

The vessel is lighted by electricity, while the turret mechanisms and all the ammunition hoists will be actuated by the same energy. By the adoption of electricity so generally, the presence of long passages of heating steam pipes is obviated, and in this way alone a very considerable reduction of temperature will be effected under service conditions.

The main battery consists of two 12-inch breech-loading rifles, and the secondary battery of four 4-inch rifles, while the auxiliary battery includes three 6-pounders and four automatic 1-pounders.

The 12-inch guns are mounted in a single barbette turret of the balanced type, having an inclined face with a pitch of 42 degrees. The armor for the turret and the barbette is 11 inches thick and treated by the Krupp process. The four 4-inch guns are mounted on the four principal corners of the superstructure deck, where they will command an enviable field of fire. These guns are protected by shields. The 6-pounders are mounted on the bridge deck, while the 1-pounders are placed on the hammock berthing, amidships, and up in the single top of the military mast. The 12-inch and the 4-inch guns are to be designed for smokeless powder, and it is promised that they shall be a considerable advance upon the pieces of like caliber, of native design, now in service.

The ship will carry two search-lights, one forward on the mast and the other upon a stand at the after end of the bridge deck. Every modern facility will add to

add just that much more to her usefulness as a gun platform.

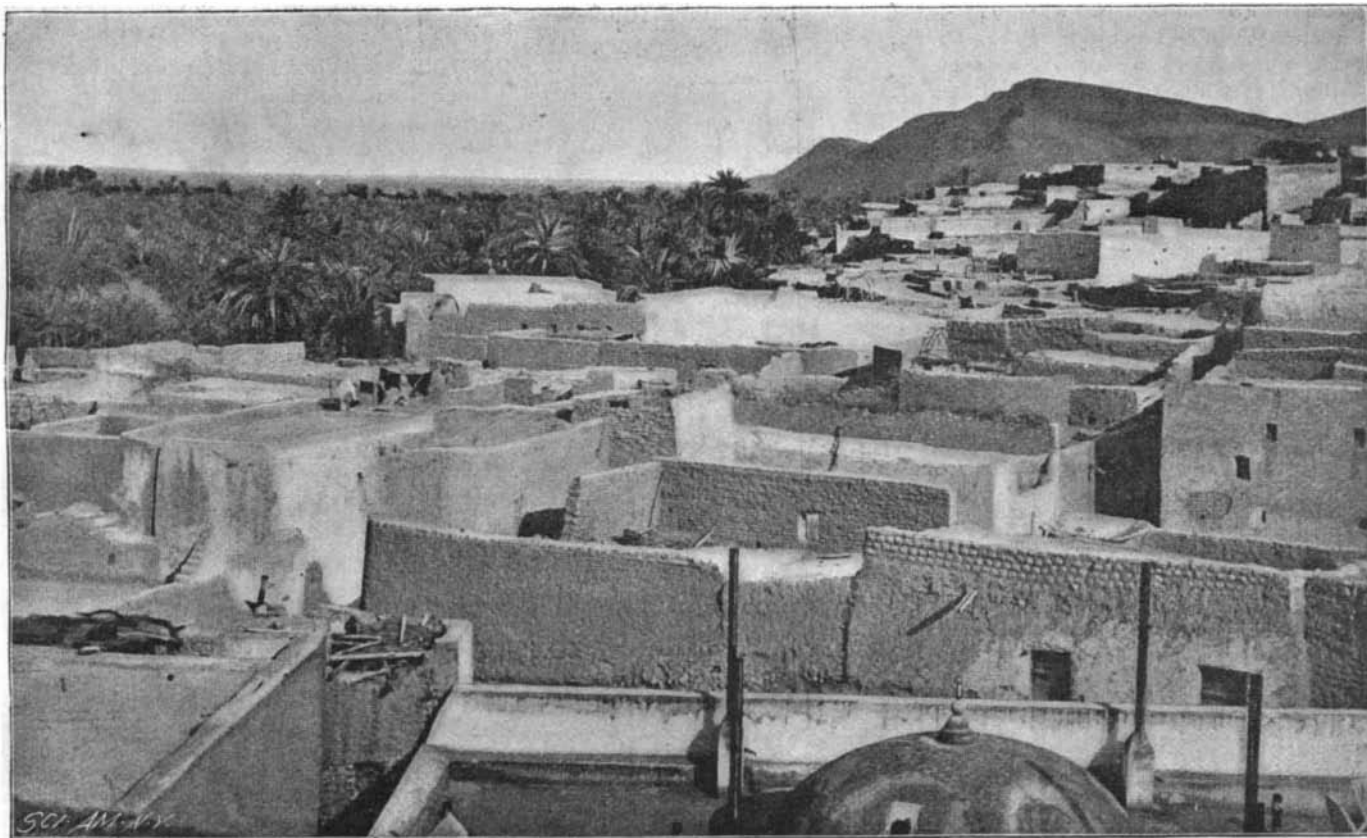
These four vessels have been designed to a large extent to meet the growing need of proper schools of instruction for the increasing ranks of the naval

