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ETHNOBOTANY OF THE TEWA INDIANS

BY

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LETTER OF TRANSMITTAL

THE SCHOOL OF AMERICAN ARCHÆOLOGY,
Santa Fe, N. Mex., November 1, 1912.

DEAR SIR: I herewith transmit the manuscript and illustrations of a paper entitled "Ethnobotany of the Tewa Indians," by Wilfred W. Robbins, John P. Harrington, and Barbara Freire-Marreco. I am authorized by the managing committee of the School of American Archæology to offer this work for publication by the Bureau of American Ethnology as a part of the results of the cooperative work of our respective institutions during 1910 and 1911.

I am, very truly, yours,

EDGAR L. HEWETT,
Director.

Mr. F. W. HODGE,
Ethnologist-in-Charge,
Bureau of American Ethnology,
Washington, D. C.

LETTER OF SUBMITTAL

SMITHSONIAN INSTITUTION,
BUREAU OF AMERICAN ETHNOLOGY,
November 8, 1912.

SIR: I have the honor to submit a paper on the "Ethnobotany of the Tewa Indians," by Wilfred W. Robbins, John P. Harrington, and Barbara Freire-Marreco, which forms a part of the results of the ethnological and archeological research in the upper Rio Grande Valley of New Mexico, undertaken jointly by the Bureau of American Ethnology and the School of American Archæology in 1910 and 1911. It is recommended that the paper be published as a bulletin of this bureau.

Very respectfully,

F. W. HODGE,
Ethnologist-in-Charge.

Honorable CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

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PHONETIC KEY

1. Orinasal vowels, pronounced with mouth and nose passages open: *ą* (Eng. *f*a*th*er, but orinasal), *ą́* (French p*as*, but orinasal), *ǫ* (moderately close *o*, orinasal), *ų* (Eng. r*u*le, but orinasal), *æ̨* (Eng. m*a*n, but orinasal), *ę* (moderately close *e*, orinasal), *i̧* (Eng. rout*i*ne, but orinasal).

2. Oral vowels, pronounced with mouth passage open and nose passage closed by the velum: *a* (Eng. *f*a*th*er), *o* (moderately close *o*), *u* (Eng. r*u*le), *e* (moderately close *e*), *i* (Eng. rout*i*ne).

Very short vowels following the glottid (') are written superior. Thus, *k'a'ᵃ*, wild rose. A slight aspiration is heard after a vowel followed by *qw*, *k*, *kw*, *k'*, *s*, *ʃ*, *t*, *t'*, *ts*, *tʃ*, *p*, *p'*. Thus, *ît'o'tu*, kernel of a nut, written *îotu* in this memoir.

3. Laryngeal consonants: *h* (Eng. *h*ouse), ' (glottid or glottal clusive, produced by closing and suddenly opening the glottis).

4. Velar consonants: *w* (Eng. *w*ater), *qw* (Span. *juez*; Ger. a*ch* labialized), *k* (unaspirated, Span. *c*arro), *kw* (unaspirated, Span. *cu*al), *k̂* (glottalized), *k'* (aspirated, Eng. coo*kh*ouse), *g* (levis, Span. abo*g*ado), *ġ* (preplosively nasal, Eng. fi*ng*er), *ŋ* (nasal, Eng. si*ng*er), *ŋw* (nasal labialized, Eng. La*ngw*orthy; variant of Tewa *w*).

In absolute auslaut and before *h* and ', *ŋ* is somewhat palatal. Before palatal consonants *ŋ* is assimilated to *ñ* or *n*, before frontal consonants to *n*, before labial consonants to *m*.

5. Palatal consonants: *j* (Ger. *j*a), *ñ* (Span. ma*ñ*ana).

In the Hano dialect a *tʃ* or palatal *t* occurs.

6. Frontal consonants: *s* (Eng. *s*in), *ʃ* (Eng. *sh*ip; *ʃ* is the capital of *ʃ*), *t* (unaspirated, Span. *t*e), *t̂* (glottalized), *t'* (aspirated, Eng. swea*th*ouse), *ts* (consonant diphthong, Ger. *z*ehn, but not followed by an aspiration), *tʃ* (consonant diphthong, Eng. *ch*ew, but not followed by an aspiration), *t͡s* (glottalized), *t͡ʃ* (glottalized), *ɻ* (levis *d*, more *r*-like than in Span. abogad*o*), *ḏ* (preplosively nasal, Eng. ci*nd*er), *n* (nasal, Eng. *n*ow).

The sound of *l* occurs in Rio Grande Tewa only in words of foreign origin and in the San Ildefonso word *polamimi*, butterfly; but it is common in Hano Tewa.

7. Labial consonants: *p* (unaspirated, Span. *p*adre), *p̂* (glottalized), *p'* (aspirated, Eng. scal*ph*ouse), *b* (levis, Span. a*b*ogado), *b̤* (preplosively nasal, Eng. la*mb*ent), *m* (nasal, Eng. *m*an).

A grave accent over a vowel indicates falling tone and weak stress. Thus, *Saȅ̀*, Athapascan, approximately rhymes with and has accent of Span. *sabe*. Where practicable for distinguishing two words, vowel length is indicated by the macron. Thus *'o̅ku*, hill, but *'ōkū*, turtle.

Phonetic Spelling of Non-Tewa Words

Vowels: *ą̆* (French *pas*), *ɣ* (unrounded *u*), *ȧ* (French *patte*), *ą̇* (French *patte*, but orinasal). The acute accent over a vowel indicates loud stress. Surdness is indicated by a circle beneath a vowel.

Consonants: ' (aspiration), *g*, *d*, *b* (as in Eng.), *ɬ* (surd *l*), *ꜰ* (bilabial *f*).

		Laryngeals	Velars	Palatals	Frontals	Labials
Vowels	Orinasal		*ą̇* *ą̆* *ą̈* *o̥* *e̥* *ɣ̥* *i̥*			
	Oral		*a* *o* *e* *u* *i*			
Consonants	Semivowels		*w*	*j*		
	Fricatives	*h*			*s*, *ʃ* (*l*)	
	Fricatives labialized		*qw*			
	Clusives	'	*k*	(*tʃ*)	*t*	*p*
	Clusives labialized		*kw*			
	Clusives glottalized		*k̂*		*t̂*	*p̂*
	Clusives aspirated		*k'*		*t'*	*p'*
	Affricatives				*t͡s* *t͡ʃ*	
	Affricatives glottalized				*t̂͡s* *t̂͡ʃ*	
	Clusives levis		*g*		*d*	*b*
	Clusives preplosively nasal		*ᵑg*		*ⁿd*	*ᵐb*
	Nasals		*ŋ*	*ñ*	*n*	*m*
	Nasals labialized		*ŋw*			

A. VIEW NEAR SANTA FE, N. MEX., SHOWING THE GENERAL APPEARANCE OF COUNTRY DOMINATED BY A GROWTH OF PIÑON PINE AND CEDAR.

B. CANYON OF EL RITO DE LOS FRIJOLES, SHOWING STREAMSIDE DECIDUOUS FOREST; BETWEEN THIS AND THE STEEP MESA SIDE ON A NARROW STREAM TERRACE IS SEEN A GROWTH OF TALL ROCK PINE.

ETHNOBOTANY OF THE TEWA INDIANS

By Wilfred W. Robbins, John P. Harrington, and Barbara Freire-Marreco [1]

INTRODUCTION

Scope of Ethnobotany

Ethnobotany is virtually a new field of research, a field which, if investigated thoroughly and systematically, will yield results of great value to the ethnologist and incidentally also to the botanist. Ethnobotany is a science, consequently scientific methods of study and investigation must be adopted and adhered to as strictly as in any of the older divisions of scientific work. It is a comparatively easy matter for one to collect plants, to procure their names from the Indians, then to send the plants to a botanist for determination, and ultimately to formulate a list of plants and their accompanying Indian names, with some notes regarding their medicinal and other uses. Ethnobotanical investigation deserves to be taken more seriously: it should yield more information than this; it should strike deeper into the thoughts and life of the people studied. If we are to learn more of primitive peoples, we must attempt to gain from them their conceptions not of a part but of the entire environment. Ethnobotany is a special line of ethnologic investigation, the results of which must receive consideration in our ultimate analysis.

Ethnobotanical research is concerned with several important questions: (a) What are primitive ideas and conceptions of plant life? (b) What are the effects of a given plant environment on the lives, customs, religion, thoughts, and everyday practical affairs of the

[1] The earlier, larger, and more systematic part of this memoir is the work of the two authors first named on the title-page, Mr. Wilfred W. Robbins and Mr. John P. Harrington. Their methods of investigation and collaboration are explained in the Introduction.

When the memoir, in its original scope and form, was in type, it was thought advisable to enlarge it by including notes on some of the economic, industrial, and medicinal uses of the plants, made by the third author, Miss Barbara Freire-Marreco, in the course of work supported by the Research Fellowship fund of Somerville College, Oxford, England, and by the late Miss Mary Ewart's trustees, as well as many additional plant-names. It was thought well also to add, for the sake of comparison, information gained from the Tewa colony settled since the end of the seventeenth century among the Hopi at Hano, Arizona, although the winter season had made it difficult to learn much of the plant environment. Mr. Harrington is not responsible for the form of the Tewa words recorded at Hano, nor Mr. Robbins for the tentative identifications of the plants obtained or described there; Mr. Harrington and Mr. Robbins are alone responsible for the views expressed in pages 1 to 75; and Miss Freire-Marreco for those contained in pages 76 to 118.

people studied? (c) What use do they make of the plants about them for food, for medicine, for material culture, for ceremonial purposes? (d) What is the extent of their knowledge of the parts, functions, and activities of plants? (e) Into what categories are plant names and words that deal with plants grouped in the language of the people studied, and what can be learned concerning the working of the folk-mind by the study of these names?

Ethnobotany will become a more important subject when its study has progressed to a point where results can be studied comparatively. The ethnobotany of one tribe should be compared with similar studies of other tribes. And in such comparative work there arises the necessity for a standard in the quality of and in the manner of conducting the several investigations. Conceptions of plant life differ among different peoples: a particular plant here does not react in the same way upon one people as it does upon another; it has a different name and probably a different usage; while different ideas are held concerning it. Furthermore, we encounter different vegetal environments as we pass from tribe to tribe. Attempt should ultimately be made to investigate the causes and extent of these variations.

Ethnobotanical Field Work

The method of conducting ethnobotanical researches is of considerable importance, and the value of results obtained may be judged in great measure by the methods pursued in obtaining them. A prime necessity is a good native informant; indeed it is better to have several informants, preferably older men or women. The reasons for selecting the older persons as informants are obvious: they have greater knowledge concerning aboriginal things than have younger persons; they are less inclined to regard the work lightly and to attempt to give wrong and misleading answers; they are steadier, and above all they are able to give, as a result of their maturer years and greater experience, more trustworthy information. The writers found a distinct advantage in taking with them into the field several old Indians: time was saved; questions were answered more readily; furthermore, they frequently discussed the point in question among themselves, thus arriving at conclusions and bringing out facts that one individual could not. It is also true that several Indians together usually feel less restraint in answering freely such questions as are asked than would one in the presence of one or more questioners. As a means of checking the accuracy of information obtained it is also well to work with different individuals or groups of individuals separately, and to compare the results. Questions asked should not suggest the answers. Questioning should be systematic, yet so conducted as not to weary or offend the informants. It is well to intersperse the questioning with jokes and light conversation. The Indian language should be used as

largely as possible in asking the questions and in recording the information. The reasons for this are that the Indian words are largely not susceptible of exact translation, and the use of a foreign language is apt to modify and render un-Indian the conceptions of the informants.

In the present work the writers took with them into the field three old Indians, one of whom could speak fairly good English. The services of this individual were of considerable value; it is very desirable that the services of such an informant be enlisted if possible. Although not absolutely essential, it is probably true that the best ethnobotanical work can be done by the close coöperation of a botanist with an ethnologist and linguist experienced in the methods of recording Indian languages, the scientific recording of which is by no means an easy task. With their informants the two should go into the field together. It is essential that investigation be done in the field with growing plant life; showing fragments of plants picked up here and there, or even herbarium specimens, to the informants is far less satisfactory. The botanist will relieve his co-worker of collecting and preserving the plant material; the latter can thus better concentrate his efforts on obtaining the ethnologic information. Furthermore, it is natural that questions of botanical interest will occur to the botanist that would not occur to the linguist. Once in the field, the Indians are shown growing plants and are questioned fully about each, the smaller as well as the larger and more conspicuous forms. The nature of the questions will depend somewhat on the plant. In the present work the questions were framed so as to elicit the following facts about each plant: Indian name; etymology of name; uses of various parts, and methods of preparing them for use; names of the parts of plants, even the most inconspicuous; descriptive terms applied to this or that shape of leaf, kind of bark, stem, etc., and the extension of these terms in describing non-botanical phenomena; native ideas of the relation of the use of the different structures to the plant itself; and the lore connected with the plant.

It is needless to say that field notes should be made complete in the field; it is unsafe to depend on one's memory and attempt to record certain information after reaching camp. It is well not to hasten from plant to plant: the informants should be given abundant time to think over and discuss points among themselves.

It is often of advantage to photograph some of the more striking and important plants, showing their habitat and general appearance. Drawings of plants may be used to supplement photographs. In addition, native representations of plants can often be obtained, notably in the form of designs of pottery, basketry, from petroglyphs, etc. An attempt should be made to identify these, as they are important in indicating the Indian conception of various plants.

Collection and Preparation of Botanical Specimens

In any case, even if the plant be well known, specimens should be collected. These, prepared in the manner to be discussed, make valuable specimens for the ethnological museum. In view of the fact that many individuals doing ethnobotanical work may not be familiar with the proper methods of pressing and handling plants, the following suggestions are made rather explicit and detailed. The necessity for this is suggested by the experience of the writers, who have known such collections to consist of a few dried, shriveled, and undeterminable fragments of plants.

A portable plant-press is recommended for use in collecting. The collector will supply himself with sheets of thin, cheap paper (newspapers will serve the purpose), cut to the size of the press; these are used to separate the specimens as collected. The specimens should be large, including, if possible, underground parts, flowers, and fruit. As collected the specimens are temporarily placed between the sheets of paper in the plant-press. Special driers made for pressing plants are highly desirable; these are of soft, felt-like material and are very durable; two hundred will be sufficient for collections of ordinary size. The material collected should either be numbered (the numbers referring to data in the field book) or the related data should be included with each specimen. In addition to the information obtained from the Indians, each plant should bear the following data: locality collected, date collected, name of collector. The specimens brought from the field are immediately put into driers; if not pressed while fresh the plants will lose their color and will mold. Each plant is placed between two sheets of paper and two or more driers. The stack of plants, papers, and driers is weighted down with a heavy stone, and all is kept in a dry place. Driers should be changed at least once every 24 hours; the wet driers are placed in a sunny place to dry; plants should dry within four or five days.

Whenever possible, information about plants should be obtained from the Indian from the growing plant, as he is thus accustomed to see and know it or to gather it for use. It is sometimes important that the plant be examined by the informant in its natural environment, since it has been learned by experience that plants removed from the places in which they grew tend to confuse the informant and are identified by him only with considerable difficulty and uncertainty.

Probably the best way to exhibit ethnobotanical specimens in the museum is in such mounts as the "Riker specimen mounts," by which the material may be displayed in an attractive, instructive, and permanent form. These mounts, made in various sizes, are provided with glass covers; the specimens are arranged on a back-

ground of raw cotton and held in place by pressure of the glass front. They are particularly useful in that they admit of grouping, under a glass cover in one frame, specimens that are to be associated in the mind of the observer. In each mount should be placed the plant specimen, with portions of products, if any, made from it, and all other material of ethnological interest. This method of exhibiting ethnobotanical specimens is recommended as being the most attractive and instructive, at the same time eliminating the danger of destruction of the exhibited material.

Another method of exhibiting ethnobotanical specimens is to mount them on heavy paper; such paper is specially prepared for the purpose. Each specimen is fastened to a sheet of the mounting paper by narrow strips of gummed paper; gummed Chinese linen paper may be obtained in sheets or in strips cut in varying lengths and widths. A label bearing the data desired is then pasted at one corner of the sheet, when the specimen is ready for exhibition. The content of the label is a matter of some consequence. It should include the scientific name of the plant, the common name, the Indian name with etymology, the locality and the date collected, the name of the collector, and brief mention of special points of interest connected with it.

The ethnologist who is collecting his own material should take pains to collect large specimens with all the parts present if possible in order that the botanist to whom they are sent may readily identify them. The writers have known instances in which plants submitted for classification could not be identified because of insufficient material, or because, if named, the designations were followed by question marks. Although primarily an ethnological subject, ethnobotany does not exclude the necessity for accuracy as regards the botanical part of the work.

Previous Ethnobotanical Studies

Ethnobotany has received attention from a number of ethnologists, and valuable data have been accumulated. It is desirable that this material be assembled, so that the present state of ethnobotany may be better ascertained; and furthermore, that problems and methods of research may be outlined and work in this field be conducted systematically and with a definite purpose in view.

Harshberger[1] in a paper published in 1890 discussed the purposes of ethnobotany and pointed out the importance of the subject in general. He made the interesting suggestion that ethnobotanical gardens, in which should be grown only aboriginal plants, be established in connection with museums. Havard[2] has written two

[1] Harshberger, J. W., Purposes of Ethno-botany, *Botan. Gazette*, XXI, pp. 146–54, 1896.

[2] Havard, V., The Food Plants of the North American Indians, *Bull. Torrey Botan. Club*, XXII, no. 3, pp. 93–123, 1895. Drink Plants of the North American Indians, ibid., XXIII, no. 2, pp. 33–46, 1896.

articles giving valuable accounts of the most important food and drink plants of the North American Indians. Barrows[1] has discussed the ethnobotany of the Coahuilla Indians of southern California, including much information on the general ethnology of the tribe. Chamberlin[2] gives lists of the plant names of the Ute and the Gosiute Indians, including in many instances etymology and uses to which the plants were put. Plants known to have been utilized by the Luiseños of southern California are listed by Sparkman,[3] with their Luiseño, botanical, and English names.

Attention is drawn also to the papers by Powers,[4] Coville,[5] Fewkes,[6] Hough,[7] Matthews,[8] Stevenson,[9] and others.

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[1] Barrows, David Prescott, The Ethno-botany of the Coahuilla Indians of Southern California, pp. 1–82, Chicago, 1900.

[2] Chamberlin, Ralph V., Some Plant Names of the Ute Indians, *Amer. Anthr.*, n. s., XI, no. 1, 1909. Ethnobotany of the Gosiute Indians, *Memoirs Amer. Anthr. Assoc.*, II, pt. 5, pp. 331–405, 1911.

[3] Sparkman, Philip Stedman, The Culture of the Luiseño Indians, *Univ. Calif. Pub., Amer. Archeol. and Ethn.*, VIII, pp. 187–234, 1908.

[4] Powers, Stephen, Aboriginal Botany, *Proc. Calif. Acad. Sci.*, V, pp. 373–379, 1873–75.

[5] Coville, F. V., Plants Used by the Klamath Indians of Oregon, *Contr. U. S. Nat. Herb.*, V, pp. 87–108, 1897.

[6] Fewkes, J. Walter, A Contribution to Ethnobotany, *Amer. Anthr.*, IX, no. 1, pp. 14–21, 1896.

[7] Hough, Walter, The Hopi in Relation to their Plant Environment, ibid., X, no. 2, pp. 33–44, 1897.

[8] Matthews, Washington, Navajo Names for Plants, *Amer. Nat.*, XX, pp. 767–77, 1886.

[9] Stevenson, Matilda Coxe, Ethnobotany of the Zuñi Indians, *Thirtieth Ann. Rep., Bureau of American Ethnology*, pp. 31–102, 1915.

TEWA CONCEPTS OF PLANT LIFE

Functions of Plant Parts

We speak of the functions of certain plant parts; for example, we say the leaf makes food for the plant, the bark has a protective function, the colored petals of a flower attract insects. What are the Indians' ideas of the functions of the parts of plants? It seems that the majority of their ideas arise directly from their observation of life phenomena; they do not arise as the result of thought and deliberation; there is little evidence of philosophizing or of inquiry into the reasons for the existence of things and conditions. They say that the leaves make the plant grow; when the leaves fall off the plant stops growing. The tree in the winter condition is not considered to be dead; they say it does not grow then because it has no leaves; the tree stays just the way it is in the fall until leaves come again. This idea arises purely from their observation of seasonal vegetative events; they have not thought out nor wondered how and why it is that the leaves cause resumption of growth. The leaves fall from the tree because they get ripe like fruit. If you ask them why a cottonwood sheds its leaves and a pine tree does not, they have no answer. They observe the fact, but so far as could be ascertained they have not thought about the reason therefor. We find no folklore connected with the great majority of phenomena relating to plant life. The roots of a tree are the parts upon which the plant sits. The word for root, *pu*, is the same as that for haunches, buttocks; base, bottom, or foot of inanimate objects. They have not observed that roots take up water, but they say the "roots have to get wet or the plant dies." The bark is considered to be a protection to the tree; the word for bark, also for skin, is *k'owà;* the bark is the skin of the tree. Spines, thorns, prickles are not thought to have any protective function. The Tewa appear to have a very vague idea of sex in plants. To corn pollen, which is used so much by them in their religious ceremonies and which is produced by the plant in such great abundance, was ascribed no use; the informants had not observed that it falls on the corn silk and that its presence there is necessary for the development of the ear of corn. It is merely something finely divided and yellow, and holy when used in certain ways. A Tewa once made the statement, however, that one can not get a field of purely white corn because the wind always mixes the colors (see p. 84), but his idea was perhaps vague. The little plant is thought

to be within the seed; the informant said "the plant is in the seed, but you can not see it." They say that when you put the seed into the ground and pour water on it, and it "gets a good shock," it grows up. "Bees go to the flowers to get honey; after a while they get their young from [by the help of] the flower."

Classification of Plants

Although the Tewa distinguish plants from animals and again from minerals, and also recognize more or less consciously such classes as trees, shrubs, small flowering plants, vines, grasses, fungi, mosses, etc., much as Europeans do, the classificatory words in the Tewa language are very few as compared with a language such as English.

There is not even a word meaning 'plant' unless it be *p'e*, which signifies primarily a 'stiff, long object,' and is variously applied to stick, pole, stake, stalk, trunk, timber, log, stave, staff, plank, board, lumber, wood, plant. Yet the morphology of the language shows how consistently plants are recognized as not being animals or minerals. All nouns denoting plants and most nouns denoting parts of plants have vegetal gender,[1] a fact shown by a peculiar form of adjectives and verbs construed with such nouns. Thus *p'e p̂i'i̯y*, 'red stick' (*p'e*, stick; *p̂i*, red), has vegetal gender: sing. *p'e p̂i'i̯y*, dual *p'e p̂i'i̯y*, 3+ plu. *p'e p̂i'i'i; tse p̂i'i'i*, 'red dog' (*tse*, dog; *p̂i*, red), has animal gender: sing. *tse p̂i'i'i*, dual *tse p̂i'i̯y*, 3+ plu. *tse p̂i'i̯y; k̂u p̂i'i'i*, 'red stone' (*k̂u*, stone; *p̂i*, red), has mineral gender: sing. *k̂u p̂i'i'i*, dual *k̂u p̂i'i̯y*, 3+ plu. *k̂u p̂i'i'i*.

'Akǫy, 'field', 'open country', prepounded to the names of plants in some cases distinguishes the wild from the cultivated variety; thus: *'akǫnsi*, 'wild onion' (*'akǫy*, 'field'; *si*, 'onion'). Plants are distinguished also as mountain plants, valley plants, good plants, bad plants, etc. Edible wild plants are sometimes grouped as *tsa̯i̯ywæ'i'i*, 'green things' (*tsa̯i̯ywæ* blue, green).

There is no general word meaning 'tree' unless it be *p'e*, 'stiff long object,' 'stick,' 'lumber,' 'plant,' referred to above. English 'tree' or Spanish *arbol* is sometimes rendered by *te*, Populus wislizeni, *i̯wæi̯*, Pinus brachyptera, or some other name of a large 'tree' species; cf. *be*, 'fruit tree,' below.

There is no word meaning 'shrub' or 'bush' unless it be this same word *p'e*. The diminutive postpound *'e* may be added to a tree name to show that the plant is dwarfed or young. Thus: *hu̯*, Juniperus monosperma, *hu̯'e*, dwarfed or young plant, bush, shrub of *Juniperus monosperma*.

[1] *P̨i̯*, 'mountain,' and some other nouns which do not denote plants or parts of plants also have this gender.

Be, meaning originally 'roundish fruit,' as that of the chokecherry or wild rose, has become applied to all kinds of introduced fruits and also to the plants which bear them. Thus *be* means fruit tree, as apple, peach, plum, or orange tree. Fruit tree may also be called *bep'e* (*be*, roundish fruit, fruit, fruit tree; *p'e* stick, plant).

Îo, meaning originally piñon nut, i. e. nut of the *îō*, 'piñon tree,' has become extended in application to all kinds of nuts except cocoanuts. Nut tree might be called *îop'e* (*îo*, piñon nut, nut; *p'e*, stick, plant), but there would rarely be occasion to use so general and inclusive a term.

P'e'ñæb̃i, 'rubbish,' 'litter,' 'lint,' 'weed,' 'herbaceous plant,' is very common, its application not being restricted to useless plants. It is the nearest equivalent of Spanish *yerba*. Cf. French *chenille* which originally meant only 'rubbish' and now usually means 'caterpillar'.

Pob̃i, 'flower,' like the English word 'flower,' in the case of smaller plants of which the flowers are a conspicuous part often loosely denotes the entire plant. Several of the Tewa specific plant names contain *pob̃i* with the meaning 'flower plant'.

There is no word meaning 'vegetable' in the sense of German *Gemüse*.

'Apæ, 'vine', exactly covers the meanings of the English 'vine'.

Ta 'grass,' 'hay'.

Te is said to signify almost any kind of fungus.

K'owà, 'tegument', 'skin', is applied to any skinlike vegetal growth, as many kinds of moss and lichen.

Discrimination

Small differences in plants are observed by the Tewa. It is remarkable how closely distinctions are made by them. For instance, they have a name for every one of the coniferous trees of the region; in these cases differences are not conspicuous. The ordinary individual among the whites does not distinguish the various coniferous trees, but, as a rule, calls them all pines. It is clear that the majority of white people are less observant and in many cases know far less about plant life than does the Indian, who is forced to acquire knowledge in this field by reason of his more direct dependence on plants.

PLANT NAMES OF THE TEWA

Character of Plant Names

A majority of the Tewa names of plants are descriptive, having reference to some striking characteristic of the plant, to its use, its habitat, etc. The same is true to a great extent of common English names of plants; for instance, ground ivy, monkey flower, pine drops, crane's bill, monkshood, jack-in-the-pulpit, etc. Just as among English common names of plants we find some the reason for the original application of which is not understood, so we find similar cases among the Indians. Why do we call a certain tree dogwood? And why do the Tewa call a certain plant 'coyote plant'? As a result of the descriptive character of plant names by far the larger proportion of them are compound. Following is a list of such names.

Non-compounded Tewa Plant Names

It will be seen from the following list that the plants which have non-compounded and distinctive names are the most common, conspicuous, and widely used ones of the region. The etymology of these words is unknown to the Tewa, the words being merely phonetic symbols employed to designate the various plants. There are comparatively few of these unetymologizable names. Many other plant names are formed by compounding them.

Unetymologizable Plant Names of Native Origin

'Aðè, chokecherry
'Awa, cattail
'Awi, Galium, bedstraw
Hu, one-seeded juniper
Jǔŋ, willow
Jo, chandelier cactus
Kojaje, Span. yerba de víbora
Kwæ, oak
K̂uŋ, skunk-bush
K'a'ª, rose
K'uŋ, corn
Nǫ̆nǫ̆, aspen
Nwæŋ, rock pine (pl. 1)
'Oǫa, globe mallow.
Po, squash, pumpkin
Po, Phragmites, "carrizo"
Puhu, four-o'clock
P'a, Yucca baccata, Span. "datil"
P'u, large rabbit-brush
Qwæ, mountain mahogany
Qwǫ̆, guaco
Sa, tobacco
Sagoḅe, potato-like plant
Sæ, Opuntia
Sek'æŋ, cotton
Si, onion
Su, amaranth
Ta, grass
Te, valley cottonwood
Te, fungus
Tu, bean
T̂o, Rocky Mountain sage
T̂ō, piñon pine (pl. 1)
T̂se, Douglas spruce
Tʃuŋ, alder
Wæjoka, ragweed

It appears that about thirty Spanish plant names of etymology unknown to the Tewa and for which there are no common Tewa equivalents have been taken into the everyday language, and are used precisely as are the thirty-six native plant names listed above. In addition to these there are many other Spanish designations of plants with which the Tewa are familiar.

Plant Names of Spanish Origin that Have no Common Equivalents of Tewa Origin

'Almendȧ̀, almendra, almond
'Alp'alp'à, alfalfa
'Añi'i, añil, sunflower
'Apiù, apio, celery
Aspaɜagù, esparrago, asparagus
Ƀananà, banana, banana
Ƀenɣnd̨ì, melón, melon
Ƀeɜù, berro, cress
'Igɣù, higo, fig
Kakàwatè, cacahuate, peanut
Kañà, caña, cane
Kap'e, café, coffee
Kokò, coco, coconut
Kolè, col, cabbage
Letʃugà, lechuga, lettuce
Limoɣ, limón, lemon
Malƀà, malva, mallow
Moɜà, mora, mulberry, blackberry
Motasà, mostaza, mustard
Naɜayhà, naranja, orange
'Oɣgù, hongo, mushroom
Peɜà, pera, pear
Poñi'i, poñil, Fallugia
Sand̨ià, sandía, watermelon
Seleɜi, "celerí," celery
Seɜesà, cereza, cherry
Te, te, tea
Tomatè, tomate, tomato
Tsigù, chico
Tsɨnd̨ì, chile, pepper
'Ulè, hule, rubber

PARTS AND PROPERTIES OF PLANTS

Tewa names designating parts of plants do not correspond closely with those used in English. A part which may be designated in English by a single term is frequently called by various terms in Tewa according to the species. Thus: Eng. 'bark', Tewa *k'owà*, said of most trees, but *qwiɓè*, said of the one-seeded juniper; Eng. 'stalk,' Tewa *p'e*, said of many plants, but *k'ų'ų*, 'corn stalk.' Again, the opposite is frequently true. Thus Tewa *ƙa* is applied to leaves, petals of flowers, and needles of coniferous trees.

Another interesting feature is the extension of application of a word originally used to denote one conception only, to include related conceptions. Thus the Tewa called the piñon tree *îō*, while *îo* is used for the piñon nut, the seed of the piñon tree, and original etymological connection between *îō* and *îo* seems certain after an examination of cognate words in other Tanoan languages. The Tewa of the present day, however, apply *îo* also to the seeds of some other coniferous trees, thus: *ŋwæ̨nîo*, 'seed of the rock pine' (*ŋwæ̨ŋ*, rock pine; *îo*, piñon nut, nut), and even to any kind of introduced nut, peanuts, the kind of introduced nuts with which the Tewa are most familiar, being regularly called *îo*.

It is commonly supposed that the vocabularies of Indian languages are meager and that to translate scientific works into them would be almost impossible. Quite the opposite is true, at least as regards Tewa, the vocabulary of which is rich and capable of expressing abstract thought. Indeed, it would be possible to translate a treatise on botany into Tewa, although the translation would be somewhat clumsy.

Flowers, their Parts and Functions

Poɓì, 'flower', 'flowering plant.' This word applies to any flowers. The name of the species is often prepounded, thus: *k'a'apoɓì*, 'wild rose flower' (*k'a'a*, wild rose; *poɓì*, flower). *Poɓì* is evidently cognate with the second syllable of Isleta *nąpaɪ*, 'flower,' etc.

The winged fruit of *tejeɑi*, 'box-elder' (see fig. 1), is also called *poɓì*. The relation of the wing to the seed is similar to that of the petals to the seed of a flower. The true flower of the box-elder is also called *poɓì*.

Poɓì is very commonly used meaning 'flowering plant,' as English 'flower.' (Compare Tennyson's "Flower in the crannied wall.")

Poƀì is not, however, applied to inflorescence, as of corn, yucca, etc., although the entire inflorescence is sometimes called in English the flower of the plant. See below under the heading Inflorescence.

Figurative uses of *poƀì* are pretty. Young men use the expression *naƀì poƀì*, 'my sweetheart,' literally 'my flower.' *Poƀì* is found in many compounded personal names of women, in which it appears as both a prepounded and a postpounded element. The other adjoined member of such names is frequently omitted in conversation, the woman or girl being called merely *Poƀì*, 'flower.' A white cumulus cloud is called *'ok'uwà poƀìt̂sæ'i'i*, 'white flower cloud' (*'ok'uwà*, cloud; *poƀì*, flower; *t̂sæ*, white). Eagle down is called *tsepoƀì*, 'eagle flower' (*tse*, eagle; *poƀì*, flower).

Poƀìka, 'petal,' literally 'flower leaf' (*poƀì*, flower; *ka*, leaf); cf. German *Blumenblatt*. *Ka* alone is also used, meaning 'petal.' Petals are called 'flower leaves' in many languages because of their leaf-like appearance. Many of the descriptive terms applied to leaves (see below) might also be applied to petals.

Poƀìtęy, 'stamen,' literally 'flower tube' (*poƀì*, flower; *tęy*, tube, stalk bearing inflorescence). If the stamens resemble corn-silk they may be called *sæ*; see below. Pistil is usually also called *poƀìtęy*, not being distinguished from the stamens. If the difference between stamens and pistil is noticeable in that the latter lacks an anther, the pistil may be called *poƀìtęm ƀewèpi'i̯y*, 'tube without a knob on the end' (*poƀì*, flower; *tęy*, tube; *ƀewè*, knob, small roundish thing; *pi*, negative); see *poƀìtęmbewè'e*, below. The functional difference between stamen and pistil was not understood by the Tewa informants. The diminutive *tęy'e* may well be substituted for *tęy*.

Poƀìtęmbewè'e, 'anther,' 'stigma,' literally 'flower-tube knob' (*poƀì*, flower; *tęy*, tube; *ƀewè*, small roundish thing; *'e*, diminutive). The functional difference between anther and stigma was not known to the informants.

Sæ (Hano Tewa, *sælæ*), 'corn-silk', 'stamens and pistil resembling corn-silk'. The silk of corn consists of the styles which are attached to the grains (seeds) of corn (see fig. 6). Instead of *sæ* one also hears *sæpoƀì*, literally 'corn-silk flower' (*sæ*, corn-silk; *poƀì*, flower), and *sæfu̯y* (*sæ*, corn-silk; *fu̯y*, to fly?), both having exactly the same meaning and usage as *sæ*.

Kǫ̆tu, 'pollen', literally 'inflorescence kernel' (*kǫ̆y*, inflorescence; *tu*, kernel, distinguished by some speakers at least from *tu*, flesh, meat, by its tone). *Kǫ̆tu* is applied to the pollen of any kind of flower or inflorescence, the etymology being merely dormant in the minds of the speakers. The fructifying action of pollen was not known to any of the informants. One may hear also *kǫ̆tu t̂sejì'i̯y*, 'yellow pollen' (*kǫ̆tu*, pollen; *t̂se*, yellow).

Poɓìk'ǣŋ, 'pollen', literally 'flower meal' (*poɓì*, flower; *k'ǣŋ*, meal, flour). This term appears to be less used than *kątu*. As in the case of *kątu* one also hears *poɓìk'ǣŋ t̂seji'iŋ*, 'yellow pollen, (*poɓìk'ǣŋ*, pollen; *t̂se*, yellow).

Poɓì'ąŋ, 'flower cover', 'calyx', 'sepals' (*poɓì*, flower; *'ąŋ*, covering).

Poɓìpu, 'flower stem' (*poɓì*, flower; *pu*, base, buttocks, root, stem). Cf. *kapu*, leaf stem, *ɓepu*, fruit stem, etc.; see below.

A flower bud is called *'op'u* or *poɓì'op'u*. *'Op'u* is used of any bud or young sprout, whether of flower, leaf, or stem. Of a flower bud which has not yet burst or opened the Tewa say: *nąpoɓì'ąmmų*, 'the flower is enveloped or covered' (*nąˌ* it; *poɓì*, flower; *'ąŋ*, to envelop or cover; *mų* to be), or *winąpoɓìpąmpi*, 'the flower has not yet burst' (*wi*, negative; *nąˌ* it; *poɓì*, flower; *pąŋ*, to burst; *pi*, negative), or *nąpoɓìwamų*, 'the flower is an egg,' 'the flower is in the bud' (*nąˌ* it; *poɓì*, flower; *wa*, egg; *mų*, to be). See also *wa*, under Fruits, below. When the flower bud has opened, one may say: *nąpoɓìpąŋ*, 'the flower has burst' (*nąˌ* it; *poɓì*, flower; *pąŋ*, to burst). The Tewa informants volunteered the information that the pollen falls or is shed: *nąkątut'ąnnæ*, 'the pollen falls or is shed' (*nąˌ* it; *kątu*, pollen; *t'ąnnæ*, to fall or be shed), or *nąkątujemu*, 'the pollen falls' (*nąˌ* it; *kątu*, pollen; *jemu*, to fall). When the petals start to wither, one may say: *nąpoɓìsiŋde'e*, 'the flower is withering' (*nąˌ* it; *poɓì*, flower; *siŋ*, to wither; *de'e*, progressive). When the petals are withered and already dry, one may say: *nąpoɓì(ka)t̂a*, 'the flower is dry or the flower petals are dry' (*nąˌ* it, they; *poɓì*, flower; *ka*, leaf, petal; *t̂a*, to be dry). Of dropping petals, one may say: *nąpoɓìkat'ąnnæ*, 'the petals are falling or being shed' (*nąˌ* it, they; *poɓìka*, petal; *t'ąnnæ*, to fall, to be shed), or *nąpoɓìkajemu*, 'the petals are falling' (*nąˌ* it, they; *poɓìka*, petal; *jemu*, to fall). After the petals are shed, one might say of the flower: *nąpoɓìtʃu*, 'the flower is dead' (*nąˌ* it; *poɓì*, flower; *tʃu*, to be dead).

Inflorescence

Kąŋ, 'inflorescence,' 'tassel.' *Kąŋ* refers to any group of flowers on a stem. Thus: *k'ųŋkąŋ*, 'tassel of corn' (*k'ųŋ*, corn; *kąŋ*, inflorescence) (see fig. 6); *takąŋ*, 'inflorescence of grass' (*ta*, grass; *kąŋ*, inflorescence) (see fig. 5); *wæjokakąŋ*, 'inflorescence of common ragweed' (*wæjoka*, common ragweed; *kąŋ*, inflorescence). In case the flowers are not scattered along the stalk but have their bases surrounded by a common involucre, one would hardly apply *kąŋ*, but would describe such a group as: *'iwègà nąpoɓìmų*, 'the flowers are together' (*'iwègà*, together in one place; *nąˌ* they; *poɓì*, flower; *mų*, to be), or *nąpoɓìqwisa*, 'the flowers are tied together' (*nąˌ* they; *poɓì*, flower; *qwi*, to tie; *sa*, to lie, to be, said of 3+).

Tę̣y, 'tube,' 'stamen,' 'pistil,' 'stalk bearing inflorescence'. *Tę̣y* is said of hollow cylindrical objects. Thus: *k'ų̣y(kq̆)tę̣y*, 'stalk of corn tassel' (*k'ų̣y*, corn plant; *kq̆*, inflorescence; *tę̣y*, tube, stalk bearing inflorescence); *p'a(kq̆)tę̣y*, 'stalk bearing inflorescence of 'Yucca baccata' (*p'a*, Yucca baccata; *kq̆*, inflorescence; *tę̣y*, tube, stalk bearing inflorescence).

K̂aląą, 'cluster' (Hano). Thus: *te k̂aląą*, 'clustered catkins of the cottonwood tree.' The same term would be applied to a cluster of grapes.

Tjaka, 'bunch' (Hano). Thus: *tę̣njotjaka*, bunch of white fir foliage.

Seeds and Fruits, their Parts and Functions

P̂e, 'seed,' 'fruit,' 'crop.' This is the adjective *p̂e*, 'ripe,' 'mature,' used as a noun; for adjectival use of *p̂e* see below. *P̂e* is applied to any seed or fruit produced by any plant, also to crops in the sense of seeds or fruits collectively. Rarely it refers to 'crops,' meaning matured whole plants or any part or parts of matured plants. Thus: *tq̆tq̆p̂e*, 'seed, fruit, or berry of wheat,' 'wheat crop,' not including or excluding stalks, leaves, or roots (*tq̆tq̆*, wheat; *p̂e*, seed, fruit, crop). *P̂e* may be used instead of *tq̆y*, *t̂o*, *k'e*, *k'a*, *bẹ*, *pegè*, *k'owè*, and the names of introduced nuts and fruits; see below. *P̂e* tends especially to supplant *k'a* and *pegè*. Thus: *hų̣p̂e*, 'berry of one-seeded juniper,' instead of *hų̣pegè* (*hų̣*, one-seeded juniper; *p̂e*, seed, fruit, crop); *kwæ̨p̂e*, 'acorn,' instead of *kwæ̨k'a* (*kwæ̨*, oak tree; *p̂e*, seed, fruit, crop). In the case of fruits to which none of the other words applies very well, *p̂e* is regularly applied. Thus: *'abèp̂e*, 'fruit of the chokecherry' (*'abè*, chokecherry; *p̂e*, seed, fruit, crop); *sæ̨p̂e*, 'prickly-pear or Opuntia' (*sæ̨*, Opuntia; *p̂e*, seed, fruit, crop). *P̂e* is used as a second member of compounds, such as *p'ep̂e*, *k'ap̂e*, *bẹp̂e*, etc.; see below. See also *p̂e*, 'immature kernel of corn either on the cob or cut off the cob,' listed below, which may be the same word.

Fig. 1.—Fruit of box-elder.

P'ep̂e, 'seed,' 'fruit,' 'crop' (*p'e*, stick, plant; *p̂e*, seed, fruit, crop). This is an equivalent of the non-compounded *p̂e*.

Tq̆y, 'seed.' This word is applied to any seed. It may be, but usually is not, applied instead of *t̂o* or *k'a*; see below. Introduced nuts may be called *tq̆y*, just as we would call them seeds, but the common name for them is *t̂o*.

