

---

SMITHSONIAN INSTITUTION—BUREAU OF ETHNOLOGY.

---

# NAVAJO SILVERSMITHS.

*BY*

Dr. WASHINGTON MATTHEWS, U.S.A.

---

## ILLUSTRATIONS.

	Page.
PLATE XVI. <a href="#">Objects in silver</a>	<a href="#">172</a>
XVII. <a href="#">Navajo workshop</a>	<a href="#">175</a>
XVIII. <a href="#">Crucible, and Sandstone molds for shaping silver objects</a>	<a href="#">175</a>
XIX. <a href="#">Objects in silver</a>	<a href="#">177</a>
XX. <a href="#">Navajo Indian with silver ornament</a>	<a href="#">178</a>

---

# NAVAJO SILVERSMITHS.

---

BY WASHINGTON MATTHEWS.

Among the Navajo Indians there are many smiths, who sometimes forge iron and brass, but who work chiefly in silver. When and how the art of working metals was introduced among them I have not been able to determine; but there are many reasons for supposing that they have long possessed it; many believe that they are not indebted to the Europeans for it. Doubtless the tools obtained from American and Mexican traders have influenced their art. Old white residents of the Navajo country tell me that the art has improved greatly within their recollection; that the ornaments made fifteen years ago do not compare favorably with those made at the present time; and they attribute this change largely to the recent introduction of fine files and emery-paper. At the time of the Conquest the so-called civilized tribes of Mexico had attained considerable skill in the working of metal, and it has been inferred that in the same period the sedentary tribes of New Mexico also wrought at the forge. From either of these sources the first smiths among the Navajos may have learned their trade; but those who have seen the beautiful gold ornaments made by the rude Indians of British Columbia and Alaska, many of whom are allied in language to the Navajos, may doubt that the latter derived their art from a people higher in culture than themselves.

The appliances and processes of the smith are much the same among the Navajos as among the Pueblo Indians. But the Pueblo artisan, living in a spacious house, builds a permanent forge on a frame at such a height that he can work standing, while his less fortunate Navajo *confrère*, dwelling in a low hut or shelter, which he may abandon any day, constructs a temporary forge on the ground in the manner hereafter described. Notwithstanding the greater disadvantages under which the latter labors, the ornaments made by his hand are generally conceded to be equal or even superior to those made by the Pueblo Indian.

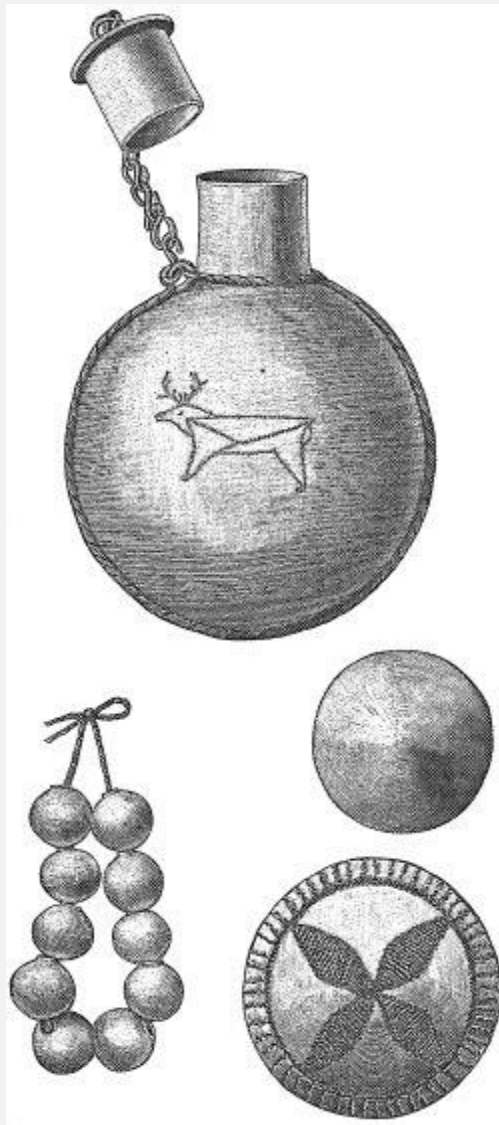
A large majority of these savage smiths make only such simple articles as buttons, rosettes, and bracelets; those who make the more elaborate articles, such as powder-chargers, round beads ([Pl. XVI](#)), tobacco cases, belts, and bridle ornaments are few. Tobacco cases, made in the shape of an army canteen, such as that represented in Fig. 6, are made by only three or four men in the tribe, and the design is of very recent origin.

[Pg 172]

Their tools and materials are few and simple; and rude as the results of their labor may appear, it is surprising that they do so well with such imperfect appliances, which

usually consist of the following articles: A forge, a bellows, an anvil, crucibles, molds, tongs, scissors, pliers, files, awls, cold-chisels, matrix and die for molding buttons, wooden implement used in grinding buttons, wooden stake, basin, charcoal, tools and materials for soldering (blow-pipe, braid of cotton rags soaked in grease, wire, and borax), materials for polishing (sand-paper, emery-paper, powdered sandstone, sand, ashes, and solid stone), and materials for whitening (a native mineral substance—almogen—salt and water). Fig. 1, taken from a photograph, represents the complete shop of a silversmith, which was set up temporarily in a summer lodge or *hogan*, near Fort Wingate. Fragments of boards, picked up around the fort, were used, in part, in the construction of the *hogan*, an old raisin-box was made to serve as the curb or frame of the forge, and these things detracted somewhat from the aboriginal aspect of the place.

