Directions for collecting specimens and information illustrating the aboriginal uses of plants / by Frederick V. Coville.

SMITHSONIAN INSTITUTION.
UNITED STATES NATIONAL MUSEUM.

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GENERAL REMARKS.

Information on the subject of aboriginal botany may, of course, be best obtained by actual observation and by conversation with individuals of those tribes among whom primitive uses of plants are still in vogue. In the United States at the present time nearly all of the native tribes are assembled on reservations, and are in charge of public agents who attend to their relations with the Government. In addition, most tribes are supplied with Government schools, in charge of teachers and subject to the inspection of a superintendent. In each tribe there are prominent men, either chiefs or medicine men, from whom, under favorable circumstances, better information may be obtained than from the average individual. This is particularly true of the medicine men and women who are themselves expert in the practice of medicine, according to the Indian ideas, and are usually persons of exceptional keenness and knowledge, not only of the materials with which they work, but of the aboriginal products and usages as well. It is through these and other prominent individuals, Indian teachers and superintendents, and occasionally agents, that information is ordinarily most easily accessible. In the absence, however, of such favorable opportunities the average Indian will be found capable of communicating a great deal of useful information. It must be borne in mind by the observer that actual observation conscientiously made, so as to reduce the possibility of error, is far more valuable than any amount of second-hand information, and that a single positive detailed record, accompanied by good specimens of the products under discussion, is of permanent and almost inestimable value to the history of aboriginal botany. It is such facts and materials that the observer should secure. Hearsay evidence is principally useful in suggesting to others lines of investigation.

MATERIAL TO BE COLLECTED.

Material for identification.—Probably the most important fact to be learned about a vegetable product of aboriginal use is the scientific name of the plant from which it was derived. To obtain material, therefore, upon which a positive identification can be made should be the first object of the observer. If he is a botanist, and consequently in the habit of making herbarium specimens, he will be able to forward material in that form, which is wholly satisfactory for the purpose. To those not familiar with the preparation of herbarium specimens the following brief statement will be found useful: A herbarium specimen should consist of a flowering or fruiting plant, including not merely the portion above ground, but such an amount of the root, rootstock, tuber, or other underground parts as will indicate clearly their characteristics. It is often impossible to secure all these portions of a plant on a single specimen, but two or more should be collected when necessary. The specimen should be placed in a folded sheet of bibulous paper, such as the cheaper grades upon which common daily newspapers are printed. These sheets containing the plants are placed in a pile alternating with two or three sheets of common carpet paper, or blotting paper, and subjected, between two boards of the same size as the sheets, to a pressure of 15 to 30 pounds, applied by straps or by a weight, and so regulated as neither to crush the tender parts of the green specimens nor to allow the leaves to wrinkle in drying. Stems, roots, or other parts exceeding a quarter of an inch in thickness should be thinned on the back with a knife before pressing. Specimens of fleshy fruits, additional to the plant itself, may be dried in the open air, inclosed in envelopes, and placed in the folded sheets with the specimens of the plant. The specimens in their containing sheets should be removed from the pile of moist carpet paper each day to a similar pile of well-dried ones, and in most cases they will be found thoroughly pressed and dried within three to seven days. The sheets upon which specimens are mounted in most herbaria are of a standard size, 11½ by 16½ inches, and all the specimens dried should come within this limit. It is best, therefore, to use carpet paper and containers no larger than the herbarium sheets. If a plant is too large to be preserved entire in its normal position it may be bent in the form of an inverted V or an N and brought within the proper dimensions, or, if still too large, as in the case of trees and some herbaceous plants, branches and other portions of suitable size, illustrative of the whole plant, should be secured.

If it is impracticable for the observer to prepare herbarium specimens, he should collect a specimen of the entire plant, or, in the case of very large plants, representative portions, wrap them up securely in paper while still fresh, using preferably a glazed or oiled paper, and forward immediately, so that they may reach their destination in a fresh state. Herbarium specimens may be preserved indefinitely, and

when ready for shipment should be packed between two sheets of stiff pasteboard, tightly wrapped, and tied.

In labeling specimens the directions given below should be followed.

