6-1-1931

The Ethnobotany of the Isleta Indians

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A Thesis Submitted for the Degree
of
Master of Arts

University of New Mexico

1931

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THE ETHNOBOTANY OF THE ISLETA INDIANS

I. INTRODUCTION

Scope and Importance

This study is an outgrowth of the increasing interest in the history, ethnology, and archaeology of the Pueblo Indians of the Southwest. Although much research has been done in this very fertile field, new and fascinating problems are constantly presenting themselves.

When one states that the environment greatly influences a people he speaks truisms and common knowledge. The arid Southwest with its distinctive flora offers an unusual environment to which the Indian had adapted himself remarkably well. The object in general of this problem has been to study the reciprocal relation between the Isleta Indian and his plant environment; specifically, it has been to discover the plants which have been used, and are being used, by these Indians, to classify them, to ascertain their uses, and to learn to what extent the economics, religion, customs, and everyday practical life of these Indians is affected by plants. A study of this nature should be of value both in ethnology and in practical botany.

It is important that ethnobotanical work among the Indians be done as rapidly as is possible. With the Indian's acceptance of the customs, habits, religion, and civilization of the white man the necessity of a wide use of wild plants is disappearing. The knowledge of what plants were used in the past and the art and the ritual of their use is being buried with the older Indians.

Review of Literature

Research in the ethnobotany of the American Indian has received itermittent attention over a period of about half a century. Various tribes have been studied, and various phases of ethnobotany have been stressed.

A number of papers have been written on the uses of plants for medicinal purposes. Grinnell[1] has listed by scientific names the medicinal plants of the Cheyennes with discussions of their uses. Mooney,[2] in a paper on the sacred formulae of the Cherokees, lists twenty medicinal plants with the ritual of their uses. Wallis[3] gives the diseases of the Micmac Indians and their treat-

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1. Grinnell, G.B., Some Cheyenne plant medicines, Amer. Anthr. 1905, Vol. VII, p. 37-43.
2. Mooney, James, Sacred formulas of the Cherokees, Seventh Ann. Rep. Bureau of Amer. Eth., 1885-1886, p. 301-397.
3. Wallis, W. D., Medicines used by the Micmac Indians, Amer. Anthr. 1922, Vol. XXIV, p. 24-32.

ment by plant medicines. Swanton[1] identified the medicinal plants of the Creeks, and gave their specific uses. Safford[2] has an interesting paper on plants thought by the Indians to have magical properties.

A number of tribes have received attention in more general and complete ethnobotanical treatises. A comprehensive study of the plant uses of the Thompson Indians of the Northwest was made by Steedman.[3] Popenoe[4] made a study of the plant relationships of the Maya Indians of Honduras. Densmore[5] and Gilmore[6] have prepared thorough and interesting papers on the ethnobotany of the Chippewas, and the Missouri River Indians respectively. Investigations in the plant uses of the Gosuite and the Ute Indians resulted in two papers by Chamberlain.[7]

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1. Swanton, J. R., Religious beliefs and medicinal practices of the Creek Indians, Forty-second Ann. Rep. Bureau of Amer. Eth., 1924-1925, p. 473-672.
2. Safford, W. E., Magic plants of the ancient Americans, (abstract in Proceedings of the Anthropological Society of Washington, meeting of Nov. 7, 1916), Amer. Anthr., 1917, Vol. XIX, p. 305-307.
3. Steedman, E. V., Ethnobotany of the Thompson Indians, Forty-fifth Ann. Rep. Bureau of Amer. Eth., 1927-1928, p. 441-522.
4. Popenoe, Wilson, The useful plants of Copan, Amer. Anthr., 1919, Vol. XXI, p. 125-138.
5. Densmore, Frances, Uses of plants by the Chippewa Indians, Forty-fourth Ann. Rep. Bureau of Amer. Eth., 1926-1927, p. 275-397.
6. Gilmore, M. R., Uses of plants by the Indians of the Missouri River region, Thirty-third Ann. Rep. Bureau of Amer. Eth., 1911-1912, p. 43-154.
7. Chamberlain, R.V., The ethno-botany of the Gosuite Indians of Utah, Memoirs Amer. Anthr. Assoc., 1907-1915, Vol. II, p. 331-405.

   ----------, Some plant names of the Ute Indians, Amer. Anthr., 1909, Vol. XI, p. 27-40.

The Pueblo Indians of the Southwest have not been neglected.[1] Russell[2] devotes a section of his paper on the ethnology of the Pima Indians to food supply, giving the uses and methods of preparation for use of the native and the cultivated plants. Occasional mention is made of the use of plants in artifacts, arts, and ceremonies. This study was made on the Gila Reservation in southern Arizona.

J. W. Fewkes[3] in a brief paper listed about seventy of the chief plants used by the Hopi, giving uses and beliefs concerning them. The scientific names were given, and, in most cases, the Indian names. The dependence of the Hopi on plants was stressed. This work was followed by a paper by Hough[4] which went more deeply into the plant relations of the Hopi. Almost a hundred and fifty plants were found to be used; these uses were classified as follows: agriculture and forage, arts, architecture, domestic life, dress and adornment, folk-lore, food, medicine, and religion.

Stevenson,[5] in her paper, "The Zuñi Indians", touches on

1. For a complete bibliography of the ethnobotany of the Southwest, both of the ancient and modern Indians, see: Hough, V.A., The bibliography of the ethnobiology of the Southwest Indians, Univ. of New Mexico. 1931.
2. Russell, Frank, The Pima Indians. Twenty-sixth Ann. Rep. Bureau of Amer. Eth., 1908, p. 17-389.
3. Fewkes, J. W., A contribution to ethnobotany, Amer. Anthr., 1896, o. s. Vol. IX, p. 14-21.
4. Hough, Walter, The Hopi in relation to their plant environment, Amer. Anthr., 1897, o. s. Vol. X, p. 33-44.
5. Stevenson, M. C., The Zuñi Indians, their mythology, esoteric fraternities, and ceremonies, Twenty-third Ann. Rep. Bureau of American Ethnology, 1902, p. 13-608.

ethnobotany in discussions of the agriculture, medicine, ceremonies, and customs of the Zuñi Indians. In a later paper,[1] she gives a very complete and thorough ethnobotanical treatment of this pueblo. About one hundred and twenty-five plants are listed in the following sections: medical practices and medicinal plants, edible plants; uses in weaving, dyeing, basketry, pottery, decoration, toilet, folk-lore, and ceremonies. She also gives the derivation of clan names from plants. Mrs. Stevenson's familiarity with the customs, ceremonies, and every-day life of the Zuñi Indians makes this paper very interesting and worth-while. Cushing[2] has a very interesting book on the cultivation of corn and its preparation for use by the Zuñi Indians. The fables and superstitions concerning corn are also given.

An ambitious study of the six remaining Tewa[3] pueblos was made by Robbins,[4] Harrington, and Freire-Marreco. This bulletin contains an annotated list of plants used, giving scientific name, common name, Indian name, uses, and Indian concepts and beliefs concerning each. A section on the Tewa knowledge of classification, functions, anatomy and diseases of plants is especially good.

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1. Stevenson, M. C., Ethnobotany of the Zuñi Indians, Thirtieth Ann. Rep. Bureau of American Ethnology, 1909, p. 35-102.
2. Cushing, F. H., Zuñi Breadstuffs, Indian notes and monographs, 1920, Vol. VIII.
3. For linguistic classification see page 6
4. Robbins, W. R., Harrington, J. P., and Freire-Marreco, Barbara, Ethnobotany of the Tewas, Bureau of Amer. Eth., 1916, Bull. 55.

