

slanting board or rock, repeating until all the dirt, sand and grease have been removed. The wool is then spread out in the sun to dry, and finally stored in sacks ready for use.

Carding

When the weaver is ready to card her wool, she first loosens it by hand, then combs it between carding tools until the hairs lie all in one direction. The old cards consisted of burrs held in place by strips of leather mounted on small boards with handles at one side. These were replaced when metal cards of American manufacture were procurable at the trading posts. When a weaver wants to produce good grey color, she mixes wool from black sheep with that from white as she cards the wool. This method makes the finest grey used in many rugs, particularly those from the Two Grey Hills area.

Spinning

The Navaho still use the same type of spindle they learned to make from their Pueblo teachers. Since the American occupation of the Southwest, traders and others have tried to introduce the spinning wheel, but the Navaho women have always rejected it, preferring to use their spindles of ancient origin. Wool is spun twice, occasionally more, until the desired fineness of thread is achieved, through the process of twisting and pulling the loose fibres until firm, strong thread is produced.

Dyeing

Using a wide variety of native plants, the Navaho produce dyes of many colors and shades. The wool from black

slanting board or rock, repeating until all the dirt, sand and grease have been removed. The wool is then spread out in the sun to dry, and finally stored in sacks ready for use.

Carding

When the weaver is ready to card her wool, she first loosens it by hand, then combs it between carding tools until the hairs lie all in one direction. The old cards consisted of burrs held in place by strips of leather mounted on small boards with handles at one side. These were replaced when metal cards of American manufacture were procurable at the trading posts. When a weaver wants to produce good grey color, she mixes wool from black sheep with that from white as she cards the wool. This method makes the finest grey used in many rugs, particularly those from the Two Grey Hills area.

Spinning

The Navaho still use the same type of spindle they learned to make from their Pueblo teachers. Since the American occupation of the Southwest, traders and others have tried to introduce the spinning wheel, but the Navaho women have always rejected it, preferring to use their spindles of ancient origin. Wool is spun twice, occasionally more, until the desired fineness of thread is achieved, through the process of twisting and pulling the loose fibres until firm, strong thread is produced.

Dyeing

Using a wide variety of native plants, the Navaho produce dyes of many colors and shades. The wool from black

sheep is never a true black, as it tends to a brownish tinge. Good black dye is made from a mixture of twigs and leaves of sumac boiled four or five hours, and then added to a mixture of powdered native yellow ochre and an equal amount of piñon gum, stirred together over a fire until a black liquid is formed which dries to a fine black powder. The tannic acid of the sumac acts as a mordant to produce a rich, permanent black. Indigo, on the other hand, was imported in lumps by the early traders and was used extensively until the end of the 1890s. The indigo, tied in a cloth, was suspended in a large jar of urine which acted as a mordant. Occasionally, some of this dye is still made. The wool was placed in the jar and left until the desired depth of color was obtained. The mordant used with most native plants is an impure alum found in limited quantities in certain regions on the reservation, while certain plants require moss or lichen as a mordant.

Aniline dyes, perfected in 1856-57, came onto the market from the first factory in 1864, and were in general use by 1870. They reached the Navaho traders about 1880 when Mr. B. F. Hyatt, trader at Fort Defiance, taught the weavers how to use them. C. N. Cotton, originally a partner of Lorenzo Hubbell, succeeded in obtaining dyes packaged ready for use, including a mordant, and these, under the trade name of Diamond Dyes, were soon available at most trading posts, and were used to dye both native hand-spun wool and the Germantown yarn.

sheep is never a true black, as it tends to a brownish tinge. Good black dye is made from a mixture of twigs and leaves of sumac boiled four or five hours, and then added to a mixture of powdered native yellow ochre and an equal amount of piñon gum, stirred together over a fire until a black liquid is formed which dries to a fine black powder. The tannic acid of the sumac acts as a mordant to produce a rich, permanent black. Indigo, on the other hand, was imported in lumps by the early traders and was used extensively until the end of the 1890s. The indigo, tied in a cloth, was suspended in a large jar of urine which acted as a mordant. Occasionally, some of this dye is still made. The wool was placed in the jar and left until the desired depth of color was obtained. The mordant used with most native plants is an impure alum found in limited quantities in certain regions on the reservation, while certain plants require moss or lichen as a mordant.