T̂o, 'piñon nut,' 'nut.' As stated above, an examination of cognate words in other Tanoan languages leads us to believe that *î̂o* is etymologically related to *î̂ō*, 'piñon tree,' and that the original signification of *î̂o* is 'piñon nut.' The present application of *î̂o* to the seeds of the rock pine and to introduced nuts is probably a more recent extension of the use of the word. Thus: *ɣwæ̀nî̂o*, 'seed or nut of the rock pine' (*ɣwæ̀ɣ* rock pine; *î̂o*, piñon nut, nut); for names of introduced nuts see under names of plants, below.

Ɓewè, 'small roundish object,' 'cone of coniferous tree.' *Ɓewè* is said to be used of the cones of coniferous trees only in the compounds *tą̆mɓewè*, 'cone with seeds in it' (*tą̆ɣ* seed; *ɓewè*, small roundish object, cone), and *î̂oɓewè*, 'cone with nuts in it' (*î̂o*, piñon nut, nut; *ɓewè*, small roundish object, cone). Like *ɓuju* (see below) *ɓewè* refers of course to the shape. An empty cone may be distinguished by postjoining *k'owà*, 'skin,' 'husk,' or by using *k'owà* alone; also by saying *winą̆tą̆mmųpi*, 'it has no seeds' (*wi*, negative; *ną̆*, it; *tą̆ɣ*, seed; *mų*, to have; *pi*, negative).

Ɓuju, 'small roundish object,' 'cone of coniferous tree.' Cf. *ɓewè*, above, the usage of which this word exactly parallels.

K'e (Hano Tewa *k'ili*), 'grain of corn,' 'small bud of cottonwood flower.' The commonest compounds are said to be: *k'ųɣk'e*, 'grain of corn' (*k'ųɣ*, corn plant; *k'e*, grain, in this sense), and *tek'e*, 'flower bud of valley cottonwood' (*te*, valley cottonwood; *k'e*, grain, bud, in bud, in this sense).

K'odè, 'ear of corn husked or not husked.' The word has this one meaning only.

K'a, 'acorn', 'fruit of the skunk-bush.' This word appears to be used of these two fruits only. The commonest compounds are said to be *kwæ̨k'a*, 'acorn' (*kwæ̨*, oak tree; *k'a*, acorn, fruit of the skunk-bush), and *k̂ųk'a*, 'fruit of the skunk-bush' (*k̂ų*, skunk-bush; *k'a*, acorn, fruit of the skunk-bush).

K'aî̂pe, 'acorn', 'fruit of the skunk-bush' (*k'a*, acorn, fruit of the skunk-bush; *î̂pe*, seed, fruit, crop). The use of the word is similar to that of *k'a*, above.

Ɓe, 'roundish fruit', 'apple', 'any kind of introduced fruit.' Thus: *k'a'aɓe*, 'fruit of the wild or introduced rose' (*k'a'a*, rose; *be*, apple, introduced fruit) is heard as well as *k'a'aî̂pe* (*k'a'a*, rose; *î̂pe*, seed, fruit, crop). *Ɓe* evidently refers to roundish shape and is connected with *ɓegì*, 'small and roundish like a ball,' *ɓugì*, 'large and roundish like a ball,' etc.

Ŋwæ̨be'ᵉ, *ŋwæ̨bu'ᵘ*, 'prickly, roundish seed-pod' (*ŋwæ̨*, thorn, pricker; *be'ᵉ*, *bu'ᵘ*, roundish thing). Of smaller pods *ŋwæ̨be'ᵉ* would be used, of larger ones *ŋwæ̨bu'ᵘ*. It happened that the informants applied these compounds only to the seeds of the *Datura meteloides*, using the compound *sąp'eŋwæ̨be'ᵉ*, 'prickly, roundish seed pod of *Datura meteloides*' (*ŋwæ̨*, thorn, pricker; *be'ᵉ*, small thing roundish like a ball). *Be'ᵉ* or *bu'ᵘ* could hardly be used alone with this meaning.

Bep̂e, 'apple,' 'any kind of introduced fruit' (*be*, apples, introduced fruit; *p̂e*, seed, fruit, crop). Use and meaning are quite identical with those of non-compounded *be*. *Bep̂e* is used meaning 'fruit crop,' but *be* is also used with this meaning.

Pegè, 'berry.' This word was applied by the informants to the fruit of the one-seeded juniper, *hųpegè* (*hų*, one-seeded juniper; *pegè*, berry) being a common compound. The informants stated that they had heard *pegè* applied also to the fruit of the chokecherry and of the introduced currant. As nearly as the writers can understand, the meaning of *pegè* is 'tough, leathery berry.'

Pegèp̂e, 'berry' (*pegè*, berry; *p̂e*, seed, fruit, crop). Use and meaning are identical with those of *pegè*, above.

Wa, 'egg,' 'green pod of milkweed.' Compare also the expression: *nąpoƀ̀iwamų'* 'the flower is an egg,' meaning 'the flower is young or in the bud' (*nąˇ*, it; *poƀ̀i*, flower; *wa*, egg; *mų*, to be), listed under Flower, above.

The Tewa names denoting all kinds of introduced fruits and nuts should also be classed here, since these names apply both to the plant and to the fruit. They will be found below. All these names admit of being postpounded with *p̂e*, 'seed,' 'fruit,' 'crop.'

Mąˇ'ñæ̨ŋ, 'bunch or cluster of anything,' 'bunch or cluster of fruit.' Thus: *'uƀ̀imąˇ'ñæ̨ŋ*, 'bunch of grapes' (*'uƀ̀i*, grapes; *mąˇ'ñæ̨ŋ*, bunch, cluster).

Mų, 'bag,' 'sack,' 'pod.' *Mų* often refers both to pod and contents. Thus: *tumų*, 'bean-pod or bean' (*tu*, bean plant, bean; *mų*, pod). Apparently it may be applied also to the round fruit of the squash. Thus, in a war song used at Hano: *'i'a 'ųƀi 'ɛƀi p̂okųmele nąn ɖąmpomų paɹi*, 'your son's skull I have made into a squash-bag' (*'i'a*, demonstrative, 'he'; *'ų*, you 1; *ƀi*, possessive; *'ɛ*, son, child; *ƀi*, possessive; *p̂okųmele*, 'head-ball'; *nąŋ*, unprefixed pronoun 1st sing.; *ɖąŋ*, emphatic form of inseparable pronoun *ɖo*, 'I—it'; *pomų*, 'squash-bag'; *paɹi*<*pa*, 'make,' 'do,' verbal form expressing antecedent circumstance).

'Ôku, 'down,' 'fluff.'

Poƀì, 'flower,' 'fruit of the box-elder,' 'fluff of cottonwood seeds.' Thus: *tejɑ̈ipoƀì*, 'box-elder seed' of flower-like appearance (*tejɑ̈i*, box-elder; *poƀì*, flower); *tɑ̈ɑ̨̈poƀì*, 'cottonwood fluff' (*tɑ̈ɑ̨̈*, cottonwood seed-pod; *poƀì*, flower). The latter is called also *tɑ̈ɑ̨̈'ôku* (*'ôku*, down).

Pu, 'base,' 'buttocks,' 'root,' 'stem.' *Pu* is used of the stem of fruit. Thus: *ƀ̣epu*, 'stem of fruit' (*ƀ̣e*, apple, introduced fruit; *pu*, base, stem); *tɑ̨̈mpu*, 'stem of a seed' (*tɑ̨̈ɣ*, seed; *pu*, base, stem). But cf. *k'apu* below.

ʃa, 'ear-wax,' 'the rough surface of tanned deerskin,' 'the bloom on the surface of fruits and plants.' Thus: *'uƀàʃa*, 'the bloom or fine bluish dust on the surface of a grape' (*'uƀà*, grape; *ʃa*, ear-wax, bloom).

Tɑ̈ɑ̨̈, 'unripe or ripe seed-pod of the female cottonwood of any species.' When these burst, white fluff comes forth from them which is called *tɑ̈ɑ̨̈poƀì* (*poƀì*, flower) or *tɑ̈ɑ̨̈'ôku* (*'ôku*, down).

Tu, 'kernel of a seed.' Commonly used compounds are *tɑ̨̈ntu*, 'kernel of a seed' (*tɑ̨̈ɣ*, seed; *tu*, kernel), and *îotu*, 'kernel of a nut' (*îo*, piñon nut, nut; *tu*, kernel). *Tu*, 'kernel,' has a level tone; *tu*, 'flesh,' has a circumflex tone.

K'æɣ, 'meal,' 'flour,' 'ground-up seeds.'

K'owà, 'skin,' 'tegument,' 'shell,' 'husk,' 'bark.' Thus: *îok'owà*, 'nut shell' (*to*, piñon nut, nut; *k'owà*, skin, shell); *k'oɑ̀ę̀k'owà*, 'husk of ear of corn' (*k'oɑ̀ę̀*, ear of corn; *k'owà*, skin, husk).

K'apu, 'handle' of anything, 'stem of an ear of corn.' With reference to plants the term appears to be used only of the stem of an ear of corn, being equivalent to *k'oɑ̀ę̀k'apu*, 'stem of an ear of corn' (*k'oɑ̀ę̀*, ear of corn; *k'apu*, handle, stem of corn ear). The second syllable of *k'apu* appears to be *pu*, base. Stem of ear of corn would hardly be called *k'oɑ̀ę̀pu*.

Tɑ̨ƀì, 'core,' of apple, pear, etc; 'pith.' See page 24.

K̂ɥɣ, 'wing,' 'corncob.' For 'corncob' the frequent compound is *k'oɑ̀ę̀k̂ɥɣ*, 'corncob' (*k'oɑ̀ę̀*, ear of corn; *k̂ɥɣ*, wing of bird or other flying creature, cob). *K̂ɥɣ* occurs also as second member of *p'ek̂ɥɣ*, 'bone' (*p'e*, stick, long hard thing; *k̂ɥɣ*, wing, cob). Whether *k̂ɥɣ* may be said of skeleton-like parts of other plants was not ascertained.

Of a flower going to seed the Tewa say: *nɑ̆poƀìtɑ̨̆mpuwàmæɣ*, 'the flower goes to seed' (*nɑ̆*, it; *poƀì*, flower; *tɑ̨̆ɣ*, seed; *puwà*, to become; *mæɣ*, to go). The ordinary adjective denoting ripeness is *p̂e*. Thus: *îo p̂e'i̯ɣ*, 'ripe piñon nut' (*îo*, piñon nut; *p̂e*, ripe); *îo p̂epi'i̯ɣ*, 'un-

ripe piñon nut' (*t̂o*, piñon nut; *p̂e*, ripe; *pi*, negative). Of all fruits which are green when unripe *tsą̆ywæ*, 'green,' may be used. Thus: *be tsą̆ywæ'i̱y*, 'green apple' (*be*, apple; *tsą̆ywæ*, green). Of gourds, squashes, pumpkins, muskmelons, watermelons, and perhaps of some other fruits, *k̂e*, 'hard,' is used of ripeness, while *'owa*, 'soft,' is applied to unripe condition. Thus: *sąnd̨ià k̂e'i̱y*, 'hard, ripe watermelon' (*sąnd̨ià*, watermelon < Span. *sandía; k̂e*, hard); *sąnd̨ià 'owa'i̱y*, 'soft, unripe watermelon' (*sąnd̨ià*, watermelon < Span. *sandía; 'owa*, soft). But of other fruits *k̂e*, 'hard,' is used of unripeness and *'owa*, 'soft,' of ripeness or mellowness, just as in English. Thus: *be k̂e'i̱y*, 'hard, unripe apple' (*be*, apple; *k̂e*, hard); *be 'owa'i̱y*, 'soft, mellow apple' (*be*, apple; *'owa*, soft). The adjectives given above may of course also be used predicatively. Thus: *nąp̂emu*, 'it is ripe' (*nąp̆*, it; *p̂e*, ripe; *mu*, to be); *winąp̆emupi*, 'it is not ripe' (*wi*, negative; *nąp̆*, it; *p̂e*, ripe; *mu*, to be; *pi*, negative).

Leaves, their Parts and Functions

LEAVES IN GENERAL

K̄a (Hano Tewa, *kala*), 'leaf.' Thus: *k'ų̄yk̄a*, 'corn leaf' (*k'ų̄y*, corn; *k̄a*, leaf).

K̄ap'a, 'leaf surface' (*k̄a*, leaf; *p'a*, large, thin, flat, and roundish).

K̄ak'i̱yg̨è, 'leaf edge' (*k̄a*, leaf; *k'i̱yg̨è*, edge).

K̄atsi, 'leaf point' (*k̄a*, leaf; *tsi*, point).

K̄a'okwą̆, 'leaf vein', 'leaf fiber' (*k̄a*, leaf; *'okwą̆*, vein, artery).

K̄ap̂o, 'leaf juice', literally 'leaf water' (*k̄a*, leaf; *p̂o*, water).

K̄apu, 'leaf stem' (*k̄a*, leaf; *pu*, base, stem).

Of leaves falling the Tewa say: *nąk̄at'ą̄nnæ*, 'the leaves fall' (*nąp̆*, it, they; *k̄a*, leaf; *t'ą̄nnæ*, to fall); or *nąk̄ajemu*, 'the leaves fall' (*nąp̆*, it, they; *k̄a*, leaf; *jemu*, to fall).

SIZE AND SHAPE OF LEAVES

K̄a he'i̱y, 'big leaf' (*k̄a*, leaf; *he*, big). *K̄ajo* (*k̄a*, leaf; *jo*, augmentative) may not be used meaning 'big leaf.'

K̄a hiñæ'i̱y, 'little leaf' (*k̄a*, leaf; *hiñæ*, little).

K̄a'e, 'little leaf' (*k̄a*, leaf; *'e* diminutive).

K̄a hejì'i̱y, 'long leaf' (*k̄a*, leaf; *hejì*, long).

K̄a hiñæ'i̱y, 'short leaf' (*k̄a*, leaf; *hiñæ*, short). Same as 'little leaf,' above.

K̄a p'agì'i̱y, 'big flat leaf' (*k̄a*, leaf; *p'agì*, large, thin, flat, and roundish).

Ka p'igì'ıy, 'little flat leaf' (*ka*, leaf; *p'igì*, small, thin, flat, and roundish).

Ka p'agì'ıy, 'broad flat leaf' (*ka*, leaf; *p'agì*, large, thin, flat, and roundish). Cf. 'big flat leaf,' above.

Ka segì'ıy, 'slender leaf' (*ka*, leaf; *segì*, slender). This term is applied to the needles of coniferous trees and to other slender leaves.

Ka t'agì'ıy, 'big round leaf' (*ka*, leaf; *t'agì*, large, thin, and round).

Ka t'igì'ıy, 'little round leaf' (*ka*, leaf; *t'igì*, small, thin, and round).

Piyka, 'heart-shaped leaf' (*piy*, heart; *ka*, leaf).

Ka k̂a'ıy, 'thick leaf' (*ka*, leaf; *k̂a*, thick).

Ka k̂api'ıy, 'thin leaf' (*ka*, leaf; *k̂a*, thick; *pi*, negative).

COMPOUND LEAVES

Ka wijèka'ıy, 'bifoliolate leaf' (*ka*, leaf; *wijè*, two; *ka*, leaf).

Ka pojèka'ıy, 'trifoliolate leaf' (*ka*, leaf; *pojè*, three; *ka*, leaf).

Ka jonùka'ıy, 'quadrifoliolate leaf' (*ka*, leaf; *jonù*, four; *ka*, leaf).

If a single leaf has a deeply serrated edge it is not considered to be a multifoliolate leaf, but is called *ka sæywì'ıy*, 'zigzag-edged leaf' (*ka*, leaf; *sæywì*, zigzagged).

SURFACE OF LEAVES

Ka 'ą̃ñæ̨'ıy, 'smooth leaf,' 'glabrous leaf' (*ka*, leaf; *'ą̃ñæ̨*, smooth).

Ka 'otsa'ıy, 'shiny, smooth leaf,' 'glaucous leaf' (*ka*, leaf; *'otsa*, shiny).

Ka k̂o'ıy, 'rough leaf' (*ka*, leaf; *k̂o*, rough).

Ka t̂uk'ų'ıy, 'ridged leaf' (*ka*, leaf; *t̂uk'ų*, backbone, vertebral column).

Ka hegè'ıy, 'grooved leaf' (*ka*, leaf; *hegè*, arroyito, gulch, groove).

Ka 'okwą̃'ıy, 'veined leaf' (*ka*, leaf; *'okwą̃*, vein, artery).

Ka p'o'ıy, 'hairy leaf,' 'pubescent leaf,' 'puberulent leaf,' 'woolly leaf' (*ka*, leaf; *p'o*, hairy).

Ka p'o̱k̂osǫ'ǫnd̨ì'ıy, 'coarse-haired leaf,' 'hispid leaf' (*ka*, leaf; *p'o*, hair; *k̂osǫ'ǫnd̨ì*, coarse).

Ka 'o̱k̂u'ıy, 'downy leaf,' 'fluffy leaf' (*ka*, leaf; *'o̱k̂u*, downy, down, fluffy, fluff).

Ka jų̱nd̨ì'ıy, 'prickly leaf' (*ka*, leaf; *jų̱ų*, to pierce).

Ka ywæ̨'ıy, 'thorny leaf' (*ka*, leaf; *ywæ̨*, thorny).

Ka ît̂sit̂bè'ıy, 'sticky leaf' (*ka*, leaf; *ît̂sit̂bè*, sticky).

These adjectives have also predicative forms of course. Thus: *nąp'omų*, 'it is hairy' (*nąˇ*, it; *p'o*, hairy; *mų*, to be); *nątsiðèto*, 'it is sticky' (*nąˇ*, it; *tsiðè*, sticky; *to*, to make).

MARGIN OF LEAVES

Ka kįyǫè, 'edge of a leaf' (*ka*, leaf; *kįyǫè*, edge).

Ka kįyǫè'ąñæ'įy, 'smooth-edged leaf' (*ka*, leaf; *kįyǫè*, edge; *'ąñæ*, smooth).

Ka kįyǫèsæywì'įy, 'zigzag-edged leaf' (*ka*, leaf; *kįyǫè*, edge; *sæywì*, zigzagged).

Ka kįyǫèywą'įy, 'tooth-edged leaf,' 'dentate leaf' (*ka*, leaf; *kįyǫè*, edge; *ywą*, toothed).

Ka kįyǫèsiðè'įy, 'torn-edged leaf' (*ka*, leaf; *kįyǫè*, edge; *siðè*, torn crosswise to the grain or fiber).

TENDRIL

'Aqwi, 'tendril.' The etymology of this word is uncertain. The syllable *qwi* clearly means fiber; see below. *'A* may be the verb meaning 'to grow' or may be the same as the first syllable of *'ap'æ*, 'vine'; or, it is connected perhaps with Hano Tewa *'awo*, 'tendril,' 'to spread' (said of plant). A slender tendril is called *'aqwi segì'įy*, 'slender tendril' (*'aqwi*, tendril; *segì*, slender). A curled tendril is called *'aqwiþe'e*, 'tendril curl' (*'aqwi*, tendril; *þe'e*, small roundish thing). Tendrils are said to be *mąyywagì*, 'like hands' (*mąˇy*, hand; *ywagì*, like).

STALK, TRUNK, STUMP, STEM, BRANCH, TWIG, JOINT

P'e, 'stick,' 'stalk,' 'pole,' 'trunk,' 'log,' 'wood,' 'plant.' *P'e* refers to almost any long stiff object. It is the only Tewa word meaning 'plant' in general, but is rarely used with this meaning. The staff of authority of the Pueblo governors is called *p'e*, or sometimes *tajop'e*, 'governor's stick' (*tujo*, governor; *p'e*, stick). For *p'e* meaning 'wood' see page 23.

'Uuuto, 'walking stick.' Walking sticks were made of various kinds of wood and were used mostly by old or crippled people. Perhaps this word hardly belongs here. Cf. *'uuup'e*, below.

'Uuup'e, 'prayer stick.' Cf. *'uuuto*, above.

Pugè, 'lower part,' 'base or trunk of a tree' (*pu*, base, buttocks; *gè*, locative). When the trunk of a tree is referred to, one usually names the kind of tree, postpounding *pugè*. Thus: *tepugè*, 'lower part or trunk of a cottonwood tree' (*te*, Populus wislizeni; *pugè*, lower part, trunk).

K'u'u, 'cornstalk.' This word refers only to the stalk of the corn plant. *K'u'u* in some irregular way may be connected etymologically with *k'u*, 'corn plant.'

Tẹy, 'tube,' 'hollow stalk.' *Tẹy* refers to such a stalk as that of the yucca. Thus: *p'atẹy*, 'inflorescence stalk of Yucca baccata' (*p'a*, Yucca baccata; *tẹy*, tube, hollow stalk). See under Inflorescence, page 15.

Pubẹ, 'stump.' This word refers to the stump of any tree or plant. Its etymology is not understood by the Indians. The first syllable appears to be *pu*, 'base,' 'buttocks.'

Pu, 'base,' 'stem.' This is the word which means also 'buttocks' and 'root.' It is applied to the stem of a flower, leaf, or fruit as Germans might apply *Stiel*. Thus: *poðùpu*, 'flower stem' (*poðì*, flower; *pu*, base, stem).

K'apu, 'stem of an ear of corn.' This word means also 'handle' (of anything). Applied to plants it seems to be used only of the stem of *k'oɬè*, 'ear of corn.' See page 18.

Wajè, 'bough,' 'branch.' *Wajè* is applied to boughs and branches of all plants, especially to those of trees. Thus: *ẹewajè*, 'branch of a fruit tree' (*ẹe*, apple, fruit; *wajè*, bough, branch).

Wajèk'o, 'bough,' 'branch,' literally 'bough arm,' 'branch arm' (*wajè*, bough, branch; *k'o*, arm). The meaning and usage seem to be identical with those of the uncompounded *wajè*. Thus: *tewajèk'o*, 'branch of a valley cottonwood tree' (*te*, Populus wislizeni; *wajèk'o*, bough, branch).

Wajè'e or *wajèk'o'e*, 'twig,' 'twiglet' (*wajè* or *wajèk'o*, bough, branch; *'e*, diminutive).

Qwe, 'joint,' 'node,' 'internode.' *Qwe* is used as ambiguously as is English 'joint,' referring both to the nodes of a stem and to the sections of stem between the nodes. The word seems to refer more properly to the nodes, *qwejaɬì*, 'between the joints' (*qwe*, node, internode; *jaɬì*, between) being applicable to internodes. A joint of a stovepipe is, however, regularly called *qwe*.

'Op'u, 'bud.' *'Op'u* refers to buds of stalks, stems, twigs, etc., as well as to those of flowers and leaves. Thus: *wajè'op'u*, 'bud of a branch' (*wajè*, bough, branch; *'op'u*, bud).

K'e (Hano Tewa, *k'ili*), 'grain,' 'kernel,' 'bud of grain-like shape.' This is applied particularly to the red buds of the cottonwood of any species which are seen on the trees early in the spring. These are eaten, especially by the children.

Root

Pu, 'base,' 'buttocks,' 'stem,' 'root.' Thus: *k'ų̨mpu*, 'corn root' (*k'ų̨y*, corn plant; *pu*, root). Rootlet is called *pu'e*, 'little root' (*pu*, root; *'e*, diminutive).

Leaf-sheath

K'ų'ų̨k'owà, 'leaf-sheath of corn' (*k'ų'ų̨*, cornstalk; *k'owà*, tegument, skin, bark).

Tap'ek'owà, 'leaf-sheath of a stalk of grass' (*ta*, grass; *p'e*, stalk; *k'owà*, tegument, skin, bark).

K'owà, 'tegument,' either alone or postpounded, would undoubtedly be the term applied to any leaf-sheath.

Wood, Pith

P'e, 'stick,' 'stalk,' 'stem,' 'pole,' 'trunk,' 'log,' 'lumber,' 'wood,' 'plant.' *P'e* is used of wood as *palo* and *madera* are used in Spanish, but Spanish *leña* in the sense of 'firewood' is translated *sǫ̨*. *P'e* is never used meaning 'firewood.' (Hodge gives as "Firewood or Timber" clan, San Juan and Santa Clara *Pè-tdóa*, San Ildefonso *Petdóa*, Hano *Pè-tówa* (*towà*, people).[1] The rendering of *p'e* in these clan names as "firewood" is incorrect according to the writers' Indian informants.)

P'e is common as the first element of compounds, where it must be rendered by 'wood' or 'wooden' in English. Thus: *p'ekutsandà*, 'wooden spoon' (*p'e*, stick, wood; *kutsandà*, spoon < Spanish *cuchara*).

Green wood is called *p'e 'otʃu'ų̨y* (*p'e*, stick, wood; *'otʃu*, fresh, green, wet); dry or seasoned wood is called *p'e ta'ų̨y* (*p'e*, stick, wood; *ta*, dry).

Sǫ̨, 'firewood.' This usually consists of dead, fallen, or drifted wood, picked up or torn off; but the same word is applied to trees felled for firewood. See *p'e*.

A Tewa of Santa Clara told the following story: Long ago people had no fire and were trying to find it—who knows how they cooked? Perhaps they ate berries. They made four holes in a row in a slab of *ŋwæ̨ŋ* and then they twirled a stick in the holes and out of one of the holes came fire.

A few billets of firewood, carried by means of a cord on a man's shoulder and thrown down beside a woman's door, is considered an

[1] F. W. Hodge, Pueblo Indian Clans, *Amer. Anthr.*, IX, p. 350, Oct., 1896.

appropriate present. When a woman is about to be confined, her husband's father often brings her firewood.[1]

Pope, 'driftwood.' This is gathered and used as firewood. Considerable quantities of driftwood are to be found along the Rio Grande.

Tæ̨ðì, 'pith,' 'core' of fruit. See page 18. This word is the adjective *tæ̨ðì* 'soft,' used as a noun. It refers to the soft, light, spongy tissue found in the stems of some plants. Thus: *k'ų'ų̨tæ̨ðì*, 'pith of the cornstalk' (*k'ų'ų̨*, cornstalk; *tæ̨ðì*, pith).

Fiber

Qwi, 'fiber.' Thus: *p'aqwi*, 'yucca fiber' (*p'a*, Yucca baccata; *qwi*, fiber). We possibly have this word also in *'aqwi*, 'tendril,' and *qwiðè*, 'shreddy bark.' See page 21.

Pą̆'ą̆, 'string.' This word usually applies to fiber already made into string, but might be said of any kind of fiber.

Juice

P̂o, 'water,' 'juice.' This word covers all the meanings of English 'water,' 'juice.' Thus: *k'ų'ų̨p̂o*, 'juice of a cornstalk' (*k'ų'ų̨*, cornstalk; *p̂o*, water); *tep̂o*, 'sap of a valley cottonwood tree' (*te*, Populus wislizeni; *p̂o*, water, juice).

'Ap̂o, 'sweet juice,' 'syrup' ('*a*, sweetness; *p̂o*, water).

Melasà, 'sweet juice,' 'syrup' (< Spanish *melaza*).

Gum

K̄wæ̨, 'gum.' The gum of various plants was chewed. Gum was also much used for sticking things together. Thus: *ŋwæ̨ŋkwæ̨*, 'gum or pitch of the rock pine' (*ŋwæ̨ŋ*, rock pine; *kwæ̨*, gum). Chewing-gum is called merely *kwæ̨*.

Bark

K'owà, 'tegument,' 'skin,' 'bark.' This is the commonest and most inclusive word meaning 'bark.' Thus: *tek'owà*, 'valley cottonwood bark' (*te*, Populus wislizeni; *k'owà*, tegument, bark). The general name for 'moss' is *k̂uk'owà*, 'rock skin' (*k̂u*, rock; *k'owà*, tegument, bark).

[1] In the seventeenth century women went to fetch firewood; see Benavides, *Memorial* (pp. 32,76): "Nacion Taos . . . una vieja hechizera, la qual, á título de ir por leña al campo, sacó á otras quatro mugeres buenas Cristianas." At Santa Clara, after peace had been made with the Apaches de Navajó in September, 1629, "Salian hasta las viejas por leña por aquella parte." The acquisition of donkeys, and subsequently of horses and wagons, with iron tools, by the men, has removed wood-getting from the women's sphere of labor. Occasionally an old widow, or a woman whose husband is an invalid, may be seen chopping wood or gathering fallen branches.

'Ok'owà, 'bark' (*'o*, unexplained; *k'owà*, tegument, bark). This word has been heard only at San Juan Pueblo, where *k'owà* is also in use. Thus: *te'ok'owà*, 'cottonwood bark' (*te*, Populus wislizeni; *'ok'owà*, bark).

Qwiðè (Hano Tewa, *qwi*), 'shreddy bark' (*qwi*, fiber; *ðè* ?). So far as could be learned, *qwiðè* is said of the bark of the one-seeded juniper only. This is very shreddy and is a favorite substance for kindling fires. Thus: *hųqwiðè* (Hano Tewa, *hųqwi*), 'bark of the one-seeded juniper' (*hų*, one-seeded juniper; *qwiðè*, shreddy bark). *Hųk'owà*, 'bark of the one-seeded juniper' (*hų*, one-seeded juniper; *k'owà*, tegument, bark) may also be used.[1]

Hair, Spine, Thorn

P'o, 'hair.' This word is said of any kind of hair on animals or plants. The down of birds is called thus. The diminutive form is *p'o'e*, 'little hair' (*p'o*, hair; *'e*, diminutive).

K̂e, 'sharp-pointed thing.' This is the adjective *k̂e*, 'sharp-pointed', used as a noun. Thus: *p'ak̂e*, 'sharp point at the end of a yucca leaf' (*p'a*, Yucca baccata; *k̂e*, sharp-pointed thing).

Nwæ̨, 'spine', 'thorn.' This word is applied to cactus spines and all kinds of thorns. Thus: *joŋwæ̨*, 'spine of the long cactus' (*jo*, long cactus; *ŋwæ̨*, spine); *k'a'aŋwæ̨*, 'rose thorn' (*k'a'a*, rose; *ŋwæ̨*, spine).

'Agusà, 'needle' (< Span. *aguja*). This word may be used of cactus spines: *jo'agusà*, 'spine of the long cactus' (*jo*, long cactus; *'agusà*, needle).

One might mention here also verbs, as *nąk̂e*, 'it is sharp' (*nąˇ*, it; *k̂e*, to be sharp); *ɖijųŋ*, 'it pricks me' (*ɖi*, it me; *jųŋ*, to pierce, to prick).

[1] Is Gatschet's "Keres *uáka*, Rinde" (in *Zwölf Sprachen aus dem Südwesten Nordamerikas*, p. 61, Weimar, 1876), a misprint for Rind or Rinder? The Cochiti call cattle *wáka:* the Tewa of Hano, *wakà* (< Span. *vaca*, cow).

'A, 'to grow.' Thus: *nąᵡ'a*, 'it grows' (*nąᵡ*, it; *'a*, to grow); *nąᵡ'a-'ąŋgì*, 'it grows slowly' (*nąᵡ*, it; *'a*, to grow; *'ąŋgì*, slow); *nąᵡ'a-'ąñų*, 'it grows fast' (*nąᵡ*, it; *'a*, to grow; *'ąñų*, fast). Hano Tewa, *'awǒ*, 'spread wide,' applied to tendrils of vines, squashes, etc., and apparently to trees of spreading foliage. Thus: *'awǒ tsąywæ*, 'spread-wide greenness,' a female personal name given by the White Fir clan at Hano.

Pi, 'to come up,' 'to grow up.' Thus: *nąᵡpi*, 'it comes up' (*nąᵡ*, it; *pi*, to come up). This is said of a plant sprouting and growing up out of the ground.

P̂a, 'to burst,' 'to crack.' This is said of a plant unfolding or opening. Thus: *sanąᵡp̂apo'°*, 'the tobacco bursts open or unfolds' (*sa*, tobacco; *nąᵡ*, it; *p̂a*, to burst; *po'°*, to become).

Of leaves (or flowers) opening and spreading wide the Tewa say *ḍiƀikawaɹi*, *ḍiƀipoƀìwaɹi* 'the 3+ leaves open themselves,' 'the 3+ flowers open themselves' (*ḍiƀi*, prefixed reflexive pronoun third person 3+ plural; *ka*, leaf; *poƀì*, flower; *waɹi*, to spread open). Thus, in a war-song sung at Hano: *'iweɹąy 'alijowa îæmæ pegąn ḍiƀikalawaɹi*, 'thence the sunflowers, bursting open on every side, spread wide their leaves' (*'iweɹąy*, Hano dialectic emphatic form of *'iweɹi*, thence; *'alijowa*, Hano name for 'sunflower' ? species; *îæmæ*, in all directions; *pegąy*, bursting; *ḍiƀi*, prefixed reflexive pronoun third person 3+ plural; *kala*, Hano dialectic form of *ka*, leaf; *waɹi*, to spread open). The same expression is used figuratively of clouds, thus: *'ok'uwa îæmæ ḍiƀipoƀì waɹi*, 'the clouds in all directions open their flowers' (*'ok'uwa*, clouds; *îæmæ*, in every direction; *ḍiƀi*, prefixed reflexive pronoun third person 3+ plural; *poƀì*, flower; *waɹi*, to spread open).

Habits of Growth

Ŋwiŋ, 'to stand.' Thus: *nąᵡŋwiŋ*, 'it stands' (*nąᵡ*, it; *ŋwiŋ*, to stand).

'Aŋwiŋ, 'to grow in a standing position' (*'a*, to grow; *ŋwiŋ*, to stand). Thus: *nąᵡ'aŋwiŋ*, 'it grows in a standing position' (*nąᵡ*, it; *'a*, to grow; *ŋwiŋ*, to stand).

K̂o, 'to lie.' Thus: *nąᵡk̂o*, 'it lies' (*nąᵡ*, it; *k̂o*, to lie).

'Ak̂o, 'to grow in a lying position' (*'a*, to grow; *k̂o*, to lie). Thus: *nąᵡ'ak̂o*, 'it grows in a lying position' (*nąᵡ*, it; *'a*, to grow; *k̂o*, to lie).

Mæŋ, 'to go.' Thus: *nąmæŋ*, 'it sends out growth' (*nąˇ*, it; *mæŋ*, to go).

'Amæŋ, 'to grow sending out growth' (*'a*, to grow; *mæŋ*, to go). Thus: *nąˇ'amæŋ*, 'it grows sending out growth' (*nąˇ*, it; *'a*, to grow; *mæŋ*, to go).

Jiˇⁱ, 'to go about.' Thus: *nąjiˇⁱ*, 'it grows all about' (*nąˇ*, it; *jiˇⁱ*, to go about).

'Ajiˇⁱ, 'to grow spreading about' (*'a*, to grow; *jiˇⁱ*, to go about).

P'iɹ̀, 'interlaced.' Thus: *nąp'iɹ̀mųˇ*, 'it is interlaced' (*nąˇ*, it; *p'iɹ̀*, interlaced; *mų*, to be). This is said of vines which grow through other plants.

Dense Growth, Forest, Grove

K̂a, 'thick', 'dense', 'dense growth', 'forest'. This word is used as an adjective and as a noun. Thus: *t̂oka'i̯ŋ*, 'a sagebrush plant of dense growth' (*t̂o*, sagebrush plant; *k̂a*, thick, dense); *t̂ok̂a* 'sagebrush thicket,' 'place where the sagebrush is thick' (*t̂o*, sagebrush; *k̂a*, dense growth, forest). *K̂a* is used alone meaning forest, just as the Mexicans use *monte* and *bosque*. With names of geographical features postjoined, *k̂a* may be translated 'wooded' or 'where there is much vegetal growth.' Thus: *t̂ok̂a'akonu*, 'a plain or valley where the sagebrush grows thick' (*t̂o*, sagebrush; *k̂a*, thick, thick growth; *'akonu*, plain, valley); *k̂abugè*, 'a low place where there is much vegetal growth' (*k̂a*, thick, thick growth; *bugè*, low roundish place).

Boɹ̀, *biɹ̀*, 'thing roundish like a ball, 'pile,' 'clung.' *Boɹ̀* is said of large, *biɹ̀* of small size. Thus: *tebiɹ̀*, 'grove of cottonwood trees' (*te*, Populus wislizeni; *boɹ̀*, grove). Often *k̂a*, 'thick' is prejoined to *boɹ̀*. Thus: *k̂abiɹ̀*, 'a clump or grove of thick vegetal growth' (*k̂a*, thick, thick growth; *boɹ̀*, clump, grove).

Wowà, 'to be alive.' Thus: *nąwowà*, 'it is alive' (*nąˇ*, it; *wowà*, to be alive).

Tʃu, 'to be dead.' Thus: *nątʃu*, 'it is dead' (*nąˇ*, it; *tʃu*, dead).

Ke (Hano Tewa, *kalé*), 'to be strong,' 'to thrive.' Thus: *nąke*, 'it is strong,' 'it thrives' (*nąˇ*, it; *ke*, to be strong, to thrive). The expression opposite in meaning would be *winąkepi*, 'it is weak' (*wi*, negative; *nąˇ*, it; *ke*, to be strong; *pi*, negative).

He, 'to be sick.' Thus: *nąhe*, 'it is sick' (*nąˇ*, it; *he*, to be sick). The expression opposite in meaning would be *winąhepi*, 'it is well' (*wi*, negative; *nąˇ*, it; *he*, to be sick; *pi*, negative).

Worms, Gall-balls

Puƀæ, 'worm.' This applies to all kinds of worms. Thus: *kˈųmpuƀæ*, 'corn worm' (*kˈųŋ*, corn; *puƀæ*, worm).

Pubæñæŋ, 'cobweb-like nest of worms as seen in apple trees' (*puƀæ*, worm; *ñæŋ*, nest). These are carefully destroyed.

Puƀæ̨e, 'gall-ball,' literally 'worm-ball' (*puƀæ*, worm; *e̊*, small thing roundish like a ball). *E̊* is used alone in the same sense. Thus in Hano Tewa: *pˈųmele*, 'rabbit-brush ball' (*pˈų*, rabbit-brush; *mele*, Hano dialectic form of *e̊*, ball).

'Oƀoƀo, 'red swelling on willow leaf.' This word can not be analyzed. It is also the Tewa name of Dorotea Pino of San Ildefonso.

Of a worm-eaten plant one may say: *nąpuƀækomų*, 'it is worm-eaten' (*nąˇ*, it; *puƀæ*, worm; *ko*, eaten; *mų*, to be).

Chemically Changed Vegetal Matter

Pˈaˈu, 'charcoal.'

At Santa Clara charcoal is taken in hot water as a remedy for cough and sore throat; the hot water is poured on and the mixture stirred and allowed to settle. The water is then drunk.

For laryngitis piñon charcoal *îopˈaˈu* (*îo*, piñon nut; *pˈaˈu*, charcoal) is wrapped in a wet cloth, which is then tied about the throat as a compress.

Charcoal in water is taken for biliousness.

K̂upˈaˈu, 'coal,' literally 'stone charcoal' (*k̂u*, stone; *pˈaˈu*, charcoal).

K̂upˈaˈukwæ, 'bitumen,' literally 'stone charcoal gum' (*k̂u*, stone; *pˈaˈu*, charcoal; *kwæ*, gum). A Santa Clara informant, when he happened to see some coal tar at Santa Fe, gave the name as *p̂okæŋų*, but this name is usually applied to mica.

Nu, 'ashes.'

Ashes are stirred into the dough for making *ƀuwa* (waferbread, Spanish *guallabe*) and *ƀuwa ǩaʌa* (corn tortillas), in order to turn it blue. At Hano the ashes of a wild plant, *'ťa'jæŋ* (Atriplex canescens) are preferred, but at the end of the winter, when the supply runs short, the ashes of sheep's dung are substituted.

Ashes of corncobs are boiled with white corn in order to make it swell. Fray Juan de Escalona in his private report from San Gabriel (Chamita), 1st October, 1601, refers probably to a similar practice; he says that the Indians, having been robbed of their corn, are eating wild seeds mixed with charcoal.[1]

At Santa Clara warm ashes are rubbed on to relieve pain in the shins, attributed to cold. *Nupo*, 'ash water' (*nu*, ashes; *po*, water) is given to children as a medicine.

At Santa Clara and at San Ildefonso, when children have measles ashes are dusted over the eruption with a cloth to sooth the irritation. Hence the malady is called *nukewe* (*nu*, ashes; *kewe*, ——).

At the time of the Spanish advent ashes were mixed with adobe for building material.

Torquemada's informant mentions the use of ashes in signaling: "They [the Pueblo Indians] know of their enemies' approach from far off, and in order that the neighboring pueblos may come to their aid, the women go up to the top of their houses and throw ashes into the air, and behind this make a smothered fire so that by giving a thicker smoke it may be better seen by the other pueblos whose help they desire, and the women, striking their hands on their open mouths, raise a great cry which sounds loud and far off . . ."

Castaño de Sosa, in 1590, described the throwing of ashes, perhaps in token of defiance: "The lieutenant went back to the pueblo to parley with them again, and they would not; on the contrary an Indian woman came out on a balcony of the said houses, which are as much as four or five stories high, and threw a small amount of ashes at him, and at this they set up a great clamor, and he withdrew."[2]

[1] Torquemada, *Monarchia Indiana*, lib. v, p. 672.
[2] *Doc. de Indias*, xv, p. 229.

COLOR OF PLANTS

Light, Darkness, Color, Painting, Lines, Spots

Ki, 'to be light.' Thus: *nąkinąˇ*, 'it is light' (*nąˇ*, it; *ki*, to be light; *nąˇ*, present). This verb seems to refer only to daylight.

T'e (Hano Tewa, *t'ele*), 'to shine.' Thus: *nąt'enąˇ*, 'it shines' (*nąˇ*, it; *t'e*, to shine; *nąˇ*, present). This verb is used of the sun: *nąt'ant'e*, 'the sun shines' (*nąˇ*, he; *t'ay*, sun; *t'e*, to shine).

Ko, 'a light.' This noun is used of the light of a candle, lamp, lantern, fire, firefly, glowwork, etc. Of the light shining one may say: *nąkot'e*, 'the light shines' (*nąˇ*, it; *ko*, a light; *t'e*, to shine); or *nąkoke*, 'the light is bright' (*nąˇ*, it; *ko*, a light; *ke*, to be strong).

Pa'aʌ́ or *pa'agè*, 'sunny place,' 'sunny side of a pueblo' (*pa'a*, ? akin to Jemez *pe*, 'sun'; *ʌ̀*, *gè*, locative).

*K'ų*ŋ, 'to be dark.' Thus: *nąk'ųnnąˇ*, 'it is dark' (*nąˇ*, it; *k'ų*ŋ, to be dark; *nąˇ*, present). *K'ų*ŋ is used as an adjective in the form *k'ų*ŋ*wì* (*k'ų*, to be dark). Thus: *p'ok'ų*ŋ*wì'i'i*, 'dark hole' (*p'o*, hole; *k'ų*ŋ*wì*, dark).

