AMERICAN INDIAN BEADWORK IN MIDDLE NORTH AMERICA
AND THE INFLUENCE OF EUROPEAN
MATERIALS AND PATTERNS

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INTRODUCTION

All people seem to possess the yearning, to a greater or lesser degree, to adorn and ornament themselves and their belongings and to attempt to create more pleasing forms above and beyond the mere utilitarian demands to be made of an object. In this respect, the American Indians were no different from other men. One of the ways in which they exhibited this characteristic was in their use of beads. Long before the first white man arrived in the western hemisphere, the native Indians were taking advantage of the materials available in their environment for use as beads. Some of these resources could be used just as they occurred in nature, but most of them required some modification to make them suitable.

The eventual appearance of the Europeans upon the North American scene introduced a multitude of alien elements that provoked far-reaching changes in the Indian cultures generally.

This paper represents an attempt to investigate the influence of European materials and European patterns upon the native bead craft. In order to determine the nature and extent of that influence, it will first be necessary
to inquire into the situation as it existed prior to the coming of the white man. What kinds of beads did the Indians have in this period? What materials were used and how were beads made from these materials? Is it possible to ascertain the purposes for which the beads were used? Can any clues be found in the precontact situation that would be helpful in explaining the postcontact developments?

Several manifestations that seem to have originated in the precontact or very early postcontact period should also be taken into consideration because of their relevance to the later beadwork developments. The first is a decorative form that is peculiar to the North American Indians: porcupine quillwork. Quillwork appears to have been the immediate native predecessor, particularly in the Plains and Woodlands areas, of the postcontact bead weaving and bead embroidery. The second is a special form of shell beads known as wampum, which acquired some importance after the Europeans appeared.

In scrutinizing the postcontact situation, inquiry should be made as to the kinds of beads that were then used, how they were used and for what purposes. How did post-contact bead methods and usages differ from or resemble those of the precontact period? To what extent did the natives retain their former craft and to what extent did they accept European innovations?
The writer proposes, then, to attempt to answer these questions in considering each of these various aspects of Indian beadwork separately, and in so doing, to compare the traits that existed in the precontact period with those that were present after contact. By such analysis and comparison, the writer hopes to discover, not only wherein the old was modified or supplanted by the new, but also some of the factors inherent in the precontact crafts that might have contributed to the acceptance of the European elements.

This discussion has been limited to the Plains and Woodlands areas of middle North America. Here, in the writer's opinion, the most significant developments in quillwork and beadwork occurred. A few examples have been taken from outside this region which seemed useful to the topic being considered.
CHAPTER I

PREHISTORIC BEADS

According to the dictionary (American Collegiate Dictionary, 1952) definition, a bead is "a small ball of glass, pearl, wood, etc., with a hole through it, strung with others like it, and used as an ornament or in a rosary." However, the Indians did not limit the forms of their beads to "small balls" nor did they always perforate them in the middle of the beads in order to string them. Thus, it is occasionally difficult to distinguish beads from pendants. Orchard's decision to classify as a bead any probable object that was not obviously intended as a button, pendant, etc., seems feasible and worth following (Orchard, 1929).

For our information concerning the lives of the American Indians during the long period between their first appearance in this hemisphere and their discovery by the Europeans, we are dependent upon archaeological evidence and inference. Fortunately, some of the materials used for beads seem to be fairly durable, so that quite a variety of beads have been found at prehistoric sites throughout America. But many bead materials
are highly perishable. In such cases we can guess, from possible holdovers in historic groups, that they were also used by earlier people. And, occasionally, because of unusually favorable conditions for preservation, a few examples have remained for us.

The archaeologists have uncovered beads of many shapes and materials. Some finds indicate that beads were used to embellish clothing or other articles and were also strung like necklaces. In some cases, they seem to have been intended as charms or, perhaps, as a form of currency. Often we can only theorize about the intended purpose or project back from the use of the same material by modern groups. That certain materials were esteemed for bead making can be surmised from the fact that such beads can be found great distances away from their sources. This distribution could have been the result of trading between various groups or traveling, perhaps for the express purpose of obtaining the particular items.

When the first bead was made is problematic. Certainly primitive man, in general, was making beads a very long time ago. Braidwood (1959) mentions the appearance of beads in Europe between 10,000 and 40,000 years ago.

Orchard suggests that the earliest form of bead may have been just a stone with an appropriate shape and a
perforation through it, or a shell with an opening (Orchard, 1929).

The American Indians used a great variety of materials for making their beads. They took advantage of many rocks and minerals, such as quartz, turquoise, slate, soapstone, serpentine, copper, hematite, magnetite, and pottery. They used seeds, nuts, stems and roots of plants. They also made use of many animal substances including claws, teeth, bone, horns, ivory, and shell (Hodge, 1907).

The material most commonly used for beads was shell. It was wrought into a great variety of forms. Orchard (1929, p. 17) lists "discoidal, spherical, tubular, barrel-shape, ovate, rectangular, conical, truncate, and several odd forms in a wide range of sizes." (Plate 1.) Some shells could be used as beads with a minimum of effort being necessary to prepare them. Dentalium shells, for instance, having a natural perforation, could be used as beads and strung by merely passing a cord through them from end to end. A small marginella or olivella shell with the apex ground off or with a perforation made in the outer wall was ready to be strung. Small bivalves only needed to be perforated at the center or at the edge to prepare them.

Most of the shell beads that have been found are discoidal in shape, possibly because of the relative ease
with which they could be made. Orchard (1929) suggests that the method that was probably used in making prehistoric discoidal beads was much the same as the method that prevailed among the Zuni in New Mexico about thirty years ago. The principal tools that they used were a pump drill and a flat stone on which to rub and shape the shells. The aborigines probably used a hammerstone to shape the shells roughly and a stone drill point to make the perforations. The Zuni were using the sharpened end of a three-cornered file as a drill point. With a few revolutions of the drill and frequent applications of water, the roughly shaped pieces of shell were perforated, first from one side, then from the other. The drilled pieces were then strung on a cord, about eighteen inches long, and knotted at one end so that the beads could be pushed tightly together. The other end was firmly held in one hand, with the thumb exerting pressure on the last bead so that the beads were almost rigid. The beads were then laid on a sandstone slab and rolled over the surface of the stone with the free hand. Water and grit were applied to facilitate the abrasion of the rough edges. A groove along one edge of the slab, in which the beads could be drawn back and forth, helped to keep them of equal size.

It seems apparent that a lively trade in shells was taking place in America long before contact. Moorehead
(1900) points out that one of the most common species of shell to be found in New England collections of Indian beads is the *marginella conoidalis* and it only lives south of the Carolinas. Mills (1909) attributes the presence of ocean shells in the Seip Mound in Ohio to trade. Dentalium shells came principally from the west coast of Vancouver Island. According to Driver and Massey (1957) these were quite widely traded. At the time of contact, they had been traded as far east as the Upper Missouri tribes on the northern Plains. Over much of the area where they were known, they seem to have been used as a medium of exchange. Olivella and haliotis (abalone) shells were traded from the coast of California to the interior (Driver and Massey, 1957; Barrett, 1933).

Freshwater pearls were perforated and used as beads in the Ohio area by the Hopewell people (Shetrone, 1927). Moorehead (1900) also mentions their presence in the Etowah mound in Georgia. About 10,000 pearls were found there, and three or four thousand were found on the Illinois River about a hundred miles northeast of St. Louis (Kunz, 1930).