duced merely by similarity of conditions under which they developed. This peculiarity of primitive art has been discussed by the Director of the Bureau of Ethnology, J. W. Powell, under the title "Activital Similarities," and has attracted much attention from other anthropologists; but while many instances of imported arts are on record, evidence on the other side of the case is rare and difficult to procure.

Of all the arts of a primitive people, there is perhaps none which has the same value to the student as their architecture, for the reason that in their houses we find a record of their lives, of their manners and customs, of the conditions under which they lived, and, to a certain extent, even of their beliefs and hopes. Moreover, the record was made unconsciously, and generally with but little thought of the future, although often with a curi-

ous adherence to the ideas of the past. Thus, there is hardly a system of architecture, be it that of a primitive or of a civilized people, which does not carry within it evidence of the conditions under which it developed, and nothing is more common than architectural forms, originally derived from wooden construction, for example, afterward perpetuated in stone—a material to which they are not at all suited.

Much has been written about the houses of the Pueblo Indians of Arizona and New Mexico, the highest type of the house-building art found within the limits of the United States, and heretofore that system of architecture has been regarded as unique and the pro-



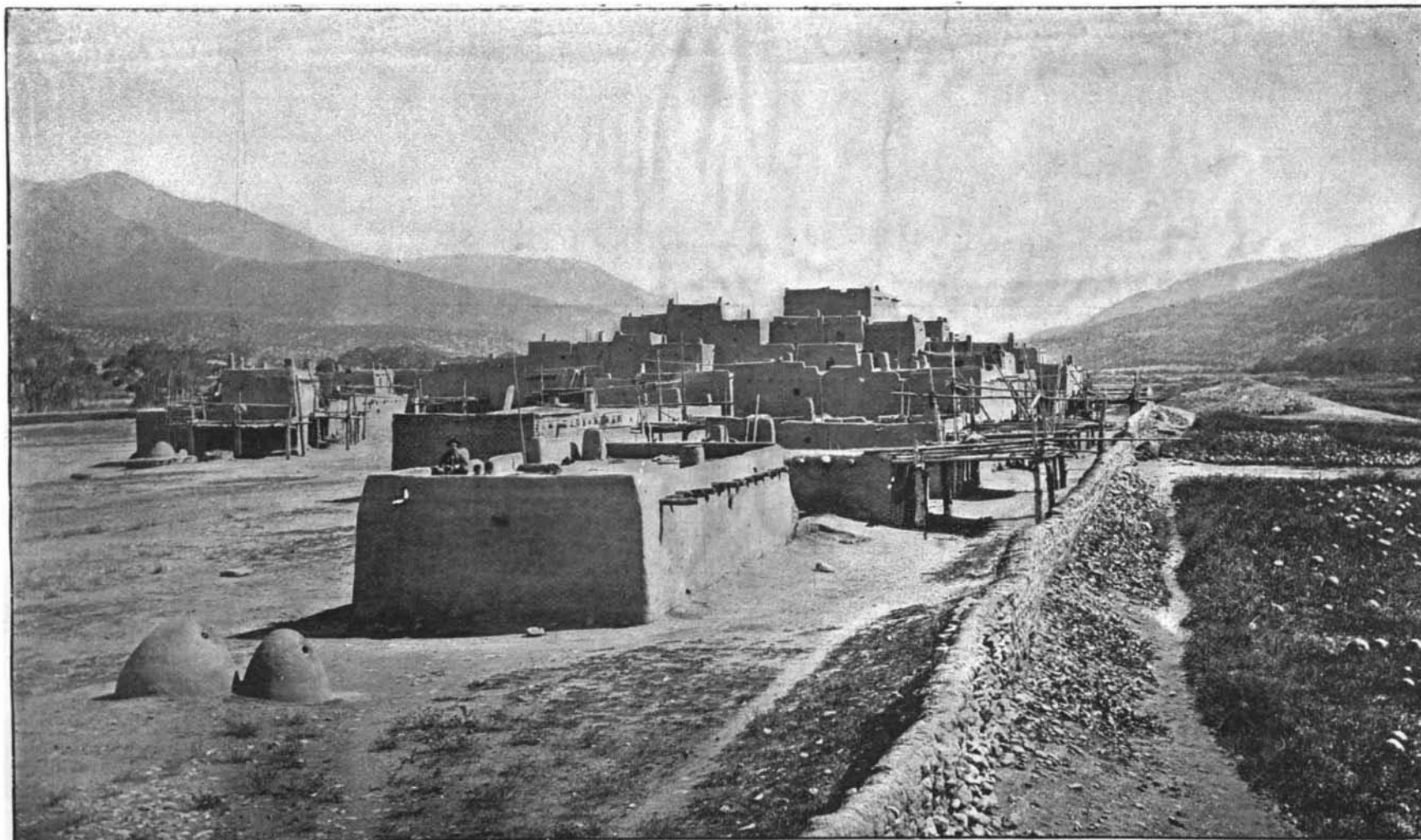
THE OASIS OF BOU-SAADA, PEARL OF THE ALGERIAN DESERT.