*'Ok'æ*ŋ, 'shade,' 'shadow.'

Kǣnnugè or *kænįŋgè*, 'shady place,' 'shady side of a pueblo' (*kæ*ŋ, cf. *'ok'æ*ŋ, above; *nugè*, *'įŋgè*, at the side).

'Oſsa, 'glittering.' Thus: *ſku 'oſsa'i'i*, 'glittering stone' (*ſku*, stone; *'oſsa*, glittering).

'Oſsapi, 'dull,' 'glossy' (*'oſsa*, glittering; *pi*, negative). The usage of this term with the meaning 'glossy' is curious. Thus: *'a 'oſsapi'į*ŋ, 'glossy cloth' (*'a*, cloth; *'oſsa*, glossy).

There is no word meaning 'color.' One asks: *hawì'ąŋ 'ų̨bi kaƀajù 'ų̨mmų̨*, 'how is your horse?', meaning 'what color is your horse?' (*hawì'ąŋ*, how; *'ų̨bi*, of you 1; *kaƀajù*, horse; *'ų*ŋ, it with reference to you 1; *mų̨*, to be). If this is not definite enough one might follow the question with *ha ſpi'i'i ha ſtsæ'i'i*, 'is it red or is it white?' (*ha*, or; *ſpi*, red; *ha*, or; *ſtsæ*, white).

*Tą̄'ᵍ*ŋ (Hano Tewa, *t'a*), 'painted,' 'painting.' Thus: *nąt'ᵍąmmų̨*, 'it is painted' (*nąˇ*, it; *tą̄'ᵍ*ŋ, painted; *mų̨*, to be); *ſtoƀa tą̄'ᵍ*ŋ*dį i'i*, 'painted cliff' (*ſtoƀa*, cliff; *tą̄'ᵍ*ŋ, painted).

T'ų̨, 'spotted.' The attributive form is *t'ų̨wì* (*t'ų̨*, spotted). Thus: *nąt'ų̨mų̨*, 'it is spotted' (*nąˇ*, it; *t'ų̨*, spotted; *mų̨*, to be); *tse t'ų̨wì'i*, 'spotted dog' (*tse*, dog; *t'ų̨wì*, spotted).

P̨inḏù (Hano Tewa, *p̨intù*), 'spotted' (< New Mexican Span. *pinto*). Meaning and use are the same as those of *t'ų*. Thus: *tse p̨inḏù'i'i*, 'spotted dog' (*tse*, dog; *p̨inḏù*, spotted).

Qwaɹ̀, *qwiɹ̀* (Hano Tewa, *kwælæ*), 'line,' *qwaɹ̀* referring to a broad line and *qwiɹ̀* to a narrow line.

Color Adjectives

T̂sæ, 'white,' 'whiteness.' Thus: *nąt̂sæmų*, 'it is white' (*nąˇ*, it; *t̂sæ*, white; *mų*, to be); *poδì t̂sæ'i̯ŋ*, 'white flower' (*poδì*, flower; *t̂sæ*, white).

P'ę̨ŋ, 'black,' 'blackness.' Thus: *nąp'ę̨mmų*, 'it is black' (*nąˇ*, it; *p'ę̨ŋ*, black; *mų*, to be); *poδì p'ę̨n'i̯ŋ*, 'black flower' (*poδì*, flower; *p'ę̨ŋ*, black).

P̂i (Hano Tewa, *p'ili*), 'red,' 'redness.' Thus: *nąˇp̂imų*, 'it is red' (*nąˇ*, it; *p̂i*, red; *mų*, to be); *poδì p̂i'i̯ŋ*, 'red flower' (*poδì*, flower; *p̂i*, red).

T̂se, 'yellow,' 'yellowness.' The attributive forms are *t̂sejì'i*, *t̂sejì'i̯ŋ*. Thus: *nąt̂semų*, 'it is yellow' (*nąˇ*, it; *t̂se*, yellow; *mų*, to be); *poδì t̂sejì'i̯ŋ*, 'yellow flower' (*poδì*, flower; *t̂sejì*, yellow).

Tsąywæ, 'blue,' 'blueness,' 'green,' 'greenness.' In *tsąywæ*, 'hot,' the second syllable is lower than the first. *Tsąywæ* is applied to the sky, vegetation, unripe fruit, blue or green stones, turquoise, etc. Thus: *nątsąywæmu*, 'it is blue or green' (*nąˇ*, it; *tsąywæ*, blue or green; *mų*, to be); *poδì tsąywæ'i̯ŋ*, 'blue or green flower' (*poδì*, flower; *tsąywæ*, blue or green).

P̂osiwì, 'watery green,' 'watery greenness' (*p̂o*, water; *si*, ? to stink; *wì*, unexplained. Cf. *P̂osi*, Ojo Caliente). *P̂osiwì* is applied to water of greenish appearance, as that of the mineral spring at Ojo Caliente, Taos county, New Mexico; also to cloth and paint of similar color. Thus: *nąˇp̂osiwìmų*, 'it is watery green' (*nąˇ*, it; *p̂osiwì*, watery green; *mų*, to be); *p̂o p̂osiwì'i'i*, 'greenish water' (*p̂o*, water; *p̂osiwì*, watery green).

'Ą́, 'brown,' 'brownness.' The attributive form is *'ą̇wì*. Thus: *nąˇ'ą́mų*, 'it is brown' (*nąˇ*, it; *'ą́*, brown; *mų*, to be); *poδì 'ą̇wì'i̯ŋ*, 'brown flower' (*poδì*, flower; *'ą̇wì*, brown).

Ho, 'gray,' 'grayness.' The attributive form is *howì*. Thus: *nąˇhomų*, 'it is gray' (*nąˇ*, it; *ho*, gray; *mų*, to be); *poδì howì'i̯ŋ*, 'gray flower' (*poδì*, flower; *howì*, gray).

Hano Tewa *'okju*, 'glimmering,' 'grayish;' *'okjut̂se*, 'grayish yellowness,' was used, for instance, in referring to the fir tree.

Tsæto, 'buff,' 'buffness.' The attributive form is the same. Thus: *nątsæto'mų* 'it is buff' (*nąˇ*, it; *tsæto*, buff; *mų*, to be); *poδì tsæto'i̯ŋ*, 'buff flower' (*poδì*, flower; *tsæto*, buff).

K̆ą̆ 'buff-brown,' 'buff-brown color.' The attributive form is the same. Thus: *nąk̆ą̆mų*, 'it is buff-brown' (*nă*, it; *k̆ą̆*, buff-brown; *mų*, to be); *poðì k̆ą̆'i̯y* 'buff-brown flower' (*poðì*, flower; *k̆ą̆*, buff-brown).

Tsæ̆ge, 'many-colored,' 'all-colored,' 'variegated,' 'state of having many, all, or variegated colors,' 'iridescent,' 'iridescence.' The colors may be distributed in separate patches, or blent. "When we look at a crow feather and its color seems to be changing all the time, black, green, and red, we say: *nątsæ̆gemų*, 'it is iridescent'" (*nąˇ*, it; *tsæ̆ge*, many-colored, iridescent; *mų*, to be). Thus: *poðì tsæ̆ge'i̯y*, 'many-colored flower' (*poðì*, flower; *tsæ̆ge*, many-colored). The Tewa name of Gregorita Vigil of San Ildefonso is *Tsæ̆gepoðì*, 'flowers of many-coloredness' (*tsæ̆ge*, many-coloredness; *poðì*, flower). There is a clan at San Ildefonso called *K'ų̆y tsæ̆ge'i̯y îowà*, 'Many-colored Corn clan' (*k'ų̆y*. corn; *tsæ̆ge*, many-colored; *îowà*, person, people).

T̂æmæ̆gi, 'of many kinds,' 'state of being of many kinds,' 'many-colored,' 'many-coloredness.' Meaning and usage are the same as those of *tsæ̆ge*, except that *îæmæ̆gi* never refers to iridescence and often does not refer to color. Thus: *nąîæmæ̆gimų*, 'it is of many kinds' (*nąˇ*, it; *îæmæ̆gi*, of many kinds; *mų*, to be); *poðì îæmæ̆gi'i̯y*, 'flower of many kinds of color' (*poðì*, flower; *tæmæ̆gi*, of many kinds).

Color-adjective Compounds

Almost any two color adjectives may be compounded to denote an intermediate color. Thus: *tsą̆ywæho*, 'bluish gray' (*tsą̆ywæ̆*, blue, green; *ho*, gray); *îsetsą̆ywæ̆*, 'yellowish blue' (*îse*, yellow; *tsą̆ywæ̆*, blue), said of the color of the middle of a tufted-eared squirrel's back. 'Light' is usually rendered by postpounding *îsæ̆*, 'white'; 'dark' by postpounding *p'ę̆y*, 'black.' Thus: *îseîsæ̆*, 'light yellow' (*îse*, yellow; *îsæ̆*, white); *p̂ip̂ę̆'y*, 'dark red' (*p̂i*, red; *p'ę̆y*, black). But certain color adjectives are never compounded with certain others. Thus: *p̂iîsæ̆* (*p̂i*, red; *îsæ̆*, white) is never used, a compound of irregular meaning signifying 'light red.' This compound is *p̂i'ą̆*, 'light red,' 'pink,' literally 'red brown' (*p̂i*, red; *'ą̆*, brown). *P̂i'ą̆* is applied to pink corn and even to objects of a buff-yellow color! *T̂sæ̆'ą̆* (*îsæ̆*, white; *'ą̆*, brown) is said of whitish corn. It may be that *'ą̆* in *p̂i'ą̆* and *îsæ̆'ą̆* has merely a weakening force like *ish* in Eng. 'reddish,' 'whitish.' *'Ą̆* seems not to be postpounded to other color adjectives.

Hano Tewa, *t'ų̆lų̆gi*, *t'ų̆lų̆*, 'many-colored.'[1] Thus, in the war song: *k'ų̆lų̆m poðì pojo poðì Sek'æ̆ poðì kwæ̆lų̆ poðì p'ili'ą t'ų̆lų̆gi.*

[1] Corn flower, squash flower, cotton flower, *kwæ̆lų̆* flower, red-gray (and) many-colored. The fur of a rabbit is described as *t'ų̆lų̆'i̯*.

Color-adjective Modifiers

Jo, augmentative postpound, 'very,' 'intensely.' Thus: *p̂ijo*, very red (*p̂i*, red; *jo*, augmentative); *nąp̂ijomų*, 'it is very red' (*nąˇ*, it; *p̂i*, red; *jo*, augmentative; *mų*, to be); *poβì p̂ijo'ịŋ*, 'intensely red flower' (*poβi*, flower; *p̂i*, red; *jo* augmentative). *Jo* can not be postjoined to any color adjective the attributive form of which ends in *wì*. Thus it can not be added to *k'ų*, *t'ų*, *ą̆*, *ho*. *T'ųjo* is the name of the "Black Mesa" north of San Ildefonso pueblo, but has no other meaning.

K̂oɹiḍi, 'very.' This precedes the color adjective as a separate word. Thus: *k̂oɹiḍi nąp̂imų*, 'it is very red' (*k̂oɹiḍi*, very; *nąˇ*, it; *p̂i*, red; *mų*, to be); *poβì k̂oɹiḍi p̂i'ịŋ*, 'very red flower' (*poβì*, flower; *k̂oɹiḍi*, very; *p̂i*, red).

Hæwaą̀, 'very.' This precedes the color adjective as a separate word. Thus: *hæwaą̀ nąp̂imų*, 'it is very red' (*hæwaą̀*, very; *nąˇ*, it; *p̂i*, red; *mų*, to be); *poβì hæwaą̀ p̂i'ịŋ*, 'very red flower' (*poβì*, flower; *hæwaą̀*, very; *p̂i*, red).

Piwǫŋ, 'very,' 'too.' This precedes the color adjective as a separate word. Thus: *piwǫŋ nąp̂imų*, 'it is very red' (*piwǫŋ*, very; *nąˇ*, it; *p̂i*, red; *mų*, to be); *poβì piwǫŋ p̂i'ịŋ*, 'very red flower' (*poβì*, flower; *pìwǫŋ*, very; *p̂i*, red).

Hano Tewa, *'imo*, 'very.' Thus: *'imo nąˇtsą̆ŋwæmų*, 'it is very blue or green' (*'imo*, augmentative; *nąˇ*, it; *tsą̆ŋwæ*, blue, green; *mų*, to be); *'imo nąˇt'amų*, 'it is highly decorated,' 'it is variegated' (*'imo*, augmentative; *nąˇ*, it; *t'a*, variegated; *mų*, to be).

He, 'somewhat,' 'slightly,' 'a little.' This precedes the color adjective as a separate word. Thus: *he nąp̂imų*, 'it is somewhat red' (*he*, somewhat; *nąˇ*, it; *p̂i*, red; *mų*, to be); *poβì he p̂i'ịŋ*, 'somewhat red flower' (*poβì*, flower; *he*, somewhat; *p̂i*, red).

OTHER QUALITIES OF PLANTS

Size

Sǫjo, 'large.' Thus: *nąsoˀjomų*, 'it is large' (*nąˇ*, it; *soˀjo*, large; *mų*, to be). The attributive forms are irregular: *sǫˀjo*, an., min. sing.; *sǫˀǫy*, *sǫˀǫniy*, veg. sing., an., veg., min. dual, an. 3+ plu.; *sǫˀǫnd̨iˇⁱ*, veg., min. 3+ plu.

Hehæñun, 'large.' Thus: *nąhehæñumų*, 'it is large' (*nąˇ*, it; *hehæñu*, large; *mų*, to be). The attributive forms are irregular: *hehæñuˀiˇⁱ*, an., min. sing.; *heˀehæˀᵋniy*, veg. sing., an., veg., min. dual, an. 3+ plu.; *hehæˀᵋd̨iˇⁱ*, veg., min. 3+ plu.

He, 'large.' Thus: *nąhemų*, 'it is large' (*nąˇ*, it; *he*, large; *mų*, to be). The attributive forms are irregular: *heˀiˇⁱ*, an., min. sing.; *heˀeniy*, veg. sing., an., veg., min. dual, an. 3+ plu.; *heˀed̨iˇⁱ*, veg., min. 3+ plu.

Jo, augmentative postpound. This is used very irregularly only with certain adjectives and nouns. It seems to be the last syllable of an., min. sing. *sǫˀjo*, 'large.'

Tʃæ, 'small.' Thus: *nątʃæmų*, 'it is small' (*nąˇ*, it; *tʃæ*, small; *mų*, to be). This word is used only in the singular: *tʃæˀiˇⁱ*, an., min., sing.; *tʃæˀiy*, veg. sing. The dual and 3+ plu. forms are supplied by *hiñæ*, *tajeɹi*, etc.; see below.

Hiñæ, 'small.' Thus: *nąhiñæmų*, 'it is small' (*nąˇ*, it; *hiñæ*, small; *mų*, to be). The attributive forms are irregular. Thus: *hiñæˀiˇⁱ*, an., min. sing.; *hiˀiniy*, veg. sing., an., veg., min. dual, an. 3+ plu.; *hiˀind̨iˇⁱ*, veg., min. 3+ plu.

Tajeɹi, 'small.' Thus: *nątajeɹimų*, 'it is small' (*nąˇ*, it; *tajeɹi*, small; *mų*, to be). The attributive forms are irregular: *tajeɹiˀiˇⁱ*, an., min. sing.; *tajęnd̨iˇiy*, veg. sing., an., veg., min. dual, an. 3+ plu.; *tajęnd̨iˇiną̨iˇⁱ*, veg., min. 3+ plu.

ˀE, diminutive postpound. This may be added to any noun. Thus: *ˀagojoˀe*, 'little star' (*ˀagojo*, star; *ˀe*, diminutive). It does not alter the gender of the noun. The accent of *ˀe* in the sing. is falling; in the dual and 3+ plu., circumflex.

Taste

Tʃą̆, 'to taste,' intransitive. Thus: *hą̆n nątʃą̆*, 'how does it taste?' (*hą̆y*, how; *nąˇ*, it; *tʃą̆*, to taste); *hiwǫn nątʃą̆*, 'it tastes good' (*hiwǫy*, good; *nąˇ*, it; *tʃą̆*, to taste); *hą̆ywæbo'°winą̆tʃą̆pi*, 'it has no taste' (*hą̆ywæbo'°*, nothing; *wi*, negative; *nąˇ*, it; *tʃą̆*, to taste; *pi*, negative).

'Ą̆, 'to be sweet', 'sweet', 'sweetness.' Thus: *nąˇ'ą̆*, 'it is sweet' (*nąˇ*, it; *'ą̆*, to be sweet); *ka 'ą̆'i̯y*, 'sweet leaf' (*ka*, 'leaf; *'ą̆*, sweet); *'ą̆k̂i̯kiną̆tʃą̆*, 'it tastes insipid' (*'ą̆*, sweet; *k̂i̯ki*, like; *nąˇ*, it; *tʃą̆*, to taste).

Tsi̯y, 'to be sticky.' This is also said of taste. Thus: *nąˇtsi̯y*, 'it is sticky' (*nąˇ*, it; *tsi̯y*, to be sticky).

'Ojohe, 'to be sour,' 'sour,' 'sourness.' Thus: *nąˇ'ojohe*, 'it is sour' (*nąˇ*, it; *'ojohe*, to be sour); *be 'ojohe'i̯y*, 'sour apple' (*be*, apple; *'ojohe*, sour).

'Oje, 'to be sour,' 'sour,' 'sourness.' Thus: *nąˇ'oje*, 'it is sour' (*nąˇ*, it; *'oje*, to be sour); *be 'oje'i̯y*, 'sour apple' (*be*, apple; *'oje*, sour).

P'ahąy, 'to be burnt.' This is also said of taste. Thus: *nąˇp'ahąy*, 'it is burnt,' 'it has a burnt taste' (*nąˇ*, it; *p'ahąy*, to be burnt; Ger. *angebrannt sein*).

'I'æ, 'to be bitter,' 'bitter,' 'bitterness.' Thus: *nąˇ'i'æ*, 'it is bitter' (*nąˇ*, it; *'i'æ*, to be bitter); *ka 'i'æ'i̯y*, 'bitter leaf' (*ka*, leaf; *'i'æ*, bitter).

Sæ, 'to be hot or burning to the taste, like chile pepper,' 'hot or burning to the taste,' 'hot or burning taste,' 'substance which has a hot or burning taste.' Thus: *nąˇsæ*, 'it tastes burning, like chile, (*nąˇ*, it; *sæ*, to be hot or burning to the taste); *ka sæ'i̯y*, 'leaf with hot or burning taste' (*ka*, leaf; *sæ*, hot or burning to the taste).

Suwà, 'to be warm,' 'warm,' warmth.' Thus: *nąˇsuwà*, 'it is warm,' 'it has a warm taste' (*nąˇ*, it; *suwà*, to be warm); *ka suwà'i̯y*, 'warm leaf' (*ka*, leaf; *suwà*, warm).

T̂są̆ywæ, 'to be hot,' 'hot,' 'heat.' Thus: *nąˇt̂są̆ywæ*, 'it is hot,' 'it has a hot taste' (*nąˇ*, it; *t̂są̆ywæ*, hot); *ka t̂są̆ywæ'i̯y*, 'hot leaf' (*ka*, leaf; *t̂są̆ywæ*, hot).

'Okaɻ̀, 'to be cool,' 'cool,' 'coolness,' 'to be cold,' 'cold,' 'coldness.' Thus: *nąˇ'okaɻ̀*, 'it is cool or cold,' 'it tastes cool or cold' (*nąˇ*, it; *'okaɻ̀*, to be cool or cold); *ka 'okaɻ̀'i̯y*, 'cool or cold leaf' (*ka*, leaf; *'okaɻ̀*, cool or cold). This word is never applied to the weather.

'Ą́sæ̨, 'to taste salty, or alkaline' (*'ą́*, alkali; *sæ̨*, to taste hot, like chile). *'Ą́* also appears as the first syllable of *'ą́ñæ̨*, 'salt' (*'ą́*, alkali; *ñæ̨*, as in *k̂uñæ̨*, turquoise). Thus: *nąᷤ'ą́sæ̨*, 'it tastes salty or alkaline' (*nąᷤ*, it; *'ą́*, alkali; *sæ̨*, to taste hot, like chile).

A prickling or puckering taste seems to be expressed by *'sojohe*, *'oje* or *sæ̨*. Of a nauseating taste one says merely, *ą́ihewo'°*, 'it makes me sick' (*ą́i*, it me; *he*, to be sick; *wo'°*, causative).

Odor

Sų́, 'to smell,' intransitive. Thus: *hą̆n nąᷤsų́*, 'how does it smell?' (*hą̆ŋ*, how; *nąᷤ*, it; *sų́*, to smell); *hą̆ŋwæ̨b̨o'°* *winą̆* *sųpi*, 'it has no odor' (*hą̆ŋwæ̨b̨o'°*, nothing; *wi*, negative; *nąᷤ*, it; *sų́*, to smell; *pi*, negative). This verb appears in all terms denoting kinds of odor. Thus: *nąᷤsų́ke*, 'it smells strong' (*nąᷤ*, it; *sų́*, to smell; *ke*, to be strong); *heɹa'ᵃŋ nąᷤsų́*, 'it smells faintly' (*heɹa'ᵃŋ*, slight; *nąᷤ*, it; *sų́*, to smell); *nąᷤ'ą̆sų́*, 'it smells sweet' (*nąᷤ*, it; *'ą́*, sweet; *sų́*, to smell); *nąᷤsisų́*, 'it stinks' (*nąᷤ*, it; *si*, giving the meaning to stink; *sų́*, to smell).

Nouns with the postfix *wagì*, 'like,' are very common with *sų́*, 'to smell.' Thus: *sawagì nąᷤsų́*, 'it smells like tobacco' (*sa*, tobacco; *wagì*, like; *nąᷤ*, it; *sų́*, to smell).

Feeling

Ą́ñæ̨, 'to be smooth,' 'smooth,' 'smoothness.' Thus: *nąᷤ'ą́ñæ̨*, 'it is smooth' (*nąᷤ*, it; *'ą́ñæ̨*, to be smooth); *ka 'ą́ñæ̨'i̯ŋ*, 'smooth leaf' (*ka*, leaf; *'ą́ñæ̨*, smooth).

K̂o, 'to be rough,' 'rough,' 'roughness.' Thus: *nąᷤk̂o*, 'it is rough' (*nąᷤ*, it; *k̂o*, to be rough); *'o k̂o'i̯ᵢ*, 'rough metate' (*'o*, metate; *k̂o*, rough).

P̂a, 'cracked,' 'cracked surface.' Thus: *mą̆p̂amų́*, 'it is cracked or chapped' (*nąᷤ*, it; *p̂a*, cracked; *mų́*, to be); *ka p̂a'i̯ŋ*, 'cracked leaf' (*ka*, leaf; *p̂a'i̯ŋ*, cracked).

Tsi̯, 'to be sticky.' Thus: *nąᷤtsi̯*, 'it is sticky' (*nąᷤ*, it; *tsi̯*, to be sticky).

Tsi̯b̨è, 'sticky,' 'stickiness.' Thus: *nąᷤtsi̯b̨ê̂o*, 'it is sticky' (*nąᷤ*, it; *tsi̯b̨è*, sticky; *ê̂o*, causative); *ka tsi̯b̨è'i̯ŋ* 'sticky leaf' (*ka*, leaf; *tsi̯b̨è*, sticky).

P'o, 'hairy,' 'hair.' Thus: *nąᷤp'omų́*, 'it is hairy' (*nąᷤ*, it; *p'o*, hairy; *mų́*, to be).

Ɲwæ̨, 'thorny,' 'thorn.' Thus: *nąᷤɲwæ̨mų́*, 'it is thorny' (*nąᷤ*, it; *ɲwæ̨*, thorny; *mų́*, to be).

Jų́ŋ, 'to pierce.' Thus: *nąᷤjų́ŋ*, 'it pierces' (*nąᷤ*, it; *jų́ŋ*, to pierce); *nąᷤjų́nî̂o*, 'it is prickly' (*nąᷤ*, it; *jų́ŋ*, to pierce; *î̂o*, causative).

Sąyhe, 'to hurt' (*sąy*, giving the meaning to hurt, to pain, intransitive; *he*, to be sick). Thus: *nąą sąyhe*, 'it hurts' (*nąą*, it; *sąyhe*, to hurt).

Suwà, 'to be warm,' 'warm,' 'warmth.' Thus: *nąą suwà*, 'it is warm' (*nąą*, it; *suwà*, to be warm).

Tsąywæ, 'to be hot,' 'hot,' 'heat.' Thus: *nąą tsąywæ*, 'it is hot' (*nąą*, it; *tsąywæ*, to be hot); *ka tsąywæ'ịy*, 'hot leaf' (*ka*, leaf; *tsąywæ*, hot).

'Okaɹì (Hano Tewa, *'okaɹì*) 'to be cold,' 'cold,' 'coldness.' Thus: *nąą'okaɹì*, 'it is cold' (*nąą*, it; *'okaɹì*, to be cold); *ka 'okaɹì'ịy*, 'cold leaf' (*ka*, leaf; *'okaɹì*, cold). *Tsąywæ* and *suwà* may be used of things hot to the touch; the same expressions, also *nąî*, 'it is cold,' are applied to the weather; *'okaɹì* cannot properly be used with reference to the weather.

Kẽ (Hano Tewa, *kele*), 'hard,' 'hardness.' Thus: *nąkemụ*, 'it is hard' (*nąą*, it; *ke*, hard; *mụ*, to be).

Tæ̨ðì, 'to be soft,' 'soft,' 'softness.' Thus: *nąątæ̨ðì*, 'it is soft' (*nąą*, it; *tæ̨ðì*, to be soft); *ka tæ̨ðì'ịy*, 'soft leaf' (*ka*, leaf; *tæ̨ðì*, soft).

K'a (Hano Tewa, *k'ala*), 'to be heavy,' 'heavy,' 'weight.' Thus: *nąąk'a*, 'it is heavy' (*nąą*, it; *k'a*, to be heavy); *ka k'a'ịy*, 'heavy leaf' (*ka*, leaf; *k'a*, heavy). Light, opposite of heavy, is expressed by the negative *winąąk'api*, 'it is light' (*wi*, negative; *nąą*, it; *k'a*, to be heavy; *pi*, negative); *ka k'api'ịy*, 'light leaf' (*ka*, leaf; *k'a*, heavy; *pi*, negative).

Wetness and Dryness

P̂o, 'water.' Thus: *nąąp̂onąą*, 'it is wet' (*nąą*, it; *p̂o*, water; *nąą*, to be present, to have); *nąąp̂omụ*, 'it is wet' (*nąą*, it; *p̂o*, water; *mụ*, to be).

'Omụ, 'moisture.' Thus: *nąą'omụnąą*, 'it is moist' (*nąą*, it; *'omụ*, moisture; *nąą*, to be present, to have).

P̂ose (Hano Tewa, *p̂osele*), 'dew' (*p̂o*, water; *se*, unexplained). Thus: *nąąp̂osenąą*, 'it is dewy,' said either of an object or of the weather (*nąą*, it; *p̂ose*, dew; *nąą*, to be present, to have).

T̂a, 'to be dry,' 'dry,' 'dryness.' Thus: *nąît̂a*, 'it is dry' (*nąą*, it; *t̂a*, to be dry); *nąît̂anąą*, 'it is dry' (*nąą*, it; *t̂a*, dryness; *nąą*, to be present, to have).

ANNOTATED LIST OF PLANTS

I. Indigenous Wild Plants

The use of wild plants is declining, and very many foods, once popular, are now neglected. Villages, families, and individuals vary in this respect, and one informant speaks of the use of a certain plant in the present while another limits it to the past. The prejudice of the New Mexican Tewa against American drugs has preserved fairly well until now their knowledge of the plants which they use as remedies. At Hano, however, the decline in native medicine is already far advanced.

TREES

Tẹnjo, 'large tubes' (*tẹy*, tube; *jo*, augmentative).

Abies concolor. White Fir, Balsam Fir.

The twigs are said to have been used for making pipestems.[1]

The *kwæ*, 'balsam,' 'resin,' from the pimples found on the main stem and larger branches is used in the treatment of cuts.

The Fir clan (*Tẹnjoîowà*)[2] of Hano is seemingly named after this tree. The Tewa of Hano are unable to describe the *tẹnjo*, which, they say, is not found within their present local range; but they speak of it as a tree common in the old Tewa country. The Fir clan is classed with the Cloud and Water clans; also with the Bear clan (*Kêîowà*) and the Stick or Plant clan (*P'êîowa*), and bestows 'bear' and 'stick' personal names as well as names of its own, as:

tẹnjotɾaki, 'fir bunch.' M.
tsă̆ywæ, 'green.' F.
'awotsă̆ywæ, 'spread green.' F.
'okjʊ̃se, 'glaucous yellowness.' F.
kalatsạy, 'new leaf.' F.
îosẹy, 'nut man.' M.

Te'jɪɹi (*te'*, unexplained; *jɪɹi*, ? to sift).

Negundo interius. Box-elder. New Mexican Spanish *nogal*.

Pipe-stems were made of the twigs of this tree.

The seeds of this tree are called *te'jɪɹipoðì*, 'box-elder flowers' (*te'jɪɹi*, box-elder; *poðì*, flower), because of their winged, flower-like appearance (fig. 1).

Tʃụy (possibly akin to *tʃụwè*, to dye).

Alnus tenuifolia. Alder.

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[1] Young leaves of ? *Abies concolor* are ritually smoked in stone "cloud-blowers" by the Hopi. (See specimen 66057, Stanley McCormick Coll., Field Museum, Chicago.)

[2] Cf. F. W. Hodge, Pueblo Indian Clans (*Amer. Anthr.*, IX, p. 350, 1896)—"Tényo-háno" [-îowà], "Pine" clan of Hano; also J. Walter Fewkes, *Nineteenth Ann. Rep. Bur. Amer. Ethn.*, pt. 2, p. 615—"Tenyük," Hano "Pine" clan.

A. ASPEN GROVE AT THE EDGE OF GRASSLAND AREA IN THE VALLE GRANDE.

B. ROCK PINE FOREST OF MESA TOP.

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. Sometimes the bark is chewed and the juice is ejected on deerskin, which is then rubbed between the hands. Many of the alders have been used by noncivilized peoples in dyeing.

P̂inn'ɨn tewàb̨e, 'mountain Tewa-fruit' (*p̂iy*, mountain; *nɨ*, locative; *tewà*, Tewa; *b̨e*, roundish fruit). Cf. *tewàb̨e*, 'Tewa fruit,' *Sericotheca dumosa*.

Betula fontinalis. Streamside Birch.

P'e ke'iy, 'hard stick' (*p'e*, stick; *ke*, hard).

Celtis reticulata. Hackberry. ?New Mexican Spanish *palo duro*.

The Tewa and Spanish names are descriptive of the character of the wood. Whether the Tewa name is merely a translation of the Spanish remains to be determined. Handles for axes and hoes are now made of the wood.

The berries were eaten.

Hɨ̨.

Juniperus monosperma. One-seeded Juniper. New Mexican Spanish *sabina*.

This is the "common cedar" of the Rio Grande region. It is used largely for firewood by the New Mexican Tewa and also at Hano.

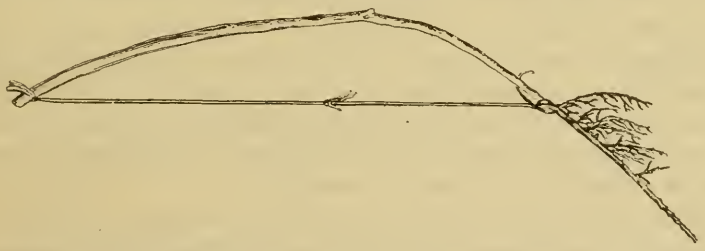

FIG. 2.—Santa Clara bow.

The bark is called either *hɨ̨qwib̨è* (*hɨ̨*, juniper; *qwib̨è*, shreddy bark); at Hano, *hɨ̨qwi* (*hɨ̨*, juniper; *qwi*, fiber); or *hɨ̨k'owà* (*hɨ̨*, juniper; *k'owà*, tegument, bark). It is in daily use as tinder and kindling material. Formerly it was used as tinder in conjunction with flint and steel. Folk-tales at Hano represent that it would ignite merely from the heat of the sun. Long shreds of this bark, bound into compact bundles by means of *p'aqwi*, 'yucca fiber' (*p'a*, Yucca baccata; *qwi*, fiber), were formerly used as torches to give light in the houses and to carry light from house to house. At Hano the bark is used also to chink the walls and roofs of log houses built after the Navaho fashion.

In New Mexico the wood was used for making bows (see fig. 2). Small ceremonial bows of cedar branches, provided with yucca strings, are carried by some *katsina* at Hano, for instance, during the *k'awot'o*.

At Santa Clara the leaves, *hųka* (*hų*, juniper; *ka*, leaf), are used by women the third day after childbirth. The leaves are boiled in water; a little cold water is added, and the decoction is set beside the patient, who is left alone for a short time. She rises and bathes herself with the decoction and also drinks a small quantity. At San Ildefonso the treatment is the same, except that a woman stays to assist her to bathe.[1]

At Hano a lying-in woman is fumigated on the fourth day after delivery with *hųkala*, juniper leaves (*hų*, juniper; *kala*, leaf), placed on hot coals in a vessel; some families use another plant, but juniper is probably the one generally employed. Formerly the lying-in woman drank an infusion of juniper leaves during the first four days after delivery; but now, following the Hopi custom, she drinks plain warm water for twenty days.[2]

The juniper is regarded as "hot," and almost every part of it is a medicine for "cold" conditions. At San Ildefonso the leaves are used as medicine.

At Hano the leafy twigs, *hųkala* (*kala*, leaf), after being toasted on the embers, are bound tightly over a bruise or sprain to reduce the pain and swelling.

At Santa Clara juniper gum, *hųkwæ* (*kwæ*, gum, balsam) is used as a filling for decayed teeth. At Hano it is chewed as a delicacy.

The berries, *hųpege* (*pege*, berry), are eaten by children and young people. Men bring home twigs loaded with the ripe berries to please their young relations. The berries are considered more palatable when heated in an open pan over the fire. At Santa Clara juniper berries, as well as a decoction of them in water, are considered an effectual remedy for every kind of internal chill, "because they are hot". They are said to be an active diuretic. At San Ildefonso the berries are eaten but not taken as medicine.

Juniper branches are used in a few ceremonies and dances. At Hano they are sometimes used as a hasty substitute for *îsele* (see p. 43); for instance, *tsonekatsina* from Hano and Sichomovi wore them on January 25, 1913. At Santa Clara the impersonator of an *'ōk'uwa* called *jųnḍi''i sęnḍo* (*jųų*, thrust; *sęnḍo*, old man) or *hųqwiîponḍi''i sęnḍo* (*hų*, juniper; *qwi*, fiber; *îpo*, head; *sęnḍo*, old man) wears a hat of juniper bark as a headdress.[3]

[1] M. C. Stevenson, The Zuñi Indians, *Twenty-third Ann. Rep. Bur. Amer. Ethn.*, p. 297: "Hot tea of toasted juniper twigs and berries steeped in boiling water is drunk by a woman in labor to prevent constipation." See also this author's Ethnobotany of the Zuñi Indians, *Thirtieth Ann. Rep. Bur. Amer. Ethn.*, p. 55.

[2] The Yavapai at McDowell, Ariz., who now use the leaves and twigs of the creosote bush (? *Larrea glutinosa*) to steam lying-in women four days after childbirth, and also drink a decoction of the leaves as a remedy for internal chill, say that they used juniper (*tjóka*) for these purposes as long as they lived in the mountains.

[3] The impersonator of *kwikwiljaka*, "one of the older Hopi kachinas now seldom seen," wears a similar mat of juniper bark. See *tihu* of this kachina in Field Museum, Chicago (McCormick Coll., 65757).

Hųpoƀì, 'Juniperus monosperma flower' (*hų*, Juniperus monosperma; *poƀì*, flower).

Hųwo (*hų*, Juniperus monosperma; *wo* (?)).

Juniperus scopulorum. New Mexican Spanish *cedro.*

The wood of this tree is red.

Pæ̨̂to, 'deer piñon' (*pæ̨*, mule deer; *̂to*, piñon tree).

Picea engelmanni. Engelmann Spruce.

This tree is found at the higher elevations where deer are more plentiful. It is said that deer are fond of staying among these trees.

Ŋwæ̨ŋ (cognate with Jemez *kwą̇*, Pinus brachyptera).

Pinus brachyptera. Rock Pine, Western Yellow Pine. New Mexican Spanish *pinavete.* (See pl. 2, *b*.)

At Hano two *ŋwæ̨ŋkala* (*ŋwæ̨*, rock pine; *kala*, leaf), 'rock-pine leaves,' is attached to each of the prayer-feathers, *pele*, which are prepared during the *t'ą̇ntai* ceremonies in December. Branches of rock pine for this purpose are fetched by a runner.

T̂ō (cf. *̂to*, piñon nut).

Pinus edulis, Piñon Pine, Nut Pine. New Mexican Spanish *piñon.*

Piñon pine is the commonest tree on the lower mesas. It is much used as firewood.

The nuts, generally roasted for eating, were formerly an important food. After corn harvest, about October 15, many of the Santa Clara people go to the mountains for several days to gather piñon nuts. They are also bought from Mexican peddlers[1] and eaten raw on festive occasions.[2] The Navaho bring them for sale to Hano, as they do to Jemez and the Keresan pueblos, and the Indian storekeepers also sell them.

At Hano the resin of the piñon, *̂tōkwæ̨* (*kwæ̨*, gum, balsam), is used for mending cracked water-jars, also for excluding the air from cuts and sores. The resin of piñon or of another conifer is sometimes smeared over earthenware canteens to make them watertight. Compare this with the resin-coated basket canteens of southern Arizona.

At Santa Clara *̂tō* is said to be the oldest tree, and its nuts the oldest food of the people. It was the result of going up on the western mesa and eating the fallen piñon nuts that the people "first knew north and west and south and east."

Kä'ą̇ñæ̨, 'smooth leaf' (*ka*, leaf; *'ą̇ñæ̨*, smoothness).

Pinus flexilis. White Pine.

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[1] Benavides (*Memorial*, 1630, pp. 47–48) says that piñon nuts from New Mexico were traded to Mexico: "Los arboles de piñones que son de diferente especie de los de España, porque son grandes, y tiernos de partir, y los árboles, y piñas chicas, y es tanta la cantidad, que parece inacawable, y de tanta estima, que vale la fanega en México á veinte y tres, y veinte y cuatro pesos, y los que lo buelucn á vender ganan en ellos."

[2] Cf. Hough, *Amer. Anthr.*, X, p. 40, Washington, 1897.

Te'ñæ (*te*, Populus wislizeni; *ñæ*, as in *'q̆ñæ*, salt, and *k̂uñæ*, turquoise).

Populus acuminata. Rydberg's Cottonwood.

Populus angustifolia. Narrow-leaf Cottonwood, Mountain Cottonwood.

Nq̆nq̆.

Populus tremuloides. Aspen. (See pls. 2, *a*,3.)

At San Ildefonso the leaves of this tree are boiled and the decoction is drunk for urinary trouble.[1]

Hodge[2] gives *Nána-tdóa* as a "tree (birch?)" clan at Nambé.

Te.

Populus wislizeni. Valley Cottonwood.

This is the common cottonwood along the Rio Grande. The Tewa are more familiar with it than with any other large broad-leaved tree, and they use it more than any other.[3] The wood is used for making many artifacts, notably the *tetq̆mb̨e*, 'cottonwood drum' (*te*, Populus wislizeni; *tq̆mb̨e*, Hano Tewa, *tq̆mmele*, drum). English 'tree' is often translated *te* in case no particular species is referred to.

Cottonwood buds are called *tek'e*, 'cottonwood kernels' (*te*, Populus wislizeni; *k'e*, kernel, grain, as kernel or grain of corn).

The white fluff of cottonwood buds is called *teɹq̆y'ôku*, 'cottonwood fluff' (*te*, Populus wislizeni; *ɹq̆y*, unexplained; *'ôku*, downy, down, state of being downy).

Hodge[4] gives as Cottonwood clans at various pueblos: San Juan, Santa Clara, and San Ildefonso, Te-tdóa; Cochiti, Ĭ'trahání-hánuch. At Hano the Cottonwood clan, *Te'e-îowà*, is classed with the Sacred-dancer clan, *Katsinaîowà*, and the Macaw clan, *Talîîowà*.

T̂se (Hano Tewa, *t̂sele*).

Pseudotsuga mucronata. Douglas Spruce. New Mexican Spanish *pino real*, 'royal pine.'

Branches of this tree, which grows in the mountains and deep canyons, are used by the Tewa in almost all their dances. For example, at Santa Clara, February 9, 1911, the male performers in the *pogǫnfaɹè* wore loose collars of spruce branches covering their shoulders and breasts, and carried spruce branches in their left hands. In the Basket dance, *tuŋfaɹè* (closely corresponding with the *humiskatsina* of Oraibi), held at Santa Clara, October 21, 1912, the male performers wore spruce branches hanging from their necks and waist-belts, while small twigs of spruce formed part of the headdress called *popoƀì*,

[1] U. S. Dispensatory: Bark of certain species is possessed of tonic properties and has been used in intermittent fevers with advantage.

[2] *Amer. Anthr.*, IX, p. 352, 1896.

[3] For the use of cottonwood in prayer-sticks see footnote, p. 49.

[4] Op. cit., p. 351.

'squash blossom.' The female performers carried sprigs of spruce in their right hands, concealing their wooden rasps, *ywæmp'e*. On the afternoon of the day preceding the dance the five *capitanes* went to the forest, cut eight young spruce trees, and brought them, unobserved, to the village; and after midnight these were planted in the plazas, two at each dancing place. These were referred to in the song-phrase, *jagiwǫ'ǫnd̨i t̂sa̱ywæ'i nq̱nq̱* (*jagiwǫ'ǫnd̨i*, archaic form of *sagiwo'ond̨i*, beautiful; *t̂sa̱ywæ'i*, greenness, green thing; *nq̱*, it; *nq̱*, to be present). Spruce branches worn or carried by dancers at Santa Clara are always thrown into the Santa Clara River when the dance is over.

Certain clouds are ritually called 'spruce clouds', *t̂se'ok'uwa*, and their personifications are called 'spruce-cloud boys', *t̂se'ok'uwa'e'enu̱y*, and 'spruce-cloud girls', *t̂se'ok'uwa'a'añu̱y*.