A forge built in an outhouse on my own premises by an Indian silversmith, whom I employed to work where I could constantly observe him, was twenty-three inches long, sixteen inches broad, five inches in height to the edge of the fire-place, and the latter, which was bowl-shaped, was eight inches in diameter and three inches deep. No other Navajo forge that I have seen differed materially in size or shape from this. The Indian thus constructed it: In the first place, he obtained a few straight sticks—four would have sufficed—and laid them on the ground to form a frame or curb; then he prepared some mud, with which he filled the frame, and which he piled up two inches above the latter, leaving the depression for the fire-place. Before the structure of mud was completed he laid in it the wooden nozzle of the bellows, where it was to remain, with one end about six inches from the fire-place, and the other end projecting about the same distance beyond the frame; then he stuck into the nozzle a round piece of wood, which reached from the nozzle to the fire-place, and when the mud work was finished the stick was withdrawn, leaving an unflammable tweer. When the structure of mud was completed a flat rock about four inches thick was laid on at the head of the forge—the end next to the bellows—to form a back to the fire, and lastly the bellows was tied on to the nozzle, which, as mentioned above, was built into the forge, with a portion projecting to receive the bellows. The task of constructing this forge did not occupy more than an hour.



**PL. XVI. OBJECTS IN SILVER.**

[Pg 173]

A bellows, of the kind most commonly used, consists of a tube or bag of goatskin, about twelve inches in length and about ten inches in diameter, tied at one end to its nozzle and nailed at the other to a circular disk of wood, in which is the valve. This disk has two arms: one above for a handle and the other below for a support. Two or more rings or hoops of wood are placed in the skin-tube to keep it distended, while the tube is constricted between the hoops with buckskin thongs, and thus divided into a number of compartments, as shown in [Pl. XVII](#). The nozzle is made of four pieces of wood tied together and rounded on the outside so as to form a cylinder about ten inches long and three inches in diameter, with a quadrangular hole in the center about one inch square. The bellows is worked by horizontal movements of the arm. I have seen among the Navajos one double-chambered bellows with a sheet-iron tweer. This bellows was about the same size as the single chambered one described above. It was also moved

horizontally, and by means of an iron rod passing from one end to the other and attached to the disks, one chamber was opened at the same time that the other was closed, and *vice versa*. This gave a more constant current of air than the single-chambered implement, but not as steady a blast as the bellows of our blacksmiths. Such a bellows, too, I have seen in the Pueblo of Zuñi.

For an anvil they usually use any suitable piece of iron they may happen to pick up, as for instance an old wedge or a large bolt, such as the king-bolt of a wagon. A wedge or other large fragment of iron may be stuck in the ground to steady it. A bolt is maintained in position by being driven into a log. Hard stones are still sometimes used for anvils and perhaps they were, at one time, the only anvils they possessed.

Crucibles are made by the more careful smiths of clay, baked hard, and they are nearly the same shape as those used by our metallurgists, having three-cornered edges and rounded bottoms. They are usually about two inches in every dimension.

Fig. 1, [Pl. XVIII](#) represents one of ordinary shape and size, which I have in my collection. The Navajos are not good potters; their earthenware being limited to these crucibles and a few unornamented water-jars; and it is probably in consequence of their inexperience in the ceramic art that their crucibles are not durable. After being put in the fire two or three times they swell and become very porous, and when used for a longer time they often crack and fall to pieces. Some smiths, instead of making crucibles, melt their metal in suitable fragments of Pueblo pottery, which may be picked up around ruins in many localities throughout the Navajo country or purchased from the Pueblo Indians.

The moulds in which they cast their ingots, cut in soft sandstone with a home-made chisel, are so easily formed that the smith leaves them behind when he moves his residence. Each mould is cut approximately in the shape of the article which is to be wrought out of the ingot cast in it, and it is greased with suet before the metal is poured in. In Figs. 2 and 3, [Pl. XVIII](#), are represented pieces of sand-stone, graven for molds, now in my possession. The figures are one-third the dimensions of the subjects. In the middle cavity or mould shown in Fig. 2, [Pl. XVIII](#), was cast the ingot from which was wrought the arrow-shaped [Pg 174]handle of the powder-charger shown in [Pl. XIX](#); in the lower cavity depicted in the same figure was moulded the piece from which the bowl of this charger was formed. The circular depression, delineated in the lower right corner of Fig. 3, [Pl. XVIII](#), gave form to the ingot from which the sides of the canteen-shaped tobacco-case (Fig. 6) was made.

Tongs are often made by the Navajo silversmiths. One of these which I saw had a U-shaped spring joint, and the ends were bent at right angles downwards, so as more effectually to grasp the flat-sided crucible. Often nippers or scissors are used as tongs.