The single remaining Towa pueblo of Jemez has been studied by Cook.[1] About sixty plants used by these Indians were listed with scientific names and often the Indian names were given. The uses to which these plants were put and beliefs concerning them were given.

To date no ethnobotanical study of the Tiwa pueblos of Sandia, Isleta, Taos, and Picurís is on record.

Linguistic Classification of Isleta Indians

The Pueblo Indians of the Rio Grande valley are of the Tanoan and the Keresan linguistic stocks. The former is divided into three groups: Tiwa, Tewa, and Towa. There is some disagreement as to the details of classification under these groups. The following, by Harrington,[2] seems very satisfactory. In the Tiwa group are the northern pueblos of Taos and Picuris, and the southern pueblos of Sandia and Isleta. There is some difference in the northern and southern dialects but representatives can converse with no difficulty. There are a few survivors at the Mexicanized pueblo of Isleta del Sur near El Paso, Texas, which was founded by Isleta Indians after the revolt of 1680. The

1. Cook, S. L., The ethnobotany of Jemez Indians, Univ. of New Mexico, 1930.
2. Harringon, John P., Notes on the Piro Language, Amer. Anthr., 1909, Vol. XI, p. 594.

Tewa dialect is spoken at San Juan, Santa Clara, San Ildefonso, Nambé, Tesuque, and the Pueblo of Hano in the Hopi country. The Towa dialect is spoken only at Jemez. It was the language of the Pecos pueblo which recently became extinct. The surviving Pecos Indians are at Jemez. The people of Isleta, as classified by language are, therefore, of the Tanoan stock and the Tiwa group.

Isleta in New Mexico History

The determination of the origin of the American Indian is an interesting problem. The abundance of ruins in the Southwest has offered a rich field for the study of this problem; hence it does not seem so remote as formerly. However, the ancestory of the Pueblo Indians, and their relation to the cliff-dwellers and the neighboring wandering tribes, is still a matter of conjecture.

Archaeological investigation indicates that in early prehistoric times the pueblos were, as a rule, smaller, more numerous, and scattered over a much larger area. The cause of concentration was doubtless climatic changes,[1] movement to permanent and dependable water supplies, concentration for purpose of labor, and combination of fighting forces. As this concentration took

1. Hewett, E. L., Physiography of the Rio Grande. Bureau of Amer. Eth., Bull. 54. p. 68.

place the buildings and cultivated fields became larger, and culture, as indicated by the arts, reached a higher level.

With the expedition of Coronado in 1540 the Rio Grande pueblos emerged into history. At this time there were about eighty inhabited towns in all, sixty-six of which were in the Rio Grande basin.[1] The province of Tiguex, according to Castañeda,[2] the chronicler of the expedition, comprised twelve of these towns along both banks of the river from the present site of Bernalillo to Isleta. Isleta stands on, or near, the location which it had at that time.

The discovery of the pueblos was due to persistent rumors reaching Mexico of rich cities to the north. These stories were strengthened by the arrival of Cabeza de Vaca in 1536. It is doubtful that de Vaca ever touched what is now New Mexico while on his famous peregrination, but he did hear of the "Seven Cities of Cíbola", and other so-called rich cities to the north.

These tales created great interest in Mexico, but it was not until 1539 that an expedition to explore the new country was under way. This expedition, under command of Friar Marcos de Nizza, had for a guide the negro Estevan who had accompanied de

1. Hewett, E. L., My neighbors the Pueblo Indians. In Art and Archaeology, July-August, 1923, p. 6.
2. Winship, G. P., The Coronado Expedition 1540-1542 (in Bureau of Amer. Eth., Fourteenth Ann. Rep. , Part I), 1892-1893, p. 519.

Vaca. Estevan, who was leading the party with a few men, entered one of the "Seven Cities"[1] and was promptly killed by the natives. After this gesture of hostility, Friar Marcos was content to view Cíbola from a distance and return to Mexico with glowing and exaggerated accounts of the richness of the pueblo.

The favorable report of Friar Marcos and continued rumors of gold and riches, led to the commissioning of Coronado by the governor to explore this new land. Coronado's party, which was large and well-equipped, started in 1540. Cíbola, or Zuñi, was conquered without difficulty. Explorations were made in the Hopi country of what is now Arizona, and the Grand Canyon was discovered. An exploring party under Alvarado moved to the east, conquered Ácoma, and arrived at the province of Tiguex. Headquarters for the entire force were at Tiguex during the winter of 1540-1541. Explorations were made into the plains region of what is now Kansas and Texas. During the stay at Tiguex, cruel and inhuman treatment of the Indians caused constant difficulty. After many disappointments and hardships, Coronado and his army returned to Mexico in 1542. Two friars were left to do missionary work, but were soon killed by the Indians. Coronado found no cities with houses and streets of gold, but he discovered the Pueblo Indian and explored a large portion of what is now

1. The "Seven Cities of Cíbola" were without doubt the Zuñi pueblos.

designated "The Southwest".

After the disappointing adventure of Coronado no further explorations were made for about forty years. In 1581 a small party under Friar Rodríguez left Mexico with the professed purpose of converting the Indians. This expedition followed the Rio Grande River and reached Tiguex, of which Bustamante,[1] who reported the expedition, said:

"From there they passed on to another nation dwelling further up the same river. These were the finest people of all they had met, possessing better pueblos and houses and were the ones who treated them best, giving them most generously of whatever they had. They have well-built houses of four or five stories with corridors and rooms twenty-four feet long and thirteen feet wide, whitewashed and painted."

After some explorations, two missionaries and a few Indian servants were left in the Tiguex towns, and the remainder of the party returned to Mexico. Not long afterwards, two of these servants returned to Mexico, saying that the friars had been killed by the Indians.

In November 1582, Espejo, with a few men, set out to verify this report, or to rescue the friars if yet living. They followed the same route as Rodríguez and arrived at Tiguex to find the report true. Although his mission had been accomplished, Espejo did not at once return to Mexico, but engaged in extensive exploring trips. Practically all of the territory traversed

1. Bolton, H. E., Spanish Explorations in the Southwest, 1542-1706. p. 146.

by Coronado was re-explored. Comparatively little trouble was had with the natives, and not a life was lost. Espejo's account of Tiguex[1] checks with the previous descriptions except that he reports sixteen towns instead of the twelve reported by Castañeda.

After the return of Espejo many persons applied for the commission to colonize New Mexico. Two unauthorized expeditions moved out. The first, under Castaño de Sosa, visited a number of pueblos including the Tiguex towns. A total of fourteen Tiguex pueblos was reported and nine were actually visited. Castaño was overtaken and arrested. The other expedition, under Bonilla and Humaña, spent a year in the pueblos, then moved to the plains to the east where it was annihilated by the Indians.

The contract of colonization was finally given to Oñate. After two years of elaborate preparation, the expedition, composed of four hundred men, one hundred and thirty of which had families, moved out in 1598. Headquarters were made a few miles north of the present site of Santa Fé and the pueblos, including those of Tiguex, were brought into submission. Isleta thus came under formal Spanish rule.

About 1609 the capitol was moved to Santa Fé. Oñate ruled until 1608. For the three-quarters of a century between 1605 and 1680 the records are very fragmentary, most of them being destroy-

1. Hammond, P. H. and Rey, Agapito, Expedition into New Mexico made by Antonio de Espejo, 1582-1583, p. 80.

ed in the revolt of 1680. This period was characterized by slow but progressive colonization, rather rapid nominal Christianization of the Indians, friction between the overlapping authority of the civil and religious powers, and harsh treatment of the natives resulting in growing dissatisfaction and increasingly severe outbreaks. Little is heard of Isleta during this interval. It is known that the Tiguex towns had been reduced from either fourteen or sixteen to only four; Sandia, Isleta, Puaray, and Alameda. About 1675 a number of the Manzano pueblos had been deserted and the people moved to Isleta. This consolidation was doubtless urged by the missionaries for protection from the Apaches, and to facilitate religious work. The total population of the four remaining Tiguex towns was about six thousand, two thousand of which were at Isleta. Churches had been built at Sandia and Isleta prior to 1629.