Another material that was extensively used in bead making was bone. Bone beads were usually cylindrical and were made from thigh or other bones cut into various lengths (Hodge, 1907). Bird bone seems to have been a
favorite material. After cutting the hollow bird bone to the desired length, it was only necessary to rub the rough ends smooth in order to have an acceptable bead. Hodge (1920) states that many of the hundreds of bone beads that have been recovered were found in kitchen middens or in graves where they formed necklaces for the dead.

Some bone beads received further treatment or embellishment. Lowie (1935) mentions that in prehistoric times the Crow men wore necklaces of buffalo bone beads that had been polished and daubed with clay. Orchard (1929) mentions two beads that were recovered from a shell midden near Pemaquid, Maine. These had been made from bird bones and had been decorated with incised designs, which were particularly interesting because of the fact that the designs were characteristic of the art of the modern Maine Indians. However, since no objects were found in association with them that indicated a European derivation, it seems probable that they were made before contact, or before the Indians had been influenced by the Europeans.

Teeth and claws also served the Indian as beads. "The milk teeth of the elk, the canines of the bear and the incisors of the horse were worn" (Hodge, 1907, p. 138). Catlin, in describing the costume of a Mandan warrior, refers to his necklace which "was made of fifty huge claws or nails of the grizzly bear . . . ." (Catlin, I, 1841,
Maximilian was also impressed by similar necklaces. In writing of the Manitives, he reports, "Many of them wore the large valuable necklace, made of long bear claws." (Maximilian, I, 1905, p. 360). Grinnell takes note of the "necklaces of elk-teeth, deer-teeth, and fish vertebrae" which the Cheyenne had worn in the early period (Grinnell, I, 1923, p. 223).

Stone beads enjoyed a wide distribution. In New York, however, according to Beauchamp, other materials were more readily available as well as more showy, so the Indians of New York did not use stone extensively for ornaments (Beauchamp, 1897). Orchard (1929) mentions the use of steatite or soapstone in California, indicating that it was used in making elaborate beads. Beads of orgillite have been recovered from mounds on Stockton Channel. As found in nature, orgillite is creamy in color, but the Indians subjected it to a roasting process that turned it a rosy-red (Moorehead, 1900). In the Southwest, turquoise was an important material for bead making and was widely traded throughout that area. The American Museum of Natural History has more than fifty thousand turquoise beads that bear witness to the skill of the Indians in working the stone, for some of these beads are only about two millimeters in diameter, but they have been perforated and strung (Kunz, 1930). Agate beads have also been found,
occasionally in great quantities. These were sometimes combined with jadeite or other materials (Kunz, 1930).

Prior to the time of contact, the use of metals for beads, with the exception of copper, was rare. Many locations in North America provide native copper, but one of the most important sources of supply for the Indians seems to have been the Lake Superior region. Copper that was probably derived from that area has been found in the southern and eastern states (Moorehead, 1900). Apparently copper beads were made in such a way that the necessity of drilling was obviated (Plate 1). Moorehead (1900) mentions a burial site in Maine where twenty-two beads were found that had been made by rolling strips of copper. The Copena people of northern Alabama are also reported to have made beads of rolled sheet copper, a trait that is associated with late Adena and Hopewell cultures (Webb and Baby, 1959).

A great variety of vegetal materials provided bead resources for the aborigines. According to Orchard (1929), juniper seeds were used for necklaces by some tribes in California. They also perforated pine-nuts and either strung them alone or combined them with the juniper seeds. The Zuni were also partial to seed necklaces. Orchard further mentions Chickasaw plumstones found in caves in the Ozark Mountains that had apparently been processed for
stringing, and a lupine seed necklace that had been discovered in a cave in Utah. The Pueblo people are reported to have made necklaces by stringing plant stems (Hodge, 1907).

Among some of the more unusual finds are beads of clay. Although these are rare, they have been recovered in all parts of the state of Georgia (Moorehead, 1900). Some imperfectly made beads of pottery were discovered at Hawikuh, New Mexico (Orchard, 1929). In Oregon, about fifty gum beads were found, but such finds are unusual, probably because of the perishability of the material (Orchard, 1929).

Beads manufactured of these various materials were evidently used in diverse ways. That they were strung after the fashion of necklaces is known since some have been found in dry caves with the original strings still intact (Orchard, 1929). That they were used for necklaces and also as bracelets for wrists and ankles can be presumed from the manner in which they were associated with skeletal remains in burial mounds. Harrington (1922) reports the uncovering of several burials on Hiwassee Island, in Tennessee, in which the skeletons were covered with shell beads from the neck to the waist -- one with approximately 1100 beads and another with about 9000 beads made from Olivella shells. From the evidence he surmised that some
kind of garment had been decorated with them. Another burial yielded the skeleton of a child, similarly covered, but the shells in this case had been "arranged longitudinally, side by side" (Harrington, 1922, p. 134). Thomas, in discussing shell beads found in association with skeletons in a Shawnee mound, said that there were "rather more than a quart about the neck" and "on the right of the feet were two conch shells . . . partially filled with small shell beads" (Thomas, 1891, pp. 128-29). The beads about the neck might conceivably have formed a collar or necklace, or might have decorated an article of clothing, but, in some instances, beads have been found so arrayed, or so disarrayed, that it has been difficult to guess their function. It seems reasonable to suppose, though, that beads were used not only as necklaces, bracelets, and anklets, as ornaments for the hair or ears, but also for decorating clothing and other objects. Quite possibly they were also used for religious, magical, and economic purposes.

The coming of the Europeans with their strange new articles altered and modified the established patterns of the Indians. In the case of beads, the old forms and the new glass beads coexisted for a time. Maximilian reported that the Mandan, for instance, not only bedecked themselves with "strings of glass beads" but also with strings of
"scented roots or fungi, elk's teeth . . ." (Maximilian, II, 1905, p. 262). The latter were, in all probability, ancient bead materials.

Some traditional bead materials continued in use long after the foreign beads were available. Holmes, writing in 1883 about shell beads, spoke of the Indians "from Oregon to Florida" who, at that time were still overloading themselves with many strings of shell beads (Holmes, 1883, p. 219).

In some cases, the Indians altered their manufacturing methods by adopting foreign tools, but used them to continue to produce beads of native materials. Underhill in 1944 mentioned that the Pueblo Indians were still making beads of turquoise and shell, but had exchanged their stone drill points of former times for metal points to perforate them.
CHAPTER II
WAMPUM

Wampum is a rather special category of the use of shells for beads. The term has been applied indiscriminately to all shell beads used for money (Underhill, 1953), but strictly speaking refers to small, cylindrical shell beads, either in strings or belts, which were used in the eastern part of the United States for a great variety of purposes: as a medium of exchange, as a communication device, as a mnemonic means, for ratification of treaties, and so on.

There is some question as to whether or not wampum preceded the advent of the Europeans. Iroquois legends indicate that the first wampum was made of quills (Beauchamp, 1901). Loskiel (1794, p. 26) says that prior to contact "the Indians used to make their strings of wampum chiefly of small pieces of wood of equal size, stained either black or white. Few were made of muscles. . . ." Hutchinson (1936, p. 386) remarks that the settlers of "New-Plimouth, in the year 1627, began a trade with the Dutch at Manhados, and there they had the first knowledge of wampompeag, and their acquaintance therewith occasioned
the Indians of these parts to learn to make it." But according to Morgan (II, 1901, p. 51), the "use of wampum reached back to a remote period upon this continent. It was an original Indian notion which prevailed among the Iroquois as early, at least, as the formation of the League." Morton (1637, p. 6) states that "these people . . . have a kinde of beads insteede of money, to buy withall such things as they want, which they call wampampeak . . . made of the shells of fishe."