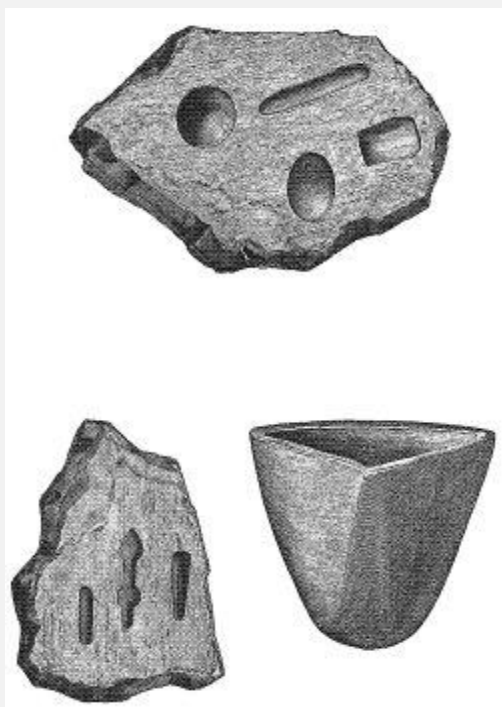
Ordinary scissors, purchased from the whites, are used for cutting: their metal after it is wrought into thin plates. The metal saw and metal shears do not seem as yet to have been imported for their benefit. Some of the more poorly provided smiths use their scissors also for tongs, regardless or ignorant of consequences, and when the shears lose their temper and become loose-jointed and blunt, the efforts of the Indian to cut a rather thick plate of silver are curious to see. Often, then, one or two bystanders are called to hold the plate in a horizontal position, and perhaps another will be asked to hold the points of the scissors to keep them from spreading. Scissors are sometimes used as dividers, by being spread to the desired distance and held in position by being grasped in the hand. By this means I have seen them attempt to find centers, but not to describe circles. It is probable that had they trusted to the eye they might have found their centers as well.

Their iron pliers, hammers, and files they purchase from the whites. Pliers, both flat-pointed and round-pointed, are used as with us. Of files they usually employ only small sizes, and the varieties they prefer are the flat, triangular, and rat-tail. Files are used not only for their legitimate purposes, as with us, but the shanks serve for punches and the points for gravers, with which figures are engraved on silver.

The Indians usually make their own cold-chisels. These are not used where the scissors and file can be conveniently and economically employed. The re-entrant rectangles on the bracelet represented in Fig. 4, [Pl. XIX](#), were cut with a cold-chisel and finished with a file.

Awls are used to mark figures on the silver. Often they cut out of paper a pattern, which they lay on the silver, tracing the outline with an awl. These tools are sometimes purchased and sometimes made by the Indians. I have seen one made from a broken knife which had been picked up around the fort. The blade had been ground down to a point.

Metallic hemispheres for beads and buttons are made in a concave matrix by means of a round-pointed bolt which I will call a die. These tools are always made by the Indians. On one bar of iron there may be many matrices of different sizes, only one die fitting the smallest concavity, is required to work the metal in all. In the picture of the smithy ([Pl. XVII](#), in the right lower corner beside the tin-plate), a piece of an old horse-shoe may be seen in which a few matrices have been worked, and, beside it, the die used in connection with the matrices.



**PL. XVIII. CRUCIBLE, AND SANDSTONE MOLDS  
FOR SHAPING SILVER OBJECTS.**



**PL. XVII. WORKSHOP OF  
NAVAJO SILVERSMITH.**

[Pg 175]

A little instrument employed in levelling the edges of the metallic hemispheres, is rude but effective. In one end of a cylinder of wood, about three or four inches long, is cut a small roundish cavity of such a size that it will hold the hemisphere tightly, but allow the uneven edges to project. The hemisphere is placed in this, and then rubbed on a flat

piece of sandstone until the edges are worn level with the base of the wooden cylinder. The uses of the basin and the wooden stake are described further on.

Their method of preparing charcoal is much more expeditious than that usually employed by our charcoal-burners, but more wasteful; wood, however, need not yet be economized on the juniper-covered *mesas* of New Mexico. They build a large fire of dry juniper, and when it has ceased to flame and is reduced to a mass of glowing coals, they smother it well with earth and leave it to cool. If the fire is kindled at sunset, the charcoal is ready for use next morning.

The smith makes his own blow-pipe, out of brass, usually by beating a piece of thick brass wire into a flat strip, and then bending this into a tube. The pipe is about a foot long, slightly tapering and curved at one end; there is no arrangement for retaining the moisture proceeding from the mouth. These Indians do not understand our method of making an air chamber of the mouth; they blow with undistended cheeks, hence the current of air directed on the flame is intermitting. The flame used in soldering with the blow-pipe is derived from a thick braid of cotton rags soaked in mutton suet or other grease. Their borax is purchased from the whites, and from the same source is derived the fine wire with which they bind together the parts to be soldered. I have been told by reliable persons that it is not many years since the Navajos employed a flux mined by themselves in their own country; but, finding the pure borax introduced by the traders to be much better, they gradually abandoned the use of the former substance.

For polishing, they have sand-paper and emery-paper purchased from the whites; but as these are expensive, they are usually required only for the finishing touches, the first part of the work being done with powdered sandstone, sand, or ashes, all of which are used with or without water. At certain stages in the progress of the work, some articles are rubbed on a piece of sandstone to reduce the surfaces to smoothness; but the stone, in this instance, is more a substitute for the file than for the sand-paper. Perhaps I should say that the file is a substitute for the stone, for there is little doubt that stone, sand, and ashes preceded file and paper in the shop of the Indian smith.