In 1680 there was an organized, concerted revolt of the Indians. Kidder[1] in summarizing the causes of this rebellion says:

"The pueblo revolt was caused partly by dissatisfaction with the civil rule of the Spanish which had been becoming more oppressive year by year, but principally, it would seem, by a deep-rooted hatred of Christianity and a desire to return to the unhampered practice of the ancient native religion."

The revolt was well-timed and successful in throwing off the Spanish oppression. About four hundred Spaniards, including

1. Kidder, A. V., Southwestern Archaeology, p. 13.

twenty-one friars, were killed and the remainder forced to withdraw. The Spaniards, anticipating the revolt, had designated Santa Fé and Isleta as strongholds of defense and concentrated at those places. On account of the large number of Spaniards p esent, Isleta was unable to join the uprising until after their withdrawal. It is debated whether or not they cared to join.

With the rule again in the hands of the Indians there was a strong reaction against everything Spanish and Christian. The results of a hundred years of Spanish influence were practically destroyed in the space of a few years.

Governor Otermín returned in 1681 and attempted to reconquer New Mexico. Isleta and the other Tiguex pueblos offered little resistance. He found the churches and all sacred vessels destroyed, and little of Spanish civilization remaining. In the northern pueblos, serious resistance was met. As his equipment was in poor condition and his supplies low, Otermín decided to withdraw to El Paso for the winter. A number of the Isleta Indians had gone to join the hostile forces, and some others had established a new pueblo in the Hopi country. Those who remained, numbering almost four hundred, withdrew with Otermín and established the pueblo of Isleta del Sur[1] near El Paso, Texas. The old pueblo of Isleta was burned before leaving.

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1. Isleta del Sur or Ysleta is at present a small village about ten miles south of El Paso, Texas. It has come under Mexican influence and has few Indian characteristics remaining.

After Otermín's unsuccessful attempt to reconquer New Mexico, the Indians governed themselves until 1692. These twelve years of self-rule were very disastrous. The churches had been destroyed by the Indians, and several pueblos, by the Spanish. The population was depleted by wars among the various pueblos and by depredations of the wandering Apaches, Navajos, and Utes. Famine and disease had taken their toll. The entire Tiguex province had been destroyed. Sandia had been burned by Otermín, and the survivors had moved to the Hopi country. Puaray and Alameda had been destroyed and were never re-established. Isleta had been burned before the removal to Isleta del Sur. Other pueblos were destroyed during this period, many of which were never re-built.

In 1692-93 Governor de Vargas effected the re-conquest of New Mexico. In their weakened condition, the pueblos were brought into submission almost without bloodshed. Colonization and Christianization were resumed. Isleta was re-established in 1709 by Juan de la Peña with scattered Tiwa peoples who were later joined by those Isleta people who had been in the Hopi country. The present church was built soon afterwards.

From 1692 until Mexico gained her independence in 1822, New Mexico was under Spanish rule again. The Mexican War with the United States resulted in New Mexico coming into the possession of the United States in 1848. In 1851, the territorial

government went into effect, and in 1911 New Mexico became a state. During all of these changes progress and development were rapid, but the pueblos have remained very little effected. The Indians of Isleta and the other pueblos continue to live much as they have lived for centuries..

Isleta at Present

Almost four centuries after the coming of the Spaniards, we find remaining of the Tiguex province only two pueblos, Sandia with its 115 inhabitants, and Isleta.

Isleta is situated on the west bank of the Rio Grande river about twelve miles south of Albuquerque. It is the southernmost of the Rio Grande valley pueblos. Isleta is believed by its inhabitants to be on its original location, and most authorities hold this view. A portion of the river once flowed through an arroyo to the west of the town making an island of the location; hence the name Isleta, or "Little Island".

The population of Isleta is at present about eleven hundred. The people are intelligent, friendly, and industrious. Because of its location and accessibility, Isleta is more subject to the influence of the white man than any other pueblo, yet the blood has remained pure and the religion, social organization,

ceremonies, and manner of dress as yet have been affected very little by this contact. It is, however, inevitable that they will be influenced by a civilization which surrounds them and with which they are in constant contact. The new civilization and culture are gradually being assimilated by the older members, and rather rapidly by the younger.

The Isleta reservation is one of the larger pueblo reservations. It extends east and west from the ridge of the Manzano Mountains to the Puerco River, a distance of about thirty miles. It extends north and south along the Rio Grande for eight or nine miles. The acreage is figured roughly between 170,000 and 180,000 acres. There is much controversy over the boundaries, the limits and the acreage which are given approximately. This land has been acquired through the original Spanish grant confirmed in turn by the Mexican, and the United States governments, and through purchases . There is much good farming and grazing land supplied with abundant water by the river and numerous springs and wells. About 2,000 acres are under irrigation and in cultivation. The land belongs to the pueblo as a whole, there being no private ownership. The land is apportioned to the people by the governor and council according to the needs and worthiness of the applicant.

Isleta is a well-organized farming community, and one of the few pueblos which are independent, economically. In addi-

tion to agriculture there is a small scale manufacture of pottery and silverware. The silverware compares favorably with that of the other pueblos, but the pottery is not of good quality, it is not distinctive and is of poor workmanship. It is said to be influenced by that of Laguna.[1]

The buildings of Isleta are no longer of the four and five story terraced type. They are chiefly one story, rather plain houses of stone and adobe.

Although practically the entire population of Isleta has publicly professed Christianity and has been baptized, there is still a well-organized pagan religion, the philosophy of the Indian allowing him to accept more than one religion. The majority of the Isletans are Catholic. As is true in most of the pueblos, the Catholic religion was the first Christian religion established here, and has been firmly entrenched for centuries. The old church, which is said to have been built about 1718, is very interesting and is visited yearly by hundred of tourists. In addition to its priority, the nature of the Catholic religion appeals to the Indian more than Protestantism, and the Protestant sects have failed to gain a hold.

The social organization has remained unchanged. It is the conventional pueblo organization. Descent is maternal. In

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1. See Parsons, E. C., The LAGUNA migration to Isleta, Amer. Anthr., 1928, Vol. 30, p. 604.

Isleta there are two main divisions with numerous clan subdivisions.

Free schools and free medical attention are furnished by the federal government. There are at present two schools serving about one hundred students. There is a physician on duty one day per week and a nurse four days per week.

Although numerous attempts have been made to remove him, and his powers have been curtailed, Isleta still has that interesting religious and political leader--the cacique. This official holds his position for life and trains and appoints his successor. His religious powers are unlimited. Politically he has the power of appointing three candidates from whom the governor must be elected.

Isleta has a modification of its original system of government. It is practically self-governing and takes its politics seriously. The governor is elected by popular vote from the candidates appointed by the cacique and serves for one year. A council of twelve is appointed, six by the governor and six by the Superintendent of Southern Pueblos, and also serves one year. Two lieutenant governors are appointed by the governor. A secretary and a treasurer are appointed by the council. The position of "War Chief" is an elective one and the duties have degenerated into land and range supervision.

Isleta has the usual pueblo ceremonies. Dances are held

for four days at Christmas time.