militia; and it is easy to see how successfully they meet the demand by covering every practical branch of naval warfare with the single exception of torpedo duty.

NATIVE ARCHITECTURE IN AFRICA AND NEW MEXICO.

BY COSMOS MINDELEFF.

Perhaps the most difficult problems with which the ethnologist, and, to a less extent, the archaeologist, has to deal are those concerning the origin of the art products and of the ideas which are the subject of his study. The first question is, Was this art imported or



TIWA PUEBLO OF TAOS, NEW MEXICO, SHOWING RESEMBLANCE TO ARCHITECTURE OF ALGERIA.

the equipment and finish of the vessel, and ample quarters and bathing facilities will make life reasonably comfortable for the complement of a captain, six other officers, and 130 enlisted men.

Docking keels are to be placed on the ship, and, acting somewhat in the capacity of bilge keels, will materially affect the steadiness of the craft in a seaway and

is it indigenous to the tribe or people who practice it? The similarity of art products is often so close that an incautious student will at once pronounce them the same, that one tribe has taken the art direct from the other, but, on the other hand, it has been well established that arts so closely resembling each other as to be hardly distinguishable can and have been pro-

duct of peculiar local conditions. There is no reason to doubt that it is indigenous to the country where it is found, but that similar conditions working upon a people who live much the same kind of life as that of the Pueblo Indians is shown by the illustrations and description of an Algerian village published in *Le Monde Illustré* by Eugène Gallois, a member of the

Geographical Society of Paris. He devoted some time to the study of the oasis and village of Bou-Saada, and from his description the following is extracted :

Situated about 250 kilometers (150 miles) southeast of Algiers, the oasis of Bou-Saada, the pearl of Algeria, lies in a manner under the shadow of the mountains which close in the great plain of Hodna on the west. Framed in, as it were, the village, which has preserved all the characteristics of the Sahara, is placed on the last foothill of the mountain, just above some verdant gardens, watered by a spring which never dries up, a rare thing in Algeria, where generally the traveler finds only the dry and sandy beds of rivers.

The village has a native population of 45,000 Arabs, besides 5,500 of mixed and alien race. It was occupied in 1849 by a French expedition under Col. Daumas, and has been occupied ever since by a small garrison, but has preserved unchanged all its Arabian characteristics. The streets are narrow and bounded by walls pierced only here and there by low doors formed of the trunks of palm trees roughly squared and closed by great wooden bars. The houses are constructed of earth with terraced roofs, from which project the pieces of bamboo which serve as pipes to discharge the water which falls upon the flat roofs.

In the streets one passes now and then an Arab draped in his burnous, who returns his silent salutation, or an ass driven by a little child or perhaps bearing a man whose feet drag upon the ground as he rides.

