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NAVAJO INDIAN MEDICAL ETHNOBOTANY

By

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1. Wooton and Standley, 1915.

LITERATURE

There are scattered references to the use of plants in many of the papers on the Navajo*² but the only considerable lists of Navajo names for plants, together with species identifications, are in a paper by Matthews and in the works of the Franciscan Fathers.³ Matthews gave 112 Navajo names (ninety-two of which we have confirmed), with 104 specific and two additional generic identifications. The Franciscan Fathers gave about 387 Navajo names. Of these about 244 were identified to species, forty-five were relegated to genera, and seventeen to families only, twenty-nine were for introduced domesticated plants, and fifty-two were unidentified. Where an identification was made, only a single species is given for each Navajo name. We now know that, "... there are several sub-ethnic units represented in the Navajo area"⁴ so that local and individual variations in naming plants are to be expected. Moreover, there is individual variation in the use of the several types of names and variation in the assignment of botanical species to them (*v.i.*). Strict adherence to the previously published lists, therefore, may lead to erroneous conclusions.

MATERIAL AND METHODS

The material for this analysis consisted of over 1,200 specimens of plants, belonging to eighty families, 286 genera, and 515 species. Each specimen was named and its medical uses explained by from one to four informants.⁵ Only plants used in medicine were collected since others have pub-

*In accordance with the established policy of the University of New Mexico Press, the author has consented to adopt the Spanish spelling of Navajo, rather than his preferred form, *Navaho*.

2. See Kluckhohn and Spencer, 1940, p. 26.

3. Matthews, 1886; Franciscan Fathers, 1910, 1912.

4. Hill, 1938, p. 3.

5. Over seven hundred specimens were discussed by two or three informants other than the ones who had collected them. This, together with the data for duplicate species, gave ample cross checks.

lished lists of plants used for food,⁶ dyes,⁷ or other economic purposes.⁸ Most of the field material was obtained by Wyman during the months of June, July, and August of 1933, 1934, 1935, 1937, and 1938, from informants in the Pinedale-Coolidge-Smith Lake, New Mexico, region. We were kindly allowed to use data and 167 specimens (comprising 128 species) obtained by Dr. Clyde Kluckhohn and his co-workers, Mr. Harry Tschopik, Jr., and Miss Flora L. Bailey, from informants in the Ramah-Atarque, New Mexico, area.

Except for fifty-one specimens from the vicinity of Chin Lee, in the east central part of Apache County, northeastern Arizona, the plants were collected in the southeastern part of the Eastern Navajo Jurisdiction and adjacent country, which lies along the southern border of McKinley County, the northern border of Valencia County, and eastward to the western part of Bernalillo County, New Mexico. This country is one of considerable physical variability, lying at an average of seven thousand feet above sea level.⁹ On the whole, it is semi-arid desert or xerophytic forest (zones of sagebrush and greasewood or pinyon and juniper),¹⁰ but the Navajos often go to the coniferous forests of the mountains (zones of yellow pine or Engelmann spruce), along the streams of the mountain valleys, or to lower altitudes (zone of cottonwood, cactus, and yucca) to get plants.

Data were obtained by going into the field accompanied by an informant and an interpreter (if necessary), collecting the plants designated by the informant, and recording the names and uses of each specimen, usually at the end of each day's work. The Navajo often travel long distances on horseback to obtain certain plants that grow only in limited localities. One gets the impression that the curative value of a plant, and certainly its monetary value, are enhanced by

6. Castetter, 1935; Yanovsky, 1936; Bailey, 1940.

7. Amsden, 1934; Reichard, 1936.

8. Mr. Harry Tschopik, Jr., has monographs on Navajo pottery and basketry in preparation, and Dr. Paul Vestal is conducting a study of the economic ethnobotany of the Ramah-Atarque area.

9. See Gregory, 1916; Hill, 1938, pp. 11-14.

10. For zones of vegetation see Gregory, 1916, pp. 72-73.

difficulty in collection. The Navajo appear to have good memories for the exact places in which to find certain species, and will often lead one to an isolated station many miles from their homes. They also have a good sense of the type of locality in which to look for certain species, showing that they recognize to some extent the relations between species and habitat.¹¹

Plants for medicine may be gathered in any place, but certain precautions must be taken in collecting them. A plant of the desired species is located and a song is sung over it. Then corn pollen is placed upon it in ceremonial order (see under *life medicine*) or jewels (turquoise, shell, jet) are "given" to it. Finally, a prayer is said to it and then the collector leaves it, walking around it sunwise, and gathers plants of the same species in the vicinity. "If you do not give something you might hurt the plant or the earth." "Do not pick up an arrowhead while collecting plants, for it might have been given by a previous collector." "You must ask permission of the plant or the medicine will not work." "Plants are alive; you must give them a good talk." "It is dangerous to gather certain plants (e. g. *Rhus canadensis*, *var. trilobata*) unless you have had the ceremonial in which they are used, for you might get the disease associated with that ceremonial."

The Navajo seem to have some notion of conservation, for informants gathered only as much of any species as they needed at the time, even when they had traveled a long distance to find it. Only one instance of the transplantation of wild species was observed. An herbalist from near Smith Lake, New Mexico, had transplanted *Nicotiana attenuata* from the Zuñi Mountains to an old corral near his home.

11. No attempt was made to learn all their ideas about botany but the following notes are of interest. "Plants have different strengths to grow (like animals) so they grow to different heights. When a plant has grown as much as it can it starts the flowers. Then wind, air, and moisture make pollen and seeds. Seeds fall to the ground and bring more plants. The roots serve as an anchor (feet), give food to the plant, and suck up moisture from the earth (rain). The leaves furnish food for the plant. They change color in the fall when they get ripe. Frost causes them to fall. Pine leaves do not fall because the pitch keeps the moisture in. The bark retains moisture. Thorns are protective."

Sixteen informants from the Pinedale-Coolidge-Smith Lake, New Mexico, region and one singer from Chin Lee, Arizona, were employed. Among these were eight singers, three herbalists, two curers, one diagnostician, and three of the laity (one a woman) who knew about plants because there were singers or herbalists in their families.¹² Except for the one woman, all were adult males. One of the singers, one of the lay informants, and one other young man (an apprentice) served as interpreters for the others at different times. The data from the Ramah-Atarque area were obtained from twenty-eight informants, but chiefly from six or seven of these.

The botanical knowledge of informants is variable. In general, herbalists know the largest number of plants (sometimes over three hundred species) while singers usually know the ones for the ceremonials they conduct and a few other common species (perhaps a hundred or so in all). The knowledge of others depends upon their interest or associations with practitioners.¹³

12. For definitions of terms for personnel see Kluckhohn and Wyman, 1940, pp. 13-18.

13. Iroquois plant concepts, collecting practices, native taxonomy, etc., show many extraordinary parallels with the Navajo. See Fenton, 1940.

NAVAJO CLASSIFICATION OF PLANTS

Our modern system of classification of organisms probably had its origin in the generalizations concerning plants made by the early herbalists, generalizations arising from the need to place in convenient groupings, plants of supposed medicinal value. The economic botany of present peoples who are not familiar with the Linnean system offers us similar, but living, examples of such first steps in the evolution of a natural classification. There is an extraordinary similarity between the names for supposedly allied plants in the works of the pre-Linnean herbalists, such as Gerarde's herbal of the sixteenth century, and many of the Navajo names for plants.

Matthews, in 1886, found that the Navajo "are not devoid of generalization among allied species" and that "in some cases this generalization agrees with our own,"¹⁴ and gave three or four examples. We have found the same; for, as one informant told us, "the Navajos are great categorists." The Navajo classify plants in at least three separate ways. When asked if plants are related in the same way that people are related, informants have replied, "Yes, first, plants are male and female. Another relation is that various groups are used for curing the same disease or for the same purpose, or are used in the same way. Still another is that they have similar characteristics, such as being prickly or sticky, and within these groups there are large, medium, and small or slender kinds." These three types of category are independent, except that when plants are named according to size the larger one is likely to be "male," while the smaller one is "female." They form, however, classifications within classifications, physical characteristics or "sex" being used to distinguish plants within a usage group. We shall

14. Matthews, 1886, pp. 767, 768.

call these three quasi-independent categories: *sex*, *Navajo family*, and *Navajo genus*.¹⁵

SEX

The conception of sex enters into nearly every field of Navajo ideology. There are male and female branches of many ceremonials, male and female items of ceremonial equipment, male and female rains or other natural phenomena. Likewise some or all plants (according to different informants) are male and female. The two are "almost alike but the leaves are a little bit different. None are exactly alike." The "male is bigger and the female is smaller." When plants that have leaves which are "alike" are named according to size, "the big one is usually male, the smallest one female." The Franciscan Fathers mention "male medicine" and "female medicine" and say that the designation is due to the use of these plants in male and female branches of Shooting Chants.¹⁶ These names are probably generalizations about sex rather than specific Navajo names for the botanical species given.

The Navajo differentiation does not coincide with biological sex. By coincidence the male and female of a pair are sometimes large and small species of a single genus, sometimes two superficially similar species in widely separated genera, and occasionally large and small specimens of a single species. The following examples will serve to illustrate this.

Male—*Medicago sativa*, female—*Medicago lupulina*; male—*Cirsium pulchellum* (large specimen), female—*Cirsium calcareum* (small specimen); male—*Penstemon strictus*, female—*Sisymbrium linearifolium*; Part I, Nos. 12 and 13.

A few of our informants paid considerable attention to the *sex* of plants, always designating the best known male

15. These terms, when used to refer to these Navajo categories, will appear in italics; when not italicized they refer to the orthodox scientific terminology.

16. Franciscan Fathers, 1912, vol. 2, p. 44.

and female plants, while the others seldom mentioned it unless asked.

NAVAJO FAMILIES

The Navajo think of plants as falling into large categories according to their use (purpose or method). They have names for these categories and if an informant cannot recall the specific name for a plant he will designate it by the group name, much as we might call a plant "hardwood," "evergreen," "rock garden plant," or in the case of medicinal herbs, "cathartic," etc. They regard the species in a category as being definitely related in some way, although the same species may sometimes belong to more than one category. In a few instances, these groups do contain a number of species from the same botanical family, although this is because they have similar morphological or pharmacological properties.

There appears to be no definite number of *Navajo families*, nor of species belonging to any one *family*, the number given by any one informant depending upon the extent of his botanical knowledge. Since there are probably as many *families* as there are well known uses, and since there are no fixed relations between *families* and classification by characteristics, no attempt was made to obtain a complete list of of *families*, nor to allocate the Navajo names in Part I to them.¹⁷

A *Navajo family* may be named for the ceremonial in which the constituent species are used; the etiological factor held responsible for the disease treated with the herbs; the disease or disease group itself (a disease is occasionally named for an etiological factor, see Part III, *rheumatism*); the supposed pharmacological effect of the herbs; the method of preparation for use; the method of administration. *Family* names may also be combinations, especially the names of ceremonials for which the constituent species are appropriate followed by the name of an etiological factor, a

17. Fifty-six *family* names were recorded, examples of which may be found in Part III, under the various uses. See also Kluckhohn and Wyman, 1940, pp. 48-57, for the "medicines" used in most ceremonials, the names of which are applied to groups of plants used in them.

pharmacological effect, a method of preparation, or a method of administration.

NAVAJO NAMES FOR PLANTS

Names for plants which are widely known and accepted by the Navajo consist of (1) those for single botanical species or small groups of botanically related or superficially similar plants (*Navajo species*), and (2) those used to designate a number of botanical species, no one of which (except occasionally *v. i.*) can be considered a *basic species*¹⁸ for the group (*Navajo form genera*).¹⁹ Collectively we shall call these (1 and 2) *stem* names.

Some *stem* names are never (or seldom) qualified to fit related plants. Others may be modified by additional qualifying terms to designate species which resemble or are allied to the species designated by the unmodified name (*Navajo varieties*).

A group composed of a *stem* name and its *varieties* we shall call a *Navajo genus*.²⁰ In each *genus* there are seldom more than three or four *varieties*, often only one or two which are widely known or recognized. An informant, however, may "make" additional *varieties* to suit his fancy (*individual varieties*). Informants vary in this respect, some using only the well-recognized terms, while others seem to delight in splitting the *genera* into *varieties*, sometimes never using the *stem* itself without qualifications (as do certain "white" botanists).²¹ Large and small specimens of one

18. A single or a limited number of botanical species, exclusive of other plants, to which a given Navajo name is usually applied.

19. Such names are not the same as *family* names, since they usually refer to physical characteristics rather than to uses. The distinction, however, is subtle, and sometimes difficult or impossible to make since, by usage, some *family* names have come to be used to designate a more limited group of species than the term *family* would imply.

20. It would be confusing to call the *stem* names *generic* names, since they do refer to definite botanical species. The situation is as if in our binomial system the generic name were used alone for the best known species of a genus, while binomial terms were used for all other members of the genus.

21. We have recorded 341 *stem* names and 245 *varieties*, but only 243 *stem* names and sixty-three *varieties* are given in Part I. *Individual varieties* (unconfirmed by other informants or by other authors—139) have been omitted. Likewise we have omitted 133 *stem* names given by single informants and unsupported by data from

species are often called "big" or "large" and "slender" or "small" *varieties*. The same applies to large and small species of one botanical genus, especially in a *form genus*. In a surprising number of instances, the *species* in a *Navajo genus* are actually members of the same botanical genus, or at least of the same family, although this is not always so.

Of the 243 *stem* names in Part I, forty-four are probably *form genera*. Botanical species which have no *specific* names but which resemble one another in certain respects, e. g. color (9), may be placed in *form genera*. It is peculiar that so many of the *stem* names referring to color are *form generic*. Other species which are basic for one or more *specific* names may also be included in *form genera* in which they fit well.²² For some species, this practice may be local or individual. Occasionally (twelve cases) a *form genus* may include one or two botanical species which may be considered basic for the group.

BASES OF NAVAJO PLANT NOMENCLATURE

The majority of Navajo names for plants are frankly descriptive. They may begin with the word ?aze?— medicine (33 of the 243 *stem* names in Part I) or č'il—plant (17). These two terms are often used interchangeably. According to informant A, the term ?aze? should be rendered "herb" when it is part of a plant name, while independently it has two meanings, "herbs in general" or "medicine." To avoid confusion we shall render it "medicine." Descriptive names refer to some physical characteristic of the plant or some part of it (seventy-eight *stem* names), e. g. color (23), shape (8), odor (7), size (6), taste (4), or some other char-

22. This, together with the facts that more than one botanical species may be *basic species* for the same Navajo name and that the same botanical species may be a *basic species* for several Navajo names, makes it obvious that data must be extensively cross-checked and based on a fair number of specimens to be reliable.

other sources (*unicates*). Of these, sixty-one may be established as names for *basic species* by future field work, but seventy-two seem to be purely descriptive, individual characterizations of doubtful validity. Navajo botanists, especially herbalists who are proud of their botanical knowledge, are not loath to manufacture names to fit a specimen when they cannot give an accepted name.

acteristic (sticky, sharp, etc., 30); to resemblance of the plant to some object, e. g. rattle, basket, hair, etc. (12); to its habit, e. g. winding, erect, etc., or its habitat with relation to rocks, water, or trees (20). In numerous names, the description is made more specific by including the name of the part concerned, e. g. flower, root, stem, leaves, bark, or seeds.²³

Many names link the plant with some animal (44), referring to it as the animal's food (15),²⁴ comparing it to some part of the animal or indicating some other association (29).

Some names refer to the use of the plant (32), e. g. its economic use (9), pharmacological effect (8), ceremonial use (9), or the disease for which it is a remedy (6).

The remaining names (57) might be considered strictly botanical. Some of these are descriptive, referring to physical characteristics, resemblances, use, etc., but through usage they have received definite botanical connotation, while the etymology of others is obscure.

Eighteen *stem* names which refer to uses or animals appear to be *family* names which by usage have come also to be *specific* (9) or *form generic* (9) names. They are used to designate one or a limited number of plants when used as a *stem* name, but a larger number when used as a *family name* (see footnote 19). An informant may use one of these in either sense.

23. There is a considerable range in the phonetic details of the qualifying adjectival terms (especially those referring to color). Thus for "gray" one hears: labáhí, labáhí, labáhí, labáhí, labáhí, libáhí, libáhí, libáhí, libáhí, libáhí, libáhí, libáhí, etc. These variations represent choice between nominalizing and relativizing enclitics, contraction and sandhi forms, and other products of free variation in accord with general laws of Navajo phonology. The precise incidence of such alternatives can be of great interest to the linguist but for our purposes they are irrelevant. We have, therefore, given in Part I only the form which our informants used most commonly in each case. But it is in the nature of the case that other investigators have (perfectly correctly) recorded slightly different forms for the same plant.

24. See Sapir, 1936.

SUMMARY

Sex, Navajo family, Navajo genus: the three quasi-independent categories for plants according to "sex," use, characteristics.

Navajo species: names for definite botanical species or small groups of closely related species (*basic species*).

Form genus: names for a variety of superficially similar similar plants (but more limited than *families*).

Stem names: *species* and *form genera* collectively.

Varieties: *stem* names qualified to fit related plants.

Navajo genus: a *stem* name together with its *varieties*.

Sex may apply to any plants, independently of other categories except that large and small *varieties* may be male and female.

Families are composed of definite *genera* or *species* only in so far as these may happen to correspond in use. *Family* names may be modified to make *family varieties*. *Family* names may occasionally be used as *stem* names to designate fewer species.

Since informants may name plants according to any one or a combination of these categories, botanical data gathered by different field workers without extensive cross-checking with independent informants may vary widely.

PART I

NAVAJO NAME LIST

The Navajo names for plants are arranged alphabetically and numbered consecutively. The numbers of *varieties* are italicized and indented, to distinguish them from those of *stem* names, so that the *genera* may be seen easily. Each name is followed by a free English rendering. In the case of *varieties* the *stem* name is not repeated but only the qualifying word or phrase which should follow the *stem* name, and its English rendering, are given (preceded by dashes which represent the position of the *stem* name). Following the name are the pertinent botanical species, their standing being indicated by the following conventions.