Although some use of beads in bartering operations was certainly well established very early in historic time, and probably before, it would seem that the wampum of historic fame was made possible only by the availability of European steel tools. Morgan (II, 1901, p. 52) notes that the "wampum in present use was introduced among them by the Dutch, who in the manufactured shell bead offered an acceptable substitute for the less convenient one of the spiral shell."

The beads from which wampum was made were of two colors, purple and white. They were about a quarter of an inch long and an eighth of an inch in diameter. They were generally made from the quahog or hard-clam, however, the white beads might be made from the columellae of the conch shell. A lengthwise perforation made it possible to string them (Morgan II, 1901; Orchard, 1929).
The earlier wampum seems to have been used in strings. Morgan refers to ancient wampum among the Iroquois as consisting "of strings" (Morgan II, 1901, p. 51). The making of belts of wampum was a later development. The use of strings persisted, however, although they were not as valuable nor as important as the belts. Whether or not belts were made seemed to depend largely on the supply of beads. Belts were preferred, but if they did not have belts, strings served the purpose (Beauchamp, 1901).

Apparently there were different methods of making wampum belts. Morgan describes some belts that were made by "covering one side of a deer-skin belt with these beads, arranged after various devices," which suggests the technique of embroidering with glass beads (Morgan, II, 1901, p. 53). Beauchamp (1901) says that no such belts are known but that the early quill belts were probably made in that fashion. According to Loskiel (1794), strings of wampum were fastened together to make a belt, which would be about four inches in width and about three feet in length.

Most of the wampum belts (Plate 2) seem to have been woven. They differed somewhat in that they might be of a solid color or variegated; they might incorporate designs or figures. The width and length varied, but usually they were about three inches wide and between two and six feet long. A bow loom was used for the weaving process. Cords
were made by twisting slippery elm strands. These were threaded through holes in a piece of leather designed to keep them separated equidistant from each other. The cords were then attached to each end of a bow and were under tension. With a needle, seven beads were strung on a thread. This was laid under the cords on the loom, with one bead between each cord. The needle was again passed through each bead but this time the thread was above the cord. This was repeated until the belt was the desired length. The ends of the cords were tied and the belt ends were finished. Sinew was used earlier for both cords and thread (Morgan, 1901).

Skinner (1925) describes a fragment of a wampum belt with seven rows of beads, much as Morgan described. However, these had been strung on native hemp string and buckskin thongs rather than slippery elm cord or sinew.

As the white man's tools simplified production, and the white man's presence apparently rendered the economic and political processes more complex, the occasions which demanded the accompaniment of wampum became legion. It was "highly valued as a circulating medium . . . so many strings or so many hands-breadth being the fixed value of a horse, a gun, a robe, etc." (Catlin I, 1841, p. 250). According to Morgan, if the sachems wished to assemble a council, they would send runners out with a belt of wampum
to convey the information that on a particular date, at a specified time, a Council of the League would meet for a certain purpose. All treaties between the Indian nations were recorded in strings of wampum which were kept by the hereditary keeper of the wampum. After entering into such compacts, the various nations always exchanged belts of wampum to indicate ratification of the treaty and also to serve as a memorandum. At the death of a sachem, belts were sent out to convene the nations in council. As part of the ceremony, the ancient laws were repeated from consulting strings of wampum in which they had been recorded. At the public confessions which were made before each religious festival, the confessor held a string of white wampum, symbolizing purity and sincerity, in his hand. In the event of a murder, the murderer would send white wampum to his victim's family as compensation for his crime (Morgan, I, 1901).

The wampum belts that were used to keep records were woven in such a way that the colors formed patterns which were associated with the particular event or law that was to be remembered. An interpreter was needed to reveal the meaning at a later date (Holmes, 1883).

Wampum, as used in the official transactions of the Indians, was somewhat like our act of affixing a seal or signature (Underhill, 1953). If wampum was not given, the
Indians viewed any promise made by another nation as unimportant (Morgan, I, 1901).

Catlin (I, 1841, p. 250) indicates that wampum also had an ornamental use. He refers to strings of it being worn "on their necks in profusion" and wampum belts being woven "for the waist." And Holmes (1883, p. 249) feels that the original use of wampum belts was "as a part of the costume long before they became the vehicles of tradition."

This almost excessive use of wampum seems to have been a phenomenon of the Eastern Woodlands tribes. It use west of this area seems to have been much less enthusiastic, and was probably, in some of its aspects at least, a post-contact introduction. Catlin (I, 1841, p. 251) states that the tribes among whom wampum "has been invariably manufactured and highly valued as a circulating medium" were those who had "formerly inhabited the Atlantic Coast, and that part of the country which now constitutes the principal part of the United States." He goes on to say that "after I passed the Mississippi, I saw but very little wampum used."

Among the Menomini, Keesing (1939) reports that wampum apparently had a ceremonial significance, but little else. He attributes its introduction to the French, who had taken it over from the eastern tribes.
It might be noted that the introduction of glass beads had little effect on the production of wampum. Rather, the introduction of metal tools with which the native shells could be more adequately worked, and the particular stage of receptivity at which the Indians happened to be, which made it possible for them to incorporate wampum into so many facets of their lives, seem to have been the important factors in its widespread usage.
CHAPTER III
PORCUPINE QUILLWORK

Porcupine quillwork is a highly distinctive decorative art form that is to be found only in North America. It was widely distributed throughout Canada and the eastern and central United States, and also along the Rocky Mountains southward. It appears to have been a well established trait before the time of contact, and was remarked upon by several of the earliest white travelers to the Plains region. Catlin (I, 1841, p. 34), in describing the costumes of the Blackfeet and the Crows, made reference to the "porcupine quills, which constitute one of the principal ornaments to all their fine dresses." At another time, he remarked on the lodges of the Crows, which they "beautifully garnish with porcupine quills" (Catlin I, 1841, p. 50). Maximilian (I, 1905, p. 352) was also impressed by the Crow costumes, which "embroidered and ornamented with dyed porcupine quills, are particularly handsome."

The first requisite for the development of quillwork was the availability of quills (Map I). In the United States, the porcupine is to be found around the Great Lakes
and along the St. Lawrence River, in parts of Colorado, Utah, Washington, Oregon, California, and Arizona. It has been observed that "there was a high correlation between the presence of the porcupine in the environment and the use of its quills for decoration. The main exception to this rule is the Plains area where the porcupine was absent" (Driver and Massey, 1957, p. 324). But this is the very area in which the tribes lived which have been "producers of a great quantity of porcupine embroidery . . . which may indicate that the Indians desired the things most difficult to obtain for their personal adornment" (Orchard, 1916, p. 4). Tribes living in regions lacking porcupines procured the quills either through trade or by making trips to the mountains especially to obtain them (Driver and Massey, 1957).

The male members of the Indian tribes were responsible for hunting the porcupine and providing the quills. Orchard (1916) lists several ways that they had of catching the animals. Tree bark that had been recently gnawed indicated the presence of a porcupine, which was removed from the tree with a bow and arrow, or, later, a gun. Another way was to dig the porcupine out of its burrow. They also used different kinds of traps.