Materials illustrating manufacture and use.—Next in importance to the identification of the plant, in our observations, comes the question of its manufacture. This should be illustrated by specimens of the crude materials in all the different stages through which they pass, together, when possible, with specimens of the completed product. In the case, for example, of a plant whose roots are used for food, specimens of the root should be obtained, preferably those dug by the Indians themselves; other specimens of the root after cooking; still others after the material is ground or otherwise prepared for its ultimate use; and if the ground product is made into cakes or bread, samples of these also. The methods of preparation are so varied in the case of different seeds, fresh fruits, roots, textile products, etc., that no single rule can be given except to secure specimens illustrating every stage in the process of preparation. Paper envelopes or cloth bags are convenient receptacles for these materials, labeled according to the directions given below. On account of their liability to injury from moisture, insects, or other causes, it is preferable to forward specimens to their destination at once. But if this is impossible, they should be kept in a dry place, and, if they become infested by insects, should be subjected to the vapor of carbon bisulphide (a poisonous and highly inflammable substance), naphthaline, or any of the commercial products commonly employed to prevent the ravages of moths and other insects.

DESCRIPTION OF SPECIMENS, AND NOTES.

Specimens forwarded to the Smithsonion Institution should be carefully labeled, as in the absence of proper data they are almost worthless. Notes are always of interest, even when not illustrated by specimens, but they become especially important when well-labeled specimens accompany them. Descriptions of such articles are then capable of verification at any time in the future.

Labeling of specimens.—Each specimen should be marked by a number, the numbers arranged chronologically in the order of collecting. These numbers should be entered in a blank book, or on separate sheets suitable for ultimate binding, and with each number the requisite data should be written, whether the specimen is a plant collected for the purpose of identification or is a derivative product. These sheets, preferably about 5¼ by 8¼ inches in size, should accompany the specimens to their destination, duplicates being retained by the sender if he desires. A blank space should be left for the insertion of the technical name, and below should be given the common and aboriginal names,

when known, the date and place of collecting, the name of the collector, the object for which it is used, the name of the tribe, and the part used. These facts may, for convenience, be arranged in the following order:

1. Number.
2. Common name.
3. Aboriginal name of plant.
4. Aboriginal name of derived product.
5. Tribe.
6. Place.
7. Uses.
8. Part used.
9. Date of collecting.
10. Collector.
11. General remarks.

Descriptive matter.—Specimens labeled as described above do not furnish complete information on the uses of the particular plants that they represent, but they constitute the basis upon which detailed descriptions may be made. Often no one is better able to furnish these descriptions than the observer himself, and this should always be done whenever any additional information can thus be conveyed. The descriptive matter should cover especially the method of manufacture and the method of use, but it is not desired under that heading to enter largely into the customs of the Indians, at least not into their ethnological features. The following will serve to indicate the nature of the descriptive matter desired:

One of the prickly pears, *Opuntia basilaris*, is used by the Indians, prepared in a peculiar manner. In May and early June the flat, fleshy joints of the season's growth, as well as the buds, blossoms, and immature fruit are fully distended with sweet sap. They are broken off with sticks, and collected in large baskets. Each joint, having been carefully rubbed with grass to remove the fine, barbed prickles, is exposed to the heat of the sun. When they are thoroughly dry they will keep indefinitely, and are prepared for eating by boiling and adding salt. Instead of the drying process another more elaborate is sometimes adopted. A hole, about 10 inches in depth and 3 feet in diameter, is dug in the ground and lined with stones. Upon this a fire is built and other stones thrown in. When they are all thoroughly heated, the ashes, coals, and all but one layer of stones are scraped away, and some fresh or moistened grass spread in the hole. Next a layer of cactus joints is added, then more hot stones, and so on, till the pile is well rounded. The whole is then covered with sacking (originally with a mat of sedges), and lastly with moist earth. After about twelve hours of steaming the pile is opened and the nä′-vō, as the cooked cactus is called, is salted and eaten. Prepared as it is, in larger quantities than can be disposed of at once, a portion is dried and preserved. It is then in texture and appearance similar to unpeeled dried peaches.[1]