B.S. (*basic species*) The first botanical name given is the species to which the Navajo name is usually applied, at least in the areas studied. Other species so designated which are not distinguished by the Navajo (usually in the same botanical genus) follow, set off by commas. If more than one species are recognized by the Navajo as botanically different but are of equal standing as *basic species* for the name each is preceded by B. S. Species which are regularly designated by the name but are not quite so widely recognized as the *basic species* are preceded by B.S. 2 (*secondary basic species*). A number in parenthesis following a botanical name is the number of identifications of that species for the Navajo name made by independent informants.²⁵

25. Other species are often designated by a given name for the following reasons. A name may be applied to plants other than the *basic species*, which belong to the same *Navajo genus*, resemble it superficially, or are otherwise associated with it (generalization). This may happen when the specimen is of a species not usually collected by the informant and is not recognized as being botanically different, or when the informant may not be familiar with the name of a *variety* and may designate it by the *stem* name alone. Species other than the *basic species* are often confused with it because of some actual resemblance, or because the specimen is sterile, or otherwise hard to identify. Also even the best informants may make mistakes which cannot be condoned by confusing resemblances. In our field notes we have 247 such identifications, of which seventy-two are probable *generalizations*, 125 are *confusions*, and fifty are *mistakes*. This illustrates the danger in accepting data from a single informant as final.

FORM GEN. The *stem* name is that of a *form genus*.

M or F: A Navajo name which was listed by Matthews or the Franciscan Fathers²⁶ is indicated by M or F (or both) in parenthesis. When they did not give a botanical identification, this follows the rendering of the Navajo name. When they did, it follows the *basic species*, without comment if their identification agreed with our own, followed by G if they gave the same genus but no species identification, accompanied by their identifications if different from ours. In certain instances our estimate of the probable standing of identifications which were different from ours is indicated by genl., conf., or mist. (See footnote 25.)

NAVAJO SPECIES AND FORM GENERA

a

1. ?acá (?acáji)* č'il—eagle (Eagle Way) plant (F): B.S. *Lupinus Kingii* (5)
2. ?ac'ose·?aze·?—Plume Way medicine: B.S. *Lotus Wrightii* (2)
3. ?ajákó· halčín—groin odor (F): B.S. *Valeriana ovata* (3), *V. acutiloba*, *V. trachycarpa*
4. ?aliž be-yi·c'ól—urine spurter (diuretic): FORM GEN. *Hieracium Fendleri* (3), *Wulfenia plantaginea* (2), *Agoseris purpurea*, *Anemopsis californica*, *Linum australe*, *Plantago major* (M and F—*Draba montana*)
5. ?ahtáni·c'éhi· c'ó·s—slender cockle burr: B.S. *Glycyrrhiza lepidota* (M,F)
6. ?altí·? jik'áší—bow smoother: B.S. *Equisetum kansanum* (7), *E. laevigatum* (2) (F—*Juncus*—mist.)
7. - - - ?a·lc'ó·sígí—slender: B.S. *Equisetum arvense*
8. ?ana·lcó·i—yellow eyes: B. S. *Solanum elaeagnifolium* (10) (F)
9. ?at'á·? coh—big leaves. (F): B.S. *Pericome caudata* (3)
10. ?at'á·? c'ó·s—slender leaves (F): B.S. *Hedeoma nana* (5)
11. ?awé·? bi·lá·í yilbé·ž—placenta boiler (F): B.S. *Penstemon coloradoensis* (29), B.S. *Chrysothamnus depressus* (31)
12. - - - ?a·lc'ó·sígí—slender, or ba?á·dí—female: (for *Penstemon coloradoensis*)
13. - - - ñcá·gí—large, or bika?í—male: (for *Chrysothamnus depressus*)

26. Matthews, 1886; Franciscan Fathers, 1910; 1912.

* j represents approximately the sound that it does in English "judge." Because of an incomplete font it is used instead of the usual symbol.

A good example of two basic species of equal standing. 12 and 13, although individual names, may be used to distinguish them.

14. ?awé·c'á·l—baby mat (see 100): B.S. *Cowania Stansburiana* (4) (M, F), B.S. *Purshia tridentata* (3)
15. ?aya?ái—standing erect (F): B.S. *Artemisia dracunculoides* (3)
16. - - - coh—big: B.S. *A. dracunculoides* (large specimens) (15) or *A. campestris* (2)
17. - - - íbáhígí—gray: B.S. *Artemisia kansana* (13), *A. scopulorum*
18. ?ayání bič'il—bison plant: B.S. *Lepachys tagetes* (2), *L. columnaris*, var. *pulcherrima*, *Helianthus ciliaris*
19. ?ayání biliž ha·lčín—odor of bison urine (F), or - - - ?ažližgi: B.S. *Psoralea lanceolata* (5)
20. ?aze·? bi·jící—red core medicine (F): B.S. *Astragalus lonchocarpus* (6)
21. ?aze· (č'il) bilátah do·ł'izigi—blue flowers: FORM GEN. *Gilia multiflora*, *Gilia rigidula*, var. *acerosa*, *Parosela scoparia* (2), *Penstemon coloradoensis*, *P. oliganthus*, *Sidalcea neomexicana*, *Verbena bracteata* (3)
22. ?aze·? (č'il) bilátah ha·łcoi (łico·ígí)—yellow flowers: FORM GEN. *Actinea argentea*, *Agoseris purpurea*, *Aploppapus gracilis*, *Brassica arvensis*, *Chrysopsis villosa*, var. *canescens*, *Draba Helleriana*, *Dyssodia acerosa*, *Lepachys columnaris*, var. *pulcherrima*, *L. tagetes*, *Melilotus indica*, *Psilostrophe tagetina*, *Senecio Fendleri*, *S. filifolius*, *S. quaerens*, *Solidago trinervata*, *Taraxacum montanum*, *Zinnia grandiflora*
23. ?aze·? (č'il) bilátah ha·łgai (łiga·ígí)—white flowers: FORM GEN. *Gilia longiflora* (2), *G. pinnatifida*, *Lepidium montanum*, *Melampodium leucanthum* (2), *Oenothera albicaulis*, *Townsendia Fendleri* (2)
24. ?aze·? bilátah łiči·?ígí—red flowers: FORM GEN. *Gaura coccinea*, *Gilia Greeneana*, *Verbena ambrosiaefolia*
25. ?aze·? bit'a·? do·łyasí—serrate leaves: FORM GEN. *Hoffmannseggia densiflora*, *Potentilla Anserina*, *P. pennsylvanica*, *Sonchus asper*, *Tribulus terrestris*
26. ?aze·? bit'a·? ñt'e·łf—broad leaves: FORM GEN. *Berlandiera lyrata*, *Limonium limbatum*, *Plantago major*, *Verbascum Thapsus*, *Wulfenia plantaginea*
27. ?aze·? coh—big medicine: B.S. *Asclepias tuberosa* (2), *A. speciosa* (F—*Erysimum asperum*)
28. ?aze·? (č'il) c'ó·s (?a·łc'ó·sígí)—slender medicine: FORM GEN. *Asclepias galioides*, *Hybanthus verticillata*, *Melampodium leucanthum*, *Polygala alba*, *Potentilla monspeliensis*, *Pseudotsuga*

- mucronata, *Sisymbrium linearifolium*, *Trifolium subcaulescens* (F—*Vesicaria alpina*, *Aplopappus lanuginosus*)
29. ^ʔaze-^ʔ dit'i^ʔi—viscid medicine (F): FORM GEN. *Mentzelia* sp., *Oenothera caespitosa*, var. *marginata*, *Sphaeralcea Fendleri*
30. ^ʔaze-^ʔ do-ʔ'iš—blue medicine: B.S. *Ditaxis cyanophylla* (2): FORM GEN. *Helianthella Parryi*, *Lathyrus eucosmus*, *Parietaria pennsylvanica*, *Potentilla propinqua* (F—*Nasturtium obtusum*)
31. ^ʔaze-^ʔ hajini—black root medicine, or - - -c'ó's—slender: B.S. *Lithospermum angustifolium* (15) (M,F)
32. - - - coh—big: B.S. *Lithospermum multiflorum* (10) (M)
33. - - - łabá^ʔi—gray: B.S. *Cryptantha fulvocanescens* (5), *C. Jamesii*, var. *multicaulis* (5) (F—*Lithospermum multiflorum*—conf.)
34. ^ʔaze-^ʔ hak'ízi—twisted medicine: B.S. *Eriogonum Jamesii* (10) (F—*E. microthecum*)
35. ^ʔaze-^ʔ há-ł'izid—rotten medicine: *Eriogonum Jamesii*, *Potentilla pennsylvanica* (F—*Hymenopappus filifolius*)
- Since the roots of these plants are similar in appearance it is impossible to tell which is the basic species.
36. - - - coh—big: *Helianthella Parryi*
37. ^ʔaze-^ʔ hókáni—rounded medicine: B.S. *Cirsium calcareum* (8), *C. undulatum* (12), *C. ochrocentrum* (F), *C. pulchellum*, (F—*Potentilla gracilis*—mist.)
- The various species of *Cirsium* are not distinguished by the Navajo.
38. ^ʔaze-^ʔ (č'il) h^woší—spiny medicine: B.S. *Salsola Kali*, var. *tragus* (3): FORM GEN. *Ribes pinetorum* (2), *Astragalus Kentrophyta*, *Aplopappus spinulosus*, *Solanum triflorum* (F—*Bigelovia Vaseyi*)
39. ^ʔazé-^ʔ ʔí-ł^wo^ʔi—runs into the mouth: B.S. *Polypogon monspeliensis* (2), *Sitanion hystrix* (M and F—*Hordeum jubatum*)
40. ^ʔaze-^ʔ (č'il) łabá^ʔhí (łabá^ʔígí)—gray medicine: FORM GEN. *Amaranthus graecizans*, var. *pubescens*, *Antennaria aprica*, *Astragalus Kentrophyta*, *A. sonorae*, *Bahia absinthifolia*, var. *dealbata* (3), *Baileya multiradiata*, *Berlandiera lyrata*, *Chrysopsis villosa* (3), *Cladothryx lanuginosa*, *Corispermum hyssopifolium* *Erigeron divergens*, *Eriogonum racemosum*, *Erysimum asperum*, *Evolvulus pilosus*, *Franseria discolor*, *Gaillardia pinnatifida* (2), *Galium Fendleri* (2), *Gaura coccinea*, *Gilia multiflora*, *Hieracium Fendleri*, *Lotus Wrightii*, *Lupinus Kingii*, *Melampodium leucanthum*, *Oenothera caespitosa*, var. *marginata*, *Plantago argyrea*, *Potentilla Anserina*, *P. norvegica*, var. *hirsuta*, *Senecio Hartianus* (2), *S. Riddellii*, *Silene laciniata*, *Sisymbrium linearifolium*, *Whipplea utahensis* (F—*Arabis communis*—no species bearing this name has ever been described)

The form genus "gray medicine" includes many species having brownish or yellowish flowers or gray or silvery leaves.

41. ?aze-? lahdilt'êi—scattered or solitary medicine: B.S. *Erysimum asperum* (4) (M and F—*Arabis Holboellii*)
42. ?aze-? hičí-?ígí—red medicine: B.S. *Lithospermum angustifolium* (11)
The basic species of 31 and 42 are the same botanical species, being distinguished according to informants by the color of the roots. Two collections which were indistinguishable to a trained botanist were consistently named by three independent informants, although the criteria were not apparent to the botanist.
43. ?aze-? hícöi—yellow medicine: FORM GEN. *Actinea leptoclada*, var. *Ivesiana*, *Apocynum sibiricum*, var. *salignum*, *Astragalus tenellus*, *Lygodesmia juncea*. (F—*Oenothera grandiflora*)
44. ?aze-? liga-ígí—white medicine (F): FORM GEN. *Abronia Bigelovii* (2), *Amsonia hirtella*, *Asclepiodora decumbens*, *Hoffmannseggia Jamesii*, *Oenothera Hookeri*, *Oxybaphus linearis* (2), *Silene laciniata*, *Stellaria Jamesiana*
45. ?aze-? na-ne-sdzí—winding medicine: FORM GEN. *Arabis perennans*, *Astragalus Hosackiae*, *Astragalus tenellus* (2), *Cerastium longipedunculatum*, *Chara* sp., *Lathyrus graminifolius*, *Mirabilis oxybaphoides*, var. *glabrata*, *Oenothera coronopifolia*, *Oxybaphus linearis*, *Panicum obtusum* (2), *Polygonum aviculare*, *P. Douglasii*, *Parosela lanata*, *Ptiloria neomexicana*, *Sedum Wrightii*, *Vicia americana* (F—*Hosackia Wrightii*, - - - slender—*Lithospermum canescens*)
This form genus includes plants of prostrate, spreading habit.
46. ?aze-? ná?oltâ-di—unraveling medicine: B.S. *Townsendia exscapa* (4), *T. arizonica*, *T. Fendleri* (F—*T. serica*)
47. ?aze-? ñčj-?i—irritating medicine: B.S. *Verbena Wrightii* (F—*V. Aubletia*, *Dracocephalum parviflorum*), B.S. *Phacelia crenulata*, var. *ambigua* (M—*P. glandulosa*)
48. ?aze-? ñdo-te-ží—knotted medicine: B.S. *Monarda pectinata* (18), *M. punctata*, subsp. *occidentalis* (M—*M. fistulosa*, F—*M. punctata*), B.S.2 *Mentha arvensis*, var. *glabrata* (3)
49. - - - coh—big: B.S. *Monarda mollis*, var. *menthaefolia* (2)
50. - - - labá-?ígí—gray: B.S. *Marrubium vulgare* (6)
51. ?aze-? no-dó-zígí—striped medicine: B.S. *Parosela lanata* (3)
52. ?aze-? nómazí—globular medicine: B.S. *Peteria scoparia* (3)
53. ?aze-? ñł'íní—sticky medicine: B.S. *Sphaeralcea coccinea*, var. *elata* (3) (M,F), *S. digitata* (4), *S. Fendleri* (5) (M), *S. marginata* (4)

The first two species may be called "small" or "slender" and the last two "large," depending on the size of individual specimens.

54. ʔaze·ʔ n̄l'izí—hard medicine (also called ɛ'il bicin n̄l'izí—hard stem plant, ʔaze·ʔ cin—stick medicine): B.S. Hoffmansseggia Jamesii (3): FORM GEN. Eriogonum cernuum, E. Jamesii, E. microthecum, Gaura coccinea, var. glabrata, Melampodium leucanthum
55. ʔaze·ʔ sak'az—cold medicine: B.S. Gaura parviflora (4) (M, F)
56. ʔaze·ʔ tá'pí·cóhi—squash blossom medicine: FORM GEN. Astragalus sonorae, Baileya multiradiata, Draba Helleriana, Oenothera Hartwegii, O. Hookeri, Sisymbrium altissimum, Stanleya pinnatifida
57. ʔaze·ʔ l'ohí—grass medicine: B.S. Arenaria Fendleri (M and F—A. aculeata)

b

58. bicin hič'í—red stem: B.S. Berberis Fendleri (M included B. Fremontii and B. repens under "yellow stem")
59. bi·hi·l'ja·ʔ—deer's ears: B.S. Fraxera venosa (4) (M and F—F. speciosa), B.S. Wulfenia plantaginea (2), B.S. 2 Plantago major
60. bikécí·n dił'opí—woolly rootstock: B.S. Actinea leptoclada, var. Ivesiana, Hymenopappus gloriosus
61. biłha·zčí·n—wind odor: B.S. Brickellia grandiflora, var. petiolaris (7), B. californica, B. grandiflora, B.S. Eupatorium herbaceum (5) (M and F—E. occidentalis)
62. bis ndo·č'i·ʔ—red on adobe: B.S. Eriogonum fasciculatum (M, F), E. polycladon (2), E. Wrightii
63. - - - ʔa·łc'ózi'gí—slender: B.S. Eriogonum Wrightii (M—E. microthecum)
64. bit'áʔaslaaʔ—five leaves: Parthenocissus vitacea (3) (M), Rubus parviflorus, var. parvifolius (F—plant akin to stone parsley). This may be a form genus.
65. bí·yadi hič'í—red beneath (—halčí·): B.S. Penstemon trichander (8)
66. - - - ʔa·łc'ózi'gí—slender: B.S. Penstemon neomexicanus (5)

c

67. cáʔásziʔ—standing awl (botanical name for Yucca): B.S. Yucca baccata (3) (M and F—G)
68. - - - c'ó·z—slender: B.S. Yucca glauca (5) (M, F)
69. cá·yáʔn̄łč'í n̄cā·gí—large breeze through rock: Dyssodia papposa (M—Pectis angustifolia)
70. cé coh k'i·ʔ—big rock sumac: B. S. Philadelphus microphyllus (4) (F)
71. cédidé·h—rock tea, or - - - coh—big: B.S. Mirabilis multiflora (9) (F—G)
72. - - - c'ó·s—slender: Mirabilis oxybaphoides (2), Oxybaphus

melanotrichus, *Oxybaphus nyctagineus*, var. *pilosus*, *Selinocarpus diffusus*

This *variety* is apparently a form group for small members of the *Nyctaginaceae*.

73. ce²esda·zi.—heavy as stone: B.S. *Cercocarpus montanus* (6) (M,F)
74. cé²ésgízi.—twisted into stone: B.S. *Amelanchier Bakeri* (F—*A. alnifolia*)
75. cé²ézi·h—rock sage: B.S. *Artemisia Wrightii* (23), *A. albula* (F—*A. tridentata*—conf. or genl.)
76. cé gad—rock juniper: *Selaginella mutica*
77. cék'i·n²ałčizi.—scrapes on rock: B.S. *Clematis ligusticifolia*, B.S. *Pericome caudata* (2) (F—*Gratiola virginiana*)
78. céní·č'il—cliff plant: *Pellaea Suksdorfiana*
79. céní²ji.—rock center: B.S. *Adiantum Capillus-Veneris* (2)
80. cé·ya hatá·ł—sings under rock: *Radicula hispida*, *Stanleya pinnatifida* (F—*Brassica campestris*)
This is probably a *form genus* for crucifers.
81. ci·yáji č'il—hair plant, or ci·yájiłci—red hair: B.S. *Portulaca oleracea* (6) (F—*Cuscuta umbellata*)
82. císni'ádá·?—bee's food: B.S. *Cordylanthus Wrightii* (2), B.S. 2 *Orthocarpus purpureo-albus*
83. cił'iz—hard wood: B.S. *Fendlera rupicola* (M, F)
84. ci·yah nč'i·n—odorous under trees: B.S. *Chenopodium Botrys* (5)

c'

85. c'ah—sage (botanical name): B.S. *Artemisia Bigelovii* (3), *A. tridentata* (5) (F)
86. c'ahbj·h—deer sage(?): *Stanleya pinnatifida*, *Sisymbrium linearifolium* (F—a crucifer *Physaria*)
This is apparently a *genus* of crucifers.
87. c'o's be·yi·c'oł—vein spurter: FORM GEN. *Astragalus sonora*, *Cheilanthes Feei*, *Erigeron divergens*, *E. flagellaris*, *Gayophytum Nuttallii* (2), *Linum aristatum*, *L. puberulum*, *Potentilla monspeliensis*, *Tragia ramosa*
This is either a *form genus* or *family* including plants with slender stems and leaves, which are used for hemostatics (diłsidé ?aze·?—hemorrhage medicine).

