

The Project Gutenberg eBook of Pottery of the ancient Pueblos. (1886 N 04 / 1882-1883 (pages 257-360)), by William Henry Holmes

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. If you are not located in the United States, you'll have to check the laws of the country where you are located before using this eBook.

Title: Pottery of the ancient Pueblos. (1886 N 04 / 1882-1883 (pages 257-360))

Author: William Henry Holmes

Release date: February 4, 2013 [EBook #41998]

Language: English

Credits: Produced by Wayne Hammond, PM for Bureau of American Ethnology, The Internet Archive (American Libraries) and the Online Distributed Proofreading Team at <http://www.pgdp.net> (This file was produced from images generously made available by the Bibliothèque nationale de France (BnF/Gallica) at <http://gallica.bnf.fr>)

*** START OF THE PROJECT GUTENBERG EBOOK POTTERY OF THE ANCIENT PUEBLOS. (1886 N 04 / 1882-1883 (PAGES 257-360)) ***

257

SMITHSONIAN INSTITUTION—BUREAU OF ETHNOLOGY.

POTTERY

OF THE

ANCIENT PUEBLOS.

BY

WILLIAM H. HOLMES.

258
259

CONTENTS.

	Page.
Introductory	265
Pueblo art	266
Distribution	266
Character	266
Treatment	266
The ceramic art	267
Age	267
Material	267
Tempering	267
Construction	268
Surface finish	268
Firing	268
Glaze	268

Hardness	269
Color	269
Form	269
Origin of forms	269
Handles	271
Ornament	271
Origin of ornament	272
Use	272
Classification	272
Coil-made ware	273
Coiling	273
Coiling of the Pueblos	273
Coiling of other peoples	275
Origin of the coil	277
The coil in ornamentation	278
Other varieties of ornament	282
Material	283
Color, etc.	283
Form	283
Use	283
Illustrations of vessels	284
District of the Rio San Juan	284
District of the Rio Virgen	287
District of the Little Colorado	292
Pecos and the Rio Grande	298
District of the Rio Gila	299
Imitation coiled ware	299
Plain ware	299
Painted ware	302
Preliminary remarks	302
Color of designs	302
Execution	302
Stages of ornament	303
Classification of ware	304
White ware	305
Classification by forms	306
Bowls	306
Ollas	306
Bottles	306
Handled vessels	306
Eccentric and life forms	307
Illustrations	307
District of the Rio Virgen	307
Bowls	308
Ollas	314
Handled vessels	314
District of the Rio San Juan	315
Bowls	316
Handled cups	318
Ollas	318
Handled vases	319
District of the Colorado Chiquito	321
Bowls	322
Ollas	335
Bottles	343
Handled vessels	346
Eccentric and life forms	353
Concluding remarks	358

ILLUSTRATIONS.

Fig. 210.—Origin of forms	270
211.—Origin of forms	270
212.—Origin of forms	270
213.—Origin of forms	270
214.—Origin of forms	270

215.—Origin of handles	271
216.—Origin of handles	271
217.—Beginning of the coil	274
218.—Section of coil-made vessel	274
219.—Ordinary superposition of coils	277
220.—Coiled and plain surface	278
221.—Rib-like coil	279
222.—Rib-like coil	279
223.—Indented pattern	280
224.—Thumb-nail indentation	280
225.—Wave-like indentation	281
226.—Wave-like indentation	281
227.—Impressions of finger tips	281
228.—Implement indentations	281
229.—Nail markings	282
230.—Incised lines	282
231.—Incised pattern	282
232.—Applied fillet	283
233.—Examples of relief ornaments	283
234.—Examples of relief ornaments	283
235.—Examples of relief ornaments	283
236.—Examples of relief ornaments	283
237.—Examples of relief ornaments	283
238.—Examples of relief ornaments	283
239.—Vase from a cliff house, Mancos Cañon	285
240.—Vase from Epsom Creek	287
241.—Vase from tumulus at Saint George	288
242.—Vase from tumulus at Saint George	289
243.—Vase from tumulus at Saint George	290
244.—Bowl from tumulus at Saint George	291
245.—Vase from Parowan, Utah	291
246.—Cup from central Utah	292
247.—Vase from Zuñi	293
248.—Vase from Zuñi	294
249.—Mug from Tusayan	294
250.—Vase from Tusayan	295
251.—Vase from Tusayan	296
252.—Vessel from Tusayan	296
253.—Vase from Tusayan	297
254.—Bowl from Cibola	297
255.—Bottle from tumulus at Saint George	300
256.—Vase from tumulus at Saint George	301
257.—Vase from tumulus at Saint George	301
258.—Bowl from tumulus at Saint George	308
259.—Bowl from tumulus at Saint George	309
260.—Bowl from tumulus at Saint George	309
261.—Painted design	310
262.—Bowl from Kanab, Utah	310
263.—Painted design	311
264.—Bowl from Kanab, Utah	311
265.—Painted design	311
266.—Bowl from tumulus at Saint George	312
267.—Painted design	312
268.—Bowl from Tusayan	312
269.—Bowl from tumulus at Saint George	313
270.—Bowl from tumulus at Saint George	313
271.—Pitcher from tumulus at Saint George	314
272.—Bowl from Montezuma Cañon	316
273.—Bowl from San Juan Valley	316
274.—Bowl from San Juan Valley	317
275.—Bowl from San Juan Valley	317
276.—Painted design	318
277.—Handled cup from Montezuma Cañon	318
278.—Handled cup from Montezuma Cañon	318
279.—Vase from San Juan Valley	318
280.—Vase from San Juan Valley	319
281.—Vase lid from San Juan Valley	319
282.—Vase lid from San Juan Valley	319

283.—Handled bottle from San Juan Valley	319
284.—Handled bottle from San Juan Valley	320
285.—Handled mug from San Juan Valley	320
286.—Handled mug from San Juan Valley	320
287.—Handled mug from San Juan Valley	320
288.—Handled mug from southern Utah	320
289.—Bowl from Tusayan	322
290.—Bowl from Tusayan	323
291.—Painted design	323
292.—Bowl from Tusayan	324
293.—Painted design	325
294.—Handled bowl from Tusayan	325
295.—Painted design	326
296.—Original form of painted design	326
297.—Handled cup from Tusayan	327
298.—Handled cup from Tusayan	327
299.—Dipper from Tusayan	327
300.—Dipper from Tusayan	328
301.—Figure of bird	328
302.—Dipper from Tusayan	328
303.—Painted design	329
304.—Painted design	329
305.—Unit of the design	329
306.—Bowl from Tusayan	330
307.—Bowl from Tusayan	331
308.—Bowl from Tusayan	331
309.—Bowl from Tusayan	332
310.—Bowl from Tusayan	332
311.—Painted design	333
312.—Bowl from Tusayan	333
313.—Bowl from Tusayan	334
314.—Vase from Tusayan	334
315.—Vase from Tusayan	335
316.—Vase from Tusayan	335
317.—Vase from Tusayan	336
318.—Vase from Tusayan	336
319.—Painted design	337
320.—Vase from Tusayan	337
321.—Vase from Tusayan	338
322.—Painted design	338
323.—Unit of the design	339
324.—Vase from Tusayan	339
325.—Painted design	340
326.—Unit of the design	340
327.—Vase from Tusayan	341
328.—Painted design	342
329.—Unit of the design	342
330.—Vase from Tusayan	343
331.—Vase from Cibola	343
332.—Vase from Cibola	344
333.—Painted design	345
334.—Painted design	345
335.—Vase from Tusayan	346
336.—Handled vase from Tusayan	346
337.—Painted design	347
338.—Handled mug from Tusayan	347
339.—Painted design	348
340.—Vase from Tusayan	348
341.—Painted design	348
342.—Handled cup from Cibola	349
343.—Painted ornament	349
344.—Painted ornament	349
345.—Painted ornament	350
346.—Painted ornament	350
347.—Vase from Tusayan	350
348.—Vase from Tusayan	351
349.—Bottle from Tusayan	351
350.—Bottle from Tusayan	352

351.—Bottle from Tusayan	352
352.—Vase from eastern Arizona	353
353.—Vase from eastern Arizona	354
354.—Vase from Tusayan	354
355.—Vase from Tusayan	355
356.—Vase from Tusayan	355
357.—Vase from Tusayan	356
358.—Vase from Cibola	357
359.—Vase from Arizona	358
360.—Bird-shaped cup from Tusayan	358

POTTERY OF THE ANCIENT PUEBLOS.

By WILLIAM H. HOLMES.

INTRODUCTORY.

A study of the pottery of the ancient Pueblo peoples is here commenced in accordance with plans formed years ago by the Director of the Bureau of Ethnology. His aim was to present to the world a monographic work upon the splendid material obtained by the Bureau, including with it the important collections made previously by himself. The preparation of this work has been postponed from time to time with the view of completing the collections, which were being enriched by annual visits to the Pueblo country. Meantime I began the study of the collection for the purpose of securing at the start a satisfactory classification of the material on hand.

The present paper is the first result of that study. I have, however, taken up only the more ancient groups of ware, leaving the rest for subsequent papers. A comparative study is not attempted, for the reason that a detailed examination of all the groups to be considered is absolutely essential to satisfactory results. Conclusions drawn from partial observations lead generally to error.

There were great difficulties in the way of treating satisfactorily the modern varieties of ware, as no one had sufficient familiarity with the language of the Pueblo tribes to discuss the ideographic phases of the ornamentation. Mr. F. H. Cushing's studies bid fair to supply this want, and his recent return from Zuñi has led to the preparation of the valuable paper presented in this volume.

Mr. James Stevenson, who has procured a large portion of the collection of modern pottery, has published catalogues with copious illustrations. Most of the cuts have been prepared under my supervision, and have been selected with the view of securing engravings of a full series of typical examples for a final work.

PUEBLO ART.

DISTRIBUTION.—The ancient Pueblo peoples dwelt in a land of cañons and high plateaus. They had their greatest development in the valley of the Rio Colorado, where they delighted to haunt the shadows of the deepest gorges and build their dwellings along the loftiest cliffs. The limits of their territory are still in a measure undefined. We discover remnants of their arts in the neighboring valleys of Great Salt Lake, the Arkansas, and the Rio Grande, and southward we can trace them beyond the Rio Gila into the table-lands of Chihuahua and Sonora.

Thus outlined, we have an area of more than one hundred thousand square miles, which has at times more or less remote been occupied by tribes of town-building and pottery-making Indians.

CHARACTER.—High and desert-like as this land is, it has borne a noble part in fostering and maturing a culture of its own—a culture born of unusual needs, shaped by exceptional environment, and limited by the capacities of a peculiar people. Cliff houses and cavate dwellings are not new to architecture, and pottery resembling the Pueblo ware in many respects may be found wherever man has developed a corresponding degree of technical skill; yet there is an individuality in these Pueblo remains that separates them distinctly from all others and lends a keen pleasure to their investigation.

TREATMENT.—The study of prehistoric art leads inevitably to inquiries into the origin of races. Solutions of these questions have generally been sought through migrations, and these have been traced in a great measure by analogies in archæologic remains; but in such investigation one important factor has been overlooked, namely, the laws that govern migrations of races do not regulate the distribution of arts. The pathways do not correspond, but very often conflict. The arts migrate in ways of their own. They pass from place to place and from people to people by a process of acculturation, so that peoples of unlike origin practice like arts, while those of like origin are found practicing unlike arts. The threads of the story are thus so entangled that we find it impossible to trace them backward to their beginnings.

For the present, therefore, I do not propose to study the arts of this province with the expectation that they will furnish a key to the origin of the peoples, or to the birthplace of their arts, but I shall treat them with reference rather to their bearing upon the processes by which culture has been achieved and the stages through which it has passed, keeping always in mind that a first requisite in this work is a systematic and detailed study of the material to be employed.

THE CERAMIC ART.

AGE.—The ceramic art of the ancient Pueblos is practically a unit. We find in its remains few indications of distinct periods. There is nothing to carry us back to a remote past. The oldest specimens known are nearly as high in the scale as the latest. In the deposits of caves and burial-grounds we find, so far, nothing more archaic than in the ruins of once populous villages and beneath the fallen walls of hewnstone cliff houses. In methods of manufacture and in styles of ornamentation there is no specific distinction.

Once introduced, there is much in the character of the country to develop this art. The people were sedentary, and thus able to practice the art continuously for a long period; and in a country so arid there was often great need of vessels suitable for the transportation and storage of water.

MATERIAL.—Nature was lavish in her supply of the material needed. Suitable clay could be found in nearly every valley, both in the well-exposed strata and in the sediment of streams. I have noticed that after the passage of a sudden storm over the mesa country, and the rapid disappearance of the transient flood, the pools of the arroyos would retain a sediment of clay two or three inches thick, having a consistency perfectly suited to the hand of the potter. This I have taken without tempering and have made imitations of the handsome vases whose remnants I could pick up on all sides. In drying and burning, these vessels were liable to crack and fall to pieces; but I see no reason why, with the use of proper tempering materials, this natural paste might not be successfully employed. It would not be difficult, however, to find the native clay among the sedimentary formations of this district. Usually the clay has been very fine grained, and when used without coarse tempering the vessels have an extremely even and often a conchoidal fracture.

TEMPERING.—The materials used in tempering do not often come into notice. It appears that, in a majority of cases, fine sand, probably derived from naturally disintegrated rocks, was employed. A large percentage of rather coarse sand is found in the more roughly finished coil-made ware, but vessels intended for smooth finish have little perceptible tempering material.

The speckled appearance of some of the abraded surfaces suggests the use of pulverized potsherds, a practice frequently resorted to by the modern tribes. In some localities, notably in the south, we find a slight admixture of mica, which may have come from the use of pulverized micaceous rock.

268

CONSTRUCTION.—No one can say just how the materials were manipulated, fashioned into vessels, and baked; yet many facts can be gleaned from a critical examination of the vessels themselves; and an approximate idea of the various processes employed may be formed by a study of the methods of modern potters of the same region or of corresponding grades of culture.

It is evident that the vessels were built and finished by the hands alone; no wheel was used, although supports, such as shallow earthen vessels, baskets, and gourds were certainly employed to a considerable extent. Primitive processes of building have varied considerably. The simplest method perhaps was that of shaping a single mass of clay by pressure with the fingers, either with or without the assistance of a mold or support. The mold would be useful in shaping shallow vessels, such as plates, cups, and bowls. The walls of vessels of eccentric forms or having constricted apertures would be carried upward by the addition of small more or less elongated masses of clay, with no support but the hand or an implement held in the hand. Casting proper, in regularly constructed molds, was practiced only by the more cultured races, such as the Peruvians. A variety of methods may have been employed in the construction of a single piece.

SURFACE FINISH.—A great deal of attention was given to surface finish. In the coiled ware the imbricate edges of the fillets were generally either smoothed down and obliterated entirely, or treated in such a way as to give a variety of pleasing effects of relief decoration. Vessels with smooth surfaces, whether built by coiling, modeling, or molding, very often received a thin coat of fine liquid clay, probably after partial drying and polishing. This took the place of the enamels used by more accomplished potters, and being usually white, it gave a beautiful surface upon which to execute designs in color. Before the color was applied the surface received a considerable degree of polish by rubbing with a suitable implement of stone or other material. Attention was given chiefly to surfaces exposed to view—the interior of bowls and the exterior of narrow-necked vases.

FIRING.—The firing of the ancient ware seems to have been carefully and successfully accomplished. The methods probably did not differ greatly from those practiced by the modern Pueblo tribes. The ware is, as a rule, light in color, but is generally much clouded by the dark spots that result from imperfections in the methods of applying the fire. The heat was rarely great enough to produce anything like vitrification of the surface, and the paste is seldom as hard as our stone ware.

GLAZE.—A great deal has been said about the glaze of native American wares, which exists, if at all, through accident. The surface of the white ware of nearly all sections received a high degree of mechanical polish, and the effect of firing was often to heighten this and give at times a slightly translucent effect; a result of the spreading or sinking of the coloring matter of the designs.

269

HARDNESS.—The paste exposed in fractured edges can be scratched with a steel point, and often with ease. Some of the white pottery of ancient Tusayan can be carved almost as readily as chalk or sun-dried clay. At the same time all localities furnish occasionally specimens that through the accidents of firing have the ring and hardness of stoneware. The ancient pottery is generally superior in hardness to that produced by the historic tribes.

COLOR.—This pottery presents a pleasing variety of color, although the light grays prevail, especially in the more archaic varieties. The general color probably depended greatly upon the natural constituents of the clay and the degree of heat applied, and these conditions varied with the locality and the people. Reds and browns result from the presence of iron, which may have been oxidized in burning, or the red oxides may have been used in rare cases as coloring matter in kneading the clay. The surface is often lighter than the mass; a condition probably resulting from the presence of vegetable matter in the clay, which is destroyed on the surface and remains unchanged within. In the south the colors of the paste are often slightly reddish or yellowish in hue. It is notable that a small percentage of the ware of all localities is red. This gives rise to

the suggestion that vessels of this color probably had some especial or sacred use. Color is known to have an intimate connection with superstitious observances among many barbarian peoples.

FORM.—In form the ancient ware is universally simple and pleasing. Many shapes known to both civilized and barbarian art are absent. High-necked bottles and shallow plates are of rare occurrence, and pitchers, canteens or lenticular bottles, and vessels with legs and stands are unknown. There is a notable dearth of life forms, a circumstance that would seem to indicate the rather tardy development of a taste for modeling—a condition which may have resulted from the comparatively recent origin or introduction of art in clay.

Vessels with full globular bodies prevail. The bottoms are generally round or a little pointed, indicating primitive conditions of life and suggesting great simplicity in methods of manufacture and in the models copied.

Origin of Forms.—There can be no doubt that ceramic forms are to a great extent derivative, and the search for their originals will constitute a most important feature in our studies. Turning to nature for possible originals, we find them liberally supplied by both the animal and the vegetable kingdom. The shells of the sea shore were probably among the first receptacles for food and drink. We have examples of pottery from the mounds in the Mississippi Valley, representing three or four distinct varieties of shells. The shells of turtles and the horns of cattle and other animals have also served as models.

270

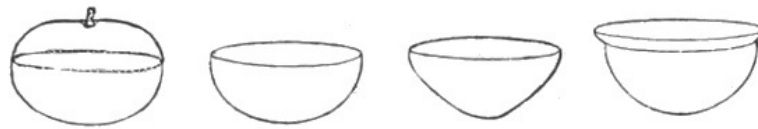


FIG. 210.—Origin of forms.

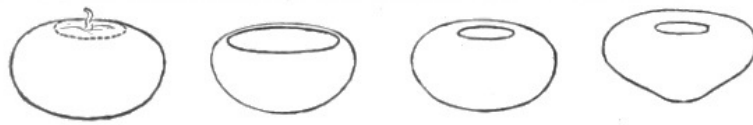


FIG. 211.—Origin of forms.

The vegetable world furnishes many originals; the gourd, for example, was utilized at a very early date. Its forms are greatly varied, and must have given rise to many primitive shapes of vessels in clay, and perhaps in wicker-work and wood. One of the ordinary forms cut off midway would suggest the series of bowls outlined in Fig. 210. Simply perforated it would give rise to the series illustrated in Fig. 211.

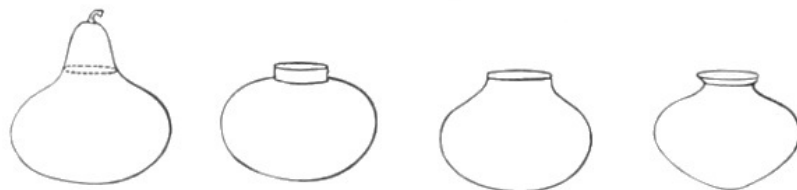


FIG. 212.—Origin of forms.

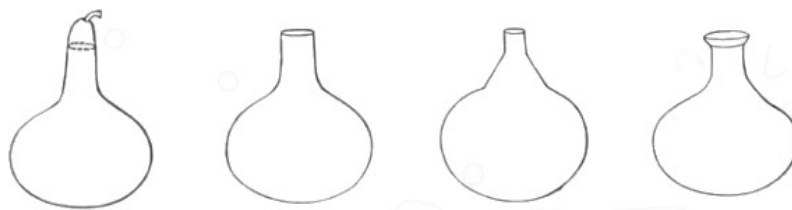


FIG. 213.—Origin of forms.

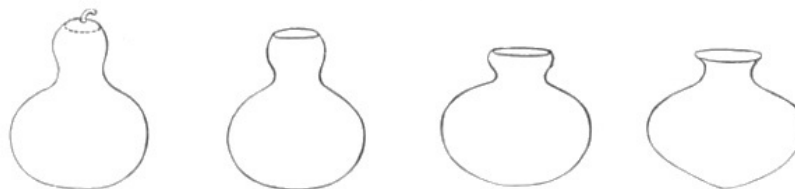


FIG. 214.—Origin of forms.

Wide-mouthed vases would be suggested as indicated in Fig. 212, bottles as shown in Fig. 213, and eccentric forms as seen in Fig. 214.

These particular examples are presented in illustration of the manner in which forms may be derived and nothing more, as there are many possible origins of the same forms. In a separate paper I have amplified this topic, and have discussed the relative importance of the influence of natural and artificial products upon the conformation of utensils of clay.

271

HANDLES.—In searching for the first suggestions of handles we must certainly go back to the very beginnings of art, when men and women employed leaves or vines to carry their children or their food, or to suspend

them for safety from the trees of the forest. The art of basketry would naturally fall heir to this use of handles. Clay, bronze, and iron, when they came into use, would also inherit some of the forms thus developed. There are, however, other sources of equal importance, among which are animal forms, such as horns, and various forms of vegetable growth, such as the gourd. The latter may again serve as an illustration.

By cutting the body of the gourd longitudinally at one side of the axis, we have dippers with straight or curved necks or handles. The primitive potter would in like manner have the suggestion of a handled vessel in clay, which, carried forward by the ever active spirit of improvement, would in time give us the series shown in Figs. 215 and 216:



Fig. 215.—Origin of handles.



FIG. 216.—Origin and development of handles.

ORNAMENT.—The shapes of vessels are, in a measure, ornamental, but it is difficult to say just how much the necessary or functional characters of particular forms have given way to decorative modifications. Pure ornament is a feature not essential to the vessel. Its ideas may be expressed by three principal methods: by relieved, by flat, and by intaglio figures.

Relief ornament was not extensively employed by the ancient Pueblos. The forms are few and simple, and nearly all are traceable to constructional or to functional features. Thus the ornamental crenulated surface of the coiled ware is constructional, consisting as it does of ridges, resulting from the method of building. The knobs, isolated coils, and festooned fillets are probably, in some cases, atrophied forms of handles.

Intaglio decoration is still more rare. It consists of incised, impressed, and punctured figures. No designs of importance are produced by this method, the most notable being the simple patterns traced by the finger or a sharp implement upon the relieved edges of fillets in the coiled ware.

272

With these people, the highest class of decoration consisted of designs in color. This topic is fully discussed in a subsequent section.

Origin of ornament.—It is probable that before pottery came into use the decorative art had been cultivated in other fields, and we shall need to look both to nature and to antecedent arts for the originals of many decorative ideas.