At Hano the Douglas spruce, *t̂sele*, is used in almost all the winter dances; the dancers wear spruce twigs made up with yucca fiber into compact neck-wreaths (called *'imb̨it̂seleket'o*, 'their spruce neckwear,' or figuratively *katsina 'imb̨inwa'a*, 'kachinas' necklaces'), and also carry branches in their left hands, called merely *'imb̨it̂sele*, 'their spruce.' As no Douglas spruce grows near Hano, it is procured from the mountains some miles southeast or east of First Mesa. A horseman leaving Hano at daybreak to fetch it returns after nightfall. Occasionally the Navaho bring it to Hano and barter it for corn and meal; thus, before the Little *k'awot'o* in March, 1913, the Corn clan bought a quantity of spruce branches for the use of all the members of the estufa,[1] *munate'e*, which this clan controls. As a rule, however, when spruce is needed for a dance, a fast runner is sent to the hills to fetch it. Returning after dark, he carries it to the estufa, where feathers, *pele*, are put on it; then he is asked to choose one branch, which is carried to the spring early next morning. During the night one or more large branches are planted in the plaza where the dance is to take place, and in the morning the children are astonished to see trees growing there. Spruce branches used in the dances are thrown from the edge of the mesa when the dance is over, or dropped in some appropriate place among the rocks, for instance behind the *k'ajète*, 'fetish house,' at *T̂ob̨at̂sana*, 'the Gap.'

Occasionally juniper twigs and branches (*hukala*; see p. 40) are substituted for spruce.[2]

The New Mexican Tewa say that mankind first climbed into this world by means of a tree of this species, at *Si'pop'e* in the far north. The Tewa of Hano say that when the chiefs wished to make a way for

[1] *Estufa*, the name given by the Spanish explorers to the sunken dance-houses or club-houses of the Pueblo Indians and the name current at the present time in New Mexico: Hopi *kîva*; Tewa *te'e*, and *'po'ɣte'e*, the latter probably meaning 'old-time house,' etc.

[2] Cf. W. Matthews, The Mountain Chant, *Fifth Ann. Rep. Bur. Amer. Ethn.*, p. 464. The Navaho ritual requires spruce saplings (*Pseudotsuga Douglasii*), but as the spruce does not grow plentifully at a height of less than 8,000 feet, piñon saplings are sometimes substituted.

their people to the upper world, they planted first a *tẹnjo*, White Fir, and next a *t͡sele*; when both of these failed to pierce the roof of the underworld, they planted a *po*, reed, and by this the people climbed out. This version coincides with the Oraibi and Shipaulovi stories.[1]

The New Mexican Tewa say that the *sẹ'wæ̨*, pine-squirrel, eats the leaves of the *t͡se*.

Hodge[2] gives *Tse-tdóa* as a tree clan at San Ildefonso.

Tenɯi'i̯ŋ kwæ̨, 'winter oak' (*tenɯi*, winter; *kwæ̨*, oak).

Quercus undulata. Evergreen Oak.

This is a small evergreen species abundant on the mesa sides.

Kwæ̨.

Quercus utahensis. Utah Oak.

This is the common oak along the streams. The acorns were used for food.[3] The wood was used for making digging-sticks and many other things, including bows and war-clubs. Iron is called *kwæ̨k̨ɯŋ̍*, a word connected with *kwæ̨k̨u*, 'Mexican.' The first syllable of these two words sounds exactly like *kwæ̨*, 'oak'.

At Hano oak is used for making rabbit-sticks, embroidery-stretchers, and other utensils.

Hodge[4] gives as Oak clans at various pueblos: Santa Clara, ———; Pecos, *Gyuí^{n}sh;* Laguna, *Hápai-háno^{ch};* Acoma, *Hápanyi-hánoq^{ch};* Sia, *Hápan-háno;* San Felipe, *Hápanyi-háno;* Cochiti, *Hápanyi-hánuch.*

There is an Oak clan (*Kwæ̨t͡sowà*) at Santa Clara. The Oak clan (*Kwæ̨t͡sowà*) at Hano has become extinct within living memory; it is said to have accompanied the Asa clans who settled with the Hopi.

SHRUBS

'Ạntamisà (>Spanish).

Artemisia (? sp.), New Mexican Spanish *altamisa.*

One use of this plant is reported under *kojaje*, page 56.

Soɓok'ɯwàp'e, 'mist plant' (*soɓok'ɯwà*, mist; *p'e*, plant). San Ildefonso, *p'ụ t͡sæ̨'i̯ŋ*, 'white rabbit-brush' (*p'ụ*, Chrysothamnus bigelovii; *t͡sæ̨*, white).

Artemisia filifolia. Silver Sage.

This is a favorite remedy with the New Mexican Tewa and at Hano. Bundles of the plant are dried for winter use. It is chewed and swallowed with water, or drunk in a hot decoction, as a remedy for indigestion, flatulence, biliousness, etc. A bundle of the plants steeped in boiling water and wrapped in a cloth is applied to the stomach as a hot compress.

---

[1] Cf. H. R. Voth, Traditions of the Hopi, pp. 10, 16.

[2] *Amer. Anthr.*, IX, p. 352, 1896.

[3] Benavides mentions acorns among the food products of the Santa Fe district.

[4] Op. cit., p. 351.

Artemisia filifolia, *soƀok'uawàp'e*, is sometimes confused with *Artemisia canadensis*.

P'ų̀ ts'æ'iy, 'white rabbit-brush.'
Artemisia filifolia.
See *soƀok'uwàp'e*, above.

To.
Artemisia tridentata. Rocky Mountain Sage, Sagebrush. New Mexican Spanish *chamiso hediondo*, "stinking greasewood," *estafiata, estafiate.*

The dry bushes are used for fuel where no firewood is available, as for example, on the journey from San Juan to Taos.

All the New Mexican sages are used at Santa Clara in the treatment of indigestion, and this species, the most pungent of all, is considered a very effectual remedy though disagreeably strong. It is certainly useful in dispelling flatulence. It is also said to be a good remedy for a constant feeble cough with ineffectual expectoration. In both cases the leaves are chewed and swallowed.

Qræ. Called also *p'e ke'iy* (*p'e*, stick, wood; *ke*, hard).
Cercocarpus montanus. Mountain Mahogany. New Mexican Spanish *palo duro*, "hard wood." (See fig. 3.)

Puqwæ̀p'e, 'rabbit-sticks' (*pu*, rabbit, cotton-tail rabbit; *qwæ̀*, strike; *p'e*, stick) are made of the wood of this plant.

The leaves of old plants, or entire young plants, are mixed with salt, and powdered by pounding. The mixture stirred in cold water is drunk as a laxative.

P'ų̀.
Chrysothamnus bigelovii. Rabbit-brush. (See pls. 4, *a*, 8, *b*.)

The Tewa of Hano give this name to *Bigelovia bigelovii* or *B. graveolens*.[1] Like the Hopi, they use it largely for making wind-breaks and other shelters for melon plants and young peach trees, and in damming washes and small arroyos. The March–April moon is called *p'ų̀kaƀo*, 'rabbit-brush shelter moon,' because wind-breaks and dams are then renewed. A mat or bundle of *p'ų̀*, along with a rabbit-skin blanket, is used to close the hatchway of the estufa when warmth or privacy is desired. *P'ų̀mele*, 'rabbit-brush balls,' the white galls which appear on *Chrysothamnus bigelovii* or *C. graveolens*, are strung as beads and hung round babies' necks to stop their dribbling. The flowers, *p'ų̀poƀì*, are boiled to make a yellow dye for woolen yarn.[2]

[1] The Hopi call Bigelovia graveolens *hanoshivàpi*, because the Tewa of the pueblo of Hano carry great bundles of it for firewood. (See Hough, *Amer. Anthr.*, vol. x, no. 2, 1897, p. 39.)

[2] The Navaho boil *Bigelovia graveolens* for yellow dye. (See Matthews, *Third Ann. Rep. Bur. Ethn.*, p. 377.)

Saǩup'e, 'tobacco pipe plant' (*sa*, tobacco; *ǩu*, stone; *p'e*, stick, plant.

Edwinia americana. Wax Flower.

? ———

Ephedra antisyphilitica. Joint Fir.

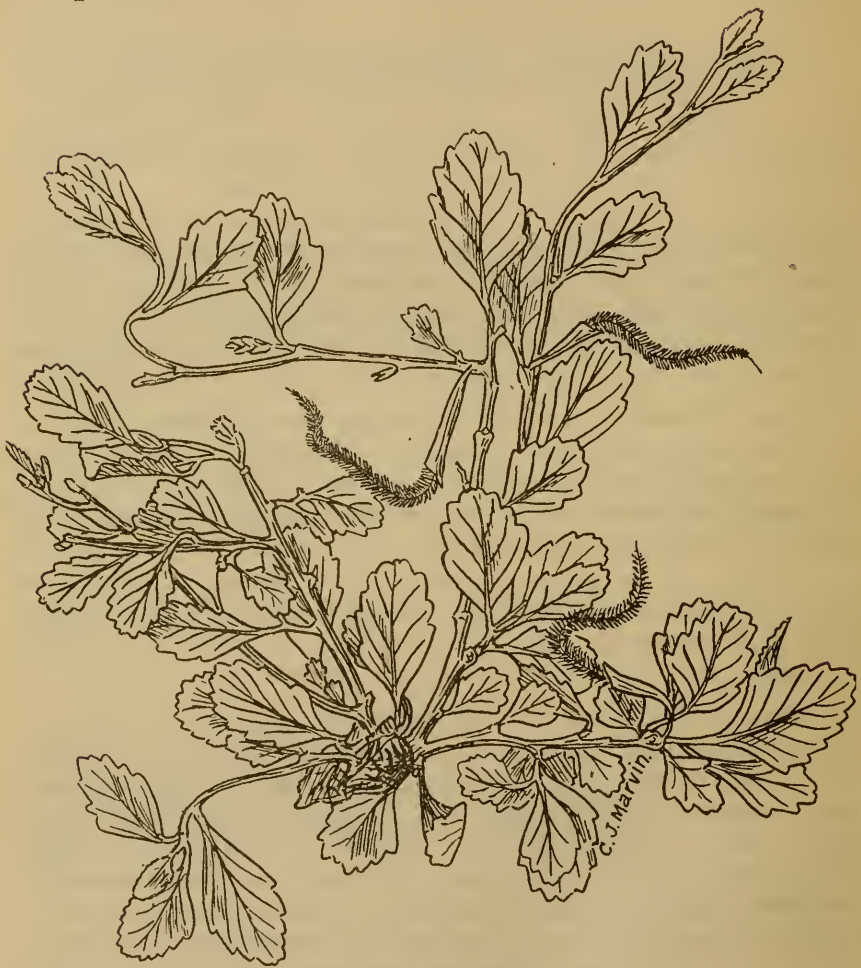


FIG. 3.—Mountain mahogany.

The leaves and stems are boiled in water and the decoction is taken as a remedy for diarrhea. Sometimes the leaves and stems are chewed for the same purpose.[1]

Poñi'ɬ (of obscure etymology; < New Mexican Spanish *poñil?*).

Fallugia paradoxa. Apache Plume. New Mexican Spanish *poñil* (< Tewa? But cf. Tewa *'añi'ɬ* < New Mexican Spanish *añil*, p. 60); see plate 4, *b*.

[1] Teamster's Tea (*Ephedra antisyphilitica* Berland) is used by the Pima as a beverage, and by both the Pima and the Mexicans as a remedy for syphilis. (See Russell, *Twenty-sixth Ann. Rep. Bur. Amer. Ethn.*, p. 80.)

The slender branches are bound together and used as *tap'eñį*, 'brooms' (*ta*, grass; *p'eñį*, of obscure etymology), for rough outdoor sweeping.

Arrows are made of the straight slender branches.

At San Ildefonso women steep the leaves in water until they are soft, and wash their hair in the infusion, to promote its growth.

Sopa.

Lycium pallidum. New Mexican Spanish *tomatilla.*

The Hopi eat the berries of this plant.

Pæp'e'ñæƀì, 'deer weed' (*pæ*, mule deer; *p'e'næƀì*, weed).

Pachistima myrsinites.

Hutsinąƀu'u (*hu*, Juniperus monosperma; *tsinąƀu'u* (?)).

Phoradendron juniperinum. Mistletoe.

This plant grows abundantly on the one-seeded junipers (see p. 39) in the region. It is said that deer eat it.

It is ground, mixed with hot water, and drunk when one "feels a chill in the stomach."

'Aƀè[1] (cf. Cochiti Keres *ápo*, Padus melanocarpa).

Padus melanocarpa. Chokecherry.

Bows are made from the wood.

The berries are boiled and eaten or are eaten raw.

The Jicarilla Apache grind the berries and make the meal into round cakes, six inches in diameter and about one inch thick; they are blackish in appearance and taste sweet. The Tewa call them *'aƀèƀuwa*, 'chokecherry bread' (*ƀuwa*, bread). Occasionally the Apache bring them to San Ildefonso at Christmas time. The occurrence of the personal name 'Abenbua'[2] at Pojoaque in 1715 suggests that *'aƀèƀuwa* was formerly made by the Tewa.

Tęnƌęyka, apparently 'slender-tubed leaves'[3] (*tęy*, tube; *ƌęy*, slenderly pointed; *ka*, leaf).

?Ptelea crenulata.

Tʃiƀatùp'e, 'kid plant'[3] (*tʃiƀatù*, young goat < Span. *chibato; p'e*, stick, plant). The plant is so named because of its goat-like odor.

Ptelea tomentosa. Hop Trefoil.

Saƞi'iy, 'red tobacco' (*sa*, tobacco; *ƞi*, red).

Rhus cismontana. Sumac.

The leaves were dried and smoked in pipes or made into cigarettes, either mixed with tobacco, *sa*, or alone. The Jicarilla Apache also smoke it.

[1] This word rhymes with *Saƀè*, 'Athapascan.'

[2] Spanish Archives, office of U. S. Surveyor General, Santa Fe.

[3] Identified with the Indian name from a dried specimen only.

Tsiʃu.

Ribes sp. Gooseberry.

P̂otʻeŋ, 'throws out water' (*p̂o*, water; *tʻeŋ*, to throw out). The name refers to the juicy character of the plant.

Ribes inebrians. Currant. New Mexican Spanish *manzanita.* The fruit is eaten. The wood was used for making bows.

Pʻeywæ̨ʻiŋ, 'thorny plant' (*pʻe*, stick, plant; *ywæ̨*, thorn). ?———.

Musàpʻe, 'cat plant' (*musà*, domestic cat; *pʻe*, stick, plant).

Robinia neomexicana. Locust. New Mexican Spanish *uña de gato*, "cat's claw."

The wood was used for making bows.

The Tewa name, *musàpʻe*, is probably due to Spanish influence; at least it is not pre-Spanish, for *musà* is not a native Tewa word, but of the same origin as Cochiti *mósą*, etc., appearing in many Southwestern languages. Tewa *musà* is sometimes rather incorrectly applied to the wildcat.

Kʻaʼᵃ.

Rosa sp. Wild Rose, Garden Rose.

At Santa Clara rose petals are dried and kept in the houses as an agreeable perfume. They are ground fine and mixed with grease to make a salve for sore mouth.

One of the folk etymologies of *Kʻaʼᵃp̂o*, the Tewa name of the pueblo of Santa Clara, refers it to *kʻaʼᵃ*, 'rose,' and *p̂o*, supposed to be *p̂o*, 'water,' the compound being explained as meaning 'dew.' Another, referring it to the same elements, explains that there "the roses (?) grow by the water."[1]

Jąŋ, Hano Tewa.

Salix sp. Willow.

Called also *jąŋkʻili*, 'bud willow' (*jąŋ*, willow; *kʻili*, grain, bud), in allusion to the characteristic silvery buds.

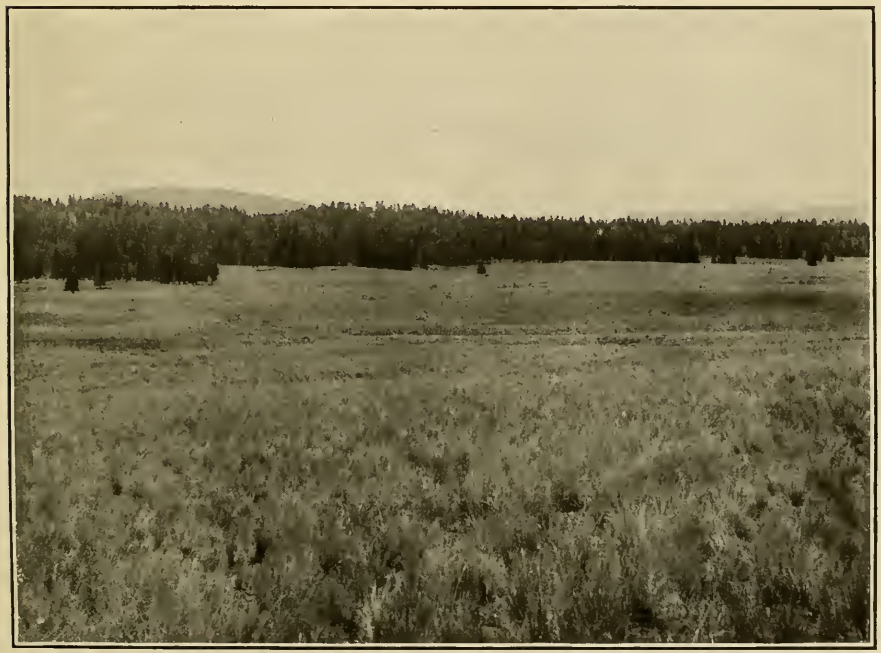
The catkins of willow are called *ʼiðipoðì*, 'its flowers.' The white buds are *jąŋkʻili*, 'willow grains.' The small male flowers are *jąŋkʻiliʼoǩu*, 'bud-willow fluff or down;' *ʼoǩu* is properly 'loose down of a bird,' and these flowers are so called because they are easily detached.

At the *Tʻąntaʼi* ceremony in December, willow twigs, apparently one for each household in the village, are prepared, a number of *pele* (feathers with *ŋæ̨kala*) being tied by cotton strings to each twig.[2] The twigs are called *jąŋkʻili*. They are set up in the *kʻajetʻe* to the east of the village.

[1] See Harrington, Ethnogeography of the Tewa Indians, *Twenty-ninth Ann. Rep. Bur. Amer. Eth.*, p. 241.

[2] A shrine on a hill above the pueblo of Jemez contains bouquets of spruce and cedar, with feathers of the turkey, eagle, and parrot tied to the ends of the twigs.

A. AN EASTERN SLOPE AT THE CREST OF THE JEMEZ MOUNTAINS. TALL ROCK PINES ARE SCATTERED OVER THE GRASSLAND; AN ASPEN GROVE IS SEEN AT THE LEFT; LARGE GRASS CLUMPS, SO CHARACTERISTIC HERE, ARE IN THE FOREGROUND.



B. VALLE GRANDE, SHOWING WHERE GRASSLAND GIVES WAY TO SPRUCE AND ASPEN ON THE SLOPES.

Jąysæ'i̱, Hano Tewa, 'sour willow' (*jąy*, willow; *sæ'i̱*, sour).

Salix, ? sp.

"Like the ordinary willow, *jąy*, but the bark is green, not red." It is used to cover roofs, prayer-sticks, and *'ułuṗ'e*, are made of it.[1] It grows on a hill, therefore called *jąy'i̱'i*, a few miles south of First Mesa.

Jąy.

Salix argophylla. Willow. New Mexican Spanish *jara.*

Salix irrorata. Willow.

Jąy was used for basketry[2] and many other purposes.

Willow charcoal used as body paint is called *jąmp'ę̱y* (*p'ę̱y*, blackness, black).

Hodge[3] gives *Yä'n-tdóa* as a Willow clan at Santa Clara.

Jąnjo, 'large willow' (*jąy*, Salix irrorata, Salix argophylla; *jo*, augmentative).

Salix cordata. Willow.

K̄ųy.

Schmaltzia bakeri(?). Skunk-bush, Three-leaved Sumac. New Mexican Spanish *lemita.*

Baskets were made from the stems.

The fruit was eaten whole or ground.

The Santa Clara people use this wood for bows, but at San Ildefonso it is not so used.

Tewàbe, 'Tewa fruit' (*tewà*, Tewa; *be*, roundish fruit). Cf. *p̂i̱ynæ'i̱y tewàbe*, 'mountain Tewa-fruit,' *Betula fontinalis.*

Sericotheca dumosa.

The small fruit was eaten.

Ywæjoka, 'big thorn leaf' (*ywæ*, thorn; *jo*, augmentative; *ka*, leaf).

Xanthium commune. Cocklebur.

At Santa Clara this plant is used as a remedy for diarrhea and vomiting. Children are fumigated with it as a cure for urinary disorders.

P'a (Hano Tewa, *p'alų*).

Yucca baccata. Yucca, Spanish Bayonet. New Mexican Spanish *datil.*

New Mexican Spanish, *palmilla ancha*, *amole.*

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[1] In a large shrine on the summit of *Tsikumuṗi̱ns*, Santa Clara Peak (see Harrington, Ethnogeography of the Tewa Indians, p. 125), a peak in the Jemez Mountains at the headwaters of the Santa Clara River, Mr. W. B. Douglass found in 1911 prayer-sticks made of willow (*Salix humilis*), cottonwood (*Populus wislizeni*), box-elder (*Negundo interius*), and blades of sedge (*Cyperus*); some of these were decorated with goldenrod (*Solidago*), *Gutierrezia tenuis*, dropseed grass, and a herb of the genus *Sporobolus.* The shrine was visited by messengers from Santa Clara, San Juan, San Ildefonso, Taos, Jemez, and Cochiti. (See A World-quarter Shrine of the Tewa Indians, *Records of the Past*, vol. XI, pt. 4, pp. 159–73, 1912.)

[2] The Zuñi make coarse baskets of willows, dogwood, and *Chrysothamnus graveolens* (Stevenson, The Zuñi Indians, p. 373). The Hopi of Oraibi use willow twigs in the manufacture of their woven basket-trays, and all the Hopi use willow as material for large burden-baskets (Hano Tewa *jąmmele*).

[3] *Amer. Anthr.*, IX, p. 352, 1896.

The roots of this plant provide an excellent lather; until the introduction of commercial soap, it was the only washing medium used by the Indians of New Mexico and Arizona and the New Mexican Spaniards, and it is still used for washing woolens, heavy native cotton fabrics, feathers, and human hair. After being bruised with a stone (generally one of the grinding stones), the roots are put into cold water to steep. After a few minutes they are briskly stirred and rubbed with the hand until a good lather is produced; the fibrous parts are then removed and the lather is ready for use. The lather is called *'ok'o* (Hano Tewa, *'ok'olo*), and the name is extended to commercial soap. In ceremonies lather represents clouds, *'ok'uwa*.

The Tewa wash their hair about once a week, and also after performing dirty work, after a journey, and before taking part in ceremonies. Before a public dance all the inhabitants of a pueblo, as well as the actual dancers, are expected to wash their hair. At Hano the people wash their hair early on the morning after the conclusion of a series of ceremonies, whether a public dance follows or not; in this way the actual performers are said to "wash off their clouds."

The Tewa of Hano, like the Hopi, accompany all ceremonies of adoption and name-giving by washing with yucca suds. Thus, when an infant is named before sunrise on the twentieth day after birth, its head is washed by the paternal grandmother, and each member of the father's clan who gives an additional name smears the child's head with suds. The bride is bathed by the bridegroom's mother at the beginning of her bridal visit to the bridegroom's house, and at the end of the visit, when she is about to return to her own clan-house, women of the bridegroom's clan wash her hair before sunrise and give her a new name. When a Tewa from New Mexico visits a Tewa clan at Hano, the women of the clan wash his hair before sunrise and give him a new name; formerly they also bathed him with *amole* suds. Navaho, Ute, and Apache scalps, when they were brought to Hano, were intrusted to the *p̂oṭa'i'i*, who washed them before sunrise with amole suds and gave them the name *'agajosojo*, the Morning Star. All these washing customs are apparently foreign to the New Mexican Tewa.

Cord and rope were formerly made from the fibers of *Yucca baccata*. The fleshy leaves were boiled for a short time; when cool, the leaves were chewed and the fibers extracted and twisted into cord.

The fruit of *Yucca baccata* was formerly eaten. It was called *p'aṗe*, 'yucca fruit' (*p'a*, Yucca baccata; *p̂e*, fruit), this name being applied to dates also on account of their resemblance to yucca fruit; see page 115.

An old man at Santa Clara said that the fruit of one kind of *p'a*, though excellent, was apt to cause diarrhea, and that another kind was eaten by women to promote easy and complete delivery.

An informant from San Ildefonso described the use of *p'a* as a ritual emetic; the person chews it (part not specified, possibly the root) and then drinks water.

The leaves were sometimes baked and eaten by travelers when other provisions failed.

Mr. A. F. Bandelier kindly allowed the writers to quote from his manuscript notes on the uses of yucca at Cochiti in 1882:

"Fishing was done in former times with long nets made of threads of *palmilla ancha* (Yucca baccata), which were stretched across the river, weighed down by stones, and kept floating by gourds and inflated skins. . . . The thread of the *palmilla ancha* was prepared as follows: In May or June, the governor sent out men to cut the leaves of the plants and gather them in 'hands.' They dug a hole in the ground and kindled a large fire in it; after the ground had become thoroughly heated, the embers and ashes were cleared out and the leaves placed in carefully, covered with brush, then with stones, and finally with a layer of earth. On the top of this another large fire was built and left burning over night; the leaves were thus well baked. Then the 'hands' were carried to the pueblo, and as the leaves became very sweet, the boys chewed them up, extracting the fiber, *ha-tyañi-gó-gowĕn*, which they carefully laid aside, each bundle by itself, returning it to the house where it belonged. That fiber was twisted into thread, and strips of netting made of it, which were handed to the officers and then the whole net made. It was thus to all intents and purposes a communal enterprise, and the proceeds were enjoyed in common. Fruits of the Yucca baccata are still eaten. The women went together to gather the fruit in September and October, baking it until the skin could be taken off and the fiber removed, then threw it into *cavetes* and mixed it thoroughly, boiling it alternately, until it came down to a firm jelly or paste. It was then spread into large cakes about 1 inch thick, and left to dry on hanging scaffolds, changing it from time to time until it was perfectly dry. It was then cut into squares (or, at Acoma and Laguna, rolled into loaves) and preserved. In spring it was eaten in various ways, as paste, or dissolved in water and drunk, or tortillas and guayabes were dipped into the solution, thus using it like molasses or syrup."

The fruit, *sahü*, of Yucca baccata, *samóa*, is eaten by the Hopi; its soapy root is called *samomobi*. The soapy root of Yucca angustifolia, *mohü*, is called *mohümobi*. All the yucca plants are used for basketry and a multitude of other purposes.[1]

The Zuñi paint designs on pottery with brushes made of yucca needles. The pigments are ground in stone mortars and made into a paste with water to which a sirup of yucca fruit is added.[2] They make yucca cord for netting, strings to plume offerings, etc.[3] The ancestors of the Zuñi, Ashiwi, are said to have used bowstrings of yucca fiber.[4] The Zuñi make a conserve of the fruit of *Yucca baccata*.[5]

The archeological evidence in the pueblo area shows that yucca strips were used to make plaited sandals and baskets resembling the modern *pajo*, and for fiber and cord generally; also that yucca fiber,

[1] J. Walter Fewkes in *Amer. Anthr.*, IX, 1896, p. 17.

[2] M. C. Stevenson, Zuñi Indians, *Twenty-third Ann. Rep. Bur. Amer. Ethn.*, p. 375. See also this author's Ethnobotany of the Zuñi Indians, *Thirtieth Ann. Rep. Bur. Amer. Ethn.*, passim.

[3] Ibid., p. 113. [4] Ibid., p. 36. [5] Ibid., p. 368.

alone or in combination with cotton, was of great importance as a weaving material. Fur of beaver, otter, or rabbit was incorporated with yucca cord or twisted around it to make warmer or more ornamental fabrics.

In describing a pre-Spanish cave burial site probably of the Keres, just outside the Tewa domain, Dr. Edgar L. Hewett says:[1]

"The body was first wrapped in a white cotton garment . . . The outer wrapping was a robe of otter or beaver fur . . . made by twisting a small rope of yucca fiber about an eighth of an inch in diameter; then with the shredded fiber of the eagle or turkey feather, the fur was bound upon the cord, producing a fur rope of about a quarter of an inch in diameter, which was then woven into a robe with very open mesh."

Numbers of fur-wrapped cords were found in a large cave higher up the canyon. Similar cords are now worn by the *koshare* (clowns) at the Keres pueblo of San Domingo.[2]

P'amų (*p'a*, Yucca baccata; *mų*, unexplained).

Yucca glauca. New Mexican Spanish *palmilla*.

This species is smaller than the *p'a* (Yucca baccata), but resembles it considerably.

The roots are used for making lather. The fruit is eaten as in the case of the *p'a*.

According to the informant, string and rope were never made of *p'amų*.

Narrow slips of *p'amų* are used like paint brushes in decorating pottery.

The fibrous leaves of both species of yucca, merely split into narrow strips without twisting, serve for tying material. Thus, watermelons are kept fresh for winter use by hanging them from the rafters, encased in a network of yucca strips; sliced apples and chile peppers threaded on yucca strips are hung up to dry; the sifting-baskets, called *pajo*, 'not tight, openwork, like a net' (which the Tewa of Santa Clara buy from Jemez, and the Tewa of Hano from the Second Mesa villages), are woven of yucca strips. Bandoleers and neckties of knotted yucca strips are sometimes worn by the *k̂osà* (clowns) and by some other dancers.

At Hano small ceremonial bows of cedar are strung with yucca. In some initiation ceremonies at Hano, the novices are beaten with yucca whips.

'Osæ.

? ———.

This is a yucca-like weed. It grows near *'Osæwè*, a ridge a mile north of Nambé Pueblo;[3] also in the Cochiti Mountains. Fiber from this plant was used in making string, and for other purposes.

[1] Excavations at El Rito de los Frijoles in 1909, *Amer. Anthr.*, n. s., XI, p. 663, 1909.

[2] Cf. *Relación Postrera de Sivola*, Winship, *Fourteenth Ann. Rep. Bur. Amer. Ethn.*, p. 569.

[3] See Harrington, The Ethnogeography of the Tewa Indians, *Twenty-ninth Ann. Rep. Bur. Amer. Ethn.*, p. 371.

Tẹdẹŋ (no etymology).

? ———. New Mexican Spanish *palo duro.*

HERBS

Poƀì t̂sæ̨'i̯ŋ, 'white flower' (*poƀì*, flower; *t̂sæ̨*, whiteness, white).

Achillea lanulosa. Yarrow, sneezeweed.

Si. Hano Tewa, *si'u.*

Allium recurvatum. Wild Onion.

Sometimes called *'akọnsi*, 'prairie onion,' or *'akọnsi'e*, 'little prairie onion' (*'akọŋ*, plain; *si*, onion), to distinguish it from the cultivated onion introduced by the Spaniards, by which it has been superseded in New Mexico.

The Tewa of Hano, like the Hopi, know and use two species of wild onion: *'akọnsi'u*, 'field onion,' growing on high ground, which is gathered, washed, and eaten raw, usually with broken waferbread dipped in water; and *wạsi'u*, 'wind onion' (*wạ*, wind; *si*, onion), growing on lower ground, which is small and almost tasteless.

'Ōkūp'e, 'turtle plant' (*'ōkū*, turtle; *p'e*, stick, plant). Cf. *'ōkūp'e'ñæ̨ƀì*, page 59.

Allionia linearis.

Su.

Amaranthus retroflexus, A. blitoides. Amaranth, Pigweed. Called in New Mexican Spanish merely *quelite*, 'greens.'

Su was boiled and at times afterward fried. Thus prepared it is said to have been a very palatable food.

Tosụ'i̯ŋ (*to*, unexplained; *sụ*, to stink, stinking).

Arenaria confusa. Sandwort.

P'ụ t̂są̆ŋwæ̨'i̯ŋ, 'green rabbit-brush' (*p'ụ*, Chrysothamnus bigelovii; *t̂są̆ŋwæ̨*, blue, green).

Artemisia forwoodii. Green Sage.

The leaves and stems of *p'ụ t̂są̆ŋwæ̨'i̯ŋ* are chewed and the juice is swallowed when one feels "sick at the stomach."

The leaves and stems are steeped in water, and the decoction is taken as a remedy for chills. See *t̂a'ñe*, page 73.

K̂e'at̂o, 'badger sage'?, 'badger nut'? (*k̂e'a*, badger; *t̂o*, with level intonation, sage; *t̂o*, with falling intonation, nut). The probabilities are in favor of the meaning 'sage,' but one careful informant persistently gave the intonation of *t̂o*, 'nut.'

Artemisia frigida.[1]

This plant is used in the same way as *soƀok'nwàp'e* (see p. 44), but is less valued, since it grows in the lowlands near the villages, whereas *Artemisia filifolia* is brought from the mountains.

Waƥop'e, 'milk plant' (*wa*, breast, udder; *ƥo*, water; *p'e*, stick, plant). The plant is called thus when young.

'Ojaqwi, ('*oja*, unexplained; *qwi*, fiber). The plant is called thus when matured and its fibers are usable.

Asclepias sp. Milkweed.

The roots were eaten raw. The immature pods also were eaten.

Cf. *'Ojaqwitsipæy*, page 67.

String and rope were made of the mature plant.

'Imutaka ('*imu*, unexplained; *ta*, ? grass; *ka*, ? leaf).

Asclepias sp.

A remedy for sore breasts, at Santa Clara.

Wopoƀì, 'medicine flower' (*wo*, magic, medicine; *poƀì*, flower).

Campanula petiolata. Bluebell.

Puƭą'ᵃp'e, 'painted root plant' (*pu*, base, root; *ƭą'ᵃ*, painting, painted; *p'e*, stick, plant).

Castilleja linariæfolia. Painted Cup, Indian Paint-brush.

The red flower is prominent in decorative art at Hano; it is painted on pottery, painted and carved in wood, and imitated in colored yarn on a wooden framework.

P'ų 'ą̆wi'iy, 'brown rabbit-brush' (*p'ų*, Chrysothamnus bigelovii; *'ą̆*, brown).

Chrysopsis hirsutissima. Golden Aster.

Ƭa'ᵃñæy, Hano Tewa *'ƭa'jæy* (*ƭa'ᵃ*, unexplained; *ñæy*, apparently *ñæy*, nest).

Atriplex canescens. Salt Bush. (See pl. 7, *a*.)

At Hano the ashes are stirred into the dough for *mowa* (see p. 29) in order to turn it from purplish-gray, the natural color of meal ground from "blue" kernels, to greenish-blue.

? ———.

Cicuta occidentalis. Water Hemlock.

'Ojop'e ('*ojo*, unexplained; *p'e*, stick, plant).

Coleosanthus umbellatus.

P'e'ñæƀì 'aqwiƭsæ'iy, 'white tendriled weed' (*p'e'ñæƀì*, weed; *'aqwi*, tendril; *ƭsæ*, white).

Cuscuta. Dodder.

[1] Flowers of this plant, tied to *pahos*, are used in the *Sojal* ceremonies of the Hopi.

Sæmp'e, 'porcupine plant' (*sæy*, porcupine; *p'e*, stick, plant).
Datura meteloides. Datura. (See pl. 5, b.)

Seeds of this plant were found in perfect condition in the large community house in Rito de los Frijoles Canyon. The Tewa of the present day seem to make no use of the plant.[1]

'Ok'uwàp'e, 'cloud plant' (*'ok'uwà*, cloud; *p'e*, stick, plant).
Eriogonum annuum.

Poðì tsą̆ywæ̨'i̯y, 'blue or green flower' (*poðì*, flower; *tsą̆ywæ̨*, blue, green).
Townsendia eximia.
Eriogonum divergens.

Pojèka, 'three leaves' (*pojè*, three; *ka*, leaf).
Fragaria ovalis. Strawberry.

'Awi.
Galium triflorum. Bedstraw.

Ỵwæ̨tsą̆ywæ̨, 'hot tooth' (*ỵwæ̨*, thorn; *tsą̆ywæ̨*, hot).
Galium sp.? Bedstraw.

If chewed, this plant makes the gums smart and burn.

P̂añùp'epoðì, 'five-stalked flower' (*p̂añù*, five; *p'e*, stick, stalk; *poðì*, flower).
Geranium atropurpureum. Geranium, Cranesbill.

Ỵwæ̨p'e'ñæ̨ðì, 'thorn weed' (*ỵwæ̨*, thorn; *p'e'ñæ̨ðì*, weed).
Geum strictum. Avens.

Poðìwijèki, 'swaying flower' (*poðì*, flower; *wijèki*, to sway, intransitive).
Gilia greeneana. Red Gilia.

Poðìỵwi̯y, 'standing flower' (*poðì*, flower; *ỵwi̯y*, to stand).
Gilia longiflora. White Gilia. New Mexican Spanish *lina*.

A second informant criticized this name as being merely descriptive and not proper to this particular plant (probably because he did not know the name).

The dried flowers and leaves of *Gilia longiflora*, ground and mixed with water, make a soapy lather, which is good for sores on any part of the body or for headache.

[1] The Zuñi use the roots of *Datura stramonium* as a narcotic and anesthetic, and the blossoms and roots ground to a powder as an external application for wounds and bruises. (See M. C. Stevenson, The Zuñi Indians, *Twenty-third Ann. Rep. Bur. Amer. Ethn.*, p. 385; also Ethnobotany of the Zuñi Indians, *Thirtieth Ann. Rep. Bur. Amer. Ethn.*, passim.) Some of the Yuman tribes use the leaves as a narcotic. Doctor Hough says (*Amer. Anthr.*, x, p. 38) that the use of *Datura meteloides* as a narcotic "is extremely rare and is much decried by the Hopi." Miss G. Robinson, formerly field matron at Second Mesa, informs the writers that a Hopi doctor at Sichomovi administered doses of *Datura* to two children who were brought to him from Shongopovi. One of the patients, a child of three months, afterward suffered from a succession of convulsive fits, with loss of muscular control, and did not fully recover, or acquire the power of speech; the other, a girl about three years of age, lost muscular control and died about a month later.

K̲ojaji. Hano Tewa, *kojaje* (< Span.?).

Gutierrezia longifolia. New Mexican Spanish *yerba de vibora* and *coyaye.*

This plant grows freely in the sand about the Tewa villages. It is eaten by live stock.

At Santa Clara the midwife gives a mixture of *kojaji*, *'a̲ntamisà* (see p. 44), and *sa*, native tobacco, to the patient in the form of snuff. The patient is also fumigated by placing *kojaji* on hot coals on a *puki* (base used in making pottery), over which she stands, wrapped in a blanket. The same remedy is used for painful menstruation. At San Ildefonso a newborn child is fumigated in the same way.

At Hano *kojaje*, as well as a smaller plant resembling it, called *kojaje 'i̲b̲itije*, 'younger brother of *kojaje*' (fresh or, in winter, dried), is boiled in water and the decoction given for gastric disturbances. In a case of gastric influenza with violent vomiting and bleeding from the stomach, three half-pint doses a day were given. A fresh decoction was made daily and the treatment was continued for five or six days.

Fresh green *kojaje*, chopped fine, is rubbed on the skin around the ear to relieve earache.

Sprigs of *kojaje* are tied on many kinds of prayer-sticks by the Tewa of Hano as well as by the Hopi. It is almost the only flowering plant available for the December ceremonies.

P̂o'a (*p̂o*, water; *'a*, perhaps *'a*, clothing). Cf. Hano Tewa *nă̲y'a*, 'earth clothing' (*nă̲y*, earth; *'a*, clothing), a name for lichen (see p. 68).

Halerpestes cymbalaria. Crowfoot.

Snares for catching bluebirds are made from this plant.

Helianthus annuus. Sunflower. New Mexican Spanish *añil.*

The fire-stick, *p'ap'e*, for lighting cigarettes is sometimes a dried sunflower stalk.

A scalp song at Hano describes sunflowers as watered by the tears shed by Navaho girls.

Pu̲'b̲eje.

Hymenoxys floribunda. Colorado Rubber Plant.

The skin of the roots is pounded until it becomes gummy. The material is then chewed as Americans chew chewing-gum.

P̂i̲mp'e, 'mountain stalk' (*p̂i̲y*, mountain; *p'e*, stick, stalk, plant).

Hypopitys latisquama. Pinesap.

'Ogohep'e'ñæb̲ì, 'sour weed' (*'ogohe*, sour, sourness; *p'e'ñæb̲ì*, weed).

Ionoxalis violacea. Violet Wood-sorrel.

'Agojop'e, 'star plant' (*'agojo*, star; *p'e*, plant).

?Kallstroemia brachystylis. New Mexican Spanish *contrayerba.*[1]

[1] The *contrayerba* used by the Spaniards in Peru as an antidote for poison, and introduced into England in 1581 under the name of drakesroot, is an entirely different plant.

A. CANYON OF EL RITO DE LOS FRIJOLES, SHOWING STREAMSIDE FOREST AND NUMEROUS RABBIT-BRUSH SHRUBS (CHRYSOTHAMNUS BIGELOVII) IN THE FOREGROUND ON TALUS SLOPE.

B. PLUMED ARROYO SHRUB (FALLUGIA PARADOXA) IN ARROYO IN CANYON OF EL RITO DE LOS FRIJOLES.

At San Ildefonso the chewed leaves are put on a sore or swelling, and at Santa Clara the roots are used as a remedy for diarrhea.

P̂ịyywịki, 'mountain slope' (*p̂ịy*, mountain; *ywịki*, steep slope). Why the plant should be called thus could not be explained.

Laciniaria punctata. Blazing Star.

The roots were eaten as food.

'Okị̂.

Lappula floribunda. Stickseed.

P'e'ñæƀì 'ą̆wì'ịy, 'brown weed' (*p'e'ñæƀì*, weed; *'ą̆*, brown).

Lupinus aduncus. Lupine.

T̂osǫmbe.

Martynia sp.

The open seed-vessels, wound about with woolen yarn, are sometimes used at Santa Clara and at Hano in making artificial flowers for dancers' headdresses.[1]

P̂'e'ñæƀì tsịƀè'ịy, 'sticky weed' (*p̂'e'ñæƀì*, weed; *tsịƀè*, sticky, usually said of glutinous substances).

? *Pukæ̂* (Santa Clara).

Nuttallia multiflora.

This plant is rough, covered with minute hairs, and clings to clothing tenaciously. A young boy, before he is put on a horse for the first time, is stripped of his clothing and this rough plant rubbed briskly on the bare skin of his legs. His clothing is put on and he is placed on the back of the horse. The Tewa maintain that this treatment enables the boy to adhere to the horse.