Aniline dyes, perfected in 1856-57, came onto the market from the first factory in 1864, and were in general use by 1870. They reached the Navaho traders about 1880 when Mr. B. F. Hyatt, trader at Fort Defiance, taught the weavers how to use them. C. N. Cotton, originally a partner of Lorenzo Hubbell, succeeded in obtaining dyes packaged ready for use, including a mordant, and these, under the trade name of Diamond Dyes, were soon available at most trading posts, and were used to dye ~~both~~ native hand-spun wool and the ~~Germantown yarn~~.

94

sheep is never a true black, as it tends to a brownish tinge. Good black dye is made from a mixture of twigs and leaves of sumac boiled four or five hours, and then added to a mixture of powdered native yellow ochre and an equal amount of pifon gum, stirred together over a fire until a black liquid is formed which dries to a fine black powder. The tannic acid of the sumac acts as a mordant to produce a rich, permanent black. Indigo, on the other hand, was imported in lumps by the early traders and was used extensively until the end of the 1890s. The indigo, tied in a cloth, was suspended in a large jar of urine which acted as a mordant. Occasionally, some of this dye is still made. The wool was placed in the jar and left until the desired depth of color was obtained. The mordant used with most native plants is an impure alum found in limited quantities in certain regions on the reservation, while certain plants require moss or lichen as a mordant.

Aniline dyes, perfected in 1856-57, came onto the market from the first factory in 1864, and were in general use by 1870. They reached the Navaho traders about 1880 when Mr. B. F. Hyatt, trader at Fort Defiance, taught the weavers how to use them. C. N. Cotton, originally a partner of Lorenzo Hubbell, succeeded in obtaining dyes packaged ready for use, including a mordant, and these, under the trade name of Diamond Dyes, were soon available at most trading posts, and were used to dye both native hand-spun wool and the Germantown yarn.

weaves, are the variations of color and pattern, giving the weaver an extensive choice.

Most of the designs are carried in the weaver's mind. She does not use a diagram or drawing, or counting of threads. The exceptions are some of the very intricate patterns of tapestry sand-painting rugs, or some of the classical designs. Then the weaver makes a sketch in the sand. This carrying of a design mentally is a remarkable feat, for every weaver has many interruptions, and sometimes may be away from the loom for days at a time, yet she knows at just what stage of the design she left when she was called away. A retentive mind and skillful hands enable her to resume quickly her interrupted task.

weaves, are the variations of color and pattern, giving the weaver an extensive choice.

Most of the designs are carried in the weaver's mind. She does not use a diagram or drawing, or counting of threads. The exceptions are some of the very intricate patterns of tapestry sand-painting rugs, or some of the classical designs. Then the weaver makes a sketch in the sand. This carrying of a design mentally is a remarkable feat, for every weaver has many interruptions, and sometimes may be away from the loom for days at a time, yet she knows at just what stage of the design she left when she was called away. A retentive mind and skillful hands enable her to resume quickly her interrupted task.

THE BLANKETS

From the beginning of Navaho weaving, blankets and mantas were made for clothing. Beyond personal needs, as the chroniclers have told us, surplus blankets were made for trade. The great period, known as the classic period, was from approximately 1840 to the end of the nineteenth century. During the earliest part of this period, possibly even before, Spanish traders brought a fabric to trade to the Indians known as bayeta cloth. This was imported from England to Spain, thence to New Mexico, and while it was called by the Spanish name, it was in reality English Manchester cloth. Red color predominated, a special shade of red which took the fancy of the Navaho weavers, who, after careful scrutiny, unraveled it, re-spun and re-wove it into the intricate patterns of these early blankets. Many of the finest examples of Navaho weaving contain the beautiful bayeta, merged into the textiles along with the native handspun wool. Many serapes and blankets of this period were so firmly woven that they were waterproof. They were in great demand and were highly prized.

