

~~570.6~~
~~P355A~~

~~DISCARD~~

Native Navajo Dyes

by

GEORGE H. PEPPER

Department of Anthropology, American Museum
of Natural History

Reprint from The Papoose for February

Pierce Library
Eastern Oregon University
1410 L Avenue
La Grande, OR 97850

THE PAPOOSE



PRIMITIVE WEAVING IN PROGRESS



“Native Navajo Dyes”

GEORGE H. PEPPER

Department of Anthropology American Museum of Natural History

The native dyes used by the Navajo Indians of New Mexico and Arizona are not numerous but by combinations and by proper manipulation in the preparative stage they have been able to obtain a fair range of tints.

Dr. Washington Matthews in writing of these nomads in 1881, enumerates three dyes that they were using at that time: namely—yellow, red and black. There was also strong evidence for the belief that they formerly had a native blue. If they had a blue they of course had green for we

know that they mixed their native yellow with the indigo which was obtained from the Spaniards and thus produced the beautiful greens that are found in the old bayeta blankets.

The bayeta which formed the greater part of most of the very old blankets was obtained by raveling a European flannel called bayeta. The wool of this material was used and it gave them a rich lasting red. The continued use of this foreign product may account for the absence of a native red dye that can be used to advantage in dyeing wool.



ROOTS OF THE MOUNTAIN MAHOGANY ARE STRIPPED OF THEIR BARK BY A POUNDING PROCESS

The colors used in dyeing the native wool, used in connection with the bayeta in the manufacture of the "Serape Navajo," as the old blankets were called, were of native origin, with the exception of the blue as before stated.

This blue was prepared with great care, the time required to produce the proper tint being over a month. Indigo was the basic principle and urine was used as a mordant. The designs in this color have more than held their own with the dye work of civilization, as shown in the red of the bayeta.

The greens, being a combination of indigo and the native yellow, as described, were also fast and lasting. Orange colored figures are also seen. This color is no doubt the one resulting from the dye mentioned by Dr. Matthews as being made from the roots of a native sorrel, *Rumex hymenosepalum*, but the writer has not been able to verify this statement nor was it known by those interviewed in obtaining the

notes that form the substance of this paper. This *Rumex* is a species of dock and is commonly known as Canaigre. It grows in great quantities in New Mexico and the root is used for tanning purposes. One authority states that it imparts an inimitable orange color to all goods treated with it.

The color in these yellow designs may be traced to one of three sources, for Dr. Matthews states that he was told of three processes for making this dye. One of these he was unable to obtain. The second was witnessed by the writer and will be explained. The third is described by Dr. Matthews as follows. "They use the large fleshy root of a plant which, as I have never yet seen it in fruit or flower, I am unable to determine. The fresh root is crushed to a soft paste on the metate, and, for a mordant, the *almogen* [*alunogen*] is



THE ROOT BARK IS THEN ROLLED FROM THE ROOTS

added while the grinding is going on. The cold paste is then rolled between the hands into the wool. If the wool does not seem to take the color readily a little water is dashed on the mixture of wool and paste, and the whole is slightly warmed. The entire process does not occupy over an hour, and the result is a color much like that now known as 'old gold.'"

The writer learned of a similar dye and, from the description given by the squaw, the ingredients may have been the same. She said that the roots of a certain plant are gathered and crushed. They are then placed in a pot and allowed to boil. This plant they call *Chahd-inney* or *Jhild-oeey*. While this is boiling, *alunogen*, *Say-doh-kaus*, is added.

The wool is dyed by being boiled in the solution. My informant said that she did not know of the practice of using roots in the way mentioned by Dr. Matthews.

A jet black may also be seen in the old blankets. It is a native product and, as will be shown later, is practically the only primitive dye that is used at present for dyeing wool.



PLACED IN A KETTLE OF WATER AND ALLOWED TO BOIL

Thus we have in the old textiles of the Navajos their color charts. Time and the introduction of cheap substitutes have caused the Indians to abandon their old methods and the next generation will hardly know that their grandmothers were dye makers.

It is a deplorable state of affairs, but, being that there is a faint hope of persuading the present weavers to go back to first principles, it is essential that we record the various processes of dye work, which none but the old squaws know, in order that we may be able to furnish the formulae should it ever be necessary.

The study of primitive dye stuffs is also of interest at present, as teachers and students of basketry and rug weaving are searching for suitable native dyes that may be used in preparing raffia, wool and other materials that are used in their work.

The only native dyes that are used by the Navajos at the present time are the red and black. These are used for dyeing the buckskin uppers of their moccasins. Machine-made

shoes of the white man are being used to such an extent, however, that a few years will suffice to stamp out the last vestiges of a once popular and worthy industry.