The Franciscan Fathers apply "tenacious" to the sticky quality of *Mentzelia* (*Nuttallia*).[2]

Sụt̂sịgị̂ɨ́ɨy (*sụ*, to smell, intransitive; *t̂sịgị̂ɨ́ɨy*, unexplained).

Monarda menthæfolia. Horsemint. According to E. Cata of San Juan the English-speaking Americans call this plant Pennyroyal.

At San Ildefonso parts of the plant are cooked with meat to flavor the latter. The dried plant is ground fine and the powder is rubbed over the head as a cure for headache or all over the body as a cure for fever.

At Santa Clara *sụt̂sịgị̂ɨ́ɨy* is a very popular remedy. As a treatment for sore throat, a decoction of the dried leaves is taken internally, and, at the same time, a small quantity of the dried and ground leaves is enclosed in a narrow strip of deerskin or calico and worn by the patient around his neck. As *sụt̂sịgị̂ɨ́ɨy* is regarded as one of the

[1] The Zuñi use these seed-vessels in the same way.

[2] The Franciscan Fathers, An Ethnologic Dictionary of the Navaho Language, St. Michaels, Arizona, p. 194, 1910.

"cold" medicines, it is used in the treatment of fever: the leaves are chopped or finely ground, and the powder, slightly moistened, is rubbed on the patient's head, face, and limbs and inside his mouth, and also given him in water to drink. *Suʃsigi'ɨy* is said to be a remedy for sore eyes, but the method of application has not been ascertained.

FIG. 4.—Rocky Mountain bee plant.

At Hano this plant is cooked and eaten.

P'e'ñæƀì ywætsɨƀè'ɨy, 'sticky podded weed' (*p'e'ñæƀì*, weed; *ywæ*, thorny, thorn; *tsɨƀè*, sticky).

Oreocarya multicaulis.

Qwiɨip'e, 'in a row plant' (*qwiɨi*, line, row; *p'e*, stick, stalk, plant).

Pentalostemum oligophyllum, *P. candidus*, Prairie Clover.

At San Ildefonso, the sweet roots of the plant are eaten raw.

At Santa Clara it is applied to an *Atriplex*, species not determined. Women and children chew the plant as a delicacy.

K'ohepoƀì, 'hummingbird flower' (*k'ohe*, hummingbird; *poƀì*, flower).

Pentstemon torreyi. Beard-tongue.

Used at Santa Clara as a dressing for sores.

Qwă.

Peritoma serrulatum. Rocky Mountain Bee Plant, Guaco. New Mexican Spanish *guaco*. (See fig. 4.)

This is a very important plant with the Tewa, inasmuch as black paint for pottery decoration is made from it. Large quantities of young plants are collected, usually in July. The plants are boiled well in water; the woody parts are then removed and the decoction is again allowed to boil until it becomes thick and attains a black color.

This thick fluid is poured on a board to dry and soon becomes hardened. It may be kept in hard cakes for an indefinite period. When needed these are soaked in hot water until of the consistency needed for paint.

Guaco is also used as a food. The hardened cakes are soaked in hot water, and then fried in grease.

The finely ground plants are mixed with water and the liquid is drunk as a remedy for stomach disorders; or sometimes fresh plants wrapped in a cloth are applied to the abdomen.

Hano Tewa *Kwæ'ų* or *kwælų*. Hopi, *tųmi*.

Peritoma serrulatum[1].

This plant is of sufficient economic importance to be named in songs with the three chief cultivated plants, corn, pumpkin, and cotton. It is gathered in spring, and, after long boiling to rid it of the alkaline taste, is eaten with *fakewè* (cornmeal porridge), a small quantity of salt being added at the time of eating.[2]

'*Ōkūp'ẽ'ñæƀì*, 'turtle weed' (*'ōkū*, turtle; *p'ẽ'ñæƀì*, weed). Cf. '*Ōkūp'e*, page 53.

Phacelia corrugata. A fern species.

Tsigo'ot'e (*tsigo*, forehead; *'ot'e*, unexplained), probably referring to the custom of cracking the pod on one's forehead.

Physalis neomexicana. Ground Tomato, Ground Cherry. New Mexican Spanish *tomate*, *tomate del campo*.

The fruit is covered with a bladdery envelope which the boys crack with a popping sound by pressing it quickly on the forehead.

The berries are eaten.

Tomatoes also are called by this Tewa name, as well as by the Spanish name *tomate* (<Nahuatl *tomatl*, Mex. Span. *tomate*). See Tomato, p. 113.

? *P̂o'anį*.

P̂įnnæ'įy qwą̆, 'mountain guaco' (*p̂iy*, mountain; *næ*, locative; *qwą̆*, Peritoma serrulatum).

Polanisia trachysperma. Clammy Weed. (See *Stanleyella wrightii*, p. 61.

P'ųñæ'æ (*p'ų*, apparently *Chrysothamnus bigelovii; ñæ'æ*, unexplained). Cf. Hano Tewa *p'ųjæ*, page 60.

Portulaca oleracea. Purslane.

The top of this fleshy plant is eaten boiled by both Indians and Mexicans.

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[1] See Fewkes, *Amer. Anthr.*, IX, p. 16, 1896.

[2] The Hopi boil the leaves with green corn. (See Hough, *Amer. Anthr.*, X, p. 37, 1897.)

P'ų̄jæ, Hano Tewa (*p'ų̄*, apparently Chrysothamnus bigelovii; *jæ*, unexplained). Cf. *p'ų̄ñæ'æ*, page 59.

Portulaca retusa (Hopi *pihala*).[1]

This plant used to be eaten, cut up fine, in gravy.

Nų̄mp'e, 'earth stalk' (*nąǔ*, earth; *p'e*, stick, stalk, plant).

Ptiloria sp.

Pų̄hų̄.

Quamoclidion multiflorum. Four-o'clock. (See pl. 5, *a*.)

An infusion of the ground roots in water is drunk for cases of swelling, probably those of dropsical origin. The roots after being ground are mixed with corn flour to improve the taste.

'Añį̄'ɨ (<New Mexican Span. *añil*).

Hano Tewa *Alijowa.*

P̂į̄nnæ'į̄y 'añį̄'ɨ, 'mountain sunflower' (*p̂į̄y*, mountain; *næ*, locative; *'añį̄'ɨ*, sunflower).

Rudbeckia flava. Black-eyed Susan.

K̂up'e'ñæƀì, 'rock weed' (*k̂u*, rock; *p'e'ñæƀì*, weed).

Leptasea austromontana.

P̂į̄nnæ'į̄m p'e'ñæƀì, 'mountain weed' (*p̂į̄y*, mountain; *næ* locative; *p'e'ñæƀì*, weed).

Senecio macdougalii.

Hano Tewa *'Awæ*,. Hopi *asa.*

Sophia sp.[2] Tansy Mustard.

The plant is used to make black paint for decorating pottery.[3] Bundles of the plant, moistened, are steamed in a can in a pit oven; "some people boil it, but steaming thus is the best way, so that it will *melt* smooth." A quantity of liquid is then squeezed out, and the mass which remains is molded into a cake and, wrapped in corn husk, is stored for winter use. It is an article of trade between women. For use, a small piece is broken off, dipped in water, and rubbed down on a stone pallette with a hard mineral paint called *k̂up'ęy* (*k̂u*, stone; *p'ęy*, blackness).

'Awæ is cooked and eaten in spring.

The Hano people translate the name of the Asa clan of Sichomovi as *'Awæ̂owa.*

'Oą̄a (unexplained).

Sphæralcea lobata. Globe Mallow.

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[1] Fewkes, *Amer. Anthr.*, IX, p. 15, 1896.

[2] See Fewkes, ibid.; Hough, ibid., X, p. 40, 1897.

[3] The method of preparation seems doubtful or variable. Hough says that the seeds are ground in a mortar, forming an oily liquid which serves as a medium for the iron paint. Fewkes says that an infusion of the flowers is mixed with iron pigment, the juice of the *asa* being presumed to cause the pigment to adhere. The Tewa of New Mexico (see above) and the Zuñi (Stevenson, The Zuñi Indians, p. 375) use the liquid obtained by boiling *Peritoma serrulatum.* The Hano method is given here.

Finely powdered roots are applied to wounds caused by snake bites and to sores in which considerable pus appears. The pus is said to be drawn out by the action of this remedy.[1]

The skin from the roots is pounded into powder; water is added to make a paint, which is used on the face preparatory for the dance.

K'ot'awo, 'medicine for broken arms' (*k'o*, arm; *t'a*, to break, *wo*, medicine).

Pot'awo, 'medicine for broken legs' (*po*, leg; *t'a*, to break; *wo*, medicine).

Taraxacum taraxacum. Common Dandelion. New Mexican Spanish *consuelda.*

The young plants are eaten as greens.

The leaves ground fine are used in dressing fractures. At San Ildefonso the ground leaves, reduced with water to a paste, are spread over the fracture, and fresh leaves of the same plant bound over it with rags. At Santa Clara a cloth spread with leaves on which ground *consuelda* leaves are sprinkled is tied over the fracture. *Consuelda* leaves ground and mixed with dough are applied to a bad bruise.

Tǫ̆n sų'iy, 'seed which smells' (*tǫ̆y*, seed; *sų*, to smell, smelling). *Thalictrum fendleri.* Meadow Rue.

Tep'e, 'tea plant' (*te* <Span.; *p'e*, plant).

Dep'e, 'coyote plant' (*de*, coyote; *p'e*, plant), and *kotà*, New Mexican Spanish *cota.*

Thelesperma gracile and *T. trifidum.* New Mexican Spanish *te, te silvestre, cota.*

The leaves are steeped and the tea is drunk as a beverage by Indians and Mexicans.

P̂ǫnnæ'iy qwą̆, 'mountain guaco' (*p̂ǫy*, mountain; *næ*, locative; *qwą̆*, Peritoma serrulatum).

Stanleyella wrightii.

This is a species of mustard, the Mustard family being closely related to the guaco. The informants stated that *p̂ǫnnæ'iy qwą̆* is used in the same way as guaco for making paint for pottery and as food. (See *Polanisia trachysperma*, p. 59.)

Pǫnka, 'heart leaf' (*pǫy*, heart, heart-shaped; *ka*, leaf).

Viola canadensis. Violet.

'Akǫnsų̂sigǫ̂'ᵻy, 'prairie horsemint' (*'akǫy*, valley, field, open country; *sų̂sigǫ̂'ᵻy*, see p. 57).

? ———

A small horsemint growing in the mountain canyons.

[1] *U. S. Dispensatory:* Forms closely allied to this species are described as having several medicinal properties. Fresh plants of the Common Mallow have been used as a suppurative or relaxing poultice in case of external inflammation.

Hano Tewa, *Kojaje 'ibitije.*

? ———.

See under *kojaji*, page 56.

P'ų̄ t̂sæ̨to'i̯y, 'buff-colored rabbit-brush' (*p'ų̄*, Chrysothamnus bigelovii; *t̂sæ̨to*, buff-color, buff-colored).

? ———.

The galls of this plant, *p'ų̄be'e* (*p'ų̄*, rabbit-brush; *b̨e*, ball; *'e*, diminutive), ground up and drunk in water, are a good though very strong medicine for the stomach (Santa Clara).

CACTI

Sæ̨.

Opuntia. Prickly Pear Cactus, Round-leaved Cactus.

Opuntia camanchica. Prickly Pear Cactus, Round-leaved Cactus. (Pl. 6, *b*, shows the *Opuntia camanchica.*)

The fruit of both of these species is eaten; it is called *sæ̨p̂e*, prickly pear (*sæ̨*, prickly-pear cactus; *p̂e*, fruit), or *sæ̨i̯wæ̨b̨e* (*sæ̨*, Opuntia; *i̯wæ̨*, thorny; *b̨e*, ball, roundish fruit), 'thorny round fruit of *Opuntia.*'

This plant is perhaps usually called by the Tewa of San Juan *sæ̨i̯wæ̨* 'thorny Opuntia' (*sæ̨*, Opuntia; *i̯wæ̨*, thorny, thorn).

The Tewa of Hano call the fruit of this or a similar cactus *sæ̨nt̂o* (*sæ̨*, Opuntia; *t̂o*, nut).

Jo.

Opuntia arborescens. Chandelier Cactus, Cane Cactus. New Mexican Spanish *entraña.* (See pl. 8, *a.*)

The Tewa of Hano eat the cooked fruit of this or of a similar species, *jomelesæ̨læ̨* (*jo*, Opuntia; *mele*, ball, roundish fruit; *sæ̨læ̨*, boil, cook), in summer.[1] The women pick the fruit with tongs, *sæ̨nt̂op'e*, made of cleft sticks (*sæ̨*, Opuntia, see above; *t̂o*, nut; *p'e*, stick), and carry it home in baskets. It is put into a *p'ajo* (basket made of slips of yucca), and rubbed with a stone to dislodge the spines. It is then dropped into boiling water and allowed to cook for some time. This fruit is eaten with *ʃakewè*, cornmeal porridge, with the addition of sugar.

The fruit of "a flat cactus," also called *jo*, is cooked in the same way.

Nwą̨nsaƀèwaǩu, 'Navaho testicles' (*Nwą̨y*, Jemez; *Saƀè*, Athapascan; *waǩu*, testicle).[2]

Mamillaria sp. Ball Cactus. (See pl. 6, *a.*)

The spines were burned off and the entire plant was eaten raw.

The Tewa know by report the giant saguaro of southern Arizona, "used for the roof-beams of houses."

[1] The Zuñi cook the fruit of *Opuntia filipendula.* (See Stevenson, The Zuñi Indians, p. 368.)

[2] At Santa Clara a story is told of a Navaho who, prowling around a "Mexican" village by night, fell into the cactus bushes; the spines put out his eyes, and he was caught and mocked by the people next morning.

VINES

Any kind of vine is called *'ap'æ*.

'Ap'æ 'oku'iŋ, 'downy vine' (*'ap'æ*, vine; *'oku*, downy, down).
Clematis ligusticifolia. Clematis.

When the vine is in fruit the long plumose styles are said to look like the down of an eagle.

Kaqwi'ap'æ, 'tie leaves vine' (*ka*, leaf; *qwi*, to tie; *'ap'æ*, vine).
Humulus lupulus neomexicanus. Hop.

GOURDS

Po'oje (*po*, squash, pumpkin; *'oje*, unexplained).
Cucurbita fœtidissima. Wild Gourd. (Pl. 7, *b*.)

The roots ground fine and stirred in cold water are drunk as a laxative.[1]

For cultivated squashes, see page 100.

GRASSES AND GRASSLIKE PLANTS

The word meaning 'grass' is *ta*. All true grasses and grasslike plants, as sedges, may be called *ta*. There is evidence here of classification and recognition of a distinct group of plant life. Most of the grass names are compounded, *ta* being an element common to nearly all of them. In the event that a species of grass is not known by a special name it is spoken of merely as *ta*. This is of course similar to our common method of naming grasses; unfamiliar species are spoken of as 'grass,' while better known kinds are apt to be given specific names. Many of the Tewa grass names given below are merely descriptive terms and not real names of species. (See pl. 3.)

Ta is also used meaning 'hay,' in this sense being the equivalent of New Mexican Spanish *zacate*.

Straw is called *ta*, 'grass,' 'hay,' or *tak'owà*, 'grass tegument' (*ta*, grass; *k'owà*, tegument, skin). Chaff also is called *tak'owà*. Stubble left where grass or hay has been cut is called *tap'ek'y*, 'grass stalk-skeleton' (*ta*, grass; *p'e*, stick, stalk; *k'y*, hard part of an object, cob of corn, skeletal part of the body).

Wheat straw or chaff is *tatak'owà*.

Hodge[2] gives as Grass clans at various pueblos: San Juan, Nambe, and Tesuque, *Tá-tdóa;* Hano, *Tá-tówa*.

Ta ŋwæ'iŋ, 'thorny grass' (*ta*, grass; *ŋwæ*, thorny, thorn).
Cenchrus carolinianus. Sand Bur.

[1] *U. S. Dispensatory*: "The pulp of the root of *Cucurbita dageneria*, or gourd, is said by Dr. Chapin to be a powerful and even drastic purgative."

[2] *Amer. Anthr.*, IX, p. 35, 1896.

Ta p'o'i̯y, 'hairy grass' (*ta*, grass; *p'o*, hairy, hair).
Elymus canadensis. Wild Rye.
Lycurus phleoides. Texan Timothy.

P̂i̯mp̂i̯nta, 'chirping grass' (*p̂i̯mp̂i̯y*, to make a noise by blowing through a pinched grass stalk, by blowing on a grass leaf held between the two thumbs, or by putting a grass leaf between the two lips and sucking; *ta*, grass).
Tapipi, 'grass whistle' (*ta*, grass; *pipi*, onomatopœic, connected with *p̂i̯mp̂i̯y*, to chirp; see below.).
Panicum barbipulvinatum. Panic Grass.

One may say of the note produced by holding a leaf or leaf-sheath of this grass between the lips and sucking: *p̂i̯ntsi.tewagɨ nă̆p̂i̯mp̂i̯y*, 'it chirps like a mountain bird' (*p̂i̯y*, mountain; *tsi.te*, bird; *wagɨ*, like; *nă̆*, it; *p̂i̯mp̂i̯y*, to chirp thus by means of grass).

Little bundles or brooms made of this grass are used by the women for cleaning metates and metate boxes.

Tsi.teta, 'bird grass' (*tsi.te*, bird; *ta*, grass).
Alopecurus aristulatus. Rush Grass.
Muhlenbergia trifida. Hair Grass.
Schizachyrium scoparium. Sage Grass.

Two kinds of grass are used to make brooms:

Tap'eñi̯ kă̆'ni̯y ±*ta*, 'tasseled broom (grass)' (*tap'eñi̯*, broom; *kă̆'y*, tassel).
? ———

This grass grows in the fields and by the river.

A single plant of this species would be called *takă̆'ni̯y*, 'tasseled grass.'

Ta tă̆n'i̯y, 'seedy grass' (*ta*, grass; *tă̆y*, seedy, seed).
Tap'eñi̯ta, 'broom grass' (*tap'eñi̯*, broom; *ta*, grass).
Bouteloua curtipendula. Mesquite Grass.

This grass grows in the mountains, and Mexican peddlers often bring bunches of it to sell in the Tewa villages.

The grasses are gathered in August, tied in firm bundles, and carefully dried. The long soft end of the broom serves to sweep the adobe floor, and when worn shorter by use, it makes a convenient brush for the hearth and the metates. The short butt-end of the broom serves as a hair-brush. Before sweeping, the New Mexican Tewa women sprinkle the floor copiously to lay the dust, for this purpose dipping their fingers into a dish of water. The Keres women blow a 'mist' (Tewa, *sobok'iwa*) of water from their mouths for the same purpose. The Hano people, on account of both the scarcity of water and the fineness of their adobe, seldom sprinkle the floor at all.

Ta k̂eb̨e, 'bent-necked grass' (*ta*, grass; *k̂e*, neck; *b̨e*, bent, a bend).

A. FOUR-O'CLOCK (QUAMOCLIDION MULTIFLORUM). THIS LARGE CLUMP MEASURED SEVERAL FEET ACROSS. RATHER COMMON IN THE CANYONS.

B. DATURA METELOIDES, A LARGE AND CONSPICUOUS PLANT OF STREAM TERRACES AND TALUS SLOPES.

Boutelova gracilis. Grama Grass. (See fig. 5.)

'Añ*ų*ta (*'añ*ų, unexplained ; *ta*, grass).

? ———.

Much of this grass grows along the irrigating ditches.

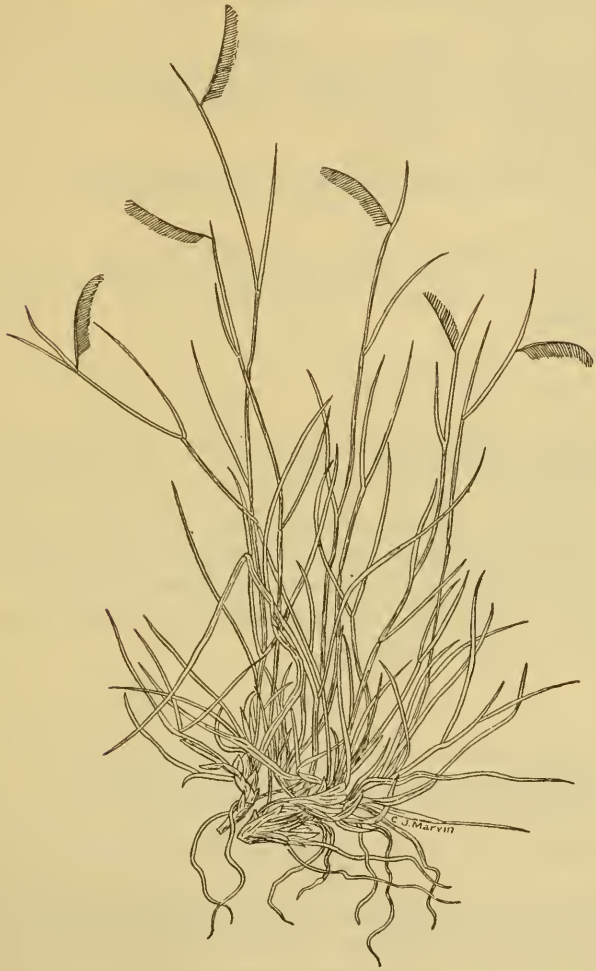


FIG. 5.—Grama grass.

*Ta p̂i'i*ų, 'red grass' (*ta*, grass; *p̂i*, red).

*Tas*ę*y*, ? 'horn grass' (*ta*, grass; apparently *s*ę*y*, horn).

? ———. New Mexican Spanish *zacate azul.*

This kind of grass grows on the hills east of the Rio Grande and elsewhere. It is excellent food for cattle.

Tajo, 'large grass,' 'boss grass' (*ta*, grass; *jo*, augmentative). *Carex* sp. Sedge.[1]

? ———.

'Awa (unexplained), a kind of cattail.

This has narrower leaves than *'awap'a*, below.

'Awap'a (*'awa*, a kind of cattail; *p'a*, large, thin, flat and roundish). This has larger leaves than *'awa* and *p'a* is added to distinguish it as regards this feature.

Typha latifolia. Cattail.

'Awase (*'awa*, a kind of cattail; *se*, unexplained).

? ———.

A kind of tall straight-stalked water grass.

P'ęŋkwamp'e, 'frog weed' (*p'ęŋkwąŋ*, frog; *p'e*, stick, stalk, plant).

? ———.

Described as a kind of rush.

Po, *posu*.

Phragmites phragmites. Reed, cane. New Mexican Spanish *carrizo*.

It is said that this plant formerly grew plentifully along the Rio Grande near the Tewa villages. Now none can be found there. It grows, however, along Jemez creek near Jemez pueblo.

The plant was used for making arrows, game-sticks for the cañute game, and many other purposes.

FUNGI

Te; 'Oŋgù (<Span.) New Mexican Spanish *hongo*. Applied to any fungus resembling toadstool or puffball.

? ———.

Te is applied to any large fungus, as a toadstool, mushroom, puffball, etc.

So far as could be learned the Tewa do not distinguish between the edible and the poisonous kinds. The informant stated that they ate any kind they found and that they never suffered ill effects. In preparing toadstools and mushrooms for food they are first boiled, then fried. A stick must be laid across the top of the kettle containing the cooked toadstools or mushrooms from which one is eating, otherwise he would thenceforth be afflicted with a poor memory.

K'ųnsæpeɬe (*k'ųŋ*, corn; *sæpeɬe*, unexplained).

? ———. Corn smut.

[1] Mr. W. B. Douglass found loops of sedge (cyprous) with feathers attached in a large shrine on Santa Clara peak; *Tsikumup̂iŋ*, a peak in the Jemez Mountains, near the headwaters of the Santa Clara River. See p. 49, footnote.

At San Ildefonso corn smut stirred in cold water is drunk as a cure for diarrhea. At Santa Clara some women use it in the same way as a remedy for irregular menstruation.[1]

Tesæ, 'valley cottonwood stew' (*te*, Populus wislizeni; *sæ*, stew, sauce).

? ———.

This is a fungus growth found on the ground near, or on the decaying wood of, a cottonwood tree. When boiled and eaten it is considered a delicacy.

'Ojaqwitsipæy, 'milkweed eye pus' (*'ojaqwi*, milkweed, *Asclepias* sp. see p. 54; *tsi*, eye; *pæy*, pus).

? ———.

A reddish creamlike scum on stagnant water.

This is seen on pools along the Rio Grande. It has little smell. This substance is not used by the Tewa.

P'o'ᵊy, 'stained,' 'stain,' 'moldy,' 'mold.'

? ———. Mold, Mildew.

Thus: *pǎm p'o'ᵊnĭy*, 'moldy bread' (*pǎy*, bread; *p'o'ᵊy*, moldy, mold.)

Nǎmp'u, 'earth swelling' (*nǎy*, earth; *p'u*, to puff up).

Geaster sp. Earth Star.

At Santa Clara the powdery seed-spores are used as a remedy for a white or yellow discharge from the ear; they are blown into the ear through a tube of corn husk or paper.

Nǎmp'u.

? ———. Potato.

See *sægoḇe*, page 73.

FERNS

K'æy'ǎmp'e, 'mountain-lion-foot plant' (*k'æy*, mountain-lion; *ǎy*, foot; *p'e*, stick, stalk, plant).

Dryopteris filix-mas. Shield Fern.

It is believed that this plant produces no seeds. The spore-sacs on the under surfaces of the fronds are considered to have no function of reproduction.

P̂oka, 'water leaf' (*p̂o*, water; *ka*, leaf).

Filix fragilis. Brittle Fern.

Paṕi'e. (San Ildefonso.) *'Ōk'ųp'e'ñæƀì* (*'ōk'ų̆*, unexplained; *p'e'ñæƀì*, weed). (Santa Clara.)

Notholæna fendleri. Cloak Fern.

[1] Mrs. Stevenson (The Zuñi Indians, *23d Ann. Rep. Bur. Amer. Ethn.*, p. 297) tells of a usage of this fungus by the Zuñi: "Though hemorrhage is uncommon it sometimes occurs, and for this trouble a tea is made by pouring boiling water over the fungus known as corn smut (*Ustilago maidis*), which has the same effect as the ergot of the pharmacopeia."

This plant ground fine is used on the lips as a remedy for cold sores.

MOSSES AND LICHENS

Mosses and lichens are called merely *k'owà*, 'tegument,' 'skin.' The name of the substance on which the plant grows is usually prejoined. Thus: *k̂uk'owà*, 'moss growing on rock,' literally 'rock skin' (*k̂u*, rock; *k'owà*, tegument, skin).

Mosses ground are applied to the lips as a remedy for cold sores.

At Santa Clara *k̂uk'owà* is rubbed on sores about a child's mouth, and also put into the cavity of a decayed tooth to stop pain.

Nąy'a, Hano Tewa (*nąy*, earth; *'a*, clothing).

Lichen sp.

At Hano a lichen, *nąy'a*, is applied to the teeth and gums to cure toothache.

SCOURING RUSHES

Poɹek'ųy (*poɹe*, apparently *poɹe*, 'fishweir'; *k'ųy*, stiff object, leg).

Equisetum arvense. Scouring Rush, Horsetail. New Mexican Spanish *cañatillo*.

This plant grows where there is water. It is of a dark green color and never exceeds two feet in height. Horses eat it.

The plant was called snake-grass by a white man living in the neighborhood.

Tʃųteɖęy.

? ———. New Mexican Spanish *cañatillo*.

A decoction made from this is a good medicine for babies when they catch cold. It is also a remedy for diarrhea.

WILD PLANTS FROM OUTSIDE THE TEWA COUNTRY

P'ɬ̂sejiy, 'yellow plant' (*p'e*, stick, plant; *ɬ̂se*, yellow).

Maclura aurantiaca. Osage Orange or Bois d'arc.

This is a shrub said to grow in Texas and the valley of the Arkansas River, especially in a place called García. The limbs are straight and thorny and the color of the wood is yellow. The wood of this shrub was considered better for making bows than any which grew in the Tewa country.[1] It was brought from the east by the Tewa, or obtained from the Comanche or other Eastern tribes.

Tsep'e, 'eagle plant' (*tse*, eagle; *p'e*, stick, plant).

Prosopis glandulosa. Mesquite sp. (not screw mesquite). New Mexican Spanish *mezquite*.

[1] Many of the Pima hunting bows are made of Osage Orange wood, a material that is now obtainable from the whites along the Salt River. (See Russell, The Pima, *Twenty-sixth Ann. Rep. Bur. Amer. Ethn.*, p. 95.)

Very few Tewa are acquainted with this plant; it does not grow in the Tewa country. Many individuals were questioned about it. At last a Tewa who had been in the southern part of New Mexico so described it that it was recognized as the mesquite. The fruit is called *tsepʻemų*, 'eagle plant pods' (*tse*, eagle; *pʻe*, stick, plant; *mų*, pod). This informant said that the screw mesquite (*Prosopis pubescens*) pods used to be obtained from the Mescalero Apache. These were twisted into the ear as a cure for *ʾojepʻohe*, 'ear-ache' (*ʾoje*, ear; *pʻo*, hole; *he*, sick, sickness). Cf. *Tʻaʾñe*, page 73.

Kǭʾ²nî̄to, 'buffalo nut' (*kǭʾ²ų*, buffalo; *î̄to*, nut).

?———. Walnut. New Mexican Spanish *nogal*.

Wild walnuts used to be gathered by the Tewa when they hunted buffalo in the Arkansas River valley. Walnuts are still called *kǭʾ²nî̄to*, but more often merely *î̄to*, 'nuts.'

Tu p̂iʾvʾi, 'red kernels' (*tu*, kernel; *p̂i*, red).

? ———.

A large red seed, resembling one of the seeds of a rose; the plant is 2 or 3 feet high and has leaves like those of a rose. The tree (?) is said to be plentiful on the Comanche, Kiowa, and Osage reservations. The Comanche sometimes bring the seeds when they visit the New Mexican pueblos, and Pueblo Indians visiting the Comanche country carry the seeds back with them.[1] They are valued as a medicine for women at their periods; a piece of a seed is broken into small fragments and swallowed with water.

Pʻekwaʾa, 'vegetable beads' (*pʻe*, stick, plant; *kwaʾa*, beads). A merely descriptive name.

? ———.

Large brown seeds from a bush four feet high which grows in the mountains near Rio Verde, Arizona.[2] A man at Santa Clara professed to recognize these seeds as "good when you have wind [i. e., wandering neuralgic pains] in the head, making your head ache and making you crazy." They should be rubbed into a greasy paste and smeared on the head.

PLANTS NOT SATISFACTORILY IDENTIFIED

Qwæpu, (*qwæ*, unexplained; *pu*, root).

? ———. ? Alder. Cf. *qwæ*, page 45, and the use of *tʃǫ̨ų*, alder, pages 38–39.

[1] The Mohave Apache obtain this seed from the neighborhood of Tucson; it grows also in northern Mexico. Apparently they use these seeds only as beads. The White Mountain Apache use them as medicine. A specimen of this seed may be seen in the Field Museum, Chicago (Owen coll., No. 84647).

[2] The Mohave Apache collect these seeds. The White Mountain Apache use them as medicine. A specimen of this seed may be seen in the Field Museum, Chicago (Owen Coll., No. 84550).

A woody stem used for coloring deerskin, called by the Yavapai *'ikwăla*, was identified by a man at Santa Clara as a remedy, applied externally, for spots on the face and arms, for throat-ache, or any other pain.

? ———.

Vagnera amplexicaulis. False Solomon's Seal.

The ripe berries were eaten.

'Asap'a (*'asa*, unexplained; *p'a*, large and flat).

? ———.

A small plant that grows in the hills behind San Ildefonso.

Kop'e, 'planting plant' (*ko*, to plant; *p'e*, plant).

? ———.

An informant at Santa Clara gave this name, probably in error, to a dried specimen of *Villanova dissecta.*

Kop'e is mentioned as a plant which is buried with corn at planting-time to promote the growth of the latter.

Kǫ'ᵑmp'e, 'buffalo plant' (*kǫ'ᵑŋ*, buffalo; *p'e*, plant).

? ———.

K'ųmp'e, 'cob plant' (*k'ųŋ*, corn-cob; *p'e*, plant).

? ———.

K'ujop'e, 'wolf plant' (*k'ujo*, timber wolf; *p'e*, stick, plant).

? ——— New Mexican Spanish *yerba de lobo.*

The Santa Clara people obtain this plant in the mountains southwest of the Rito de los Frijoles Canyon; they use it in treating a swollen bruise.

Kųtęmbi (*kų*, skunk-bush; *tęŋ*, tube; *bi*, unexplained).

? ———.

This plant is found on the hills east of San Juan Pueblo.

The leaves are chewed to allay thirst.

The leaves are steeped and the decoction is drunk as a remedy for urinal troubles.

Jɔɹɔp'epoβi (*jɔɹɔ*, ——— ; *p'e*, stick, plant; *poβi*, flower).

? ———.

This plant is described as growing in the mountains, attaining a height of two feet, and bearing large red and white flowers.

The plant is dried and ground to a fine powder; this is applied dry to the surface of a wound which has been first moistened.

Malβa (< Spanish).

Mallow sp. New Mexican Spanish *malva.*

At Santa Clara this plant is used as a remedy for headache. The plant ground is made into a paste with the addition of water and a

small quantity of sugar. The paste is applied over each temporal artery and on the forehead between the eyebrows.

Mąnsùpu (*mąnsù* <Span.; *pu*, base, root).

? ———. New Mexican Spanish *yerba del manso.*

This plant grows especially along both sides of Ojo Caliente Creek, in the vicinity of La Cueva, New Mexico. Mexicans dig it there and sell it among Mexicans and Indians. A decoction is made of the plant as one makes coffee, and this is drunk hot for stomachache.

Okąywæp'e, (*'okąywæ*, sounded like *'okąywæ*, turkey-buzzard; *p'e*, stick, weed). Known also merely as *'okąywæ.*

? ———.

This plant is described as growing about two feet high. It is said to be a good remedy for sick babies, the leaves being merely tied on the cradle. The additional information was obtained that the plant has large roots, which are not edible.

'Osawi'a.

? ———.

This is described as a species of weed, growing in lakes, springs, and pools; it is tender and peppery, and was eaten raw. (See *Beʌù*, water-cress, page 112.)

'Osa (no etymology).

? *Angelica* sp.

A specimen of the root only was obtained. The leaf is said to resemble that of tobacco.

The root, *'osapu* (*pu*, root), is highly valued as a remedy for diarrhea and almost all stomach disorders. A very small dose is recommended. Some boil the root and drink the decoction; others chew the root dry. A small piece ground fine and swallowed with a cupful of water cures stomachache and vomiting. Young women should not take this remedy, as it is highly astringent; it is particularly dangerous for a woman near the time of her confinement.

'Osapu is an article of trade in the Tewa villages; it is brought from the mountains by "Mexican" peddlers.

The same root is used as a stomach tonic by the Yavapai and other tribes of southern Arizona.[1]

'Osų.

? ———.

Described as a kind of plant which grows in the mountains.

Pa'ɯʌup'e (San Ildefonso), 'fish staff' (*pa*, fish; *'ɯʌup'e* staff, prayer-stick). *Pa'eʌop'e* (Santa Clara). See below.

? ———. New Mexican Spanish *yerba de pescado*, 'fish weed.'

[1] *Angelica atropurpurea* is used by the White Mountain Apache as a remedy, a small quantity being mixed with tobacco. (Specimen in Field Museum, Chicago.)

A kind of straight-stalked weed said to grow six inches high and to have no flowers (San Ildefonso).

At Santa Clara a similar name, *pa'ɛtop'e* (*pa*, fish; *'ɛtop'e*, meaning uncertain), along with the Spanish name *yerba de pescado*, was applied to a broad-leaved plant having fleshy tap-roots, the *mát^{a}xéfa* of the Yavapai. The roots, dried and ground fine, were said to be prepared and used as a salve for pimples on the face and nose.

P'ąñųqwą, 'snake palo duro' (*p'ąñų*, snake; *qwą*, ? Cercocarpus parvifolius).

? ———.

A kind of shrub.

P'ęntsą̆ywą'įy 'black-green' (*p'ęy*, black; *tsą̆ywą*, blue, green).

? ———.

A plant having dark foliage and a yellow flower.

P'e'ñąb̀ì ywą'įy, 'thorny weed' (*p'e'ñąb̀ì*, weed; *ywą*, thorny, thorn).

? ———. Common thistle.

P'e'ñąb̀ip'a, 'broad weed' (*p'e'ñąb̀ì*, weed; *p'a*, large, thin, flat and roundish).

? ———.

A broad-leaved lily-like plant which grows in the mountains.

Ḇuḍup'e'ñąb̀ì, 'donkey weed' (*ḇuḍu*, donkey, <Span. *burro*; *p'e'ñąb̀ì*, weed).

? ———.

Donkeys are fond of eating this weed.

P'ąñųp'e'ñąb̀ì, 'snake weed' (*p'ąñų*, snake; *p'e'ñąb̀ì*, weed).

? ———.

The leaves of two shrubs are smoked with native tobacco to make it milder, especially in religious ceremonies.

P̂įmp'uñą'ą, 'mountain purslane' (*p̂įy*, mountain; *p'uñą'ą*, Portulaca oleracea).

? ———.

This shrub grows in the mountains near Cochiti, and the Santa Clara people procure it from that pueblo. Cf. *Qwąp'e*, below.

Qwąp'e (*qwą* ? ; *p'e*, stick, plant).

? ———.

The leaves resemble those of *p̂'įm p'uñą'ą* (see above) but are smaller. This shrub grows on the hills to the west of Santa Clara Pueblo.

P̂it'ipob̀ì, 'red little ball flower' (*p̂i*, red; *t'i*, small and roundish like a ball; *pob̀ì*, flower).

? ———.

A plant which grows in the mountains. It resembles the firepoker of our gardens.

Poǫǫ̣'ᵊɣtu (*poǫǫ̣'ᵊɣ*, ———: *tu*, kernel).

? ———.

A San Ildefonso informant stated that this plant grows low on the ground in the hills. The seed-pods are six inches long; these are gathered when ripe and are eaten after being roasted in hot ashes.

An informant at Santa Clara gave this, probably in error, as the name of the Mesquite, which he professed to have seen on the Mexican border. From the seeds, called *poǫǫ̣'ᵊntu* (*poǫǫ̣'ᵊɣ*, ——; *tu*, kernel), and from which the plant evidently gets its name, flour was made.

P̂oǫwæ̨ (*p̂o*, water; *qwæ̨*, ? Cercocarpus parvifolius).

? ———.

Said to be a kind of herb which Tewa boys use as a perfume.

P̂oâap'e, 'dry water plant' (*p̂o*, water; *âa*, dry; *p'e*, stick, stalk, plant).

? ———.

This is a kind of weed that grows by the water.

P̂otǫɣ, 'water tube' (*p̂o*, water; *tǫɣ*, tube).

? *Villanova dissecta.*

Sæ̨goḇe (*sæ̨go*, unexplained; *ḇe*, roundish fruit, ball).

? *Solanum jamesii.* Potato.

It is said that *sæ̨goḇe* was originally applied to a white-flowered plant, native to this region, which bears small edible tubers similar to potatoes. These tubers likewise are called *sæ̨goḇe* and are still eaten by the Tewa. No specimen of the plant could be obtained.[1]

See *papa* and *mą̄mp'u*, which are also applied to 'potato.'

Swollen glands are called *sæ̨goḇe*.

Sæ̨yk̄'o.

? ———.

Described as a kind of hard-wooded shrub.

Sepatǫwi.

? ———.

This name was obtained at Santa Clara. *Sepatǫwi* is said to be a kind of water alga.

This plant is placed on the forehead to stop nosebleed.

T̂a'ñe.

? ———.

Said to be the correct name of one of the species of plant wrongly called *p'ų tsą̄ɣæ̨'ɨɣ* in this paper. This information was volunteered

[1] Cf. Hopi *tümna* ("a small nodule"), potato (*Solanum jamesii*). It is boiled and eaten with a tale of greasy taste called *tümtn' tcuka*, 'potato clay.' (See Fewkes, *Amer. Anthr.*, IX, 1895, p. 19.)

by one of the old informants who had been "thinking it over" for several weeks.

The plant is said to resemble *tsep'e* (p. 68).

Tiwo, 'swelling medicine' (*ti*, swollen, a swelling; *wo*, magic, medicine).

? ———.

This plant is found on the hills east of San Juan Pueblo.

The root of the plant pounded is applied to swollen parts.

Tsi∫u̯.

? ———.

A kind of shrub.

Tsætop'u'ᵘg̊i (*t͡sæ*, white; *top'u'ᵘg̊i?*).

? ———.

A weed which resembles the dusty-miller of our gardens. It is said to look as if it had been rolled in gypsum or dust. It grows in the mountains and in the lowlands.

Tu p̂i'i̯y, 'red kernel' (*tu*, kernel; *p̂i*, red).

? ———.

See page 69.

Tusa, 'flesh tobacco' (*tu*, flesh; *sa*, tobacco).

? ———.

This is described as a kind of wild tobacco.

Tu̯jo (*tu̯*, unexplained; *jo*, apparently *jo* augmentative).

? ———.

A plant which grows in the mountains.

'U̯mp̂op'e, 'blood plant' (*'u̯mp̂o*, blood, < *'u̯y*, blood; *p̂o*, water, liquid; *p'e*, stick, stalk, plant).

? ———.

A kind of plant found growing under pine trees in the mountains. It has red flowers and red juice, whence its name. Specimens were obtained from the mesa south of Frijoles Canyon,[1] but these have not yet been identified.

Ny̯wi̯ku (unexplained).

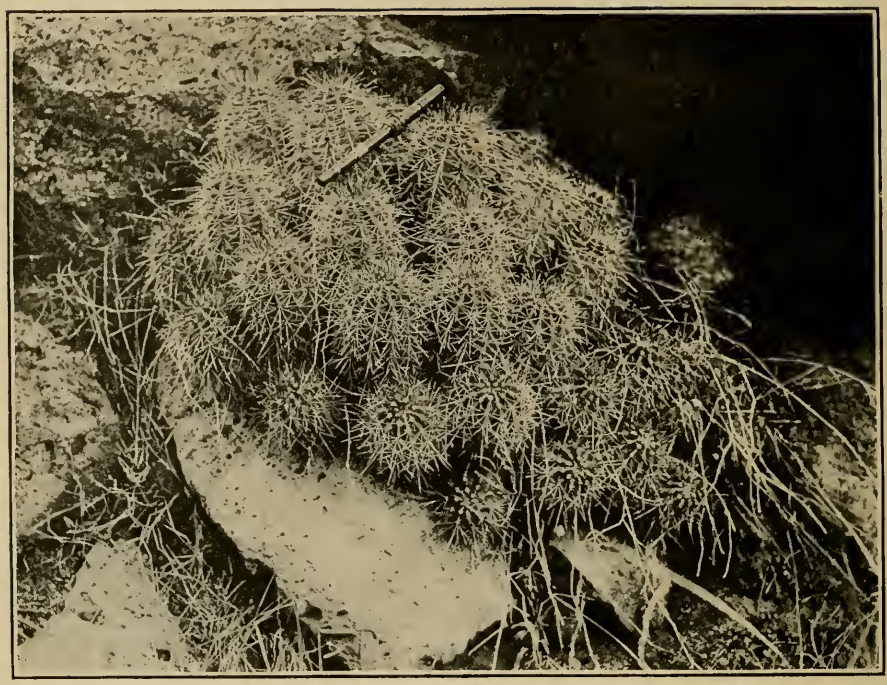
? ———. New Mexican Spanish *lechero*.