č

88. čahaš dé·zi.—strung along: B.S. *Phellopterus bulbosus* (2) (F—*Cymopterus montanus*)
89. čéč'il—oak: B.S. *Quercus utahensis* (4), *Q. spp.* (3) (F—*Q. undulata*—genl., M—*Q. undulata*, var. *gambelii*)

90. - - - ñł'izí—hard: B.S. *Quercus undulata* (4) (M and F—var. *pungens*)
91. čěč'il ʔi·lt'a·ʔi—resembling: B.S. *Berberis repens* (6)
92. čič'in—sumac (also called k'i·ʔ): B.S. *Rhus canadensis*, var. *trilobata* (7) (M,F)
93. - - - dił'ogí—hairy: *Schmaltzia Bakeri*
94. čič'in ʔi·lt'a·ʔi—resembling sumac (F): B.S. *Geranium atropurpureum* (4), *G. lentum* (3), *G. Fremontii* (2), *G. furcatum*
95. čor'in ʔaze·ʔ—arthritis medicine: B.S. *Corydalis aurea* (5): FORM GEN. *Artemisia Absinthum* (or *A. franserioides*), *Artemisia scopulorum* (2), *Asclepias tuberosa*, *Bahia dissecta* (3), *Brickellia brachyphylla*, *Chrysopsis villosa*, *Descurainia obtusa*, *Franseria acanthicarpa*, *Gilia longiflora*, *Hymenopappus robustus*, *Sidalcea neomexicana*, *Solanum triflorum*, *Stanleyella Wrightii*, *Verbena ambrosiaefolia*
- This may not be a true *form genus* since its name is a *family* name which has become a *specific* name through usage. The species other than *Corydalis aurea* may have been included because of their *family* affiliations.

č'

96. č'al dá·ʔ—frog food: B.S. *Ranunculus micropetalus*, *Berula erecta* (M and F—*Salvia lanceolata*)
97. - - - ʔa·lc'ózi·gí—slender: B.S. *Salvia reflexa*
- This is more or less of a *form genus* for plants growing in or otherwise associated with water.
98. č'á·ʔo·ł—pinyon: B.S. *Pinus edulis* (F)
99. č'á·ʔo·ł bidac'a·ʔ—pinyon basket: *Arceuthobium cyanocarpum* (4)
100. č'ášč'il—name for small or short specimens of 14 B.S.
101. č'i·ʔdá·ʔ—bitter food: B.S. *Ceanothus Fendleri* (6) (F—G), B.S. 2 *Cercocarpus breviflorus* (2)
102. č'il ʔabe·ʔ—milk plant, or - - - c'ó·s—slender: B.S. *Euphorbia Fendleri* (14), *E. novomexicana* (2), *E. serpyllifolia* (6) (F and M—G, F—*Commandra pallida*); B.S. 2 *Asclepias galioides*, *A. macrotis*
103. - - - coh—big, or ñcã·gí—large: B.S. *Asclepias involucrata* (3), *A. tuberosa*, *Asclepiodora decumbens* (5), B.S. *Lactuca pulchella* (2), *L. scariola*, var. *integrata*
- This *genus* includes plants having a milky juice.
104. č'il ʔah·woší (doh·woší)—spiny plant: B.S. *Franseria acanthicarpa* (4), *F. tenuifolia* (F—*Bidens*, *Bigelovia Vaseyi*)
105. č'il be·c'ós hóló·ní·gí—having feathers: FORM GEN. *Agoseris purpurea*, *Asclepias galioides*, *Epilobium paniculatum* (M—E. *coloratum*)

- This may be a *form genus* or *Epilobium* may be the B.S.
106. č'il behéł'ó-l lánígí—plant with many roots: B.S. *Penstemon coloradoensis*, *P. neomexicanus*, *P. strictus*, *P. trichander* (2), *P. sp.*
This group has some of the characteristics of a *form genus*, since other species, e.g. *Plantago spp.*, may be included.
107. č'il behéł'ó-l hico'ígí—plant with yellow root: B.S. *Rumex crispus* (3), *R. mexicanus*, B.S. *Cordylanthus Wrightii* (3) (F—a gentian)
108. č'il be-žñle-ši—plastering plant: B.S. *Corispermum hyssopifolium* (2) (F—*Chenopodium*)
109. č'il bit'a-? ʔa-łc'ózígí—slender leaves: FORM GEN. *Alsine Jamesiana*, *Cerastium longipedunculatum*, *Erigeron nematophyllus*, *Lathyrus graminifolius*, *Sisymbrium altissimum*, *S. linearifolium* (2), *Viguiera multiflora*
110. č'il de-níní—sharp plant: B.S. *Salsola Kali* (F—var. *tragus*)
111. č'il díč'í-ígí—peppery plant: FORM GEN. *Gaura parviflora*, *Lupinus ingratus*, *Penstemon sp.*, *Sophora sericea*
112. č'il dije-hígí—gummy plant: FORM GEN. *Agoseris purpurea*, *Grindelia aphanactis* (2), *Nama hispidum*, var. *spathalatum*, *Radicula hispida*, *Senecio Hartianus*, *Taraxacum palustre*, var. *vulgare* (2), *Zinnia grandiflora*
113. č'il dilyési—dodge weed, or - - - yáží—little: B.S. *Gutierrezia Sarothrae* (27) (M,F), *G. diversifolia*, *G. sp.* (3)
114. - - - coh—big: B.S. *Gutierrezia tenuis* (11)
115. č'il dišohí—furry plant, or dišohgí č'il: FORM GEN. *Lupinus Kingii*, *Marrubium vulgare*, *Psilostrophe tagetina*, *Penstemon Whippleanus*
116. č'il hočí-ʔi—itch plant: B.S. *Dithyrea Wislizeni* (5)
117. č'i-ljó-ʔ—flexible plant: B.S. *Artemisia filifolia* (3) (M—*Sporobolus cuspidatus*, F—*Actinella Richardsonii*—genl.)
118. č'il koh'é-ʔ—plant coffee: B.S. *Thelesperma gracile* (3), *T. subnudum* (F—*Heuchera bracteata*—mist.)
119. č'il latah ʔac'ós—feather top: B.S. *Sieversia paradoxa* (3) (F—*Epilobium coloratum*)
120. č'il naʔał'o-ʔi—weaving plant, or - - - ñcä-gí—large: B.S. *Humulus Lupulus*, var. *neomexicanus* (2) (M and F—*Ampelopsis quinquefolia*, F—*Clematis ligusticifolia*, *Prunus domestica*, *Vitis vinifera*)
This may be a *form name* for plants of vine-like habit.
121. - - - c'ós—slender: B.S. *Clematis ligusticifolia* (15)
122. č'i-ndi č'il—ghost plant: B.S. *Tetradymia canescens*, var. *inermis* (13) (F—*Bigelovia graveolens*—conf. or mist.)
123. č'i-š ʔaze-ʔ—running nose medicine: B.S. *Aplopappus Nuttallii*,

A. spinulosus, B.S. *Aster ericaefolius* (2) (M—*Physaria Newberryi*)

124. č'ó—spruce: B.S. *Pseudotsuga mucronata* (4) (F—*Picea*)
 125. - - - de·níní—sharp (F): B.S. *Juniperus sibirica* (5), B.S. (2) (?) *Picea pungens* (3)
 126. - - - ñt'e·lí—broad (F): B.S. *Picea pungens* (2)
 127. č'ó ñhčí·n—odor of: B.S. *Pseudocymopterus montanus* (4) (F—*Phlox caespitosa*)
 128. č'óxo·jil·yê·i—madness producing: B.S. *Datura meteloides* (4) (F—*D. stramonium*)
 129. č'q̄h—rose: B.S. *Rosa Fendleri* (2) (F), *R. neomexicana* (5)

d

130. da²a·yá·li· coh—big rattles: *Astragalus Pattersonii*
 131. - - - c'ó·s—slender: B.S. *Astragalus allochrous* (2) (F—G)
 132. dahba²—gray up above: B.S. *Fraxinus cuspidata*
 133. dahi·tíhídá·²—humming bird's food: B.S. *Penstemon trichander* (8), *Castilleja integra* (21), *C. lineata* (2), *C. sp.* (2) (M—*C. affinis*, *Silene lacineata*—conf.) B.S. 2 *Gilia Greeneana* (4) (F—*G. aggregata*)
 This genus has at least three basic species, *Castilleja spp.* are often characterized as "large" (F—*C. integra*) or "gray" (F—*C. parviflora*) and the *Penstemon* and *Gilia* as "slender" (F—*P. barbartus*, var. *Torreyi*).
 134. de·ídá·² or de·i ja·d—sandhill crane's food or legs: B.S. *Rumex crispus* (6), *R. mexicanus* (8)
 135. dibécétah č'il—bighorn plant: *Erigeron divergens* (2), *Brickellia grandiflora* (F—*Epilobium spicatum*)
 136. dibé haič'i·dí—sheep scratch, or - - - łabá²ígí—gray: B.S. *Astragalus Matthewsii* (8) (M—*Sophora sericea*, *Astragalus sp.*, F—an *Oxytropis*)
 137. - - - a·łc'ózígí—slender: B.S. *Astragalus scaposus* (2)
 These names may be used in a general way for other species of *Astragalus*.
 138. dibé nát'oh—sheep tobacco: *Penstemon neomexicanus*, *Aster oblongifolius*, *Salvia lanceaefolia* (F—an *Oxytropis*)
 This may be a form genus.
 139. dižé—berry: B.S. *Prunus melanocarpa* (6) (F—*P. virginiana*)
 140. - - - ²a·łc'ózígí—slender: B.S. (?) *Forestiera neomexicana* (2)
 141. - - - coh—big (peach) (F)
 142. - - - dit'ódí—soft: B.S. *Amelanchier alnifolia*, var. *pumila* (3), *A. alnifolia* (M, F—G)

143. - - - dókóži—bitter: B.S. *Ribes pinetorum* (3), *Ribes aureum* (F—*Prunus armeniaca*—genl.)
144. dixidí·ʔái—put in a fire (F): B.S. *Oxytenia acerosa* (2)
145. dinas c'ó·z—slender dinas (F): B.S. *Pachystima myrsinites* (9) B.S. *Arctostaphylos Uva-ursi* (7), *A. pungens*
146. dini·e· č'il—Game Way plant: FORM GEN. or FAMILY *Draba Helleriana*, *Fragaria bracteata*, *Geranium lentum*, *Gilia pinnatifida*, *Lepachys tagetes*, *Lonicera arizonica*, *Medicago sativa*, *Psoralea tenuiflora*, var. *obtusiloba*, *Rumex mexicanus*, *Wulfenia plantaginea*, *Trifolium subcaulescens* (F—*Lygodesmia rostrata*, *Menodora scabra*)
147. dóg·wóži—"chamiso," or - - - íbá·í—gray: B.S. *Atriplex canescens* (M—G, F, or *Sarcobatus*)
148. dóg·wóži· žin—black "greasewood": B.S. *Sarcobatus vermiculatus* (6) (M—G, F)
149. dokó·z—bitter ("salt weed"): B.S. *Atriplex argentea* (3) (M—G, F), *A. confertifolia*, *A. obovata*, *A. Nuttallii*, *A. rosea*
150. - - - sazi·ni—standing: *A. confertifolia*, *A. argentea* (F—*A. expansa*)
- The Navajo do not clearly distinguish the different species of *Atriplex*. *A. argentea* is probably the basic "salt weed."

λ

151. ló· bina·yízi—prairie dog's squash, or ló·dá·ʔ—food: B.S. *Solanum triflorum* (2)

3

152. šił nát'oh—mountain tobacco: B.S. *Nicotiana attenuata* (9) (F)

g

153. gad—juniper: B.S. *Juniperus pachyphloea* (2) (M—J. *communis*, F—J. *occidentalis*)
- This name is applied to the common juniper in any given region, often to *J. monosperma*.
154. - - - cagi—fringed (See 156)
155. - - - nezi—tall: B.S. *Pinus flexilis* (6), *P. chihuahuana* (3)
156. - - - ni·e·'i—floating (also called gad cagi· or dilk'isčí·—red popping in fire): B.S. *Juniperus scopulorum* (2) (M and F—J. *virginiana*, F—J. *communis*) B.S. 2 *J. monosperma* (5), *J. occidentalis*
157. gad bidac'a·ʔ—juniper basket: B.S. *Phoradendron juniperinum* (5) (M,F)
158. gâ·gi bił'ohčín—crow's onion (See 291) (F—*Allium cernuum*)
159. gahbiłak'ání—liked by cotton tail rabbit: B.S. *Artemisia tridentata* (3)
160. gahcohdá·ʔ—jack rabbit's food: B.S. *Eurotia lanata* (6) (M,F)

γ

161. γ^wo·dini· ʔaze·ʔ—toothache medicine: B.S. *Penstemon coloradoensis*, *P. neomexicanus*, *P. trichander*
This may be a *family* name.

h

162. ha·yáni·yó·di· (ha·yáʔázi·)—cathartic (F): FORM GEN. *Penstemon strictus*, *P. sp.*, *Artemisia scopulorum* (2), *Franseria discolor*, *Gilia aggregata*
163. hasbífidá·ʔ—dove food: B.S. *Corydalis aurea* (3) (F—var. *occidentalis*)
164. hastoi ci·yé·í—old man's queue: *Clematis alpina*, *Lepachys columnaris*, var. *pulcherrima*, *Plantago argyrea* (M and F—*Petalostemum candidus*, var. *occidentalis*)
This may be a *form genus* of legumes and similar plants.
165. ha·šč'é·ʔdá·ʔ—supernatural's food: B.S. *Lycium Torreyi* (11), *L. pallidum* (2) (M, F)
166. ha·šč'é·ʔ ʔi·lci·ʔígí—supernatural's hair: B.S. *Houstonia rubra* (2) (F—*Vesicaria Fendleri*)
167. hazaʔale·—laid in mouth: B.S. *Aulospermum purpureum* (4) (F—*Cymopterus glomeratus*)
168. - - - coh—big: B.S. *Pseudocymopterus montanus* (2) (M—*Cymopterus purpureus*, F—*Ferula multifida*)
169. hazahosi·ʔi—astrigent (zahosí·ʔ): B.S. *Sanvitalia Aberti* (2) (F—akin to stone parsley)
170. hazé·ilce·ʔé—like a squirrel's tail: B.S. *Achillea lanulosa* (6) (M and F—*A. Millefolium*)
171. hazé·ilt'a·ʔi—resembling a squirrel: B.S. *Aquilegia elegantula* (3), *A. formosa* (F—a grass)
172. ho·giši·—cutting leaves (F): B.S. *Nolina microcarpa* (2)
173. hosc'í·hí ʔa·íc'ózígí—slender stinging: B.S. *Urtica viridis* (F—*Epilobium origanifolium*—genl.)
174. - - - ncá·gí—large: B.S. *Urtica gracilis* (2) (F—*Oenothera sp.*—conf.)
175. hwoš be·l'ʔdéhí·—cactus brush: B.S. *Senecio filifolius*, *Senecio Riddellii* (2) (M and F—*S. Douglassii*)
176. hwoš—cactus—*Opuntia sp.* (3)
The Franciscan Fathers listed fifteen Navajo *varieties* of cactus and gave six identifications, four species of *Opuntia* and two of *Cereus*. Our list is not complete.
177. - - - décahi coh—big thorny: B.S. *Opuntia arborescens* (4) (F)
178. - - - hbáʔi—gray—*Opuntia sp.* (4)
179. - - - nt'e·lí—wide: *Opuntia phaeacantha* (M and F—*O. missouriensis*)

i

180. ʔi·je·hi—gummy: B.S. *Cryptantha Fendleri* (4) B.S. 2 *Lappula Redowskii*, var. *occidentalis* (F—*Echinosperrum Redowskii*)
181. ʔi·łł'jhi—tenacious: B.S. *Mentzelia multiflora* (4) (M, F)
182. - - - coh—big, or ñcá·gí—large: B.S. *Mentzelia pumila*, var. *multiflora* (3) (F called this “slender”), 181 B.S. large specimen (3)
183. ʔi·nizin č'il—witchcraft plant: FORM GEN. or FAMILY *Penstemon neomexicanus* (2), *P. strictus* (2), *P. trichander* (2), *Wulfenia plantaginea* (4), *Clematis alpina* (2), *Physaria Newberryi* (3), *Coreopsis cardaminefolia*, *Sisymbrium linearifolium*, *Gaura coccinea*, *Gilia longiflora* (M and F—*Gentiana affinis*)
These plants are used for diseases supposed to be caused by witchcraft. Various *Penstemons*, *Wulfenia*, and possibly the *Physaria* and *Clematis* may be fairly definite basic species.

j

184. ja·ʔabanídá·ʔ—bat food (see 187): B.S. *Cheilanthes Feei*, *Cystopteris fragilis* (2), *Pteridium aquilinum*, var. *pubescens* (2)
This name is applied to various ferns.
185. ja·ʔabaní ʔi·łt'á·ʔí—resembling a bat: B.S. *Pericome caudata* (2)
B.S. 2 *Brickellia grandiflora*
186. jadí·lde·ʔ—antelope's horn: (M and F—*Asclepiodora decumbens*)
187. ja·ñcílí·dá·ʔ—bat food (see 184): B.S. *Cheilanthes Feei* (3) (F)
188. je·ʔ do·ł'is̄—blue gum: B.S. *Ptiloria neomexicana* (2)
189. jihibilitá·ł—chewing gum: B.S. *Eriogonum Jamesii* (2)
190. jilxazí—biting weed (?): B.S. *Celtis reticulata* (F—G)

k

191. kécí·n ha·łčí—red base: *Polygonum aviculare* (M and F—*Euphorbia Pringlei*)
192. ʔaze·ʔbikécí·n ha·łčí·ʔígí—medicine with a red base: *Lotus Wrightii*, *Penstemon neomexicanus* (F—*Oenothera tenacetifolia*)
This may be a *form genus*.
193. kécí·n ha·łcói—yellow base: B.S. *Orthocarpus purpureo-albus* (5)
B.S. 2 *Cordylanthus Wrightii*
194. ki·łcíní· coh—big child: B.S. *Tradescantia occidentalis* (2), *T. scopulorum* (F—*Zygadenus venenosus*)
195. - - - łčí—red: *Calochortus Gunnisonii* (M and F called *C. Nuttallii* “children's food”)
196. ki·łcíní· ʔi·łt'á·ʔí—resembling child: B.S. *Commelina dianthifolia* (2), *C. linearis*
197. kəʔ ʔaze·ʔ—fire medicine: B.S. *Mirabilis oxybaphoides* (5):

FAMILY Oxybaphus linearis, O. nyctagineus, var. pilosus, O. melanotrichus

k'

198. k'a·?be·š ?i·lt'a·?í—resembling an arrowhead, or bit'a? k'a·?be·š—arrowhead leaves: FORM GEN. Brickellia grandiflora, var. petiolaris (2), Convolvulus arvensis (2), Pericome caudata
199. k'ai?—willow: B.S. Salix Wrightii (3), S. fluviatilis (F—G)
200. - - - hbáhígi—gray, or - - - do·ʔi·š—blue: B.S. Salix Wrightii (4), S. amgdaloides (2) (F—S. Babylonica)
The willows were not consistently distinguished by informants.
201. k'asdábe·gá—arrow killer: Helianthella Parryi (2), Hymenopappus gloriosus, Helianthoid Comp. (M and F—Eupatorium purpureum)
202. - - - habá?ígi—gray: B.S. Hymenopappus gloriosus (2), H. mexicanus
203. - - - ñcã·gí—large: Arnica foliosa, Helianthella Parryi, Rudbeckia laciniata
This seems to be a *form group* including chiefly helianthoid *Compositae*.
204. k'éł'ahí—spread under foot: B.S. Polygonum Douglasii, P. ramossissimum (F—Delphinium scaposum or bicolor)
205. k'i·łcoi dijo·li—round yellow stem: B.S. Bigelovia graveolens (11) (M,F)
206. k'i·?—(see 92)
207. k'ínjít'a·hí—skinned from the tree: B.S. Ribes inebrians (11), R. pinetorum (2) (F—Purshia tridentata—mist.)
208. k'í?ni·łíši·dá·?—beetle food: B.S. Abronia cycloptera (2), A. fragrans (3) (M, F)
209. k'íšišji·ž—smashed down sumac: B.S. Rhus Toxicodendron (F, F—Urtica sp.)
This may be a *form group* for plants which irritate the skin.
210. k'i·žíni—black sumac (see 218)

l

211. lók'a·?—arrow reed: B.S. Phragmites communis (5) (M, F)
212. - - - coh—big (F): B.S. Arundo donax

ł

213. łe·?aze·?—earth medicine: B.S. Eriogonum alatum (22) (M, F-G)
214. łe?aze·? ?i·lt'a·?í—resembling earth medicine: B.S. Eriogonum lachnogynum (7)
215. łe·do·le·z—foot in the ground: B.S. Orobanche fasciculata (4) (M, F), Conopholis mexicana (2)
This is a name for the *Orobanchaceae* in general, derived from the shape of the stem.