For blanching the silver, when the forging is done, they use a mineral substance found in various parts of their country, which, I am informed by Mr. Taylor, of the Smithsonian Institution, is a "hydrous sulphate of alumina," called *almogen*. This they dissolve in water, in a metal basin, with the addition, sometimes, of salt. The silver, being first slightly heated in the forge, is boiled in this solution and in a short time becomes very white.

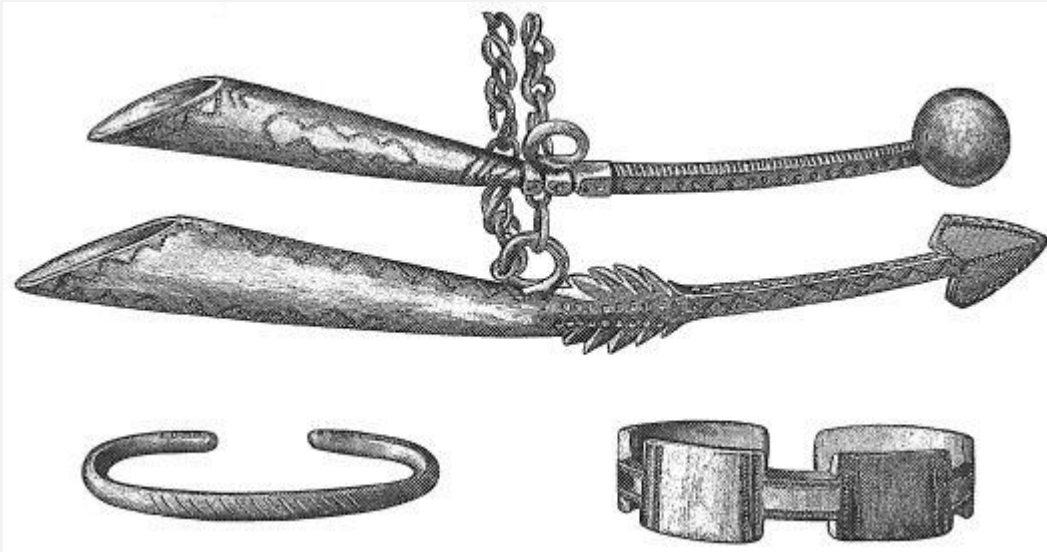
[Pg 176]

The processes of the Navajo silversmith may be best understood from descriptions of the ways in which he makes some of his silver ornament. I once engaged two of the best workmen in the tribe to come to Fort Wingate and work under my observation for



a week. They put up their forge in a small outbuilding at night, and early next morning they were at work. Their labor was almost all performed while they were sitting or crouching on the ground in very constrained positions; yet I never saw men who worked harder or more steadily. They often labored from twelve to fifteen hours a day, eating their meals with dispatch and returning to their toil the moment they had done. Occasionally they stopped to roll a cigarette or consult about their work, but they lost very few moments in this way. They worked by the job and their prices were such that they earned about two dollars a day each.

The first thing they made was a powder charger with a handle in the shape of a dart (Fig. 2, [Pl. XIX](#)). Having cut in sandstone rock (Fig. 2, [Pl. XVIII](#)) the necessary grooves for molds and greased the same, they melted two Mexican dollars—one for the bowl or receptacle, and one for the handle—and poured each one into its appropriate mold. Then each smith went to work on a separate part; but they helped one another when necessary. The ingot cast for the receptacle was beaten into a plate (triangular in shape, with obtuse corners), of a size which the smith guessed would be large enough for his purpose. Before the process of bending was quite completed the margins that were to form the seam were straightened by clipping and filing so as to assume a pretty accurate contact, and when the bending was done, a small gap still left in the seam was filled with a shred of silver beaten in. The cone, at this stage, being indented and irregular, the workman thrust into it a conical stake or mandrel, which he had formed carefully out of hard wood, and with gentle taps of the hammer soon made the cone even and shapely. Next, withdrawing the stake, he laid on the seam a mixture of borax and minute clippings of silver moistened with saliva, put the article into the fire, seam up, blew with the bellows until the silver was at a dull red-heat, and then applied the blow-pipe and flame until the soldering was completed. In the meantime the other smith had, with hammer and file, wrought the handle until it was sufficiently formed to be joined to the receptacle, the base of the handle being filed down for a length of about a quarter of an inch so that it would fit tightly into the orifice at the apex of the receptacle. The two parts were then adjusted and bound firmly together with a fine wire passing in various directions, over the base of the cone, across the protuberances on the dart-shaped handle, and around both. This done, the parts were soldered together in the manner already described, the ring by which it is suspended was fastened on, the edge of the receptacle was clipped and filed, and the whole was brought into good shape with file, sand, emery-paper, &c.



PL. XIX.

# OBJECTS IN SILVER.

[Pg 177]

The chasing was the next process. To make the round indentations on the handle, one smith held the article on the anvil while the other applied the point of the shank of a file—previously rounded—and struck the file with a hammer. The other figures were made with the sharpened point of a file, pushed forward with a zigzag motion of the hand. When the chasing was done the silver was blanced by the process before referred to, being occasionally taken from the boiling solution of almogen to be rubbed with ashes and sand. For about five hours both of the smiths worked together on this powder-charger; subsequently, for about three hours' more, there was only one man engaged on it; so that, in all, thirteen hours labor was spent in constructing it. Of this time, about ten hours were consumed in forging, about one and one-half hours in filing and rubbing, and about the same time in ornamenting and cleaning.