The Evergreen ceremonies, "corn dances", and scalp dances are held at various times during the year. The "chongo races" are held during the Easter season.

Methods

This investigation was carried on by questioning native informants concerning plants found chiefly on or near the Isleta reservation. In some instances plants were gathered from the field and taken in to the informants for discussion, but it was found to be more satisfactory to take the informants into the field as the plants are recognized more readily in their native habitat and response is more spontaneous. The ideal situation is to have two or more informants in the field together as there is less hesitation in giving information and an opportunity is offered for the discussion of doubtful points. In almost every case the information was verified by questioning at least two informants. Where possible the information was also checked with ethnobotanical literature.

The field work covered a period from early spring to fall, thus practically all of the native plants could be seen in the field in their various stages of growth. All of the plants were taken to the University of New Mexico for identification.

II. RESULTS

The plants in the following list were found to be used, or to have been used, by the Isleta Indians. The plants are listed alphabetically by the scientific names. Following the scientific name is the common name. The list is annotated: the use, preparation for use, any ~~my~~ ideas, beliefs and superstitions concerning the plant being given. ~~This~~ These are data ~~is~~ compared with ~~that~~ those of other ethnobotanical publications by use of foot-notes.

Annotated List of Plants Used at Isleta

Acer glabrum. Rocky Mountain Maple.

A choice grade of bow was made from the supple trunks of straight young specimens of this species. It grows profusely in the Manzano Mountains near the eastern boundary of the Isleta reservation.

Aciphyllaea acerosa.

The leaves of this perennial shrub are boiled in water and the liquid used to bathe the body of fever patients.

Allium cernuum. Wild Onion.

The bulbs of this small onion are eaten fresh, uncooked,

or boiled. It is said to store well.

Warm onions are applied externally to the throat as a relief for sore throat. The application of an onion to infected places is said by Isletans to cure them promptly.

Alnus tenuifolia. Alder.

The bark of this tree is mixed with equal amounts of bark from the roots of Prunus americana and Cercocarpus montanus to make an excellent red dye for buckskin.[1]

Amaranthus retroflexus. Amaranth, Pigweed.

The fresh, tender, young leaves are boiled and eaten as greens.[2]

Amelanchier prunifolia. Service-berry.

The fruits of this shrub, which is a member of the apple family, have a consistency and flavor similar to the cultivated apple and are called apples by the Indians. In the

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1. The uses of this plant for dye vary at the other pueblos. At Jemez the bark from this plant is mixed with that from Cercocarpus montanus and Betula fontanalis to make a red dye. (see Cook, Univ. of New Mexico, page 20, 1930.) At Zuñi, only the bark of this species is used; a reddish-brown dye results from boiling it. (see Stevenson, 30th Ann. Rep. Bureau of Amer. Ethnology, page 80, 1909) The Tewa pueblos use Alnus tenuifolia alone. Robbins, Harrington, and Freire-Marreco, Bull. 55, Bureau of Amer. Ethnology, page 39, 1916, say: "The bark of the tree, dried and ground fine, is boiled until it becomes red. When the liquid is cool, deerskin is soaked over night, and then is dyed red."
2. The Tewas use this species in the same manner. (see Robbins, Harrington, and Freire-Marreco, Bureau of Amer. Ethnology, Bull. 55, page 53, 1916.)

past, these fruits were an important article of food but are not eaten to any great extent at present.

Androsace. Pinetorum.

The leaves are steeped in water to make a beverage.

Anemopsis californica. Yerba Mansa, Lizard Tail.

This plant grows abundantly near Isleta. It is much prized as a medicinal plant. The Isletans say that the Navajos, and the Indians from Ysleta come to Isleta for this plant. An infusion of the leaves is made and used as a disinfectant on open wounds. The damp leaves are used as a poultice. The liquid is also drunk as a blood medicine, and to stop hemorrhage of the lungs.

Apocynum angustifolium. Dogbane.

The gum from this plant is mixed with "clean clay" and used as chewing gum.

Dogbane is sometimes called "Indian hemp" and is said to be used by some of the Indians in making strings and ropes. The Isletans do not know of this use.

Artemisia frigida. Sagebrush, Wormwood, "Estafiata".

This plant is considered by the Isletans as an excellent grazing plant for sheep and cattle.

An infusion is used as a stomach medicine and is said to be quite effective.

The Mexicans are very familiar with this plant by the name

"estafiata"; they use it extensively as a stomach medicine in the same manner as the Indians from whom they probably learned the use.[1]

Artemisia sp.[2]

This unidentified species of Artemisia is used as a relief for constipation. A decoction from the leaves is thickened with sugar and taken internally.

Asclepias latifolia. Milkweed.

The leaves and stems are pounded and ground until a fine powder is formed. This powder is inhaled as a relief for catarrh.

Asparagus officinalis. Asparagus.

This species grows abundantly around Isleta and appears to be a native plant. It is considered as native by the Indians. Wooton and Standley[3] say of it: "The cultivated asparagus thrives in New Mexico and is a not common escape in the valleys." No native asparagus is listed.

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1. At Zuñi a tea for curing colds is made from Artemisia. (see Stevenson, 30th Ann. Rep. Bureau of Amer. Eth., 1909, p. 42) A medicine for indigestion is prepared by the Tewas from Artemisia frigida. (see Robbins, Harrington, and Freire-Marreco, Bull. 55, Bureau of Amer. Ethnology, 1916, p. 54)
2. Robbins, Harrington, and Freire-Marreco, Bull. 55, Bureau of Amer. Eth., 1916, p. 45. "All the New Mexico sages are used at Santa Clara in the treatment of indigestion." Cook, Univ. of New Mexico, 1930, p. 20, gives use of Artemisia sp. as medicine for stomach troubles.
3. Wooton and Standley, Flora of New Mexico, 1915, p. 139.

Asparagus is prepared by the Indians in the customary manner by boiling and seasoning.

Atragene pseudalpina. Virgin's Bower.

This vine grows in the mountains near the pueblo. It has been brought into the pueblo and grown as an ornamental and shade.

Atriplex canescens.[1] Shadscale, Saltbush, "Chamiso".

Arrow heads were carved from the wood of this shrub and fit into "bamboo" shafts. This type of arrow was the swift, or war arrow; the arrows with stone points were used only in hunting game.

The wood of Atriplex canescens was thought to be infectious; arrows from it were called "poison arrows". A "bamboo" shaft was used in these poison war arrows because it was light and swift; and, since it always broke when it hit, the arrow could not be shot back.

Atriplex sp. (Argentea ?)

The young, tender leaves are boiled for greens. The leaves have a very salty taste.[2]

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1. Atriplex canescens is used at Zuñi for the relief of ant bites. (see Stevenson, 30th Ann. Rep. Bureau of Amer. Ethnology, 1909, p. 44)
2. The Pima and Hopi use species of Atriplex for seasoning because of their salty flavor. (see Russell, 26th Ann. Rep. Bureau of Amer. Ethnology, page 69, 1905, and Fewkes, Amer. Anthr., 1896, Vol. IX, p. 21)

Bossekia parvifolia. Thimble-berry.

The thimble-berry grows in the higher places in the Manzano Mountains on the Isleta reservation. It is similar to the wild strawberry both in appearance and flavor, and is considered a strawberry by the Indians. The Indians consider it quite a delicacy.

Bromus sp. Brome Grass.

The stems are tied in bunches to make brooms and brushes.

Cercocarpus montanus. Mountain Mahogany.

A red dye is made from the barks of this plant, the alder, and the wild plum, as described under Alnus tenuifolia.

Chenopodium sp.[1] Goosefoot, Lamb's Quarters.