From a remote period man has been able to appreciate beauty. The first exercise of taste would probably be in the direction of personal adornment, and would consist in the choice of colors or articles thought to enhance attractiveness, or in the grouping and modification of objects at first functional in character. Later, taste would be exercised on a variety of subjects, and finally it would extend to all things in use. Man may have recognized the comeliness of the first simple articles employed in his humble arts, but when he came to attempt the multiplication of these articles artificially, utility was probably the only thought. In reproducing them, however, non-essential features would be copied automatically, and the work of art would through this accident inherit purely ornamental attributes.

Thus it appears that the first ideas of decoration do not necessarily originate in the mind of the potter, but that, like the shapes of art products, they may be derived, unconsciously, from nature. This is an important consideration. At a later stage new forms of ornament are derived in a like manner from constructional features of the various arts. Invention of decorative motives is not to be expected of a primitive, tradition-following people. Advance is greatly by utilization of accidents.

USE.—A satisfactory classification of this pottery by functional characters will be most difficult to make. In the early stages of its manufacture it was confined chiefly, if not solely, to the alimentary arts. A differentiation of use would take place when certain vessels were set aside for special departments of the domestic work. Thus we would have vessels for eating, for cooking, for carrying, and for storage. When vessels came to be used in superstitious exercises, certain forms were probably set aside for especial ceremonies. With some peoples, particular forms were dedicated to mortuary uses, but we have no clew to any such custom among the ancient Pueblos, as the same vessel served for food both before and after death, and cinerary vessels were not called for. Certain classes of the ruder and plainer ware are found to be blackened by smoke. These were evidently cooking vessels. The painted pottery rarely shows evidences of such use. Bowls were probably employed chiefly in preparing and serving food. The larger vessels were devoted to carrying and storing water, fruits, grains, and miscellaneous articles. Smaller vessels were used as receptacles for paint, grease, and the like. The ancient people had not yet devoted their ceramic art to trivial uses—there are no toys, no rattles, and no grotesque figures.

CLASSIFICATION.—In treating a subject covering so wide a field, and embracing such a diversity of products, a careful classification of the material is called for. Three grand divisions of the ceramic work of this province may be made on a time basis, namely: prehistoric, transitional, and modern. At present I have to deal chiefly with the prehistoric, but must also pay some attention to the transitional, as it embraces many features common both to the archaic and to the modern art. In discussing the prehistoric pottery I find it convenient to consider it under the three heads, coiled ware, plain ware, and painted ware. This classification is unsatisfactory, as it is based upon somewhat imperfectly differentiated characters. The

273

smooth vessel is in many cases a coil-built one with obliterated coils, and a painted vessel a smooth one with the addition of designs in color. Very little of the pottery was left plain, but the coiled and painted varieties are fully represented in every locality.

I place the coiled ware first because to all appearances it is the most archaic variety and one which is rarely made at the present day. I suspect that the pieces made by modern potters serve to supply the wants of the collectors rather than to meet the requirements of traditional art. Among the collections in the National Museum are found many crude attempts to manufacture this ware by potters who did not comprehend the secrets of its construction, or who thought to produce the coiled effect by the cheap device of scarifying and indenting the surface of a plain vessel.

Close relations are established between the coiled and the painted pottery, not only by the identity of materials, form, color, and time, but by the union of the two methods of finishing, the coiling and painting, in one and the same vessel, as may be seen in the examples given in in the following pages.

COIL-MADE WARE.

COILING.—The art of building vessels by means of coils of clay has been practiced by many widely separated communities, and is, therefore, certainly not peculiar to the ancient Pueblos. A careful study of the ceramic field shows considerable diversity in the treatment of the coil. The most striking variation, the employment of the coil as a means of embellishment, is, so far as my observation extends, peculiar to the Pueblo peoples. With others it is a feature of construction simply.

The preliminary steps are with all primitive potters in a general sense the same. The first care is to secure suitable clay and to have it properly purified and tempered. After this the treatment varies greatly.

Coiling of the Pueblos.—The ancient Pueblo potter rolled out long, slender fillets or ropes of clay, varying in width and thickness to suit the size and character of the vessel to be constructed. They were usually perhaps from one-fourth to one-half of an inch in thickness. When they were properly trimmed and smoothed the potter began by taking the end of a single strip between his fingers and proceeded to coil it upon itself, gradually forming a disk, as shown in Fig. 217, which represents the base of a large vase from the San Juan Valley.

274

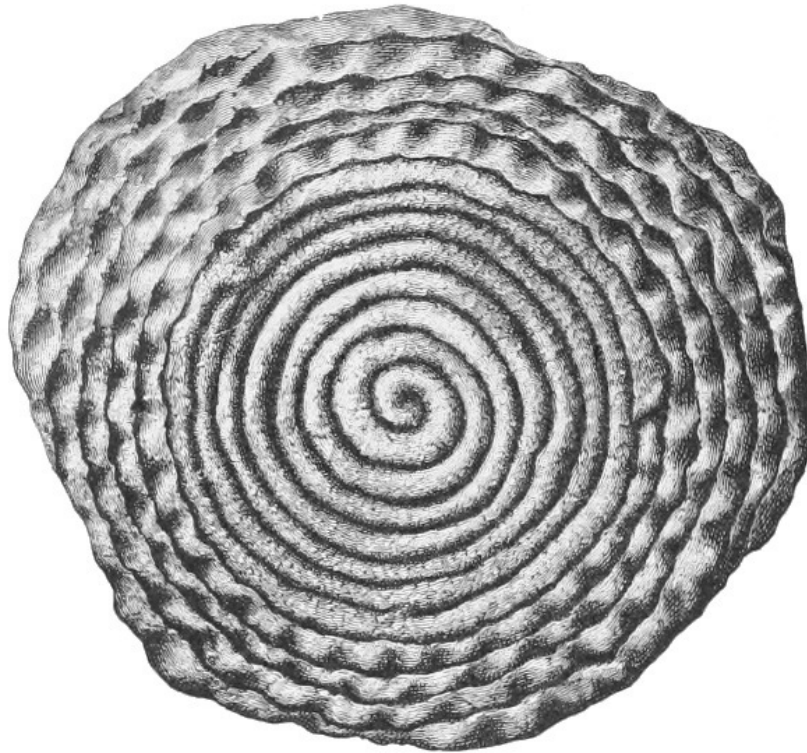


FIG. 217.—Beginning of the coil.

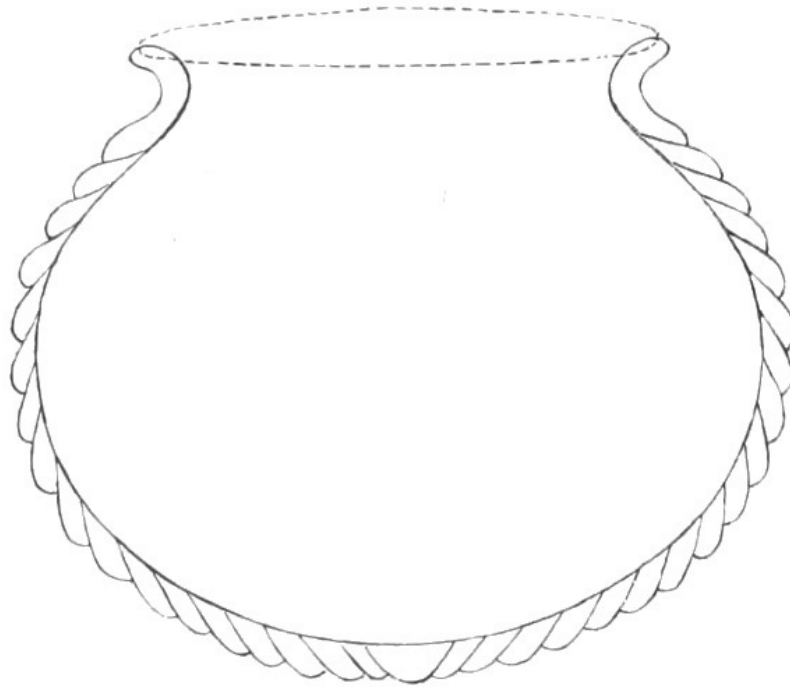


FIG. 218.—Section of coil-made vessel.

At first the fillets overlapped only a little, but as the disk grew large and was rounded upward to form the body of the vessel, the imbrication became more pronounced. The fillet was placed obliquely, as shown in the section, Fig. 218, and was exposed on the exterior side to probably one-half of its width. Strip after strip of clay was added, the ends being carefully joined, so that the continuity might not be broken until the vessel was completed. The rim generally consisted of a broad strip, thickened a little at the lip, and somewhat recurved. The exterior imbricate edges were carefully preserved, while those on the inner surface were totally obliterated, first by pressure, and finally by smoothing down with an implement, or with the fingers, imprints of the latter being frequently visible. So thoroughly were the fillets pressed down and welded together that the vessels seldom fracture more readily along the lines of junction than in other directions.

275

The fact that the spiral ridges of the bottom are frequently without abrasion, as shown in Fig. 217, suggests an idea in regard to the manipulation of the coil. While building the upper part of the vase the base would necessarily rest upon some sort of support and the soft ridges would suffer from abrasion. In preventing such defacement, an interior support, such as a mold or the base of another vessel, must have been used, in which case the vessel was necessarily built in an inverted position. At the same time it is clear that this would be practicable only with bowls or with very wide-mouthed vessels, as the mold, if rigid, could not be removed through a restricted aperture.

In pressing the coil down, in welding it to the preceding turn, internal support would be necessary, as otherwise the strain would warp the walls. A curved trowel or a rounded pebble could be used as long as the aperture would admit the hand, but no support excepting the fingers, or an implement shaped for the purpose, could be used beyond this stage. The whole process was a most delicate one, requiring patience and skill. In this respect it contrasted strongly with the coiling of other peoples. As indicated by numerous specimens, the coil was sometimes laid on the inside of a shallow basket or bowl, the surface of the vessel showing a combination of basket-markings and nearly obliterated spiral creases. This device served a good purpose in starting the vessel, the upper part being completed by free-hand coiling.

Coiling of other peoples.—The art, as practiced by the Indians of Louisiana, is graphically described by Dumont. The following paragraph is translated from his work:

"Moreover, the industry of these (savage) girls and women is admirable. I have already alluded to the skill with which, with their fingers only, and without a wheel, they make large pieces of pottery. The following is their method of work: After having collected a quantity of the proper kind of earth, and having cleaned it thoroughly, they take shells which they break up and reduce to a very fine, loose powder; they mix this fine dust with the earth which they have collected, and, moistening the whole with a little water, work it with their hands and feet into a paste, from which they make rolls six or seven feet long and as thick as they may desire. If they wish to make a dish or a vase, they take one of these rolls by the end, and marking on this lump with the thumb of the left hand the center of the vessel, they turn the roll around this center with admirable rapidity and dexterity, describing a spiral. From time to time they dip their fingers into the water, which they are always careful to have near them, and, with the right hand, they flatten the inside and the outside of the vase, which without this would be uneven. In this way they make all kinds of earthen utensils, dishes, plates, bowls, pots, and jugs, some of which hold as much as 40 or even 50 pints. This pottery does not require much preparation for baking. After having dried it in the shade, they make a large fire, and as soon as they think they have enough embers they clean a place in the middle, and, arranging the pieces of pottery, cover them with charcoal. It is thus that the pieces are given the necessary heating (cooking), after which they are as strong as our pottery. There is no doubt but that we must attribute their strength to the mixture which these women make of powdered shells with the earth which they employ."^[1]

276

Professor C. F. Hartt has furnished many facts in regard to the manufacture of pottery by the Brazilian Indians. According to his account the women of Santarem model the bottom of a vessel from a lump of clay in the usual way. Then "a piece of clay is rolled under the hand into a long, rope-like cylinder. This rope is then coiled around the edge of the bottom of the vessel, being flattened sidewise by pinching with the

fingers of the left hand, and caused to adhere to the bottom. On this, coil after coil is laid in like manner, each being flattened as before. After a few have been added they are worked into shape with the fingers, which are occasionally moistened in water, and the irregularities produced by the coils are caused to disappear. The vessel is formed by the hand alone and the surface is smoothed down by means of a bit of gourd or a shell, which is from time to time dipped in water. If the vessel be large it is now set away in the shade for a while to dry a little, after which new coils are added as above, no other instrument being used except the hands and the gourd or shell, with which alone the vessel may receive not only an extremely regular form, but also a very smooth surface. * * * The coils are so worked together that from a simple inspection of the vessel it is impossible to determine how it was built up. I should never have suspected that the pottery of Pacoval had been made by coiling, were it not that I found the coils still ununited on the inner surface of the heads of idols."^[2]

Prof. Hartt states, also, on the authority of Dr. de Magalhaes, that the pottery of the several tribes of the Araquaya River is always made by coiling, the surface being worked down by the hand and water and the aid of a spoon-like trowel made of bamboo. Humboldt makes a similar statement in regard to the tribes of the Orinoco.

Mr. E. A. Barber^[3] relates, on the authority of Captain John Moss, a resident, for a long time, of southwestern Colorado, that the Ute Indians manufacture pottery at the present time, and that they probably follow the methods of the Mokis, from whom they learned the art.

277

Captain Moss states that "They use marl, which they grind between two rocks to a very fine powder. They then mix this with water and knead it as we would dough. Afterwards they roll it out into a rope-like state about one inch in diameter and several yards in length. They then commence at the bottom of the jar, or whatever vessel they may be making, and coil the clay-rope layer on layer until they have the bottom and three inches of the sides laid up. The tools for smoothing and joining the layers together are a paddle made out of wood and perfectly smooth, and an oval-shaped polished stone." Both of these tools are dipped in the water (salt water is preferred), the stone is held in the left hand and on the inside of the vessel, and the paddle is applied vigorously until the surfaces are smooth. The method thus described by these authors was, probably, almost universally practiced.

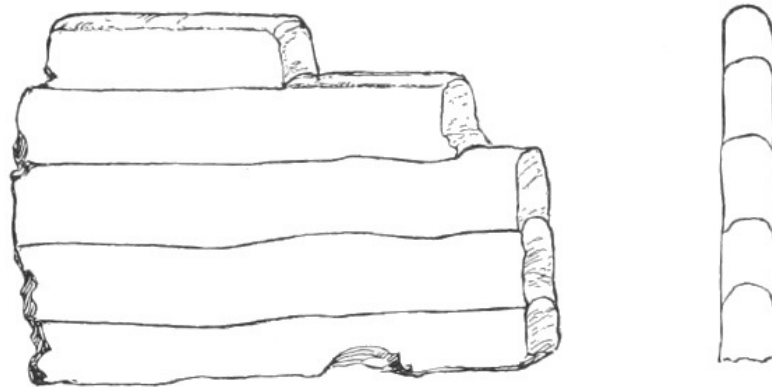


FIG. 219.—Ordinary superposition of coils. Section.

I have specimens from a number of the Eastern and Southern States that fracture along the line of junction, showing clearly the width of the fillets and the manner of their attachment. I picked up a small specimen at Avoca, North Carolina, which has broken along the line of junction, giving the section illustrated in Fig. 219. It will be seen that there is no overlapping as in the Pueblo work, the attachment being accomplished by pressure and by drawing both edges of the coil down over the convex edge of the preceding coil. I have similar specimens from the modern Pueblos, from Florida, from Mexico, and from Brazil. It will readily be seen that this method of building differs essentially from that practiced so successfully by the ancient Pueblos.

ORIGIN OF THE COIL.—This use of the coil is but a refinement of the most simple possible method of construction, that of building by the addition of small masses of clay. A disk or shallow cup can be formed successfully by the fingers alone from a single lump of clay, but to carry the wall upward by pressure or by blows from a paddle would result in a weak, frayed edge. To counteract or prevent this tendency small elongated masses are used, which are laid one upon another along the growing margin. From this, in the most natural manner possible, we arrive at the use of the long, even rope or fillet. The imbrication or overlapping of the coil practiced by the Pueblos may have originated in the effort to secure a more stable union of the parts which had to be welded together by pressure. It would also almost necessarily arise from the attempt to lay the coil upon or within a mold or support. There is a possibility that it may have been suggested by features of construction observed in other arts—the overlapping parts of a roof, of a plate or scale garment, or of a coiled basket. The latter is especially suggestive, since we must generally look for the origin of features of the ceramic art in the features of closely associated arts.

278

THE COIL IN ORNAMENTATION.—Ordinarily the coil has not been expected to contribute to the beauty of the vessel, but the Pueblo tribes made it a prominent feature in decoration. The primitive potter as he laid his rude coils noticed that the ridges thus produced served to enhance the appearance of the vessel. He also observed that the series of indentations left on the outer surface of the fillet in pressing it down gave a pleasing effect, and made use of the suggestion. Improving upon the accidents of manufacture, he worked out a variety of decorative devices.

In some cases the coiled ridges are confined to particular parts of the vessel, the other parts having been worked down or originally constructed by plain modeling. Numerous examples have the body quite plain, the collar alone retaining the spiral ridges of the coil. Fig. 251 illustrates a very good example of this peculiarity.

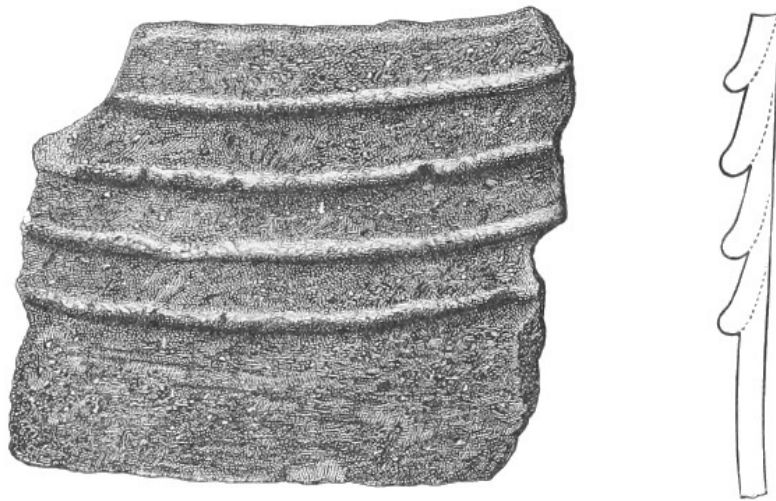


FIG. 220.—Coiled and plain surface.

Section.

The fragment shown in Fig. 220 is from the neck of a pot-shaped vase. The surface has been plain below and the fillets of the upper part have been pressed down evenly with the thumb, leaving the extreme edge of the overlapping band in sharp relief, as shown more clearly in the section.

279

The whole coil is sometimes left plain, as in Figs. 221 and 222, in which cases the edges have been carefully pressed down and smoothed with the fingers.



FIG. 221.—Rib like coil.

Section.

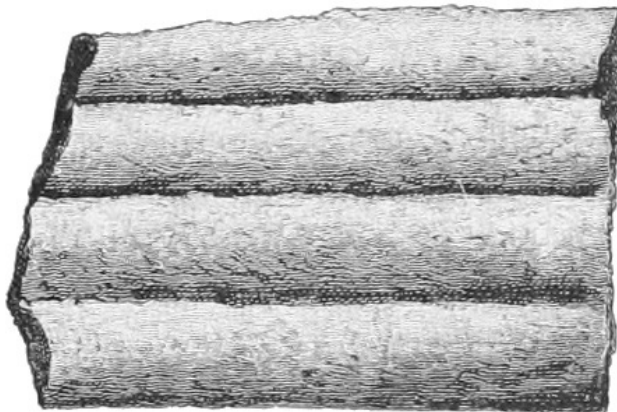


FIG. 222.—Rib like coil.

Section.

A great variety of devices were resorted to to diversify and decorate the ribbed spirals, and in this the innate good taste of the Indian exhibits itself to much advantage. The coil is often indented or crimped throughout, from the center of the bottom to the rim of the vessel. At times a few turns at the beginning are left plain, as shown in Fig. 217, while again alternate bands, consisting of several turns each, are not crimped, as clearly brought out by an example from Southern Utah, illustrated in the Art Review for July, 1874, by F. W. Putnam, and also by two fine specimens recently collected by E. W. Nelson near Springerville, Arizona.

The decided taste of this ancient people for ornament is still further indicated by attempts to elaborate more intricate patterns by means of thumb-nail indentations. The idea may have been borrowed from

basketry. The fragment given in Fig. 223 illustrates the method of procedure. We have some very fine vessels of this class from Springerville, and others from the province of Tusayan in which the entire surface is covered with checkered or meandered patterns. An excellent example is shown in Fig. 253. We shall appreciate the cleverness of this work more fully when we remember that the separate thumb indentations forming the figures of the pattern are made in each coil as it is laid and pressed into place and before the succeeding turn is made.

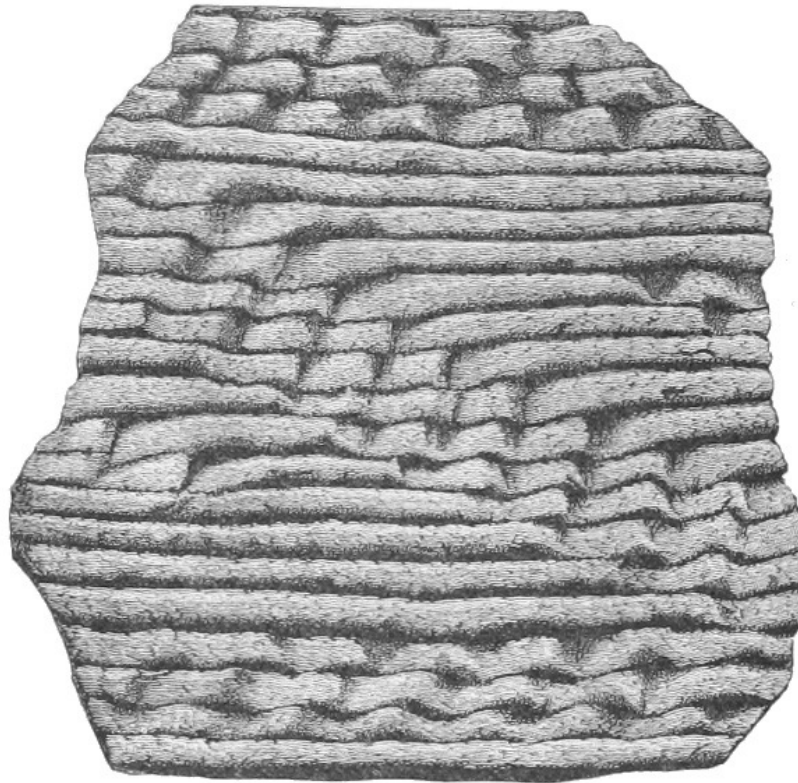


FIG. 223.—Indented pattern.



FIG. 224.—Nail indentions.

These curious decorative effects were still further elaborated by diversifying the character of the indentations of the coil. In Fig. 224 we have a most successful effort in this direction. The fillets are alternately crimped and plain. The thumb, in pressing down the one, has been applied with such force that the nail has cut entirely through it, indenting the plain layer below and causing the two to coalesce. This specimen was obtained from the cañon of the Rio Mancos.