In making the hollow silver beads they did not melt the silver, but beat out a Mexican dollar until it was of the proper tenuity—frequently annealing it in the forge as the work advanced. When the plate was ready they carefully described on it, with an awl, a figure (which, by courtesy, we will call a circle) that they conjectured would include a disk large enough to make half a bead of the required size. The disk was then cut out with scissors, trimmed, and used as a pattern to cut other circular pieces by. One of the smiths proceeded to cut out the rest of the planchets, while his partner formed them into hollow hemispheres with his matrix and die. He did not put them at once into the cavity from which they were to get their final shape, but first worked them a little in one or more larger cavities, so as to bring them gradually to the desired form. Next the hemispheres were leveled at the edges by a method already described, and subsequently perforated by holding them, convex surface downwards, on a piece of wood, and driving through them the shank of a file with blows of a hammer. By this means of boring, a neck was

left projecting from the hole, which was not filed off until the soldering was done. The hemispheres were now strung or, I may say, spitted on a stout wire in pairs forming globes. The wire or spit referred to was bent at one end and supplied with a washer to keep the heads from slipping off, and all the pieces being pressed closely together were secured in position by many wraps of finer wire at the other end of the spit. The mixture of borax, saliva, and silver was next applied to the seams of all the beads; they were put into the fire and all soldered at one operation. When taken from the fire they were finished by filing, polishing and blanching.

These Indians are quite fertile in design. In [Pl. XIX](#) are shown two powder-chargers, which I consider very graceful in form. I have seen many of these powder-chargers, all very graceful, but no two alike except in cases where duplicates had been specially ordered. Their designs upon bracelets and rings are of great variety. Ornaments for bridles, consisting of broad bands of silver, sufficient in size and number to almost entirely conceal the leather, are not particularly handsome, but [Pg 178]are greatly in demand among the Navajos and are extensively manufactured by them. Leather belts studded with large plates of silver are favorite articles of apparel, and often contain metal to the value of forty or fifty dollars. [Pl. XX](#) represents an Indian wearing such a belt, in which only three of the plates are shown. Single and double crosses of silver are represented attached to his necklace. The cross is much worn by the Navajos, among whom, I understand, it is not intended to represent the "Cross of Christ," but is a symbol of the morning star. The lengthening of the lower limb, however, is probably copied from the usual form of the Christian emblem. These savage smiths also display much ingenuity in working from models and from drawings of objects entirely new to them.

They are very wasteful of material. They usually preserve the clippings and melt them in the crucible, or use them in soldering; but they make no attempt to save the metal carried off in filing, polishing, and by oxidizing in the forge, all of which is considerable. In one article of silver, for which, allowing for clippings saved, 836 grains were given to the smith, and the work on which I watched so closely throughout that I am certain none of the material was stolen, there was a loss of 120 grains, or over 14 per cent.

The smiths whom I have seen working had no dividers, square, measure, or any instrument of precision. As before stated, I have seen scissors used as compasses, but as a rule they find approximate centers with the eye, and cut all shapes and engrave all figures by the unaided guidance of this unreliable organ. Often they cut out their designs in paper first and from them mark off patterns on the metal. Even in the matter of cutting patterns they do not seem to know the simple device of doubling the paper in order to secure lateral uniformity.

Here ends my description of the smithcraft of a rude but docile and progressive people. I trust that it may serve not only to illustrate some aspects of their mental condition,

their inventive and imitative talents, but possibly to shed some light on the condition and diffusion of the art of the metalist in the prehistoric days of our continent, notwithstanding the fact that some elements of their craft are of recent introduction and others of doubtful origin.



PI. XX. NAVAJO INDIAN WITH SILVER ORNAMENTS.

---

## INDEX.

Almogen used by Navajoes in blanching silver

[175](#)

Articles made by Navajo silversmiths	<a href="#">171</a> , <a href="#">176</a>
Bellows used by Navajo silversmiths	<a href="#">172</a>
Blanching silver, Navajo method of	<a href="#">175</a>
Blow-pipe of Navajo silversmiths	<a href="#">175</a>
Charcoal, Navajo method of preparing	<a href="#">175</a>
Chasing silver, Navajo method of	<a href="#">176</a>
Coin used by Navajo silversmiths	<a href="#">177</a>
Cross design associated with others, in Navajo silver ornamentation	<a href="#">178</a>
Crucibles of Navajo silversmiths	<a href="#">173</a>
Fertility of design of Navajo silversmiths	<a href="#">177</a>
Files used in engraving silver	<a href="#">174</a>
Forge of the Navajo silversmith	<a href="#">172</a>
Improvement of the silversmith's craft among the Navajoes	<a href="#">171</a>
Matthews, Dr. W., Navajo silversmiths, by	<a href="#">167</a>
Moulds used by Navajo Silversmiths	<a href="#">173</a>
Silversmith's craft among the Navajoes	<a href="#">171</a>
Polishing silver, Navajo method of	<a href="#">175</a>
Processes of the Navajo silversmith	<a href="#">171</a> , <a href="#">176</a>
;blanching	<a href="#">175</a>
;chasing	<a href="#">176</a>