216. *ke·?écoh ?i·lja·?*—resembling a rat's ear: B.S. *Hieracium Fendleri* (2), *Physaria Newberryi* (2) (F—*Ranunculus cymbalaria*)
Although two basic species are listed the name seems to be used rather loosely.
217. *ķi· dá·?*—horse food: B.S. *Lupinus ingratus* (7) (F—*Sidalcea malvaeflora*)
- m
218. *ma·?i·dá·?*—coyote food (see 210): B.S. *Forestiera neomexicana* (4) (M, F, F—*Prunus demissa*)
219. *ma·?i· liž*—coyote urine: B.S. *Senecio filifolius*, *S. Hartianus*
220. *ma·?i· ná·?o·ljil*—whirling coyote: FORM GEN. *Ribes inebrians*, *Silene* sp., *Senecio Hartianus*, *Sisymbrium linearifolium*, *Solanum rostratum* (M—*Astragalus kentrophyta*, F—*Oxytropis* sp.)
221. *ma·?i· yisté·?*—coyote bed: B.S. *Antennaria aprica* (2) (F—*Sarcobatus*—mist. or genl.)
- n
222. *ná·?ádi·?*—blind (no eyes): *Astraeus hygrometricus* (2)
This is a general name for members of the *Lycopodaceae* since it is believed that the spores cause blindness.
223. *na·?ašje·?i ʻil*—spider plant: FORM GEN. *Androsacae septentrionalis*, var. *puberulenta*, *Arenaria Fendleri*, *Astragalus Hosackiae*, *Hoffmanseggia drepanocarpa*, *Linum puberulum*, *Polygonum aviculare*, *Potentilla pennsylvanica*, *P. propinqua*
224. *na·?ašje·?i dá·?*—spider food: FORM GEN. *Androsacae septentrionalis*, var. *puberulenta*, var. *glandulosa*, *Boerhaavia* sp., *Bouteloua eriopoda*, *Cladophryx lanuginosa*, *Galium Fendleri*, *Gaura coccinea*, *Hoffmanseggia drepanocarpa*, *Petalostemum oligophyllum* (F—*Vesicaria Fendleri*, *Croton texensis*)
The last two groups include plants with a "spidery" habit. *Androsacae* spp. may be basic.
225. *na·?ašje·?i ʻó·ł*—spider rope: B.S. *Erigeron flagellaris* (2), *E. divergens*
226. *na·?ašó·?i dá·?*—lizard food: B.S. *Asclepias galioides* (2)
227. *na·?ašó·?i do·ʻiž*—blue lizard: *Allenrolfea occidentalis*
228. *na·?ašó·?i ?i·lce·?*—resembling a lizard's tail: B.S. *Asclepias involu-crata* (2)
229. *na·?ašó·?i ?i·lde·?*—resembling lizard's horn: B.S. *Asclepiodora decumbens* (2) (F)
230. *ná·?i·h*—deer eye (F): B.S. *Conioselinum scopulorum* (5)
231. *nadá·? ?i·lt·a·?i*—resembling corn: B.S. *Smilacina amplexicaulis* (2)
232. *nahó·yai*—tuber: unidentified tuberous root (F—*Convolvulus*)
233. *nak·?i·hináka·di* (*nixi·hi·dináka·d*)—limbs on the ground: B.S. *Juniperus sibirica* (5)

234. na-²ohí ²i-lt'a-²í (nano-l²í)—resembling beans: B.S. *Lathyrus eucosmus* (M and F—*L. polymorphus*), *Astragalus calycosus*, *Lotus Wrightii*, *Oxytropis Lambertii*
This may be a *form genus* to include various *Leguminosae*, with *Lathyrus* leading.
235. nát'oh coh—big tobacco: B.S. *Verbascum Thapsus* (4)
236. na-zka-di—spread out: B.S. *Amaranthus blitoides* (2) (M, F), *A. graecizans*, *A. retroflexus*
237. ñc'a-² ²í-l²ín—basket maker: B.S. *Parryella filifolia* (4) B.S. 2 (?) *Parosela formosa*
238. ñdełídi—scorched: B.S. *Oryzopsis hymenoides* (M, F)
239. ñdí-²íli—sunflower (F), or - - - coh—big: B.S. *Helianthus annuus* (8) (F—*Gymnolomia multiflora*)
240. - - - c'ó's—slender: B.S. *Helianthus annuus* (small specimen), *Rudbeckia flava* (F—*Gymnolomia multiflora*)
241. ñdí-²ílinčíní—odorous sunflower: B.S. *Verbesina encelioides*, var. *exauriculata* (M, F—*Helianthus Nuttallii*—mist.)
242. ñdilkal—wild gourd (F): B.S. *Cucurbita foetidissima* (2)
243. ñdíšc'í-²—pine: B.S. *Pinus ponderosa* (F—*P. flexilis*)
244. ñdo-č'í—red downwards (F): B.S. *Corallorrhiza multiflora* (2), *Pterospora andromedea*
245. ne-²ecah ²aze-²—pimple medicine (F): B.S. *Erigeron canadensis* (8) B.S. 2 *Asclepias galioides* (3)
246. né²ésja-²i-lk'e-²—owl's feet: B.S. *Actinea Richardsonii* (5) (F—*Helenium Hoopsii*—conf.?)
247. níba-yandí—earth house: B.S. *Eriogonum racemosum* (4) (M, F)
248. níha-lá-d—earth moss, or cé-lá-d—rock moss (F): B.S. *Parmelia molliuscula* (6), *Peltigera* sp. (5)
249. ní-²ic²si—earth veins (F): B.S. *Petalostemum oligophyllum* (4)
250. - - - coh—big (F): B.S. *Petalostemum oligophyllum* (6), *Astragalus allochrous* (2), *A. lonchocarpus* (3), *A. sonorae*, *A. tenellus*.
Some informants use this name for 249 B.S., but it is also applied to slender, glabrous species of *Astragalus*.
251. - - - c'ó's—slender: *Astragalus pictus* (2), *Lathyrus graminifolius*, *Lotus Wrightii*, *Sophora sericea*
This seems to be a *form species* including several slender legumes resembling *Petalostemum*.
252. ní-²i-n'ít—snuff, or - - - c'ó's—slender: B.S. *Aster ericaefolius* (8) B.S. *Linum australe*, *L. aristatum*, *L. puberulum* (2) (F—*Townsendia strigosa*)
253. - - - coh—big: B.S. *Baccharis Wrightii* (2) B.S. *Linum australe* (F—*Aster canescens*, *Zinnia grandiflora*)
254. nó-mazí—globular, or nó-mazí c'ó's—slender globular: B.S. *Solanum Jamesii* (10) (M—*S. tuberosum*, F—*Ipomea ponderata*)

255. nómazí ?i·lt'a·?í—resembling globular: B.S. Chamaesaracha coronopus (3)

o

256. ?ósce? (λ'osce)—first one: B.S. Descurainia Sophia (2), Arabis perennans (F—Sisymbrium incisum)

257. - - - ?a·te'ózígí—slender: B.S. Arabis perennans (2)

258. - - - coh—big: B.S. Descurainia incisa, D. obtusa (2), D. Sophia

259. ?ósce? ?i·lt'a·?í—resembling first one: B.S. Descurainia incisa, D. Sophia, Lepidium montanum, var.

s

260. sái bé·?ézó·?—sand broom (F): Muhlenbergia Wrightii (used for hair brushes).

š

261. šaš dâ·?—bear food: B.S. Berberis Fendleri (2)

262. šilacoh—my thumb (F): FORM GEN. Lotus Wrightii, Rudbeckia laciniata, Urtica gracilis

This is a group of poisonous plants.

263. šj náljidi—afraid of the summer: Maurandia antirrhiniflora

t

264. tádí·n do·λ'íš—blue pollen: B.S. Delphinium Nelsonii (4) (M and F—D. scaposum)

265. - - - ñcã·gí—large: Geranium atropurpureum (2), Oxytropis Lambertii (2), Verbena MacDougalii

Individual application of name to plants with blue flowers.

266. tádi·lčóši—pops on the forehead: B.S. Physalis longifolia (4) (M and F—Astragalus triflorus)

267. tálká·bé·š—water arrowhead: B.S. Pericome caudata (2) (F—Nasturtium) B.S. 2 Brickellia grandiflora

268. tálká·? dahi·kał—spreads over water: FORM GEN. Berula erecta, Ranunculus Cymbalaria (2) (F—Nasturtium alpinum)
This and the next are groups of water plants.

269. táł'á·h č'ó—water spruce: Berula erecta, Chara sp. (F—prob. Lemna)

270. tąži·lčí·n—turkey odor: B.S. Thalictum Fendleri, or var. Wrightii (7) (F—T. Fendleri, Krynitzkia glomerata—mist.)

271. te·ł—cat-tail (broad): B.S. Typha latifolia (4) (F)

272. - - - łakani—sweet: B.S. Iris missouriensis (6) B.S. 2 (?)
Triglochin maritima

273. - - - ní·yizi—round (F); B.S. Juncus balticus (4), Juncus sp. (3) B.S. 2 Eleocharis palustris (4)

274. t'i·s—cottonwood: B.S. Populus Wislizenii (M—P. Fremontii, F—P. angulata or Fremontii)

This name is applied to the common valley cottonwood in any given region.

275. - - - báʔí—gray: B.S. *Populus tremuloides* (2) (F)
 276. - - - coh—big (for a large 274 B.S.)
 277. - - - c'ó's—slender: B.S. *Populus angustifolia* (M, F)
 278. to·hjihoco—extending into water (F): *Heliotropium curassavicum*
 279. tóiká·t—carrying water: B.S. *Artemisia frigida* (13) (M)
 280. tóʔi·sí·hi—water blackens it: B.S. *Suaeda depressa* (7) (M—*Sarcobatus*, F—*Chenopodium leptophyllum*): FORM GEN. (?)
Asparagus officinalis, *Allenrolfea occidentalis*, *Sedum Wrightii*, *Solanum triflorum*
 This group includes plants which are somewhat succulent.
 281. tólčín—water odor: B.S. *Mentha arvensis*, var. *glabrata* (14) (F—Violet—mist.)
 282. - - - coh—big: *Stachys palustris*, subsp. *pilosa*

λ'

283. λ'e·ʔi·gahí—white at night, or - - - coh—big: B.S. *Oenothera caespitosa*, var. *marginata* (6) (F), *O. albicaulis* (5), *O. coronopifolia* (4) (F—*Mirabilis multiflora*—mist., M—*O. breviflora*)
 284. - - - c'ó's—slender: B.S. *Oenothera coronopifolia*, *O. laciniata*
 285. λ'i·š coh bič'il—big snake's plant: B.S. *Frasera paniculata*, *Sonchus asper*
 286. λ'i·š ʔi·l·γwo·ʔí—resembling a snake's tooth: B.S. *Aplopappus spinulosus* (4)
 287. λ'oh ʔazi·hi—rubbing grass, or - - - c'ó's—slender: B.S. *Ephedra Torreyana* (10), *E. viridis* (F—*E. trifurca*)
 288. λ'oh cahí—awl grass (F): *Sporobolus airoides*
 289. λ'oh coh—big grass (F): *Sporobolus giganteus*
 290. λ'oh c'ó's—slender grass: B.S. *Sporobolus cryptandrus* (2) (M, F)
 291. λ'ohčín—onion (see 158): B.S. *Allium cernuum*, var. *neomexicanum* (M and F—*A. cernuum*, *A. Palmeri*)
 292. λ'oh de—seed grass: B.S. *Chenopodium leptophyllum* (3), *C. Fremontii* (2) (M, F), *C. incanum* (2)
 293. - - - coh—big, or - - - ná·łgai—white eyed: B.S. *Chenopodium album* (10) (M, F)
 294. - - - c'ó's—slender: B.S. *C. leptophyllum* (2)
 295. - - - hwoší—prickly: B.S. *Amaranthus retroflexus* (4) (M)
 296. - - - nλ'izí—hard: *Monolepis Nuttalliana* (F—a pigweed)
 297. ci·yah λ'oh de—under trees seed grass: B.S. *Chenopodium capitatum* (M and F—*C. cornutum*)

298. *ł'oh de-sk'idi*?—ridged grass: B.S. *Amaranthus retroflexus* (10) (F)
299. *ł'oh hčí*?—red grass: B.S. *Sorghastrum nutans* (3), *Andropogon scoparius*
300. *ł'oh nástasí*—bent grass: B.S. *Bouteloua gracilis* (5) (M and F. —*B. hirsuta*)
301. *ł'oh nčí-n*—odorous grass: B.S. *Hierochloe odorata* (4) (F—*Hedeoma Drummondi*—indiv.)

w

302. *wa*?—bee weed: B.S. *Peritoma serrulatum* (5) (F—*Cleome pungens*)
303. *wóláčí*? *ʔaze*? (*č'il*)—red ant medicine: FORM GEN. *Dyssodia acerosa*, *D. papposa*, *Gaura coccinea*, var. *glabra*, *Viguiera multiflora*, *Lepachys tagetes* (2), *Polygonum aviculare*
304. *wóláčí*? *be-gá*—red ant killer (F): B.S. *Grindelia aphanactis* (12)
305. *wóláčí*? *ʔdá*?—red ant food: B.S. *Eriogonum cernuum* (5) (F—G) B.S. 2 *Grindelia aphanactis* (4): FORM GEN. (?) *Androsacae septentrionalis*, var. *puberulenta* (2), var. *glandulosa* (2), *Arenaria Fendleri*, *Erigeron divergens*, *Euphorbia novomexicana*, *Oxybaphus Bodini*, *Psilactis asterioides*
Various botanical species of a "spidery" habit are often included in this group as generalizations, often being the same as those in the groups of "spider plants" (see 223 and 224).
306. *wóláčí*? *ı́bčé-ž*—red ant decoction: FORM GEN. or FAMILY *Actinea leptoclada*, var. *Ivesiana*, *Coreopsis cardaminefolia*, *Corispermum hyssopifolium*, *Dyssodia acerosa*, *Eriogonum cernuum* (2), *Menodora scabra*, *Paronychia Jamesii*, *Polygala alba*, *Silene Pringlei*, *Tetraclea Coulteri*, *Thelesperma longipes*, *T. subnudum*

PART II

BOTANICAL LIST

The following list contains all the species (452) mentioned in Parts I and III, arranged according to botanical families. The author (or authors) of each species is also given, but is not repeated elsewhere.

Following each specific name are numbers which refer to the numbers of the Navajo names in Part I. A number by itself indicates that the plant is a *basic species* for that Navajo name; followed by (2)—a *secondary basic species*; preceded by F—in a Navajo *form genus*.

Appended is a list of the botanical genera represented, arranged alphabetically. Each genus is followed by a number which refers to the number of the first species in that genus in the botanical list. This is for the convenience of readers who may not be familiar with the place of the genera in botanical families.