From about 1890 until the early years of this century, Navaho weaving deteriorated. The weavers commenced making coarser fabrics largely for sale to the tourist trade as floor rugs. To a considerable extent the traders were responsible for this change. With this making of rugs rather than blankets, borders were introduced with patterns of very different character from

THE BLANKETS

From the beginning of Navaho weaving, blankets and mantas were made for clothing. Beyond personal needs, as the chroniclers have told us, surplus blankets were made for trade. The great period, known as the classic period, was from approximately 1840 to the end of the nineteenth century. During the earliest part of this period, possibly even before, Spanish traders brought a fabric to trade to the Indians known as bayeta cloth. This was imported from England to Spain, thence to New Mexico, and while it was called by the Spanish name, it was in reality English Manchester cloth. Red color predominated, a special shade of red which took the fancy of the Navaho weavers, who, after careful scrutiny, unraveled it, re-spun and re-wove it into the intricate patterns of these early blankets. Many of the finest examples of Navaho weaving contain the beautiful bayeta, merged into the textiles along with the native handspun wool. Many serapes and blankets of this period were so firmly woven that they were waterproof. They were in great demand and were highly prized.

From about 1890 until the early years of this century, Navaho weaving deteriorated. The weavers commenced making coarser fabrics largely for sale to the tourist trade as floor rugs. To a considerable extent the traders were responsible for this change. With this making of rugs rather than blankets, borders were introduced with patterns of very different character from

100

able to sell these at a higher price than those made of commercial dyes, and to sell them as fast as the weavers could produce them.* This was the beginning of another great change in the production of rugs, for other traders soon followed McSparron's lead, and today, thousands of these beautiful rugs are on the market.

The Two Grey Hills area, however, has continued the border patterned rugs which are woven with undyed wool, white, grey, brown, and black wool, the latter, however, is dyed with black dye to produce a true black.

Occasionally very large rugs have been made on special order, measuring twenty or more feet wide by nearly forty feet long. Special looms had to be built to accommodate such size, but they were, or are, built to the traditional specifications. Rugs of extremely fine texture have appeared in recent years from the Two Grey Hills area. One weaver, Daisie Tauglechee, spins strands so fine that her woven fabric counts 110 weft threads to the inch. Others are now following her lead, but so far, these are still bordered rugs and of the undyed wool except for the black.

Throughout the nearly 175 years that the Navaho women have been weavers, they have produced an extraordinary variety of products; moving quickly from the first simple striped blankets to the superb classic period, through a time of decadence, until in very recent years a new surge of fine quality has appeared. The variety of design seems endless in its use of geometric shapes, the spacing of line and color, and the harmony of the whole, for there are never two exactly alike.

* Navaho Blankets, Charles A. Amsden, p. 224.

The variety of weaving is also great, for following the old original clothes that were woven, there were shoulder blankets, ponchos, serapes, saddle blankets, both single and double weave, rugs, Yei blankets (sand-painting blankets), saddle girths, sashes, garters, hair-cords, stockings and leggings. Weaving is unquestionably the great craft of the Navaho. The finest examples are to be found in leading museums of the world, as well as in many private collections. The new building of the Navaho Arts and Crafts Guild at Window Rock, with its contents of weaving, silver jewelry and other crafts, is evidence of the vigorous production of the craftsmen of today. When the quantity of crafts of all kinds sold by the many traders and shops all over the Wouthwest and elsewhere, the aggregate is most impressive.

able to sell these at a higher price than those made of commercial dyes, and to sell them as fast as the weavers could produce them.* This was the beginning of another great change in the production of rugs, for other traders soon followed McSparron's lead, and today, thousands of these beautiful rugs are on the market.