In preparing the red dye for moccasins or any other article of buckskin, the process is as follows:

First a large rock is dusted and on it a fire is built. The sticks used for the fire are branches of the Juniper tree (*Juniperus occidentalis*), called by the Navajos, *Kot*. Branches of this material are added from time to time until enough ashes have accumulated. The fire is then allowed to burn out. All of the ashes, *Kot Deed-lit*, are collected and placed in a cloth which is rolled up and put aside. The squaw now attends to the preparation of the other ingredients.



THE FIRST STEP IS TO BREAK THE BARK INTO SMALL PIECES

Roots of the Mountain mahogany, *Say-es-tozzie Bay-heck-klohl* (*Cercocarpus Parvifolius*) are gathered and stripped of their bark by a pounding process. For this work a flat stone and a hand hammer-stone are used. The root-bark, *Say-es-tozzie Bay-heck-klohl Bo-coggy* is loosened by continued pounding and is then rolled from the roots. The bark is the only part retained, the roots themselves being devoid of color-bearing matter. When a sufficient quantity of the root-bark has been prepared it is placed in a kettle of water and allowed to boil for several hours.

While the root-bark is boiling the squaw brings forth from her bundles of household goods a number of pieces of

the Black Alder, *Kish*, (*Alnus incana* var. *virescens*.) In many parts of the reservation this material must be brought from a distance and, as it is one of the principal ingredients, it is carefully prepared. A large buckskin is spread upon the floor of the hogan and upon it a stone slab is placed. The squaw now assumes a kneeling posture and, with a combination hammer and grinding stone, proceeds to reduce the bark to a powder. The first step is to break the bark into small pieces. This is done by means of a gentle pounding with the hammer end of the stone. As the bark is very brittle, care must be



THE HAMMER END OF THE STONE IS AGAIN BROUGHT INTO PLAY THIS TIME AS A PULVERIZER

taken if the pieces are to be kept from flying beyond the limits of the buckskin, hence the hammer strokes are short ones and are more in the form of a crushing movement than of a blow. When the bark has been reduced to small pieces, the hammer end of the stone is again brought into play, this time as a pulverizer. The accumulated pieces of bark are made still smaller and then the hand-stone is reversed. The flat side is thus brought into use and the last process, that of grinding, is begun. The bark is reduced to a powder in the same manner as corn is made into meal, the work being done, at times, on a regular meal metate. The powdered bark is now swept into a pile and transferred from the buckskin to a piece of cloth and placed beside the juniper ashes.

When the root-bark decoction *Say-es-tozzie Bay-toh*

is ready for use, the small ash-twigs that have retained their shape are separated from the fine ashes and placed in a can into which some of the liquid from the boiled root-bark has been poured. These are allowed to remain about ten minutes, then the pieces that have not dissolved are removed.

Everything in the way of preparation having been attended to, the work of dyeing is begun by placing the piece of buckskin, that is to be treated, upon a smoothed surface of the sandy floor. The juniper ashes are the first to be applied. They are sprinkled upon the surface and rubbed in with the hands. Small pinches of this material are added from time to time until the entire surface has been uniformly prepared. The mahogany-root-bark-liquid is now poured upon the skin and worked into it with the fingers. The surface of the skin is also roughened with the nails. This rubbing and scratching continues until enough liquid has been applied to almost



THE BARK IS REDUCED TO A POWDER IN THE SAME MANNER
AS CORN IS MADE INTO MEAL

saturate the skin. The powdered alder bark is the next to be applied. It is put on in the form of a thick layer and the skin is kneaded and patted until the bark combines with the liquid. A thin layer of bark is now sprinkled upon the skin and upon this is poured the liquid obtained by mixing the juniper ashes with the mahogany root-bark extract. A final patting and rubbing ensues and the buckskin is then rolled up and, in an absolutely saturated condition, is put aside to dry.

The color resulting from this process is a dull red. It gives

a very satisfactory color when applied to the buckskin, but it cannot be used to dye wool. It has been tried but the resulting color is too light a red to be of use for blanket work.

The black dye, *Eel-gee Bay-toh*, is used for both buckskin and wool. In preparing this dye a fire of greasewood branches is started and upon it a pot of water is placed. While this is heating, twigs and leaves of the Aromatic Sumac, *Key* (*Rhus aromatica*), are twisted into bunches. These



YELLOW OCHRE IS POWDERED BY GRINDING AND IS THEN ROASTED IN A FRYING PAN

bunches average about six inches in length and with them the pot is filled. They are allowed to boil from five to six hours. During this time a second fire is built. Yellow ochre, *Tset Koomph*, is powdered by grinding and is then roasted in a frying pan. The roasting turns the ochre to a dull red color. A portion of pinon gum, *Jay*, the gum of the *Pinus edulis*, equal in quantity to that of the ochre, is added. The mass soon assumes a pasty form but it is stirred constantly until the gum carbonizes and combines with the ochre thereby forming a black powder. The bundles of twigs are taken from the pot and the contents of the frying pan are dumped into the dark colored extract of the sumac, *Key Bay-toh*. The pot is allowed to remain on the fire and, after the powder is added, the boiling continues for fully half an hour. The wool is then introduced, allowed to boil, and the dyeing is complete.