As the quills were plucked, they were carefully separated, by size, into four grades. The tail of the
animal provided the longest and coarsest quills. These were used for embroidering large surfaces that were to be completely filled in, or for wrapping handles of clubs, or pipe stems, or fringes. A smaller size came from the neck and a yet smaller size quill from the back. The smallest and finest quills came from the belly. These were used for the more delicate work. Each of the various sizes was kept separately in a pouch made from the bladder of an eik or buffalo (Orchard, 1916). The length of the quills varies from one to four inches. They are naturally white except for their dark brown tips, but the Indians dyed them several colors, then used the colored quills together with the white ones (Morgan, I, 1901).

The dyes that were used to impart color to the quills probably depended, to a great extent, upon what was available in the immediate environment. However, Orchard (1916) does mention that long trips were sometimes undertaken to obtain a particularly desirable material to use as a dye. Maximilian reported on some of the dyes used. The Blackfoot women were "very skillful in the art of dyeing." They used a "lemon-coloured moss from the Rocky Mountains, which grows on the fir trees" to make a yellow dye. "A certain root furnishes a beautiful red dye, and they extract many other bright colours from the goods procured from the Whites. With them they dye the porcupine quills
... with which they embroider very neatly" (Maximilian II, 1905, pp. 103-104). He further noted that "in the north, they understood how to dye a beautiful red with the roots of *Galium tinctorium* and *boreale*, and black with the bark of the alder."

Grinnell enumerated several plants that the Cheyenne found of value as dyes and described the dyeing process that was followed. In each case, the roots, leaves, or stems of the plants from which the dyes were being made, were boiled in water, then allowed to cool. The quills were added to the resulting dye bath and were allowed to remain in it for a longer of shorter time depending upon the depth of color desired (Grinnell, II, 1923).

Orchard (1916) gathered some information concerning dye materials from some of the older informants on the Sioux reservation. A red dye was made from buffalo-berry and squaw-currant. Wild grapes made an excellent black dye, although green walnuts or hickory nuts could be used for a less desirable brownish black dyd. Yellow dye was obtained from wild sunflower, cone flower, or the bark of a particular pine tree. Apparently blue dye was not known until after the Europeans introduced aniline dyes. Later, the Indians on the reservation boiled blue blankets, issued by the government, with the quills to obtain a blue color.
It seems evident that dye material was no great problem to the Indians, nor was the dyeing process difficult or involved. When the aniline dyes became available, however, the older aboriginal methods and materials yielded to the new and fell into disuse. Some groups can no longer remember the methods used for coloring quills (Spier, 1928).

It should be noted that, although porcupine quills were by far the most favored material to be used for this particular type of decorative art, other materials, such as grasses, hair, bird quills, and reeds were occasionally handled in a similar fashion. Sometimes these other materials are found used in conjunction with porcupine quills. Among the Cheyenne Indians, for example, a "certain reed was also used, as well as the slender black reed and a black grass. A few years ago beautiful reed and quillwork was often seen on robes, moccasins and tobacco pouches" (Grinnell, I, 1923, p. 167).

Quillwork, and the subsequent beadwork, were feminine pursuits. The men were the hunters, and as such, provided the necessary skins and quills, while the decorative arts that combined these raw materials into a pleasing finished product, were in the province of the women. They carried their sewing equipment in leather pouches attached to their belts. The sewing essentials consisted of an awl, sinew thread, quills, a knife and, perhaps, a marker of
bone with which to draw the design (Grinnell, I, 1923; Orchard, 1916).

The sinew came from along the spine of the buffalo or deer. It was dried and the long pieces of it were split into strands of thread. Sewing was achieved by moistening and pointing one end of a strand, then pushing it through a hole in the material that had been made with the awl. Usually the Indians made their awls and needles of bone (Wallace and Hoebel, 1952).

A birchbark or rawhide pattern of the design to be followed in the quilling was sometimes laid out and traced. A design, however, might be drawn freehand with a bone marker. At this stage of the work, the men were occasionally consulted for suggestions for designs (Orchard, 1916).

Orchard (1916) has made a detailed analysis of the stitches used in fastening the quills to the leather background material. One, to which he refers as the "spot-stitch," is a straight stitch similar to basting (Plate 3). Another, which he calls the "back-stitch," is achieved by pushing the awl, when sewing from left to right, first downward into the leather, then upward toward the left. A third, which he names the "loop-stitch," is made by perforating the leather with the awl, but in this case the sinew is made to pass over itself in such a way that loops are formed as it is pushed through successive awl holes.
The stitches were only caught just under the surface, despite the thinness of the skin being quilled. They were never sewn completely through the leather.

Because of the shortness of the quills, it was necessary to splice them frequently. This was usually done by placing the end of the quill being added within the fold of the quill before it and making a stitch to secure it. The spliced quills held remarkably well. This was due, in part, to the fact that quills became flexible in the preparatory processes of dampening and flattening them, but as they dried, they became stiff and fixed in place. The flattening process may have been carried out by the use of a special tool made of bone or antler or the quills may have been flattened by the simple expedient of drawing the thumbnail along a quill lengthwise while one end was held between the teeth (Orchard, 1916).

Various techniques were developed by the Indians for applying the quills to the material to be decorated. When a large surface was to be covered solidly with quills, the simplest method was to fold the quill ends, and laying the quills side by side, attach them to the leather with spot-stitching between each fold. This resulted in two rows of stitching, one at each end of the band of quills (Plate 3). Although the spot stitch was the simplest and easiest to do, the back-stitch and loop-stitch were more frequently
used. This was probably because of their superior holding capacity (Orchard, 1916).

Various effects were achieved by folding the quills in different fashions or by folding quills of different colors together (Plate 3). Techniques have been described which produced a checkerboard effect, in which two different colors of quills crossed over and under each other at right angles, as well as a form of plaiting in which two quills were worked over and under each other to form a diamond shaped design, and so on. Robes, medicine bags and tipis were adorned with quillwork discs. These were made with a coil made by wrapping the quills around a filler of hair (Orchard, 1916).

Pipe stems and fringe were wrapped with quills. In some instances each quill was wrapped once about a pipe stem, its ends folded under and secured by a thread at the back where all the quill ends met (Orchard, 1916). Another method involved the initial weaving of the quills into a long, narrow band which was subsequently wrapped around the stem. The colors of the quills could be varied in such a way as to produce patterns (Hodge II, 1907).

In addition to the embroidery and wrapping techniques, the Indians also employed weaving techniques (Plate 3) for handling porcupine quills. The bow loom was used in weaving quill bands (Plate 4). The warp threads were attached
to either end of a bow, the tension of the bow keeping them straight and taut. They were kept separated and parallel to each other by means of two perforated pieces of birch bark, through which the strands were threaded. Another thread was attached to the last warp strand, and was worked across, over and under the warp, then back again, reversing the process, etc. The quills were woven in and out the crossing threads, between the warp strands. They were pushed tightly together so that the only exposed threads in the finished product were the two outside threads and the loop formed by the turning of the crossing threads at the end of each row. This formed a selvage. The end result, according to Orchard, gave the impression of having been made of beads (Orchard, 1916; Driver and Massey, 1957).

The designs that the Indians of the Plains featured in their quillwork were of a geometric character, for which the stiff quills would seem to have been especially well qualified. The quillwork designs of the Woodland Indians differed markedly from those commonly produced by the Plains tribes. Their designs were predominantly of a floral nature, for which they designed a number of ingenious ways of manipulating the quills that were not used on the Plains.