Wop̂i'i'ⁱ, 'red medicine' (*wo*, magic, medicine; *p̂i*, red).

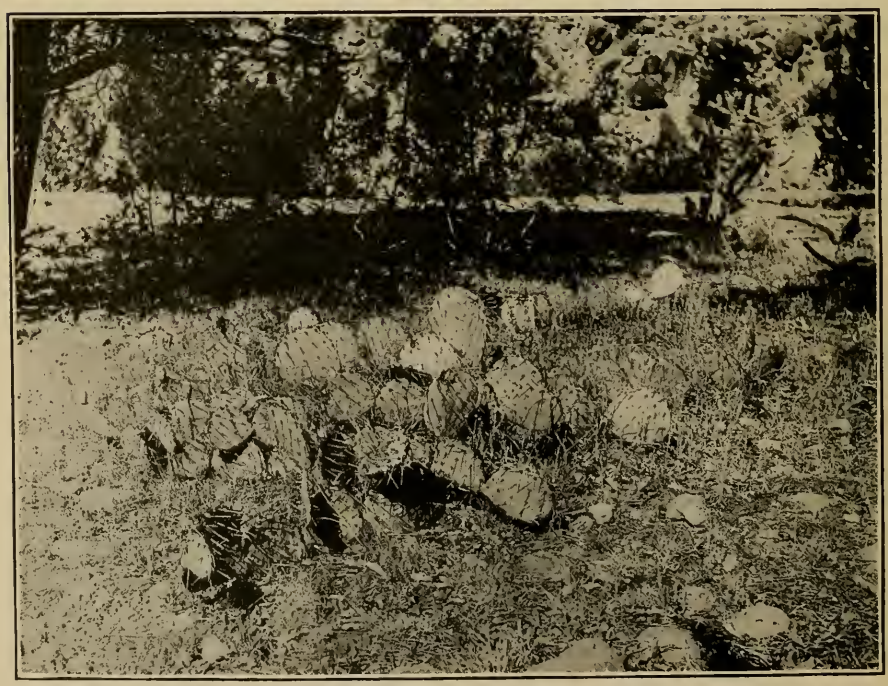
? ———.

This is described as a plant bearing red flowers; it is boiled and the decoction is drunk for purifying the blood. The plant grows in the mountains.

[1] See Harrington, The Ethnogeography of the Tewa Indians, *Twenty-ninth Ann. Rep. Bur. Amer. Ethn.*, p. 410.



A. BALL CACTUS (MAMILLARIA SP.).



B. PRICKLY PEAR (OPUNTIA CAMANCHICA).

Kɔ̂pe, Hano Tewa (*kɔ*, apparently *kɔ*, bear; *p̂e*, berry).

? ———.

Red berries gathered and eaten in summer.

Pakôtsejï'i, Hano Tewa (*pakɔ*, said to be an old word; *t̂se*, yellow). Hopi, *to'itsma*.

? ———.

A plant with yellow flowers somewhat resembling *Gutierrezia*.

This plant was formerly cooked with meat, or, dipped in salt water, was eaten with new corn.

Sojomelep'e (Hano Tewa), 'urinal-pot plant' (*sojo*, urine; *mele*, pot; *p'e*, plant).

? ———.

A plant bearing large roundish seed-vessels.

T̂aje'q̆, Hano Tewa (*t̂aje*, unexplained; *'q̆*, sweetness).

? Atriplex sp. Orache.

At Hano the young leaves and stalks are eaten, boiled, in spring.

Sip'ulu'i̯ (Hano Tewa), 'stomach swelling' (*si*, belly; *p'ulu*, swell). This is a second Hano name.

? ———.

T̂alaŋ, Hano Tewa (said to mean 'spread wide').

Any plant having leaves spread wide on the sand would be so called.

The Hano people never eat this plant for fear their stomachs would swell.

Tamu̯ (Hano Tewa), 'grass bag' (*ta*, grass, *mu̯*, bag).

? ———.

A grass used to cover the hatchway of the estufa (kiva) when warmth or privacy is needed.

Ti̯ti̯mp'e, Hano Tewa (unexplained).

? ———.

Described as a flowering plant.

T̂owasæ̆læ̆, Hano Tewa (*? t̂owà*, people, Indian; *sæ̆læ̆*, stew, boil).

? ———.

A plant which is eaten, boiled.

Tsik̂u, Hano Tewa (unexplained).

? ———.

Rabbit-sticks, musical rasps, stirring-sticks for cooking, shade-sticks, lease-rods, and heddles for weaving are made of this hard, knotty wood.

II. Cultivated Plants

INDIGENOUS PLANTS

The Tewa Economy

At the time of the Spanish discovery the Tewa were cultivating, it would seem, maize, beans, pumpkins and other gourds, cotton, and tobacco. The Spaniards added to the native resources by introducing wheat,[1] oats, barley, chile, onions, other kinds of beans, peas, watermelons, muskmelons, peaches, apricots, and apples. The English-speaking Americans have introduced no food plant of importance.

No doubt the Spaniards' importations into New Mexico were not accepted without a struggle, but at the present day most of these plants constitute an indispensable factor of native life: they are regarded as "Indian food" which may be eaten in the estufa, and they are named in the ritual formulas and prayers. Thus, a Tewa at San Ildefonso described the people as praying in the estufa "for all the things they want to have—corn, wheat, melons, watermelons, onions, chiles, apples, peaches, all things they have to eat—and clothes, shoes; and a long life, to live to be old men."

The comparatively recent introduction of "store food" by the Americans—machine-milled flour, sugar, bacon, lard, canned goods—tends to invest *all* home-grown foods with a kind of autochthonous prestige.

Even in Arizona, the refuge of those Pueblo peoples who detested the Spanish rule and influence, melons and watermelons, chiles, and onions won their way. But the ritual songs at Hano name no foreign plants, only corn, beans, pumpkins, and cotton, sometimes coupled with the name of *kwæ̀lu* (*Peritoma serrulatum*), an important wild food plant.[2]

These cultivated plants were supplemented by a very wide knowledge and use of edible wild plants. But nowadays, although wild berries and nuts are still gathered in autumn and green weeds are eagerly sought and eaten in the spring, there is a very general and increasing neglect of all but the most common and best-liked. Formerly it was a matter of necessity that the housewife should know them and store them; for although in normal years they were merely a pleasant addition to the diet, yet drought, flood, fire, or a hostile raid might destroy the crops at any time, thus making the wild products an indispensable resource.[3] At times when old people ate only once in three days in order to leave food for the children, no eatable

[1] The wheat grown at Moenkapi, a Hopi farming village, is of more modern introduction.

[2] Cf. W. Matthews, The Mountain Chant: a Navajo Ceremony (*5th Ann. Rep. Bur. Amer. Ethn.*, p. 448 and plate XVII). A dry painting represents the four principal plants: The corn plant, painted white, assigned to the god (Yay) of the east; the bean plant, blue, to the god of the south; the pumpkin vine, yellow, to the god of the west; the tobacco plant, black, to the god of the north.

[3] Cf. Hough, *Amer. Anthr.*, X, p. 37, 1897. The Hopi call *Acanthochiton wrightii* "ancient Hopi food" and say that it has often warded off famine, springing up as it does before the corn is filled out.

substance was likely to be overlooked.[1] But the coming of the railway has changed all this; and a shortage of crops, general or individual, is now supplied, not from the savings of former years or by the substitution of wild plants, but by earning American money to buy American provisions.[2]

The people gain immensely in protection against want; but, at least in the present transition period, they decline in thrift. Idleness and resourcelessness are as disastrous as ever, but they are not so obviously irreparable. The nearer a pueblo lies to a railroad and stores, the more do families tend to live from hand to mouth, raising and storing less corn than will carry them through the year, selling corn extravagantly for luxuries, and meeting every emergency by recourse to store flour. The Tewa pueblos, which are all near the railroad and open to American influence, are particularly affected; while the people of Santo Domingo, near the railroad indeed but fenced in by their conservatism, are still rich in native food and thrifty in the use of it; "they sell but they do not buy."[3] Still it must be said that some Tewa women make an intelligent use of modern resources, feeding their families on store flour (paid for by the husband's and children's earnings) in the early winter while it is comparatively cheap, and reserving their own wheat and maize for the time when prices rise.[4] Valuing their time cheaply, they will travel miles to buy at the smallest advantage.[5] Most families make debts in the late summer and pay them after harvest.

[1] Several times of scarcity occurred from 1840 to 1860. "Our grandfather told us how poor the people used to be. When they had a good piece of rawhide, such as would be used now for shoe soles, they used to roast it, grind it, and make it into bread. He remembered one day when they went to a fiesta at Santa Cruz. There had been a piece of bread in the house at suppertime, but they saved it for grandmother because she was nursing my father (1852), so she ate it for breakfast and the rest went fasting to Santa Cruz. The family whom they visited had no food either, so they came home hungry as they went, and on the road they found a little corn dropped from a wagon and took it home, ground it, and ate it." (Information communicated by a Tewa informant.)

The Tewa etiquette of eating bread at meals recalls times of extreme economy—each person breaks from the pile of tortillas no more than he can eat at once, and returns any remnant to the common stock. Only sick people (and women soon after childbirth) take a whole tortilla at a time. The Yavapai etiquette, founded on camp life, is exactly the contrary.

[2] Mr. A. F. Bandelier was told by a Cochiti Indian in 1882 that "formerly the people saved many wild plants in autumn in order to have food in spring when the crops gave out." "Now," Mr. Bandelier says, "they have become less provident, or more indifferent to such means of subsistence." (Information communicated by Mr. Bandelier.)

[3] The Hano people and the Hopi are less affected than are the Tewa in general by modern conditions, but even among the former thrift is declining. Many women sell maize for sugar and coffee, and run short before March; those who make pottery can exchange it for store flour to an indefinite extent. Here again commercial facilities and thriftlessness are obviously related; the "nonprogressive" village of Hotavila, where there are no traders, raises and stores more food per household than Oraibi, and very much more than Hano, Walpi, or Sichomovi.

[4] A man at Santa Clara said, on February first, that his wife had nine *almudas* of maize besides her own wheat flour. "We are buying flour now and only giving corn to the horses, and then the maize will last us [three adults, four children] until I get my new wheat in August, and so we shall not be hungry."

[5] It must be added that the present scarcity of meat and hides makes money a necessity in New Mexico, and corn must be sold, or wages must be earned.

Along with this decline in thrift the diet of the "progressive" Tewa pueblos tends to become very monotonous. The standard of variety has been lowered. Once the people's own idea of a good diet embraced cultivated plants in addition to wild plants in season in considerable variety, drawing on the greatest possible number of different food plants, since the available quantity of any single plant was limited. Now the people draw on the unlimited but unvaried supplies of the American store, or on what they can afford to buy of them—white flour, coffee, and sugar. To buy what the store offers is less trouble than to hunt for plants in the open; further, an ideal of women's work and behavior is growing up which rather discourages the old activities. The women are not to help to provide food (except by earning money), but to keep a clean house, cook, and serve hot meals.

The standard of variety in cooking has also declined, as may be seen by comparing the number of ways in which corn is cooked at Santa Clara with those at Hano. Like all Indian arts, cookery is suffering from a half-conscious discouragement in which perfection is no longer aimed at, because of the overwhelming superiority of American civilization. Many progressive families deliberately aim at the monotonous diet of the whites with whom they come in contact, but attain only a poor imitation of it.

PLANTS CULTIVATED BY THE TEWA BEFORE THE SPANISH CONQUEST

K'u, Hano Tewa *k'ulųy*.

Zea mays. Maize, Corn. Spanish *maíz* (New Mexican Spanish pronunciation, *máĭs*).

For the names of the various parts of the corn plant see figure 6.

Varieties of Corn

Zea mays has a strong tendency to variation in the coat-color of the seed, and the Pueblo Indians have long possessed and distinguished several varieties based on this character.[1] Castaño de Sosa[2] noted in 1590–91 that the New Mexican pueblos had maize and beans of several colors—"el maiz hera de muchas colores, é lo propio es el frisol." Since a number of such color-varieties in maize were found in widely separated parts of North America at the time of the European discovery,[3] it is most probable that some of them at least had become

[1] Nordenskiöld, Cliff Dwellers of the Mesa Verde, p. 93 (and pl. XLV, description): "Ears of maize found in the ruins . . . belong to several varieties, and are yellow (yellowish gray) and (dark) reddish-brown. I never found an ear similar in color to the blue corn of the Mokis."

[2] *Doc. Inéd. de Indias*, XV, 238.

[3] See the following: Thomas Hariot, A Brief and True Report of Virginia (quoted by Thomas, Mound Explorations, *12th Ann. Rep. Bur. Amer. Ethn.*, p. 616): "Pagatowr, a kind of grain so called by the inhabitants; the same in the West Indies is called Mayze, Englishmen call it Guiny-wheat or Turkey-

fixed in or near the area of original domestication,[1] before it came into the hands of the Indians of New Mexico and Arizona. On the other hand, it is not impossible that the development of color-varieties has been carried farther in the Pueblo area than elsewhere. Certain conditions have furthered this process, even among an uncivilized people: (1) The fact that the coat-color of the seeds lends itself easily to observation and selection. (2) The local custom of planting, not in large continuous fields, but in small isolated patches of ground chosen for their soil and natural drainage. In such situations favorite strains of corn would be easily kept apart; for probably a half-mile interval of broken ground would protect them, as a rule, from mixture by means of wind-borne pollen. This is the method still followed by the Hopi and the Tewa of Hano, who have no artificial irrigation except in the rare terrace gardens below springs. Clans and individuals have their separate fields. Thus, at Walpi the Snake clan and their connections plant in a wide sandy wash, in Tewa called a *p̂otʃuɹiną̆ba* (*p̂o*, water; *tʃu*, enter; *ną̆ba*, field), southwest of the mesa. The Cloud clan plants southeast of the mesa; some of the Fox clan plant ten miles away, near Keam's Canyon; the Tewa have a group of fields far up the wash to the northeast. These are the clan fields, and they are of considerable size; but individuals make their "first planting," *'imb̆ipa'ᵃɹeko*, in early spring on tiny isolated flood plains made by damming the water in sheltered gullies. At Mishongnovi some of the Hopi make their "first planting" in very small walled fields of sand lodged on the rocky hillside. In the scattered farming settlements, or "clan houses" (if we rightly suppose that such existed before the aggrega-

wheat . . . The grain is about the bigness of our ordinary English peas and not much different in form and shape; but of divers colors, some white, some red, some yellow and some blue."

Beverley, History of Virginia (2d ed., 1722, vol. II, 125–127): "There are four sorts of Indian corn; two of which are early ripe, and two, late ripe; all growing in the same manner. . . . The late ripe corn is diversify'ed by the shape of the grain only, without respect to the accidental differences in colour, some being blue, some red, some yellow, some white, and some streak'd. That therefore which make the distinction is the plumpness or shrivelling of the grain; the one looks as smooth and as full as the early ripe corn, and this they call *flint-corn;* the other has a larger grain, and looks shrivell'd with a dent on the back of the grain, as if it had never come to perfection; and this they call *she-corn.*"

John Gerard, The Herball or General Historie of Plants (London, 1597; 2d edition, 1633, chap. 61): "Of Turkie Corne. *The kindes.* Of Turkie cornes there be divers sorts, notwithstanding of one stock or kindred, consisting of sundry coloured grains, wherein the difference is easy to be discerned . . . The graine is of sundry colours, sometimes red, and sometimes white, and yellow, as my selve have seene in myne owne garden, where it hath come to ripeness." He figures "*frumentum indicum luteum*, Yellow Turkey Wheat," apparently with long dented grains, "*frumentum indicum rubrum*, Red Turkey Wheat," with small dented grains, and "*frumentum indicum cæruleum*, Blew Turkey Wheat," with full smooth grains.

[1] Cf. Cyrus Thomas, in Handbook of American Indians (article *Maize*): "It is now generally supposed to have been derived from native grasses—the *Euchlæna mexicana of* s. Mexico and *E. luxurians* of Guatemala, the latter approximating most nearly the cultivated corn."

tion of clans into villages), even the clan fields must have been small and so would have encouraged the isolation of strains.[1] (3) Another condition favorable to the restriction of the number of varieties of corn was the ancient prejudice against taking seed from other communities.

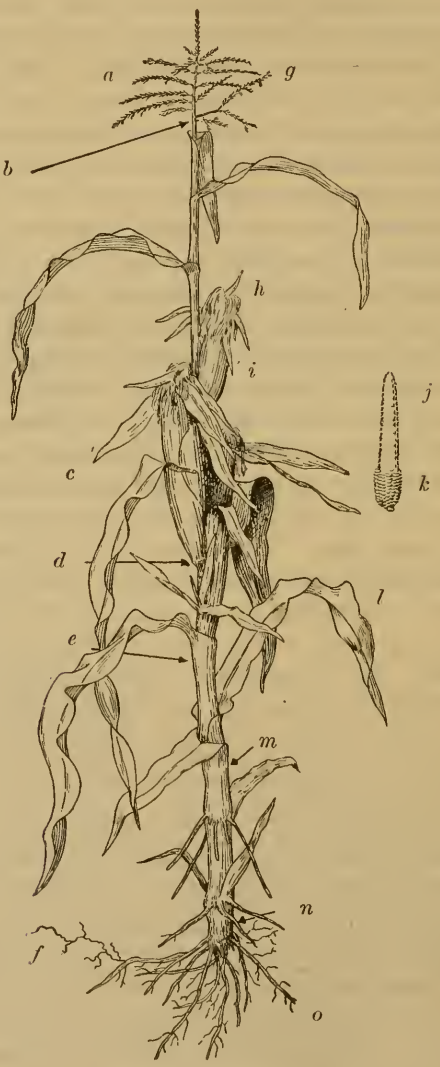


FIG. 6.—*K'u̲*, Corn plant.

a, *ku̲ŋ*, inflorescence, tassel; b, *kätɛŋ*, inflorescence stalk; c, *k'oɹckowà*, husk of ear; d, *k'oɹèk'apu*, stem of ear; e, *k'u̲'u̲k'owà*, leaf-sheath; f, *pu'c*, rootlets; g, *kätu*, pollen; h, *sa̲*, silk; i, *k'oɹè*, ear; j, *k̂u̲ŋ*, cob; k, *k'c*, grains; l, *ka*, leaf; m, *k'u̲'u̲*, cornstalk; n, *k'u̲'u̲pugè*, base of cornstalk; o, *pu*, root.

In New Mexico methods have been changed by the establishment of villages near permanent streams and the consequent development

[1] We understand the nomenclature of Pueblo clans so slightly that it would be rash to assume that clans called Early Corn, White Corn, and the like had specialized strains of corn when they joined their pueblos.

of irrigation. But the Tewa of Santa Clara have a strong tradition of an earlier state of things:

In old times, when the people lived on the hills, they had no ditches; the corn grew with water purely from the heavens. When it was very dry, the women watered it from their jars.[1] Then the people began to plant in the arroyos where the water ran, and so, little by little, as best they could, they thought of irrigating.

The Pueblo Indians have myths which profess to account for the variously colored strains of corn. A Zuñi myth[2] ascribes the origin of the seven kinds (yellow, blue, red, white, streaked, black, all-colored) to the selection by their ancestors of large and beautifully colored grass seeds, ceremonially planted with feathered wands of the desired colors, and fertilized by the ritual union of the youth Yápotuluha with the Seven Corn-maidens. The following myth, obtained from a Tewa of Santa Clara, was obtained from Miss C. D. True:

Long ago the people lived principally on meat; forest fires destroyed the game and the people were starving. They went up to Puje[3] and danced for many weeks before the caciques could obtain a dream. At last the caciques dreamed; in accordance with their dreams they made a small hole, placed in it pebbles of six colors corresponding to the world-regions, and covered the opening with a stone. The people danced again for several weeks; then the caciques looked into the hole and saw six corn-plants sprouting in it. From this first planting came the six colored varieties of corn.

The Tewa of New Mexico distinguish seven principal varieties of corn, named in the following order:

1. *K'ų tsą̆ywæ'ìy*, 'blue corn' (*k'ų*, corn; *tsą̆ywæ*, blue), associated with the North, personified by *K'ųtsą̆ñu'a'ᵃñų*, 'Blue Corn Maiden.

2. *K'ų t̂sejì'ìy*, 'yellow corn' (*k'ų*, corn; *t̂se*, yellow), associated with the West, personified by *K'ųt̂sejì'a'ᵃñų*, 'Yellow Corn Maiden.'

3. *K'ų p̂ì'ìy*, 'red corn' (*k'ų*, corn; *p̂i*, red), associated with the South, personified by *K'ųp̂'inu'a'ᵃñų*, 'Red Corn Maiden.'

4. *K'ų t̂sæ'ìy*, 'white corn' (*k'ų*, corn; *t̂sæ*, white), associated with the East, personified by *K'ųt̂sæñu'a'ᵃñu*, 'White Corn Maiden.'

5. *K'ų tsæyǫeìy*, 'many-colored corn' (*k'ų*, corn; *tsæyǫe*, many colored), associated with the Above, personified by *K'ųtsæyǫe(i'ⁱ)'a'ᵃñų*, 'Many-colored Corn Maiden.'

6. *K'ų p'ę'nìy*, 'black corn' (*k'ų*, corn; *p'ęy*, black), associated with the Below, personified by *K'ųp'ę'nḍi'ⁱ'a'ᵃñų*, 'Black Corn Maiden.'

7. *K'ųp'inini*, 'dwarf corn,' personified by *K'ųp'inini'a'ᵃñų*, 'Dwarf Corn Maiden.'

It will be noticed that the first six of these varieties are associated with the cardinal colors and the world-regions, and it seems probable that the

[1] Cf. M. C. Stevenson, The Zuñi Indians, p. 353. Zuñi women carry water in jars to their vegetable gardens.

[2] Cushing, Zuñi Creation Myths, *Thirteenth Rep. Bur. Amer. Ethn.*, pp. 392–398.

[3] See Harrington, The Ethnogeography of the Tewa Indians, *Twenty-ninth Rep. Bur. Amer. Ethn.*, p. 236.

six-fold classification made by the Tewa has been influenced by the fact that they possessed maize of six colors; or rather, five, since "many-colored maize" is simply maize in which grains of several colors grow on the same cob. In addition to the six cardinal colors, intermediate colors are recognized; see COLOR-ADJECTIVE COMPOUNDS, p. 32. The seventh variety, *p'inini*, or *k'ųp'inini* (*k'ų*, maize; *p'inini*, midget, dwarf, 'small, weazened person' appears to be from Spanish *pigmeo*, New Mexican pronunciation *pininéo*, pigmy), is a kind of corn with small ears and small yellowish-white grains. The Tewa state, however, that they have had this variety of corn from immemorial times. The name has sometimes been translated "sweet corn" by the Americans and *maiz dulce* by the Mexicans. The introduced sweet corn, however, is distinguished as:

K'ų 'ą̆'iy, 'sweet corn' (*k'ų*, maize; *'ą̆*, sweet). Sweet Corn. New Mexican Spanish *maiz dulce*. Hodge gives *Kʷaii-tdóa* as a Sweet Corn clan at San Ildefonso.

At the present time (1912) the largest proportion of the corn raised at Santa Clara is "blue" and "white". "Blue" corn, *k'ų tsą̆ywæ'iy*, is almost black in coat-color, but, when ground, it produces a blue-purple meal. "Black" corn, *k'ų p'ę'niy*, has a dusty, gray-black surface. Indian yellow corn, *k'ų t͡sejï'iy*, is not raised at Santa Clara, but there is a fine strain of it at Tesuque. One or two men at Santa Clara raise American yellow corn. A dark-red variety mottled with black was introduced four years ago from Jemez.

The Tewa of Hano distinguish the following strains, naming them in the same order as do the Hopi:

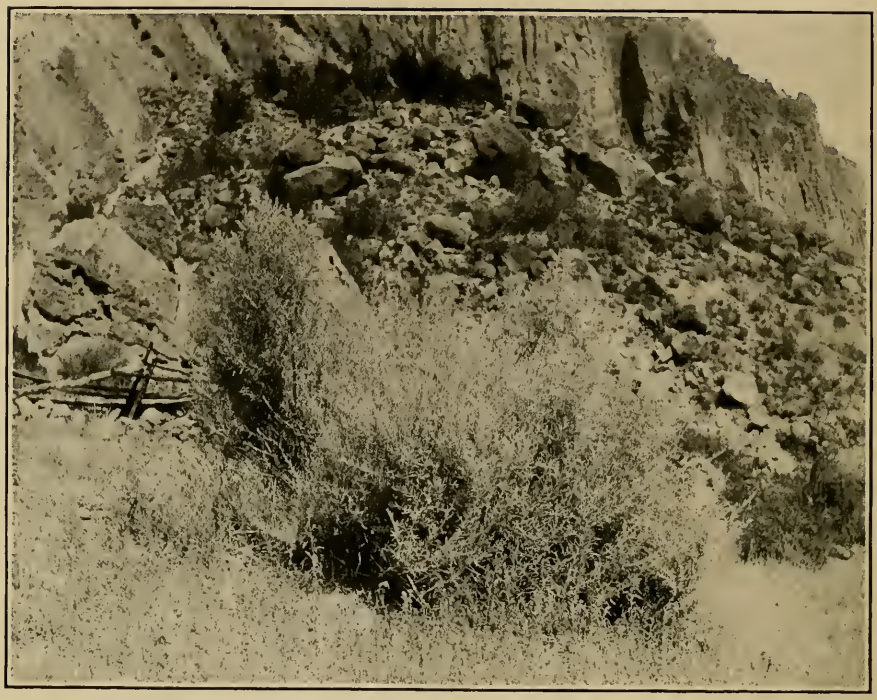
K'ųlųn t͡se'i, yellow corn—North.
K'ųlųn tsą̆ywæ'i, blue corn—West.
K'ųlųm p̂i'i, red corn—South.
K'ulųn t͡sæ'i, white corn—East.
K'ųlųm p'ę'ni, black corn—? Below.
K'ųlųn t͡æmæge'i, mixed-colored corn—? Above.
P'ininik'ųlų, dwarf corn.
Melęy, a dwarf corn cultivated by the ancestors; archaic name, *jele*.

Intermediate colors are also named, as—

K'ųlųy'a'i, gray corn.
K'ųlųm p̂itsæki'i, pink corn.
K'ųlųm p̂ip'ę'ni, dark-red corn.

TREATMENT OF CORN

Corn is planted by the Rio Grande Tewa in April. As with all other seeds, it should be sown under a waxing moon, so as to grow with the moon; under a waning moon the seeds cease growing. Not



A. SALTBUSH (ATRIPLEX CANESCENS), A SHRUB SEVERAL FEET HIGH IN THE CANYONS ON TALUS SLOPES AND STREAM TERRACES.

B. WILD SQUASH (CUCURBITA FŒTIDISSIMA), A TRAILING FORM IN CANYONS.

everyone knows the right times for sowing; some men know the time for one crop and some for another. Sometimes women help to plant by dropping seeds after the men.

The corn is gathered in late September or early October, after the watermelons have been taken. The *gobernador* proclaims the day on which people are to begin to take their corn, and at the more conservative pueblos, for instance at Nambé, no one dares to take it before the time.

At Santa Clara the people do not plant a field for the cacique, nor have they done so within the last 50 years. They used to plant a field in common for the support of the church.

Occasionally women help to gather "their corn," but most of the work is done by the men, who pick the ears by hand and place them in sacking aprons, leaving the stalks to be cut down with a scythe. They bring the ears to the pueblo in a wagon the sides of which have been inclosed with cottonwood saplings and cornstalks, and pile them in the plaza before their houses, for husking.

The pueblo of San Ildefonso is swept before the corn is brought home, "because corn is just the same as people and must have the plaza clean, so that the corn will be glad when we bring it in."

Men, women, and children spend several days husking the corn, going to help relations when the work for their own household is done. The men and boys chop the stalks with axes; within living memory sharp stones were used for the purpose. A large pile of husks is soon formed against which the women sit; the master of the house presides and takes special charge of the best ears.

An ear on which no grain has developed is called *ta ḫa'i̧y*, 'lazy grass' (*ta*, grass; *ḫa*, lazy), and the same jesting reproach is used to a lazy woman who will not grind. When such an ear is found in the course of husking, a man or boy will strike a woman with it, crying, *ta ḫa'i̧y!*, reproaching her as a poor housewife. If both parties are young, this assault leads to much romping and struggling; the girl protests that, lazy or not lazy, nothing would induce her to marry that boy; he chases her and rolls her playfully in the corn husks, while the elders laugh indulgently. The little girls carry large ears of corn in their shawls, calling them their children. The whole tone of the work is gay and enthusiastic.

The better ears are selected for seed at the time of husking, each person laying aside such as appear to come up to the standard, which naturally varies from year to year according to the general quality of the crop. These ears, called *k'owaju*, are not entirely stripped, but two or three strips of husk, *k'owà*, are left attached to them. The master of the house reminds the helpers to save the good ears by saying *ḫi̧yk'owaju'ą̆* (*ḫi̧y*, ye, three or more—them; *k'owaju*, choice ears; *'ą̆*, do). He may tell them also to save clean husks for smoking and

other uses, *bi'k'owapa* (*bi'*, ye, three or more—them; *k'owà*, husk, skin; *pa*, make). The *k'owaju* are handed over to the master at the end of the day, and the ordinary ears are tossed up on the roof or on a platform built of cottonwood poles and branches, or are laid on a bed of logs—in any place that is dry and well drained.

When the husking is finished the master clears away the husks, raking them over to find piles of *k'owaju* unwittingly covered up in the heap, and next day he makes the *k'ų'op'ide* (*k'ų*, corn; *'op'ide*, braid), fastening the *k'owaju* in a long braid by means of the strips of husk attached to them. Most men sort the *k'owaju* according to color, making one braid (Spanish *ristra*) of blue ears, another of white, and so on. It is recognized that a crop of corn will always be more or less mixed in color; that, if one sows all blue corn, "some white is sure to mix in it from another field." But most men, by continuing to select the whole blue and whole white ears each year for seed, keep up approximately a white strain and a blue strain.

The *ristras* when finished are set up to dry, resting on the points of the ears, and afterward are hung over the parapet of the roof.

Certain ears are saved for seed with the husk on; these are called *k'oɹe*, or *k'oɹe k'owàŋwogeḃo'°* (*k'oɹe*, ear of corn; *k'owà*, skin; *ywogeḃo'°*, withal). It is said that these are not husked until the spring, when the kernels are sown before any of the other seed. Some husked ears of white corn set apart in the houses have spruce twigs tied on them.

Dwarf corn, parched and made into *ristras*, is hung on the parapet to dry.

All this is man's work.

Miss C. D. True informed the writer that the seed corn is the subject of a winter ceremony [1] in which all the heads of houses take part, and that after this ceremony it may not be touched except by the head of the house.[2]

Seed corn should be kept over until the second year; that is, corn gathered in 1912 should be sown in 1914. If sown the very next year, it is supposed to germinate less quickly.

An informant at San Ildefonso gave the same rule:

> The old women are like that; they know from very old times, and they keep the corn for seed; some they sow the next year, but some they keep for the year after.[3] Then, if no corn should grow this year there would still be some to sow the year

[1] Possibly identical with the Winter Solstice Ceremony at Hano. See Fewkes, *Amer. Anthr.*, n. s., I, no. 2, pp. 251–276.

[2] The statement is made, but on doubtful authority, that the Keres of Santo Domingo represent in their August dance the coming of messengers from destitute pueblos to beg seed-corn from Santo Domingo.

[3] Fray Juan de Escalona, writing in October, 1601, from San Gabriel in the Tewa country, says that "the captain-general and his officers have sacked the villages, robbing them of their corn of which they had six years' store, so that now they are eating wild seeds mixed with charcoal." (Quoted by Torquemada, *Monarchia Indiana*, lib. v.)

after.[1] They do the same with melon and watermelon seeds. They want to keep the corn of the pueblo. We could buy other seed, and perhaps better, from white people; or we could get seed from other pueblos; but the old men do not want that. They want to keep the very corn of the pueblo, because the corn is the same as the people.

At Santa Clara, however, seed corn is often imported; one man showed a strain of red corn from Jemez and proposed to get white corn from a friend at Taos, "because it is very cold there, and their corn ought to ripen early here." Other men said that corn from a distant place generally grew larger and better. While they lay stress on color, size of ears, and quick growth and ripening, they seem to neglect depth of planting. But for sowing they prefer the large grains from the lower part of the ear. A few men raise American yellow maize.[2] The introduction of new food plants, e. g., cabbage, is often discouraged by the women, who refuse to cook or eat them.

The Hano people showed themselves highly averse to exchanging seed of their own for that of a New Mexican pueblo, suspecting the "intention" of the senders.

It is said that at Tesuque, where "the customs" are admittedly very strict, people are allowed to plant only the traditional crops—corn, wheat, melons, watermelons, pumpkins, beans, and chile; anyone who attempted to sow new crops or American seeds would be punished. The same feeling must have been at work in 1680, when the revolted Indians burnt wheat, sheep, pigs, and fowls—all Spanish importations—along with books and images and vestments.

The Santa Clara people consider it a proof of their own modern liberalism that they allow any kind of seed to be sown.

The ordinary corn, when it has been husked, comes into the charge of the mistress of the house, who sorts it according to quality—some for grinding at home, some for sale, some for feed for the horses. A widower may be seen doing this work for himself. A small quantity of the new corn is shelled off the cob at once and dried on cloths in the sun, to make *atole* next day. When the corn has dried in the open air it is taken into the house, sometimes being pitched into a storeroom through a chimney hole, and finally the master and mistress of the house stack it in a neat pile, sorted according to color or quality.

As soon as people have husked their own household corn they go to help their relations. Widows and orphans and needy persons in general help at as many huskings as possible, receiving a present of corn at each. "Mexicans" are sometimes hired to help, and men go to other pueblos to help relations who are short of help.

[1] At the Keres pueblo of Cochiti a field is cultivated by all the people for the benefit of the cacique. He is expected to keep the corn from this field as a reserve over the next year, in case the people's corn should fail or be destroyed.

[2] The Hopi are said to be willing and anxious to use American seeds.

The pueblo is finally swept of the litter of husks late in October, generally in preparation for a dance.

Property in Corn

Standing crops are the property of men, usually the heads of households. Boys often have fields assigned to them by their fathers or bequeathed by their mothers' relations, which they plant and call their own, although they put the corn into the family stock. Crops once housed belong to the mistress of the house, who has to store and care for them, so as to feed the family during the year. She uses, gives, and sells the corn at her discretion, making a daily allowance for her husband's horses and, at his request, for those of guests. A man always speaks of the stored corn and other food as "my wife's" and does not dispose of it without her leave. Sometimes he speaks of it as hers while it is still in the fields.

The seed corn belongs to the man.

Hay and corn-shocks, which are stacked on platforms over the corrals, fenced with boughs and tall cornstalks, belong to the man.

Grinding Corn

The Pueblo method of grinding maize on the metates, *'o*, has often been described.[1] In the Tewa villages of New Mexico the younger women do not learn to grind, and few new houses are furnished with metates; when the occupants need corn meal they grind at an older house, or put a small quantity through the coffee mill. This means the practical abandonment of maize as human food in favor of wheat. Older women contrast their own hands, in which certain muscles are largely developed, while the finger-nails are worn down obliquely by rubbing on the metate, with the slight hands of the girls. In the youth of the former—perhaps thirty years ago—women used to rise before dawn to grind. When the men were going to the plains to trade with the Comanche, the women used to grind whole loads of meal for them to carry. Several women would grind together at night; they ground the corn successively on four metates ranging from rough to smooth. On the first they broke up the corn, and reduced it to fine flour on the fourth, toasting it after each grinding. Meanwhile the men sang the grinding song (a tune without words, still known), or beat a drum, and the women kept time to the music with slow regular strokes. There is a story that in ancient times women did not have to grind; they merely laid the mano and the corn on the metate and it ground itself.

At Hano grinding is still the daily occupation of women. Where there are several women in a house, the unmarried girls are set to grind, while the married women fetch water. Girls grind for their

[1] Cf. Mindeleff, *Eighth Ann. Rep. Bur. Ethn.*, p. 211; Cushing, Zuñi Bread-stuff.

father's sisters, and make parties to do the same work in one another's houses; married women grind occasionally for their mothers-in-law. Girls sing while they grind, and smear their faces with meal before and after grinding; and this is playfully recommended as a way of learning the task. They also powder their faces with meal when they are in full dress.

Ritual Use of Corn-meal

The ritual use of *k'ụk'æy* or *k'æmb̨owa* by the New Mexican Tewa is necessarily attended with so much reserve and secrecy that it will be more convenient to describe here some of the practices of the Tewa of Hano.

White corn-meal is primarily the women's offering, as feathers are the offering of the men, but to a less degree each is used by the other sex. The action of offering corn meal is called *d̨ok'ụlụyk'ili*, 'I [scatter] corn grains' (*d̨o*, I–it; *k'ụlụy*, corn; *k'ili*, grain), or, rarely, *d̨o k'æmụ* (*d̨o*, I–it; *k'æmụ*, unexplained). In this manner women pray to the sun at sunrise, asking for long life, *d̨ĭbijowowa'o'°* (*dĭbi*, they themselves; *jowowa*, pray for life; *o'°*, do), especially when giving names to infants or adults. By throwing meal on the *k'ajète'e*, 'fetish house' or 'shrine,' and saying their wish aloud, they ask favors of the *kachina*. They take corn-meal, *k'ụlụyk'ili*, in their hands when they go to dig clay for pottery. A song represents a woman praying with corn-meal for the success of her husband, who has gone to trade in the New Mexican pueblos:

> "At daybreak
> taking *k'ụlụyk'ili* with her,
> going out on the roof,
> sprinkling it eastward (she says).
> Buffalo hides he shall find for me,
> costly things he shall find for me.
> So she says,
> she sprinkles it in all directions."

When a rabbit is given to a woman she lays it on the floor and drops meal on it "to feed it."

When the impersonators of the *kachina* visit a house, the women welcome them by throwing corn-meal to each in turn. Similarly, when the *kachina* visit an estufa, the *te'etụnjo*, 'estufa chief,' makes a circuit of them before they begin their performance, throwing a pinch of meal to each from the bag, *'ĭbik'ụlụk'ilimụ* (*'ĭbi*, his; *k'ụlụ*, corn; *k'ili*, grain; *mụ*, bag), which hangs from his neck, and on some occasions the senior woman of the clan which controls the estufa is stationed behind the ladder with meal in her hand ready to throw as the visiting *kachina* pass. At public dances in the plaza several old men pass along the line of dancers, throwing meal to each and uttering requests

on behalf of the village; the clowns (*k̂osakojala*) also wear meal-bags and occasionally sprinkle from them.[1]

When the people have planted for a chief and he exhibits his *k'ųlųŋ'a*, 'dressed corn' (*k'ųlųŋ*, corn; *'a*, clothing, dressed), all the people throw corn-meal and pray to it.

Two kinds of ritual "road," *p'olǫŋ*, are made with corn-meal. One is a line drawn along the path by which visitors are ritually invited to enter—*'imb̨ip'olǫŋ 'ǫŋko*, 'their road lies for them' (*p'olǫŋ*, road; *'ǫŋ*, it for them; *ko*, to lie)—whereas a path is ritually closed by a line of meal drawn across it—*nąt̨sala*, 'it is cut' (*nąˇ*, it; *tsa*, to cut; *la*, modal). The other kind of road is a line of meal with a feathered cotton string lying on it (or a feathered cotton string carried in a man's hand with a pinch of meal), by which absent persons, game animals, etc., are invited to travel to the village.

At the naming of a child or adult (? female only), the face, breast, and hands are powdered with corn meal, and the walls of the room should be "painted" with meal in four places; the impersonator of the sun, *t'anse̱nno*, "paints" certain houses with meal when he makes his rounds in February.

Cooking of Corn Products

The following preparations of corn, among others, are eaten by the Tewa of Hano:

Mowa (Rio Grande Tewa, *b̨uwa*), wafer bread (New Mexican Spanish *guallabe*), the *piki* of the Hopi.[2] It is a staple article of food, being eaten at the ordinary household meals, and supplied to shepherds and travelers as their provision (*hægi*); at dances and ceremonies the performers are refreshed with *mowa* brought to them by their female relations; immense piles of *mowa* are given as return presents (*wo'a*, pay) from one household to another.

In most households *mowa* is made once a week or once a fortnight and stored in a box, from which it is dealt out by the mother or eldest daughter as it is needed. Parties of women meet to make *mowa* in one another's houses.

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[1] Torquemada's informant from San Gabriel (1601) writes: "At daybreak the women go with meal and feathers to certain toscas stones, which they have set up, and throw them a little of the meal which they are carrying and some of those little feathers, with the intent that they should keep them [the women] safe that day so that they may not fall from the ladders, and also that they should give them dresses (*mantas*)."

Benavides says (1630) that the Pueblo Indians before going out to fight offered "meal and other things" to the scalps of enemies whom they had slain; that they offered meal to the heads of deer, hares, rabbits, and other dead animals before hunting, and to the river before fishing. Women who desired lovers offered meal to stones or sticks which they set up for the purpose on hillocks at a distance from the pueblo.

[2] The Zuñi recipes for wafer bread ("he'we"), tortillas ("he'yahoniwe", dumplings, light bread ("he'palokĭa "=*b̨uwak'o*), doughnuts ("mu'tsikowe"), hominy (="chu'tsikwanawe"), roasted sweeteorn (mi'lo'we), popped corn ("ta'kunawe"), are given by Mrs. Stevenson. (See The Zuñi Indians, pp. 361-367, and Ethnobotany of the Zuñi Indians, passim.)