DIVISION THALLOPHYTA

SUB-DIVISION ALGAE

Characeae

1. *Chara* sp. 269, F 45

SUB-DIVISION FUNGI

Lycoperdaceae

2. *Astraeus hygrometricus* (Pers.) Morgan 222

SUB-DIVISION LICHENS

Parmeliaceae

3. *Parmelia molliuscula* Ach. 248
4. *Peltigera* sp. 248

DIVISION PTERIDOPHYTA

Polypodiaceae

5. *Adiantum Capillus-Veneris* L. 79
6. *Cheilanthes Feei* Moore 184, 187, F 87
7. *Cystopteris fragilis* (L.) Bernh. 184
8. *Pellaea Suksdorfiana* Butters 78
9. *Pteridium aquilinum* Kuhn., var. *pubescens* Underw. 184

Equisetaceae

10. *Equisetum arvense* L. 7
11. *E. kansanum* J. H. Schaffn. 6
12. *E. laevigatum* A. Br. 6

Selaginellaceae

13. *Selaginella mutica* D. C. Eaton 76

DIVISION SPERMATOPHYTA

SUB-DIVISION GYMNOSPERMAE

Pinaceae

14. *Juniperus monosperma* (Engelm.) Sarg. 156 (2)
15. *J. occidentalis* Hook. 156 (2)
16. *J. pachyphloea* Torr. 153
17. *J. scopulorum* Sarg. 154, 156
18. *J. sibirica* Burgsd. 125, 233
19. *J. utahensis* (Engelm.) Lemmon 153
20. *Picea pungens* Engelm. 125 (2), 126
21. *Pinus chihuahuana* Engelm. 155
22. *P. edulis* Engelm. 98
23. *P. flexilis* James 155
24. *P. ponderosa* Laws. 243
25. *Pseudotsuga mucronata* (Raf.) Sudw. 124, F 28

Ephedraceae

26. *Ephedra Torreyana* Wats. 287
27. *E. viridis* Coville 287

SUB-DIVISION ANGIOSPERMAE

CLASS MONOCOTYLEDONEAE

Typhaceae

28. *Typha latifolia* L. 271

Juncaginaceae

29. *Triglochin maritima* L. 272 (2)

Gramineae

30. *Andropogon scoparius* Michx. 299
31. *Arundo donax* L. 212
32. *Bouteloua eriopoda* Torr. F 224
33. *B. gracilis* (H. B. K.) Lag. 300
34. *Hierochloe odorata* (L.) Wahl. 301
35. *Muhlenbergia Wrightii* Vasey 260
36. *Oryzopsis hymenoides* (Roem. & Schult.) Ricker 238
37. *Panicum obtusum* H. B. K. F 45
38. *Phragmites communis* Trin. 211
39. *Polypogon monspeliensis* (L.) Desf. 39
40. *Sitanion hystrix* (Nutt.) J. G. Smith 39

- 41. *Sorghastrum nutans* (L.) Nash 299
- 42. *Sporobolus airoides* Torr. 288
- 43. *S. cryptandrus* (Torr.) Gray 290
- 44. *S. giganteus* Nash 289

Cyperaceae

- 45. *Eleocharis palustris* (L.) R. & S. 273 (2)

Commelinaceae

- 46. *Commelina dianthifolia* Delile 196
- 47. *C. linearis* Benth. 196
- 48. *Tradescantia occidentalis* (Britt.) Smyth. 194
- 49. *T. scopulorum* Rose 194

Juncaceae

- 50. *Juncus balticus* Willd. 273

Liliaceae

- 51. *Allium cernuum* Roth., var. *neomexicanum* (Rydb.) Macbr. 158, 291
- 52. *Asparagus officinalis* L. F 280
- 53. *Calochortus Gunnisonii* Wats. 195
- 54. *Nolina microcarpa* Wats. 172
- 55. *Smilacina amplexicaulis* Nutt. 231
- 56. *Yucca baccata* Torr. 67
- 57. *Y. glauca* Nutt. 68

Iridaceae

- 58. *Iris missouriensis* Nutt. 272

Orchidaceae

- 59. *Corallorrhiza multiflora* Nutt. 244

CLASS DICOTYLEDONEAE

Piperaceae

- 60. *Anemopsis californica* (Nutt.) Hook. & Arn. F 4

Salicaceae

- 61. *Populus angustifolia* James 277
- 62. *P. tremuloides* Michx. 275
- 63. *P. Wislizenii* (Wats.) Sarg. 274, 276
- 64. *Salix amygdaloides* Anders. 200
- 65. *S. fluviatilis* Nutt. 199
- 66. *S. Wrightii* Anders. 199, 200

Fagaceae

- 67. *Quercus undulata* Torr. 90
- 68. *Q. utahensis* (A. DC.) Rydb. 89

Urticaceae

69. *Celtis reticulata* Torr. 190
70. *Humulus Lupulus* L., var. *neomexicanus* Nels. & Cockerell 120
71. *Parietaria pennsylvanica* Muhl. F 30
72. *Urtica gracilis* Ait. 174, F 262
73. *U. viridis* Rydb. 173

Loranthaceae

74. *Arceuthobium cyanocarpum* A. Nels. 99
75. *Phoradendron juniperinum* Engelm. 157

Polygonaceae

76. *Eriogonum alatum* Torr. 213
77. *E. cernuum* Nutt. 305, F 54, F 306
78. *E. fasciculatum* Benth. 62
79. *E. flavum* Nutt.
80. *E. Jamesii* Benth. 34, 35, 189, F 54
81. *E. lachnogynum* Torr. 214
82. *E. microthecum* Nutt. F 54
83. *E. polycladon* Benth. 62
84. *E. racemosum* Nutt. 247, F 40
85. *E. Wrightii* Torr. 62, 63
86. *Polygonum aviculare* L. 191, F 45, F 223, F 303
87. *P. Douglasii* Greene 204, F 45
88. *P. ramosissimum* Michx. 204
89. *Rumex crispus* L. 107, 134
90. *R. mexicanus* Meisn. 107, 134, F 146

Chenopodiaceae

91. *Allenrolfea occidentalis* (Wats.) Kuntze. 227, F 280
92. *Atriplex argentea* Nutt. 149, 150
93. *A. canescens* (Pursh) Nutt. 147
94. *A. confertifolia* (Torr. & Frem.) Wats. 149, 150
95. *A. obovata* Moq. 149
96. *A. rosea* L. 149
97. *A. Nuttallii* Wats. 149
98. *Chenopodium album* L. 293
99. *C. Botrys* L. 84
100. *C. capitatum* (L.) Asch. 297
101. *C. Fremontii* Wats. 292
102. *C. incanum* (Wats.) Heller 292
103. *C. leptophyllum* (Moq.) Nutt. 292, 294
104. *Corispermum hyssopifolium* L. 108, F 40, F 306
105. *Eurotia lanata* (Pursh) Moq. 160
106. *Kochia Scoparia* (L.) Schrad.
107. *Monolepis Nuttalliana* (R. & S.) Wats. 296

108. *Salsola Kali* L. 110
 109. *S. Kali* L., var. *tragus* DC. 38
 110. *Sarcobatus vermiculatus* (Hook.) Torr. 148
 111. *Suaeda depressa* (Pursh) Wats. 280

Amaranthaceae

112. *Amaranthus blitoides* Wats. 236
 113. *A. graecizans* L. 236
 114. *A. graecizans* L., var. *pubescens* Uline & Bray F 40
 115. *A. retroflexus* L. 236, 295, 298
 116. *Cladotrix lanuginosa* Nutt. F 40, F 224

Nyctaginaceae

117. *Abronia Bigelovii* Heimerl F 44
 118. *A. cycloptera* Gray 208
 119. *A. fragrans* Nutt. 208
 120. *Boerhaavia* sp. F 224
 121. *Mirabilis multiflora* Gray 71
 122. *M. oxybaphoides* Gray 72, 197
 123. *M. oxybaphoides* Gray, var. *glabrata* Heimerl F 45
 124. *Oxybaphus Bodini* Holz. F 305
 125. *O. linearis* (Pursh) Robins. F 44, F 45, F 197
 126. *O. melanotrichus* (Standl.) Weatherby 72, F 197
 127. *O. nyctagineus* (Michx.) Sweet., var. *pilosus* Gray 72, F 197
 128. *Selinocarpus diffusus* Gray 72

Illecebraceae

129. *Paronychia Jamesii* Torr. & Gray F 306

Caryophyllaceae

130. *Alsine Jamesiana* (Torr.) Heller F 109
 131. *Arenaria Fendleri* Gray 57, F 223, F 305
 132. *Cerastium longipedunculatum* Muhl. F 45, F 109
 133. *Silene laciniata* Cav. F 40, F 44
 134. *S. Pringlei* Wats. F 306
 135. *Stellaria Jamesiana* Torr. F 44

Portulacaceae

136. *Portulaca oleracea* L. 81

Ranunculaceae

137. *Aquilegia elegantula* Greene 171
 138. *A. formosa* Fisch. 171
 139. *Clematis alpina* Mill. 183, F 183
 140. *C. ligusticifolia* Nutt. 77, 121
 141. *Delphinium Nelsonii* Greene 264
 142. *Ranunculus Cymbalaria* Pursh F 268

143. *R. micropetalus* (Greene) Rydb. 96
 144. *Thalictrum Fendleri* Engelm. 270
 145. *T. Fendleri* Engelm., var. *Wrightii* Trel. 270

Berberidaceae

146. *Berberis Fendleri* Gray 58, 261
 147. *B. repens* Lindl. 91

Fumariaceae

148. *Corydalis aurea* Willd. 95, 163

Cruciferae

149. *Arabis perennans* Wats. 256, 257, F 45
 150. *Brassica arvensis* (L.) Ktze. F 22
 151. *Descurainia incisa* (Engelm.) Britton 258, 259
 152. *D. obtusa* (Greene) Schulz. 258, F 95
 153. *D. Sophia* (L.) Webb. 256, 258, 259
 154. *Dithyrea Wislizeni* Engelm. 116
 155. *Draba Helleriana* Greene F 22, F 56, F 146
 156. *Erysimum asperum* DC. 41, F 40
 157. *Lepidium montanum* Nutt. 259, F 23
 158. *Physaria Newberryi* Gray 216, F 183
 159. *Radicula hispida* (Desv.) Heller 80, F 112
 160. *Sisymbrium altissimum* L. F 56, F 109
 161. *S. linearifolium* (Gray) Payson 86, F 28, F 40, F 109, F 183, F 220
 162. *Stanleya pinnatifida* Nutt. 80, 86, F 56
 163. *Stanleyella Wrightii* (Gray) Rydb. F 95

Capparidaceae

164. *Peritoma serrulatum* (Pursh) DC. 302

Crassulaceae

165. *Sedum Wrightii* Gray F 45, F 280

Saxifragaceae

166. *Fendlera rupicola* Gray 83
 167. *Philadelphus microphyllus* Gray 70
 168. *Ribes aureum* Pursh 143
 169. *R. inebrians* Lindl. 207, F 220
 170. *R. pinetorum* Greene 143, 207, F 38
 171. *Whipplea utahensis* Wats. F 40

Rosaceae

172. *Amelanchier alnifolia* Nutt. 142
 173. *A. alnifolia* Nutt., var. *pumila* (Nutt.) Schn. 142
 174. *A. Bakeri* Greene 74
 175. *Cercocarpus breviflorus* Gray 101 (2)
 176. *C. montanus* Raf. 73

177. *Cowania Stansburiana* Torr. 14, 100
178. *Fragaria bracteata* Heller F 146
179. *Potentilla Anserina* L. F 25, F 40
180. *P. monspeliensis* L. F 28, F 87
181. *P. norvegica* L., var. *hirsuta* (Michx.) Lehm. F 40
182. *P. pennsylvanica* L. 35, F 25, F 223
183. *P. propinqua* Rydb. F 30, F 223
184. *Prunus melanocarpa* (A. Nels.) Rydb. 139
185. *Purshia tridentata* (Pursh) DC. 14, 100
186. *Rosa Fendleri* Crep. 129
187. *R. neomexicana* Cockerell 129
188. *Rubus parviflorus* Nutt., var. *parvifolius* (Gray) Fernald 64
189. *Sieversia paradoxa* Don. 119

Leguminosae

190. *Astragalus allochrous* Gray 131, 250
191. *A. calycosus* Torr. 234
192. *A. Hosackiae* Greene F 45, F 223
193. *A. Kentrophyta* Gray F 38, F 40
194. *A. lonchocarpus* Torr. 20, 250
195. *A. Mathewsii* Wats. 136
196. *A. Pattersonii* Gray 130
197. *A. pictus* Gray 251
198. *A. scaposus* Gray 136
199. *A. sonorae* Gray 250, F 40, F 56, F 87
200. *A. tenellus* Pursh 250, F 43, F 45
201. *Glycyrrhiza lepidota* (Nutt.) Pursh 5
202. *Hoffmanseggia densiflora* Benth. F 25
203. *H. drepanocarpa* Gray F 223, F 224
204. *H. Jamesii* Torr. & Gray 54, F 44
205. *Lathyrus eucosmus* Butters & St. John 234, F 30
206. *L. graminifolius* (Wats.) White 251, F 45, F 109
207. *Lotus Wrightii* (Gray) Greene 2, 192, 234, 251, F 40, F 262
208. *Lupinus ingratus* Greene 217, F 111
209. *L. Kingii* Wats. 1, F 40, F 115
210. *Medicago sativa* L. F 146
211. *Melilotus indica* (L.) All. F 22
212. *Oxytropis Lambertii* Pursh 234, 265
213. *Parosela formosa* (Torr.) Vail 237 (2)
214. *P. lanata* (Spreng.) Britt. 51, F 45
215. *P. scoparia* (Gray) Heller F 21
216. *Parryella filifolia* Torr. & Gray 237
217. *Petalostemum oligophyllum* (Torr.) Rydb. 249, 250, F 224
218. *Peteria scoparia* Gray 52
219. *Psoralea lanceolata* Pursh 19

220. *P. tenuiflora* Pursh, var. *obtusiloba* Wats. F 146
 221. *Sophora sericea* Nutt. 251, F 111
 222. *Trifolium subacaulescens* Gray F 28, F 146
 223. *Vicia americana* Muhl. F 45

Linaceae

224. *Linum aristatum* Engelm. 252, F 87
 225. *L. australe* Heller 252, 253, F 4
 226. *L. puberulum* (Engelm.) Heller 252, F 87, F 223

Geraniaceae

227. *Geranium atropurpureum* Heller 94, 265
 228. *G. Fremontii* Torr. 94
 229. *G. furcatum* Hanks 94
 230. *G. lentum* Woot. & Standl. 94, F 146

Zygophyllaceae

231. *Tribulus terrestris* L. F 25

Polygalaceae

232. *Polygala alba* Nutt. F 28, F 306

Euphorbiaceae

233. *Croton texensis* (Klotzsch.) Muell.
 234. *Ditaxis cyanophylla* Woot. & Standl. 30
 235. *Euphorbia Fendleri* Torr. & Gray 102
 236. *E. novomexicana* (K. & G.) Wh. 102, F 305
 237. *E. serpyllifolia* Pers. 102
 238. *Tragia ramosa* Torr. F 87

Anacardiaceae

239. *Rhus canadensis* Marsh., var. *trilobata* (Nutt.) Gray 92, 206
 240. *R. Toxicodendron* L. 209
 241. *Schmaltzia Bakeri* Greene 93

Celastraceae

242. *Pachystima myrsinites* (Pursh) Raf. 145

Rhamnaceae

243. *Ceanothus Fendleri* Gray 101

Vitaceae

244. *Parthenocissus vitacea* (Knerr.) Hitch. 64

Malvaceae

245. *Sidalcea neomexicana* Gray F 21, F 95
 246. *Sphaeralcea coccinea* (Nutt.) Rydb., var. *elata* (Baker) Kearney 53
 247. *S. digitata* (Greene) Rydb. 53

248. *S. Fendleri* Gray 53, F 29

249. *S. marginata* York 53

Violaceae

250. *Hybanthus verticillata* (Ortega) Nels. F 28

Loasaceae

251. *Mentzelia multiflora* (Nutt.) Gray 181, 182, F 29

252. *M. pumila* (Nutt.) Torr. & Gray, var. *multiflora* (Nutt.) Urb. & Gilg. 182, F 29

Cactaceae

253. *Opuntia arborescens* Engelm. 177

254. *O. phaeacantha* Engelm. 179

Onagraceae

255. *Epilobium paniculatum* Nutt. F 105

256. *Gaura coccinea* Pursh F 24, F 40, F 183, F 224

257. *G. coccinea* Pursh, var. *glabra* (Lehm.) Torr. & Gray F 54, F 303

258. *G. parviflora* Dougl. 55, F 111

259. *Gayophytum Nuttallii* Torr. & Gray F 87

260. *Oenothera albicaulis* Pursh 283, F 23

261. *O. caespitosa* Nutt., var. *marginata* (Nutt.) Munz 283, F 29, F 40

262. *O. coronopifolia* Torr. & Gray 283, 284, F 45

263. *O. Hartwegii* Benth. F 56

264. *O. Hookeri* Torr. & Gray F 44, F 56

265. *O. laciniata* Hill 284

Umbelliferae

266. *Aulospermum purpureum* (Wats.) C. & R. 167

267. *Berula erecta* (Huds.) Coville 96, 269, F 268

268. *Conioselinum scopulorum* (Gray) C. & R. 230

269. *Phellopterus bulbosus* (A. Nels.) C. & R. 88

270. *Pseudocymopterus montanus* (Benth. & Hook.) C. & R. 127, 168

Ericaceae

271. *Arctostaphylos pungens* H. B. K. 145

272. *A. Uva-ursi* (L.) Spreng. 145

273. *Pterospora andromedea* Nutt. 244

Plumbaginaceae

274. *Limonium limbatum* Small F 26

Primulaceae

275. *Androsace septentrionalis* L., var. *glandulosa* (Woot. & Standl.) St. John F 224, F 305

276. *A. septentrionalis* L., var. *puberulenta* (Rydb.) Knuth. F 223, F 224, F 305

Oleaceae

277. *Forestiera neomexicana* Gray 140, 210, 218

278. *Fraxinus cuspidata* Torr. 132
 279. *Menodora scabra* Gray F 306

Gentianaceae

280. *Frasera paniculata* Torr. 285
 281. *F. venosa* Greene 59

Apocynaceae

282. *Amsonia hirtella* Standl. F 44
 283. *Apocynum sibiricum* Jacq., var. *salignum* (Greene) Fernald F 43

Asclepiadaceae

284. *Asclepias fascicularis* Decsne
 285. *A. galioides* H. B. K. 102 (2), 226, 245 (2), F 28, F 105
 286. *A. involucrata* Engelm. 103, 228
 287. *A. macrotis* Torr. 102 (2)
 288. *A. speciosa* Torr. 27
 289. *A. tuberosa* L. 27, 103, F 95
 290. *Asclepiodora decumbens* (Nutt.) Gray 103, 186, 229, F 44

Convolvulaceae

291. *Convolvulus arvensis* L. F 198
 292. *Evolvulus pilosus* Nutt. F 40

Polemoniaceae

293. *Gilia aggregata* (Pursh) Spreng. F 162
 294. *G. Greeneana* Woot. & Standl. 133, F 24
 295. *G. longiflora* (Torr.) Don. F 23, F 95, F 183
 296. *G. multiflora* Nutt. F 21, F 40
 297. *G. pinnatifida* Nutt. F 23, F 146
 298. *G. rigidula* Benth., var. *acerosa* Gray F 21

Hydrophyllaceae

299. *Nama hispidum* Gray, var. *spathalatum* (Torr.) Hitch. F 112
 300. *Phacelia crenulata* Torr., var. *ambigua* (Jones) Macbr. 47