The Two Grey Hills area, however, has continued the border patterned rugs which are woven with undyed wool, white, grey, brown, and black wool, the latter, however, is dyed with black dye to produce a true black.

Occasionally very large rugs have been made on special order, measuring twenty or more feet wide by nearly forty feet long. Special looms had to be built to accommodate such size, but they were, or are, built to the traditional specifications. Rugs of extremely fine texture have appeared in recent years from the Two Grey Hills area. One weaver, Daisie Tauglechee, spins strands so fine that her woven fabric counts 110 weft threads to the inch. Others are now following her lead, but so far, these are still bordered rugs and of the undyed wool except for the black.

Throughout the nearly 175 years that the Navaho women have been weavers, they have produced an extraordinary variety of products; moving quickly from the first simple striped blankets to the superb classic period, through a time of decadence, until in very recent years a new surge of fine quality has appeared. The variety of design seems endless in its use of geometric shapes, the spacing of line and color, and the harmony of the whole, for there are never two exactly alike.

* Navaho Blankets, Charles A. Amsden, p. 224.

The variety of weaving is also great, for following the old original clothes that were woven, there were shoulder blankets, ponchos, serapes, saddle blankets, both single and double weave, rugs, Yei blankets (sand-painting blankets), saddle girths, sashes, garters, hair-cords, stockings and leggings. Weaving is unquestionably the great craft of the Navaho. The finest examples are to be found in leading museums of the world, as well as in many private collections. The new building of the Navaho Arts and Crafts Guild at Window Rock, with its contents of weaving, silver jewelry and other crafts, is evidence of the vigorous production of the craftsmen of today. When the quantity of crafts of all kinds sold by the many traders and shops all over the Wouthwest and elsewhere, the aggregate is most impressive.

probably made by Spanish, Mexican, or even Pueblo people. The Spanish brought silver ornaments to New Mexico where the Navaho doubtless saw them, and they may have purchased, traded for, or even stolen some of these. Many of the designs later adopted by the Navaho were of Spanish origin, such as the so-called Squash Blossom, which in reality is the pomegranate blossom, long used by the Spanish in Europe, fashioned for buttons of brass or silver, and in iron for ornaments for spurs.

One of the early Navaho to ply the blacksmith's trade was Atsidi Sani, who became known as a maker of bridle bits and knife blades. In his authoritative book, The Navaho and Pueblo Silversmiths, John Adair tells of Atsidi Sani learning the silversmith's art from Nakai Tsosi, a Mexican craftsman who lived near Mount Taylor.

As there seems to be no record of any silver work by the Navaho prior to the exile to Fort Sumner, it must have been after their return in 1868 that practice of the art commenced. That it spread rapidly is evident from all the early records of the period between 1870 and 1880, for by the time that Dr. Washington Matthews was stationed at Fort Wingate at the latter date, there were a good many proficient craftsmen. Dr. Matthews employed two Navaho silversmiths whom he established near his residence where he might observe them at their work, and he left for posterity a detailed account of the art as practiced by these two men. Some fifty years later, Father Berard Haile also left a similar record of his findings over a wider area, for he had been making this study as well as many others during his long years on the reservation.

probably made by Spanish, Mexican, or even Pueblo people. The Spanish brought silver ornaments to New Mexico where the Navaho doubtless saw them, and they may have purchased, traded for, or even stolen some of these. Many of the designs later adopted by the Navaho were of Spanish origin, such as the so-called Squash Blossom, which in reality is the pomegranate blossom, long used by the Spanish in Europe, fashioned for buttons of brass or silver, and in iron for ornaments for spurs.

One of the early Navaho to ply the blacksmith's trade was Atsidi Sani, who became known as a maker of bridle bits and knife blades. In his authoritative book, The Navaho and Pueblo Silversmiths, John Adair tells of Atsidi Sani learning the silversmith's art from Nakai Tsosi, a Mexican craftsman who lived near Mount Taylor.