Certain districts are particularly rich in remains of this peculiar ware and furnish many examples of crimped ornament. The remarkable desert-like plateau lying north of the Grand Cañon of the Colorado contains many house and village sites. At intervals along the very brink of the great chasm we come upon heaps of stones and razed walls of houses about which are countless fragments of this ware. These are identical in nearly every character with the pottery of Saint George on the west, of the San Juan on the

east, and of the Gila on the south. A few miles south of Kanab stands a little hill—an island in the creek bottom—which is literally covered with the ruins of an ancient village, and the great abundance of pottery fragments indicates that it was, for a long period, the home of cliff-dwelling peoples. In no other case have I found so complete an assortment of all the varieties of coil-ornamentation. All the forms already given are represented and a number of new ones are added.



FIG. 225.—Wave-like indentions.

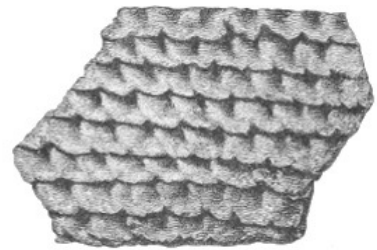


FIG. 226.—Wave-like indentions.

In the example given in Fig. 225 the fillets are deeply indented, giving a wave-like effect. Another pretty variety is seen in Fig. 226.

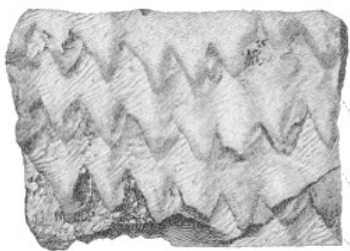


Fig. 227.—Impressions of finger-tips.

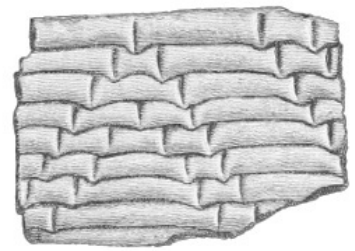


Fig. 228.—Implement indentations.

One of the most successful of these archaic attempts at relief embellishment is illustrated in the fragment shown in Fig. 227. The raised edge of the fillet is pinched out at regular intervals, producing rows of sharp-pointed "beads." Over the entire surface impressions of the fine lines of the finger-tips are still distinctly visible. The dotted lines show the direction of the coil.

The indenting was not always done with the thumb or finger-tips, but a variety of implements were used. The vase, of which Fig. 228 shows a small fragment, had a figure worked upon it by indenting the soft coils with a sharp implement.

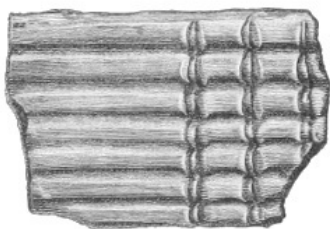


FIG. 229.—Nail markings.

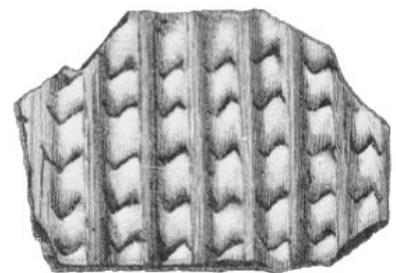


FIG. 230.—Incised lines.

In the specimen illustrated in Fig. 230, incised lines are drawn across the ridges of the coil.

The coil ridges were sometimes worked down into more regular forms by means of an implement and were left plain or were interrupted by transverse lines. Lines of nail marking are shown in Fig. 229. These lines are occasionally combined in rude patterns.

OTHER VARIETIES OF ORNAMENT.—I have already remarked that certain styles of decoration are confined to somewhat definite geographic limits. In the ancient Pueblo district we find that painted designs and coil ornaments are co-extensive, while within this area there are but rare examples of incised designs, stamped figures, or cord-marking. We find basket indentations, but these are in all cases the accidents of manufacture. The coil has often been laid upon the inner surface of a basket.

The fragment shown in Fig. 231 was picked up on the site of an ancient Pueblo village near Abiquiu, New Mexico. It is a portion of the neck and upper part of the body of a small vase which was covered by a simple pattern of intaglio lines, produced with a bone or wooden stylus.



FIG. 231.—Incised patterns.

Ornaments in relief, aside from the coil and forms resulting directly from its use, were sparingly employed and are of comparatively little interest. They consist of straight, curved, or crimped fillets, applied to the surface of the vessel as shown in Fig. 232. Additional examples are given in Figs. 233, 234, and 235.

Nodes, cones, and other forms are also used as seen in Figs. 236, 237, and 238. These are usually placed about the neck of the vessel, occupying the places of the handles.

MATERIAL.—The clay used in this ware was in some sections tempered with a large percentage of rather coarse silicious sand, which gives to the surface a rough, granular look. In the south the paste seems to be finer grained than in the northern districts.

COLOR, ETC.—The color of the paste is generally gray, but in the province of Tusayan it is frequently yellow. In some cases the surface has received a wash of fine liquid clay, and a few bowls from the Little Colorado and Gila Valleys have designs in white paint covering the exterior surface. This ware is always well baked and extremely hard.

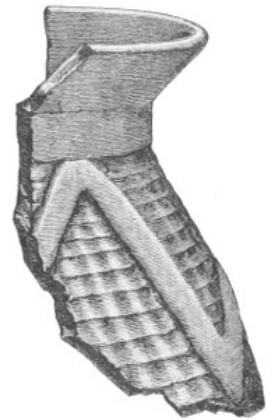


FIG. 232.—Applied fillet.

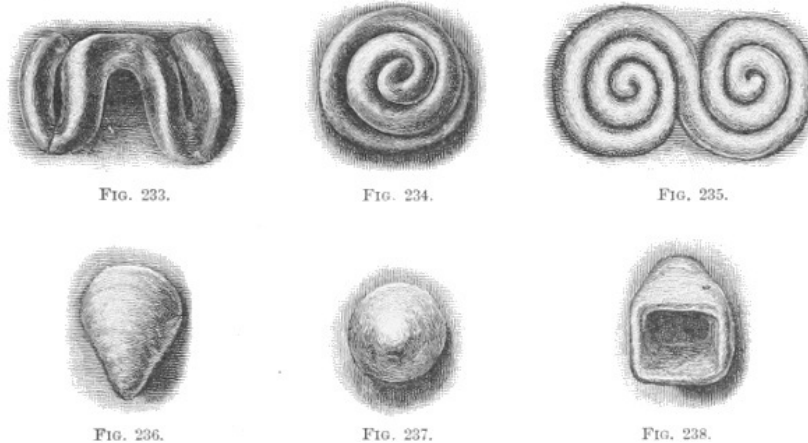


FIG. 233, 234, 235, 236, 237, & 238.—Examples of relief ornaments.

FORM.—The forms are not nearly so varied as are those of the painted ware. The leading variety is a round-bodied, wide-mouthed olla or pot, with flaring rim. Bottles are of rare occurrence, and bowls are not nearly so plentiful as in other varieties of pottery. Life and eccentric forms are occasionally found. Many small vessels of the more elongated shapes are furnished with handles, which are in most cases placed vertically upon the neck, and consist of single or double bands or ropes or of two or more strands twisted together.

USE.—As a rule the forms are such as have been devoted by most peoples to culinary uses, and in many cases the entire exterior surface is coated with soot. Plain vessels of similar outlines are used by the modern tribes of this province for cooking and serving food. Examples having very neatly or elaborately finished surfaces have apparently not been used over a fire. Those of large size doubtless served for the transportation and storage of water.

ILLUSTRATIONS OF VESSELS.

As it is my desire to give this paper something of a monographic completeness, I shall present a typical series of the best preserved vessels of this class along with some notices of the circumstances under which they were discovered. The treatment by districts or localities is for convenience simply, and has no reference to distinctions in the character of the ware.

DISTRICT OF THE RIO SAN JUAN.

Our first expeditions into the land of the cliff-dwellers were full of interest. We were not, however, the first explorers. The miners of the silver-bearing mountains to the north had made occasional excursions into the sinuous cañons of the plateau district, and failing to bring back the coveted gold, told tales of the marvelous cities of the cliffs, and speculated upon discovering in the débris of ancient temples and tombs a portion of the fabled gold and jewels of the provinces of Cibola and Tusayan.

Notwithstanding our entire freedom from expectations in this direction, the thought gave color to our anticipations, and it was not an uncommon occurrence to hear, about the slumbering camp fire, half jocular references to the "great pots of gold moons" that some one had whispered might be hidden away in the

inaccessible cliffs that overshadowed us.

I shall not soon forget the incidents connected with the discovery of a pair of fine water-jars—one of which is illustrated in Fig. 239. On the occasion of our first passage down the cañon of the Rio Mancos^[4] I made the discovery of a group of fine cliff-houses on the south side, far up in the vertical walls. On our return I made it a point to camp for the night directly below these houses, although a dense growth of underbrush had to be cut away to give room for our beds by the side of the sluggish stream.

The two finest houses were set in shallow, wind-worn caves, several hundred feet above the valley. One was almost directly above the other, the upper being reached by a number of notches picked in the nearly vertical rock-face.

I had ascended alone and was busily engaged in studying the upper house and tracing the plans of its fallen walls, when I heard a voice echoing among the cliffs. Descending hastily to the lower house I found that one of my men had followed me and was excitedly scratching with a stick among the debris of fallen walls. He had just discovered the rim of a buried pot, and was fairly breathless from the anticipation of "piles of moons." By the aid of my geologic hammer we soon had the upper part of the neck uncovered, but hesitated a moment with bated breath before venturing to raise the rough stone lid. But there was no treasure—only a heap of dust. I was content, however, and when by a little further search we came upon a second vessel, a mate to the first, the momentary shades of disappointment vanished.

285



FIG. 239.—Coiled vase from a cliff house in the Mancos Cañon, Colorado.

—¹/₃.

These vessels had been placed in a small recess, where the falling walls had not reached them, and were standing just as they had been left by their ancient possessors. The more perfect one, which had lost only a small chip from the rim, I determined to bring away entire. This I succeeded in doing by wrapping it in a blanket, and by means of straps, slinging it across my back. I carried it thus for a number of days over the rough trails of the cañons and plateaus. The other, which was badly cracked when found, was pulled apart and packed away in one of the mess chests. It is now with its mate in the National Museum, perfectly restored.

286

The unbroken vessel is shown in Fig. 239 about one-third its real height. Its capacity is nearly four gallons. The clay is tempered with a large portion of sand, some grains of which are quite coarse. The color of the paste is a light gray, apparently not having been greatly changed by the baking. A few dark contact clouds appear on the sides of the body. The walls are quite thin for a vessel of its size and are of very uniform thickness. The entire weight hardly exceeds that of a common wooden pail of the same capacity. The mouth is wide and the rim, which is made of a plain rough band, is one inch wide and abruptly recurved. The vessel can hardly be said to have a neck, as the walls round gradually outward from the rim to the periphery of the body, which is full and nearly symmetrical. The narrow strands of clay have been coiled with something less than average care, the exposed surfaces being wide in places and in others very narrow. The thumb indentations have been carelessly made. Two small conical bits of clay are affixed to the neck as if to represent handles. These may have been intended for ornaments, but are as likely to owe their presence to some little superstition of the archaic artisans.

The companion vessel has also a capacity of about four gallons. Its form differs from that of its mate, being considerably more elongated above and having a more pronounced neck. The material is about the same, but the color is darker and the workmanship is superior. The surface is coated with soot, indicating use over a fire in cooking food or in boiling water. The coil was laid with a good deal of care and the indentation was done in a way to produce a series of sharp points along the margin of the coil. The interior of the rim

was finished with a polishing stone. A small cord of clay was neatly coiled into a double scroll and attached to the narrowest part of the vessel, corresponding in position to the knobs in the other example. This ornament, though small, is nevertheless effective. Similar scrolls are found upon vases from many parts of the Pueblo Province.

It is an interesting fact that this vessel had been successfully mended by its owners. A small perforation near the base had been stopped by cementing a bit of pottery to the inside with clay paste. These vases were evidently the most important of the household utensils of the cliff-dwellers, especially as in this place water had to be carried, at least during a part of the year, from the creek five hundred feet below. It is probable that baskets and skins were sometimes used for carrying water, and that the earthen vessels were used as coolers, as are similar vessels among many primitive peoples. That they were used for carrying water up the cliffs is indicated by the fragments that lie upon the slopes and point out the location of houses invisible from the trails below.

A large fragment of a similar olla was picked up in the valley of Epsom Creek, southeast Utah. This vessel was larger, neater in finish, and more elegant in shape, than either of those described. A sufficiently large fragment was discovered to show satisfactorily the character of the rim, the outline of the body, and the details of surface finish. (Fig. 240.) The rim is but slightly recurved and the neck is high and upright. The body swelled to a diameter of about eighteen inches at the greatest circumference. The paste, as usual, indicates a gray clay tempered with coarse sand. The inside is smooth and the walls are remarkably thin for so large a vessel, being about one-fourth of an inch in thickness. The coil is very neatly laid and indented, a variety to the effect being given by leaving occasional plain bands. This vessel is described by W. H. Jackson in the Bulletin of the U. S. Geological Survey of the Territories, Vol. II.

287



FIG. 240.—Part of a large vase from Epsom Creek, Utah.— $\frac{1}{8}$.

Fragments of this class of ware are found throughout the cañoned region of southern Utah and for an undetermined distance into Nevada. I have already described fragmentary specimens from Kanab and therefore pass on to the west.

DISTRICT OF THE RIO VIRGEN.

The most notable collection of this coiled ware ever yet made in any one locality is from a dwelling-site tumulus near Saint George, Utah, nearly three hundred miles west of the Rio Mancos.

About the year 1875, the curator of the National Museum obtained information of a deposit of ancient relics at the above locality, and in 1876 a collector was sent out to make an investigation. The result, so far as collections go, was most satisfactory, and the account furnished gives an insight into the customs of this ancient people not yet obtained from any other source. On the Santa Clara River, a tributary of the Rio Virgen, about three miles from the Mormon town of Saint George, a low mound, which I suppose to have been a sort of village-site tumulus, was found. The outline was irregular, but had originally been approximately circular. It was less than ten feet in height, and covered about half an acre. One side had been undermined and carried away by the stream. The work of exhumation was most successfully accomplished by means of water. A small stream was made to play upon the soft alluvium, of which the mound was chiefly composed. The sensations of the collector, as skeleton after skeleton and vase after vase appeared, must have been highly pleasurable.

288

It is thought that the inhabitants of this place, like many other primitive peoples, buried their dead beneath their dwellings, which were then burned down or otherwise destroyed. As time passed on and the dead were forgotten, other dwellings were built upon the old sites, until quite a mound was formed in which all

the less perishable remains were preserved in successive layers.

Following the customs of most primitive peoples, the belongings of the deceased were buried with them. Earthen vessels were found in profusion. With a single body, there were sometimes as many as eight vases, the children having been in this respect more highly favored than the adults. There seems to have been no system in the arrangement either of the bodies or of the accompanying relics.

The majority of the vases were either plain or decorated in color, but many of the larger specimens were of the coiled variety. About sixty vessels were recovered. Those of the former classes will be described under their proper headings.



FIG. 241.—Vessel from the tumulus, at Saint George.— $\frac{1}{3}$

The shapes of the corrugated vases are of the simplest kind. The prevailing form corresponds very closely with the Cliff House specimen illustrated in Fig. 239. One unusually large example was brought back in fragments, but has since been successfully restored. It stands nearly seventeen inches high and is sixteen inches in diameter. The plain part of the rim is one and one-half inches wide, and the lip is well rounded and strongly recurved. The lines are quite graceful, the neck expanding below into a globular body which is just a little pointed at the base. The color is dark, from use over the fire. The fillets of clay were narrow and very neatly crimped. Roughly estimated, there were at least three hundred feet of the coil used. The vessel has a capacity of about ten gallons.

289

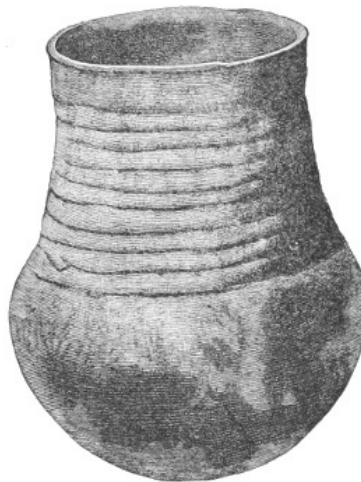


FIG. 242.—Vase from the tumulus at Saint George.— $\frac{1}{2}$.

Vases of this particular outline may be found, varying in size from these grand proportions to small cups an inch or two in height. Of a somewhat different type is the vessel shown in Fig. 241. The outline is symmetrical. The neck is comparatively high and wide and swells out gently to the widest part of the body, the base being almost hemispherical. A band about the neck is coiled and roughly indented, while the body

is quite smooth. The plain band about the mouth is broad and sharply recurved. The coils are wide and deeply indented. They have been smoothed down somewhat while the clay was still soft. The vase shown in Fig. 242 is characterized by its upright rim, elongated neck, round body, and plain broad coils. The fillets are set one upon another, apparently without the usual imbrication. This latter feature occurs in a number of cases in the vessels of this locality.

The bottle given in Fig. 243 is quite comely in shape. The neck expands gracefully from the rim to its junction with the body, which swells out abruptly to its greatest fullness. The coil is not neatly laid. The indentation began with the coil, but was almost obliterated on the lower part of the vessel while the clay was yet soft. The fillets are not so well smoothed down on the interior surface as usual, a ridged appearance being the result. This comes from the difficulty of operating within a much restricted aperture. The color is gray, with a few effective clouds of black, the result of firing. Another, of similar form, was taken from the collection by unknown persons.

290

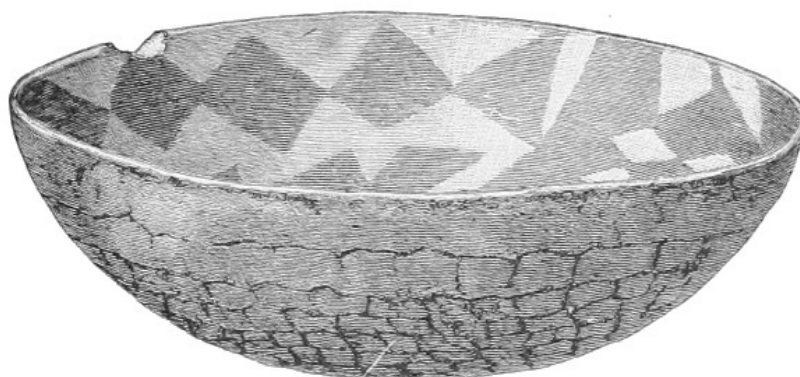


FIG. 243.—Vase from the tumulus at Saint George.— $\frac{1}{2}$.

The only example of coiled ware from this locality having a handle is a small mug. Its body is shaped much like the larger vessels, but it is less regular in outline. The single vertically placed handle, now partially broken away, was attached to the side of the body near the top, and consisted of a rough cord of clay less than half an inch in diameter. The Saint George tumulus furnished a number of vessels with smooth, unpainted surfaces, very similar in form and size to the coiled vessels. They are generally blackened by use over fire, and, like the large coiled pots, were evidently used for culinary purposes. A few smaller vessels of the same style of finish exhibit forms characteristic of the painted ware, as will be seen by reference to the illustrations of these two groups.

From the same source we have two bowls of especial interest, as they have coiled exteriors and polished and painted interiors. One of these is illustrated in Fig. 244. They form an important link between the two varieties of ware, demonstrating the fact that both styles belong to the same age and to the same people. A similar bowl, found in possession of the Zuñi Indians, is illustrated in another part of this paper, Fig. 254. Another was obtained at Moki. Fragments of identical vessels are found occasionally throughout the whole Pueblo district. One piece from the San Juan Valley has figures painted upon the coiled exterior surface, the interior being polished and unpainted. Specimens from the vicinity of Springerville, Arizona, have designs in white painted over the coiled surface. A large number of well-made, hemispherical bowls from this locality have a coiled band about the exterior margin, but are otherwise plain and well polished. Some are brownish or reddish in color. Many of them have been used over the fire.

291



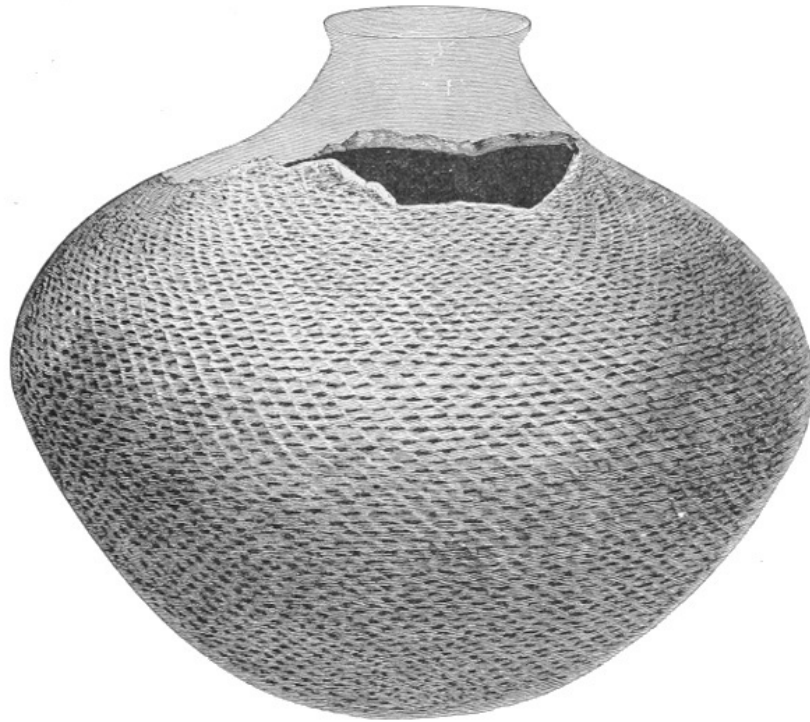


FIG. 245.—Vase from Parowan, Utah.— $\frac{1}{2}$.

The ceramic remains of Utah present some puzzling features. As we go north from the Rio Virgen there is an apparent gradation from the typical Pueblo ware to a distinct group characteristic of Salt Lake Valley. The interesting problems suggested by this condition of things cannot be discussed in this place, and I will stop only to present a specimen of the coiled ware from Parowan, which is in some respects the finest example known. The form, so far as it is preserved, seems unusually graceful, and the laying and indenting of the coil is surprisingly perfect. This vase is in the Salt Lake Museum, and the cut, Fig. 245, is made from a photograph furnished by Prof. Marcus E. Jones. Vessels with similar finish have recently been obtained from graves at Fillmore, Utah, by Dr. H. C. Yarrow, and, singularly enough, identical work is seen in some very fine pieces obtained by Mr. Nelson from ruined pueblos in middle eastern Arizona.

292



FIG. 246.—Cup from central Utah.
— $\frac{1}{2}$.