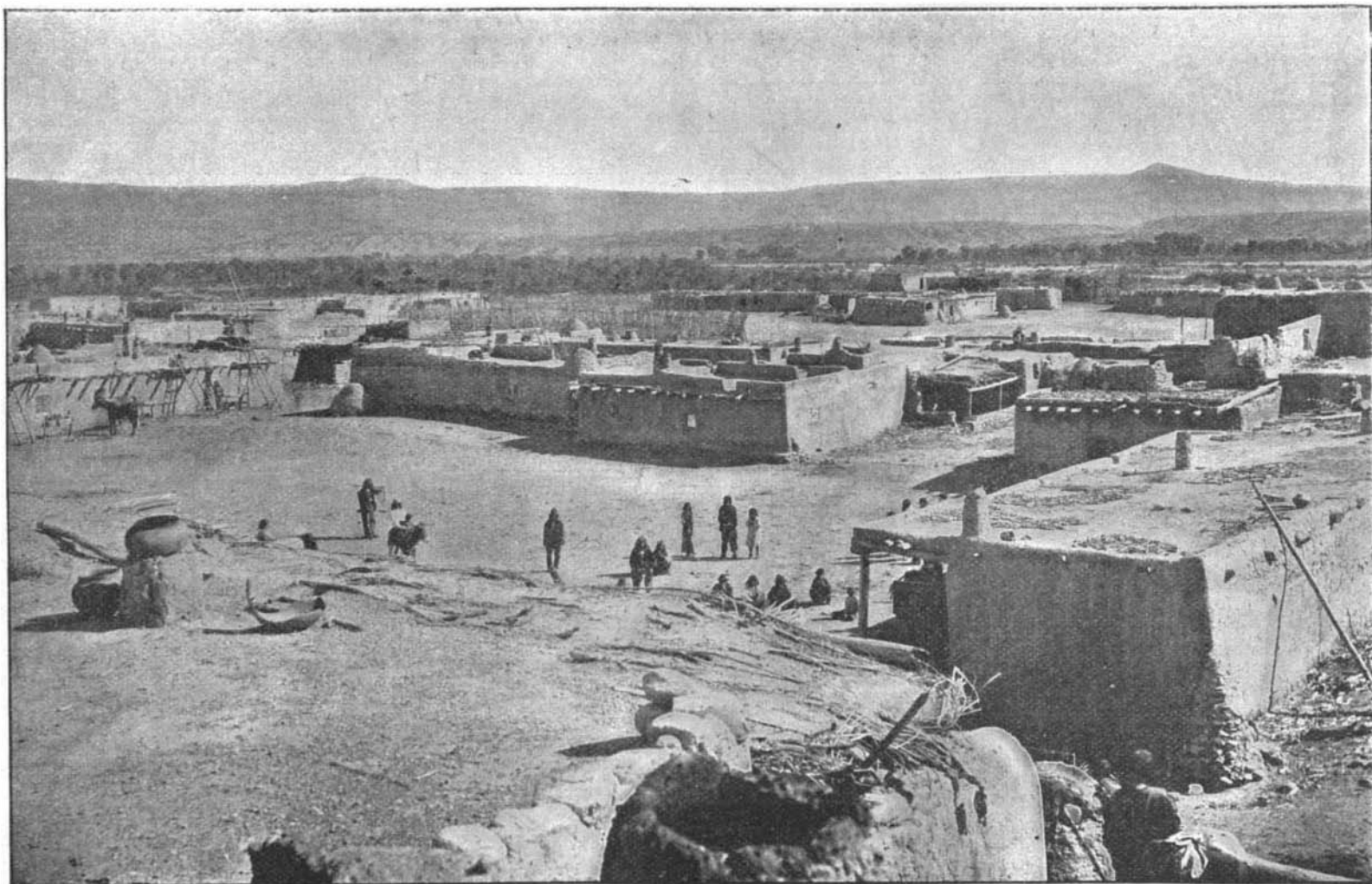
The distinctive feature of the Pueblo system of architecture, as may be seen from the illustration of the village of Taos, is the terraced arrangement of the flat roofed houses, which rise one above another like huge steps, sometimes to the height of seven stories. As in the Arabian village, access to the terraces is had by a ladder, which, oddly enough, is also more or less shaky, and always consists merely of two long poles into which rungs are loosely inserted. In order to prevent the contrivance from falling to pieces while in use, the lower ends of the poles are buried slightly in the ground, while the upper ends are held together by a cross piece of wood, or sometimes merely by a string. On the upper terraces access from one to another is often by means of narrow flights of stone steps, and the same feature can be seen in the illustration of the Algerian village.

The Pueblo of Taos, the northernmost of all the villages, and second in size only to Zuñi, near the Arizona boundary, is in some respects the most interesting of all the Pueblo settlements, for it and Acoma, in New Mexico, with perhaps Oraibi, in Arizona, still remains on the site which it occupied at the time of the discovery and conquest of the country in 1540. All the other villages have been moved at least once, several of them several times in the past three and a half centuries. The place was then called Braba, or Yuraba, and was named by the Spaniards Valladolid. According to the ancient chronicler, "It has eighteen divi-

for three hundred years prior to the American conquest of the country. In the older ruins, of which many hundreds are scattered over the country, no trace of a chimney has yet been found.

The streets in the Pueblo settlements are usually narrow, and under the old system no doorway or other large opening was ever made in the walls of the first or ground story. In recent years the old practice has been abandoned to some extent, and doorways almost identical in appearance with those of the Algerian houses can be seen in the newer houses. Formerly the openings were closed merely by a hanging blanket, but now rough doors are used, commonly closed by a heavy wooden bar.