As there seems to be no record of any silver work by the Navaho prior to the exile to Fort Sumner, it must have been after their return in 1868 that practice of the art commenced. That it spread rapidly is evident from all the early records of the period between 1870 and 1880, for by the time that Dr. Washington Matthews was stationed at Fort Wingate at the latter date, there were a good many proficient craftsmen. Dr. Matthews employed two Navaho silversmiths whom he established near his residence where he might observe them at their work, and he left for posterity a detailed account of the art as practiced by these two men. Some fifty years later, Father Berard Haile also left a similar record of his findings over a wider area, for he had been making this study as well as many others during his long years on the reservation.

105

were used. After the coming of the railroad, pieces of rails were used and still are used by many smiths. An anvil was fastened to the top of a large log cut to the right height for comfortable work.

Crucibles

The early crucibles for melting silver were made of clay and baked hard in a fire. They were about three or four inches in diameter and had an outward curved rim and one or more spouts. These were not very durable and were replaced by commercial crucibles when these became available. Some smiths have found that cup-shaped pieces of prehistoric pottery from a ruin, served the purpose and were more durable than any.

Molds

Some molds are made of ingots for casting a bar of silver to be worked into a bracelet or other ornament. Molds for making casts are incised in a soft stone, preferably pieces of volcanic tuff, a very light pumice-like stone which is found in several places on the reservation. All molds for casting are greased with mutton tallow. Molds for beads are cut into iron or hard wood, smooth surfaced, so that the silver coin or sheet can be pounded into the depression, making a spherical half of a bead. Later two of these are soldered together to make the round bead.

The incised pieces of tuff for casts are cut to approximately the right size and shape and the surface perfectly smoothed. A cover piece is then fitted to each mold,

making as tight a fit as possible. Grooves are cut at one end of the incised piece to permit the entry of the molten silver, while two or more grooves are cut for air passages.

Smelting Fuel

Charcoal has always been used for smelting fuel. It is prepared during the summer months by making a large fire of piñon or juniper branches. After the flames have died down and only glowing embers remain, the coals are smothered with earth and allowed to cool.

Blowpipe

Originally the blowpipe was hammered out of a piece of brass or copper wire, bent into a tube with a curved, tapering end. It was used in soldering with a lamp or wick of twisted cotton soaked in tallow. The modern blow torch is a highly prized tool used today by most smiths. Some ingenious individuals have fashioned torches from cans by fastening a spout on one side and an opening on the opposite side into which a rubber tube was fastened. Blowing through the tube produced enough pressure to blow the flame out of the spout.

Solder

Solder is used with borax as flux to make it flow more smoothly.

Materials

Some of the very early smiths worked in copper and brass, making rings and bracelets. The first silver to be used was American coin silver, melted and fashioned to the desire of the craftsman. When the United States Government put a stop to the use of coins for this purpose, some time

in the 1880s, the traders soon procured Mexican pesos in their place. The Navaho smiths preferred the peso silver, for it had less alloy and was somewhat softer. As the traders began to buy jewelry to sell, they provided silver in one-ounce slugs in quality of fineness approximately that of the coins.

Stones

Turquoise first was used in the 1880 period. The traders procured stones from the mines near Santa Fe, and later from mines in Colorado and in Utah. Sometimes there were stones already cut, sometimes in chunks that must be shaped and polished. Early stones were set in deep bezels, with the edges coming slightly over the top of the stones, holding them securely in place. As craftsmen acquired greater skills they were able to set stones in a lower setting. Other kinds of stones also were used, malachite, garnets, cannel coal.

Cleaning

The Navaho like their silver well polished. Cleaning used to be done with native alum, then polished with buckskin, but today it is cleaned by dipping in a diluted solution of nitric acid, then put in a bowl of water and brushed with a wire brush. It is buffed either by hand or with a buffing pad attached to a grindstone, with the pad well covered with jeweler's rouge.

The skill of the Navaho craftsman lies in his ability and judgement in all phases of his work. Sprinkling a little borax on the silver as it melts, reduces the melting point; it