;polishing	<a href="#">175</a>
;soldering	<a href="#">176</a>
Silversmith among the Navajos and Pueblos, Origin of	<a href="#">171</a>
Soldering silver, Navajo method of	<a href="#">176</a>
Tools used by Navajo silversmith	<a href="#">172</a>
;anvil	<a href="#">173</a>
;awl	<a href="#">174</a>
;bellows	<a href="#">172</a>
;blow-pipe	<a href="#">175</a>
;cold-chisel	<a href="#">174</a>
;crucibles	<a href="#">173</a>
;files	<a href="#">174</a>
;hammers	<a href="#">174</a>
inefficient	<a href="#">178</a>
;metallic hemispheres	<a href="#">174</a>
;molds	<a href="#">173</a>
;pliers	<a href="#">174</a>
;scissors	<a href="#">174</a> , <a href="#">178</a>
;tongs	<a href="#">174</a>
Wastefulness of the Navajo silversmith	<a href="#">174</a> , <a href="#">178</a>

\*\*\* END OF THE PROJECT GUTENBERG EBOOK NAVAJO SILVERSMITHS \*\*\*

Updated editions will replace the previous one—the old editions will be renamed.

Creating the works from print editions not protected by U.S. copyright law means that no one owns a United States copyright in these works, so the Foundation (and you!) can copy and distribute it in the United States without permission and without paying copyright royalties. Special rules, set forth in the General Terms of Use part of this license, apply to copying and distributing Project Gutenberg™ electronic works to protect the PROJECT GUTENBERG™ concept and trademark. Project Gutenberg is a registered trademark, and may not be used if you charge for an eBook, except by following the terms of the trademark license, including paying royalties for use of the Project Gutenberg trademark. If you do not charge anything for copies of this eBook, complying with the trademark license is very easy. You may use this eBook for nearly any purpose such as creation of derivative works, reports, performances and research. Project Gutenberg eBooks may be modified and printed and given away—you may do practically ANYTHING in the United States with eBooks not protected by U.S. copyright law. Redistribution is subject to the trademark license, especially commercial redistribution.

## START: FULL LICENSE

### THE FULL PROJECT GUTENBERG LICENSE

PLEASE READ THIS BEFORE YOU DISTRIBUTE OR USE THIS WORK

To protect the Project Gutenberg™ mission of promoting the free distribution of electronic works, by using or distributing this work (or any other work associated in any way with the phrase “Project Gutenberg”), you agree to comply with all the terms of the Full Project Gutenberg™ License available with this file or online at [www.gutenberg.org/license](http://www.gutenberg.org/license).

#### **Section 1. General Terms of Use and Redistributing Project Gutenberg™ electronic works**

1.A. By reading or using any part of this Project Gutenberg™ electronic work, you indicate that you have read, understand, agree to and accept all the terms of this license and intellectual property (trademark/copyright) agreement. If you do not agree to abide by all the terms of this agreement, you must cease using and return or destroy all copies of Project Gutenberg™ electronic works in your possession. If you paid a fee for obtaining a copy of or access to a Project Gutenberg™ electronic work and you do not agree to be bound by the terms of this agreement, you may obtain a refund from the person or entity to whom you paid the fee as set forth in paragraph 1.E.8.

1.B. “Project Gutenberg” is a registered trademark. It may only be used on or associated in any way with an electronic work by people who agree to be bound by the terms of this agreement. There are a few things that you can do with most Project Gutenberg™ electronic works even without complying with the full terms of this agreement. See paragraph 1.C below. There are a lot of things you can do with Project Gutenberg™ electronic works if you follow the terms of this agreement and help preserve free future access to Project Gutenberg™ electronic works. See paragraph 1.E below.

1.C. The Project Gutenberg Literary Archive Foundation (“the Foundation” or PGLAF), owns a compilation copyright in the collection of Project Gutenberg™ electronic works. Nearly all the individual works in the collection are in the public domain in the United States. If an individual work is unprotected by copyright law in the United States and you are located in the United States, we do not claim a right to prevent you from copying, distributing, performing, displaying or creating derivative works based on the work as long as all references to Project Gutenberg are removed. Of course, we hope that you will support the Project



Gutenberg™ mission of promoting free access to electronic works by freely sharing Project Gutenberg™ works in compliance with the terms of this agreement for keeping the Project Gutenberg™ name associated with the work. You can easily comply with the terms of this agreement by keeping this work in the same format with its attached full Project Gutenberg™ License when you share it without charge with others.

1.D. The copyright laws of the place where you are located also govern what you can do with this work. Copyright laws in most countries are in a constant state of change. If you are outside the United States, check the laws of your country in addition to the terms of this agreement before downloading, copying, displaying, performing, distributing or creating derivative works based on this work or any other Project Gutenberg™ work. The Foundation makes no representations concerning the copyright status of any work in any country other than the United States.

1.E. Unless you have removed all references to Project Gutenberg:

1.E.1. The following sentence, with active links to, or other immediate access to, the full Project Gutenberg™ License must appear prominently whenever any copy of a Project Gutenberg™ work (any work on which the phrase “Project Gutenberg” appears, or with which the phrase “Project Gutenberg” is associated) is accessed, displayed, performed, viewed, copied or distributed:

This eBook is for the use of anyone anywhere in the United States and most other parts of the world at no cost and with almost no restrictions whatsoever. You may copy it, give it away or re-use it under the terms of the Project Gutenberg License included with this eBook or online at [www.gutenberg.org](http://www.gutenberg.org). If you are not located in the United States, you will have to check the laws of the country where you are located before using this eBook.