Several Woodland techniques are described by Orchard (1916). For edgings, quills were sometimes folded in such
a fashion as to produce a sawtooth border. Occasionally the quills were folded over the edge in such a way that both top and under side looked the same. All edgings were made of the finest quills and were tacked to the material with small stitches which were usually concealed. For the line work so characteristic of Woodland quill decoration, the quill might simply be placed on the material and stitched. In finer work, the quill might be twisted and stitched in such a way that the sewing was concealed by the twists. The outlining of flowers and leaves was done in such a way. A raised line, which was used for outlining panels, was made by adding a filler, such as sinew or a bird quill, around which the quills were wrapped before being stitched to the material.

Porcupine quillwork was employed for decorating a great number of objects. Catlin (I, 1841) and Maximilian (I and II, 1905) describe many articles decorated with quills including shirts, tunics, leggings, moccasins, robes, pipestems, lodges, women's dresses, bed curtains, saddles, tobacco sacks, war whistles, cradle- straps and cradles, pipe-cleaners, and hair ornaments. Necklaces also seem to have been made of quills. Skinner (1920) describes an elaborate one made by the Illinois. It was woven of buffalo hair and bore designs of black, white,
red, and green quills. Birch bark containers were also embellished with quills. This was relatively simple since the quills were not flattened nor was any sewing necessary (Orchard, 1916).
CHAPTER IV
HISTORIC BEADWORK

Work with porcupine quills was the traditional and prehistoric decorative form that was flourishing among many American Indian tribes when the white traders began to supply them with glass beads. These were made in a variety of sizes and shapes, and the Indians found different uses for them. Ewers (1958), discussing the trader's items that were attractive to the Blackfoot women, mentions large glass beads that they strung on buckskin and wore as necklaces. Orchard describes a string of glass beads that was obtained from the Crow Indians of Montana. The beads had apparently been made to look like kernels of red corn. Glass copies of yellow corn kernels were found in a New Jersey burial. The Crow Indians used polychrome glass beads as religious offerings (Orchard, 1929). It would seem that some of the glass beads were used in the same ways that the pre-Columbian beads probably had been.

Among certain groups of Indians (Map 2) the introduction of small, globular glass beads signaled a phenomenal development of bead embroidery and woven beadwork. Wissler delimits the great beadwork area, "the country around the
Great Lakes and the Western Plains -- all the States that border the Lakes, that lie between the Rocky Mountains and the Mississippi, and adjoining parts of Canada" (Wissler, 1919, p. 3). The fullest expression of the art developed among the Plains Indians, however, in the same general area which had witnessed the greatest development of porcupine quillwork.

The obvious enthusiasm with which beads were adopted might be partially accounted for by the fact that they could be used in a manner somewhat analogous to the way in which quills were used. Hence their acceptance did not involve the creation of an entirely new craft. The beads were substituted for quills, but "it is the glass beads that are modern and not the art of embroidery nor the designs employed" (Wissler, 1919, p. 3). Comparing some of the factors involved in working with quills and with beads indicates further possible reasons for their reception. Beads could be handled with greater ease than quills. They did not require the preliminary processing nor did they necessitate the initial effort to obtain them. In addition, the time and work needed to embroider an object with beads was apparently less than when quills were used. Belden tells us that an Indian woman could "cut out and sew up a plain pair" of moccasins "in half a day. If they are beaded, however, it takes a week or more
to finish them, and those ornamented with porcupine quills require a month of patient labor" (Brisbin, 1870, p. 153). But the Indian women may not have regarded a reduction in time and effort with the same fondness that we would and may have accepted beads for aesthetic or other reasons.

According to Harrington, the earliest traders carried somewhat larger beads than those available later. These early beads were called "pony beads" from the traders' practice of carrying their goods on pack-ponies. They can be seen on some of the older specimens of Indian beadwork (Harrington, 1920). Ewers also refers to the larger beads of the earlier period which were about "one-eighth of an inch in diameter" and were available in "light blue, dark blue, dark red, deep yellow, white, and black" (Ewers, 1958, p. 120). Skinner describes such beads on an Iroquois tobacco pouch, the edges of which "are adorned with heavy antique opaque white glass beads" (Skinner, 1920a, p. 107).

Beadwork utilizing the larger glass beads began to appear on the Plains about 1800. Beads at that time were not very plentiful and were frequently used in combination with quills. About 1850 smaller glass beads, known as seed beads, were introduced. These displaced the larger beads and greatly stimulated the production of beadwork, resulting in the climax of this particular handicraft during the
latter part of the nineteenth century (Wildschut and Ewers, 1959).

The seed beads were about half the size of the earlier beads and were available in a much greater range of colors. The various tribes had their color preferences. Maximilian said that the Blackfoot women's best dresses were decorated "with broad diversified stripes of sky-blue and white glass beads. The Indians do not like beads of other colours, for instance red, next the skin . . . ." (Maximilian, II, 1905, p. 103). For the background color of beaded moccasins of the Plains tribes, Wissler found that white was preferred by all tribes except the Assiniboine who preferred blue (Wissler, 1927). Blue also seems to have been the favorite color of the Blackfeet (Ewers, 1958) and of the Sioux (Wissler, 1904). The Crow seem to have preferred blue pony beads and later, when more than eighty colors of seed beads were made available to them, they usually selected beads of "light blue, lavender, white, dark blue, red, yellow, and green" (Wildschut and Ewers, 1959, p. 45).

The Indians devised a variety of techniques for handling the beads. Some of these were direct adaptations of techniques used in the working of quills. As in quillwork, the beads were either woven into bands or were embroidered on some material.
The making of woven beadwork required some device on which to stretch the warp threads. The bow loom, such as had been used for quill weaving, was also used for beads. Another method made use of a weaving frame. The warp threads were wrapped around it. One weft thread might be used to carry the beads over and under the warp. Or two weft threads might be used, in which case the threaded beads were placed on the warp and the needle again went through each bead but on the other side of the warp (Wissler, 1919) (Plate 5).

Some tribes produced beadwork with the aid of a heddle. The heddle does not seem to have been an aboriginal invention. More probably it was a European innovation, introduced either by the Jesuits, or the early French settlers. Keesing (1939) suggests the possibility that migrating Iroquois bands brought it from the east to the Menomini.

For covering broad surfaces Orchard describes two sewing methods that have been widely used. In the first, which he calls the "overlaid or spot stitch," the beads strung on a thread, were laid on the material as desired, then a stitch was made between every two or three beads to hold them flat (Plate 4). This method served for delicate line embroidery as well as for filling in solid masses of beads and was almost universally used among
Indian beadworkers (Orchard, 1929). The Blackfoot women used this method almost entirely during the Reservation Period, but the Crow used it principally for curved lines and for outlining designs of dark colors with white beads (Wildschut and Ewers, 1959).

In the second method described by Orchard the thread was attached to the material, then a certain number of beads were strung on it and a stitch was made at right angles to the row of beads, in such a way that the thread was then in position to receive the next group of beads which would lie beside the first row and contain the same number of beads. This process was repeated, and resulted in a ribbed effect similar to the banded appearance of quillwork. Orchard terms this method the "lazy stitch" (Plate 5).