The Arab in his burnous is not a bad imitation of the Pueblo Indian wrapped in his blanket, the one invariable and distinctive article of his costume. Oddly enough, too, the burro, or ass, is the beast of burden of both peoples, and in Arizona, as in Africa, is under the especial charge of the children. The fine and extensive view from the Arabian village is exactly paralleled by the outlook from any Pueblo town, and from every ruin, for such an outlook was and is regarded as an essential feature in the location of a settlement, if not indeed the most essential feature after proximity to some good area of cultivable land, or some fine spring. Close attention to this requirement is found even in the sites of cliff ruins and other subordinate structures. Singularly, also, among the



KERES PUEBLO OF COCHITI.

From the terraces the view is magnificent, extending far away to the horizon, while in the foreground are the gardens out of which the noble palms lift their heads. From the terraced roof of the mosque at sunset the muezzin calls his prayers, and is answered by his confreres from other parts of the village.

The buildings, the construction of which is very simple, consist of square or rectangular rooms, the ceilings of which, supported by wooden posts, are pierced by square holes or trap doors to permit the ingress of light and air and the egress of smoke. In the interior there is a modest assortment of household utensils, some wooden dishes, goat skins for water and perhaps some arms hung on the wall. In some of them there can still be seen primitive looms, for weaving is the principal industry of the country. In a corner is the ladder, more or less shaky, which leads to the terrace above.

This description might almost be applied to the Pueblo Indians and their houses, and the similarity, even in trifling details, is striking. The Pueblo country is in the heart of the "sub-arid" region, formerly known as the Great American Desert, and the villages are scattered here and there at such points as provide some facilities for horticulture or gardening, through the proximity of some large spring or small stream of water. The Algerian village was taken by the French in 1849, the Pueblo towns were acquired by conquest by the United States in 1846, so that both have been for about the same period in contact with a civilized people. Prior to the construction of the Atlantic and Pacific Railroad, about fifteen years ago, most Pueblo towns were as inaccessible as the village in the Sahara.

sions; each one has a situation as if for two ground plots. The houses are very close together, and have five or six stories, . . . which become smaller as they go up, and each one has its little balcony outside of the mud walls, one above the other, all around, of wood."

At the present time the village consists of two main clusters of rooms or houses, each five or six stories in height. But the unit of the Pueblo system is the single cell, and the largest clusters are merely aggregations of many such cells. In other words, differentiation in form has not yet taken place, although differentiation in function necessarily followed the bringing together into one cluster of many rooms. The lower chambers and those in the interior of the huge beehive structure could only be used for storage, while the upper terraces and the outside rooms form the habitations of the people. When the conditions which produced the clustering are removed, as they have been in many cases, the houses spread out in very much the same way as those shown in the illustration of the Algerian village, where the terracing is confined to the more thickly settled portions of the settlement.

The bamboo drainage pipes of the Arabian village have almost exact counterparts in the Indian houses, formed of hollowed trunks of small trees, flat stones, or even gourds and pieces of crockery. In the Saharan settlement there are no chimneys, the only egress for smoke being a hole in the roof. In the Pueblo villages the same method formerly prevailed, and the trap doors in the roofs are still retained, although the chimney has been introduced through contact with the Spaniards and Mexicans, a contact which fasted

Pueblos a practice prevails which is not unlike the muezzin's evening call to prayer. Every evening at sundown men ascend to the highest terraces and there call out the news of the day, at the same time making announcement of the programme for the morrow, and of any important dance or other religious ceremony to be performed in the near future.

In their interior arrangements the Indian homes closely resemble those described by the French explorer, even to the primitive looms, for among the Pueblos, as in the village of Bou-Saada, weaving is one of the principal industries of the people. In making the finest grades of blankets they have no equal, although in less perfect weaving, the Navajos, whose territory adjoins, are much larger producers.

The physical conditions in both countries are much alike. In both the want of water is the one great dominating feature, and among the Pueblos has dictated not only their manner of life, but also their beliefs. Their whole vast mythologic system revolves about that one idea. What effect this condition has had upon the mental life of the people of Bou-Saada, we do not know, but that it has dictated their manner of life and some at least of their arts is apparent. Separated as they are by a great ocean and by thousands of miles, the houses of the people are so closely similar that Bou-Saada might be transported to New Mexico, or the Pueblo of Taos to Africa, without doing violence to one's ideas of the eternal fitness of things.

For our engravings, made from photographs taken in New Mexico, we are indebted to the United States Bureau of Ethnology.