An interesting little cup, said to have been found in central Utah, illustrates some of the peculiar characters of the more northern examples of this ware. The vessel has apparently been built with coils, as usual, but the surface is worked over in such a way as to obscure the spiral ridges. The rim is upright and plain. The high, wide neck has a series of narrow, vertical flutings, made with a round-pointed implement, or possibly with the finger tip. A band of four channels encircles the middle of the body, the lower part of which is covered with oblique markings.

The handle is large and round, and is attached above to the top of the rim, and below to the middle of the body. This cup is now in the museum at Salt Lake. The photograph from which the engraving is made was obtained through Professor Jones.

DISTRICT OF THE LITTLE COLORADO.

The region now inhabited by the Pueblo tribes seems to have been a favorite residence of the ancient peoples. Ruins and remains of ceramic art may be found at every turn, and it is a common thing to find ancient vessels in possession of the Pueblo Indians. This is especially true of the Zuñis and Mokis, from whom considerable collections have been obtained. These vessels have apparently been culled from the sites of ancient ruins, from cave and cliff-houses, and possibly in some cases from burial places. Recently, since they have become valuable in trade, the country about Moki has been ransacked by both Indians and

293

whites, and many valuable specimens have been acquired.

Within recent years a number of expeditions have been sent into this region. To these the cañons and cliffs have yielded many specimens. Both Mr. Stevenson and Mr. Victor Mindeleff have brought in excellent examples, a few of which have already been illustrated in the publications of the Bureau of Ethnology. I must not fail to mention the very extensive collection of Mr. T. V. Keam and his associate, Mr. John Stephen, examples from which I am permitted to illustrate in this paper.

Most of the pieces described by Mr. Stevenson are small and not at all pleasing in appearance. They comprise ollas and handled mugs of an elongated scrotoid or sack shape, the widest part of the body being, as a rule, near the base, while the upper part is elongated into a heavy neck, to which a recurved rim has been added.

A number of examples, illustrated in the Second Annual Report of the Bureau of Ethnology, were obtained from the Zuñi Indians, and are thought by Mr. Stevenson to have come from the Cañon de Chelly.



FIG. 247.—Vessel from Zuñi.— $\frac{1}{4}$.

A large, very badly constructed specimen is given in Fig. 247. The rim is roughly finished, the body unsymmetrical, and the bottom slightly flattened. The coils differ greatly in width, and are carelessly joined and unevenly indented. The rudeness of workmanship noticed in this case is characteristic of many of the specimens from Zuñi.



FIG. 248.—Vessel from Zuñi.— $\frac{1}{2}$.



FIG. 249.—Handled mug from
Tusayan.— $\frac{1}{2}$.

A rudely constructed cylindrical cup, of the wide-mouthed, narrow-bodied variety, is illustrated in Fig. 248. The bottom was flattened by contact with some hard, scarred surface before the clay hardened. Two round, tapering, serpent-like fillets of clay have been fixed in a vertical position upon opposite sides of the vessel.

295

There are a number of handled vessels of this class. They are mostly rather rudely made and unsymmetrical. They are small in size and were probably devoted to ordinary domestic uses. A good specimen from the Keam collection is shown in Fig. 249. The handle in this case is a large loop made of three ropes of clay placed side by side. In one case there are three strands set side by side, and joined near the ends. In another case the strands have been twisted, giving a rope-like effect. These forms closely resemble wicker handles in appearance and manner of attachment, and are probably to some extent derived from them, although there is no reason why the ropes of clay, in constant use by potters, should not be joined in pairs, or even twisted, if greater strength or variety were desired.

Vessels from the province of Tusayan may often be identified by their color, which, like that of the transition and modern wares of the same region, is often a rich yellow, sometimes approaching an orange. This color is probably a result of changes in the natural constituents of the clay employed.



FIG. 250.—Yellow vase from
Tusayan.— $\frac{1}{3}$.

An excellent example of the yellow coiled vases is illustrated in Fig. 250. It has a new look, and probably belongs to a later period than the light gray ware of the district. It is symmetrical, and the coil is neatly laid and indented. Portions of the sides and base were blackened in firing.

There are a number of fine specimens of this class in the Keam collection, all obtained from the ancient province of Tusayan. A small, wide-necked pot is shown in Fig. 251. The surface is smooth, with the exception of a narrow band or collar about the neck, formed of a few indented coils. Other vessels closely resembling this in style are much larger and heavier.

296



FIG. 251.—Yellow vase from
Tusayan.— $\frac{1}{3}$.



FIG. 252.—Vessel from Tusayan.

A vessel of very archaic appearance is illustrated in Fig. 252. In form, color, and finish it differs from the preceding example. The mouth is almost as wide as the body at its greatest circumference, the color is gray, and the coils are narrow and regularly indented. A minute coiled fillet is attached to the rim for ornament.

The vessel illustrated in Fig. 253 is one of the most noteworthy of its class. In form and construction it does not differ essentially from specimens already described, but the decoration is superior. The coils are indented in such a way as to produce a pattern of triangular figures, which is carried over the entire surface of the vessel. It belongs to the Keam collection, and comes from the province of Tusayan.

297



FIG. 253.—Large vase from Tusayan.— $\frac{1}{4}$.

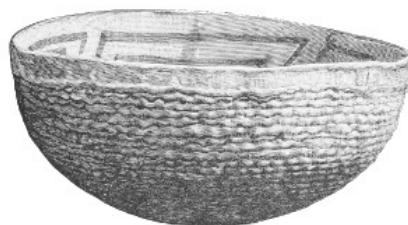


FIG. 254.—Bowl from cibola.— $\frac{1}{2}$.

From Cibola we have a bowl, the exterior of which is coiled and the interior polished and painted. It is undoubtedly of the most archaic variety of ware, and is almost a duplicate of the example from the Saint George tumulus, shown in Fig. 244. The interior is encircled by a series of five triangular volutes in black lines, and the exterior exhibits a very neatly laid and indented coil. Fig. 254.

298

PECOS AND THE RIO GRANDE.

In New Mexico, upwards of four hundred miles east of Saint George, in the handsome upland valley of the Rio Pecos, we have the most easterly of the ancient Pueblo remains. The site was occupied at the time of the conquest, but is now wholly deserted, a small remnant of the people having gone to dwell with their kindred at Jémez.

The site of this village has been thoroughly examined by that learned gentleman, Mr. A. F. Bandelier. It is his opinion that the remains show at least two distinct periods of occupation, the first being marked chiefly by a stratum of ashes, pottery, etc., of great horizontal extent. This underlies more recent deposits which belong to the people found in possession, and whose arts are nearly identical with those of the existing Pueblos.

The underlying stratum is characterized by great quantities of fragmentary coiled ware uniform with that of more western localities. At the same time there is almost a total absence of painted pottery.

The conclusion reached by Mr. Bandelier is that probably the coiled pottery wherever found marks the occupancy of a people antecedent to those who made painted ware. It is my impression, as already stated, that the coiled form may be the most archaic of the ancient Pueblo pottery, yet I think it best to notice two

things in regard to the conditions at Pecos.

In the first place, it should be remembered that the painted pottery found by Mr. Bandelier is said to resemble that of Nambe of to-day, nothing being said of the painted ware characteristic of the ancient ruins of the west, and which is always found associated with the coiled fragments, as at Saint George, in the same graves and even in the same vessel, Fig. 244. We would not expect in Pecos, or in any other place, to find modern Pueblo ware like the more recent pottery from Pecos intimately associated with the ancient ware either painted or corrugated. The only strange feature at Pecos is that the coiled fragments are not associated with ancient painted ware as in other places.

Mr. Bandelier advances the idea that this deposit of corrugated ware may represent the site of an ancient pottery, where the vessels were laid out in heaps surrounded by fuel and burned as by the modern Pueblo potters, the broken pieces being left on the ground, forming finally a considerable stratum. If this is correct, then the true explanation probably is that on this spot only the one variety of pottery was made, the painted pottery of the same locality, if such was in use, being made by potters in other parts of the village. Unless there is an actual superposition of the ancient painted ware upon deposits of the coiled variety, we learn nothing of chronological importance.

The valley of the Rio Grande has furnished but few specimens of the coiled ware, although it is known to occur along nearly its entire course through New Mexico.

299

DISTRICT OF THE RIO GILA.

The broad area drained by the Gila River and its tributaries abounds in ruins and relics, but its exploration is yet very incomplete. Coiled pottery identical, in nearly every respect, with that of the more northern valleys is abundant, but it is sometimes associated with painted wares very different in style from those of the cliff-house districts. It will probably be found that the ceramic products of the Rio Gila and the Rio Grande are much less homogeneous than those of the Colorado Chiquito, the San Juan, and the Rio Virgen.

IMITATION COIL-WARE.

I have already mentioned the occurrence in the Pueblo towns of modern coiled pottery, and also that there are seen, occasionally, vessels in which the coiled effect is rudely imitated by means of scarifying and indenting the plastic surface. Specimens of the latter class are generally small rude bottles with wide recurved lips and slightly conical bases. They are very rudely made and clumsy and are but slightly baked, and on account of the omission of proper tempering material are extremely brittle. They are new looking, and in no case show indications of use, and I have seen no example worthy of a place upon our museum shelves save as illustrating the trickery of the makers. It is possible that they are made by the Moki, but if so by very unskilled persons who have neither understood the methods nor employed the same materials as the professional potters. I consider it highly probable that some clever Navajo has thought, by imitating archaic types of ware, to outwit collectors and turn an honest penny.

PLAIN WARE.

All the groups of pottery furnish examples of plain vessels. These are generally rudely finished and heavy, as if intended for the more ordinary domestic uses, such as the cooking of food and the storing of provisions and water. The material is coarser than in the nicely finished pieces and the surface is without the usual slip and without polish or applied color.

The characters of these utensils are quite uniform throughout very widely separated districts, so that it is more difficult to assign a single vessel to its proper family than in the case of decorated wares.

We have from Saint George and other localities examples of plain vessels that belong, without a doubt, to the coiled variety, the resemblance in material, color, shape, and finish being quite marked.

300

These vessels are plentiful in the province of Tusayan, and many of them, as indicated by their color, construction, and texture, belong to the yellow and orange groups of ancient coiled ware. There is in many cases an easily discernible gradation from the wholly coiled through the partially coiled to the plain ware. In some cases the coil has been so imperfectly smoothed down that obscure ribs encircle the vessel indicating its direction, and in other cases fractures extend along the junction lines, separating the vessel when broken, into its original coils. These vessels are large and heavy, with wide mouths and full bodies, which are occasionally somewhat compressed laterally, giving an oval aperture.

Similar pithoi like vessels are in daily use by the Moki and also by the Zuñi, Acoma, Yuma, and others. They are employed in cooking the messes for feasts and large gatherings, for dyeing wool, and for storing various household materials. The modern work is so like the ancient that it is difficult in many cases to distinguish the one from the other.

Besides the typical pot or cask there are many varieties of plain vessels, some of which appear to be closely related to, or even identical with, the classes usually finished in color. These include bowls, pots, and bottles. I present three examples from the tumulus at Saint George, Utah. The little bottle, shown in Fig. 255, is remarkable in having a subtriangular shape, three nearly symmetrical nodes occurring about the most expanded part of the body. An interesting series of similar vessels has been obtained from Tusayan, some of which are decidedly askoidal in shape.

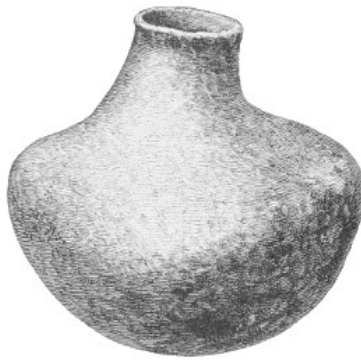


FIG. 255.—Bottle from the tumulus
at Saint George.— $\frac{1}{2}$.

Similar to the last in general outline is the curious vessel given in Fig. 256. It was obtained in Southern Utah, and is now in possession of the Salt Lake City Museum. The three nodes are very prominent and curve upwards at the points like horns. An upright handle is attached to the side of the neck.

301



FIG. 256.—Vase from the tumulus at
Saint George.— $\frac{1}{2}$.

A large bottle-shaped vessel from the same locality is illustrated in Fig. 257. The neck is short and widens rapidly below. The body is large and globular, and is furnished with two small perforated ears placed at the sides near the top. There are a number of similar examples in the collection from this place. We have also a number of handled cups, mostly with globular bodies and wide apertures. All are quite plain.

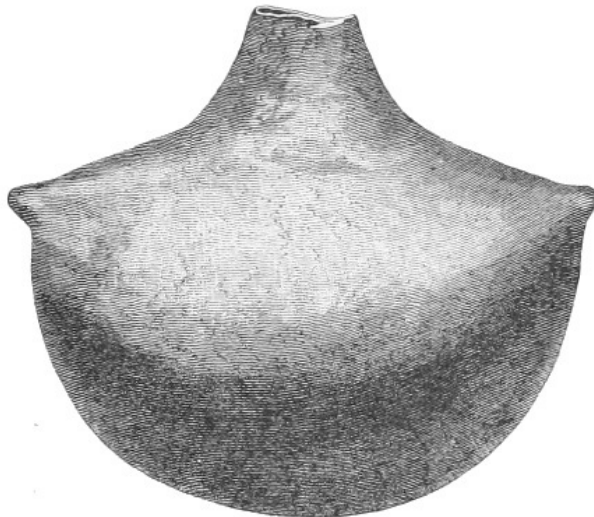


FIG. 257.—Bottle from the tumulus at Saint George.
— $\frac{1}{3}$.

Examples from this and other sections could be multiplied indefinitely, but since the forms are all repeated in more highly finished pieces it is needless to present them.

302

PAINTED WARE.

PRELIMINARY REMARKS.—It is with a peculiar sense of delight that we enter upon the study of a group of art products so full of new and interesting features. Every object of antiquity has its charm for us, but there is an especial fascination about the works of a people like the "cliff-dwellers," whose long forgotten history takes the form of a romance in our imaginations. In the study of these relics we have the additional charm engendered by a contemplation of new forms of beauty, and we follow the stages of their evolution from the initial steps to the end with ever increasing zest.

The ceramic art of classic and oriental countries has exerted a powerful influence upon existing culture, and is therefore much nearer the heart of the general student than the work of the American races; but it will not do for science to underrate the value of a study of the latter. Its thorough examination cannot fail to furnish many illustrations of the methods by which arts grow and races advance in culture, and, supplemented by a study of the art of the modern peoples, it will serve to illustrate the interesting phenomena attending the contact of widely separated grades of art. In the introductory pages I have considered many of the technical questions of construction and ornamentation. Before entering upon detailed descriptions of the specimens, I desire to give a brief review of the subject of painted decoration.

COLOR OF DESIGNS.—The colors employed are doubtless generally of a mineral character, although carbonaceous matter derived directly from vegetable sources may have been used to some extent. They comprised white, black, red, and various shades of brown, and were applied to the surfaces of the vessels by means of brushes not inferior in efficiency to those employed by the potters of more enlightened races.

EXECUTION.—The technical skill of the artist has not generally been of a high order, although examples are found that indicate a trained eye and a skilled hand. The designs are painted upon the show spaces of the vessels, which have been tinted and polished with especial reference to their reception. Large apertured vessels, such as dishes, cups, and bowls, are decorated chiefly upon the inner surface. The design often occupies only a band about the rim, but not infrequently covers the entire inner surface. High or incurved rims have in some cases received figures upon the exterior margin.

Vessels with constricted necks have exterior decorations only. The placing of the designs was governed, to a great extent, by the contour of the vessel, although there was no fixed rule. The grouping of the figures is possibly a little more irregular in the more archaic forms, but in nearly all cases there is a tendency toward arrangement in zones horizontally encircling the vessel. This feature is suggestive of the use of the wheel or of the influence of wheel-made decoration; but there is probably a pre-ceramic reason for this peculiarity, to be sought in the decoration of antecedent vessels of more pronounced surface or constructional characters, such as basketry. This arrangement may also be attributed in a measure to the conformation of the vessel decorated. It will be observed that generally the neck furnishes the space for one zone of devices and the body that for another, while the shoulder, where wide or particularly accentuated, suggests the introduction of a third. In vessels of irregular form the figures take such positions as happen to have been suggested to the decorator by the available spaces, by the demands of superstition, or the dictates of fancy pure and simple.

303

It appears that the artist never worked in a hap-hazard manner, yet never by rule or by pattern. The conception of the intended design was well formed in the mind, and the decoration commenced with a thorough understanding of the requirements of the vessel under treatment and of the effect of each added line upon the complete result. The vessels, being for the most part free-hand products, are necessarily varied in form and proportion, and the mobility of method in decoration is therefore a necessary as well as a natural condition. In accommodating the ordinary geometric figures to the variously curved and uneven surfaces, there were no erasures and, apparently, no embarrassments. This feature of the art shows it to be a native and spontaneous growth—the untrammelled working out of traditional conceptions by native gifts.

STAGES OF ORNAMENT.—In the transmission of a nation's art inheritance from generation to generation, all the original forms of ornament undergo changes by alterations, eliminations, or additions. At the end of a long period we find the style of decoration so modified as to be hardly recognizable as the work of the same people; yet rapid changes would not occur in the uninterrupted course of evolution, for there is a wonderful stability about the arts, institutions, and beliefs of primitive races. Change of environment has a decided tendency to modify, and contact with other peoples, especially if of a high grade of culture, is liable to revolutionize the whole character of the art. The manufactures of our modern tribes show abundant evidence of the demoralizing effect upon native art of contact with the whites. There are no such features in the prehistoric art.

First stage.—In the early stages of art the elements used in embellishment are greatly non-ideographic, and the forms of expression are chiefly geometric. The elements or motives are limited in number and are in a measure common to all archaic art. They embrace dots, straight lines, and various angular and curvilinear figures, which in their higher stages become checkers, zigzags, chevrons, complex forms of meanders, fretted figures, and scrolls, with an infinite variety of combination and detail. At the same time there is no confusion. The processes by which the parts are segregated are as well regulated as are the processes of natural growth. This phase of decoration seems to be the prevailing one in the earlier stages of Pueblo art.

304

Second stage.—A second phase or stage is marked by the free introduction of ideographic devices of pictorial origin into decoration. These are drawn, to a great extent, from that most prolific source of artistic conceptions, mythology. This stage is the second in Pueblo art. The period or stage of culture at which such elements are introduced varies with different peoples. It is possible that ideographic and non-ideographic devices may enter art simultaneously. This is certainly to be expected in the ceramic art, which comes into existence rather late in the course of progress.

Third stage.—In strong contrast with the preceding stages is the state of modern Pueblo decoration. Contact with the whites has led to the introduction of life forms and varied pictorial delineations. These conditions belong to a stage in advance of the position reached in the natural course of growth. Ideographic, non-ideographic, and purely pictorial characters are combined in the most heterogeneous manner in the decoration of a single vessel. The decorator has ceased to work under the guidance of his instincts as a rule unerring, and now, like the mass of his more highly civilized brethren, he must grope in darkness until culture shall come to his aid with canons of taste—the product of intellect.

CLASSIFICATION OF WARE.—In the treatment of this great group, or rather collection of groups, of pottery a scheme of classification is the first thing to be considered. In glancing over the field we notice that a whitish ware, having a certain range of material, finish, form, and decoration, is very widely distributed, that, in fact, it is found over nearly the entire area known to have been occupied by the Pueblo tribes. We find, however, that within this area there are varieties of this particular group distinguished by more or less pronounced peculiarities of color, form, and ornament, resulting from dissimilarity of environment rather than from differences in time, race, or method of construction. This group is associated, in nearly every locality, with the archaic coiled ware, and together they are especially typical of the first great period of

Pueblo art. Its makers were the builders of the cliff dwellings, of the round towers, and of countless stone pueblos.

Distinct from the preceding, and apparently occupying an intermediate place in time and culture between the primitive and the recent wares, we have a number of pretty well defined groups. At least two of these are peculiar to the ancient province of Tusayan. The vessels of one of these groups are noticeable for their rounded symmetrical bodies, their finely textured paste, and their delicate creamy shades of color. The designs are well executed and display unusual refinement of taste.

Another, and probably the more important variety, is characterized, first, by peculiarities of form, the body being doubly conical and the bottom deeply indented; second, by richness of color, orange and yellow tints prevailing; and, third, by the striking individuality and remarkable execution of the painted designs.

305

In the valley of the Little Colorado and extending southward to the Gila, we find remnants of a group of highly colored pottery differing from the preceding and, in many respects, from the widely distributed red ware of the north, specimens of which occur in connection with the white ware. The surfaces are painted red and profusely decorated in white, black, and red lines and figures.

Still another variety is obtained from this region. As indicated by collections from Saint John and Springerville, it consists greatly of bowls, the colors, forms, and decorations having decided points of resemblance to corresponding features of the cream-colored ware of ancient Tusayan. There are still other groups, probably of intermediary periods, whose limits are not yet well defined, examples of which are found in possession of the Pueblo Indians.

At Pecos the art was practiced long after the advent of the conquerors, and later specimens show the archaic decorative ideas worked out in Spanish glaze. The deserted pueblos of the Rio Grande furnish antique forms that show wide distinctions from the ancient wares of the west. Another variety peculiar to the southwest shows indications of having been carried down to the present in the work of the Indians of the Lower Colorado Valley. Each of these groups and such new ones as may be discovered will be made the subject of careful study.

The remainder of this paper will be devoted to a single group—the first mentioned in the preceding list.

WHITE WARE.

The coiled ware has already been presented in some detail. Most nearly related to it in material, form, color, and distribution is the archaic white ware, the pottery *par excellence* of the "Cliff-Dwellers." It is easily recognized, even from small fragments, whether found in the valley of the Colorado, of the Rio Grande, or of the Gila, although each locality has its slight peculiarities of texture, tint, shape, and ornamentation. As a rule the material is a fine-grained clay, tempered with fine sand, the surfaces of the vessels being coated with a thin wash of very fine white clay. The ware is nearly always well baked and hard, breaking with a saccharoidal, rarely with a conchoidal, fracture. The surface is, as a rule, well polished, but often slightly undulating. The color of the paste is generally gray within the mass and white upon the surface. Associated with the white ware in most localities we find a small percentage of red ware nearly identical in all save color with the white ware.

The forms are comparatively few and simple, a full, well-rounded body, as with the coiled ware, being a strong characteristic. The ornamentation is generally in black paint, exceptionally in red and white, and consists to a great extent of geometric figures, often rather rudely drawn. Very rarely we observe an attempt to delineate a life form—human or animal, never vegetable.

306

CLASSIFICATION BY FORM.—The ware of each province is conveniently presented in form-groups, beginning with the more simple shapes and advancing to the more complex.

BOWLS.—Bowl-shaped vessels have been in great favor with all the Pueblo peoples, and in ancient times, especially in the north and west, predominated very decidedly over all other forms. This is naturally a favorite shape with primitive peoples, as it is the most simple and probably that first developed. A long experience would be necessary for the evolution of narrow-necked or complex forms.