As the Navajos have the natural black wool it is generally used for the black designs of blankets. It is tinged with red, however, and is therefore almost always dyed before being used. The black dye is, as Dr. Matthews says "Essentially an ink, the tannic acid of the sumac combining with the sesquioxide of iron in the roasted ochre, the whole being enriched by the carbon of the calcined gum."

The Navajos relied upon this dye for dyeing wool and buckskin until the introduction of the aniline black. It is used at the present time for dyeing buckskin for moccasins and at such times some of the dye is left over. Thus it happens that the black wool in a few of the modern blankets is treated with the old dye. Were it not for this we might safely affirm that no primitive dyes are used at the present time in the manufacture of the Navajo blankets. Black dye is also applied to bridles and saddles and even woolen goods in the piece are subjected to this treatment.

The native yellow dye, *Kay-el-soey Bay-toh* in common use when the traders entered the Navajo country, the one mentioned as having been noted by the writer, is made from the flowering tops of the Rabbit weed or bush, *Kay-el-soey*, (*Bigelovia graveolens*). This plant is a member of the aster family and grows on the open prairies. It has a slender stalk which is crowned by a mass of yellow blossoms. It grows in clumps, as a rule and there are three or four varieties in the Southwest. The flower-clusters are gathered and placed in a large pot containing water. This is allowed to boil from four to six hours. During the boiling the squaw places native alum, *Say-doh-kaus*, alunogen, in a frying pan and heats it until it is reduced to a pasty consistency. When the boiling has extracted the juices from the weed, the alum, which is to act as a mordant, is added. The liquid is now ready for the reception of the wool.

In preparing the wool for dyeing, it is picked apart and the tangled masses are loosened, but, as a rule, there is no washing done. To most students of weaving, especially those who have become interested in the art of dyeing, it would seem that, in omitting the washing of the wool one of the essentials had been overlooked. In fact many dyers insist that upon the quality of the water used, depends the success of the work, and they therefore use nothing but soft water. The scarcity of water in the Navajo country is responsible for this act of seeming negligence on the part of the blanket maker. But, in judging these worthy people we must remember that the wool of the Navajo sheep is not greasy as is that of the merinos and many other sheep and therefore does not require the elaborate washing and scouring that must be undergone ere the ordinary wool is work-

able. The Navajo herdsmen are particularly careful about keeping their sheep from crossing with the merinos of the Mexicans as they realize that the merino wool cannot be washed or bleached and that the use of the wool in its natural state causes unsightly streaks in their blankets. These streaks not only detract from the æsthetic appearance of their productions but cause a depreciation in value. In dyeing the wool with the yellow decoction, it is placed in the pot of boiling liquid and allowed to boil for fifteen or twenty minutes, after which it is tested every few minutes until it has assumed the color desired. The tints obtained with this dye range from a canary yellow to an old gold, and even an olive green may be produced. The materials used in making the yellow, black and red dyes may be seen in the American Museum of Natural History of this city. The exhibit shows every stage of the work as well as the specimens of dyed wool and buckskin.

When we think of what might be done by the Navajo weaver, and consider what has been done in the past, we can but blush to think, that his present fallen state is the result of civilization. His dyes were beautiful and lasting, his dye-work an industry to be admired. Laboriously and skillfully, worked the old Navajo chemist, and no pains were spared to obtain the proper materials. No toil too great in tempting the secret combinations from the earths and herbs that were to enhance the beauty of future textiles.

While viewing this work let us look upon the picture presented by our frontispiece. What a commentary on our vaunted civilization. Primitive weaving in progress while aniline dyes in a nearby receptacle contaminate more wool. Hideous colors concealing a sister disgrace in the form of cotton warp. Fat envelopes within reach that need but the tearing of an end and lo the white man's dye is ready. And such dyes! Like a plague they have swept across the Navajo land, breeding contagion wherever they went, and, like leprous discolorations they have marred the face of one of nature's children.

Our æsthetic natures rebel when we are told that it is an evil that cannot be suppressed, and while we realize the cause and even admire the works that deft fingers are producing, we can see this foreground but dimly. Our eyes are looking into the eternal yesterday where the distant horizon once glowed with the colors that we love.

In our admiration of the Navajos present work, though disfigured with the touch of an alien race, let us bear in mind the fact that a retrograde movement is possible. Let us remember the beautiful threads of his fathers and then create conditions that will cause a desire to reclaim his own.