The leaves are used as greens.

Chrysopsis hirsutissima.

This plant, when touched, is thought to cause irritation like the sting of an ant, and is called "ant plant". The same is thought of Lappula floribunda and the same name applied to it.

Chrysothamnus sp.[2] Rabbit Brush.

This unidentified species is an important medicinal plant.

1. Wooton and Standley, Flora of New Mexico, p. 207, "Seeds of the different species of Chenapodium were formerly collected by the Indians, ground or parched, and used in making cakes or porridge." The using of Chenopodium album by the Hopi is given by Walter Hough in, "The relation of the Hopi to their plant environment", The leaves are boiled and eaten with fat.
2. Ibid., p. 660, "A decoction of the heads of various species of Chrysothamnus was formerly used by the Navajos in dyeing wool."

The entire plant, excepting the root, is boiled in water and the liquid used to bathe fever patients. This liquid is also drunk as a cure for venereal diseases. A small bit of the stem is put into the cavities in teeth to relieve tooth-ache. It is believed that if the cavity is not sealed with gum or in some manner after the stem is inserted that the tooth will break.

A species of Chrysothamnus is used at Jemez as a gargle and for colds in chest.

Chrysothamnus latisquameus. Rabbit Brush.

This species was used in the same manner as Atriplex canescens in making points for poison arrows.

The wood of this shrub is said to burn slowly and brightly, and was used as candles.

Cleome serrulatum. Rocky Mountain Bee Plant.

The leaves are used as greens.[1] The large seed were used in the past to make a flour for bread but are not used at present.

The roots of this plant were formerly used to make a dye.[2]

Covillea glutinosa. Creosote Bush.

The leaves are supposed to have absorptive power and are

1. This use is reported at Zuñi, the Tewa pueblos, and Jemez.
2. A paint for pottery decoration is made from this plant at Zuñi and the Tewa pueblos. (A description of its preparation is given in Robbins, Harrington, and Freire-Marreco, Bull. 55, Bureau of Amer. Ethnology, 1916, p. 58-59.)

put in the shoes in cases of damp perspiring feet. Glycyrrhiza lepidota is also used for this purpose.

A disinfectant is made by boiling the leaves. This same decoction is used as a cure for rheumatism. The affected parts are bathed.

Croton texensis. Dove Weed.

The fresh leaves are eaten as a laxative, or a tea may be made by boiling the leaves.[1]

The seed are put in the ear as a mechanical aid to hearing in cases of partial deafness.

Cucurbita foetidissima. Gourd.

The roots of this gourd are boiled to extract a liquid used in treating chest pains.

It is said that the Indians formerly ate the fruits of this plant. The Pima Indians still roast the seeds and eat them.

Echinocereus triglochidiatus.

The fruits from this cactus are eaten fresh, or as conserves.

The pulp is prepared in a variety of ways. It may be sliced

1. Stevenson, 30th Ann. Rep. Bureau of Amer. Ethnology, 1909, p. 45. "A tea made by boiling the entire plant is drunk as a remedy for sick stomach. This tea is used also as a purgative, and to stimulate action of the kidneys."
Croton texensis is used at Hopi as an emetic. (see Hough, Amer. Anthr., 1897, Vol. X, p. 41.)

and baked as squash is prepared. A sweet pickle is made by baking it with sugar. Cakes and candy are made from it in much the same way. In emergencies the pulp is crushed to get water. The dried pulp is used as candles.

Echinocereus. Coccinia.

Leaves were roasted and put on swellings as a poultice.

Ephedra torreyana.[1] Joint Fir.

The leaves and stems are boiled to make a lotion for itching skin.

Equisetum laevigatum. Smooth Scouring Rush.

This plant is in demand as a horse feed.

Erodium cicutarium. Alfileria.

The Indians consider this an excellent grazing plant.[2] The leaves and stems contain a large amount of moisture which the Indians think quenches the thirst of the stock and make it possible for them to go long periods of time without water.

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1. At Zuñi this plant is used to make a beverage and also as a decoction for syphilis. (see Stevenson, 30th Ann. Rep. Bureau of Amer. Ethnology, 1909, p. 49, p. 67.)
2. Wooton and Standley, Flora of New Mexico, 1915, p. 381, say: of Erodium Cicutarium, "In certain parts of the Southwest it has been found to be a valuable forage plant but it has never been utilized in New Mexico."

Fallugia paradoxa. Apache Plume.

The slender, smooth, straight branches are ideally suited to making arrow shafts. The hunting arrows were made from this plant.[1] When the branches were not as straight as desired, they were steamed and straightened.

Fomes pinicola.

This fungus, which is found on pine trees, was dried and used as tinder in making fires with flint. Polyporus dryophilus was used in the same manner.

Forestiera neomexicana. Ironwood.

These large shrubs are thought to be water indicators. Wells dug where it grows are said by Indians always to produce water.

This plant is used at Jemez in the dances.[2]

Fragaria bracteata. Wild Strawberry.

This small fruit has a very good flavor, and is a much prized delicacy of the Isletans. It grows abundantly high in the mountains on the eastern side of the Isleta reservation.

Frasera speciosa. Deer's Ears.

This herb is called "asthma plant" by the Indians. The

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1. The Tewas also use this plant for making arrows. (see Robbins, Harrington, and Freire-Marreco, Bull. 55, Bureau of Amer. Ethnology, 1916, p. 47)
2. Cook, Univ. of New Mexico, 1930, p. 22.

large, fleshy root is boiled to make a lung and throat medicine which is said to cure asthma.

The large leaves are salted and applied to the head to relieve headache.

Gaura parvifolia.

The fresh, soft leaves, worn as a band around the head, are said to be cooling and refreshing in hot weather.

Geoaster sp. Earth Star.

The spores form a brown powder which is used as baby powder similar to the use of talcum.[1]

Glycyrrhiza lepidota. Wild Licorice.

The leaves are placed in the shoes to absorb moisture in cases of damp, perspiring feet. Covillea glutinosa is also used for this purpose.

Gossypium sp. Cotton.

There is little question that cotton was grown by the Rio Grande pueblos at the time of the Spanish conquest. Hopi, however, is the only pueblo cultivating cotton at the present. The Isleta Indians say that cotton was grown at Isleta in fairly recent times.

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1. The Tewas blow this powder into the ears in ear infection. (see Robbins, Harrington, and Freire-marreco, Bull. 55, Bureau of Amer. Ethnology, 1916, p. 67)

Some cotton is brought into Isleta, from which belts, sashes, and red bands ("chongos") for the hair are made. Rugs and blankets were never made by the Pueblo Indians. Cotton is used in some manner in the ceremonies of most of the pueblos.

Gutierrezia furfuracea. Snakeweed.

The moistened leaves are used as a poultice for bruises.[1] The leaves are steeped to make a tea which is thought to cure venereal diseases. The body is bathed in this same liquid to cure fever. A bath in this liquid is considered pleasant and refreshing and the Isletans sometimes indulge themselves in cases where there is no sickness.

Hedeoma nana. Pennyroyal.

The leaves have a pleasing aroma, and a mint-like flavor. The Indians chew the leaves for this flavor.

Helianthus annus. Sunflower.

The pith from various species of sunflowers was used in the kivas to light the ceremonial cigarettes. The pith was lighted with flint and passed around to each of the participants in the ceremony.[2]

1. Cook, Univ. of N. Mex., 1930, p. 23. Used for healing sores and after childbirth.
2. This use by the Tewas is reported by Robbins, Harrington, and Freire-Marreco, Bull. 55, Bureau of Amer. Ethnology, 1916, p. 56: "The fire-stick for lighting cigarettes is sometimes a dried sunflower stalk."