Our collections contain many examples of ancient bowls, perfectly preserved, but if this were not the case the shapes are so simple that it would be an easy matter to make satisfactory restorations from fragments. There is considerable diversity of outline, yet all may be conveniently classed under two heads: the hemispherical and the heart-shaped. The former are much more plentiful and were probably the favorite food vessels of the people. As a rule they are plain segments of spheres. The rims are, in rare cases, oval in outline, and a few are elongated at the ends.

Heart-shaped bowls are characterized by a somewhat conical base and a deeply incurved rim, sometimes much depressed about the contracted mouth. The forms are often elegant, and the painted designs are generally well executed and pleasing to the eye.

OLLAS.—Between bowls and pot-shaped vases or ollas there is but a step—the addition of an upright or recurving band forming a neck. In vessels of the latter class the body is almost universally globular, often tapering a very little below. Occasionally there is a slight flattening of the bottom and very rarely a concavity. The neck is seldom high, but varies greatly in size and shape. These vessels correspond to the water vases of the modern tribes.

BOTTLES.—Bottle-shaped vessels are very widely distributed. They differ from the ollas in one respect only—the necks are narrower and higher. They are rarely flattened, as are the modern Pueblo bottles known as canteens.

HANDLED VESSELS.—Smaller vessels of nearly all shapes are at times furnished with handles. The origin of certain forms of these has received attention in the introductory pages. They vary in style with the shape of the vessel to which they are attached. Bowls exhibit two well-marked varieties—a cylindrical form and a simple loop. Those of the former often imitate the handle-like neck of a gourd, and archaic specimens from

various parts of the Pueblo province are so literally copied that the small curved stem of the gourd is represented. This feature in some cases becomes a loop at the end of the handle, serving to suspend the vessel, like the ring attached to our dipper handles. Specimens from the headwaters of the Colorado Chiquito have the ends of the handles modeled to represent the head of a serpents or other creatures. A loop sometimes takes the place of the cylindrical handle, and is attached to the side of the bowl in a vertical or a horizontal position. It may be long or short, wide or narrow, simple or compound, and is not always evenly curved. In certain forms of cups the vertically-placed loop occupies the whole length of the vessel, suggesting well-known forms of the beer-mug.

307

High-necked cups, vases, and bottles have rather long, vertically-placed loops, giving a pitcher-like effect. These may consist of two or more strands placed side by side or twisted together. Rarely an animal form is imitated, the fore feet of the creature resting upon the rim of the vessel and the hind feet upon the shoulder. Perforated knobs often take the place of the loops, and unperforated nodes and projections of varied shapes are not unusual. Some of these, placed upon the upper part of the neck, represent the heads of animals.

A novel handle is sometimes seen in the ancient vases of Cibola and Tusayan. While the clay was still soft a deep abrupt indentation was made in the lower part of the vessel, sufficiently large to admit the ends of two or three fingers, thus giving a hold that facilitated the handling of the vessel. I have seen no looped handles arching the aperture of the vessel, as in the modern meal baskets of the Zuñis.

ECCENTRIC AND LIFE FORMS.—The simple potter of early Pueblo times seems barely to have reached the period of eccentric and compound forms, and animal and grotesque shapes, so common in the pottery of the mound-builders of the Mississippi valley, the Mexicans, and the Peruvians, are of rather rare occurrence. The last section of this paper is devoted to life and eccentric forms.

For convenience of treatment, the following illustrations will be presented by districts, beginning at the northwest.

ILLUSTRATIONS.

DISTRICT OF THE RIO VIRGEN.

Under the head of coiled pottery I have given a detailed description of the remarkable dwelling-site tumulus at Saint George, Utah, which has furnished such a complete set of the fictile works of the cliff-house potter, the first collection of importance known to have been made by exhumation. I will now present the painted ware and point out its very interesting local peculiarities. All the ordinary shapes are present excepting the olla. Vessels of this form are all of the plain or coiled varieties. The paste is gray and the surface color is usually a light gray. A small percentage of the vessels are painted or stained red. The designs are all executed in black, and are for the most part nicely drawn. They differ slightly in a number of ways from those of other districts, their relationships being, with a few exceptions, more intimate with the ware of the Rio San Juan. A characteristic of this pottery is the thinness of the walls and the hardness and tenacity of the paste. In form a striking feature is the occurrence of bowls of oval form, and in one case such a bowl has sides cut down or scalloped and ends prolonged. The oval form is sometimes seen in other districts, and the elongation of portions of the rim is a feature especially characteristic of the Pima and Mojave work of to-day.

308

BOWLS.—I have already shown in Fig. 244 a small bowl from this locality, in which a coiled exterior is combined with a polished and painted interior. This is an unusual combination, the exterior commonly being plain. The following examples are grouped, as far as possible, according to their painted designs. A usual and very widely distributed decoration consists of a belt of figures encircling the inner margin. In its simplest condition it is only a single broad line, but more frequently it is elaborated into a tasteful border so wide as to leave only a small circle of the plain surface in the bottom of the vessel. The figures present much variety of effect, but combine only a few elements or ideas, as the following figures will amply show. All are rectilinear, or as nearly so as the conformation of the vessels will permit. No example of exterior decoration occurs. As my illustrations are necessarily limited to a few pieces, those having the simpler combinations of lines are omitted, and such only are given as exhibit the decorations of this district to the best advantage.

The bowl shown in Fig. 258 may be regarded as a typical example.



FIG. 258.—Bowl: tumulus at Saint George.— $\frac{1}{3}$.

It is a plain hemisphere of gray clay, with roughly finished exterior and whitened and polished interior surface. It is eight inches in diameter and nearly four inches deep. The painted design occupies a band about two inches wide, and consists of two broad bordering lines inclosing meandered lines. The triangular

interspaces are occupied by serrate figures, giving to the whole ornament an appearance characteristic of textile borders.

Two small bowls have borders in which the meandered lines are in the natural color of the ground, the triangular spaces being filled in with black. In one case the effect of the guilloche is given in the same manner.

Few vessels exhibit a more characteristic example of the ornamentation of this ware than that given in Fig. 259. It is identical in surface finish with the last, excepting that the exterior has been painted red. An exceptional feature may be noticed in the shaping of the rim, which has been brought to a sharp edge.



FIG. 259.—Bowl: tumulus at Saint George.— $\frac{1}{3}$.

The design occupies the usual space, and consists of a very elaborately meandered or fretted line, which is so involved that the eye follows it with difficulty. Four units of the combination complete the circuit of the vessel. In another specimen, which also has the design divided into four parts, the lower line of each part is made straight, by which means the space left in the bottom of the vessel is square instead of round, as in the other cases.



FIG. 260.—Bowl: tumulus at Saint George.— $\frac{1}{3}$.

Another variety of decoration, quite characteristic of this region, consists of a band of fret-work dashed boldly across the inner surface of the bowl, giving a most striking result. These figures appear to be fragments of continuous borders, taken from their proper connections and made to do duty on a surface that had ordinarily been left without decoration. This observation has led to the proper interpretation of many enigmatic combinations at first thought to have especial application and significance.



FIG. 261.—Painted device.

The handsome shallow bowl presented in Fig. 260 has been badly broken and carefully mended while still in the hands of its aboriginal owners. It is ten and one-half inches in diameter, and only three and three-fourths inches in depth. The surface finish is identical with that of the preceding example. The design, which consists of a single segment of a chain of fret-work, is drawn in broad, steady lines. Fig. 261.

Not unlike the last in its leading features is the vessel illustrated in Fig. 262. The label indicates that it was collected at Kanab, Utah, a Mormon village ninety miles east of Saint George. The design is carried over the whole inner surface, and is somewhat difficult to analyze. There is little doubt, however, that it consists of portions of fretted or meandered patterns arbitrarily selected from basketry or other geometrically embellished articles, and applied to this use. The complete device is shown in Fig. 263.



FIG. 262.—Bowl from Kanab.— $\frac{1}{4}$.

The following examples are unique in their styles of decoration. The first, Fig. 264, resembles the preceding save in its painted device. Like a few others, it has been badly fractured and carefully mended by its Indian owners. It was obtained also at Kanab, and is nine inches in diameter by four and one-half in height. The design is cruciform in arrangement, the four parts being joined in pairs by connecting lines. It exhibits some very unusual features (Fig. 265), and we are led to suspect that it may in some way have been significant, or at least that it is a copy of some emblematic device.

311

The almost total absence of life forms in the art of the primitive Pueblos has often been remarked. One example only has been discovered in this region. This occurs in a subject painted on the inner surface of a rather rude, oblong, bowl, from the Saint George tumulus, Fig. 266. A checkered belt in black extends longitudinally across the bowl. At the sides of this, near the middle, are two human figures, executed in the most primitive style, as shown in Fig. 267. Their angular forms are indicative of textile influence. The middle part of the bowl is broken out, so that the feet of one figure and the head of the other are lost.



FIG. 263.—Painted device.

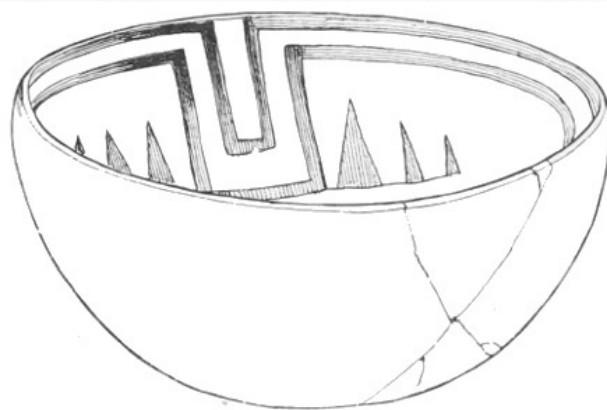


FIG. 264.—Bowl from Kanab.— $\frac{1}{3}$.

These figures resemble those painted upon and picked in the rocks of the pueblo region, and the triangular head is sometimes seen in the ceramic decoration of modern tribes. A bowl with similar figures was brought from Tusayan by Mr. Mindeleff. It is illustrated in Fig. 268.

312



FIG. 265.—Painted device.

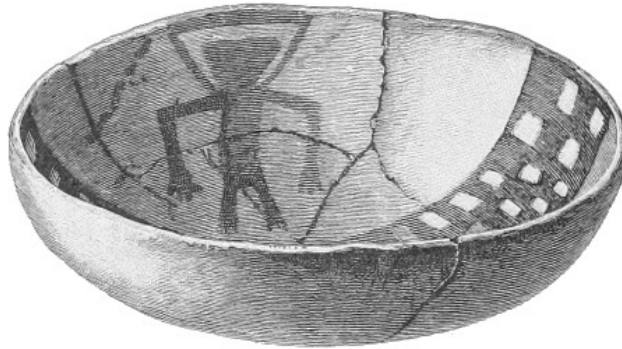


FIG. 266.—Bowl with human figures: tumulus at Saint George.— $\frac{1}{3}$.

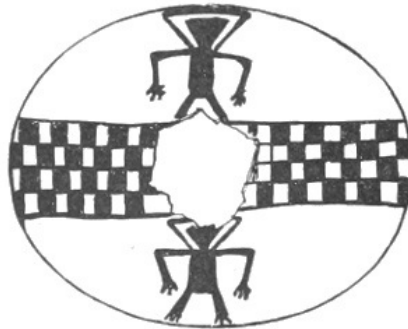


FIG. 267.—Painted design.

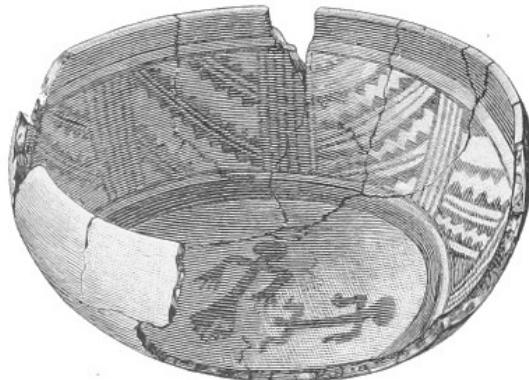


FIG. 268.—Bowl with human figures: Province of Tusayan.— $\frac{1}{3}$.

Among the many fine things from the mound at Saint George are a few red bowls. They were made of a slightly reddish clay, or the paste has reddened uniformly in burning, and a slip or wash of bright red color has been applied to the surface. The designs are painted in black, but differ in style from any of the preceding. This work corresponds very closely indeed with the decorations of similar vessels from the Little Colorado. The marked peculiarities of the ornamentation and color of these bowls give rise to the idea that they may have been intended for some especial service of a ceremonial character. It is not impossible, however, that these vessels reached very distant localities by means of trade. A representative example is shown in Fig. 269. The broad interior band of ornament is divided into four compartments by vertical panels of reticulated lines. The compartments are occupied by groups of disconnected rectangular fret-links on a ground of oblique stripes.

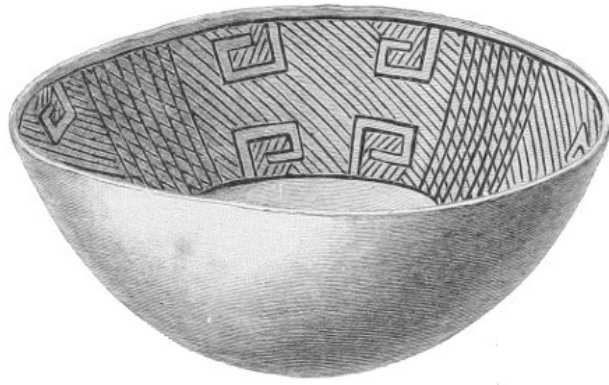


FIG. 269.—Red bowl: tumulus at Saint George.— $\frac{1}{3}$.

The heart-shaped bowls previously mentioned include medium sized and small vases, with slightly conical bases, distended shoulders, and much constricted, often depressed, apertures. They are of very general distribution, but like the hemispherical red bowls are rarely found in numbers. It is probable that they were devoted to ceremonial rather than to domestic uses. The shapes are generally pleasing to the eye; the finish is exceptionally fine, and the designs, though simple, are applied with more than usual care.

A very good specimen from the tumulus at Saint George is illustrated in Fig. 270.

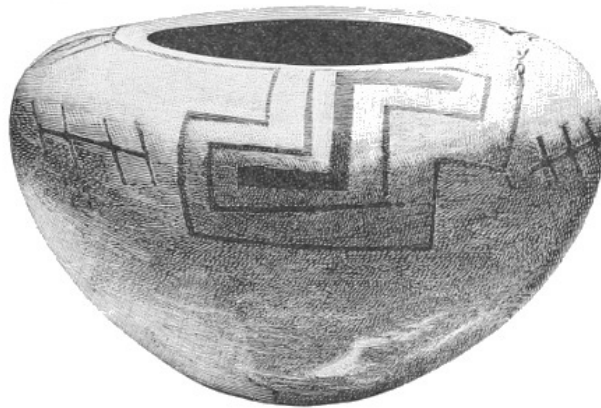


FIG. 270.—Heart shaped bowl of red ware: tumulus at Saint George.— $\frac{1}{3}$.

The bottom in this case is slightly flattened, and the incurved lip but slightly sunken. The paste is a light red and the surface has received a coat of bright red color. The design is in black, is extremely simple, and rather carelessly drawn. The principal figure seems to be a very simple form of the favorite device—the meander.

314

A large fine bowl much like the preceding, and obtained from the same locality, is owned by the Salt Lake City Museum. The design is of the same class, but very much more elaborate. Another example from Saint George is smaller and yellowish-gray in color, with figures in red and black. At Kanab I picked up fragments of a small vessel, highly polished and of a rich, brownish-purple color, the designs being in black. Another fragment showed designs in bright red and black upon a yellowish ground.

OLLAS.—I have already called attention to the fact, that the Saint George tumulus furnished no example of ollas or large-necked vases of the painted variety, vessels of this class being plain or of the coiled ware. In the vicinity, however, I collected fragments of the white painted pottery derived from large vessels of this class, very much like the large, handsome vessels of ancient Tusayan. A number of such fragments come from the vicinity of Kanab. Plain vessels of this shape were obtained from the tumulus at Saint George. They are identical in every other respect, save the presence of designs, with the painted pottery. Some have received a wash of red, while it is not improbable that others have lost their color or decorative figures by wear or weather.



FIG. 271.—Red pitcher: tumulus at Saint George.— $\frac{1}{3}$.

HANDLED VESSELS.—From the tumulus at Saint George we have a very excellent example of pitcher, which is shown in Fig. 271. The shape is not quite satisfactory, the neck being clumsy, but the workmanship is exceptionally good. The surface is even and well polished and the color is a strong red. The painted design in black, upon the red ground, consists of a number of meandered lines, to which are added at intervals small dentate figures, as seen in the cut.

315

DISTRICT OF THE RIO SAN JUAN.

In a number of ways the valley of the Rio San Juan possesses unusual interest to the antiquarian. Until within the latter half of the nineteenth century, it remained wholly unknown. The early Spanish expeditions are not known to have penetrated its secluded precincts, and its cliff-houses, its ruined pueblos and curious towers have been so long deserted that it is doubtful whether even a tradition of their occupation has been preserved, either by the nomadic tribes of the district or by the modern pueblos of the south. Certain it is that no foreign hand has influenced the art of this district, and no Spanish adventurer has left traces of his presence.

The ceramic remains are more uniform in character and apparently more archaic in decoration than those of any other district. They belong almost exclusively to two varieties, the coiled ware and the white ware with black figures. The former has already been described, the latter must now pass under review.

It is unfortunate that so few entire vessels of the painted pottery have been found in this region. The fragments, however, are very plentiful, and by proper study of these a great deal can be done to restore the various forms of vessels. In my paper upon this region, in the Annual Report of the Survey of the Territories for 1876, I gave a pretty careful review of the material then in hand. Finding that in very few cases were there whole vessels representing the achievements of the ancient potter and decorator, I presented a number of restorations from the better class of fragments. This was done in a way that could lead to no serious misapprehension, as the fragments used were always clearly indicated. The expert need never go astray in his estimate of the character of the vessel to which given pieces belonged, and his restoration from them gives a completeness of conception to the reader or student at a distance that could never be acquired by the most careful study of illustrations of the fragments. The fragments are exceedingly plentiful about camp sites and ruins, and fairly whiten the debris slopes beneath the houses in the cliffs. I found my mind so diverted by these fascinating relics that it was often difficult to keep the geologic problems of the district properly in view.

No tumuli or burial places were observed, but I suspect that careful search will bring them to light, and that they will yield much richer results than the scattered fragments of the surface. The district now under consideration comprises the entire drainage of the Rio San Juan. It includes the well-known valleys of the Animas, the La Plata, the Mancos, the McElmel, and the Montezuma on the north, and the Chaco and the de Chelly on the south. On the north I include also a portion of the valley of the Rio Dolores. The center of the district will not be very far distant from the corner stone of the four political divisions of Colorado, New Mexico, Arizona, and Utah.

316

The collections from the valley of the Rio de Chelly, one of the richest sections of this district, are very badly scattered, and the vessels cannot be identified. Many fine things have been carried away to the south and are now in the collections from Cibola and Tusayan; while others have been brought east by the various expeditions without a proper record of the locality. This is to be regretted, as it makes it impossible to study the shades of distinction between the wares of neighboring localities.

Bowls were very numerous and greatly varied in size, finish, and ornamentation. Many have received painted designs both inside and out. This occurs with those having nearly upright rims. Handled-cups of hemispherical shape are also common, but the heart-shaped bowls are of rare occurrence. Bottle-shaped vessels and ollas have not, as in the south, formed a prominent feature. For some of the latter very neat lids

have been made, the rims being shaped for their reception. Upright vessels with handles are common. Eccentric or animal forms have not been found.

BOWLS.—The arrangement of the designs upon the bowls is far from uniform. In a great majority of cases, however, they occupy belts encircling the inner and outer margin. The fragmentary condition of the remains makes it impossible to restore designs that covered the entire surface of the vessels. The decorations comprise nearly all the usual elements and motives. In Fig. 272 we have a small bowl from Montezuma Cañon, Utah. In form it is a deep hemisphere. The design is upon the interior surface, and consists of a broad band bordered by heavy lines and filled in with vertical lines. The rim is ornamented with seven pairs of dots. Fig. 273 is restored from a fragment obtained in southwest Colorado. It shows an interior ornament consisting of a well-drawn chain of volutes.



FIG. 272.—Bowl: Montezuma Cañon
— $\frac{1}{3}$



FIG. 273.—Bowl: Rio San Juan.— $\frac{1}{3}$.

Many of the bowls were large and handsomely finished, both surfaces being whitened and polished. A superior example is given in Fig. 274. Neat borders have been applied to both interior and exterior surfaces. They are suggestive of patterns produced through the technique of textile products, and consist of interrupted forms of the meander. I have restored from small fragments in this and other cases, for the reason that no large fragments of the finer vessels are preserved.

317

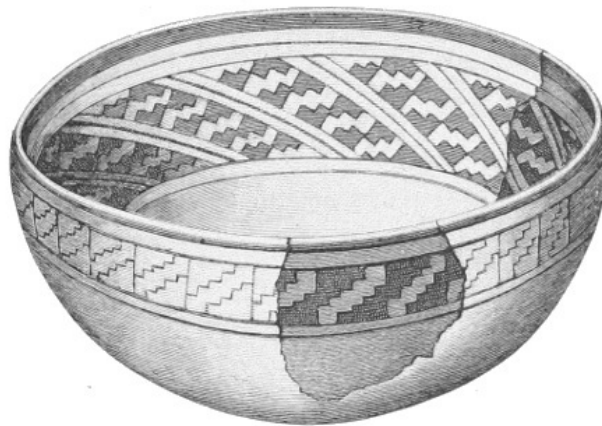


FIG. 274.—Bowl: Rio San Juan.

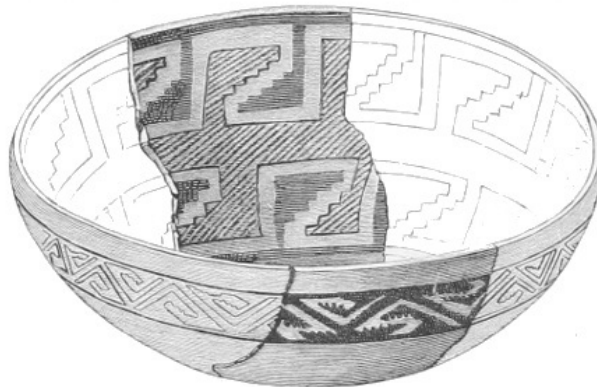


FIG. 275.—Bowl: Rio San Juan.

Fig. 275 illustrates a very pleasing vessel. It is hemispherical, and about eleven inches in diameter. A narrow zone of ornament based upon the meander encircles the exterior margin of the rim, and a broad, carefully drawn design, consisting of two parallel meanders, Fig. 276, occupies the interior. It will be seen that the meandered fillets are in white, and the bordering stripes and the upper and lower rows of triangular interspaces are in solid black, while the median band and its connecting triangles are obliquely striped. It should be noticed that the oblique portions of the meanders are indented or stepped. This is a very usual occurrence in these decorations, and may be taken as a pretty decided indication that they were copied, more or less directly, from textile ornamentation in which all oblique lines are necessarily stepped.