Though the lazy stitch was fairly widely used west of the Mississippi, it was much more limited in its distribution than the overlaid stitch. According to Wildschut and Ewers (1959), the Upper Missouri tribes applied pony beads with the lazy stitch and the Sioux, Cheyenne, and Arapaho continued to use it for seed beads. The Crow, however, limited its use to narrow borders and bands and small triangles of beadwork.

In addition to the two stitches described by Orchard, Wildschut and Ewers have identified a third beadwork
technique which they call the "modified lazy stitch" or "Crow stitch." They describe it as a combination of the lazy stitch and the back stitch. The Crow stitch was used for embroidering solid colored backgrounds and for filling in large designs with beads (Wildschut and Ewers, 1959).

These techniques were quite similar to quilling techniques. The spot stitch was used for both quillwork and beadwork. As described, beads, strung on a thread, were laid on the material and a stitch was made over the thread even as a stitch was made over a quill. This method was used for line work utilizing either beads or quills.

Solid beadwork and solid quillwork were also done in much the same way. Quills were laid side by side and a stitch taken at each end of each quill. With beads, a certain number of beads strung on a thread were similarly laid on the material. A stitch was taken at the end of the row, the next row of beads was then laid beside the first row and another stitch taken, so that there was a stitch made at the end of each row of beads just as at the end of each quill. Both quillwork and beadwork done in this way had a lined look.

The back stitch was also used for both beadwork and quillwork. However, no mention was found of the loop stitch for beadwork.
These beadwork techniques seem to be holdovers or adaptations from quill techniques. It seems simpler and more logical to fasten the thread to the material, put a bead on it and, with that same thread, make a tiny stitch, and so on. But the Indians laid the strung beads on the material and proceeded to treat them as they were accustomed to treating quills.

The bow loom was used for both quill weaving and bead weaving, and the process was quite similar. In the case of quills, however, the crossing threads were woven under and over the warp threads first and the quills were subsequently woven in and out the crossing threads, whereas with beads, the beads were strung on the crossing thread before it was woven in and out the warp thread.

When the beads were applied to leather, they were usually sewn with thread of sinew. An awl was used to perforate the leather, then the end of the thread was pointed and moistened to stiffen it, which facilitated its passage through the material. According to Wallace and Hoebel (1952), steel substitutes for the native bone awls and needles were among the earliest trade items, but while leather was used for material, sewing methods changed little. Commercial thread was used particularly when beads were applied to cloth.
The use of beadwork was a phenomenon that spread throughout the Plains area with rather amazing rapidity. Articles which were embellished with beads were numerous indeed. In the earlier period, when beads were not yet available in the tremendous quantities demanded later, porcupine quillwork was combined with beadwork on the same article. Catlin (I, 1841, p. 212) wrote of a Gros-Ventres girl "dressed in a beautiful costume of the mountain sheep skin, handsomely garnished with porcupine quills and beads."

Eventually, almost every available surface was bead-covered (Vaillant, 1939). One result was the magnificently embellished costume of the Plains warrior of fictional and historical fame. Among the Crows, for example, leggings were worn with beaded cuffs. Shirts were beaded at the neck flap, on the arms and shoulders. Vests, adopted in form from the white man, were heavily beaded. Gauntlets, also adopted, had broad, beaded cuffs. Leather belts were obtained from the traders and then decorated with beads. Women's dresses might be decorated with beadwork at the shoulders, neck, and hem. Riding gear received its share of beadwork. Containers of all kinds, such as "possible sacks," tobacco pouches, weapon cases, and cradles were also beaded. Moccasins were also subjected to the beadworker's attention (Wildschut and Ewers, 1959; Lowie, 1922). Kroeber (1902) found that many of the same articles
among the Arapaho bore beadwork. He mentioned tent ornaments, cradles, quill pouches, paint pouches, awl cases, and various other pouches and bags.

The amount of beadwork, in some instances, was carried to such extremes as to render the decorated article an art object and quite useless for its supposedly intended purpose. As an example, moccasins "for show are often so overloaded with ornamentation and beadwork, as to be utterly useless for service" (Dodge, 1883, p. 303).

Though widespread, the acceptance of glass beads was not universal. For example Speck (1920) says that beadwork never became important among the Cherokee. And in the Southwest, where the greatest European influence was of Spanish origin, the Indians adopted the art of silver-working (Adair, 1944; Miner, 1917), but they did not make beadwork like the Plains Indians. They also retained and modified their work with the native turquoise and shell, taking advantage of the greater ease in making beads that the European tools afforded (Underhill, 1944).
CHAPTER V
BEADWORK AND QUILLWORK DESIGNS

The designs that the Indians executed in their quillwork and beadwork seem to fall into two fairly distinct, geographical categories. In the Plains area, the predominating designs were geometric in character. In the Woodlands area, graceful curved designs prevailed (Map 2).

Various elements of design, which were combined to form complex figures, attained widespread distribution among the Plains tribes (Wissler, 1904). Certain tribes made use of specific design components more than other tribes did and a few groups were completely lacking some of them. According to Kroeber (1908) the design known as the "spreading pattern" (Plate 6) found its greatest use among the Ute, Arapaho, and Shoshone. (Although the Ute and the Shoshone are geographically out of the Plains area, Kroeber has included them in his discussion, indicating that they shared design traits with some Plains groups.) The Gros Ventres and Sioux employed it to some extent, but it was apparently lacking entirely among the Blackfeet. The most characteristic Blackfoot design was known as the "triangular step or checker
pattern," which was also found among the Gros Ventres, but only occasionally among the Arapaho and elsewhere.

The Arapaho made particular use of the forked design, the triangle, and the diamond. The Blackfeet preferred the diagonal checker row, the stripe and the triangular step pattern. The Ute and Shoshone both used the spreading design, the pronged design, the triangle, and the slanting bar. The Sioux and the Assiniboine used the square, the cross, the feather, pronged, forked and the triangle designs. The Gros Ventres used the forked design, the triangle, the box-square, the feather, and the stripe. Crow work bears a resemblance to Sioux and Blackfoot. The feather, square, slanting bar, and separate stripe are typical elements of it. The southern tribes, the Comanche, Kiowa, Apache, and Wichita specialized in stripes and edgings, but not solid beadwork (Kroeber, 1908).

These design elements are encountered principally on articles offering broad surfaces to be decorated. Smaller objects, such as moccasins, present a more restricted surface and their decoration poses certain structural problems in adapting the design to the form (Plate 7). One of the most widespread designs found on moccasins is the stripe-border design. This was used, to a certain extent at least, by the tribes mentioned before, with the exception of the Blackfeet, whose dominant design was
U-shaped. The Kiowa, Comanche, Ute, and Arapaho made use of the stripe and border patterns for the most part. The Shoshone, Gros Ventres, Sioux, Assiniboine, and Blackfeet principally used middle figure designs such as the round head and the angle across (Kroeber, 1908).

That the quillwork or beadwork decorations of moccasins reveal a particular tribal style has been suggested by several writers (Driver and Massey, 1957; Hodge, 1907; Dorsey, 1890). However, this view seems to be challenged by the results of a study of the distribution of moccasin designs made by Wissler (1927, p. 23) which "failed to reveal a tribal type of moccasin decoration that can be taken as characteristic." He found that this was even true of the design elements. The only approximation to tribal uniqueness was found in the combinations of elements. Composition also seemed to be the only aspect in which personal originality was possible, because the components of design were so completely standardized. Although he does admit of tribal preferences, Wissler emphasizes that the "beaded art of the Plains is an affair of the entire area, rather than of the tribe" (Wissler, 1927, p. 23).