Boraginaceae

301. *Cryptantha Fendleri* (Gray) Greene 180
 302. *C. fulvocanescens* (Gray) Payson 33
 303. *C. Jamesii* (Torr.) Payson, var. *multicaulis* (Torr.) Payson 33
 304. *Heliotropium curassavicum* L. 278
 305. *Lappula Redowskii* (Lehm.) Greene, var. *occidentalis* (Wats.) Rydb. 180 (2)
 306. *Lithospermum angustifolium* Michx. 31, 42
 307. *L. multiflorum* Torr. 32

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308. *Verbena ambrosiaefolia* Rydb. F 24, F 95
 309. *V. bracteata* Lag. & Rodr. F 21

310. *V. MacDougalii* Heller 265
 311. *V. Wrightii* Gray 47

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312. *Hedeoma nana* (Torr.) Greene 10
 313. *Marrubium vulgare* L. 50, F 115
 314. *Mentha arvensis* L., var. *glabrata* (Benth.) Fernald 48 (2), 281
 315. *Monarda mollis* L., var. *menthaefolia* (Graham) Fernald 49
 316. *M. pectinata* Nutt. 48
 317. *M. punctata* L., subsp. *occidentalis* Epl. 48
 318. *Salvia lancaefolia* Poir. 138
 319. *S. reflexa* Hornem. 97
 320. *Stachys palustris* L., subsp. *pilosa* (Nutt.) Epl. 282
 321. *Tetradlea Coulteri* Gray F 306

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322. *Chamaesaracha coronopus* (Dunal) Gray 255
 323. *Datura meteloides* DC. 128
 324. *Lycium pallidum* Miers 165
 325. *L. Torreyi* Gray 165
 326. *Nicotiana attenuata* Torr. 152
 327. *Physalis longifolia* Nutt. 266
 328. *Solanum elaeagnifolium* Cav. 8
 329. *S. Jamesii* Torr. 254
 330. *S. rostratum* Dunal F 220
 331. *S. triflorum* Nutt. 151, F 38, F 95, F 280

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332. *Castilleja integra* Gray 133
 333. *C. lineata* Greene 133
 334. *Cordylanthus Wrightii* Gray 82, 107, 193 (2)
 335. *Maurandia antirrhiniflora* Willd. 263
 336. *Orthocarpus purpureo-albus* Gray 82 (2), 193
 337. *Penstemon coloradoensis* A. Nels. 11, 12, 106, 161, F 21
 338. *P. neomexicanus* Woot. & Standl. 66, 106, 138, 161, 192, F 183
 339. *P. oliganthus* Woot. & Standl. F 21
 340. *P. strictus* Benth. 106, F 162, F 183
 341. *P. trichander* (Gray) Rydb. 65, 106, 133, 161, F 183
 342. *P. Whippleanus* Gray F 115
 343. *Verbascum Thapsus* L. 235, F 26
 344. *Wulfenia plantaginea* (Benth.) Greene 59, F 4, F 26, F 146, F 183

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345. *Conopholis mexicana* Gray 215
 346. *Orobanche fasciculata* Nutt. 215

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347. *Plantago argyrea* Morris F 40, F 164
 348. *P. major* L. 59 (2), F 4, F 26

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349. *Galium Fendleri* Gray F 40, F 224
 350. *Houstonia rubra* Cav. 166

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351. *Lonicera arizonica* Rehder F 146

Valerianaceae

352. *Valeriana acutiloba* Rydb. 3
 353. *V. ovata* Rydb. 3
 354. *V. trachycarpa* Rydb. 3

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355. *Cucurbita foetidissima* H. B. K. 242

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356. *Achillea lanulosa* Nutt. 170
 357. *Actinea argentea* (Gray) Ktze. F 22
 358. *A. leptoclada* (Gray) Ktze., var. *Ivesiana* (Greene) Macbr. 60,
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 359. *A. Richardsonii* (Hook.) Ktze. 246
 360. *Agoseris purpurea* (Gray) Greene F 4, F 22, F 105, F 112
 361. *Antennaria aprica* Greene 221, F 40
 362. *Aplopappus gracilis* (Nutt.) Gray F 22
 363. *A. Nuttallii* Torr. & Gray 123
 364. *A. spinulosus* (Pursh) DC. 123, 286, F 38
 365. *Arnica foliosa* Nutt. 203
 366. *Artemisia Absinthium* L. F 95
 367. *A. albula* Woot. 75
 368. *A. Bigelovii* Gray 85
 369. *A. campestris* L. 16
 370. *A. dracunculoides* Pursh 15, 16
 371. *A. filifolia* Torr. 117
 372. *A. frigida* Willd. 279
 373. *A. kansana* Britt. 17
 374. *A. scopulorum* Gray 17, F 95, F 162
 375. *A. tridentata* Nutt. 85, 159
 376. *A. Wrightii* Gray 75
 377. *Aster ericaefolius* Rothr. 123, 252
 378. *A. oblongifolius* Nutt. 138
 379. *Baccharis Wrightii* Gray 253
 380. *Bahia absinthifolia* Benth., var. *dealbata* Gray F 40
 381. *B. dissecta* (Gray) Britt. F 95

382. *Baileya multiradiata* Harv. & Gray F 40, F 56
383. *Berlandiera lyrata* Benth. F 26, F 40
384. *Bigelovia graveolens* Gray 205
385. *Brickellia brachyphylla* Gray F 95
386. *B. californica* (Torr. & Gray) Gray 61
387. *B. grandiflora* (Hook.) Nutt. 61, 135, 185 (2), 267 (2)
388. *B. grandiflora* (Hook.) Nutt., var. *petiolaris* Gray 61, F 198
389. *Chrysopsis villosa* (Pursh) Nutt. F 40, F 95
390. *C. villosa* (Pursh) Nutt., var. *canescens* (DC.) Gray F 22
391. *Chrysothamnus depressus* Nutt. 11, 13
392. *Cirsium calcareum* (Jones) Woot. & Standl. 37
393. *C. ochrocentrum* Gray 37
394. *C. pulchellum* (Greene) Woot. & Standl. 37
395. *C. undulatum* (Nutt.) Spreng. 37
396. *Coreopsis cardaminefolia* (DC.) Torr. & Gray F 183, F 306
397. *Dyssodia acerosa* DC. F 22, F 303, F 306
398. *D. papposa* (Vent.) Hitch. 69, F 303
399. *Erigeron canadensis* L. 245
400. *E. divergens* Torr. & Gray 135, 225, F 40, F 87, F 305
401. *E. flagellaris* Gray 225, F 87
402. *E. nematophyllus* Rydb. F 109
403. *Eupatorium herbaceum* (Gray) Greene 61
404. *Franseria acanthicarpa* (Hook.) Coville 104, F 95
405. *F. discolor* Nutt. F 40, F 162
406. *F. tenuifolia* Gray 104
407. *Gaillardia pinnatifida* Torr. F 40
408. *Grindelia aphanactis* Rydb. 304, 305 (2), F 112
409. *Gutierrezia diversifolia* Greene 113
410. *G. Sarothrae* (Pursh) B. & R. 113
411. *G. tenuis* Greene 114
412. *Helianthella Parryi* Gray 36, 201, 203, F 30
413. *Helianthus annuus* L. 239, 240
414. *H. ciliaris* DC. 18
415. *Hieracium Fendleri* Schultz 216, F 4, F 40
416. *Hymenopappus gloriosus* Heller 60, 201, 202
417. *H. mexicanus* Gray 202
418. *H. robustus* Greene F 95
419. *Iva xanthifolia* Nutt.
420. *Lactuca pulchella* (Pursh) DC. 103
421. *L. scariola* L., var. *integrata* Gren. & Godr. 103
422. *Lepachys columnaris* (Sims.) Torr. & Gray, var. *pulcherrima* Torr. & Gray 18, 164, F 22
423. *L. tagetes* Gray 18, F 22, F 146, F 303
424. *Lygodesmia juncea* (Pursh) Don. F 43

425. *Melampodium leucanthum* Torr. & Gray F 23, F 28, F 40, F 54
426. *Oxytenia acerosa* Nutt. 144
427. *Pericome caudata* Gray 9, 77, 185, 267, F 198
428. *Psilactis asterioides* Gray F 305
429. *Psilostrophe tagetinae* (Nutt.) Britt. & Brown. F 22, F 115
430. *Ptiloria neomexicana* Greene 188, F 45
431. *Rudbeckia flava* Moore 240
432. *R. laciniata* L. 203, F 262
433. *Sanvitalia Aberti* Gray 169
434. *Senecio Fendleri* Gray F 22
435. *S. filifolius* Nutt. 175, 219, F 22
436. *S. Hartianus* Heller 219, F 40, F 112, F 220
437. *S. quaerens* Greene F 22
438. *S. Riddellii* Torr. & Gray 175, F 40
439. *Solidago trinervata* Greene F 22
440. *Sonchus asper* (L.) Hill. 285, F 25
441. *Taraxacum montanum* Nutt. F 22
442. *T. palustre* (Lyons) Lam. & DC., var. *vulgare* (Lam.) Fernald
F 112
443. *Tetradymia canescens* DC., var. *inermis* (Nutt.) Gray 122
444. *Thelesperma gracile* (Torr.) Gray 118
445. *T. longipes* Gray F 306
446. *T. subnudum* Gray 118, F 306
447. *Townsendia arizonica* Gray 46
448. *T. exscapa* (Richards) Porter 46
449. *T. Fendleri* Gray 46, F 23
450. *Verbesina encelioides* (Cav.) B. & H., var. *exauriculata* Robins.
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451. *Viguiera multiflora* (Nutt.) Blake F 109, F 303
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Parryella 216	Purshia 185	Stanleya 162
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Peritoma 164	Rosa 186	Tetradymia 443
Petalostemum 217	Rubus 188	Thalictrum 144
Peteria 218	Rudbeckia 431	Thelesperma 444
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Philadelphus 167	Salsola 108	Tragia 238
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Plantago 347	Selinocarpus 128	Verbascum 343
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Polyogon 39	Sieversia 189	Vicia 223
Populus 61	Silene 133	Viguiera 451
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PART III

USES

In the following sections on the uses of plants in the treatment of disease, the arrangement is, for the most part, by organ systems. Under each such main heading are grouped the pertinent diseases, pharmacological purposes, or ceremonials. Each section, where possible, contains general information concerning ceremonials used for the disease group, methods of preparation of the medicines, Navajo *family* names for the plants pertaining to the group, etc. Numerals in parenthesis, preceded by N, refer to numbers of the Navajo names in Part I. There follows a list of the botanical names of plants, each of which was designated for the use in question by more than one informant. Numerals in parenthesis following these names denote the number of such independent informants.

From one to thirty-four additional species for each use were designated by single informants. The total number of such uncorroborated designations was 789. Likewise from one to eight prescriptions for given uses were individually recommended. Ninety-three uncorroborated prescriptions, containing from two to twenty-six species apiece,¹⁷ were obtained. Since such uncorroborated designations may represent individual practices rather than general usage, it was felt that the space necessary to present them could well be saved, and that the few specialists who might be interested in them would be willing to communicate with the authors for further details.

In describing methods of preparation, the quantities used or administered are not mentioned, for the Navajo are

17. Certain preparations, especially emetics, are likely to contain many ingredients. In other instances the practitioner may not attempt to obtain all the known ingredients, but only as many as he can find conveniently. Certain plants may be considered as essential ingredients of a prescription, effective even when used alone, but if more can be obtained so much the better. Some practitioners (especially herbalists) favor large prescriptions while others are inclined to use fewer plants.

seldom definite about quantities, except in the case of poisonous or "strong" herbs.¹⁸ "One plant," "several plants," a "handful of ground plants," a "pinch" of powdered material, soaked or boiled in "a cupful," a "pailful," or "some" water are characteristic directions; likewise, "drink some and wash all over," "drink one or two cupfuls," "drink a little," "drink a pailful" (usually a lard pail), or "apply some," and "take until cured." The usual practice is to use several good sized "pinches" in a medicine cup (abalone, turtle shell, glass, or enamel) of dried and powdered herbs for infusions, and a handful or two in a medicine pot or lard pail of whole herbs or roots for decoctions. Larger quantities of herbs and ordinary water pails are used in preparing emetics, and several handfuls of herbs in a medicine basket for certain infusions, e. g., *lightning herbs*.¹⁹ Liquid medicines to be taken internally are usually applied externally as well.²⁰ When only a cupful is given, the remnants after drinking are rubbed upon the arms, chest, face, and elsewhere if the amount suffices. With larger quantities, e. g. emetics, the whole body is thoroughly bathed in ceremonial order. Other decoctions are usually taken internally only. Decoctions are commonly salted (often with native salt) just before administration, with enough salt "to make it taste right."

Herbs to be powdered are dried, ground upon an ordinary corn grinder, and stored in small medicine bags which are often kept in a singer's bundle. Bundles of such herbs or roots may be seen hanging to dry from the roof beams in singers' hogans. Fresh herbs, e. g. those for emetics, are pounded and mixed upon a flat rock shortly before using them.

Any plant medicines, even those pertaining to a ceremonial, may be used by the laity, and are thought to be

18. The same applies to preparation of foods or dyes; see Reichard, 1936, p. 47.

19. See Kluckhohn and Wyman, 1940, p. 52; also pp. 48-57 for further information concerning the preparation and administration of medicines.

20. An obsolete custom followed when the patient was too ill to swallow was to support him head downwards and administer medicine per rectum, using a bison horn or a sheep's leg bone as a funnel. Enemas were not used for constipation.

effective, without an accompanying ceremonial and without the advice of a singer. Certain preparations acquire extra curative powers while being prepared in a ceremonial, and remnants may be eagerly sought by practitioners and laity alike.²¹ Knowledge of the properties of herbs, however, is said to be the only essential for their effective use. "Different plants specific for various diseases were created for the Navajos by the Holy People when they were living on this earth. They were tested on the first patients and have been used ever since."

HEAD AND NECK

Diseases of the head and neck may be treated by chants of the God-Impersonators, Wind Chant, or Eagle Trapping Sub-Groups,²² so certain plants (N 1, 2) pertaining to these chants (including Game Way plants—N 146) may be remedies for such conditions.

*Headache*²³

Chant lotion (e. g. *Monarda pectinata* [5] and other labiates) and odorous grass, *Hierochloe odorata* (which is chewed by the singer and spit upon the patient)²⁴ (3), are considered especially good for headache and fever. Infusions are usually employed as head lotions, but fumigation may be used; see *snuff*.

Clematis ligusticifolia (3).

Hair Lotion

Soapweed root (*Yucca baccata* or *Y. glauca*) is used generally to make a suds for shampooing the hair. *Artemisia* spp. (*A. campestris*—2) may be added for its fragrance or to make the hair "long and soft" and prevent its falling. Other plants may be used in shampooing to prevent falling hair and dandruff, or as hair restorers.

21. See Kluckhohn and Wyman, 1940, p. 96.

22. See Wyman and Kluckhohn, 1938, p. 6.

23. Massage may be used for headache; see Kluckhohn and Wyman, 1940, p. 63.

24. *Ibid.*, p. 84.

Earache

Remedies for earache are usually prepared as warm infusions and poured into the external meatus.

Cryptantha Jamesii, var. *multicaulis* (2).

Eye Disease

Remedies for sore or aching eyes (and accompanying headache) (ná·ʔaze·ʔ) may be designated by the Navajo family name "eye wash" (náke·ʔatj·). Since eye diseases (along with other head disorders) may be treated by Night Way or Plume Way (in which Game Way plants are used) eye medicines are among the plants used in these chants (N 1, 2, 146). Various species of *Cirsium* predominate. Eye medicines are usually prepared by cold or warm infusion and used as eye washes or drops, and the whole head is often bathed to relieve headache and swelling about the eyes. Hole fumigation²⁵ or the application of dry powder may also be used.

Cirsium spp. (7), *Houstonia rubra* (3), *Ditaxis cyanophylla* (2), *Lonicera arizonica* (2), *Melampodium leucanthum* (2), *Oenothera* spp. (3), *Peteria scoparia* (2), *Pseudocymopterus montanus* (2), *Senecio Hartianus* (2).

Snuff

Plants which are dried, powdered, and sniffed into the nose to relieve various head disorders, particularly nose troubles, may be designated by the Navajo family name "snuff" (N 252, 253). Remedies for catarrh, swellings or sores in the nose, etc., are called "running nose medicine" (N 123). Informants describe relief from this condition as "pieces of bone coming out of the nose or mouth." Snuff may also be used for headache, toothache, or sore eyes.

Aster ericaefolius (9), *Linum* spp. (5), *Erigeron* spp. (5), *Aplopappus* spp. (3), *Baccharis Wrightii* (2), *Phytolacca Newberryi*.

25. See *ibid.*, p. 56, for details of this treatment.

Mouth Disease

The use of lichens as remedies for sore mouth or gums is a widespread practice.²⁶ Plants used for canker, swollen gums, decayed teeth, etc., are chewed.

Parmelia molliuscula (2), *Peltigera* sp. (5), *Mirabilis* spp. (2), *Aster ericaefolius* (3), *Sanvitalia Aberti*.

*Toothache*²⁷

The plants most commonly used for *snuff* may also be used for toothache. The leaves or root are crushed or powdered and placed in the cavity of the aching tooth or rubbed upon the gums around it.

Aplopappus spinulosus (2), *Penstemon* spp. (3).

Sore Throat

Eagle Way, Bead Way, or Plume Way may be used to treat sore throat, so plants pertaining to these chants may be used (N 1, 2). Decoctions are drunk and applied as lotions, and poultices of the plant are applied to the throat.

Eriogonum spp. (7), *Oenothera* spp. (3).

RESPIRATORY SYSTEM

Lung trouble may be treated by Shooting Way or Navajo Wind Way. Infusions or decoctions of the plants are drunk.

Colds, Grippe, Influenza, Cough

Brickellia spp. (2), *Pericome caudata* (2), *Sophora sericea* (2), *Sphaeralcea* spp. (2), *Marrubium vulgare* (2).

Tuberculosis

Brickellia spp., *Pericome caudata*, *Sophora sericea*, *Anemopsis californica*.

26. See Vestal and Schultes, 1939, p. 12; Whiting, 1939, p. 99; Robbins, Harrington and Freire-Marreco, 1916, p. 68.

27. To pull a tooth tie a sinew about it, attach this to a buckskin thong tied to a stick, and jerk out the tooth while the patient lies on his back. See N 161.

CIRCULATORY SYSTEM

Heart Disease

Heart disease may be treated by one of the Wind Ways. Only four uncorroborated species were recommended for tachycardia, shortness of breath, etc.

Hemostatics

Plants used as hemostatics may be designated by the Navajo name "vein spurter" (N 87). The usual method of administration is to chew the plant and spit the juice upon the bleeding wound (an infusion or a poultice may be similarly applied). For nosebleed or lung hemorrhage infusions are drunk or applied to the head.