318

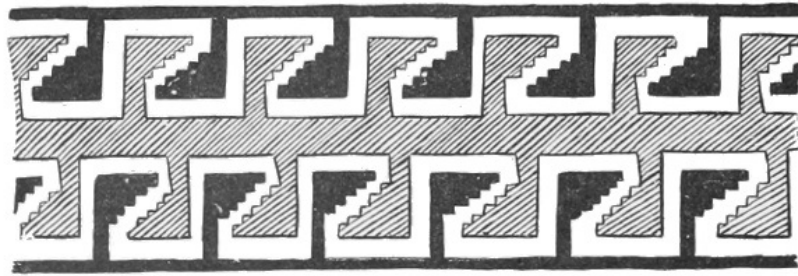


FIG. 276.—Painted design.



FIG. 277.—Handled cups:
Montezuma Cañon.— $\frac{1}{3}$.



FIG. 278.—Handled cups:
Montezuma Cañon.— $\frac{1}{3}$.

HANDLED CUPS.—Small cups were generally furnished with handles and probably served as ladles and spoons. An entire specimen is rarely found. Two are illustrated in Figs. 277 and 278. They were obtained by W. H. Jackson from the ruins of Montezuma Cañon. The handles of these vessels vary a great deal; some are flat, while others are round, consisting either of a single or a looped roll of clay; some are hollow, resembling the handles of gourds, and a few are made of twisted fillets. This latter form belongs generally to upright cups.



FIG. 279.—Vase : Rio San Juan.

OLLAS.—It is quite impossible to make satisfactory restorations of the vases or ollas from the small fragments recovered. The evidence is sufficient, however, to show that vessels of this class were numerous, and often large. I have made two restorations of small examples belonging to this class, of which there are fragments showing the neck and upper part of the bodies. The bottoms are so universally rounded that I have drawn full globular shapes; Figs. 279 and 280. The most striking character of Fig. 279 is the shape of the rim, which is fashioned for the reception of a lid. The same feature is noticed in a small vessel obtained at Zuñi.

319

Examples of lids from the San Juan Valley are shown in Figs. 281 and 282. They were evidently designed for vessels of the class just described. The specimen given in Fig. 281 is neatly finished and embellished, and the quality

of the ware is very superior.



FIG. 280.—Vase: Rio San Juan.



FIG. 281.—Vase lid: Rio San Juan



FIG. 282.—Vase lid: Rio San Juan.

HANDLED VASES.—Many small vessels were furnished with handles, some horizontal and others vertical. Of the first variety is the example shown in Fig. 283. The fragment was obtained from the great ruin at "Aztec Springs," Colorado. It shows a small, symmetrical vessel, with black lines and devices. The handle, which probably had a companion on the opposite side, is strong and neatly made.

Figure 284 represents a very pretty little vessel, brought by Mr. W. H. Jackson from the Cañon de Chelly. It is of the usual gray polished ware, the base being somewhat roughened by use. The design consists of encircling lines combined with a belt of disconnected triangular hooks or fret-links.

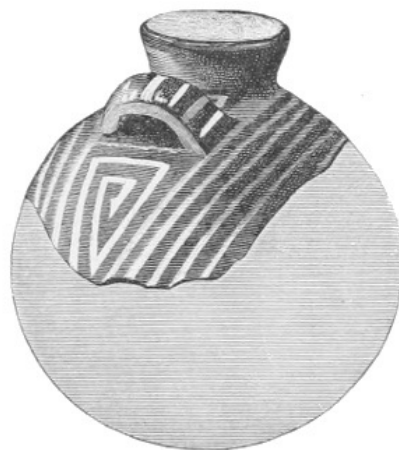


FIG. 283.—Handled bottle: Rio San Juan.

Handled mugs with round bodies and wide high necks were in great favor with the San Juan potter. There are but two entire specimens in the collection. These were obtained by Capt. Moss, of Parrott, who stated that they, with other relics, had been exhumed from a grave in the San Juan Valley. Both are comparatively rude in construction, and seem to be considerably weathered. The one shown in Fig. 285 is decorated with a classic meander which encircles the body of the vessel. The other, illustrated in Fig. 286, has the upper part covered with simple figures resembling bird tracks.

320

Among the most novel works of the ancient potter are the flat-bottomed mugs with upright sides, and with vertical handles which extend the whole length of the vessel, giving very much the appearance of a German beer mug. For a long time it was thought improbable that a vessel of this character should be the *bona fide* work of the cliff-dweller, for his status of culture seemed to call for globular bodies and rounded bases. But so many examples have been found that there is no longer room for doubt.

Fig. 287 is restored from a large fragment brought from the San Juan Valley. Its walls widen a little below, and the very pretty ornament is somewhat unevenly applied. The handle is made of a double rope of clay, and extends from the lip to the base. The example shown in Fig. 288 was obtained in the vicinity of Provo, Utah, by Capt. G. M. Wheeler's expedition. It is so like those from the San Juan that I place it here for comparison. It is a little wider toward the base, and is nearly symmetrical. It is four inches in height and the same in diameter. A very similar vessel, probably from the Province of Tusayan, is found in the Keam collection.

321



FIG. 284.—Small bottle: Rio San Juan.— $\frac{1}{3}$.



FIG. 285.—Vase lid: Rio San Juan.— $\frac{1}{3}$.



FIG. 286.—Vase lid: Rio San Juan.— $\frac{1}{3}$.



FIG. 287.—Handled mug: Rio San Juan.— $\frac{1}{2}$.



FIG. 288.—Handled mug: Southern Utah.— $\frac{1}{2}$.

The collection from this district, which includes the ancient provinces of Cibola and Tusayan, is already very large, and much more material will yet accrue, for pottery fanciers have taken up the search, and both whites and Indians are on the *qui vive* for additional examples of the artistic and showy specimens.

The National Museum has procured many fine pieces through the agents of the Bureau of Ethnology, and the collection of Mr. Keam is especially rich in the pottery of Tusayan. Some of the finer examples of the latter collection are selected for illustration.

It seems unaccountable that such a large number of the ancient vessels should be preserved, and that too in a country where vessels are constantly in demand. Many have been picked up by the Pueblo tribes and laid away for especial uses or possibly as heirlooms; but many of those secured by recent collectors were obtained from the sites of ancient settlements, from burial places, and from caves, and brought directly to the market so recently made for them.

There can be no doubt that many of the specimens accredited to this district have come from neighboring or distant provinces; yet within the valley of the Little Colorado there are such wide variations from predominant types that foreign pieces cannot be readily detected. Many of the finer pieces of the white ware are rather new looking and show very superior taste and skill. The indications are that the manufacture of this white ware was kept up in portions of this district down to a comparatively recent date, possibly until the coming of the Europeans. It will probably be impossible to determine just why and how the archaic types gave way to the transitional and modern. It may be found, however, that the influence of the Spaniard was a factor in the change.

Beside the archaic white ware and its closely associated red ware the province of Tusayan furnishes two or three distinct varieties, all of which, unlike that ware, are apparently confined to very limited districts. These have been briefly described on a preceding page.

Many pieces of the white ware are of large size and of elegant shape and finish. Some of the ollas and bottles are masterpieces of the art. The texture of the paste is fine and the color is often quite white. The designs are uniformly in black and are superior in execution and conception to those of the north.

322

BOWLS.—The bowls are very generally hemispherical. The finish, like that of the pottery of the San Juan and the Rio Virgen, is rather rough on the exterior, and whitened and polished on the inner surface. The painted figures are confined to the interior, and are highly elaborated combinations of the usual geometric motives. They are generally made up of four sections of double-zoned borders such as occur on the exterior of vases, cut out, as it were, and fitted into the bowl in a cruciform arrangement, a plain square remaining in the bottom of the vessel. See Fig. 291. There are, however, many examples which consist of two encircling zones of ornament identical in style and arrangement with examples from the Rio Virgen, Figs. 230 and 231, and from the Rio San Juan, Figs. 248, 259, and 274.

In Fig. 289 we have a representative example of the bowls of ancient Tusayan. The outer surface is rudely trowel-finished, but the inside is well polished. The painted design consists of four parts arranged about a central square. Each part comprises a number of alternate bands of straight and zigzag lines.



FIG. 289.—Bowl: Province of Tusayan.— $\frac{1}{3}$.

The superb bowl presented in Fig. 290 is nearly fifteen inches in diameter and seven inches deep. It is hemispherical but not quite symmetrical. Having been broken, it was mended by its owners after their aboriginal fashion. Two pairs of holes have been bored on opposite sides of a long fracture for the insertion of thongs. Other perforations have been commenced but do not penetrate the vessel. The walls are upwards of one-eighth of an inch in thickness near the rim, but are less than that throughout the body of the bowl. The paste is of a dark gray color, speckled with ashy-white particles, which may be pulverized potsherds. The interior surface is finished with a slip of white clay and has received a fair degree of polish. The exterior is only trowel-finished and is much scarified by use. The interior is embellished with a very elaborate design, which is given with all possible accuracy in a plain projection, in Fig. 291. The work does not exhibit a great deal of skill or neatness in execution, but the whole design is carefully made out and well adjusted to the deeply concave surface. An analysis of this figure is easily given. It is a cruciform arrangement of four portions of rather elaborate double borders. Each part consists of two parallel bands, a principal and a subordinate, separated by parallel lines and taking the relation to each other always noticed in the two belts of designs painted upon the exterior of vases. Two of the sections are alike. The others

323

324

differ from these and from each other.



FIG. 290.—Bowl: Province of Tusayan.— $\frac{1}{3}$.

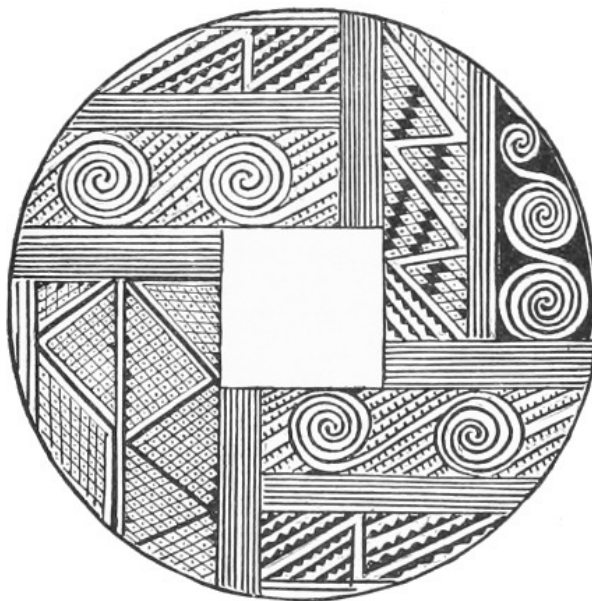


FIG. 291.—Painted design.

One figure, consisting of three linked volutes, is defined in white by painting around it a black ground. The artist in painting this vessel has probably not thought of achieving anything beyond the filling up neatly of the four spaces, and has followed the usual practice of borrowing his motives from other objects; yet it will not be wise to conclude that these figures are really meaningless combinations of lines. The persistency and individuality of certain motives makes it almost certain that they are not the result of aimless elaboration, and that the potter understood their significance. They are too purely geometric, however, to furnish any clew to us through internal evidence. We have no resource beyond the analogies of historic art. Modern tribes use the current meander to symbolize water, and a leading motive in many of these designs—the linked scroll running through a field of serrate lines—is wonderfully like some forms of the Aztec symbol for water, as may be seen by reference to the Mexican codices.



Another very excellent example of these bowls is presented in Fig. 292. It is small and shallow, measuring six and a half inches in diameter and two and a half in depth. The material is somewhat soft and chalky. The walls are thick and the surface is well finished. The painted design is cruciform, like the preceding, but is much more simple and satisfactory. It is interesting to note the changes rung upon the few simple motives employed in these designs. Again apparently each of the four parts is a fragment of a double border, cut up and fitted into the concave surface. The bands with oblique, dotted, or stepped lines, Fig. 293, are repetitions of the neck belt of a bottle-shaped vase or basket, and the other bands with their chaste fret-work repeat a section of the body zone.



FIG. 293.—Painted design.

Bowls and cups of the hemispherical model are very often supplied with handles. Like other bowls, they are embellished with painted designs derived from vases or from textile sources. In order of evolution, they probably follow the plain form—the handles being added to facilitate use.

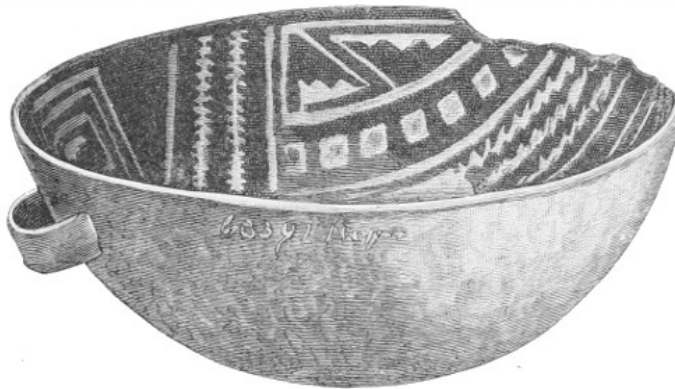


FIG. 294.—Bowl: Province of Tusayan.— $\frac{1}{3}$.

The principal varieties of handles have already been described. The bowl illustrated in Fig. 294 is furnished with a single semicircular loop. In form, finish, and color it is the same as that of the other bowls, and the painted design has a similar derivation and arrangement.

In the collection we have a fine large red bowl, now in a fragmentary state. It is eleven inches in diameter and six inches deep. A small loop is attached to the outside near the margin. It has a very decided resemblance in color, finish, and ornamentation to the red bowls of the Rio Virgen. The color of both the surface and the mass is a dull red. A broad band of bright red paint encircles the exterior, leaving a plain marginal band of the ground color and a plain area of the same upon the bottom. The painted design, which covers the inner surface is shown in Fig. 295. We discover in it at first sight a type to all appearances totally distinct from the usual devices of this locality, but a closer study reveals the existence of the favorite motive—the meander—doubled up across the middle in a way to challenge detection, with the ever-present auxiliary band above and below. The curiously complex and very pleasing ornament is amplified in Fig. 296.



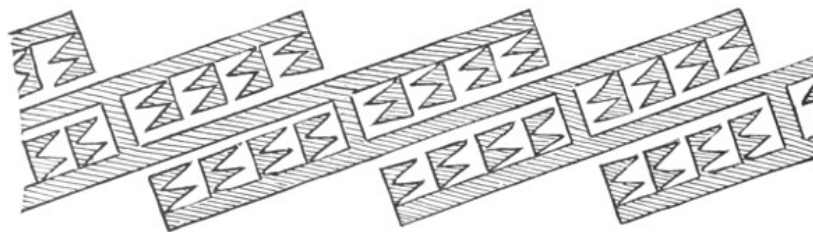


FIG. 296.—Original form of painted design.

One small cup or bowl has two ears, not semicircular, but rectangular, which are placed horizontally and project in sharp points at the corners.

The neat little vessel given in Fig. 297 has a much elongated horizontal loop, carelessly made and rudely attached. The bowl is handsomely finished. The margin is ornamented with a series of closely placed transverse lines or dots, a character appearing more frequently in the northern ware. The interior design is made up of four independent parts as usual.

The cup presented in Fig. 298 serves to illustrate another variety of handle—a large vertical loop, extending from rim to base, like those on the upright cups given in Figs. 287 and 288. The paste is very fine grained, and breaks with a conchoidal fracture. The color is gray and the paint reddish from the firing. The bottom is flat, a rare occurrence in the more archaic, pottery. The painted design is based upon the meander, and occupies nearly the entire exterior surface of the cup. The handle has two bird-track shaped figures on its outer surface.

327



FIG. 297.—Handled cup: Province of Tusayan.— $\frac{1}{3}$.



FIG. 298.—Handled cup: Province of Tusayan.— $\frac{1}{3}$.

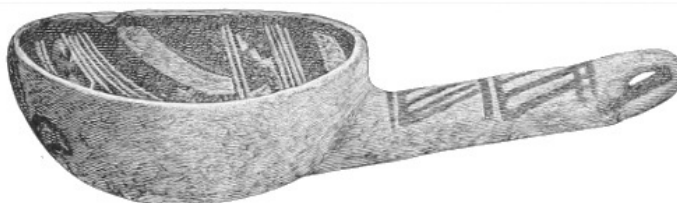


FIG. 299.—Dipper: Province of Tusayan.— $\frac{1}{3}$.

Vessels with long cylindrical handles are distributed over a very extended district, but in Tusayan they are of a better class of ware than elsewhere. Here the handles are long and stout and frequently terminate in a loop, probably intended for the attachment of a cord. The bowl is often graceful in form and tasteful in ornament. One of the finer examples is illustrated in Fig. 299. It is of the chalky ware, and has a very good surface finish. The handle is one inch in diameter and five inches long. It is hollow and terminates in a narrow loop. It is decorated with two groups of spirally inclined lines. The interior decoration of the bowl

furnishes a most excellent example of the cruciform designs previously described. This is well shown in Fig. 300. The exterior surface is embellished with a most primitive drawing of a bird, Fig. 301—a striking illustration of the pictorial accomplishments of these classic decorators. Subjects of this class are of rare occurrence upon the ancient white ware.

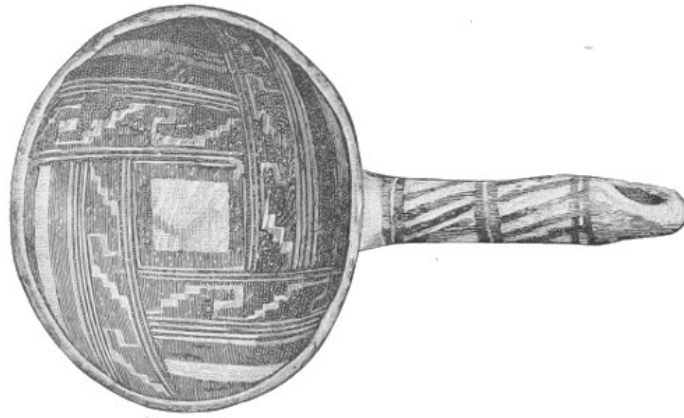


FIG. 300.—Dipper: Province of Tusayan.— $\frac{1}{3}$.



FIG. 301.—Figure of bird from exterior of dipper.

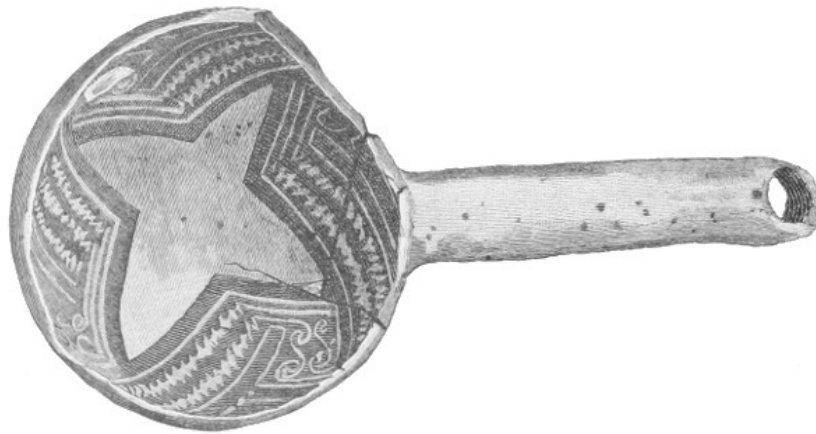


FIG. 302.—Dipper: Province of Tusayan.— $\frac{1}{3}$.

The dipper presented in Fig. 302 is somewhat inferior in workmanship to the preceding example. The handle is plain and terminates in a horizontal loop. The painted design is not arranged about a square, as in the examples given, but leaves a space in the center of the bowl resembling a four-cornered star. This shape is, however, the result of accident. The four parts are units of an elaborate border, not severed from their original connection, but contorted from crowding into the circular space. The design drawn upon a plain surface is shown in Fig. 303. Projected in a straight line, as in Fig. 304, it is readily recognized as the lower three-fourths of a zone of scroll ornamentation. A unit of the design drawn in black is shown in Fig. 305. The meander is developed in the white color of the ground, and consists of two charmingly varied threads running side by side through a field of black, bordered by heavy black lines. The involute ends of the units are connected by two minute auxiliary scrolls.

329

330



FIG. 303.—Painted design.



FIG. 304.—Painted design.

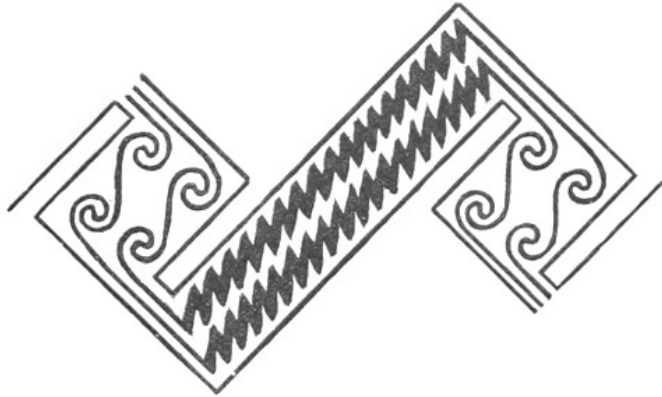


FIG. 305.—Unit of the design drawn in black.

Bowls heretofore referred to as heart-shaped are of frequent occurrence in the valley of the Little Colorado. A number have been obtained by the Bureau of Ethnology directly from the Pueblo Indians, while a few very superior specimens are in the collection of Mr. Keam. A somewhat globular example is represented in Fig. 306.



FIG. 306.—Heart-shaped bowl: Province of Tusayan.

— $\frac{1}{2}$.

It is remarkable in having four zones of devices. The narrow belt next the lip contains a single line of bird-track figures. The others exhibit simple forms of the meander. It is interesting to notice the variety of treatment. In the upper band we have a chain of units imperfectly connected. In the others there are series of triangular links quite disconnected from each other. All are defined in white by painting in a ground of black.

This district has furnished few vessels of more exquisite form and decoration than that shown in Fig. 307. It is from the Keam collection. The outlines are exceptionally symmetrical, and the design, developed in the white of the ground, is drawn with more than usual care. The figures are severely simple, however, and comprise but one motive—the typical scroll, which is arranged in three zones, separated by parallel lines. The spaces are filled in with serrate lines, parallel with the connecting fillets or stems of the volutes, as in the case given in Fig. 290.

Another smaller vessel from the same collection is simple and unpretentious, but so thoroughly satisfactory in every respect that one could hardly suggest an improvement. The surface is well polished. The ground color is whitish, and the design—a chain of classic scrolls—is produced in white by filling up the interstices with black. It is a noteworthy fact that the base of this cup has been perforated, apparently for use as a strainer. Nearly a hundred small round holes have been made while the clay was still soft. A pottery ladle from this region, now in the National collection, exhibits the same feature.



FIG. 307.—Bowl: Province of Tusayan.— $\frac{1}{3}$.

I add another example from the Kean collection, Fig. 309. The margins of the figures are serrate and the volutes, which are in white, have clumsy, disconnected stems.



FIG. 308.—Bowl: Province of
Tusayan.— $\frac{1}{3}$.