It seems evident that diffusion of beadwork and quillwork traits occurred among the Plains tribes, but an attempt to determine the direction of diffusion or the
originating group would be very difficult. This can be demonstrated by calling attention to the opposing opinions in the matter of diffusion among the Crow, Blackfeet, and Dakota. Lowie (1924) did not feel that the Crow had achieved any great amount of artistic individuality. He felt that Crow beadwork indicated Dakota influence, since many of the same designs appeared among both tribes, and Blackfoot influence, since the Blackfeet and the Crow shared the U-shaped moccasin design (Lowie, 1935). This provoked the query from Wildschut and Ewers as to why the Crow women "would have been busy copying the beadwork of the enemy Blackfoot and Dakota tribes while their husbands were risking their lives to preserve the tribe from their domination" (Wildschut and Ewers, 1959, p. 1).

But, as Catlin (1841) pointed out, when an Indian fell in battle, his enemies appropriated his clothing and weapons, which were then imitated by the rest of the tribe. Hence it seems unlikely that the Crow women would have refrained from copying Blackfoot or Dakota models simply because the tribes were antagonistic. Rather than being a deterrent to diffusion, conflict between tribes on the Plains may actually have stimulated imitation.

The designs that the Plains Indians customarily painted on robes were investigated by Ewers and compared with their quillwork and beadwork designs. It was
discovered that the counterparts of certain painted patterns were accurately executed in the other two media. For example, the border-and-box design frequently found on painted hides was duplicated by the Sioux with beads in the same colors. The feathered-circle, another typical paint-design, was reproduced in quills by the Assiniboine and the Sioux. The characteristic horizontal parallel striped design of the Blackfeet was copied in quills on many Plains Indian robes. Representative figures of men and horses, similar to those painted on hides, were also produced in quills or beads, especially among the Sioux. The relative ease with which a robe could be painted and the difficulty that would be met in constructing the same pattern with colored beads or dyed quills suggests that the painted representative designs, if not the other designs, were the forerunners of similar quilled or beaded designs (Ewers, 1939).

Curvilinear designs also occurred among the Plains Indians in beaded or quilled rosettes. And, during the latter part of the nineteenth century, floral designs became popular. This popularity may have been partly due to the influence of the Cree and other eastern tribes (Wildschut and Ewers, 1959). Ewers (1958) has suggested that, among the Blackfeet white men's Indian wives might have been responsible for the introduction of fine-line
designs, curved and floral designs, which were subsequently imitated by other craftswomen.

Two forces, in addition to the other influences at work, seem to have had some significance for the decorative art of the Plains. To the southwest of the Plains area, there existed a highly developed geometric art from whence the geometric influence may have been derived. To the northeast of the Plains, the Ojibway, in particular, possessed a pictographic art, and from this direction, the influence seems to have come for designs that were realistic and nongeometric (Wissler, 1912).

The other general area that was noted for its work in quills and beads was the Eastern Woodlands. The designs that predominated here can be considered tribally and geographically. The Iroquois of the New York State region produced a curvilinear style of embroidery using quills of white beads that "is unequalled in Indian art for delicate grace" (Douglas and D'Harnoncourt, 1941, p. 154). The Algonquin tribes developed their crafts to a higher degree than the Iroquois; both quillwork and beadwork, sewn and woven, were important decorative forms. Three styles prevailed among them. In the area around the Great Lakes, designs had a geometric quality, lacking in complexity. These came to be replaced, to a great extent, by floral designs. The "double-curve" design dominated decorative
art in New England. And among the southern Indians, the characteristic design motif was the scroll. It only persisted, after the onslaught of European innovations, in beadwork done on cloth (Douglas and D’Harmoncourt, 1941).

Speck (1914) has examined the design elements in northeastern Algonquin art. He suggested that the "double-curve," which he defined as "two opposed incures as a foundation element, with embellishments more or less elaborate modifying the enclosed space and with variations in the shape and proportions of the whole," was the major element in the region (Plates 8 and 9). It seems to have been most strongly entrenched among the tribes farthest to the east and north of the St. Lawrence River.

According to Speck (1914), floral designs and geometric designs were also used throughout the northeastern area. Among tribes farther to the west, he found that the floral elements of design gained increasingly in importance as the "double-curve" became less significant.

As for the source of the double-curve motive, Speck (1914) suggests that it might have been a northeastern invention which diffused westward. Or, more probably, it might have been an aboriginal design that underwent modification and subsequent adoption by neighboring groups. The outlying tribes that subscribed to this motive included the Menomini, Iroquois, Delaware, Pottawatomí, Sauk and
Fox, Blackfeet, Cree, and Ojibway. Among the northeastern Algonkians, there was "nothing in the life of these tribes more characteristic" than the double-curve (Speck, 1927, p. 40).

Realistic floral designs were apparently introduced to the Indians by the incoming Europeans, hence are not to be found on older articles. Among the Menomini, for instance, the more ancient objects were only ornamented with quills in geometric figures, probably the predominant aboriginal motif from this region (Keesing, 1939). However, a distinction should be made between the use of plant forms as a basis for designs and the use of realistic floral designs. Plant forms were used by the Indians in early times, but the French settlers seem to have been responsible for their realistic treatment (Douglas and D'Harnoncourt). Apparently such designs were readily accepted throughout the Great Lakes and northeastern areas, for Speck (1915) notes that the floral styles of these tribes were almost identical.

According to Barbeau, the Indian floral designs can be definitely traced to the French. He is inclined to deprecate the possibility of any aboriginal contribution to the eventual result. "The floral patterns of our northern tribes ... belong, one and all, to the French renaissance and peasant art..." He feels that the
sewing classes established for Indian girls, the institution of French renaissance architecture as a fixed style in America, and the introduction of European clothing were contributing factors to the development of "this spurious American art" (Barbeau, 1930, p. 512).

However, it would seem altogether possible that certain indigenous design elements were retained. Speck mentions a group of curve motives as being "obviously aboriginal," which seems plausible, Barbeau notwithstanding (Speck, 1927, p. 31). Native designs, subjected to some modification and combined in various amounts and ways with the French designs, probably produced the ultimate results.
CHAPTER VI
SUMMARY AND CONCLUSIONS

For thousands of years the Indians had enjoyed the New World without outside interference. In that time they had built upon the base of traits which they had brought with them from Asia by the processes of invention and borrowing from one another. They had yielded to an apparently universal urge to decorate according to the standards of attractiveness and beauty which they had developed, and within the limitations fixed by the materials available within their environment and by the fact that, until the time of contact with Europeans, certain knowledge remained unknown to them.

During the long period of isolation, the American Indians amply demonstrated their ingenuity in the exploration of their surroundings for bead resources and their skill in the able manner in which they worked those materials. They developed a wholly unique form of decorative art in their porcupine quill weaving and embroidery. Since the list of materials used for beads embraced so many things, including a variety of animal substances, it is not surprising that the enterprising
Indians thought of using quills. It seems most likely that the use of quills originated in the area where porcupines were naturally found and later spread to the other regions where the craft became important. The fact that they were dyed suggests that coloring agents were probably tried on many different substances and the discovery made that quills would take color quite satisfactorily.

We find a hint of a possible predecessor for quill-work and beadwork in some burial mounds. Apparently the custom of embellishing garments with beads of shell or pearl existed in prehistoric times, hence was not necessarily a novel idea which the Indians invented for quills.