Mowa is made on a rectangular slab of fine-grained stone, about 3 feet square, laboriously hewn and polished, called *mowaĥu* (*mowa*, bread; *ĥu*, stone), which rests on stones at the ends or at the four corners. This slab stands under a wide open chimney in a special room, *mowaĥu'ibe* (*mowa*, bread; *ĥu*, stone, *'ibe*, place); it is heated by a fire built beneath it. A soft liquid dough or batter is prepared in a mixing bowl, and when the stone has been thoroughly heated and wiped with a greasy rag, a small quantity of the batter is spread over the surface by a quick, sweeping motion of the hand, leaving a thin, even layer. In a few seconds this layer of dough is so far cooked that it can be peeled off entire by one of its corners; it is laid aside on a wickerwork tray, and a second layer is spread on the stone. While this is cooking, the first sheet of *mowa* is laid over it again to benefit by the heat; then the first and second sheets are removed, a third layer is spread, and the second sheet is laid above the third for extra cooking; and so on. When a bowlful of the batter has been used, there is a pause in the work; the semitransparent sheets are folded in four, and sometimes the four-fold sheets are rolled into cylinders. In either shape they may be eaten fresh or stored for future use; they keep good for a fortnight or more. Stale *mowa* may be broken up fine and toasted, dipped into cold water, or mixed with boiling water into a porridge.

Mowa is generally made of "blue" corn-meal, with the addition of ashes stirred into the dough, turning it to a rich greenish blue. The ashes of *ĥa'ᵃjæŋ* (Atriplex canescens), gathered for the purpose in summer, are preferred; but late in the winter, if the stock of *ĥa'ᵃjæŋ* is exhausted, ashes of sheep's dung are used. "Blue" corn-meal without ashes makes purple-gray *mowa;* white *mowa* is made of white corn-meal; red and yellow *mowa*, used by certain *kachina*, is made by mixing vegetal dyes in the dough.[1]

The ordinary *mowa* consists of fine meal with the addition of ashes and a little salt; *'ǎsæ'i̧m mowa* (*'ǎ*, unexplained; *sæ*, bitter) is made with the addition of a larger quantity of salt; *'ǎkæm mowa* (*'ǎ*, sweetness; *kæŋ*, pour from the mouth) was formerly made of dough sweetened by mixing with it chewed meal or stale *mowa* broken up fine and chewed, but it is now sweetened with sugar.

'Ǎtili'i̧ (*'ǎ*, unexplained; *tili'i̧*, dots or specks) are made by dropping small quantities of batter at intervals on the hot stone, much as white people make pancakes.

Mowanusege (*mowa*, bread; *nusege* may describe size or shape of the cakes) consists of corn just beginning to ripen, ground on a single metate in the field shelter. The dough is formed into flat oblong cakes, about the size of the palm of the hand, which are rolled and

[1] The Hopi prepare a red dye for kachina *pike* from the seeds of *Amaranthus palmeri* Watson, which they cultivate in terrace gardens around the springs. They color *pike* also with the ashes of *Parryella filifolia*, and cf. *Atriplex canescens*. (Hough, *Amer. Anthr.*, vol. x, no. 2, 1897, pp. 39, 40.)

baked in the oven of a modern stove (*kwæ̨kup'a*); formerly these were baked on small stones over a bed of hot coals.

Mowaîok'o (*mowa*, bread; *îo*, unexplained; *k'o*, bake, roast, broil) is made of blue corn-meal mixed with sugar and ashes of *îajæŋ*, stirred with a stick in boiling water. As it cools, the mass is mixed thoroughly with the hands. A handful of the dough is put into a corn-husk, the edges of which are wrapped over the dough and the ends turned down, and the whole is baked in an oven. To make the oven, four stones are set up to enclose a rectangular space, in which a fire is built; the hot embers are reduced to fine fragments which are spread in an even layer, and on which thin stone slabs are laid. On these are placed the corn-husk packets, weighted down with smaller stones. At the present time the oven of an ordinary cooking stove is often used.

Tsinimowatsi̱gi (*tsini*, chile; *mowa*, bread; *tsi̱gi*, pinch) may be made as follows: Shape into flat cakes dough composed of rather coarse white corn-meal and water. On each cake lay a piece of meat and sprinkle over it powdered chile. Tie up the cakes in corn-husk and drop them into boiling water. This article of diet more nearly resembles the New Mexican tamale than does the following:

Tamali (< Span. *tamale*), rolls of corn-meal dough boiled.

Melesæ̨læ̨, 'dumplings' (*mele*, ball; *sæ̨læ̨*, cook, boil, stew).

Over blue corn-meal mixed with a small quantity of ashes boiling water is poured; the mixture is then stirred and kneaded into dough. This is rolled into little balls between the palms of the hands, which are dropped into boiling water to cook.

'Ą̆kæmmele ('ą̆, sweetness; *kæŋ*, pour from the mouth; *mele*, ball) are dumplings made of corn-meal mixed with ashes, sweetened, formerly with chewed meal, now with sugar, and boiled. The balls are larger than *melesæ̨læ̨*, being about 2½ inches in diameter. These dumplings are used as a supper dish.

Maîisæ̨læ̨ (*maîi*, squeeze; *sæ̨læ̨*, cook, boil, stew). Coarse blue corn-meal mixed with a small quantity of ashes is made into dough. Small pieces of this dough pressed between the fingers and palm of the closed hand are dropped into boiling water. When cooked these are eaten with fried chile, *tsinitsile* (*tsini*, chile; *tsile*, cook, parch, or fry).

Three kinds of corn gruel are classed together: *'a̱k'æŋ*, *k'u̱lu̱mputsi*, and *ki̱jæ̨*. *'Ą̆k'æŋ* ('ą̆, unexplained; *k'æŋ*, meal) is made by sifting coarse blue corn-meal (without ashes) with the hands into boiling water and stirring with a stick (*'ą̆k'æmp'e*). Until the introduction of coffee and tea, this gruel was the usual morning drink. *Kijæ̨* (archaic name, meaning now unknown), a gruel of rather coarse corn-meal mixed with ashes and salt, sifted into boiling water and stirred with the *'ą̆k'æmp'e*, is seldom eaten now. *K'u̱lu̱mputsi* (*k'u̱lu̱*, corn;

putsi, unexplained) was made by sifting coarse meal of *p'inini* corn into boiling water.

ʃakewe is cooked like *'ą̃k'æy*, but with less water, making a stiff, rather dry, crumbling porridge, which can be handled in lumps. It is eaten in the morning and at other times instead of *'o̱kiŋgi*, or *mowa*, especially with pot liquor from boiled meat. Shepherds make an imitation of *ʃakewè* by sifting and stirring crumbled *mowa* into boiling water.

Mowak'oke (*mowa*, bread; *k'o* bake, roast, broil; *ke*, put down) is eaten at sunrise on festive occasions, as the final feast of a wedding, the naming of a child, or when the *kachina* come. The impersonators of the *kachina* can not go to their houses for breakfast, and so their female relatives carry *mowak'oke* and *mowa* to them. Two handfuls of wheat are put into a small basket or dish, sprinkled with water, covered with a cloth, and allowed to stand three or four days, until sprouted. White corn, after being soaked for a few minutes to loosen the outer skin, is ground on the first (coarse) metate; after the meal is well sifted it is ground fine. The sprouted wheat, ground, is mixed with the corn dough. The mixture, thoroughly stirred, is put into a vessel (formerly an earthenware pot, now a tin can lined with corn-husk or corn-leaves), which is covered with corn-husks, and baked at night in the *mowak'ote*, 'oven' (*mowa*, bread; *k'o*, to bake; *te*, house). This is a rectangular pit, 18 to 24 inches deep, cut in the rock outside the house and lined with slabs of stone. In this pit a fire is made; when it is hot, the embers are reduced to fragments and the vessel is set among them; the opening is closed with a slab of stone, sealed with clay, and a fire built on top. Next morning the vessel is taken out and the *mowak'oke* is stirred with a stick.

Mowasẹy (*mowa*, bread; *sẹy*, horn). Dough is made of blue corn-meal, with ashes and sugar; portions of the dough wrapped in corn-leaves are dropped into boiling water. When green corn-leaves, *mowasẹyk'owà* (*k'owà*, skin, husk) are saved for wrappers, they are coiled into wheel-shaped bundles and tied with yucca strips. When wanted, a bundle is soaked in warm water to soften it before being untied.

Mowatsigi and *mowatsigi'e* (*tsigi*, pinch, constrict; *'e*, diminutive). Dough is made of blue corn-meal with the addition of sugar and ashes of *ta̱jæy;* small portions of the dough, wrapped in pieces of corn-husk and tied tightly in two places with shreds of yucca, are dropped into boiling water. When men and boys go to gather snow for the women of their fathers' clans, the women make *mowatsigi'e* to pay them; they go to meet the men returning from the work and tie the little packets to their forelocks. Some *kachina* bring *mowatsigi'e* to the children.

Pʻu̧ŋwæ̨, parched corn. The corn should be parched on hot sand in a meal-drying pot, *kʻæ̨îamele* (*kʻæ̨*, corn-meal; *îa*, dry; *mele*, pot), over the fire, so that the kernels burst into "pop-corn"; but now the corn is often roasted in an American oven. As it is eaten it is seasoned by moistening with a piece of corn-cob dipped into salt water contained in a dish set near by for the purpose.

Kʻæntsiʻi̧ŋ (*kʻæ̨ŋ*, corn-meal; *tsi*, ? parch, cook), parched corn-meal, Spanish *pinole*, comprises several varieties. The commonest is meal of *pʻinini* corn very finely ground which has been roasted at the time of harvest, the meal being dried over the fire after each grinding, on the coarse, medium, and fine-grained metates. *Kʻæntsiʻi̧ŋ* with *mowa* is the conventional food of travelers; it can be mixed with cold water and drunk without further preparation, and it is very nourishing. Some of the *kachina*, when they visit the houses, require the unmarried girls to grind *kʻæntsiʻi̧ŋ* for them.[1]

ʼOk̂iŋgi (New Mexican Tewa, *ḫuwak̂aɹa;* New Mexican Spanish, *tortilla*) is a round flat cake of unleavened bread of corn-meal or wheat flour, baked on the hearth or on a small hot stone. *Ok̂iŋgi* is the general word for bread.

ʼŲmmowak̂ala (*ʼuŋ*, blood; *mowa*, bread; *k̂ala*, thick) are cakes of corn-meal mixed with fresh ox blood, baked in the oven.

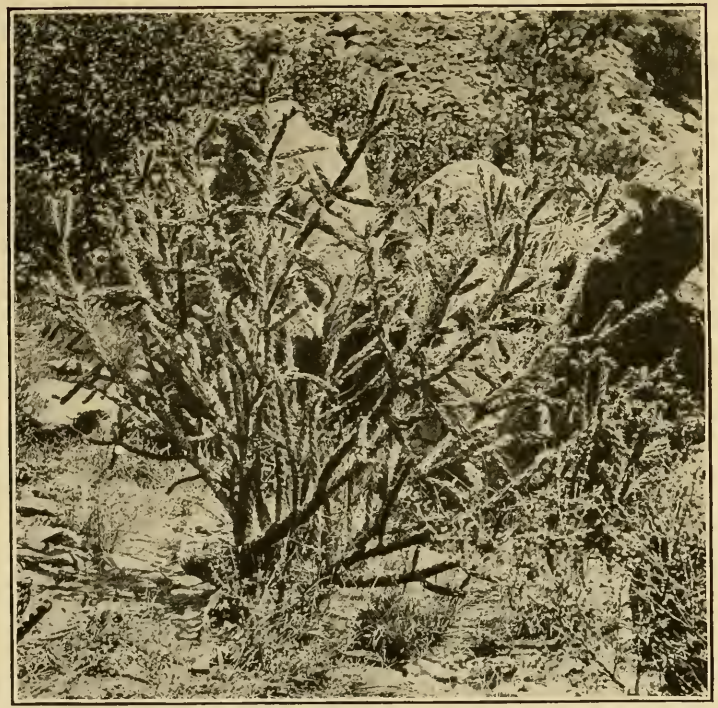
P̂utasæ̨læ̨ (*p̂uta*, unexplained; *sæ̨læ̨*, cook, stew, boil) are round flat cakes, about five inches in diameter and one inch in thickness, with a hole in the middle, made of blue corn-meal or of *pʻinini* corn-meal.

Kų̆p̂owæ̨nu (*kų̆*, fat; *p̂o*, water, liquid; *wæ̨nu*, drip) were formerly made of white corn-meal and water and were fried in mutton grease. Now they are generally made of commercial wheat flour, with the addition of baking powder and salt. After being well kneaded the dough is made up with the fingers into very thin disks about nine inches in diameter, with one or two slits or holes in each. These are fried one by one in deep fat,—mutton grease, lard, or pig's fat rendered down,—being carefully turned. They become golden-brown and puff up crisply, like very light doughnuts. *Kų̆p̂owæ̨nu* are eaten on festive occasions; being quickly made, they are esteemed a delicacy proper for entertaining guests.

Pæ̨ɹi, hominy. White corn is put into warm water with ashes of corn-cobs, and boiled, more water being added if necessary, until it swells up to three times its original bulk. After the ashes are thoroughly washed out the corn is boiled again, with mutton.

At the pueblo of Santa Clara the preparation of maize foods has certainly declined in late years—partly on account of the growing

[1] The *pinole* of the Pima is made by grinding corn not merely roasted but popped. (Pfefferkorn, Beschreibung der Landschaft Sonora, 1795, quoted by Russell in *Twenty-sixth Rep. Bur. Amer. Ethn.*, p. 67.) Dough made of *kʻæ̨ntsiʻi̧ŋ* is called *tawæ̨ʻæ̨*. Some of the *kachina* give figurines of animals made of this dough to the children.



A. CHANDELIER CACTUS; CANE CACTUS; "CANDELABRA;" "ENTRANA" (OPUNTIA ARBORESCENS). A TYPICAL AND STRIKING SHRUB OF THE REGION.

B. RABBIT-BRUSH (CHRYSOTHAMNUS BIGELOVII).

popularity of wheat flour, native and commercial, and the disinclination of the women to grind maize on the metates; also in common with the general economic deterioration which accompanies the use of money and the proximity of American stores. Only a few preparations have been noted in common use, but it is probable that others survive in connection with various ceremonies. *Ƀuwa*[1] or *ƀuwajawe* (*jawe*, to tear off a layer) (paper-bread, wafer-bread, New Mexican Spanish *guallabe*, Hopi *piki*, Zuñi *hewe*) is made by methods similar to those described under *mowa*, page 89, but the blue color is given by adding lime. Perhaps half a dozen houses in the pueblo have rooms for making *ƀuwa*, and the hewn stones, *ƀuwaˆku*, which are obtained in trade from the pueblo of Jemez.[2] *Ƀuwa* is not in everyday use: it is made for festivals and ceremonies, and the women who can make it are respected for the accomplishment.

Ƀuwaˆkaɹa[3] (*ƀuwa*, bread; *ˆkaɹa*, thick)—Spanish *tortilla de maiz*—is a flat, round, unleavened cake of blue corn-meal, baked on a hot stone over the fire. It is fully as thin as the wheat tortilla, and is called "thick" to distinguish it from *ƀuwa*, 'water-bread.'

The Tewa say that their ancestors used the fat of deer to lighten their bread. Maize bread can be made of meal and water only, without grease, but, thus made, it is hard and heavy.

'Ą́gæ, corn-meal gruel, Spanish *atole*, usually made of "blue" corn-meal, is still in fairly regular use, and is the prescribed diet for the sick, either alone or served with *sæˆpo*, liquor from boiled meat (*sæ* stew; *ˆpo*, water, liquid), or with dried beef.

ʃakewe is stiff porridge made of "blue" or red corn-meal.

'Agæ and *ʃakewè* are the conventional breakfast foods.

Dumplings were formerly made by dropping balls of corn-meal dough into boiling water. The old men liked to sit by the pot so as to be ready to pick out with a splinter of wood the dumplings as fast as they were cooked, and eat them hot.

White corn is boiled with mutton or beef; the stew is called *posoli* (<Span. *posole*). Hominy does not seem to be in use, but Escalona

[1] *Ƀuwa* (Hano Tewa *mowa*) is a general term for breadstuff made of maize, but specially for wafer-bread, *guallabe*. In fact, at Santa Clara as at Hano, unless the *ƀuwa* is further specified as *ƀuwaˆkaɹa*, *ƀuwak'o*, etc., it may be taken for granted that *guallabe* is meant. At San Ildefonso *ƀuwa* seems to be applied more generally; thus, an informant from San Ildefonso translated "our daily bread" by *nąᷤ'ɻmƀi ƀuwa t'amuŋwagi'i'i*, whereas at Santa Clara it would probably be translated *nąᷤ'ɻmƀi paƀa* (?<Span. *pan*).

[2] The Zuñi lubricate the stone with the oil of chewed squash seeds, the Tewa of Santa Clara with marrowfat (*p'ek'ųŋkᷤá*, 'bone grease'), the Tewa of Hano with any animal grease (*kᷤąᷤp'ek'ųŋ*, bone <*p'e*, stick, *k'ųŋ*, stiff object; *kᷤą*, grease).

[3] Torquemada's informant (*circa* 1600) particularly notes that the Tewa of San Gabriel (Chamita) did not mix ashes or lime in their *atole* as did the Indians of Mexico. At the present day the Tewa of Santa Clara mix lime, *ˆkunų*, 'stone ashes,' not in *atole* or *ʃakewè*, but in *ƀuwa* and *ƀuwa ˆkaɹa*. The necessary "stone" for burning can be found in Santa Clara Canyon, but, to save trouble, the lime is more often bought from "Mexican" peddlers. The Zuñi also use lime; the Tewa of Hano use vegetal or animal ashes.

(1601) refers possibly to that article of diet when he writes of grass-seeds eaten with charcoal as above mentioned.

Tamaḍe is the Spanish *tamale*, meat patty.

K'ų̨mp'ų̨ų̨wæ̨ p̂a'i̯ų̨, 'pop corn' (*k'ų̨*, corn; *p'ų̨ų̨wæ̨*, parched corn; *p̂'a* cracked, to crack), is said to have been usually *p'inini*. (San Ildefonso.)

P'ų̨ų̨wæ̨t̂a, 'pinole' (*p'ų̨ų̨wæ̨*, parched corn; *t̂a*, to grind) consists of parched or popped corn ground into meal. (Santa Clara.) (Cf. *K'æntsi'i̯ų̨*.)

Some particulars of the Tewa methods of cooking maize derived from letters sent from San Gabriel (Chamita) to Mexico shortly before 1601 are as follows: [1]

As soon as the ears of Maize have come to be in milk, they gather many of them, and having kneaded them make of them a thinly-spread dough, very thin, like puff-pastry (*hojaldrado*), as when one makes Fruta de Sartèn (a Spanish delicacy, literally, 'frying-pan fruit'); and of this Dough so kneaded they make a sort of rools (*canelones*, a sort of sugar-stick) like a supplication [cf. *mowanusege*, p. 89] and hang them in the sun, and when they are dry they keep them for eating; and when the Ears are pretty well hardened (*quaxadas*, coagulated), they gather many of them, and, after parching or roasting them, set them in the sun; and when they are dried, they store them [as the Tewa now treat *p'ininik'ų̨ų̨*]. The rest of the Ears, which are left growing, they allow to ripen entirely, to store them in the form of Maize, ready for eating, and for sowing at the proper season. They do all of this, because the frosts begin very early, and the harvest is in much danger of being lost; and so this manner of gathering their food, so as to enjoy some of it, before it be all frozen [and lost] to them. Also they gather good Beans, and large and well-flavoured Squashes; they make of the kneaded Corn for the morning meal *atole*, much as Pap or Gruel is made of Flour, and this they eat cold any time of the Day; they do not put salt on it, nor cook it with lime or ashes, as do these other Indians [i. e. those of Mexico proper]. Also they make Tamales [meat with chile powder enclosed in rolls of corn-meal dough and boiled] and Tortillas [flat cakes unleavened] as do the Indians here; and this is their usual Bread.

Gifts of Food

With the New Mexican Tewa, corn-meal and wheat bread, in fact all cooked foods—the products of women's industry—pass as appropriate presents from women to men, or between the mistresses of households. (The proper present from a man to a woman would be game,

[1] Torquemada, *Monarchia Indiana*, lib. v, cap. xxxx, pp. 678–679. The original Spanish reads as follows:

"Luego que las Maçorcas de Maìz llegan à estàr en leche, cogen muchas de ellas, y amasadas, hacen una masa de ellas estendida, mui delgada, à manera de hojaldrado, como quando hacen Fruta de Sartèn; y de esta Masa asi amasada, hacen unos canelones, à la manera, que una suplicacion [cf. *mowanusege*], y cuelganlas al Sol, y secas, las guardan para comer; y quando las Maçorcas vàn yà quasi quaxadas, cogen muchas de ellas, y tostadas, ò cocidas, las ponen al Sol; y estando bien enjutas, y secas, las guardan [as the Tewa now treat *p'ininik'ų̨ų̨*]. Las demàs Maçorcas, que quedan naciendo, las dexan saçonar de el todo, para guardarlas en Maìz, hecho para comer, y para sembrar á su tiempo. Todo esto hacen, porque los ielos comiençan mui temprano, y estàn las Micses à mucho riesgo de perderse: y asi tienen este modo de coger su comida, para goçar de alguna, antes que se le iele toda. Tambien cogen buenos Frisoles, y Calabaças grandes, y sabrosas; hacen de la Masa de Maìz por la mañana Atole (como de Harina Gachas, ò Polcadas) y este comen frio todo el Dia; no le echan Sal, ni lo cuecen con cal, ni ceniça, como estos otros Indios [i. e. of Mexico] lo cuecen, Tambien hacen Tamales y Tortillas, como los de por àcà; y este es su ordinario Pan."

firewood, or clothing.) On the eve of a festival they send new bread, *k'ą̆powæ̨nu*, and pies made of dried peaches and melons, sometimes boiled meat, to their neighbors; the present should be folded in a cloth and carried under the bearer's head-shawl. The phrase used is *næwe ŋwi̧mma'a*, 'here I bring you [this]' (*næwe*, here; *ŋwiŋ*, I it to you 1; *ma'a*, to give), to which the recipient answers, *hą̆*, 'yes'; or *k'ą̆powæ̨nu ɖi̧mmæ̨gi!* 'give me the doughnut!' (*ɖiŋ*, you it to me; *mæ̨gi*, to give); or *ku'nɖawo'i̧ña ɖiŋk'ą̆powæ̨nuja* 'thanks, I congratulate myself that you bring me a doughnut' (*ja*, to bring); or *ku'nɖawo'i̧ña ɻimmæ̨gi*, 'thanks, I congratulate myself that you gave it me' (*ɖiŋ*, you it to me). Emptying the dish, she wipes it and gives it to the bearer; or, more ceremoniously, washes dish and cloth before returning them next day.

At festivals, women and girls carry bread, cakes, boiled maet, *chile con carne*, and coffee to the estufa, as refreshment for the dancers: they set them in rows on the floor and immediately retire, while the officials in charge thank them loudly. They also carry boiled meat and bread to the house of the winter or summer cacique as the case may be. During the *k'a'ato*, a winter dance at night in the estufa at San Ildefonso, the women bring to the dancers corn-meal, bread, and sometimes a *k'ų'ų k'ɑɻe'i̧ŋ*, a whole corn-stalk with ears, husk, and leaves, which they save for the purpose. On the Day of the Kings (January 6), when the dancers perform before the houses of the newly-appointed officials of the pueblo, the officials' wives bestow boiled meat, bread, and boiled pumpkin. On All Souls' Day (November 2) corn, wheat, beans, peas, watermelons, apples, boiled pumpkins, bread, cakes, and pies are brought to the churchyard by women and presented to the Catholic priest "for the dead." More conservative, and therefore more ceremonious, is a gift of corn-meal piled in an Apache basket; it is a suitable offering for a religious functionary or for a religious society which is in session. At some dances women and girls bring baskets full of meal and set them down before their favorite dancers, who are supposed to give a present of game in return. This is done, for instance, at the Turtle Dance, *'ōkūʃɑɻe* (*'ōkū*, turtle; *ʃɑɻe*, to dance), at San Juan; and another men's dance at Santa Clara has fallen altogether into disuse "because the men are afraid to dance; there are some women capable of giving a man nine baskets of meal, and now that rabbits are so scarce, he would be ruined in buying meat to pay them!"

At Hano, as in the Hopi villages, the systematic giving and repayment of food is constant and increasingly lavish: *ɖi̊bi̊wo'a*, they pay each other,' (*ɖi̊bi̊*, they each other; *wo'a*, to pay). Boiled mutton with hominy, boiled peaches, boiled pumpkin, but above all vast quantities of *mowa* (wafer-bread) pass from household to household, each series of "payments" being closed by the gift of a few ears

of corn. Women take *mowa*, *k'ą̆p̂owq̄nu*, and boiled peaches to the dancers at their rehearsals, to the meetings of societies, to men of their husbands' clan who are weaving for them, to men who hunt rabbits, gather wood, or do them any service.

Various Uses

Corn-husks, stalks, and leaves are winter forage for stock. Cigarettes are made of corn-husk (see *sa*, p. 103). Feathers and flowers are bound to prayer-sticks with corn-husk "tape" and corn-silk.[1] The framework and mounts for feathers in many ceremonial ornaments are made of tightly twisted corn-husk. The *k̂osa* wear tufts of corn-leaf or corn-husk on the peaks of their caps.

At Hano the *k'a'ᵃwotokachina* wear artificial flowers of painted corn-husk on their heads. Corn-cobs, *k̂uy*, are everywhere used as fire-lighters and as fuel in emergencies. At Hano a corn-cob tied to the estufa ladder and swinging in the smoke which rises from the hatchway means that one of the men who attend that estufa has not yet brought his contribution of firewood for the ceremony in progress; the idea suggested is that by his negligence his comrades are reduced to burning cobs for fuel.

Corn-cobs make convenient handles and holders; for instance, at Santa Clara, turkey feathers in corn-cob holders are carried by the two women dancers in the *pogonʃaɹe*. At Hano feathered darts, *k'ų̄meliy* (*k'ų̄*, wing; *meliy*, ? balls), are made of cobs, and cobs are used to make also a resilient stuffing for *k'ų̄lų̄mqwe͡be*, 'corn kick-balls' (*k'ų̄lų̄y*, corn; *qwe͡be*, kick along the ground).

Miss C. D. True kindly gave the following information about birth customs at Santa Clara:

> At the birth of a child the mother's best friend [the *tsakwijo*, 'cut old-woman'] severs the umbilical cord with a smoldering corncob. Four days after birth the 'corn-name' is given. The mother's best friend comes to the house before dawn, bringing corn-meal and water in a vessel with two compartments, one for the meal and one for the water. The mother is led to the door with the infant, and the meal is sprinkled in the air as the sun rises. The father then takes four of his best ears of corn and sets them about the mother's bed. She returns, or should return to bed, for four days more.

The following phrases given by a woman from San Ildefonso refer to the same custom: *'ų̄n jonut'amuɹi 'ikwi'ojowowapije*, the 'fourth day she took that woman out to ask for long life'; (*'ų̄y*, it with reference to it; *jonu*, four; *t'amu*, day; *ɹi* temporal; *'i*, the; *kwi*, woman in prime; *'o*, she; *jowowa*, to throw meal asking for long life <*jo*, unexplained, *wowa*, to live; *pije*, to take out). *Ojowowapije*, 'they two (the *tsakwijo* and another woman) take her (the mother) out to ask for long life (by throwing meal), (*'o*, they two her).

[1] Douglass, *Records of the Past*, XI, p. 165.

At Hano, where the naming customs have approximated to those of the Hopi, the rite requires the use of yucca suds, corn-meal, and two ears of corn, one a tufted white ear called *posêʌe*, the other a pink or a red ear.

Trade in Corn

As long as buffalo were obtainable on the plains, the Tewa carried on a considerable trade with the Comanche, bartering corn, corn-meal, and wheat bread for prepared buffalo hides. Sometimes the Tewa visited the Comanche country, sometimes the Comanche brought hides to Santa Clara, which thus became a depot for the trade in woolen goods and buffalo hides between the Hopi and the Comanche. With the disappearance of the buffalo this intercourse ceased.

Tallies

It is said that at one time, probably between 1879 and 1894, the Santa Clara men used to elect the gobernador by ballot, using grains of corn or beans. Maize kernels or beans are used as counters in the game of cañute.[1]

Medicinal Uses of Corn

At Santa Clara the following remedy is used for swollen glands, *sægobe*, in the neck: An ear of corn, *k'oʌe*, is laid on the warm hearth near the fire, and the patient is told to set his foot on it and rub it to and fro—*nąk'oʌe'ąntsaʌi*, 'rub the ear of corn with your foot' (*nąˇ* you 1 it!; *k'oʌe*, ear of corn; *'ąy*, foot; *tsaʌi*, to rub). In two or three days' time the swellings will subside. The treatment is suitable for a child of ten years or so, not for a baby.

Blue corn-meal mixed with water is given at Santa Clara for *piyhe*, 'heart-sickness,' 'palpitations, pains near the heart or diaphragm' (*piy*, heart; *he*, sickness, to be sick).

At San Ildefonso corn-pollen, *kątu* (*kąˇ*, corn-tassel; *tu*, kernel) was especially recommended for palpitation of the heart.

Black corn with a slight streaking of red, *k'ympe'niy* or (*pip'e'niy*, New Mexican Spanish *maïs kafetao*), is good for a woman at her periods. Some women take corn-smut, *sæpeʌe*, as a remedy for irregular menstruation.

Pantomime of Corn-growing

Some dancers—for example the clowns, *kosa*, at San Ildefonso—use interesting ritual gestures which portray the growth of corn. The performer looks up at the sky, shading his eyes with one hand; this means, "I see clouds coming." He makes motions as if drawing the

[1] See Harrington, The Tewa Indian game of Cañute, *Amer. Anthr.*, XIV, p. 254, 1912.

clouds toward him with both hands, palms upward. Then bending his arms at the elbows and turning his palms downward, he shoots them repeatedly forward: "the clouds are coming here to the fields." By a zigzag motion of hand and arm above his head he indicates lightning. Holding his hand horizontal, palm down, he lowers it by a succession of jerks: "rain falls"; then he makes horizontal motions of drawing and sweeping: "the water from the irrigating ditches runs all over the fields." Next he imitates a man hoeing, first on one side and then on the other. Then he shows the corn growing up . . . so high . . . now so high . . . marking successive heights above the ground with his hand, as if showing a child's age; then the male inflorescence, by holding up his hand with fingers and thumb pointing upward in a circle. Lastly, the right forearm, with hand pointing upward, is shot up perpendicularly several times, while the left hand, held slightly above the level of the right elbow with palm turned toward the right arm, is moved upward and outward from it, to represent the growth of the female inflorescence at the side of the stalk. All this time the performer continues to dance, keeping on the same ground or moving over a few yards only.

While the *k̂osa* are dancing these motions, they mention corn, wheat, melons, watermelons, chiles, peaches, apples, and all sorts of edible plants.

Corn Clans

The Corn clan at San Juan and Santa Clara is called *k'ų̨nį̂owà*, at Hano *k'ų̨lų̨nį̂owa*. Hodge[1] gives as names of Corn clans at various pueblos: San Juan, *Kún-tdóa;* Santa Clara, *Khú^{n}-tdóa;* Hano, *Kulo^{n}-tówa;* Jemez, *Kyunutsa-ásh;* Pecos, *Kyunu'+;* Sia and San Felipe, *Yáka-háno;* Santa Ana, *Yak'-háno;* Cochití, *Yák'a-hánuch;* Zuñi (Corn or Seed), *Tâ'a-kwe.* Fewkes[2] gives *Kolon* as the Hano name of the Hano Corn clan. Hodge[3] gives *Ku^{n}aii-tdóa* as a Sweet Corn clan at San Ildefonso.

The Hopi have a Corn clan, *Kaü nyamu*, *Kaü wiñwu*, one of the Patki group, at Walpi and Mishongnovi, and a Young Corn clan at Oraibi.[4]

The Corn clan at Hano presides over corn and all edible plants; the members think themselves bound to feed the people in time of scarcity, to entertain strangers, and to interpret for them. The chief of this clan makes the corn-meal "road" at ceremonies which concern the whole village. At present the clan owns and repairs the estufa in the plaza, *munate'e*, and have named it *sælæmoloɹite'e*, 'corn-silk heap house' (*sælæ*, corn-silk; *moloɹi*, heap; *te'e*, estufa).

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[1] *Amer. Anthr.*, IX, p. 349, 1896.

[2] Tusayan Migration Traditions, *Nineteenth Ann. Rep. Bur. Amer. Ethn.*, pt. 2, 1900, p. 615.

[3] Op. cit.

[4] Fewkes, op. cit.; also Mindeleff, Localization of Tusayan Clans, in same Report, p. 651.

The women of the Corn clan at Hano have the right to give personal names referring to corn and all kinds of vegetal food, as—

k'ųlųn t͡sejiy, 'yellow corn.' M. and F.
k'ųlųm p'i'iy, 'red corn.' F.
k'ųlųnt͡sæ, 'white corn.' F.
k'ųlųnt͡sæju, 'bluish-white corn.' F.
k'ųlųy'e, 'little corn,' alluding to the forced corn-plants distributed at the Water Snake performance. M.
jele, the old name for a dwarf corn which the old people had.
p'inini, 'dwarf corn.' F.
k'ųlųkwi, 'corn tied,'? alluding to ears of corn taken to the estufa at the Winter Solstice. M.
k'ųlųmpup'a'a, 'corn at the bottom of the stack' (*pa*, base; *p'a'a*, spread on the ground). M.
k'ųlųy'a 'dressed corn.' (Hopi, *tipuni.*) M.
p'o'æk'ųlųy, 'old-time corn,' alluding to the *k'ųlųy'a*. M. and F.
tsą̆ywænele, ? 'blue (or green) standing alone.' M.
kalatsąy, 'new leaf.' F.
kalatsą̆ywæ, 'green leaf.' F.
kalatiti, 'leaf quivering.' M.
sælæp'ilitsąy, 'new red corn-silk.' F.
kă'inele, 'tassel alone.' M.
kătu, 'pollen.' F.
kătutsą̆ywæ, 'green pollen.' F.
sæpe'e, 'corn-smut.' F.
k'ænsa, 'corn-meal put up.' M.
tamali, a cooked food (<Span. *tamale*). M.
tawæ'æ, 'dough of parched sweet corn.' F.
mowanusege, 'bread of unripe corn.' F.
'akoⁿt͡sejiy, 'yellow field.' F.
kotsala, 'planting divided, cut.' M.
pa'ᵃɹeko, 'early planting.' M.
mųt'o, 'sack.' M.
k'ojemųt'o, 'seed bag.' M.
p'olontsąy, 'new road,' alluding to a ritual line of corn-meal. F.
t͡sejim mų, 'yellow pod.' M.
sannia, 'watermelon' (<Span. *sandía*). M.
sųt͡sigi, 'mint' (*Monarda menthæfolia*). M.
jąmpoβi, 'peach flower.' F.

Tu.

? ——. Bean. New Mexican Spanish *frijol.*

Beans (Span. *frijoles*, *habas*) were cultivated by the Rio Grande Pueblos at the time of the discovery. Castaño de Sosa (1590) notes that they were of several colors, "el maiz hera de muchas colores é lo propio es el frisol," possibly alluding to distinct varieties.

A number of beans (*Phaseolus vulgaris*, variety not determinable) were found in 1910 in the pre-Spanish ruins at the Rito de los Frijoles, New Mexico, just outside the Tewa area of occupancy.

The kind of beans which the Tewa used to have is distinguished from other kinds by being called *tewatu*, 'Tewa beans' (*tewa*, Tewa; *tu*, bean).

Beans are the staple food of the Tewa, as of the poorer New Mexican Spaniards.

At Santa Clara beans are cooked, mashed, and spread on the face to relieve neuralgia. *Tewatu qæ̨nîa ɓi'æñy'iɑi*, 'grind beans and smear thyself' (*tewatu*, Indian beans <*tewa*, Tewa, *tu*, bean; *qæ̨y*, you 1 it for yourself; *îa*, to grind; *ɓi*, of, for, connecting the phrase which follows with the sentence; *'æñy*, to smear; *'iɑi*, temporal).

Po (cf. *pogoje*, wild squash, *Cucurbita fœtidissima*). The Hano Tewa form is *po* with falling intonation, while the Rio Grande Tewa use rising-falling intonation.

?———. Squash, Pumpkin. New Mexican Spanish *calabacin*, *calabaza*.

Pojo (*po* squash, pumpkin; *jo* augmentative).

?———. Pumpkin. New Mexican Spanish *calabaza*.

Some persons prefer to say *po so'jo*, 'large squash' (*so'jo*, largeness, large).

Pumpkins were cultivated at all the Rio Grande pueblos at the time of the discovery and are still a fairly important crop. Considerable quantities of them are kept for winter use, to be boiled, or baked in the bread-oven, and eaten.

Mr. F. W. Hodge[1] gives as Calabash clans at various pueblos: San Juan, Santa Clara, San Ildefonso, Nambe, and Tesuque, *Po-tdóa;* Jemez, *Wëhätsa-ásh;* Pecos, *Wa'-ha'-há';* Acoma, *Tányï-hánoqᶜʰ;* Sia and San Felipe, *Tányï-háno;* Cochiti, *Tanyi-hánuch.*

At all the Tewa pueblos in New Mexico, as well as at Cochiti, at Santo Domingo, and probably at other pueblos, the people are divided into two groups, ritually and socially complementary to each other and sometimes politically opposed. One of these is *Poîowà*, 'Calabash people,' the other *K̃uñæ̨îowà*, 'Turquoise people.' At Santa Clara the *Poîowà* are 'Winter people,' *tenuɑi'i̯n îowà*, and their religious chief is the *'ojike*. At Hano this dual grouping is not traceable.

Poywæ̨'e, 'small spiny squash' (*po*, squash, pumpkin; *ywæ̨*, spiny, spine; *'e*, diminutive).

?———. Hubbard Squash, Small Spiny Squash.

[1] *Amer. Anthr.*, IX, p. 349, 1896.

Po'ᵒŋwije, 'gourd rattle.'[1]

?———. Gourd plant which bears gourds that are used as rattles (see fig. 7).

K̂eʌe, 'spoon,' 'ladle,' made of gourd or other substance.

Gourd plant which bears gourds that are used as spoons or ladles. Sections of gourds used as spoons are very common.

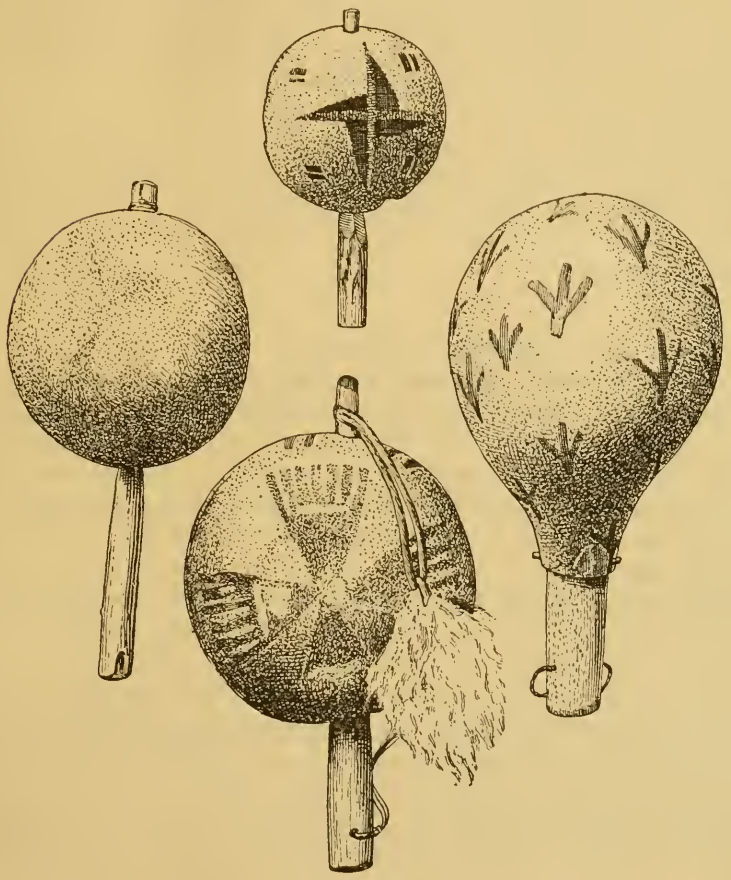

FIG. 7.—Gourd rattles.

Rattles for dancing are made of gourds, grown for the purpose.[2] Half sections of gourds are used as ladles and dippers, *k̂eʌe*, especially

[1] Two kinds of rattle are regularly made in the New Mexican pueblos: the *po'ᵒŋwije* proper, a flat-sided gourd; and the *'ą̂tsoʙe po'ᵒŋwije* (first three syllables unetymologizable), made of rawhide stretched and sewed over a clay core which is afterward broken and removed. In both cases the rattle is transfixed by a wooden handle which passes through it from end to end and is kept in place by a transverse peg, and contains a quantity of very small stones.

At Hano rattles of two kinds are made. One is a roundish gourd, fitted with a wooden handle which is pegged into the mouth of the gourd and does not transfix it. The other, called *K'awot'o-po'ᵒŋwije* because it is made at the *K'awot'o* festival in February, is evidently derived from a rawhide type; it is a flat-sided gourd transfixed by a wooden handle and painted in imitation of sewing along the edges, where the seams of a rawhide rattle would be.

[2] Formerly the Yavapai bought gourd rattles from the Hopi.

for filling the water-jars and for drinking water from them, and for ladling broth, *sæp̂o*, and gruel, *'ą̆gæ* from the cooking-pots. To some extent they have been superseded by earthenware ladles, (Hano *nąp̂okeɹe; nąp̂o*, mud; *k̂eɹe*, section of gourd) and commercial spoons. Some small earthenware vases are made in the form of gourds. Variously shaped sections of gourd, *k̂eɹe* (Hano *k̂eɹe* or *haiq haiq k̂eɹe*, *haiq haiq* representing the sound made in scraping wet paste; *k̂eɹe*, section of gourd), are used by women to smooth and shape pottery in the making. At Hano a gourd is sometimes used as a resonator for the musical rasp.

At Santa Clara a section of gourd, *pok'aƀe* (*po*, gourd; *k'aƀe*, to break, broken, fragment), painted green on the concave surface, decorated with four eagle feathers, and mounted on a short stick, is carried by each male dancer in the Zuñi Basket Dance. It is said to represent the sun.

Sek'ɐ̨ŋ.