The vessel presented in Fig. 310 has a flattened upper surface, an angular shoulder, and a high body, slightly conical below. The painted design is nearly obliterated in places by abrasion or weathering, but is correctly presented in Fig. 311, which gives the three zones in horizontal projection. This brings out a very marked feature, the cruciform arrangement of the parts, which would not be apparent in a vertical projection.

332



FIG. 309.—Bowl: Province of Tusayan.— $\frac{1}{2}$.



FIG. 310.—Bowl: Province of Tusayan.— $\frac{1}{2}$.

The two inner circles occupy the upper surface of the vessel and the outer one the most expanded portion of the body. The inner belt is separated into four panels or compartments by as many series of transverse lines, the panels being filled in with longitudinal, broken lines. The second band is also divided by four series of straight lines, but the compartments are occupied by scrolls in white, bordered by serrate wings in black. The outer band exhibits a very curious combination of features, the whole figure, however, being based upon the meander. It is probable that the grouping in fours is accidental, the division of a surface into four being much more readily accomplished than into any other number above two.

333



FIG. 311.—Painted design.

There are few better examples of the skill and good taste of the ancient potter than the bowl illustrated in Fig. 312. The body is much flattened and the incurved margin considerably depressed. The color is reddish, both on the surface and in the mass, while the upper part is painted a bright red. Upon this color, encircling the shoulder and extending inward toward the lip, is a handsome design in black and white lines. This is nearly obliterated, but enough is left to show that it consists of a highly elaborated rectilinear meander pattern, the idea being developed apparently in the light ground color. The painted lines are in black bordered with fine white stripes—a common occurrence in the south.

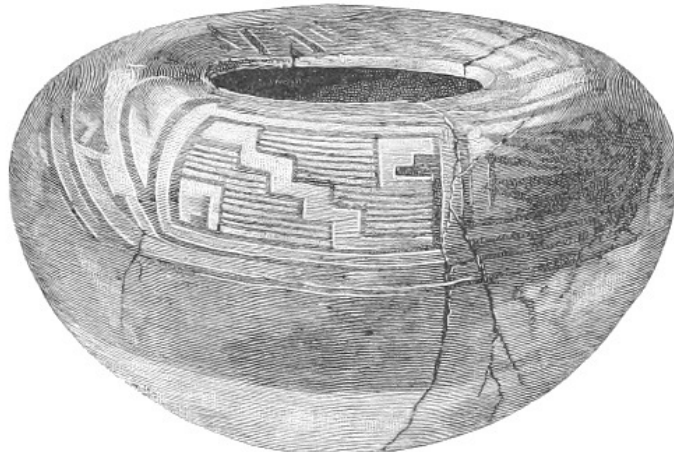


FIG. 312.—Red bowl: Province of Tusayan.— $\frac{1}{3}$.

We have in the Museum an exquisitely shaped vessel of this class obtained from the Zuñi Indians. The

material and color are identical with the red specimen from Saint George. The whole surface is painted red and a neat border design in black is worked over this. The lip is not so much depressed as in the preceding examples. Two perforations occur near the margin, through which the Zuñis have passed a buckskin thong. Another plain bowl is very much compressed vertically.



FIG. 313.—Oblong bowl: Province of Tusayan.— $\frac{1}{3}$.

Oblong bowls are not a prominent feature in Pueblo pottery. A few examples were found at Saint George, Utah, but these are of the shallow variety. The only oblong bowl with incurved rim yet sent in is shown in Fig. 313. It is six inches long and four inches wide. The ornamentation consists of three lines of meanders, that upon the flat upper surface being irregular and not continuous.



FIG. 314.—Globular vase: Province of Tusayan.— $\frac{1}{3}$.

In Fig. 314 we see another variation from the two usual forms of bowls. This vessel is globular, and the aperture quite large. Two small nodes attached to the sides and vertically perforated serve as handles. The ornamentation consists of a number of disconnected and greatly varied bands of meandered lines and figures, obliquely placed. The ornamented surface is separated into two parts by vertical panels at the handles. This affords a suggestion, of an adventitious or mechanical origin for the vertical bands which are so prominent a feature in modern Pueblo pottery. One of these is partially visible at the right side in the cut.

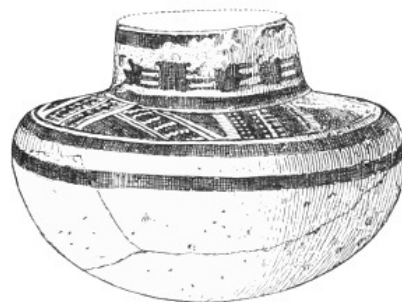


FIG. 315.—Vasel: Province of Tusayan.— $\frac{1}{3}$.

OLLAS.—A typical example of the chalky ware of Tusayan is illustrated in Fig. 315. It is a wide, low vase of symmetrical form. The body is flattened above and hemispherical below. The material is almost as white and as soft as chalk. The design comprises two zones of devices. One occupies the upright neck, and consists of encircling lines interrupted by vertical bands. The other, upon the flattened shoulder, is based upon the meander. Both are bordered by wide bands in the dark color and an additional band encircles the body.



Another handsome little vase is presented in Fig. 316. The two meanders show very diverse styles of treatment. In the upper the lines are all oblique, while in the lower they are chiefly rectangular and much prolonged horizontally. Corresponding treatment of the two bands occurs in other vessels.

The vessel shown in Fig. 317 is very different in appearance from the two preceding, and is much larger and ruder in finish. The surface has been finished with the trowel or hand without polishing. It is ten inches high and the same in width. The whole decoration consists of interlinked meander-units not arranged in belts, but thrown together in a careless manner across the body of the vase. In the Keam collection there is a water bottle nearly twice as large as this, similar in shape and finish, but having a very different though equally rude painted design. This collection contains also the large pot-like vessel or cauldron shown in Fig. 318. The walls are heavy, the lip is rounded, and the form is such as to be very serviceable for ordinary domestic use. The ornamentation consists of two bands of figures, the upper, as usual, being very simple. The figures of the body zone are in black upon the light ground. Two sets, or pairs, of the triangular links make the circuit of the vessel, the entire ornament appearing in Fig. 319.

336

337



FIG. 317.—Vase: Province of Tusayan.— $\frac{1}{3}$.



FIG. 318.—Vase: Province of Tusayan.— $\frac{1}{2}$.

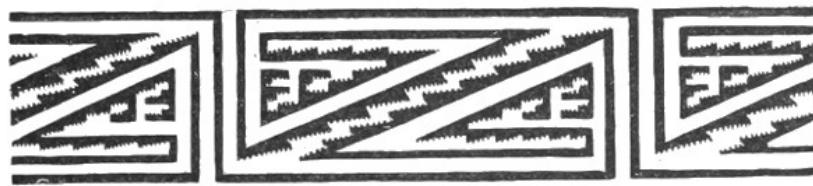


FIG. 319.—Painted design.



FIG. 320.—Vase: Province of Tusayan.— $\frac{1}{3}$.

There is, however, something less simple and consistent in the ornament seen in Fig. 320. The connecting stems of the units are heavy dark lines. The ends of the links are but imperfectly developed or are obscured by elaboration giving a suggestion of degeneracy, but the whole result is highly pleasing. The shape is an exceptional one, the body being flattened to a greater degree than usual. The ground color and the paste are quite white, yet there is in the design and its treatment a suggestion of the decoration of the cream colored ware of Tusayan. This suggestion is emphasized by the occurrence of the two pairs of dark strokes on the neck—a feature more usual in the yellow wares.



FIG. 321.—Vase: Province of Tusayan.— $\frac{1}{3}$.



FIG. 322.—Painted design.

In 1883 Mr. Mindeleff brought in two superb examples of ancient water vases. They are excellent illustrations of the skill and taste of the ancient Pueblo potter. The example illustrated in Fig. 321 is ten and a half inches in height and twelve inches in diameter. Its form is symmetrical and graceful. The surface has been whitened, but is somewhat uneven and not highly polished. The painted design is well preserved, and consists of two broad belts of devices. The upper, occupying the sloping neck, is a very simple combination of lines, based upon a single white meandered line, and the lower is quite complex and encircles the widest part of the body. The latter appears at first sight to be rather complicated, but is easily resolved into its elements.

339

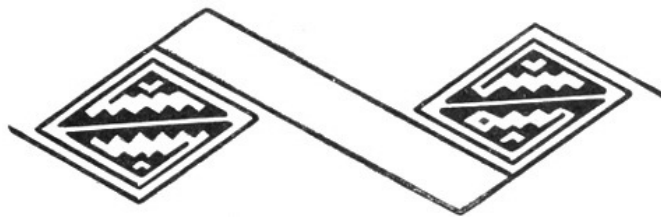


FIG. 323.—Unit of the design.



FIG. 324.—Vase: Province of Tusayan.— $\frac{1}{3}$.

The zone is five and a half inches in width and consists of two lines of highly elaborated meanders combined in a most ingenious and pleasing manner. The design is projected in Fig. 322 and compares favorably with the exquisite diaper patterns of oriental decorators. A single unit of its structure is given in Fig. 323. The triangular spaces along the border are filled in with fragments of designs harmonious in style with the principal figures. Certain spaces of the expanded connecting fillets of the units, are filled in with serrate or dotted lines. Some portion of the design seem to be developed in the white ground, as, for instance, the figures in the lateral triangles.

340



FIG. 325.—Painted design.

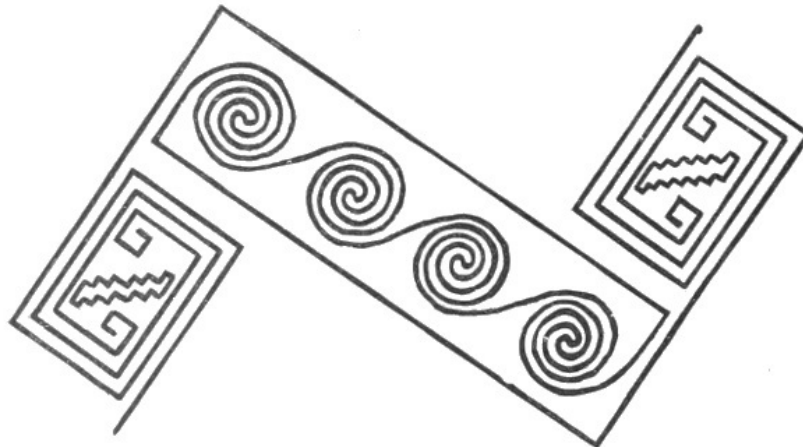


FIG. 326.—Unit of the design.

The boldness of the primitive decorator is well shown in the manipulation of these large vases. Simplicity and breadth were not sacrificed when it became necessary to carry the oft-repeated figures over the broad surface of such a vessel as that shown in Fig. 324, whose height and width measure fourteen inches each. In shape, in surface treatment, and in the arrangement of the broad belts of decoration this vessel corresponds very closely with the preceding, but the favorite motives are executed in the white color of the

ground, and are thrown across the surface of the vessel with charming freedom and boldness. The upper zone encircling the neck is occupied by a large, rather rudely drawn chain of scrolls developed in the white ground by painting the interspaces black. The broad belt of figures encircling the body of the vase is not filled out as in the preceding case, the lower series of triangular spaces being plain. The principal feature consists of a single line of the fret-work developed in the white ground. This is shown in Fig. 325. A unit of the design is given in black in Fig. 326. The connecting curve or stem of the unit incloses a rectangular space, through which the fillet returns in a series of fine scrolls. The interlocked ends of the units of the principal chain have terminations or hooks angular in two cases and curved in another, demonstrating the identity of the curvilinear and the rectilinear forms of this ornament. The small isolated stepped figure between the hooks tells, I imagine, of a textile ancestry.

341



FIG. 327.—Large vase: Province of Tusayan.— $\frac{1}{9}$.

In Fig. 327 we have another vase of still higher grade—a very masterpiece of fictile work. It is next to the largest piece of the ancient ware yet described, being twenty-four inches in diameter and upward of twenty inches in height. The form is not quite symmetrical, but the outline is highly satisfactory. The body is full and slightly conical at the base, and above joins the neck with a graceful convex curve. The surface is even and well polished, and the painted design is executed with great precision. The motives employed are identical with the preceding. Scrolls and fretted figures are carried around the neck, shoulder, and body in three bands suited exactly in width and in size of parts to the conformation of the vessel. The simple scrolls of the upper part need no explanation, and a careful analysis of the broader band, as projected in Fig. 328, furnishes a key to its rather extraordinary construction. The dark lines are drawn with mechanical exactness, and the delicate white lines, in which many of the finer details are worked out, are *left* with a nicety of handling worthy of the most skilled decorator. By a reference to the outline given in Fig. 329 it will be seen that the whole ornament hangs upon a single thread woven into a chain of delicate fret-work running through the middle of the design. The long connecting band of each unit consists of two lines (taking the black lines as representative of the idea or motive), which separate in the middle part, inclosing a wide rectangular space. This is filled with geometric ornamentation in white lines upon a black ground, as shown in Fig. 328. The triangular spaces above are occupied by checker-work of light and heavy lines. The very marked rectangular character of this handsome design indicates familiarity with the textile embodiment of the motive.

342

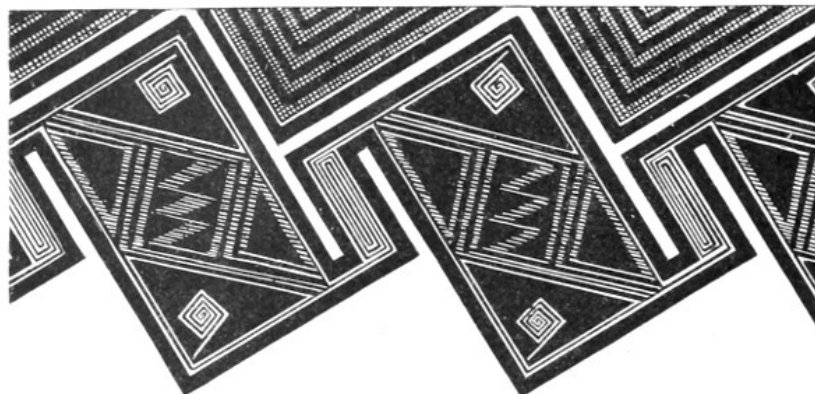


FIG. 328.—Painted design.

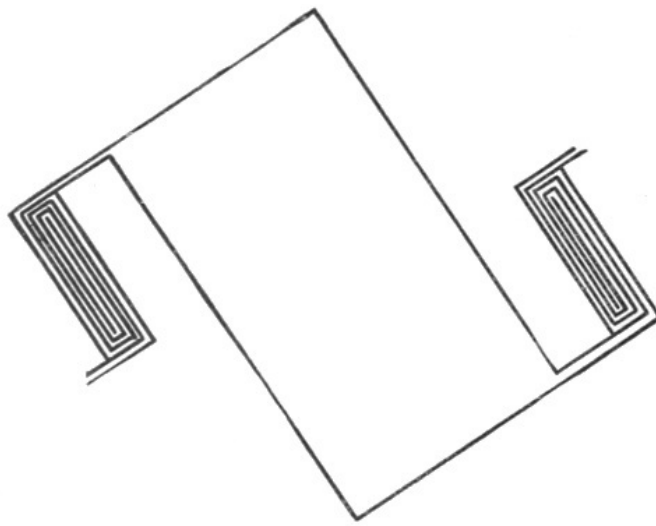


FIG. 329.—Unit of the design.

343

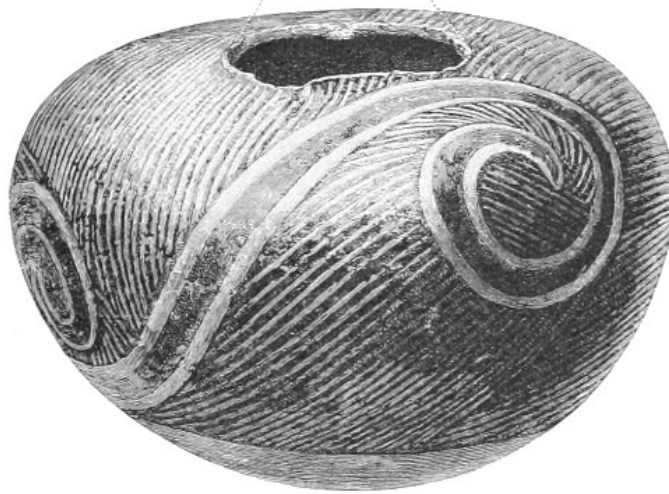


FIG. 330.—Vase: Province of Tusayan.— $\frac{1}{3}$.



FIG. 331.—Vase: Province of Cibola.— $\frac{1}{3}$.

BOTTLES.—Under this head I desire to present a number of vases having high, narrow necks. Few examples of the pottery of any people show bolder and more successful treatment than the specimen illustrated in Fig. 330. It is a large, full-bodied bottle, the neck and lip of which unfortunately are lost. The restored outline can profess to be approximate only. The surface is well polished, though gray from age. Two masterly scrolls, formed each of a broad black line bordered by white lines, are thrown across opposite sides of the vase. The ground upon which they are drawn is filled in with series of lines which accommodate

344

themselves very gracefully to the surface of the vessel and to the scrolls.

A number of ancient vessels, found in the hands of the Zuñi Indians, were probably obtained by them from some of the neighboring ruins, although in a few cases they may have been carried from distant places in the north or west. The finer examples correspond very closely to the ware of which multitudes of fragments are found at old Zuñi, San Antonio Springs, Nutria, and other places in or near the province of Cibola. They seem to be identical also in many respects with the better class of the white ware of Tusayan. The forms are very much the same and the ornaments exhibit similar arrangements of identical motives.



FIG. 332.—Vase: Province of Cibola.— $\frac{1}{3}$.

The superb vessel illustrated in Fig. 331, is a typical example of the work of the ancient potters of Cibola. In form it falls but little short of perfect symmetry. The body is nearly globular, being slightly compressed vertically. The neck is small and the lip slightly recurved. The surface, originally white, now darkened from use, is well polished excepting where roughened by age. In Fig. 333 we have a partial projection of the painted design obtained by viewing the vase vertically. This may be described as a rosette of spiral rays which consist of gracefully meandered lines alternating with groups of plain stripes. These are developed in the light color of the vase by painting in a black ground. Viewed from the side the decoration is seen to consist of the two usual zones—a narrow one about the neck, occupied by a meander, and a broad one covering the greater part of the body, crossed obliquely by a number of bands of ornament.

345

A similar vase, also from Zuñi, is illustrated in Fig. 332. It is much darkened by use and age and has suffered considerably from wear and tear. The ornament consists of three zones, a band of stepped figures about the neck, a handsome meander-chain with terraced links upon the rounded collar, and a broad belt of radiating meanders encircling the body. A vertical view showing the two outer lines of decoration is given in Fig. 334. A peculiar feature in this vessel is the indented finger-hold seen in the lower part of the body, Fig. 332.

In both form and ornament these bottles exhibit decided resemblances to wicker vessels. The introduction of stepped figures and spiral rays sufficiently demonstrates the textile origin of the painted designs.



FIG. 333.—Painted design.

A few bottles are larger than the examples given. One having a high narrow neck is seventeen inches high and sixteen in diameter of body. Generally vases of this shape are below medium size, and they are very often supplied with handles or perforated knobs, either upon the shoulder or the neck. In a few cases only the necks are high and slender like the bottles of the mound-builders of the middle Mississippi region.



FIG. 334.—Painted design.

The vessel illustrated in Fig. 335 is not properly classified either with the preceding or with the following group, but

I place it here on account of its peculiar painted device, which appears in other forms and connections in the two succeeding figures. The ornament as usual occupies two zones, each of which has three groups of vertical lines alternating with as many star-like figures resembling somewhat the Maltese cross. The latter device may possibly have been introduced to represent some idea, and I have no doubt that almost any member of the modern tribes could be induced to give a full explanation of its significance. It would, however, be his idea only and not necessarily that of the ancient potter.

346



FIG. 335.—Vase: Province of
Tusayan.— $\frac{1}{3}$.



FIG. 336.—Handled vase: Province of Tusayan.— $\frac{1}{2}$.

HANDLED VESSELS.—Handled vessels of this province are greatly varied. Examples of the dippers have already been given. Besides them there is a long series of vessels with more or less constricted necks; the handles of which are of three or four pretty distinct varieties, including the long vertical loop connecting the rim with the shoulder or body, the strong horizontal loop set at the base of the neck, and the perforated knob placed upon the shoulder. There are also a few examples of cup-shaped projections, Fig. 351, and heads of animals, Fig. 352, which are set upon the neck near the rim and seem to be survivals of handles or ornaments merely.

347



FIG. 337.—Painted design.



FIG. 338.—Handled mug: Province of
Tusayan.— $\frac{1}{2}$.

The vessel shown in Fig. 336 has an interesting combination of decorative features. I present it here, although a little out of place in my classification by form, in order to point out the similarity between its decoration and that of Fig. 335. It is a handsome mug of hard gray ware, finished with a white slip, and decorated with painted designs in the prevailing arrangement. Four equidistant nodes of large size are placed about the shoulder of the vessel. These occur along the middle of the lower zone of painted devices, the notable feature being that the volutes of the painted scroll-work encircle the nodes and inclose, between their interlinked points, cross-like devices, resembling those found upon the preceding specimen. These crosses occupy the apices of the nodes, as shown in the illustration. The painted design is given in Fig. 337. The design proper—the interlinked scrolls—is in white, the dark color being used as a ground to develop it. This is true of a great majority of the examples presented. The same device, with a slightly different combination, is seen in Fig. 338, which illustrates a small jug from the Keam collection. The design is well shown in Fig. 339, and in this case it will readily be seen that the motive proper is in white, while the black hooks and the connecting lozenge-shaped figures, forming the cross, represent the ground. This association of the cross with the linking of the scrolls is suggestive of a possible origin of the device as used independently in the instance given in Fig. 335.

348



FIG. 339.—Painted design.

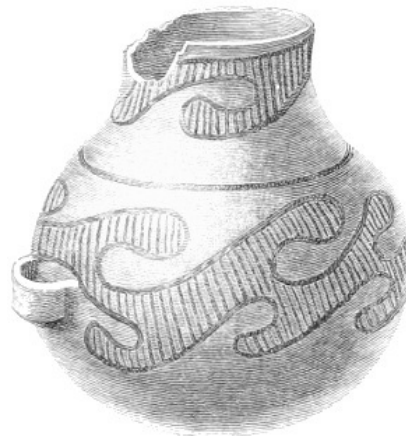


FIG. 340.—Vase: Province of
Tusayan.— $\frac{1}{3}$.



FIG. 341.—Painted design.

I shall now present a small group of handled vessels of varying characters upon which we have some illustrations of a peculiar treatment of meander motives.

349



FIG. 342.—Handled cup: Province of Cibola.— $\frac{1}{3}$.