1.E.2. If an individual Project Gutenberg™ electronic work is derived from texts not protected by U.S. copyright law (does not contain a notice indicating that it is posted with permission of the copyright holder), the work can be copied and distributed to anyone in the United States without paying any fees or charges. If you are redistributing or providing access to a work with the phrase “Project Gutenberg” associated with or appearing on the work, you must comply either with the requirements of paragraphs 1.E.1 through 1.E.7 or obtain permission for the use of the work and the Project Gutenberg™ trademark as set forth in paragraphs 1.E.8 or 1.E.9.

1.E.3. If an individual Project Gutenberg™ electronic work is posted with the permission of the copyright holder, your use and distribution must comply with both paragraphs 1.E.1 through 1.E.7 and any additional terms imposed by the copyright holder. Additional terms will be linked to the Project Gutenberg™ License for all works posted with the permission of the copyright holder found at the beginning of this work.

1.E.4. Do not unlink or detach or remove the full Project Gutenberg™ License terms from this work, or any files containing a part of this work or any other work associated with Project Gutenberg™.

1.E.5. Do not copy, display, perform, distribute or redistribute this electronic work, or any part of this electronic work, without prominently displaying the sentence set forth in paragraph 1.E.1 with active links or immediate access to the full terms of the Project Gutenberg™ License.



1.E.6. You may convert to and distribute this work in any binary, compressed, marked up, nonproprietary or proprietary form, including any word processing or hypertext form. However, if you provide access to or distribute copies of a Project Gutenberg™ work in a format other than “Plain Vanilla ASCII” or other format used in the official version posted on the official Project Gutenberg™ website ([www.gutenberg.org](http://www.gutenberg.org)), you must, at no additional cost, fee or expense to the user, provide a copy, a means of exporting a copy, or a means of obtaining a copy upon request, of the work in its original “Plain Vanilla ASCII” or other form. Any alternate format must include the full Project Gutenberg™ License as specified in paragraph 1.E.1.

1.E.7. Do not charge a fee for access to, viewing, displaying, performing, copying or distributing any Project Gutenberg™ works unless you comply with paragraph 1.E.8 or 1.E.9.

1.E.8. You may charge a reasonable fee for copies of or providing access to or distributing Project Gutenberg™ electronic works provided that:

- • You pay a royalty fee of 20% of the gross profits you derive from the use of Project Gutenberg™ works calculated using the method you already use to calculate your applicable taxes. The fee is owed to the owner of the Project Gutenberg™ trademark, but he has agreed to donate royalties under this paragraph to the Project Gutenberg Literary Archive Foundation. Royalty payments must be paid within 60 days following each date on which you prepare (or are legally required to prepare) your periodic tax returns. Royalty payments should be clearly marked as such and sent to the Project Gutenberg Literary Archive Foundation at the address specified in Section 4, “Information about donations to the Project Gutenberg Literary Archive Foundation.”
- • You provide a full refund of any money paid by a user who notifies you in writing (or by e-mail) within 30 days of receipt that s/he does not agree to the terms of the full Project Gutenberg™ License. You must require such a user to return or destroy all copies of the works possessed in a physical medium and discontinue all use of and all access to other copies of Project Gutenberg™ works.
- • You provide, in accordance with paragraph 1.F.3, a full refund of any money paid for a work or a replacement copy, if a defect in the electronic work is discovered and reported to you within 90 days of receipt of the work.
- • You comply with all other terms of this agreement for free distribution of Project Gutenberg™ works.

1.E.9. If you wish to charge a fee or distribute a Project Gutenberg™ electronic work or group of works on different terms than are set forth in this agreement, you must obtain permission in writing from the Project Gutenberg Literary Archive Foundation, the manager of the Project Gutenberg™ trademark. Contact the Foundation as set forth in Section 3 below.

1.F.

1.F.1. Project Gutenberg volunteers and employees expend considerable effort to identify, do copyright research on, transcribe and proofread works not protected by U.S. copyright law in creating the Project Gutenberg™ collection. Despite these efforts, Project Gutenberg™ electronic works, and the medium on which they may be stored, may contain “Defects,” such as, but not limited to, incomplete, inaccurate or corrupt data, transcription errors, a copyright or other intellectual property infringement, a defective or

damaged disk or other medium, a computer virus, or computer codes that damage or cannot be read by your equipment.

1.F.2. LIMITED WARRANTY, DISCLAIMER OF DAMAGES - Except for the “Right of Replacement or Refund” described in paragraph 1.F.3, the Project Gutenberg Literary Archive Foundation, the owner of the Project Gutenberg™ trademark, and any other party distributing a Project Gutenberg™ electronic work under this agreement, disclaim all liability to you for damages, costs and expenses, including legal fees. YOU AGREE THAT YOU HAVE NO REMEDIES FOR NEGLIGENCE, STRICT LIABILITY, BREACH OF WARRANTY OR BREACH OF CONTRACT EXCEPT THOSE PROVIDED IN PARAGRAPH 1.F.3. YOU AGREE THAT THE FOUNDATION, THE TRADEMARK OWNER, AND ANY DISTRIBUTOR UNDER THIS AGREEMENT WILL NOT BE LIABLE TO YOU FOR ACTUAL, DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE OR INCIDENTAL DAMAGES EVEN IF YOU GIVE NOTICE OF THE POSSIBILITY OF SUCH DAMAGE.