Holodiscus dumosus. Ocean Spray.

The leaves are steeped to make a beverage which is said to be very good.

Hymenopappus sp.

A beverage is made by boiling the stems and leaves.[1] This plant keeps well in storage, making it possible to have the beverage in all seasons.

Hymenoxys floribunda. Colorado Rubber Plant.

The roots of this plant, when chewed, develop a rubber-like consistency. The Indians use these roots for chewing gum.[2]

The leaves of this plant are thought to have a "loco" effect on cattle.

Hymenoxys sp. "Damiana".

A remedy for gonorrhea is made by boiling the leaves in water.

Juncus sp. Rush.

The various species of rushes are used as thatching for houses.

Juniperus monosperma. One-seeded Juniper.

An infusion of cedar bark is used in bathing, and in wash-

1. This use is reported at Jemez also. (see Cook, Univ. of New Mexico, 1930, p. 24.)
2. For preparation of this gum at the Tewa towns see: Robbins, Harrington, and Freire-Marreco, Bull. 55, Bureau of Amer. Ethnology, 1916, p. 56.

ing sore feet.

A tea made from the leaves is given to mothers after childbirth.[1] This tea when made strong and given in large quantities is an emetic.

When used as firewood in the open ovens, the wood of this species produces a very hot fire.

Juniperus pachyphloea. Alligator Bark Juniper.

The large fruits of this tree are boiled and eaten. They are considered very good.

Koeleria cristata. June Grass.

This plant was a very important article of food before the introduction of wheat. A flour from which bread and mush were made was prepared from the seed.

The straw was mixed with adobe to give strength and adhesion.

Lactuca integrata. Prickly Lettuce.

The leaves are eaten fresh as a relief from stomach ache.

Lappula floribunda. Stickseed.

The prickles on the burlike fruit cause irritation of the skin and swelling; the Indians call it "ant plant". Chrysopsis hirsutissima is also called "ant plant."

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1. For preparation and use of this plant in maternity cases at Zuñi and the Santa Clara, see Stevenson, 30th Ann. Rep. Bureau of American Ethnology, 1909, p. 55, and Robbins, Harrington, and Freire-Marreco, Bull. 55, Bureau of Amer. Eth., 1916, p. 40.

Lepidium apetalum. Peppergrass.

The seeds are chewed as a relief for headache.

Leucampyx newberri. Wild cosmos.

An infusion is drunk by adults for relief from stomach ache. A powder made by drying and grinding the plants is applied to the stomach of infants and small children for the same purpose.

Lotus wrightii. Bird-foot Trefoil.

The Indian sheepherders consider this an excellent grazing plant.

Lycium pallidum. Tomatilla.

The berries which are borne in late summer are eaten fresh.[1]

Marrubium vulgare. Horehound.

The leaves are crushed and applied to affected parts to reduce swelling.

Melilotus indica. Sweet Clover.

These plants are placed in the bed to drive away bed bugs.

Mentha penardi. Mint.

This aromatic herb is used as a poultice in eye troubles. The leaves are crushed, moistened, and applied to the eye.

1. The berries of this plant are reported as eaten at Zuñi and Hopi.

Mimulus geyeri. Monkey Flower.

The tender, young leaves are salted and eaten as a salad.

Monarda menthaefolia. Horsemint.

The aromatic leaves are used for seasoning soups and stews,[1] giving a pleasant flavor and odor.

Nolina microcarpa. Beargrass.

The fibers from the leaves of beargrass are used in making brushes, cords, ropes, and whips. They were formerly used in basketry, but no baskets are made at present. The leaves are boiled, then pounded with stones to extract the fiber. The seed are put in the dried shells of gourds to make rattles for use in the ceremonies. A flour is also made from the seed. The fruits are eaten fresh or preserved.

The Isletans say that a dye for blankets is made by the Navajos from some portion of this plant.

The root is cut into small pieces and boiled. The decoction is allowed to sit over-night. It is drunk as a cure for pneumonia, rheumatism, and lung hemorrhage.

Opuntia sp. Prickly Pear.

The fruits are eaten fresh uncooked, or cooked as a conserve.[2] The stems are peeled and the pulp boiled and

1. Robbins, Harrington, and Freire-Marreco, Bull. 55, Bureau of Amer. Ethnology, 1916, p. 56: "At San Ildefonso parts of the plant (Monardo menthaefolia) are cooked with meat to flavor the latter.
2. The fruit of species of Opuntia is eaten by the Zuñi, Pima, Hopi, and Jemez Indians. For a description of the method of cooking by the Pimas, see: Russell, 26th Ann. Rep. Bureau of Amer. Ethnology, 1905, p. 71.

eaten.[1]

Pachylophus hirsutus. Fragrant Evening Primrose.

The leaves are dried, ground into a powder, and applied to sores to effect rapid healing.

Panicum obtusum. Vine Mesquite Grass.

The stolons of this grass are ground into a powder and mixed with the root of Yucca Glauca. This mixture is used in washing the hair. This grass is thought to have the effect of making the hair grow rapidly.

Parthenocissus vitacea.[2] Virginia Creeper.

This plant which belongs to the grape family is considered a grape by the Isletans. Their name for it means "loco grape". The fruit which Wooton and Standley say is "not edible" is said by the Indians to give a "loco" effect when eaten.

Philadelphus microphyllus. Mock Orange.

The fruits were formerly eaten.

Physalis sp. Ground-cherry.

The berries of this plant are eaten fresh.[3]

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1. C.F. Fewkes, Amer. Anthr. 1896, Vol. IX, p. 17.
2. Wooton and Standley, Flora of New Mexico, 1915, p. 415.
3. Stevenson, 30th Ann. Rep. Bureau of Amer. Ethnology, 1909, p. 70, "The fruit (of Physalis fendleri) is boiled in a small quantity of water and then crushed and used as a condiment."
   Ibid. p. 70: Physalis longifolis is boiled with onions and chile and eaten.
   The Tewa Indians eat the berries of Physalis neomexicana. (see Robbins, Harrington, and Freire-Marreco, Bull. 55, Bureau of Amer. Ethnology, 1916, p. 59.)

Pinus edulis. Piñon.

These familiar nuts once formed a staple article in the diet of many Indians. They still are an important article of food for the Indians and Mexicans of New Mexico.[1]

The gum from the piñon is mixed with tallow and used as a salve for cuts and open sores.

The piñon grows abundantly in the foot-hills of the mountains on the Isleta reservation. The nuts are gathered, carried into the pueblo, and stored for winter use.

Pinus ponderosa. Yellow Pine.

This is the pine which furnishes the beams of "vega poles" of the houses. It is also the principal source of fire-wood. In the mountains on the reservation.in groves of Pinus ponderosa large decaying stumps can be seen. These trees were cut with instruments having blades about an inch and a half wide. The incisions are not deep, giving evidence that the trees were cut with great labor. After these trees were cut it was necessary to transport them the intervening twelve or fifteen miles to the pueblo in some manner.

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T. The Zuñi Indians eat these nuts raw or roasted. A medicine for the treatment of syphilis is made from the plant. (see Stevenson, Bureau of Amer. Eth. 30th Ann. Rep., 1909, p. 57 and 70) At Jemez the nuts are gathered and eaten and the surplus is sold. A stain for pottery is made from the plant. (see Cook, Ethnobotany of Jemez, 1930, p. 26).

Plantago major. Common Plantain.

A tea prepared from an infusion of the leaves is used as a stomach tonic.

Polanisia trachycarpa. Clammy Weed.