Linum spp. (2), *Gayophytum Nuttallii* (2), *Erigeron flagellaris* (2), *Astragalus sonora* (2), *A. pictus* (2).

ALIMENTARY TRACT²⁸*Indigestion*

Stomach-ache (bídini): since abdominal trouble may be attributed to any one of a variety of etiological factors, plants pertaining to a number of Chant Ways may be used to treat it. Various small species of *Euphorbia* seem to be widely used for abdominal pain. Decoctions are most commonly used. Various plants are recommended for anorexia, gas, eructation, heart burn, as well as for pain and acute or chronic indigestion.

Euphorbia spp. (9), *Marrubium vulgare* (3), *Berberis* spp. (3), *Erigeron* spp. (3), *Brickellia grandiflora* (2), *Chrysopsis villosa* (2), *Frasera paniculata* (2), *Gilia* spp. (2), *Kochia scoparia* (2), *Plantago* spp. (2), *Sidalcea neomexicana* (2), *Sisymbrium linearifolium* (2), *Solanum* spp. (2).

"*Aorta medicine*" (?a-vas ?aze?): the term apparently refers to the aorta ("tube next to the backbone"), specifically to that portion of the abdominal aorta just above the

28. The Navajo do not use special diets nor fasting in illness, for: "How could a patient get strength without eating?" "Give him all he can eat, especially corn meal."

bifurcation of the iliacs (A), although a few informants may use it to refer to the trachea. Informants describe an obscure sensation as "beating or moving of the aorta" which is probably due to some digestive disorder. Informant A said that it is the usual designation for hunger pangs.

Frasera paniculata.

Cathartics

Cathartics may be prescribed for constipation, abdominal pain, gas in stomach, "infection inside," or "pus in lungs or stomach." Although numerous plants were designated by single informants there was agreement only on various species of *Penstemon* (4). They may be called "cathartic" (N 162).

Diarrhea

The following remedies for diarrhea or dysentery are especially recommended for children and infants ("summer complaint"). Decoctions are drunk. Powdered argillaceous sandstone also may be taken in water.

Eriogonum spp. (3), *Euphorbia serpyllifolia* (3), *Marubium vulgare* (3).

Emetics

Each five- or nine-night ceremonial requires an emetic²⁹ and many plants are used for this purpose. Although the commonest emetics are from various botanical families, members of the *Equisetaceae*, *Pinaceae*, several families of the *Monocotyledoneae*, and *Rosaceae* predominate. They may be designated by some combination of the Navajo family name "emetic" (?i-łkó). Besides their general ceremonial use they may be recommended for stomach distress, nausea, anorexia, biliousness, acne, and bites of venomous animals. They are prepared by decoction and fairly large quantities are taken warm. Prescriptions containing many species are usually employed. Personal experience indicates that they are not especially effective, vomiting being induced by the volume of warm, bitter fluid taken and by throat tick-

29. See Kluckhohn and Wyman, 1940, pp. 85-86, for a description of the ceremonial preparation and use of emetics, and pp. 122 and 162 for prescriptions.

ling, so that their value probably lies mostly in stomach lavage.

Equisetum spp. (7), *Juniperus monosperma* (3), *Juniperus sibirica* (7), *Picea pungens* (6), *Pinus chihuahuana* (4), *Pinus edulis* (2), *Pinus flexilis* (4), *Pseudotsuga mucronata* (3), *Typha latifolia*, *Phragmites communis* (2), *Eleocharis palustris* (3), *Juncus balticus* (6), *Iris missouriensis* (2), *Salix* spp. (3), *Quercus utahensis* (2), *Eurotia lanata* (2), *Aquilegia* spp. (2), *Clematis* spp. (3), *Thalictrum Fendleri* (2), *Berberis* spp. (4), *Stanleya pinnatifida* (2), *Ribes pinetorum* (3), *Amelanchier* spp. (4), *Cercocarpus* spp. (5), *Cowania Stansburiana* (3), *Prunus melanocarpa* (6), *Rosa* spp. (3), *Purshia tridentata* (4), *Astragalus* spp. (3), *Parryella filifolia* (4), *Pachystima myrsinites* (6), *Ceanothus Fendleri* (5), *Mentzelia* spp. (2), *Pseudocymopterus montanus* (7), *Arctostaphylos* spp. (8), *Forestiera neomexicana* (2), *Lonicera* spp. (3), *Bigelovia graveolens* (3), *Brickellia grandiflora*, var. *petiolaris* (4), *Gutierrezia Sarothrae* (3), *Tetradymia canescens* (3).

MUSCULAR SYSTEM

Muscular Soreness and Stiffness

Only four uncorroborated species and two prescriptions were obtained, infusions to be used as lotions and to drink. Use of the sudatory and massage were also recommended.

Sprains, Strains, Bruises, Swellings

Although *Life Medicine* (see below) is usually employed for such conditions, four uncorroborated species and three prescriptions were also mentioned. Infusions are used as lotions and to drink or poultices are applied. Other treatments are application of powdered argillaceous sandstone in water, incision of a bruise or sprain to remove blood and admit medicine, and baking over hot rocks.

Rheumatism

Rheumatism or swollen, painful joints, is sometimes treated by Beauty Way or ascribed to witchcraft, so Beauty

Way decoction or "witchcraft plants" (N 183) may be used to treat it, as well as other plants.

Arthritis, especially arthritis deformans in males ("hump back," "break your bones"), is ascribed to improper contact with a menstruating woman or menstrual blood. The Navajo *family* name for arthritis medicine, therefore, is the same as the word for menstruation (N 95).

Both types of remedies are usually prepared by decoction, to drink, or for lotions.

Rheumatism: *Bigelovia graveolens* (2), *Mirabilis spp.* (2), *Senecio spp.* (4), *Sisymbrium linearifolium* (2), *Wulfenia plantaginea* (2).

"*Arthritis medicine*":³⁰ *Corydalis aurea* (5), *Bahia dissecta* (4), *Senecio spp.* (2).

NERVOUS SYSTEM

Narcotics

The only effective narcotic used by the Navajos as yet discovered is *Datura spp.* The root may be chewed or infusions of it may be drunk to produce narcosis during minor operations, in divination, and in witchcraft.³¹ ("Throw in face or put in cigarette if you do not like someone.") Its poisonous properties are well known to the Navajos and they handle it with caution.

Datura meteloides (4).

Fainting or dizziness

Fainting may be considered a sign of ghost infection, so one of the Evil Way ceremonials and its associated plants (e. g. *Tetradymia canescens*, *var. inermis*—N 122) may be used to treat it.

Nicotiana attenuata (2) (blow smoke in patient's face).

30. Incise skin over swollen joints to suck out "poison blood" and admit medicine; cauterize "growing bone" in limb with a willow stick covered with adobe, then apply medicine.

31. See Wyman and Kluckhohn, 1938, p. 25; Hill, 1938a.

*Mental Disease*³²

Mental disturbance may be treated by some form of Blessing Way, a chant of the Mountain Chant Sub-Group, or Hand Trembling Way. Bad dreams,³³ dread of harm or evil, and the like, may be attributed to ghost infection and treated by an Evil Way ceremonial. Plant remedies are prepared by decoction.

Potentilla spp. (3).

Mild mental disturbance: "thinking or talking bad," "thinking of running away," and other slight mental aberrations may be treated by a smoke treatment which is associated with Blessing Way. This consists of smoking mountain tobacco (*Nicotiana attenuata*) mixed with one or more other plants, e. g. *Verbascum Thapsus* (2) (N 235), in a prehistoric pipe found in a ruin.

Miscellaneous

Three uncorroborated species were recommended for insomnia, and one prescription for basal ganglion disease (according to description of symptoms), to be applied to scarifications. One informant recommended Water Way and its associated plants for paralysis.

GENITO-URINARY SYSTEM

Diuretics

Diuretic plants are often named as such, i. e. "urine spurters" (N 4). Kidney and bladder disease may be attributed to red ant, snake, or deer infection, and treated by Red Ant Way, Beauty Way, or Plume Way (with Game Way plants) respectively, so diuretics may be included among the medicines specific for these ceremonials. Diuretics are recommended for venereal disease, hematuria, pelvic pain, and bladder stones as well as for anuria. Decoctions are used.

Hieracium Fendleri (3), *Plantago* ^(used) *major* (3), *Wulfenia plantaginea* (2), *Urtica* spp. (2), *Ephedra Torreyana* (2),

32. See Hill, 1936.

33. Cf. Lincoln, 1935, p. 207 ff.

Agoseris purpurea (2), *Lotus Wrightii* (2), *Parosela lanata* (2), *Grindelia aphanactis* (2), *Lepachys* spp. (3), *Verbena bracteata* (2), *Thelesperma* spp. (2), *Zinnia grandiflora* (2), *Astragalus* spp. (3), *Geranium* spp. (2), *Anemopsis californica* ("main plant" in one prescription).

*Venereal Disease*³⁴

Most remedies for venereal disease are for treatment of local symptoms only. Dusting powders, lotions, or poultices are applied to chancres or swollen, sore genitalia and decoctions or infusions are drunk for gonorrhoea, syphilis, or orchitis. See *diuretics*.

Asclepias involucreata (2), *Lupinus Kingii* (2), *Eriogonum racemosum*, *Dithyreaa Wislizeni*.

Aphrodisiacs

For aged men, women, or stud animals. Infusions are drunk.

Commelina spp. (3).

Contraceptives

Decoctions are drunk during menstruation. Used by both sexes.

Eriogonum Jamesii (3), *Bahia dissecta*.

Sexual Infection (yištež)

This term designates disease attributed to ceremonially improper sexual intercourse (e. g. sore eyes, headache, pain in bones) or to intercourse too soon after childbirth ("pus in stomach" in females). Infusions are drunk or, more commonly, the plants are used as ingredients of bison fumigant³⁵ which is administered by hole fumigation (sprinkled on hot coals in a hole over which the patient sits, covered by a blanket). This treatment may be added to a Life Way and other ceremonials.

Ephedra Torreyana (2), *Lepachys tagetes* (2), *Zinnia*

34. See Haile, 1938, p. 68.

35. See Kluckhohn and Wyman, 1940, p. 56, for prescriptions, use, etc.

grandiflora (2), *Sphaeralcea* spp. (2), *Psoralea lanceolata* (2).

Dysmenorrhea (Menstrual Pain), *Menorrhagia*

Decoctions are usually employed.

Cordylanthus Wrightii (3), *Orthocarpus purpureo-albus* (3), *Corydalis aurea*.

Parturition³⁶

Plants used in connection with parturition may be designated by the Navajo family name "baby medicine" (ʔawé ʔazeʔ). The two most commonly used are called "placenta boiler" (N 11-13). Decoctions are used.

To expedite delivery (prolonged labor): an unraveling ceremony³⁷ using "unraveling medicine" (*Townsendia* spp.) (N 46) is often employed.

Townsendia spp. (2), *Gutierrezia Sarothrae*.

To facilitate delivery of placenta ("to clean out blood," retained placenta, pain, distention): *Chrysothamnus depressus* (31), *Penstemon coloradoensis* (29), *Penstemon* spp. (4), *Franseria* spp. (4), *Townsendia* spp. (2), *Gutierrezia Sarothrae* (17), *Actinea* spp. (2), *Gilia* spp. (3), *Hymenopappus gloriosus* (2), *Petalostemum oligophyllum* (2), *Sisymbrium linearifolium* (2).

To stop postpartum hemorrhage: *Artemisia tridentata* (3), *Artemisia* spp. (16), *Ephedra Torreyana* (2), *Lathyrus graminifolius* (2), *Verbena bracteata* (2).

For postpartum pain: *Juniperus* sp. (the common juniper) (32), *Artemisia* spp. (16).

"Baby medicine" (use postpartum to expedite recovery): *Castilleja* spp. (2), *Cryptantha Fendleri* (2), *Psoralea lanceolata* (2), any of the species listed above.

Lactagogues

Preparations are drunk and applied to the nipples (for women or goats).

Asclepiodora decumbens (2), *Euphorbia serpyllifolia*.

36. Miss Flora L. Bailey is conducting a comprehensive field study of practices connected with the reproductive cycle among Navajo women.

37. See Kluckhohn and Wyman, 1940, p. 77, for details of this ceremony.

SKIN

Wounds

Life medicine is used for wounds; thus many of the following plants are also in that group (see also *sores*). Preparations used for infected wounds (and when castrating stock animals) include poultices, dusting powders, and infusions for lotions or to drink. Wounds may be sutured with bison or deer sinew.

Artemisia spp. (4), *Eriogonum* spp. (3), *Gaura* spp. (2), *Orobanche fasciculata* (2).

Sores

Among the medicines for open sores on the skin the use of *Orobanche* and plants superficially resembling it, such as *Pterospora* and *Corallorrhiza*, is of interest. The use of the dry spores of members of the *Lycoperdaceae* is widespread.³⁸ Usually the plants are dried, ground, and applied to sores as dusting powders, especially to heal an infant's navel. Poultices or infusions as lotions may also be used. Prescriptions used for *burns* or *itching* (see below) are also used for sores.

Orobanche fasciculata (2), *Penstemon trichander* (3), *Peltigera* sp. (5), *Corallorrhiza multiflora* (4), *Astraeus hygrometricus* (2), *Pterospora andromedea*, decayed wood (2), *Rumex* sp. (root), sheep fat.

Burns

Medicines for burns and scalds may be designated by the Navajo *family* name "fire medicine" (N 197).³⁹ Members of the *Nyctaginaceae* predominate. Preparations include dusting powder, poultices, ointments (with sheep grease and red ochre), and infusions for lotions. These are also used for sores.

Mirabilis oxybaphoides (and var. *glabrata*) (4), *Oxybaphus* spp. (4), *Asclepias involucrata* (2), *Penstemon* spp.

38. See Vestal and Schultes, 1939, p. 12; Robbins, Harrington, and Freire-Marreco, 1916, p. 67; Gilmore, 1919, p. 62.

39. See Kluckhohn and Wyman, 1940, p. 57, for description of a special ceremony for burns involving the use of juniper bark which has been used in the "Fire Dance" of a Mountain Top Way.

(4), *Gaura coccinea* (2), *Artemisia* spp. (4), *Corallorrhiza multiflora* (2).

Boils

Plants used to treat boils or abscesses may be designated by the Navajo *family* name "boil medicine" (č'ož 'aze?). Boils may be attributed to eagle infection, and treated by Eagle Way or Bead Way,⁴⁰ with "eagle plants" (N 1). Boiled eagle meat may be eaten. Life medicine also is an appropriate treatment. Preparations include poultices, dusting powders, and lotions. Boils are lanced with cactus spines.⁴¹

Lupinus Kingii (3), *Evolvulus pilosus* (2), *Opuntia* spp., *Asclepias* spp. (2), *Abronia* spp. (2), *Atriplex* spp. (2), *Artemisia* spp. (2).

Pimples

Plants used for pimples are often named "pimple medicine" (N 245). The crushed or moistened leaves are applied to the skin, or infusions are used as lotions.

Erigeron canadensis (7), *Asclepias galioides* (3), *Erysimum asperum* (3).

Itching

Medicines to relieve itching of the skin are usually prepared as infusions and applied locally as lotions, but poultices or ointments (with red ochre in mixed salve⁴²) may be used. Among the conditions for which such medicines are appropriate, informants mentioned chicken pox, small pox, measles, erythema multiforme, scabs, cold sores, sunburn, chapping, frozen feet, corns, poisoning from poison ivy or other plants, and mosquito or other insect bites. Dusting powders are used as deodorants and for itching of feet or axillae.

Atriplex spp. (2), *Iva xanthifolia* (2), *Amaranthus* spp. (3), *Dithyreaa Wislizeni* (3).

40. See Wyman and Kluckhohn, 1938, p. 29.

41. See Vestal and Schuites, 1939, p. 45.

42. See Kluckhohn and Wyman, 1940, p. 47.

Warts

Warts are treated by cutting them or tying horse hairs around them and applying certain plants. Two prescriptions, or *Phoradendron juniperinum* with a wart-like growth on chamiso (*Atriplex canescens*) were recommended for this purpose. Another treatment is to burn some powdered pith of *Helianthus annuus* upon a wart (3).

INJURY BY VENOMOUS ANIMALS

Red Ant

Diseases (especially kidney and bladder disease, sudoresis, and stomach distress) attributed to swallowing a red ant (in food or water), or to other types of "red ant infection," may be treated by Red Ant Way; hence plants used for these conditions may pertain to this Chant Way. Decoctions or infusions of the plants are taken internally and are said to "kill the ant." Itching and sores caused by red ant bite are treated by applying decoctions or infusions as lotions, or by chewing the leaves of the plants and applying them as poultices. The plants may be designated by the Navajo names "red ant medicine" (N 303), "red ant killer" (N 304), "red ant food" (N 305), or included in the Navajo family or form genus "red ant decoction" (N 306). See *diuretics*.

Grindelia aphanactis (12), *Eriogonum cernuum* (5), *Gutierrezia* spp. (7), *Androsacae septentrionalis*, vars. (4), *Dyssodia* spp. (3), *Lepachys* spp. (3), *Actinea leptoclada*, var. *Ivesiana* (2), *Zinnia grandiflora* (2), *Thelesperma* spp. (2).

Beetle

For bite of a certain black beetle, drink a decoction (or infusion) of *Croton texensis*, with *Abronia* spp. ("beetle food"—N 208).

Centipede

For centipede bites apply an infusion or a poultice of the blossoms of *Penstemon trichander* and *Castilleja integra*.

Spider

The bites of venomous spiders (e. g. the black widow) are treated by drinking, or applying as lotions, decoctions, or infusions of plants which may be designated by Navajo names referring to the spider (N 223-225).

Chara sp. (2), *Erigeron flagellaris* (4), *Androsacae septentrionalis*, vars. (3), *Petalostemum oligophyllum* (3), *Polygonum aviculare* (2), *Potentilla spp.* (2).

Snake

Snake bite: infusions or decoctions of the plants are taken internally and the leaves are applied as poultices. The skin may be incised to admit medicine. A singer at Chin Lee, Arizona, recommended several species which have a milky sap (e. g. *Euphorbia*, *Lactuca*, and *Sonchus asper*), together with *Frasera paniculata* ("big snake's plant"—N 285) and *Physaria Newberryi*.⁴³ Beauty Way may be used to treat snake bite.

Snake infection: various diseases (e. g. kidney or bladder disease) may be attributed to snake infection and treated by chants in which snakes figure as etiological factors, especially Beauty Way (also used for snake bite), Shooting Way, and Navajo Wind Way. Certain plants pertaining to these chants may, therefore, be used for such "infections" (especially Beauty Way decoction).

