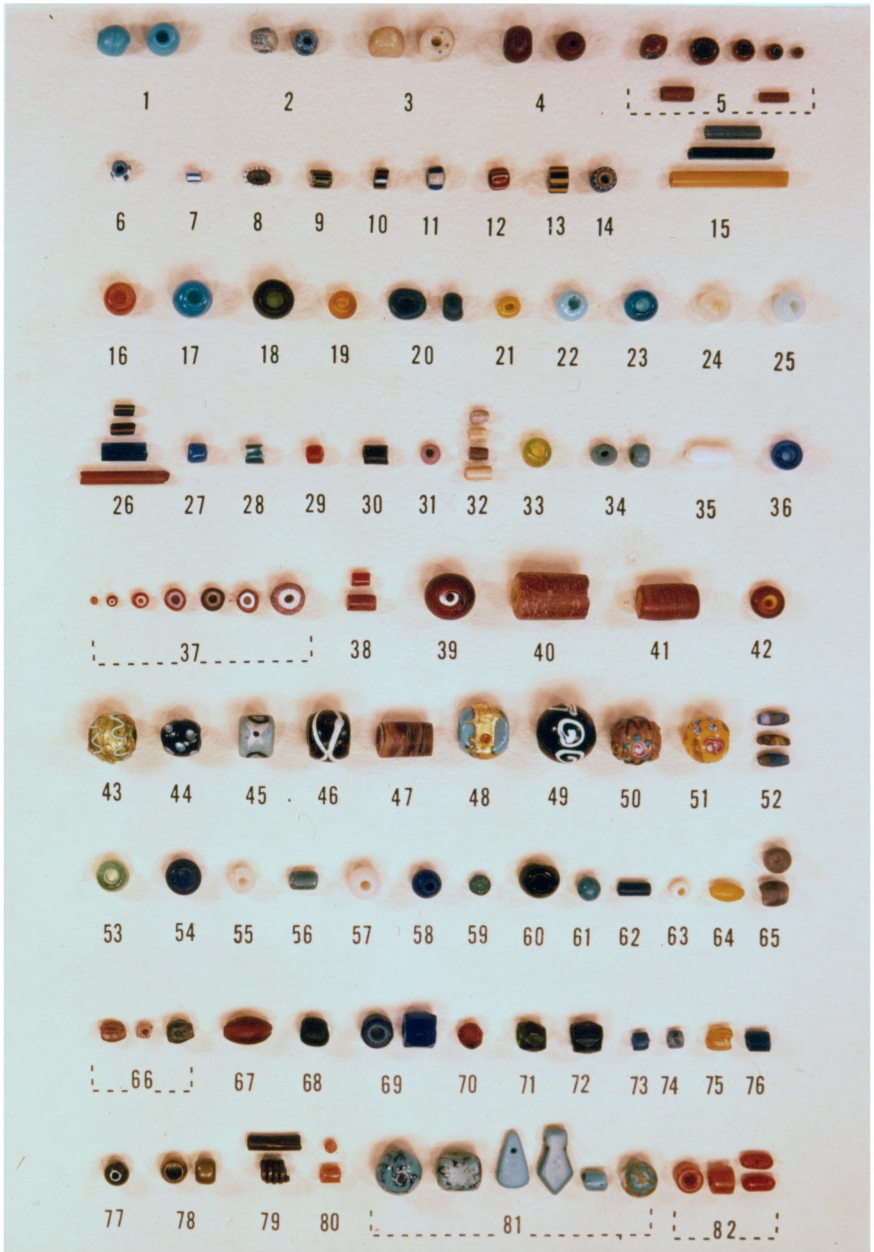
#42. The same bead as #41. It had been in a cremation fire. From central California.

#43. Opaque greenish yellow, very large bead. Longitudinal fluting and slightly tapered to one end, suggesting and resembling a green pepper. This bead taken from the draw string of a very old Navaho leather pouch with many silver buttons and old conchos. Extremely old and very rare, probably dating at least into the late 1700's and likely reused many times.

#44. The "star" or "chevron" bead, fashioned by Venetian craftsmen for hundreds of years. Typically, this red, white and blue, complex, tube drawn bead, shows on the ends, the typical 12 pointed star. Broken on one side years ago and worn smooth. This fracture shows better the complex construction of the bead. Usually found in North America in 16th to 17th century sites. Sometimes these "stars" or "chevrons" have a fourth color, not shown here, but usually an opaque yellow and rarely a transparent green. In a glass museum in Venice there is one outstanding example of a three inch "chevron" with a bright red exterior and blue and white on the inside. This bead has not been made by Venetian craftsmen for generations and its manufacture today is probably a lost art.