Before European beads could acquire any significance in Indian life, they had to be accepted and at the time the Europeans appeared, conditions for acceptance seem to have been at an optimum. Adopting glass beads was in no way impeded by the culture. The Indians were accustomed to making beads in many forms and using them in a variety of ways. Decorated items were not alien to them and, in all probability, had a prestige value in the society. Beads did not require much revamping of methods or designs; those developed for quill embroidery and weaving could be transferred to beads. Beads could even be worked on the same background materials as quills. In addition beads were available in colors that had not been possible for
quills and which appealed to the Indians. And, most important, beads could fit into the existing culture without in any way antagonizing or offending it.

European patterns were equally acceptable. Quillwork and beadwork could not be classed as "fine arts" in the sense that they represented individual expression. The patterns and designs were well standardized and the craftswomen were, for the most part, accustomed to selecting from the design components already existent. They were under no compulsion to achieve originality. When the French introduced foreign designs, the women, preconditioned to imitate, probably experienced no difficulty in shifting from aboriginal to European patterns. But, since they were also in the habit of combining design components to effect a final composition, it seems probable that they would combine some native notions with the foreign.

The tremendous vogue for beadwork may have been dependent, to some extent, upon the time saved by using European materials. To the Indian woman, the important consideration may have been the beauty of the article she was making or the satisfaction in a task done well. But, whether or not she valued time, the fact remains that it took much less time to bead an article than to quill it, hence more beadwork could be accomplished than quillwork.
in the same length of time. This simple time factor may have had some influence on the enormous amount of beadwork that appeared after glass beads were available.

The European metal tools also had considerable influence on native crafts. Without them, the Indians would never have been able to produce sufficient quantities of wampum for it to intrude into so many aspects of their culture. Time was again a significant factor. With metal tools, wampum could be made quickly and in the amounts that made its ubiquitousness possible.

These were the European innovations that seem to have influenced Indian beadwork to the greatest extent. However, there were also some minor innovations that affected decorative art. The Europeans introduced their aniline dyes which ended exploring the countryside for vegetable dye materials. They brought in steel needles, thread, and cloth, which were to supersede bone needles, sinew or vegetable fibers, and skins. They introduced a weaving heddle which facilitated bead weaving. They brought their own wardrobes. The Indians admired them and incorporated them, modified with their own distinctive ornamentation, into their own costumes.

We become accustomed to thinking of the appearance of the white man on this continent as the signal for a series of entirely devastating and traumatic experiences for the
Indians. However, it seems that the introduction of European elements into the area of beadwork had, on the whole, desirable consequences for the natives. Occurring at a highly fortuitous moment, the Indian cultures were favorably conditioned to accept them readily and offered extremely fertile ground for the resultant decorative art to grow. And grow it did. The Indians responded to the new materials with exuberance and productivity. They demonstrated their adaptability and versatility by applying the exotic beads to their aboriginal designs as well as to adopted designs. They incorporated borrowed items that had attracted them into their native decorative notions to create new and delightful Indian traits.

It is true that interest in porcupine quillwork waned and that European materials supplanted native materials to a large extent. It is also true that the exciting efflorescence in beadwork was limited to certain regions. But the writer feels that the Indians of the Plains and Woodlands areas lost little in their decorative arts as a result of their encounter with the white man in comparison to what they gained. The Indians were stimulated by the experience to utilize their ingenuity and their cultural background in assimilating the new materials and designs with the result that they created a highly pleasing blend.
BIBLIOGRAPHY
Adair, John.  

Barbeau, Marius.  

Barrett, S. A. and E. W. Gifford.  

Beauchamp, William M.  


Braidwood, Robert J.  

Brisbin, James S. (ed.)  

Catlin, George.  

Dodge, Richard Irving.  

Dorsey, J. Owen.  
Douglas, Frederic H. and Rene D'Harmoncourt.  

Driver, Harold E. and William C. Massey.  

Ewers, John Canfield.  
1939 Plains Indian Painting. Stanford University Press, California.

--- 1958 ---


Grinnell, George Bird.  

Harrington, M. R.  

--- 1922 ---


Hodge, Frederick Webb. (ed.)  

--- 1920 ---


Holmes, William H.  
<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Title</th>
<th>Publisher and Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hutchinson, Thomas</td>
<td>1936</td>
<td>The History of the Colony and Province of Massachusetts-Bay. (Edited by Lawrence Shaw Mayo.)</td>
<td>Harvard University Press, Cambridge.</td>
</tr>
</tbody>
</table>
Maximilian, Prince of Wied.

Mills, William C.

Miner, W. H.
1917 The American Indians. Cambridge University Press.

Moorehead, Warren K.
1900 Prehistoric Implements. The Robert Clarke Co., Cincinnati.

Morgan, Lewis H.
1901 League of the Ho-de-no-sau-nee or Iroquois. Dodd, Mead and Company, New York. 2 vols.

Morton, Thomas.

Orchard, William C.

Shetrone, H. C.

Skinner, Alanson.


Speck, Frank G.


Spier, Leslie.  
1928  

Thomas, Cyrus.  
1891  

Underhill, Ruth.  
1944  
Pueblo Crafts. Education Division, United States Indian Service.

1953  

Vaillant, George C.  
1939  

Wallace, Ernest and E. Adamson Hoebel.  
1952  

1957  
The Adena People--No. 2. The Ohio University Press, Columbus.

Wildschut, William and John Ewers.  
1959  

Wissler, Clark.  
1904  

1912  

Plate 1.

- Truncated Cone
- Barrel Shape
- Spherical
- Discoidal
- Tubular
- Shell Beads
- Bone Beads
- Stone Beads
- Copper Beads

Aboriginal Beads (after Orchard)
WAMPUM BELTS.

(Holmes)
Plate 3.

Method of fastening quills to leather.

One method of crossing and folding quills.

Woven quillwork. No sewing.

Some Quill Techniques

(After Orchard)
Bow Loom

with quillwork in progress
(after Orchard)
Square weaving technique, using doubled thread for weft

Overlaid or spot stitch

Lazy stitch

Bead Weaving and Stitching Techniques (After Orchard)
Some design elements of the Plains Indians
(used in bead and quill embroidery)

a) Spreading design
b) Forked design
c) Pronged design
d) Isosceles triangle
e) Rhombus
f) Square or rectangle
g) Square cross
h) Feather design
i) Slanting bar
j) Crossed line
k) Checker - diagonal
l) Triangular step or checker pattern
m) Stripe
n) Lengthened checker pattern

(After Kroeber)
Types of designs on Plains moccasins

a) Longitudinal dividing stripe
b) Longitudinal dividing stripe
c) Stripe and border
d) Longitudinal dividing stripe
e) Red-line (usually done in red quills)
f) Checker design
g) Four-squares
h) Transverse-zigzag
i) Angle across
j) Circle or round-head
k) U or oval
l) Tent
m) Cross
n) Bird
o) Any small figure in center of main decorative field

(After Kroeber)
Plate 8.

Malecite designs

Micmac designs

Iroquois designs

Examples of double curve designs

(After Speck)
Plate 9.

Blackfoot

Pottawatomie

Double Curve Designs (After Speck)
Map 1

Showing regions where porcupines are found and quillworking groups outside that area.

(Modified from Orchard)
Map 2

Plains and Woodlands Areas: Principal Beadwork Regions
(Modified from Spencer)