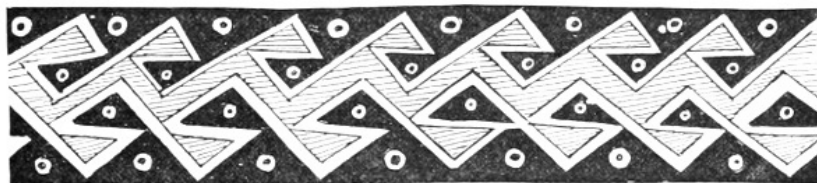


FIG. 343.—Painted ornament.

The vessel illustrated in Fig. 340 belongs to the Keam collection. The decoration is very simple and consists of a novel combination of running scrolls. The design is produced by filling in the space between two separate chains of scrolls in black with fine oblique lines, Fig. 341. Identical treatment of the meander is found upon a mug brought from Zuñi and illustrated by Mr. Stevenson in the Second Annual Report of the Bureau of Ethnology. Fig. 342. This will be apparent when the design, Fig. 343, is placed by the side of the preceding. The first is drawn in curved black lines, the ground remaining white, the second is in rectilinear white lines, the ground being black.

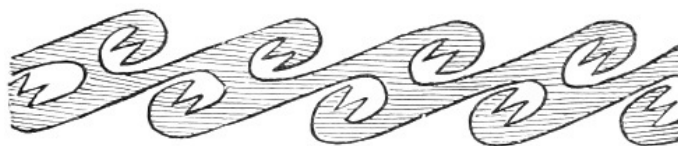


FIG. 344.—Painted ornament.

Two others of like character, one angular and the other curvilinear, are found upon small red vessels from Tusayan, Figs. 344 and 345. Still another noteworthy example is found upon the interior surface of a red bowl from Cibola, which, when projected in a straight line, gives the handsome ornament illustrated in Fig. 346.

350

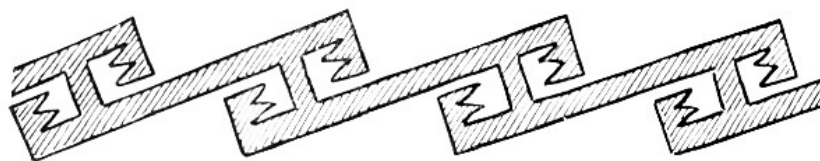


FIG. 345.—Painted ornament.

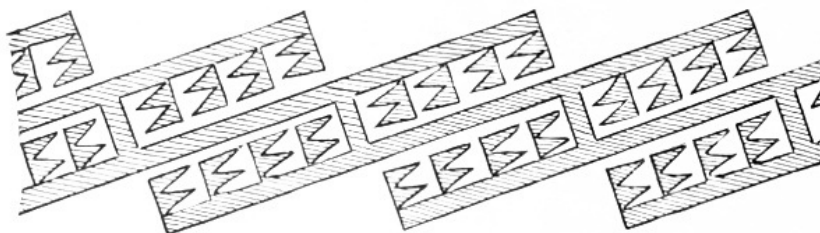


FIG. 346.—Painted ornament.

There is in the Keam collection a very interesting vessel, having two heavy horizontal loops attached to opposite sides of the body. The painted figure consists chiefly of a rectangular meander in white bordered by black and forming a wide zone about the body of the vessel. The spaces are filled in with fine parallel oblique lines. With the addition of a foot this vessel would be found to resemble, in both form and ornament, some early varieties of the Greek kylix.



FIG. 347.—Handled vase: Province of Tusayan.— $\frac{1}{3}$.

The wide-mouthed vase shown in Fig. 348 differs very decidedly in style from the last. It is finer in texture and much more carefully finished. The form is decidedly antique. The painted design is quite indistinct, the color having rubbed off or faded out. The work has been neatly done with a fine brush and exhibits some new features in point of detail. If we trace out the figures, however, we will see that there are no new motives, the meander forming the basis of all. There is a double line of figures, the upper one being the more simple, as usual.

351



FIG. 348.—Vase: Province of Tusayan.— $\frac{1}{3}$.



FIG. 349.—Bottle: Province of Tusayan.— $\frac{1}{2}$.

In the bottle illustrated in Fig. 349 the usual motives have been employed. A few heavy lines serve to give emphasis to the lip, while a band of linked scrolls is carried around the shoulder, bordered by simple parallel lines. Unpretentious as the work is, it has a very pleasing effect. The shape is repeated in modern Pueblo pottery. It is the original of the canteen, which has acquired the flattened form through accident, or change in the habits of the people employing it. A very superior example of these bottles is given in Fig. 350. The body is somewhat flattened and the sides are nearly perpendicular, giving two well defined spaces for decoration, the one above and the other about the middle of the body. The latter space is occupied by a very slender, meandered line in white, the interspaces being filled in with black. Four links encircle the vessel, two oblong ones occurring upon the sides and two short ones beneath the handles. The upper surface is decorated with a band of scrolls, four in number, partially defined in white by painting the space on one side black. There are two low, knob-like, vertically perforated handles on the shoulder of the vessel.

352



FIG. 350.—Bottle: Province of Tusayan.— $\frac{1}{2}$.



FIG. 351.—Bottle: Province of
Tusayan.— $\frac{1}{2}$.

The vessel shown in Fig. 351 is interesting on account of the peculiar knobs or ears placed on the sides of the neck, near the lip. They rudely resemble the corolla of a flower, but suggest as well the wheel-like coils of hair gathered up at the sides of the head by the women of Moki. They were probably associated with some superstition of the ancients. The neck of the bottle is unusually high. The shape is quite graceful and the painted decoration is simple and effective.



FIG. 352.—Vase: Eastern Arizona.— $\frac{1}{2}$.

In a collection recently sent from the vicinity of Springerville, Arizona, by E. W. Nelson, there are a number of vessels similar in appearance to the preceding, but with shorter necks and rounder bodies. They are small, well-finished, and in some cases quite new looking. The designs in black are nicely executed and exhibit considerable refinement of taste. One having a small animal head attached to the side of the neck is illustrated in Fig. 352. A broad meandered border encircles the neck, and a superb pattern, consisting of four ingeniously combined horizontal chains of meanders in white covers the upper three fourths of the body.

Eccentric and life forms.—In the collection made by Mr. Nelson there are several eccentric forms. One, a two-storied vessel of good proportion, neat finish and ornamentation, is illustrated in Fig. 353. The form is an exceptional one in the ancient ware, but is frequently seen in modern work of the Pueblos and other tribes. It had its origin perhaps in a double-lobed form of the gourd, or possibly the idea was suggested by the superposition of one vessel upon another.

As previously observed, the Pueblo ware is characterized, in a general way, by great simplicity of form. There is, however, one small group of eccentric forms within which we find a pretty wide range of outline, a few specimens exhibiting undoubted resemblances to life forms. Nearly all are bottles with handles and lobed bodies, often unsymmetrical. The handle in each case connects the lip with the shoulder or body of the vessel. The lobes are generally three in number and are rarely of equal dimensions, one being more or less prolonged.



FIG. 353.—Vase of eccentric form:
Eastern Arizona.— $\frac{1}{3}$.

It is very difficult to say where these curious forms originated, or in what direction they were developing. Did the archaic potter, by exaggerating the accidental eccentricities of early and simple forms, arrive at these grotesque shapes, did use determine their conformation, or must we look for their originals in antecedent utensils derived from, or made in direct imitation of, life forms?



FIG. 354.—Vase of eccentric form:
Tusayan.— $1/2$.

It is manifestly useless to seek for their antecedents within the limits of the ceramic art. A few are of such a shape as to suggest the skin vessels so often used by primitive peoples, and their origin in this manner would be entirely consistent with the laws of art growth. One variety is shaped somewhat like a shoe or moccasin. Another takes the form of a bird. In regard to their origin it would indeed be a marvel if they should be found to represent an intermediate step between the skin vessels of primitive peoples and the conventional pitcher of civilization, as corresponding shapes are thought to do in Eastern countries.

355



FIG. 355.—Vase of eccentric form:
Tusayan.— $1/3$.

Within the Pueblo province these vessels are widely but not very generally distributed, so far as specimens at hand show. I have already described two examples, Figs. 255 and 256, from Saint George, Utah, which are of the simplest type, having three nodes with no suggestion of life form.



FIG. 356.—Vase of eccentric form:
Tusayan.— $1/2$.

In Fig. 354 we have a small, well-finished cup of white ware, from Tusayan, similar in outline to the Saint George specimens. One of the three somewhat pointed nodes is considerably more prominent than the others. The handle is unique, being modeled apparently after the curved neck of a gourd, the pointed tip touching but not uniting with the body of the vessel. This vessel is handsomely decorated with two bands of scrolls. That upon the neck is of a usual form consisting of three sets of linked scrolls with zigzag or stepped connecting fillets. The scrolls of the lower bands interlock upon the three nodes and are connected by broad Z-shaped stems also stepped or notched. This specimen is from the Keam collection.

356

Another smaller vessel, still more unique in character, is illustrated in Fig. 355. One of the nodes is very much prolonged, giving, with the upright neck, a form rudely suggestive of a bird. The ornament, like the last, consists of two bands. The upper is of diamond-shaped figures in white upon a black ground, and the lower of a cleverly managed meander, which is made to conform neatly to the eccentricities of the body. The hooks encircle the nodes as in the preceding case.

A smaller specimen is given in Fig. 356. The node next the handle being prolonged resembles the tail of a bird, while the other nodes, which would occupy the place of the two prominences of the breast, are barely suggested. The decoration is extremely simple.



FIG. 357.—Vase of eccentric form: Tusayan.— $\frac{1}{2}$.

A fine specimen of these novel vessels is illustrated in Fig. 357. The body is much prolonged on one side and has no prominence whatever at the breast points. The handle is but slightly arched and connects the rim with the extreme point of the projecting lobe. There is here a rather decided suggestion of a skin or intestine vessel. It is but a step from this form to the well-known shoe or moccasin shape of a later period of Pueblo art, a form known in nearly all centers of ancient American culture. The decoration is simple and unique, consisting of a meandered figure in white upon a black ground, with parallel bordering lines in black. It connects opposite sides of the rim passing beneath the projecting lobe.

A number of the best examples are in the National collection. One of these, Fig. 358, is figured by Mr. Stevenson in the Third Annual Report of the Bureau of Ethnology. It might be described as shoe-shaped, yet we are forcibly reminded of the headless body of a bird, the rather square projecting breast being a marked feature. The painted ornament consists of broad zigzag, meandered bands filled in with fine oblique stripes.

357



FIG. 358.—Vase of eccentric form: Cibola.— $\frac{1}{3}$.

One of the finest specimens is presented in Fig. 359. The triangular or three-lobed form of body is still noticeable, two of the points forming the breast, and the other, much prolonged, standing for the tail of the bird. The meaning of the latter feature is made plain by the painted figure. A conventional design, consisting of concentric, plain and zigzag lines, occupies the back, and terminates behind in a row of pinnate marks, evidently a conventional drawing of the tail. The wings are indicated at the sides by a design like that upon the back. The breast is embellished with a series of oblong dots probably intended for feathers. In this case the neck, which is high and narrow, has three prominences near the top; one at the front represents the bill of the bird, and others at the sides are meant for eyes. A handle has connected the head with the middle of the back. This is nearly all broken away and the stumps have been perforated for the insertion of cords. A serrate collar in black encircles the neck. The original of this vase was obtained in the Pueblo country and belongs to Dr. Sheldon Jackson. A specimen recently acquired by the National Museum is superior to this in its decorative treatment. The body has four lobes, one for the breast, another for the tail, and one for each of the wings. Each of these lobes is made the center about which the volutes of the very elaborate scroll-work are turned.

I shall give one more illustration, Fig. 360. This is taken from the Keam collection and represents a bird. The vessel is quite distinct in shape from those previously given, being much like the bird vessels of the mound-builders. It is a cup with constricted rim, the head, tail, and wings of the bird projecting horizontally from the outer margin of the rim. It is of the white ware and has had a painted design in black lines, now nearly obliterated.

358



FIG. 359.—Bird-shaped vase: Arizona.— $\frac{1}{3}$.

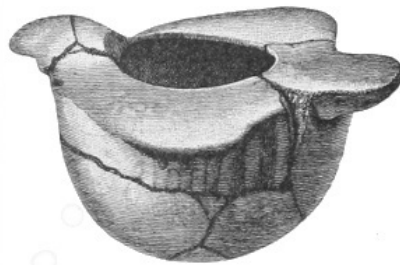


FIG. 360.—Bird-shaped cup:
Tusayan.— $\frac{1}{2}$.

CONCLUDING REMARKS.

Two great groups of ceramic products have now been presented—the coiled ware and the white decorated ware. These groups belong to the first great period of pueblo art in clay. Their chronological identity is sometimes questioned, the coiled ware to all appearances being the more archaic. It is simple in form and rude in finish, is without painted ornament, and was relegated to the more ordinary uses. These and other features give countenance to the theory of greater antiquity; but the intimate association of the two groups in nearly every locality indicates close identity in time. It cannot be said that the other classes of ware found within the same province belong to different times or to distinct races, but they are widely separated in many important characters from the two leading groups. They exhibit greater variety of form, less constraint in decoration, and greatly improved technique, points tending to prove advance in culture, and, presumably, in time.

359

The more closely the ceramic art of the ancient peoples is studied the more decidedly it appears that it was profoundly influenced by the textile arts, and especially by basketry. The latter art was practiced from remote antiquity, and within historic times the manufacture of baskets has been the most important industry of the tribes of the Pacific slope of temperate North America. Ceramic shapes, wherever found within this region, coincide closely with textile outlines, and the geometric ornamentation can be traced to textile prototypes originating in the technical peculiarities of construction.

Another point brought out by the preceding studies follows naturally the foregoing statement. There are in the pueblo country no primitive forms of earthenware. This may lead to the inference that the pueblo tribes migrated from other regions in which the earlier stages of the art had existed, but taken in connection with the lack of individuality in the potter's art, and its evident dependence upon the textile art, it leads decidedly to the conclusion that art in clay was acquired by these tribes in comparatively recent times. The ancient pueblos practised the art of basketry, but clearly remained ignorant of the plastic art, until by some accident of environment it was introduced or discovered. Under the influence of the sister art, pottery at once took a high stand. During the first stages, however, it was a servile art, reproducing the forms and decorations of basketry. The true plastic characters of clay remained practically undiscovered, and is only now, under the influence of the European, dawning upon the conservative mind of the inhabitant of the plateaus.

Besides basketry, it is probable that the early pueblos made use of gourds and of tissue vessels, traces of their influence occurring quite frequently, but there is no indication whatever of the presence of carvings in shell, wood, and stone.

I do not wish in this place to dwell upon the details of pueblo ornament. A single example will serve to illustrate the origin and character of the leading decorative conceptions. Glancing through the series of vases illustrated under painted ware, we find that ninety-four out of one hundred designs are meanders, or are based upon the meander. Beginning with the simple waved or broken line we pass up through all

grades of increasing complexity to chains of curvilinear and rectilinear meanders in which the links are highly individualized, being composed of a sigmoid line, terminating in reversed hooks; but in no case do we reach a loop in the curved forms or an intersection in the angular forms. The typical intersecting Greek fret does not therefore occur, nor, I may add, is it found anywhere in native American art.

The constructional characters of the art in which these linear forms developed, although they encouraged geometrical elaboration, forbade intersections or crossings of a line upon itself, and the genius of the decorator had never freed itself from this bondage. The forms imposed upon decoration by the textile art are *necessarily* geometric and rectilinear, and their employment in other and less conventional arts, has been too limited to destroy or even greatly modify these characters.

The study of Pueblo art embodied in the preceding pages tells the simple story of the evolution of art—and especially of decorative art—in a period when the expanding mind of primitive man, still held in the firm grasp of instinctive and traditional methods—the bonds of nature—was steadily working out its æsthetic destiny.

INDEX.

	PAGE
Abiquin, N. Mex., Pottery of	282
Acoma pottery	300
Age of pueblo ceramic art	267
American Naturalist on pottery	276
Animas Valley	315
Antiquity of coiled ware and white ware, Relative	358-359
Araqnaya coiled pottery	276
Arizona, Coiled ware from	279
pottery	291 , 353-358
Art, Pueblo	266
Review, cited on coiled ware	279
Artist in ancient pottery, Freedom of	303
Avoca, N. C., Coiled pottery from	277
Aztec Springs ruin	319
Bandelier, A. F., on pueblo pottery	298
Barber, E. A., on Ute pottery	276-277
Basket marked pottery	282
Basketry a primitive art	359
Bottles	283 , 301 , 306 , 320 , 343 , 345 , 351 , 352
Bowls	283 , 306 , 308-314 , 316 , 322-334
Brazilian Indian coiled pottery	276 , 277
Burial of dead under dwellings	288
Burial of property with the dead	288
Cañon de Chelly, Pottery of	293 , 319
Cave-houses	284-286 , 293
Ceramic art, The	267
forms, Origin of	269
Chaco Valley	315
Character of Pueblo art	266
Chiquito, Colorado	306
Cihola pottery	297 , 307 , 316 , 321 , 343 , 344 , 356
Classification of pottery	272 , 304 , 306
Cliff-dwellers	304 , 305
Cliff-dwellings	284-286 , 293
Coil in ornamentation, The	278-282
Coiled ware and white ware, Relative antiquity of	358-359
imitated	299
Coiling of the Pueblos	273-275
Coil-made pottery	273-299
Color of coiled pottery	283
of designs in pottery	302
of Pueblo pottery	269
Colorado Chiquito	306
pottery	321-357
Indian pottery	276
plateau house sites	281
pottery	281 , 305
ruin	319
Construction, Pueblo ceramic	268
Cooking, Pottery for	272 , 283
Crimped coil on pottery	279 , 280 , 282
Cross, Ideographic	345
Cups	349
Distribution of Pueblo art	266
Domestic pottery	272 , 283 , 306
Dumont describes pottery	275 , 276
Eccentric forms of pottery	283 , 307 , 353
Epsom Creek pottery, Utah	286-287
Execution of design in painted pottery	302

Fillmore, Utah, Pottery from grave at	268	292
Firing of Pueblo pottery		340
Flat heads		271
ornaments		277
Florida coiled pottery		269
Form in pottery, Origin of		
Gila pottery		281 , 283
Glaze of Pueblo pottery		268
Gourds copied in pottery	270 , 306	353
Guilloche		309
Handled vessels	271 , 300 , 314 , 319 , 325	340
Hartt, Prof. C. F., on Indian pottery in Brazil		276
Humboldt, W. O., on coiled pottery of the Orinoco		276
Indented pottery patterns		280
Indian coiled pottery of Brazil		276
Individuality of pottery designs		305
Intaglio ornament		271
Jackson, Dr. Sheldon; Indian vases		357
Jackson, W.H., on pottery	287 , 318	319
Jones, Prof. Marcus E., on pottery of Utah		292
Kanab, Pottery from	281 , 287 , 310	314
Keam, T. V., Pottery collection of	293 , 296 , 321 , 330 , 336 , 348	355
La Plata Valley		315
Life forms in pottery		283 , 307 , 353
Little Colorado, Pottery of the	283 , 292 , 321	330
Louisiana, Coiled Indian ware in		275-276
McElmel Valley		315
Magalhaes, Dr., on coiled pottery of the Araguaya River		276
Mancos Valley		315
Material used in pottery	267	283
Meander in ornament		359
Mended Pueblo pottery		286
Mexico, Coiled pottery from		277
Mindeleff, Victor, collected pottery	293 , 311	338
Miscellaneous ornamentation of pottery		283
Moki pottery	277 , 290 , 293	299
Monteztuna Cañon		315 , 318
Mormon town		287 , 310
Mortuary pottery		272
Moss, Capt. John, on Ute pottery		276 , 319
Mound village, Utah		287-288
Muge	307 , 320	347
National Museum, Pottery in	285 , 287 , 321 , 331 , 333	357
Navajo pottery		299
Nelson, E. W., obtained pottery	279 , 292	353
Nevada, Pueblo pottery in		287
New Mexico pottery		282 , 298
North Carolina coiled pottery		277
Nutria pottery		344
Ollas	283-287 , 293 , 306 , 314 , 318	335
Origin of ceramic forms		269 , 272
the coil		277
Orinoco, Coiled pottery of the		276
Ornament, Ceramic	271 , 278-282 , 303 , 305 , 337	359
Painted pottery		302-307
Parowan pottery		292
Pitcher forms		307
Plain pottery		299-301
Pottery Catalogue of Jaines Stevenson		265
developed from basketry		359
mended by Pueblos		286
Property buried with the dead		288
Provo, Utah, Pottery from		321
Pueblo art		266
coiled ware		273-275
Putnam, Prof. F. W., cited		279
Relief ornament		271 , 282
Rio de Chelley Valley		316
Dolores Valley		316
Gila pottery	281 , 283	299
Grande pottery		298 , 305
Mancos cliff-houses		284-286
, Pottery of the	281 , 284-286	

Pecos, Pottery of the	315-321 , 298 , 305
San Juan, Pottery of the	287-292 , 307-315
Virgen, Pottery of the	
Saint George tumulus, Utah, Pottery from	281 , 287-291 , 300 , 307 , 312 , 334
Saint John, Pottery from	305
Salt Lake City Museum, Pottery in	292 , 300
Salt Lake Valley, Pottery of	292
San Antonio Springs, Pottery at	344
Juan pottery	274 , 281 , 284-287 , 291
Santa Clara River, Pottery on	287
Santarem, Brazil, Coiled pottery at	276
Springerville, Ariz., Pottery at	279 , 291 , 305 , 353
Stages of ornament for painted pottery	303-304
Stephen, John, on pottery	293
Stevenson, James, on pottery	265 , 293 , 357
Storage of water, Pottery for	284
Surface finish of Pueblo pottery	268
Tempering materials in pottery	267
Transportation, of water, Pottery for	284
Tusayan pottery	269 , 279 , 283 , 294 , 300 , 304 , 307 , 311 , 316 , 321 , 358
Utah pottery. (<i>See</i> Saint George and Springerville)	279 , 286-291 , 300
Ute pottery	276-277
Vases	301 , 335-351
Vegetable forms copied in pottery	270
Village site mound or tumulus	287
Water, Pottery for transportation and storage of	284
White ware	269 , 304 , 305-358
and coiled ware, Relative antiquity of	358-359
Yarrow, Dr. H. C., obtained pottery in Utah	292
Yuma, Pottery of	300
Zuñi pottery	290 , 293 , 300 , 333 , 344

FOOTNOTES.

- [1] Mémoires sur la Louisiane. Butel-Dumont. Vol. II, pp. 271-273. Paris, 1753.
- [2] Hartt: American Naturalist, February, 1879, pp. 83-86.
- [3] Barber: American Naturalist, Vol. X, p. 412.
- [4] Tenth Annual Report U. S. Geological Survey of the Territories, p. 394.

Transcriber's Note:

Alternative spellings retained.

Punctuation normalized without comment.

Minor typos corrected without comment.

Image scaling factors (¹/₂ etc.) only useful for comparing relative sizes between objects, not actual sizes.

*** END OF THE PROJECT GUTENBERG EBOOK POTTERY OF THE ANCIENT PUEBLOS. (1886 N 04 / 1882-1883 (PAGES 257-360)) ***

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.

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. 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), 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.

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

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.

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

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.

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.