#45. Transparent amber-like, mandrel wound glass bead. Very unusual in shape, size and color. This specimen collected years ago on the lower Columbia River. Probably dating to the very early 1800's. A rare bead in any western site.

#46. Simple tube drawn and hot-tumbled, very commonly found beads in the early western sites, dating probably in the late 1700's. All of these examples were collected on the western Mohave Desert in California. They range from short bugles or tubes to flat, almost donut-like, small beads. Top row is a light translucent blue, middle row a dark translucent blue and bottom row, a rather rare green translucent bead. Thought to have been traded along with the early "barleycorn" beads shown on color plate I.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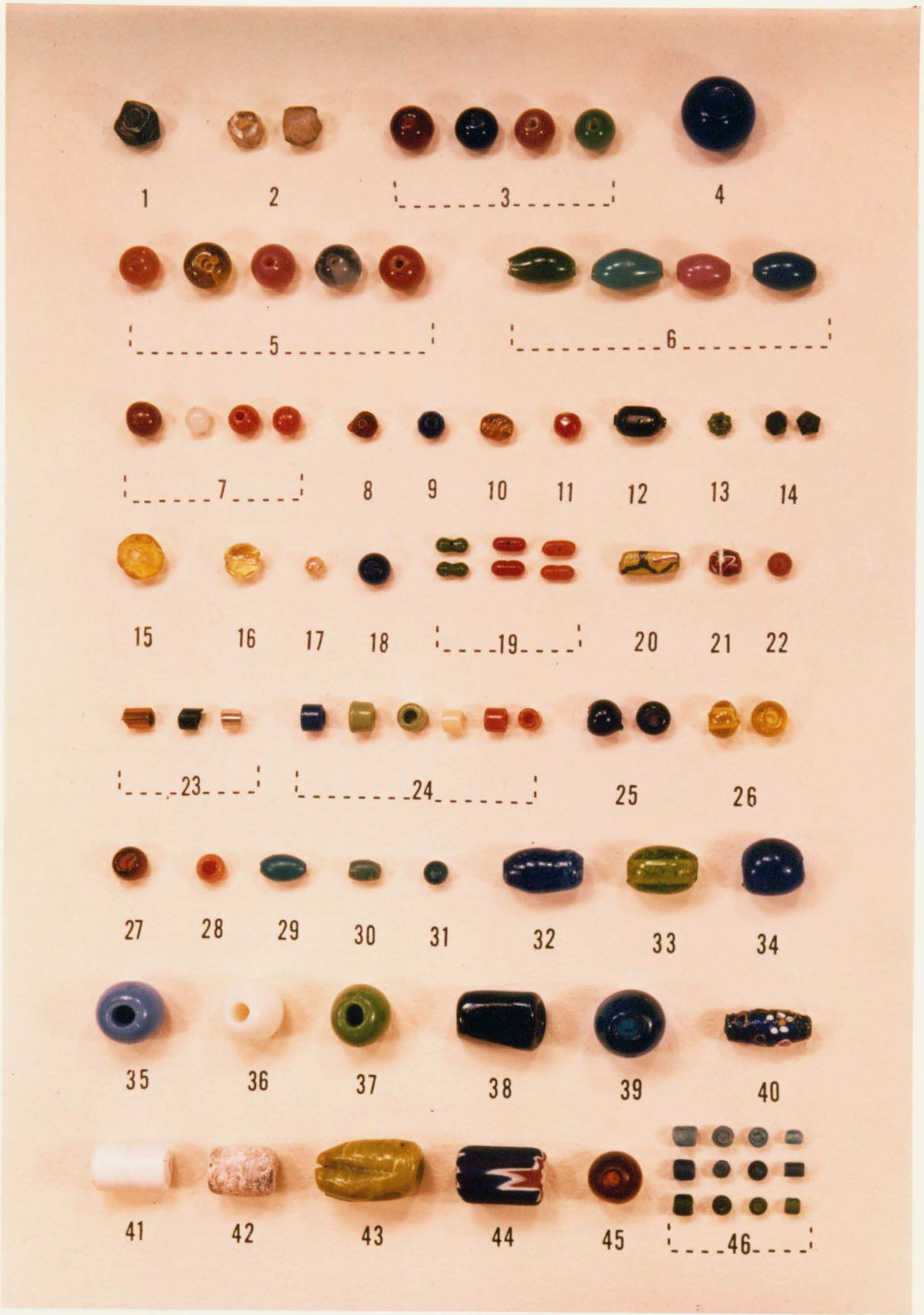
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