The leaves of this plant were formerly dried, "rubbed", and rolled in corn husks to make ceremonial cigarettes. It was approved for this purpose but not said to be so desirable as Verbascum thapsus.

Polyporus dryophilus

This fungus which is found on oak trees was used as tinder in starting fires in the same manner as Fomes pinicola.

Polyporus harlowii

This large fungus is found on cottonwood trees in the fall.[1] It is baked, or boiled, and eaten. It is said to be delicious, having a flavor similar to chicken. It can be stored for long periods.

Populus aurea. Quaking Aspen.

The bark is stripped off in cylindrical sections and used as casts in setting broken limbs.

The Indians note the similarity between Populus Aurea and the Valley Cottonwood (Popupus wislizeni) and group them

1. An unidentified fungus is eaten by the Tewas. It is described by Robbins, Harrington, and Freire-Marreco, Bull. 55, Bureau of Amer. Ethnology, 1916, p. 67, as follows: "this is a fungus found on the ground near, or on the decaying wood of, a cottonwood tree, when boiled and eaten it is considered a delicacy."

together, yet they recognize the differences and make distinctions.

Populus wislizeni. Valley Cottonwood.

Thatching for houses is made from the smaller limbs and the leaves.

The wood was used in making small boats and rafts for use on the river but these are no longer made. The wood is used in making the ceremonial drums.[1] The limbs are used in making small bows and arrows for sale to tourists. The balls (fruits) are chewed by the children as chewing gum.

Portulaca oleracea. Purslane.

Purslane is gathered in large quantities in the summer and dried slowly in the ovens. It is then stored and used as greens during the winter.[2] It is said to have a flavor similar to spinach.

Prosopsis glandulosa. Mesquite.

Shafts for hunting arrows were made from the limbs.

The leaves and pods (without the beans) are boiled to make an eye medicine.

The beans are roasted and eaten as a confection. A flour

1. Robbins, Harrington, and Freire-Marreco, Bull. 55, Bureau of Amer. Ethnology, 1916, p. 42.
2. "The top of this fleshy plant (Portulaca oleracea) is eaten boiled by both Indians and Mexicans." (Robbins, Harrington, and, Freire-Marreco, Bull. 55, Bureau of Amer. Ethnology, 1916, p. 59)

or meal made from grinding the beans, is used in making bread.[1]

Prunus americana. Wild Plum.

The wild plum is said to have once grown abundantly near Isleta,[2] but has been replaced by cultivated varieties.

The fruit was eaten and the bark used in making a dye as described under Alnus tenuifolia.

Prunus melanocarpa. Chokecherry.

The fruit of this wild cherry is rather astringent but is prized by the Indians.

The strong, supple, straight-grained limbs were used in making bows.

This plant is used for both these purposes by the Tewas.[3]

Pseudocymopterus sp.

The leaves and stems boiled make a beverage of very good flavor.

Pseudocymopterus aletifolius. Parsley.

The leaves are eaten uncooked as a relish or are cooked

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1. For a description of the preparation and use of mesquite bean flour by the Pima Indians refer to: Russell, 26th Ann. Rep. Bureau of Amer. Eth., 1905, p. 74-75.
2. Wooton and Standley, Flora of New Mexico, 1915, p. 327, says of Prunus american: "In some parts of the State this plum is almost certainly native; in other places it may have been introduced. At Taos the trees are abundant and the fruit is gathered by the Indians." The range of this species in New Mexico is given as: Taos, Pecos, Farmington, White Mountains.
3. Robbins, Harrington, and Freire-Marreco, Bull. 55, Bureau of Amer. Ethnology, 1916, p. 47.

for greens.

Pseudotsuga mucronata. Douglas Tree.

Trees are cut and brought to the pueblo from the mountains, a distance of about twelve miles, and used in the ceremonies at Easter.

The boughs are used in the Easter and Evergreen dances.

This plant is reported as used in ceremonies by the Jemez, Zuñi and Tewa Indians.[1]

A tea made from the leaves is used in cases of rheumatism and paralysis.

Quercus gambelii. Gambel Oak.

The wood is used in making handles and other wooden portions of various implements.

Acorns of Quercus utahensis were eaten by the Tewas and those of Quercus oblongifolia are eaten at present. They are parched and ground into a meal.[2]

The acorns in the past were a staple food but are rarely eaten now. The eating of acorns is popularly thought to give greater sexual potency.

Rhus trilobata. Skunk-bush, Spice Bush.

The fruits which have a sour, acid flavor are eaten as an

1. Robbins, Harrington, and Freire-Marreco, Bull. 55, Bureau of Amer. Ethnology, 1916, p. 42-44, gives a description of the use of Pseudotsuga mucronata in ceremonies.
2. Ibid., p. 78.

appetizer or relish. The berries are eaten at Jemez, Hopi, and the Tewa towns.

Ribes inebrians. Currant.

The fruit is eaten fresh or preserved. When thoroughly ripe the flavor is very pleasing.

The berries of this plant are reported to be eaten by the Zuñi and the Tewa Indians.

Rosa fendleri. Rose.

This wild rose grows profusely in the canyons and arroyos in the foot-hills of the mountains on the reservation. It has been brought into the pueblo as an ornamental.

The rose petals are soaked in water and this liquid given to new-born babies before the mother's milk is given.

Rosa sp. is used by the Tewas as treatement for sore mouth. The petals are ground and mixed with grease to make salve.[1]

Rumex crispus. Yellow Dock, Curled Dock.

The leaves are eaten as greens, the eating of which is considered beneficial to the stomach.

Salix sp. Willow.

The leaves are boiled and the liquid used for skin baths.

The limbs with leaves are used for thatching houses.

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1. Robbins, Harrington, and Freire-Marreco, Bull. 55, Bureau of Amer. Ethnology, 1916, p. 48.

Baskets were formerly woven with willow twigs.

Solanum elaeagnifolium. Trompillo.

The seed-pods eaten, or boiled to make a syrup, are thought to have a laxative effect.

At Zuñi and the Tewa towns, the berries are used as a curdling agent for milk.[1]

Solanum jamesii. "Wild Potato"

This unidentified species of Solanum has small tubers which are gathered by the Indians and cooked as potatoes.

At Hopi the tubers of Solanum jamesii are eaten.[2] At Zuni Solanum fendleri is used for this purpose.[3]

Solanum sp.

An infusion from the leaves of a species of Solanum is drunk as a relief for heart trouble.

Strombocarpa pubescens. Screw Bean.

The pods are chewed for their starch content and agreeable taste.

Thelasperma longipes. Cota.

This plant is boiled to make a delicious tea which is said to resemble commercial. Leaves of young plants are used. The

1. At Zuñi goat milk is curdled by use of the berries of Solanum Elaeagnifolium to make a delicious beverage. (see Stevenson, Bureau of Amer. Eth., 30th Ann. Rep. 1909, p. 70) The root is used in treatment of toothache, p. 60.
   The Tewas use the berries to curdle milk in making cheese. (see Robbins, Harrington, and Freire-Marreco, Bureau of Amer. Ethnology, Bull. 55, 1916. p. 78)
2. Hough, Amer. Anthr. 1897, Vol. X, p. 38.
3. Stevenson, Bureau of Amer. Eth., 30th Ann. Rep., 1909, p. 71.

plants store well.[1]

Typha latifolia. Cattail.

In the construction of house roofs, the "vega poles" were laid across first. On these a thatching of cottonwood, or of willow (see Populus wislizeni and Salix) brush was placed. The long, slender, smooth stems of the cattails make them very desirable for placing upon the brush to support mud or adobe.

Verbascum thapsus. Mullein.