Protection from snakes: *Conioselinum scopulorum* (2)—sprinkle infusion around hogan, snakes dislike its odor. Infusion with four other species—sprinkle on snake to kill it; chew and apply to face and body when away from home (e. g. attending a ceremonial).

CHANT LOTION

Most ceremonials require a chant lotion which is applied to the patient's body in ceremonial order, after which he bathes in it and drinks some.⁴⁴ The ingredients are mostly

43. See Whiting. 1939, p. 77.

44. See Kluckhohn and Wyman, 1940, p. 51, for the preparation, use, and ingredients of chant lotion; also Wyman, 1936, p. 651; Franciscan Fathers, 1910, pp. 404, 405.

members of the *Labiatae*, although other fragrant plants may be used. Certain plants may be specific for given ceremonials. They may be designated by some combination of the Navajo family name "chant lotion" (keλ'o). Chant lotion is used to relieve headache, fever, lameness, and general body aches and pains, and coughs, colds, and chills. Cold infusions are employed.

Hedeoma nana (5), *Marrubium vulgare* (2), *Mentha* spp. (16), *Monarda* spp. (12), *Salvia* spp. (5), *Aquilegia* spp. (3), *Thalictrum Fendleri* (3), *Whipplea utahensis* (2), *Medicago* spp. (4), *Gaura coccinea* (2), *Artemisia* spp. (3), *Brickellia grandiflora*, var. *petiolaris* (3), *Dyssodia papposa* (2), *Eupatorium herbaceum* (2).

LIFE MEDICINE

Life Medicine, which is specific for the Life Way chants,⁴⁵ is perhaps the most widely known medicine among informants. Although an extraordinary number of botanical species (128) are said to be appropriate for this preparation, certain ones are considered basic. From two to six of these latter are used; and, if others belonging to the family can be found and added, "so much the better." Among the important ingredients members of the *Polygonaceae* and *Boraginaceae*, and one species from the *Euphorbiaceae* (*Ditaxis cyanophylla*) figure prominently. The latter, *Eriogonum lachnogynum*, and *Lithospermum multiflorum* may be spoken of as the "heads" of Life Medicine.

D. cyanophylla and *L. multiflorum* may be collected with great care, for as informants say "they are kind of afraid of it." [About twenty feet from the plant to be collected, pollen is placed upon one of the same species, from east to west, from south to north, and twice around it sunwise, while praying. The root of the desired specimen is dug up, pollen is placed in the hole, the top of the plant is broken off and pollen placed on the bottom of the stems, the top is replanted in the hole, pollen is placed on the top. Meanwhile prayers

45. See Franciscan Fathers, 1910, pp. 144, 403; Wyman, 1936, p. 640; Wyman and Kluckhohn, 1938, p. 31; Kluckhohn and Wyman, 1940, p. 56.

to the plant and for its continued growth are said. If the top is not replanted, pollen is placed in the hole and the earth is carefully smoothed over it so as to leave no trace of disturbance, while praying for more to grow. Sometimes the plant is not uprooted but side roots are broken off, pollen placed on their ends and on the broken stub ("to make it grow"), and the plant left in situ, with accompanying prayers. Roots gathered in this way are called "live medicine" (?aze? hiná) and are thought to be more powerful, indeed so powerful that one treatment recommended for fractures was to bind two plants with roots down of *Lithospermum angustifolium* on the right and left sides (south and north) and two of *Eriogonum alatum* on the front and back (east and west) of a fractured limb. (Shaped splints of cottonwood may also be used, tied with *Equisetum* sp.) Roots of *Lithospermum angustifolium* are inside the handle of the hoof rattle and certain other objects used in Life Way.⁴⁶ The Navajo family name "life medicine" (?i-ná:ji ?aze?) may be used for any of the plants in this group.

Usually the roots only of the plants are used, being dried and ground by a virgin during a Life Way chant to the accompaniment of special songs.⁴⁷ Life Medicine (and Life Way chants) is used to treat sprains, strains, fractures, swellings, bruises, wounds, burns, lameness, internal injuries, body pains, and any other results of accidents.⁴⁸ Hence its reputation as a cure-all. It is administered internally as a cold (occasionally warm) infusion or as a dry powder; it is applied to injured parts as a hot or cold poultice (occasionally as a lotion), and sometimes the roots are chewed. Because of the profusion of species obtained only those recommended by more than two informants are listed.

Eriogonum alatum (10), *E. flavum*, *E. Jamesii* (10), *E. lachnogynum* (3), *E. racemosum* (3), *Rumex* spp. (8), *Oxybaphus* spp. (6), *Silene* spp. (5), *Potentilla* spp. (5), *Astragalus* spp. (esp. *A. lonchocarpus*) (9), *Oxytropis Lambertii*

46. See Kluckhohn and Wyman, 1940, p. 43.

47. *Ibid.*, p. 56.

48. Baking over hot rocks may be used with it.

(3), *Hoffmanseggia* spp. (3), *Peteria scoparia* (2), *Psoralea* spp. (5), *Geranium* spp. (9), *Ditaxis cyanophylla* (5), *Sphaeralcea* spp. (10), *Gaura parviflora* (3), *Oenothera* spp. (7), *Cryptantha* spp. (5), *Lithospermum* spp. (13), *Penstemon* spp. (4), *Artemisia* spp. (5), *Cirsium* spp. (7), *Gutierrezia Sarothrae* (11), *Helianthella Parryi* (4), *Hymenopappus gloriosus* (3), uncorroborated—73 species.

GENERAL BODY DISEASE

Fever

Chant lotion is used to reduce fever. Infusions or decoctions of other plants are drunk. The sudatory may be used. *Artemisia Bigelovii* (2), *Marrubium vulgare* (2).

General Body Pain

Warm infusions of various plants are drunk for internal pain.

Gaura coccinea (2).

*Witchcraft Plants*⁴⁹

Various diseases may be attributed to the effects of witchcraft, but especially generalized body pain of long duration, and rheumatism. Plants used against witchcraft may be called "witchcraft plants" (N 183). Infusions are used, usually warm. They may also be used for washing hands after handling plants used *in* witchcraft.

Penstemon spp. (6), *Wulfenia plantaginea* (3), *Clematis alpina* (2), *Physaria Newberryi* (2).

Miscellaneous

Various uncorroborated plants were recommended for malaise, as tonics ("makes children grow tall"), or to use with any or all medicines for any disease. Thus *Conioselinum scopulorum* is said to "join all medicines." Infusions are usually so employed.

An infusion of *Castilleja integra* (10) may be drunk

49. See Kluckhohn, 1940.

once a month throughout pregnancy to keep the baby small. *Plantago argyrea* is said to reduce appetite ("for fat babies").

MISCELLANEOUS

Coagulant

The use of the seeds of *Solanum elaeagnifolium* to curdle milk (4) is a well known and widespread practice.⁵⁰

Arrow Poison

A mixture of *Rhus toxicodendron*, *Phacelia crenulata*, var. *ambigua*, charcoal from a lightning-struck tree, and deer's blood.

Witchcraft

A witch may drop the fruit of *Sitanion hystrix* into the open mouth of a sleeping man in order to kill him.

The pollen of five uncorroborated species may be used in bewitchment by spell.⁵¹

CEREMONIAL USES

Numerous plants are considered specific to the equipment or medicines of each ceremonial. Still others are used non-specifically for various ceremonials, or for the ceremonials of a group or sub-group. No attempt was made to compile a complete list so the following sections contain only those plants which informants voluntarily designated as having ceremonial uses while describing their therapeutic properties. Considerable information concerning the ceremonial use of plants has been given in the monograph by Kluckhohn and Wyman (1940), especially in Section 6, and a concordance of plant names in Appendix C. Other information may be found in the works of other authors, cited in the bibliography of this monograph and in the footnotes of Wyman and Kluckhohn, 1938.

In the following list the diseases for which the plants were recommended have been omitted, since they have been

50. See Vestal and Schultes, 1939, p. 50.

51. See Kluckhohn, 1940.

given in previous sections. The etiological factors and general medical uses proper to the ceremonials mentioned below may be found in Wyman and Kluckhohn, 1938.

Non-specific

Blue pollen (N 264, 265): *Delphinium Nelsonii* (4), *Oxytropis Lambertii* (2), *Penstemon oliganthus*, *Verbena MacDougalii*, *Geranium atropurpureum*. The *Delphinium* is preferred for *blue pollen*, so the others are probably substitutes. The blue petals are dried, crushed, and sprinkled ceremonially in certain instances, similarly to the use of corn pollen.⁵²

Fumigant plant (yadidi²n'it): *Oxytenia acerosa* (2). Mixed with other substances, *Oxytenia* is sprinkled upon glowing coals and the fumes are inhaled.⁵³

Odorous grass (N 301): *Hierochloe odorata* (4). The singer chews some of the grass and spits it upon the patient and certain equipment.⁵⁴

Prayer Ceremonies

The only plant medicine used is *Wulfenia plantaginea* (2).

Blessing Way

Smoke medicine: *Nicotiana attenuata* mixed with *Verbascum Thapsus* (2), mountain mahogany which has been brushed by the antlers of a deer, or other "tobaccos," five uncorroborated species—for mental disease or sick sheep (see *mental disease*). Mix juniper, pinyon pine, and Ponderosa pine needles, pinyon pitch, shavings from the horns of deer, elk, mountain sheep, and antelope, with ten other plants and burn in the corral for sick stock animals.

Holy Way Ceremonials

Lightning infection: plants used to treat the direct or indirect (*infection*) effects of lightning often pertain to one

52. See Kluckhohn and Wyman, 1940, p. 91, for further details.

53. *Ibid.*, p. 49, for recipe and use of *fumigant*.

54. See Kluckhohn and Wyman, 1940, p. 84, for further details.

of the Shooting Way chants, although several Holy Way chants claim lightning as an etiological factor. They may be called "thunder plants" (?i'n'i? č'il), and are mostly for the decoction.

Petalostemum oligophyllum (2), *Sphaeralcea marginata* (2).

Protection from lightning: Verbesina encelioides, var. exauriculata—hang the plant, top down, in the hogan at the west side, to ward off lightning. It functions as does a token.⁵⁵

Red Ant Way

See *red ant* under *injury by venomous animals*, and N 303-306.

Mountain Top Way

Several members of the *Rosaceae*, e. g. *Prunus melanocarpa*⁵⁶ (2), *Amelanchier*, and other plants which have berries, e. g. *Berberis* and *Ribes*; *Eriogonum spp.* (3).

*Night Way*⁵⁷

Salix Wrightii, *Helianthus annuus*—use stems for offering prayersticks. *Lycium Torreyi*—food for God-Impersonators.⁵⁸

Plume Way

Lotus Wrightii (2), (N 2).

*Game Way Plants*⁵⁹

Used in deer hunting for luck or to prevent deer infection.

Frasera venosa (2), (N 146).

Coyote Way

Forestiera neomexicana, *Asclepias macrotis*, (N 218).

55. *Ibid.*, p. 38.

56. See Bailey, 1940, p. 289, "cherry bread"; Matthews, 1887, p. 450, the choke-cherry is a sacred tree, a mountain plant.

57. See Matthews, 1902, pp. 41-48.

58. *Ibid.*, pp. 106, 107, 224.

59. See Hill, 1938, pp. 134-143.

*Chiricahua Wind Way*⁶⁰

Rhus canadensis, var. *trilobata*—hoops; *Opuntia arborescens*—cactus prayerstick.

Eagle or Bead Way

Lupinus Kingii—decoction or chant lotion, (N 1).

Uncorroborated

Hail Way—1 species; Water Way—8 species (N 96, 97); Shooting Way, Female Branch⁶¹—7 species; Beauty Way decoction—34 species; Navajo Wind Way⁶²—12 species; Hand Trembling Way⁶³—1 species.

Evil Way

Evil Way plants: Tetradymia canescens, var. *inermis* (8) (N 122), *Artemisia scopulorum* (3).

Prescriptions: lightning herbs⁶⁴ mixed with *Artemisia Bigelovii*, *A. Wrightii*, *Ceanothus Fendleri*, *Tetradymia canescens*, var. *inermis*, pinyon pine and juniper needles—administered with sudatory.

Decoction: *Ceanothus Fendleri* (3), *Parryella filifolia* (2).

Emetic: *Stanleya pinnatifida* (2), see emetics.

Unravelers: *Bouteloua gracilis*, *Artemisia kansana*, *A. Wrightii*, *Gutierrezia Sarothrae*, *Andropogon scoparius*, *Pseudotsuga mucronata*.

Hoops: *Salix Wrightii*, *Forestiera neomexicana*, *Lycium* spp. (2), *Rosa neomexicana*, *Juniperus monosperma*, *Prunus melanocarpa*.

Arrows:⁶⁵ *Pinus ponderosa*, *Pseudotsuga mucronata*.

Fir and plant garments: *Pseudotsuga mucronata*, *Andropogon scoparius* and various other grasses.

Cinctures: *Yucca baccata*.

60. See Kluckhohn and Wyman, 1940, Part III, p. 140.

61. *Ibid.*, Part IV, p. 161.

62. *Ibid.*, see Part II, p. 111.

63. *Ibid.*, see Part V, p. 169.

64. See Kluckhohn and Wyman, 1940, p. 52.

65. *Ibid.*, p. 102.

Misc.: *Nicotiana attenuata*—smoke; *Aquilegia elegantula*—seeds, use with odorous grass.

Mixed charcoal (for blackening)⁶⁶: *Gutierrezia Sarothrae* (2); *Bouteloua gracilis*; *Artemisia Wrightii* (3); *A. dracunculoides* (2); *A. frigida*; *Eurotia lanata* (2); *Tetradymia canescens*, var. *inermis*; *Sorghastrum nutans*; *Salix Wrightii*; *Pinus ponderosa*. Dry the plants, burn to ashes on a hot plate, and mix with *mixed salve*.⁶⁷

Enemy Way

Enemy Way plants or medicine:⁶⁸ *Juniperus monosperma* (3); *J. scopulorum*; *Thalictrum Fendleri* (or var. *Wrightii*) (3); *Achillea lanulosa*; *Artemisia frigida* (2); *A. filifolia*.

Emetic:⁶⁹ *Achillea lanulosa*; *Thalictrum Fendleri*.

Chant lotion: *Juniperus monosperma* (also use sharpened sticks for scratching, then dispose them); *Thalictrum Fendleri* (2), *Aquilegia spp.* (2).

Odorous grass:⁷⁰ *Hierochloe odorata*; *Aquilegia elegantula* (seeds).

Mixed charcoal:⁷¹ see under Evil Way.

66. *Ibid.*, p. 55.

67. *Ibid.*, p. 47.

68. Haile, 1938, pp. 52, 72, 207.

69. *Ibid.*, p. 44.

70. *Ibid.*, p. 195. Since the species mentioned above are definite basic species for their Navajo names we are convinced that Fr. Berard's rendering as "peppermint and pennyroyal" is inaccurate.

71—*Ibid.*, pp. 32, 191, 197, 233.

BIBLIOGRAPHY

- Amsden, C. A.
1934 *Navaho Weaving, its Technique and History* (Santa Ana, Calif.).
- Bailey, F. L.
1940 "Navaho Foods and Cooking Methods" (*American Anthropologist*, vol. 42, pp. 270-290).
- Castetter, E. F.
1935 "Ethnobiological Studies in the American Southwest, I. Uncultivated Native Plants Used as Sources of Food" (*The University of New Mexico Bulletin*, no. 266).
- Fenton, W. N.
1940 "An Herbarium from the Allegany Senecas" (*The Historic Annals of Southwestern New York*, pp. 787-796).
- Franciscan Fathers
1910 *An Ethnologic Dictionary of the Navaho Language* (Saint Michaels, Arizona).
1912 *A Vocabulary of the Navaho Language* (Saint Michaels, Arizona).
- Gilmore, M. R.
1919 "Uses of Plants by the Indians of the Missouri River Region" (*Thirty-third Annual Report, Bureau of American Ethnology*).
- Gregory, H. E.
1916 "The Navaho Country" (United States Geological Survey, *Water Supply Paper*, no. 380).
- Haile, B.
1938 "Origin Legend of the Navaho Enemy Way" (*Yale University Publications in Anthropology*, no. 17).
- Hill, W. W.
1936 "Navaho Rites for Dispelling Insanity and Delirium" (*El Palacio*, vol. 41, pp. 71-74).
1938 "The Agricultural and Hunting Methods of the Navaho Indians" (*Yale University Publications in Anthropology*, no. 18).
1938a "Navajo Use of Jimson Weed" (*New Mexico Anthropologist*, vol. 3, pp. 19-21).
- Kluckhohn, C.
1940 *Notes on Witchcraft among the Navaho* (in preparation).
- Kluckhohn, C., and L. C. Wyman
1940 "An Introduction to Navaho Chant Practice" (*Memoirs, American Anthropological Association*, no. 53).
- Kluckhohn, C., and K. Spencer
1940 *A Bibliography of the Navaho Indians* (New York, N. Y.).
- Lincoln, J. S.
1935 *The Dream in Primitive Cultures* (London).
- Matthews, W.
1886 "Navajo Names for Plants" (*American Naturalist*, vol. 20, pp. 767-777).

- 1887 "The Mountain Chant: a Navajo Ceremony" (*Fifth Annual Report*, Bureau of American Ethnology).
- 1902 "The Night Chant, a Navaho Ceremony" (*Memoirs*, American Museum of Natural History, vol. 6).
- Reichard, G. A.
1936 *Navajo Shepherd and Weaver* (New York).
- Robbins, W. W., J. P. Harrington, and B. Freire-Marreco
1916 "Ethnobotany of the Tewa Indians" (*Bulletin*, Bureau of American Ethnology, no. 55).
- Sapir, E.
1936 "Internal Linguistic Evidence Suggestive of the Northern Origin of the Navaho" (*American Anthropologist*, vol. 38, pp. 224-235).
- Vestal, P. A., and R. E. Schultes
1939 *The Economic Botany of the Kiowa Indians* (Botanical Museum, Cambridge, Mass.)
- Whiting, A. F.
1939 "Ethnobotany of the Hopi" (*Bulletin*, Museum of Northern Arizona, no. 15).
- Wooton, E. A., and P. C. Standley
1915 *Flora of New Mexico* (Contributions from the U. S. National Herbarium, vol. 19).
- Wyman, L. C.
1936 "The Female Shooting Life Chant" (*American Anthropologist*, vol. 38, pp. 634-653).
- Wyman, L. C., and C. Kluckhohn
1938 "Navaho Classification of Their Song Ceremonials" (*Memoirs*, American Anthropological Association, no. 50).
- Yanovsky, E.
1923 "Food Plants of the North American Indians" (U. S. Department of Agriculture, *Miscellaneous Publication*, no. 237).