Fiber materials, Rhus trilobata and Salix lasiandra.—Sumac and willow are prepared for use in the same way. The bark is removed from the fresh shoots by biting it loose at the end and tearing it off. The woody portion is scraped to remove bud protuberances and other inequalities of the surface, and is then allowed to dry. These slender pieces of wood, that they may be distinguished from the other elements of basket materials, will be called withes. The second element is prepared from the same plants. A squaw selects a fresh shoot, breaks off the too slender upper portion, and bites one end so that it starts to split into three nearly equal parts. Holding one of these parts in her teeth and one in either hand, she pulls them apart, guiding the split with her fingers so dexterously that the whole shoot is divided into three equal even portions. Taking one of these, by a similar process she splits off the pith and the adjacent less flexible tissue from the inner face and the bark from the outer,

[1] Amer. Anthrop., V, p. 354, 1892.

leaving a pliant, flat strip of young willow or sumac wood. This is here designated a strand. Both withes and strands may be dried and kept for months and probably even for several years, but before being used they are always soaked in water.[1]

It is hardly possible to go too much into detail in description when the detail is based upon actual observation. Finally, the observer should always remember that a single positive fact or series of facts derived from actual observation among the aborigines themselves has a greater and more permanent value than an indefinite amount of information made unauthentic by the uncertainty of its origin or by carelessness on the part of the one who records it.

ABORIGINAL USES OF PLANTS.

The following list will suggest to the collector the principal uses to which plants are applied by aboriginal races in North America:

Food:
- Foods proper—
  - Farinaceous—Seeds, nuts, starchy roots, tubers, bulbs.
  - Saccharine—Sugar-pine exudates, maple sugar.
  - Herbaceous—Pot herbs, mescals.
  - Fleshy fruits—Berries, plums, cherries.
  - Condiments—Red pepper, sassafras.
- Drinks—
  - Simple aqueous drinks.
  - Acid drinks.
  - Fermented drinks.
  - Distilled drinks.
  - Narcotic drinks.

Clothing:
- For protection and use—Hats, bark dresses, moccasin thread.
- For ornament—Necklaces, hair ornaments, paints, dyes.

House and furnishings:
- House building—
  - House frames—Timber, poles.
  - House coverings—Bark, mats, thatch.
- House furniture—
  - Beds—Blankets, mats.
  - Domestic utensils—
    - Food utensils—Baskets, sieves, mortars.
    - Water-holding utensils—Baskets.
    - Washing utensils—Soap.
    - Child-rearing utensils—
      - Cradles—Frames, coverings, stuffing materials.

Heating, cooking, and lighting:
- Matches—Fire sticks.
- Tinder—Punk, moss, cottony substances.
- Fuel—Ordinary wood, resinous woods and bark, vegetable oils.
- Fire receptacles—Stoves, candlesticks, lamps, lamp wicks.

Manufacture:
- General tools—Drills, mallets, ax and hammer handles.
- Special tools—Sewing tools, arrow-making tools, net-making tools; in short, the tool chest or outfit of any craft whatever.

[1] Amer. Anthrop., V, p. 358, 1892.

Field industries:
- Hunting—
  - Killing—Clubs, spears, bows, bowstrings, arrow shafts, arrow points, quivers, air guns.
  - Trapping—Traps, snares, nets.
- Fishing—Fish nets, weirs, pounds; fishhooks, lines, poles; fish poisons.
- Harvesting—Baskets, paddles, granaries.

Travel and transportation:
- Boats—Bark canoes, dugouts, wicker boats.
- Land vehicles—Sledges, drag poles.
- Packing utensils—Pack baskets, fastening cords.
- Snowshoes—Rims, wickerwork.

Language communication:
- Paper, ink, pens.

War:
- Killing—Clubs, bows, arrows, arrow poisons, quivers.
- Painting.
- Truce—Smoking.

Amusement:
- Outdoor games—Lacrosse sticks, hoops for rolling; hoops, balls, and sticks for throwing.
- Indoor games—Dice, stick throwing, other gambling games.

Ceremonial and religion:
- Music—String instruments, drums, wind instruments, rattles.
- Dancing—Special ornaments, masks.
- Smoking—Pipes, tobacco.

Medicinal plants:
- External use—Poultices, ointments.
- Internal use—Narcotics, astringents, and other medicines.