1.F.3. LIMITED RIGHT OF REPLACEMENT OR REFUND - If you discover a defect in this electronic work within 90 days of receiving it, you can receive a refund of the money (if any) you paid for it by sending a written explanation to the person you received the work from. If you received the work on a physical medium, you must return the medium with your written explanation. The person or entity that provided you with the defective work may elect to provide a replacement copy in lieu of a refund. If you received the work electronically, the person or entity providing it to you may choose to give you a second opportunity to receive the work electronically in lieu of a refund. If the second copy is also defective, you may demand a refund in writing without further opportunities to fix the problem.

1.F.4. Except for the limited right of replacement or refund set forth in paragraph 1.F.3, this work is provided to you ‘AS-IS’, WITH NO OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE.

1.F.5. Some states do not allow disclaimers of certain implied warranties or the exclusion or limitation of certain types of damages. If any disclaimer or limitation set forth in this agreement violates the law of the state applicable to this agreement, the agreement shall be interpreted to make the maximum disclaimer or limitation permitted by the applicable state law. The invalidity or unenforceability of any provision of this agreement shall not void the remaining provisions.

1.F.6. INDEMNITY - You agree to indemnify and hold the Foundation, the trademark owner, any agent or employee of the Foundation, anyone providing copies of Project Gutenberg™ electronic works in accordance with this agreement, and any volunteers associated with the production, promotion and distribution of Project Gutenberg™ electronic works, harmless from all liability, costs and expenses, including legal fees, that arise directly or indirectly from any of the following which you do or cause to occur: (a) distribution of this or any Project Gutenberg™ work, (b) alteration, modification, or additions or deletions to any Project Gutenberg™ work, and (c) any Defect you cause.

## **Section 2. Information about the Mission of Project Gutenberg™**

Project Gutenberg™ is synonymous with the free distribution of electronic works in formats readable by the widest variety of computers including obsolete, old, middle-aged and new computers. It exists because of the efforts of hundreds of volunteers and donations from people in all walks of life.

Volunteers and financial support to provide volunteers with the assistance they need are critical to reaching Project Gutenberg™’s goals and ensuring that the Project Gutenberg™ collection will remain

freely available for generations to come. In 2001, the Project Gutenberg Literary Archive Foundation was created to provide a secure and permanent future for Project Gutenberg™ and future generations. To learn more about the Project Gutenberg Literary Archive Foundation and how your efforts and donations can help, see Sections 3 and 4 and the Foundation information page at [www.gutenberg.org](http://www.gutenberg.org).

### **Section 3. Information about the Project Gutenberg Literary Archive Foundation**

The Project Gutenberg Literary Archive Foundation is a non-profit 501(c)(3) educational corporation organized under the laws of the state of Mississippi and granted tax exempt status by the Internal Revenue Service. The Foundation's EIN or federal tax identification number is 64-6221541. Contributions to the Project Gutenberg Literary Archive Foundation are tax deductible to the full extent permitted by U.S. federal laws and your state's laws.

The Foundation's business office is located at 809 North 1500 West, Salt Lake City, UT 84116, (801) 596-1887. Email contact links and up to date contact information can be found at the Foundation's website and official page at [www.gutenberg.org/contact](http://www.gutenberg.org/contact)

### **Section 4. Information about Donations to the Project Gutenberg Literary Archive Foundation**

Project Gutenberg™ depends upon and cannot survive without widespread public support and donations to carry out its mission of increasing the number of public domain and licensed works that can be freely distributed in machine-readable form accessible by the widest array of equipment including outdated equipment. Many small donations (\$1 to \$5,000) are particularly important to maintaining tax exempt status with the IRS.

The Foundation is committed to complying with the laws regulating charities and charitable donations in all 50 states of the United States. Compliance requirements are not uniform and it takes a considerable effort, much paperwork and many fees to meet and keep up with these requirements. We do not solicit donations in locations where we have not received written confirmation of compliance. To SEND DONATIONS or determine the status of compliance for any particular state visit [www.gutenberg.org/donate](http://www.gutenberg.org/donate).

While we cannot and do not solicit contributions from states where we have not met the solicitation requirements, we know of no prohibition against accepting unsolicited donations from donors in such states who approach us with offers to donate.

International donations are gratefully accepted, but we cannot make any statements concerning tax treatment of donations received from outside the United States. U.S. laws alone swamp our small staff.

Please check the Project Gutenberg web pages for current donation methods and addresses. Donations are accepted in a number of other ways including checks, online payments and credit card donations. To donate, please visit: [www.gutenberg.org/donate](http://www.gutenberg.org/donate)

### **Section 5. General Information About Project Gutenberg™ electronic works**

Professor Michael S. Hart was the originator of the Project Gutenberg™ concept of a library of electronic works that could be freely shared with anyone. For forty years, he produced and distributed Project Gutenberg™ eBooks with only a loose network of volunteer support.

Project Gutenberg™ eBooks are often created from several printed editions, all of which are confirmed as not protected by copyright in the U.S. unless a copyright notice is included. Thus, we do not necessarily keep eBooks in compliance with any particular paper edition.

Most people start at our website which has the main PG search facility: [www.gutenberg.org](http://www.gutenberg.org).

This website includes information about Project Gutenberg™, including how to make donations to the Project Gutenberg Literary Archive Foundation, how to help produce our new eBooks, and how to subscribe to our email newsletter to hear about new eBooks.