? Gossypium Hopi Lewton. Cotton.[1]

Cotton was formerly cultivated in small quantities at the Rio Grande pueblos; cotton thread was spun and cloth was woven. Some of the villages which did not raise cotton imported it from others as raw material for their own spinning and weaving. It was always an article of luxury on account of the smallness of the quantity which could be gathered in a single year and the tedious labor needed to prepare it for use.

At the time of the discovery, Jaramillo reported that the people of the Rio Grande villages "raise and have a very little cotton, of which they make the cloaks which I have spoken of." The author of the *Relación del Suceso* says: "They raise cotton—I mean those who live near the river—the others do not;" he notes that at Cicuique (Pecos) and Yuraba (Taos) no cotton is raised. In the Tiguex pueblos "they gather cotton, but not much, and wear cloaks of it."[2] Coronado requisitioned three hundred or more pieces of cloth from the twelve villages of Tiguex, but the material is not specified;[3] probably the greater number were of rabbit fur and yucca fiber. In 1630, according to Benavides, the two hundred and fifty Spanish soldiers who

[1] F. L. Lewton, The Cotton of the Hopi Indians: A New Species of *Gossypium*, says that a specimen of cotton received from Mrs. Matilda Coxe Stevenson from Tuonyo Camp, Española, N. Mex., appears to be identical with the Hopi cotton, *Gossypium Hopi* Lewton.

[2] Relación Prostrera de Sivola, *Fourteenth Ann. Rep. Bur. Amer. Ethn., 1896*. At present the Hano people card their cotton with wool-cards.

[3] Castañeda, ibid., 495. Nordenskiöld found cotton yarn and cloth, but not cotton-seed, in the cliff-dwellings of the Mesa Verde, in southwestern Colorado. Cotton-seed have been reported found in cliff-dwellings in southern Utah. (Nordenskiöld, Cliff Dwellers of the Mesa Verde, p. 94.)

In an interment in a cave at the Rito de los Frijoles, the body was wrapped in a white cotton garment. (E. L. Hewett, Excavations at El Rito de los Frijoles in 1909.)

formed the garrison of Santa Fe were paid by a tribute raised from the neighboring villages, the Indians giving for each house a yard of cotton cloth (*una vara de lienzo de algodon*) and a bushel (*fanega*) of maize.

In modern times the general tendency has been for the people of the Rio Grande villages to abandon the cultivation and manufacture of cotton and to buy woven and embroidered cotton goods from the Hopi, importing them either directly or through the Keresan pueblos. Nevertheless, white cotton blankets with red and black woolen borders were woven at Nambé within living memory. At Santa Clara the last man who wove large ceremonial blankets of cotton (*sɛga*) died less than thirty years ago; and a man who died in 1909 used to raise a small quantity of cotton, probably to provide cotton string for tying prayer-feathers and for other ceremonial uses.

At Santa Clara *sek'ɛntą̆y*, 'cotton seed' (*sek'ɛy*, cotton; *tą̆y*, seed), obtained from Jemez, is used as a remedy for baldness in children. The seeds are crushed and the *tą̆ntu;* kernels (*tą̆y*, seed; *tu*, kernel) are taken out and chewed, and applied to the child's head. *Sek'ɛntą̆nnąy'ɛñy*, 'you I smear it with cotton seed' (*nă*, you I; *'ɛñy*, to smear it).

At Hano a small quantity of cotton is raised by a few individuals. But in general the Hano people, like the Hopi, buy cotton batting from the traders for their spinning and weaving, and commercial cotton string is used for warps. Native cotton is prepared for the strings of prayer-feathers. Shinny-balls (*hûą̂mele*) are stuffed with cotton or with wool.

Sa.

Nicotiana attenuata. Tobacco. New Mexican Spanish *punche.* This is the general word meaning tobacco, but it applies especially to this species, which is sometimes distinguished from commercial tobacco as *îowàsa*, 'Indian tobacco' (*îowà*, person, people, Indian; *sa* tobacco). Any kind of wild tobacco is called *p̂o'ɛsa* (*p̂o'ɛ*, ceremonial; *sa*, tobacco).

Nicotiana attenuata was formerly cultivated by the New Mexican Tewa, but now, as a rule, it is bought from their Spanish *vecinos.* The dried leaves and other parts of the plant are smoked in pipes, *saǐku* (*sa*, tobacco; *ǐku*, stone), and in cigarettes of corn-husk. While commercial tobacco is increasingly used for pleasure, *îowàsa* must be smoked on all formal occasions, at religious ceremonies in the estufas or in private houses, at the meetings of councils and societies, and at the reception of visitors from distant pueblos. At Santa Clara the *gobernador* provides *îowàsa* and, if possible, *p̨imp'uñɛ'ᵉ* (p. 72), to be smoked by the *principales* and *oficiales* at his council meetings; and on January 1 it is usual for the outgoing *gobernador* to hand over what

remains of his stock of *ťowàsa* to his successor, for use at his first council, for which he may well be unprepared.

The mode of smoking at Santa Clara, at the council, or in a private house, is as follows: The host (or presiding official) lays on the floor one or more bundles of clean smooth corn-husks, *k'ųŋk'owa*, selected and saved in October, together with the bags, *samų* (*sa*, tobacco; *mų*, bag), of *sa* and *p̂ịmp'uñæ̨'ᵉ*. Each person when ready to smoke takes a husk from the bundle, creases it with fingers and teeth, and cuts it to a convenient size with his thumb-nail, unless the host has already trimmed a number of husks with scissors to save trouble. Taking a pinch of *sa* and a leaf or two of *p̂ịmp'uñæ̨'ᵉ* from the bags, the smoker rolls and bruises them with his right thumb and finger in the palm of his left hand. He dampens the slip of corn-husk in his mouth and draws it between his teeth to make it flexible, lays the pinch of mixed tobacco in the middle of the slip, rolls it into a cigarette about 2½ inches long, licks the outer edge and pinches the cigarette together, folds up and pinches the ends, and looks round for a light. At this point one of the younger men of the household, or the *fiscal* if it be a meeting of the governor's council, ought to present the glowing end of the *p'ap'e*, 'fire-stick' (*p'a*, fire; *p'e*, stick), a slender rod about 3 feet long which he has allowed to smolder in the fireplace; but it is now quite usual to provide commercial matches, *p'ap'e* or *p'op'oɱù* (<Span. *fósforo*). The smoker lights the cigarette and smokes it, coughing and spitting freely; the small quantity of tobacco is soon consumed, and the rest of the cigarette is thrown on the floor.[1] Very rarely, on these occasions, a smoker may be observed to blow the first six puffs of smoke in the six ritual directions. At "general councils" attended by delegates from other pueblos the *gobernador* and *fiscales* of the entertaining pueblo pass round the tobacco and the fire-stick to the guests.

At religious ceremonies tobacco is smoked in pipes, *saǩu*.

The native tobacco seems to be irritating to the throat and eyes, and few men at Santa Clara smoke it for pleasure. Three or four cigarettes at the most are smoked by each person at a meeting, and the smoker complains of the effects next day. Commercial tobacco is more freely used, but most men profess not to smoke by daylight, except after a journey.

Until lately boys were forbidden to smoke "until they had killed deer, buffalo, jack-rabbit, and coyote," and if they transgressed they were thrown into the river. Unmarried men were not allowed to smoke in the presence of their elders. Quite recently the *'ojike* (winter cacique) of San Juan called a council because three young boys had been found smoking commercial tobacco; the culprits were publicly

[1] In a folk-tale heard at Santa Clara the procedure of an other-world council is thus described: "They were smoking and spitting, and the corn-husk was piled a foot deep on the floor."

reproved, and a dance of all the children in the pueblo was ordered in expiation of the scandal.

The Tewa say that the people of the *Tema'ǫŋwi*, the down-river (Keres) pueblos (*Tema*, Keres; *'ǫŋwi*, pueblo), smoke much more than they themselves do. It is rare for Tewa women to smoke.

The tobacco, *sa*, smoked at Hano differs slightly in flavor from the New Mexican *sa*.[1] It is called *îowàsa* and *p̂o'ǫsa* (see above), to distinguish it from commercial tobacco. It is smoked in pipes, *saǩu*, some of native and others of commercial make, and in corn-husk cigarettes. Dresses and ornaments prepared for dances, prayer-feathers, feather "roads," and many other ritual objects are smoked over with *îowàsa* before they are used. During ceremonies and rehearsals the *tųnjowa* (temporary or permanent religious officers) smoke, using a tobacco-bag, *samų*, and pipes provided by the *tųnjoŋ* who is in charge at the time. All requests and proposals made to a *tųnjoŋ* should be prefaced by giving him tobacco and "making him smoke."

Tobacco is presented to the men in the estufa with the words, *sęnnæm ƀiŋk'e; 'oƀip'iwemi, 'imo, 'ikwæn̂o*, 'men, set it down; you will smoke, it will rain very much' (*sęnnæŋ*, men; *ƀiŋ*, ye 3+ —it; *k'e*, to set down; *'oƀi*, ye 3 —yourselves; *p'iwe*, smoke; *mi*, future postfix; *'imo*, very much; *'i*, 3d pers. sing. reflexive; *kwæ*, rain; *îo*, future postfix).

When men pass the pipe to each other on ritual occasions, they exchange kinship terms. Thus, a man fills and lights the pipe and hands it to another, saying, *nąƀitaɬa*, 'my father' (*nąˇ*, I; *ƀi*, possessive; *taɬa*, father); and he replies *nąƀi'e*, 'my child' (*nąˇ*, I; *ƀi*, possessive; *'e*, child).

The Tobacco clan, *Saîowa*, is one of the three leading clans at Hano—the other two being the Bear clan, *Kêîowà*, and the Corn clan, *K'ųlųn, îowa*. The chiefs, *tųnjowa*, of these clans are also chiefs of the whole village. In ceremonies which concern the village the *saîowatųnjoŋ* brings tobacco, while the Bear clan and Corn clan chiefs bring medicine and corn-meal. When a party of *kachina* visit the *tųnjonte'e*, 'chiefs' estufa,' the *saîowatųnjoŋ* smokes on them.

The smoking of *îowàsa* is connected with the 'thought' or 'intention' (*piŋąŋ, 'ąnkjawo*) of a *tųnjon*. The late chief of the Hopi Corn clan at Moenkapi, who was also the village chief, *kikmųŋwi*, was a woman; she smoked much, hence, unlike other women, she was credited with *piŋąŋ* by the Hano men.

The older men smoke *îowàsa* for pleasure or from motives of economy, while the younger men smoke commercial tobacco in cigarettes to excess, both in the estufa and at home. A certain religious impor-

[1] Owing to the season only dried and broken specimens could be obtained. "The Hopi gather two species of tobacco, *Nicotiana trigonophylla* Duval and *N. attenuata* Torr." They also fetch wild tobacco from the Little Colorado. (Hough, The Hopi and their Plant Environment, *Amer. Anthr.*, x, 1897, p. 38.)

tance attaches even to the smoking of commercial tobacco, and for this reason the members of the neighboring Christian settlement refuse it—"we do not pray that way now."

Authorized messengers sent from one Tewa pueblo to another are provided with tobacco, which they offer to the persons who receive them. The Tewa of Hano accept such gifts of tobacco only after the most careful scrutiny of the messenger's credentials and "intention"; he must first smoke his own tobacco, then submit to a strict examination; and lastly, if his answers give satisfaction, his tobacco is accepted and smoked. To decline the tobacco of an envoy, after questioning him, implies doubt or rejection of his credentials, or entire disapproval of the object of his visit; to take his tobacco with the left hand shows an intention to refuse his request or proposal. On the last occasion, it is said, when tobacco was sent from the New Mexican Tewa to Hano it was transmitted by way of Zuñi, and an epidemic of smallpox is said to have followed. Indian tobacco introduced by a person who is not an authorized messenger from another pueblo is viewed with the gravest suspicion. At Santa Clara, on the contrary, there is no such feeling, and both officials and private persons accept "Hopi" tobacco with pleasure.

Medicinal Uses of Tobacco

At San Ildefonso tobacco leaves are placed on, or in, a tooth to cure toothache. At Santa Clara tobacco is taken as snuff to cure a discharge from the nose. To cure a cough, tobacco, oil, and soot are placed in the hollows of the patient's neck, and a cross of tobacco is made on the chest. Tobacco mixed with *kojaje* (Gutierrezia longifolia) and *'ą̈ntamisa* (?Artemisia species) is given as snuff to women in labor.

Tobacco Clans

Hodge[1] gives as Tobacco clans at various pueblos: Nambe, *Sä-tdóa;* Hano, *Sà-towa;* Sia, *Hámi-hano;* San Felipe, *Háami-háno;* Zuñi, *A'na-kwe.*

The Tobacco clan, *Saîowa*, of Hano (see above), is classed with the Hopi Tobacco and Rabbit clans, and therefore disposes of such personal names as—

sa tsejį, 'yellow tobacco.' F.
sajo, 'large tobacco.' M.
sa'ip'a, 'tobacco rolled up.' M.
natu, Navaho name for tobacco. M.
'u'uƀasęy, Havasupai name for tobacco + *sęy*, 'man.' M.
tųnjoy'a'ajų, 'chief girl.' F.
sęnno, 'old man.' M.
p̂asenno, 'rough old man.' M.

[1] *Amer. Anthr.*, IX, p. 352, 1896.

pobinele, 'flower alone.' M.
p'otsąy, 'new hair.' F.
'oku, 'fluff.' F.
'okutsæ, 'white fluff.' F.
'ijæ, 'smoke.' F
satele, 'fond of tobacco.' M.
pukwijo, 'rabbit old lady.' F.
kwąy, 'jackrabbit.' F.
'ojep'ęy, 'black ears.' M.
tuluy, 'mixed-colored.' F.

See also *sap'iy* (p. 47), *tusa* (p. 74), *'ojop'e* (p. 54), and *p'imp'uñæ* (p. 72).

INTRODUCED FOOD-PLANTS

Introduced Food-plants Cultivated by the Tewa[1]

Tątą (perhaps a corruption of *tąnta*, seed grass <*tąy*, seed; *ta*, grass).

Wheat. New Mexican Spanish *trigo*.

Wheat seed is called *tątątąy*, 'wheat seed' (*tątąy*, wheat; *tąy*, seed).

Cushing gives as the Zuñi name for "wheat food" *k'hia'ltâwe*.[2]

When first introduced into the Tewa country, wheat was no doubt classed in Indian speech as a particularly well-seeded grass. Oñate's colonists raised it under irrigation at San Gabriel before the year 1601. In the revolt of August, 1680, against Spanish government and civilization the Tewa are said to have burned their crops of wheat, along with swine, poultry, and church furniture. At the present day wheat is highly valued, and is ritually mentioned along with the aboriginal foodstuffs; it is even introduced into stories which purport to describe pre-Spanish events, the Indians not being sensitive to anachronisms of this kind. The proportion of wheat to corn under cultivation is now very large, as appears by the following table:

Estimated grain crops of the Pueblos under the Santa Fe superintendency[3]

	Wheat	Maize
1901	31,038 bushels	30,710 bushels
1903	20,194 bushels	21,854 bushels
1904	18,521 bushels	16,650 bushels

[1] From letters sent from San Gabriel to Mexico shortly before 1601, Torquemada (*Monarchia Indiana*, lib. v, cap. xxxx) names several imported vegetables successfully raised under irrigation from the Chama River: "cabbages, onions, lettuces, radishes, and other small garden-stuff . . . many good melons and sandias . . . Spanish wheat, maize, and Mexican chile all do well." Benavides (*Memorial*), describing New Mexico in general, but possibly drawing his information from the Santa Fe district—he was resident at Santa Clara in 1629—gives the following list of imported and native vegetables: "maize, wheat, beans (frijoles), lentils, chick-peas, beans (habas), peas, squashes, watermelons (sandias), melons, cucumbers; all kinds of garden-stuff; cabbages, lettuces, carrots, carpos, garlic, onions, tunas, pitahayas, excellent plums, apricots, peaches, nuts, acorns, mulberries, and many others."

[2] F. H. Cushing, Zuñi Breadstuff, *The Millstone*, IX, 12, Dec., 1884, p. 223.

[3] *Reports of the U. S. Commissioner of Indian Affairs*, 1901, p. 716, 1902; 1903, p. 536; 1904, p. 622, 1905. The last-named year was a very dry season.

The Rio Grande Tewa raise wheat by means of irrigation, preparing the ground by plowing. When American iron plows first began to supersede wooden plows of Spanish pattern, there were only one or two such implements in the pueblo of Santa Clara; these were communal property, having been given by the Indian agent, and were used by all the men in turn. (Similarly, some iron tools—scythes and hoes—at San Juan Pueblo are kept in the governor's storehouse as communal property.) The time for sowing wheat was formerly fixed and proclaimed by the *oficiales*, but after a series of disputes which began about 70 years ago, liberty of private action in this respect was established, at least in the pueblo of Santa Clara. As might be expected, the sowing of this Spanish food plant is accompanied by Christian rites. A small cross, *p'eywiy* (*p'e*, stick; *ywiy*, to stand upright), made of two twigs, with sprigs of piñon and juniper cedar tied to it with strips of yucca, is carried to the church at Santa Cruz to be blessed by the priest. After wheat sowing, this cross is stuck in the field to benefit the crop, much as the Tewa of Hano set up prayer-sticks and feathers in their maize fields. When the wheat has been harvested the cross is brought home and put away in the house. If a young boy should die, this cross would be laid on his breast.

The Tewa threshing floors, like those of the New Mexican Spaniards, are circular areas of level ground about 30 feet across, plastered with adobe, situated on the outskirts of the villages, generally on high ground near a steep declivity, where a breeze will assist the work of winnowing. Each *'eta* (<Spanish *era*) may belong to five or six men, relatives or connections by marriage, who have made it by their joint labor. In September the wheat is piled on the *'eta*, a temporary fence of stakes and ropes (formerly of rawhide straps) is set up, and a number of horses are driven round and round in the inclosure until all the grain has been trodden out. Unbroken horses and mares with their foals are driven in from the hills for this work. The men spread the wheat with pitchforks for the horses to trample, and from time to time fork the straw out of the *'eta*. When the threshing is done, the men throw the trash to the wind so it may blow away, and the women and children sweep the grain into baskets and winnow it by tossing against the wind, or sift it through trays of roughly perforated tin; after this they carry it home in sacks and store it in built-up bins of wood or of plastered adobe. An American threshing machine was used in 1912 for the first time at the pueblo of Santa Clara.

From this point the care of the wheat belongs to the women, who sort and pick it clean by hand and wash it in the creek or the acequia. It is ground in water mills, some of which belong to "Mexicans"

and a few to Indians, and the American steam mill at Española is also patronized.

The women make of their own wheat excellent though rather dense bread, *pąy* (<Spanish *pan*), raised with leaven, kneaded in the earthenware bread pan (*sæmbe*), and baked in the dome-shaped adobe oven, *pąnte* (*pąy*, raised bread; *te*, house). This bread keeps fresh and good for a week or more), but, as they are anxious to keep it moist, they usually wrap it in a cloth or put it into a covered pot when it is hot from the oven, treatment which is apt to sour it. For dances, weddings, and other festivities the loaves of bread are ornamented with raised patterns, called *poth*, 'flowers.' For the use of travelers bread is baked in a hot oven until it is thoroughly dry and crisp. Within living memory this hard-baked bread was an article of trade with the Comanche, who visited Santa Clara to barter fine whitened and painted buffalo hides for bread and corn-meal; the Santa Clara men also made occasional journeys to trade in the Comanche country, where a sack of hard-baked bread would buy a good pony.

Tortillas, called *paba* (? <Spanish *pan*), round flat cakes of wheat flour made with lard and, usually, baking powder, form the ordinary bread of the New Mexican Tewa household. They are baked on a flat stone, *ḇuwaku* (*ḇuwa*, corn-bread; *ku*, stone), propped on an iron trivet, or sometimes on an iron plate. These wheat tortillas have almost supplanted the corn-meal tortillas, *ḇuwakaa*, and commercial flour is fast superseding home-grown wheat in their making. "Children who have tasted white tortillas cry for them ever after, as a man longs for whisky."

Sweet cakes, made for weddings, are called *paba'e* (*paba*, bread; *'e*, diminutive).

Ḇuwak'o (Spanish *panocha*) is here made entirely of wheat. Moistened wheat is kept covered until it sprouts; the grains, after being washed, are dried thoroughly on a cloth spread in the sunshine; they are then ground on a metate. The meal is put into a jar (*sæmbe*) with water and allowed to stand for a day, until it bubbles like yeast. In the evening the mixture, after being stirred (? with the addition of unfermented flour), is put into the oven and baked all night. *Ḇuwak'o* is eaten at sunrise on Easter Day and St. Anthony's Day June (13).[1]

Kąpowæ̨nu (*kąp*, grease; *po*, water; *wæ̨nu*, drip) are very thin disks of dough, now always made of commercial flour and lard, fried in deep fat so that they puff up crisply. They are made for unexpected guests, and to give to the *kosa* (clowns) when they come begging from house to house.

Tą̆tą̆ 'ą̆gæ̨, 'wheat gruel' (*tą̆tą̆*, wheat; *'ą̆gæ̨*, gruel), is used as a remedy for stomach disorders and diarrhea.

[1] Information kindly supplied by Mr. Thomas S. Dozier.

At Hano wheat is not raised, but small quantities of the grain are obtained, probably from Moenkapi. To prepare wheat, the women wash it, bruise it with the grinding stones to loosen the "skin," dry it in the sun, and shake it well until the "skin" comes off; it is then boiled with meat. Commercial wheat flour is much used for raised bread, biscuit, *kǎp̂owæ̨nu*, etc.

Tǎtǎ p'o'i̯ŋ, 'hairy wheat' (*tǎtǎ*, wheat; *p'o*, hairy, hair).

Barley. New Mexican Span. *cebada.*

'Abenà (<Span. *avena*).

Oats. Oats and barley are threshed in the same manner as wheat. New Mexican Spanish *avena.*

Kañà (<Span. *caña*).

Cane, Sugar Cane. New Mexican Spanish *caña.*

Kañà ɖulsè (<Span. *caña dulce*).

Sweet Cane, Sugar Cane. New Mexican Spanish *caña dulce.*

The New Mexican Tewa first became acquainted with sugar in the form of cane sirup, introduced by the Spaniards, and therefore call it *'ǎp̂o*, a name which they originally applied to honey. Honey is now designated *p̂u̯ñu̯'ǎp̂o*, 'fly-sweetness water,' or *ywoɹombe'ǎp̂o*, 'bee-sweetness water, (*p'u̯ñu̯*, fly, insect; *'ǎp̂o*, sirup, sugar <*'ǎ*, sweetness, sweet, *p̂o*, water; *ywoɹombe*, bee). The white powdered sugar of American commerce is called *'ǎ'i' t͡sæ'i*,' 'sweet white' (*'ǎ*, sweetness, sweet; *t͡sæ*,' whiteness, white). The Navaho call it "sweet salt" or "nice salt."

Sirup, *'ǎp̂o* (*'ǎ*, sweetness; *p̂o*, water) was made at Santa Clara within living memory. The cane stalks were squeezed into a large wooden press, the juice running into a wooden trough (?) which had formerly served as a *canoa* on the Rio Grande. As it was necessary to boil the juice immediately after pressing, a large party of men, women, and children would assemble to do the work, keeping up the fires all night, with singing, drumming, and dancing.

Tu.

Bean. New Mexican Spanish *frijol.*

See (page 99).

Tu he'eniŋ, 'large bean' (*tu*, bean; *he'ey*, large).

Lima bean. New Mexican Spanish *lima.*

Tut͡sæɮe, 'white fruit bean' (*tu*, bean; *t͡sæ*, white; *ɮe*, round thing, roundish fruit).

Pea. New Mexican Spanish *arvejon.*

Si (*Allium cernuum*, wild onion).

Onion. New Mexican Spanish *cebolla.*

The name of the wild plant has been transferred to the introduced vegetable.

Onions, fried with meat or beans, or alone, are a favorite food.

To revive a person from a fainting fit, the Tewa put a piece of "strong" onion to his nostrils.

Tsiḍì (<Span. *chile*). Hano Tewa, *tsi̱ni*.

Pepper. New Mexican Spanish *chile*, *pimiento*.

In Tewa, as in English, both kinds of 'pepper' (Span. *chile* and *pimiento;* Ger. *Paprika* and *Pfeffer*) are called by a single name.

The Navaho "curse word" *tsindi*, 'wizard,' 'witch,' 'devil,' is known to some of the Tewa and sounds very similar to their *tsiḍì*, 'pepper.'

The chile pepper of the varieties which bear fruits that are eaten green is called in Tewa *tsiḍì tsą̆ywæ'iy*, 'green chile' (*tsiḍì*, pepper; *tsą̆ywæ*, blue, green), and in New Mexican Spanish *chile verde* or *chile de California*. The Tewa of Hano call commercial pepper *tsi̱ni tsą̆ywæ'i̱y*, 'blue chile,' because it is gray or bluish.

Chiles are strung on yucca slips and dried for winter use, ground to powder on a metate, and cooked with meat or eaten as sauce with tortillas.

A string of chiles is called *tsiḍì k'ą̆to* (*tsiḍì*, chile; *k'ą̆to*, string. Gatschet has commented on the excessive use of chile pepper by the Pueblo Indians.[1]

Be̱nu̱ndì, Hano Tewa *melone* (< Span. *melon*).

Muskmelon. New Mexican Spanish *melon*.

Fresh melons are much enjoyed and are given as presents.

Women prepare dried muskmelons, *be̱nu̱ndì t'u*, for winter use by shaving off the rind with a sharp knife, then cutting off one end of the melon and scraping out the seeds and liquid pulp. A cottonwood sapling has been prepared by cutting off the branches and twigs, leaving only short stumps. This tree is set up in the field, or on the roof of the house, or on a platform in the plaza, and the emptied melons are hung on the stumps to dry. Next day, if dry enough, each melon is torn by hand, spirally, into long strips, and the strips are hung on a branch or line. When they are dry enough, a number of strips are laid together, with their ends doubled up, and other strips are wound round them, making a stout bundle 10 or 12 inches long, which is compared to the queue of Pueblo Indian hairdressing. Pairs of such bundles, coupled with a rag or string, are hung up in the storeroom. In winter the women cut the dried melon fine, stew it and make it into pies; it has a sweet, fermented taste.

Są̆nḍia. Hano Tewa, *sannià* (<Span. *sandía*).

T'u̱wì'i̱y, 'spotted' (*t'u̱*, spotted).

Watermelon.[2] New Mexican Spanish *sandía*.

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[1] A. S. Gatschet, *Zwölf Sprachen aus dem Südwesten Nordamerikas*, Weimar, 1876, p. 44.

[2] At Taos watermelons are called *kwæ̱pą̆nă*, 'Mexican squash or pumpkin' (*kwæ̱*, 'Mexican'; *pą̆*, 'squash, pumpkin'=Tewa *po*). This name shows clearly that the watermelon was introduced by the Mexicans.

T'ɣwò'ìɣ is used especially when talking Tewa in the presence of Mexicans, as it is feared that they will understand *sɑ̨ɳɖìà*.

At Santa Clara watermelons are mentioned in ritual formulas as one of the principal crops. They are perhaps the favorite luxury of the people—given as presents, and produced on festive occasions and for honored guests, especially in winter. Watermelons and apples (perhaps as being typically Spanish fruits) are the appropriate refreshment when neighbors are invited for Christian prayers. At the Christian rites of the Day of the Dead (November 2), apples, and watermelons cut into ornamental patterns, form part of the offering in the churchyard.

Watermelons are gathered in September, just before corn harvest begins. They are preserved until late in the winter by hanging them from the rafters in a network of split yucca.

Introduced Food-Plants not Generally Cultivated by the Tewa

Pup̂i'ìɣ, 'red root' (*pu*, base, root; *p̂i*, red).
Beet. New Mexican Spanish *remolacha*, *betavel*.
A number of Tewa boys go to work in the beet fields in Colorado.

Pu t̂sɑ̨'ìɣ, 'white root' (*pu*, base, root; *t̂sɑ̨*, white).
Sugar beet. New Mexican Spanish *betavel de azucar*.
Turnip. New Mexican Spanish *nabo*.

Pu t̂sejì'ĩɣ, 'yellow root' (*pu*, root; *t̂se*, yellow).
Carrot. New Mexican Spanish *zanahoria*.

Pu seɢì'niɣ, 'slender root' (*pu*, root; *seɢiɣ*, slender, narrow).
Parsley. New Mexican Spanish *perejil*.

P'e'ñɑ̨ƀì t̂sɑ̨'ìɣ, 'white weed' (*p'e'ñɑ̨ƀì*, weed; *t̂sɑ̨*, white).
Parsnip. New Mexican Spanish *chirivía*, *zanahoria blanca*.

Beɹù (<Span. *berro*).
Water-cress. New Mexican Spanish *berro*.

Kolè (<Span. *col*).
Cabbage. New Mexican Spanish *col*.

Kolep'loɹ (<Span. *coliflor*).
Cauliflower. New Mexican Spanish *coliflor*, *col de flor* (*de* dialectically pronouced *e*).

Seleɹi (< Eng. celery or New Mexican Span. *celerí*).
'Apiù (<Span. *apio*).
Celery. New Mexican Spanish *apio*.

Ŋwap̂e, 'egg fruit' (*ŋwa*, egg; *p̂e*, fruit; imitating English eggplant?).
Eggplant. New Mexican Spanish *berengena*.

Letʃugù (<Span. *lechuga*).
Lettuce. New Mexican Spanish *lechuga.*

Motasù (<Span. *mostaza*).
Mustard. New Mexican Spanish *mostaza.*

Benɣndi'e, 'little muskmelon' (*benɣndì*, muskmelon <Span. *melon*; *'e*, diminutive).
Cucumber. New Mexican Spanish *pepino.*

Sægobe (*sægo* unexplained; *be*, roundish fruit), originally applied to a wild bulbous plant as yet unidentified.

Papù (<Span. *papa*), and
Nɑ̨mp'u, 'earth swelling' (*nɑ̨ɣ*, earth; *p'u*, swelling).
Potato. New Mexican Spanish *papa.*

Patelp'e'ñæbì, 'pie weed'. (<Span. *pastel*, pie; *p'e'ñæbì*, weed).
Rhubarb. New Mexican Spanish *planta de pastel*, *ruibarbo.*

Pu sæ'ɨɣ, 'root hot to the taste like pepper' (*pu*, root; *sæ*, peppery to the taste).
Radish. New Mexican Spanish *rábano.*

P'e'ñæbì tsɑ̨ywæ'ɨɣ, 'green weed' (*p'e'ñæbì*, weed; *tsɑ̨ywæ*, blue, green).
Spinach. New Mexican Spanish *espinaca.*

Tomatè (<New Mexican Spanish *tomate*).
Tsigo'ot'e, originally *Physalis neomexicana*, q. v., page 59.
Tomato. New Mexican Spanish *tomate.*

Aspaɹagù (< Span. *esparrago*).
Asparagus. New Mexican Spanish *espárrago.*

'Qŋgù (< Span. *hongo*).
Mushroom. New Mexican Spanish *hongo.*

Introduced Forage Plant

'Alp'alp'à (< Span. *alfalfa*).
Alfalfa. New Mexican Spanish *alfalfa.*

Introduced Fruits[1]

Any kind of introduced fruit is called *be*, which probably has the original meaning 'round thing,' hence 'ball,' 'roundish fruit,' 'berry,' and is now in its uncompounded form especially applied to the apple, which is, next to the peach, the most common and the most important of the fruits introduced by the Spaniards into the Tewa country.

[1] See footnote, p. 107.

P'ɔ̂pe (*p'e*, stick, plant; *p̂e*, seed, fruit, crop) is used especially of small garden fruits and the berries of wild plants.

Dried fruit is designated regularly by adding the adjective or the noun *t̂a*, 'dry,' 'dryness.' Thus: *b̥e p'o'i̯'i t̂a'i̯'i*, 'dried peaches,' veg. 3+ plu. (*b̥e*, roundish fruit, apple; *p'o*, hairy, hair; *t̂a*, dry, dryness); or *b̥e p'o'i̯'i t̂a*, literally 'peaches dryness,' veg. 3+ plu. (*b̥e*, roundish fruit, apple; *p'o*, hairy, hair; *t̂a*, dry, dryness).

If the dried strips of melons, squashes, pumpkins, etc., are twisted into a roll, the roll is called, if, for instance, of muskmelon, *b̥enu̯nd̥ìt̂a'ob̥u*, 'roll of dried muskmelon' (*b̥enu̯nd̥ì*, muskmelon; *t̂a*, dry, dryness; *'ob̥u*, twisted roll of anything). If the dried muskmelon is not twisted into a roll, one would say simply, *b̥enu̯nd̥ì t̂a'i̯'i*, 'dried muskmelons,' veg. 3+ plu. (*b̥enu̯nd̥ì*, muskmelon; *t̂a*, dry, dryness).

Jam or sauce made of any kind of fruit is called *sæ̨*, a word which is also applied to stewed meat. Thus: *b̥esæ̨*, 'fruit sauce,' 'apple sauce' (*b̥e*, roundish fruit, apple; *sæ̨*, sauce, stew). Jelly is called *tʃelè* (< Eng. jelly) or *haléa* <Span. *jaléa*.

All names of introduced fruits are used of both the trees and the fruits without distinction. In this respect Tewa differs from Spanish. The Spanish names of fruits, not of fruit trees, are given below.

INTRODUCED FRUITS COMMONLY CULTIVATED BY THE TEWA[1]

B̥e, 'roundish fruit.' In Hano Tewa apple is never called *b̥e*.

Mansanà (< Span. *manzana*).

Apple. New Mexican Spanish *manzana*.

Apples are preserved for winter use by cutting them in rings and threading them on strips of yucca to dry. The *k̂osa* (clowns) sometimes wear these and other dried foods—chiles, sweet-corn ears—as necklaces. Apples and cakes are thrown into the air and trampled into the ground at the conclusion of some autumn dances. Choice apples are hung up by strings tied to the stalks and kept to be offered in the churchyard on November 2. Apples are considered an appropriate present from host to guest or from guest to hostess.

Many of the Tewa have small apple orchards, mostly of a small, thin-skinned yellow apple. In October and November the women buy apples from "Mexican" peddlers, paying for them in corn on the cob, a basket of corn for a basket of apples. Some of the Santa Clara

[1] The importance which these introduced fruits have gained in the Tewa economy is shown by the fact that one informant at Santa Clara substituted them for indigenous trees in a scheme of cardinal points, thus: "At the beginning there were no mountains; the earth was not yet hard; there were no trees, except only in the north an apple (*manzana b̥e*); and in the west apricots (*albaricoque, sæ̨qwɔ̂mb̥e* (?)); and in the south *b̥e ɬ̃icjɨ̨y* (?) and behind them plums (*ciruelas, p̂ib̥e*[s]), for which reason they are red; and in the east peaches (duraznos, *b̥e p'o'ɨ̨'i*)(?) . . . When the waters subsided, these trees dropped their fruits into the mud as seed for the world."

men used to take one or two donkey-loads of apples and trade them to the Apache.

Sąŋqwą̆mbe, 'St. John apple' (*sąŋ* < Span. *San*, Saint; *qwąŋ* < Span. *Juan*, John; *be*, roundish fruit, apple). The fruit is so called because it ripens by St. John's Day.

Said to mean a kind of apple which ripens early.

'Uƀà (< Span. *uva*).

Grape. New Mexican Spanish *uva*.

Raisin is called *'uƀàta'iŋ*, 'dry grape' (*'uƀà*, grape; *ta*, dry). New Mexican Spanish *pasa*.

Grapes are cultivated at San Ildefonso.

Torquemada's informant[1] writes of a wild grape in New Mexico, probably in the Tewa country: "y con tener mucha Uba, no se aprovechan de ella para bebida, sino para comer de ella, y haçer Pan, que comen." Possibly he had seen *'aƀeƀuvà*, 'choke-cherry bread,' or something else of that kind.

Introduced Fruits not Generally Cultivated by the Tewa

Be 'ojohe'iŋ, 'sour apple' (*be*, roundish fruit, apple; *'ojohe*, sour).
Quince. New Mexican Spanish *membrilla*.

Setesà (< Span. *cereza*).
Cherry. New Mexican Spanish *cereza*.

'Oƀukwąŋ. (? Name of some wild plant.)
Currant. New Mexican Spanish *grosella*.

Nataŋhà (< Span. *naranja*).
Orange. New Mexican Spanish *naranja*.

Limoŋ (< Span. *limon*).
Lemon. New Mexican Spanish *limon*.

Peià, or *peiàbe* (*peià* < Span. *pera*; *be*, roundish fruit, apple).
Pear. New Mexican Spanish *pera*.

P'aîpe, 'yucca fruit' (*p'a*, Yucca baccata; *îpe*, fruit).
Date. New Mexican Spanish *datil*. (See page 50.)

'Igù (< Span. *higo*).
Fig. New Mexican Spanish *higo*.

Banànà (< Span. *banana*).
Banana. New Mexican Spanish *banana*.

'Asetunà (< Span. *aceituna*).
'Oliƀa (< Span. *oliva*).
Olive. New Mexican Spanish *aceituna*, *oliva*.

[1] *Monarchia Indiana*, lib. v, cap. xxxx, p. 680.

Pu̇p̂ap̂e, 'cracked buttocks fruit' (*pu̇*, bottom, buttocks, anus; *p̂a*, cracked, chapped; *p̂e*, fruit).
Strawberry.
Raspberry.
Loganberry.
Gooseberry.
Blackberry.

P'e̊'nį̇y, 'black,' is often added to *pu̇p̂ap̂e* when it means 'blackberry.'

Mo.ıà (<Span. *mora*).
Mulberry, blackberry. New Mexican Spanish *mora*.

Be p'o'į̇y, 'hairy fruit' (*be*, roundish fruit, apple; *p'o*, hairy, hair).
Hano Tewa, *ja̱y* (literally 'willow,' see p. 48).
Peach. New Mexican Spanish *durazno*.

Many of the Tewa own peach trees. On the death of the man who planted the orchard, the trees are divided among his children.

For winter use, peaches are split, stoned, and dried in the sun, either on planks in the orchard or on the roof-top. The dried fruit is tied in a cloth and hung up. When required, the peaches are washed and stewed; they are also eaten dry as a dainty.

Be p̂i'į̇y, 'red fruit' (*be*, roundish fruit, apple; *p̂i*, red). Perhaps also called *be ŝeji'į̇y*, 'yellow fruit,' at Santa Clara.
Apricot. New Mexican Spanish *albaricoque*.

Apricots are eaten raw and are also dried for winter use.

P̂ibe (*p̂i*, red, redness; *be*, roundish fruit, apple).
Plum, Prune, any color. New Mexican Spanish *ciruela*.

A wild plum, or sloe, is dried for winter use.

NUTS

Piñon nuts and all other kinds of nuts are called *îo*. The one exception is the coconut; see below.

The kernels of nuts are called *îotu*, 'nut kernel' (*îo*, piñon, nut; *tu*, kernel).

Indigenous Nuts

T̂o, 'piñon nut,' 'nut.'
T̂ōîo, 'piñon nut' (*îō*, piñon tree; *îo*, piñon nut, nut).
Piñon nut. New Mexican Spanish *piñon*. (See page 41.)
Kǫ̊'ᵊnîo, 'buffalo nut' (*kǫ̊'ᵊnį*, buffalo; *îo*, nut).
T̂o, 'nut.'
Walnut. New Mexican Spanish *nogal*.

Wild walnuts used to be gathered by the Tewa when they hunted buffalo in the Arkansas River valley. Walnuts are still called *kǫ'ᵊnîo*, but more frequently merely *îo*.

IMPORTED NUTS

Îo, 'nut.'

'Almendȧ̀ (<Span. *almendra*).

Almond. New Mexican Spanish *almendra*.

Almonds are usually called *îo*, 'nuts.'

Kokò (<Span. *coco*).

Coconut. New Mexican Spanish *coco*.

Îo, 'nut.'

Mexikanùîo, 'American nut' (*mexikanù*, American < Span. *Americano; îo*, piñon nut, nut).

Kakàwatè (<Span. *cacahuate*).

Peanut. New Mexican Spanish *cacahuate*.

Peanuts are usually called simply *îo*, 'nuts.' Sometimes they are called *mexikanùîo*, 'American nuts' (*mexikanù*, American < Span. *Americano; îo*, piñon nut, nut). The Jemez regularly call peanuts *beliganùîâʃ*, 'American piñon nuts' (*beliganù*, American < Span. *Americano; îâʃ*, piñon nut, nut). The Franciscan Fathers report that the Navaho call peanuts "American piñon nuts."[1]

In 1911 a man at Santa Clara raised peanuts, to the surprise of his neighbors.

FOREIGN PLANTS KNOWN ONLY AS COMMERCIAL PRODUCTS

Kap'e (<Span. *café*).

Îop'ɐ̨ŋ, "black water' (*îo*, water; *p'ɐ̨ŋ*, black, blackness).

Coffee. New Mexican Spanish *café*.

Coffee is drunk with every meal by all wno can afford it; tea is seldom used except in sickness; but at Hano tea is drunk almost as much as coffee.

Te (<Span. *te*).

Tea. New Mexican Spanish *te*.

'Ulè (<Span. *hule*).

Tæ̨'i''ⁱ, 'stretchy stuff' (*tæ̨*, stretchy, to stretch).

Rubber. New Mexican Spanish *hule*.

Rubber tree would be called *'ulè*, *'ulèp'e*, 'rubber plant' (*'ulè*, rubber, <Span. *hule*; *p'e*, stick, plant), or *tæ̨'i''ⁱ p'e*, 'stretchy stuff plant (*tæ̨'i''ⁱ*, stretchy stuff; *p'e*, stick, plant).

[1] The Franciscan Fathers, *An Ethnologic Dictionary of the Navaho Language*, St. Michaels, Arizona, 1910, p. 193.

In the winter of 1910 rubber catapults were in use among the boys of Santa Clara, but in 1912 bows and arrows had replaced them.

For commercial sugar see page 110.

Commercial cotton goods, such as calico or sheeting, are not classed as *sek'æŋ*, 'cotton,' but as *îsæ'i̯ⁱ*, 'white,' or *'a îsæ'i̯ŋ*, 'white clothing' (*'a*, clothing).

The vegetal origin of many American drugs is not generally recognized.

ARCHAEOLOGICAL MAP
JEMEZ PLATEAU
NEW MEXICO

FOREST SERVICE U.S. DEPT. OF AGRICULTURE
1909

LEGEND

- Inhabited Pueblo
- Important Pueblo Ruin
- Minor Pueblo Ruin
- Cliff Dwellings
- Shrines
- Game Pit
- Forest Reserve Boundary
- Land Grant Boundary

SCALE

1:125000

0 5 10 MILES

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