The leaves of mullein are said by an Isletan to have been used as ceremonial tobacco. This plant was probably confused with Nicotiana attenuata which grows at Isleta. The latter plant furnishes the ceremonial tobacco of the Hopi and Zuñi. This seems particularly likely as Wooton and Standley say that Verbascum thapsus is an introduced plant.[2]

Vitis arizonica. Grape.

All of the reports of early expeditions to the Rio Grande valley mention grapes as an article of food at the pueblos. The wild grape, along with cultivated and improved varieties, is still important in the diet of the Isletans.

1. Wooton and Standley, Flora of New Mexico, 1915, p. 703: "In the southern part of the state it (Telesperma longipes) is said to be used as a substitute for tea by the native peoples.
2. Ibid., page 577,

Washingtonia obtusa. Sweet Cicely.

The aromatic stems and roots are boiled to make a beverage.

Yucca baccata. Datil.

Cords, ropes, and plaques are made from the fibers of this yucca.[1] Baskets were formerly made from it. Small brushes for pottery decoration are made from it. This use is reported at Zuñi.[2]

The fruits when young and tender are seasoned and baked, and said to be delicious. They may be dried in the sun and stored for winter use. The Pima, Tewas, Hopi, and Zuñi,[3] all eat them. The deer are said to be very fond of these fruits, and often leave few for the Indians.

Yucca glauca. Soapweed.

The fiber and fruit of the Soapweed is used just as in Yucca baccata.

A soap used in washing the hair, blankets, and for bathing is made from this plant. The root is pounded until soft and then soaked in water for about two hours. The pulp is then ready for use.[4] Yucca root is used by the Zuñi, Tewas, Jemez, and Hopi to make soap.

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1. Stevenson, Bureau of Amer. Eth., 30th Ann. Rep., 1909, p. 78-79, describes the preparation of the fiber of Yucca baccata.
2. Ibid., p. 82.
3. Ibid., p. 72-73, gives an interesting account of the preparing of Yucca baccata for eating.
4. Cf. Stevenson, Bureau of Amer. Eth., 30th, Ann. Rep., 1909, p. 83.

Panicum obtusum is used with Yucca glauca in washing hair to make the hair grow. This soap is considered to be very satisfactory and is said to leave the hair clean and soft.

Zea mays. Corn, Maize.

Corn is thought not to be indigenous to New Mexico but to have been introduced from Mexico or Central America. Indian corn was grown by all of the Pueblo Indians at the time of the Spanish conquest. It formed the basic article of food; a failure of the crop practically meant starvation.

Wheat and other grains introduced by the white man have replaced corn to some extent but it is still the most important species used by the Indian.

The silks, pollen, and corn meal are used in the well-known "Corn Dances" of the Pueblos. The meal is smeared on the body in the burial ceremony.

Corn is prepared in a variety of ways for purposes of eating. The meal is made into various forms of bread. A mush is cooked and eaten fresh, or is dried and stored. Parched corn is both a staple and confection. When the stalks are crushed, soaked, and the liquid allowed to evaporate a sugar remains.

A beverage said to be slightly intoxicating is made by grinding the corn, boiling it in water and allowing it to

sit a few days.

The husks are used to wrap tamales and as cigarette "papers" for the ceremonial cigarettes.

Stevenson[1] gives an excellent discussion of the uses of Zea mays at Zuñi.

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1. Stevenson, Bureau of Amer. Eth., 30th Ann. Rep., 1909, p. 7376.

III. CONCLUSION

The Isleta Reservation extending from the Puerco River to the ridge of the Manzano Mountains includes parts of three life zones; the Upper Sonoran, the Transition, and the Canadian.

Growing on the reservation are about four hundred species of plants representing the typical plants of these zones. Of these, 103 species were found to be used or to have been used by the Isleta Indians, and their uses recorded. Doubtless, many more are used. Some few plants are known to be brought in from other areas but none were identified.

These plants were found to be employed in a variety of ways. The uses may be grouped under the following headings: food, medicine, clothing, material for hand-manufacture, in ceremonies, forage and grazing, and architecture.

Naturally more plants are used for food than for any other purpose. Many fruits, seeds, leaves and roots are eaten uncooked. Beverages are made by boiling the leaves, roots or stems of plants or by soaking the seeds. "Greens" is a favorite dish, judging by the number of plants found to be prepared in this manner. Bread, cakes, candies, and relishes are made from plants parts. Formerly many plants were dried, or preserved and

stored but since the advent of the grocery store the necessity for this has decreased.

A surprisingly large number of plants are used for medicinal purposes, one or more remedies for practically all of the common diseases being made from plant materials. Although a doctor and nurse are on duty at Isleta giving free medical attention, many of the old cures are still practiced; however, more and more advantage of this medical service is being taken. These medicines are chiefly in the form of "teas", poultices, liniments, and salves. Some of these medicines are obviously not beneficial but there is good reason to believe that others may be. The analyzing of the plants used by the Indians for medicine and the comparison of them to the standard drugs of the white man would be an interesting and, no doubt, enlightening work.

In the past it was, of course, necessary for the Indian to prepare his clothing from the available raw materials. Commercial clothing materials and clothes have so nearly replaced the hand-made clothes at Isleta that the use of plants for this purpose is negligible. The Isletans know something of the manufacture of clothing material from raw cotton, wool, hair and plant fibers, but have no occasion for the use of this knowledge. The Isletans say that the weaving of rugs and blankets, as done by the Navajos at present was never done at Isleta.

The hand-manufacturing at Isleta is fostered by necessity. Raw plant materials are utilized for various purposes as occasion and ingenuity dictate. Such varied articles as belts, whips, harness, handles for implements, cord, ropes, brooms, and household utensils are made from plants on occasion. There is little manufacture for commercial purposes at Isleta. A few plaques, dolls, and miniature bows and arrows are made for sale. The manufacture of silver-ware and a poor grade of pottery are the only important commercialized hand-work, and no plants are used in either. Strangely, no vegetable materials are used in the decoration of pottery at Isleta, as at many of the pueblos.

Although the dances and ceremonies at Isleta are chiefly public and white visitors are welcomed, the Indians are very reticent concerning the rituals, significance, and purposes of them and give evasive answers. Very little information of this nature was obtained. It is known that some vegetable materials are used. Evergreen trees and boughs are used. Corn pollen and corn meal play an important part in the "corn dances". Gourd rinds containing beargrass seed are used as rattles in the dances. Cotton and ceremonial "tobacco" are said to be used in the ceremonies in the "kiva". The purpose and significance of these plants was not determined.

Grazing is an important industry at Isleta. The Indians consider certain plants as desirable for grazing and select

areas for grazing by the abundance of these plants.

The houses at Isleta are chiefly of "adobe" and are a modification of the original pueblo type of architecture. Beams or "viga poles", thatch, and vegetal reinforcements for the "adobe", are from plants.

The Isleta Indian is very familiar with his plant environment. He recognizes plants readily, is familiar with the areas in which they grow, and has a surprisingly good knowledge of practical plant anatomy. The diseases of the various plants are known. The knowledge of plant uses is general. Most of the uses listed were known by all the persons questioned. The knowledge of plant medicines is general and not confined to a "medicine clan" as at some of the pueblos. These Indians make fine distinctions between plants and usually recognize the similarities of related genera and species.

Contact with the civilization of the white man is changing the Indians manner of living, so that he is no longer so dependent on native plants. Many uses to which plants were formerly put are no longer necessary or practical. As a result the use of native plants is decrasing rapidly. Many uses doubtless have been forgotten and many more will soon be lost. It is therefore advisable that ethnobotanical work be done as soon as possible.

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