

NOTES ON THE PLANTS USED BY THE KLAMATH INDIANS OF OREGON.

By FREDERICK V. COVILLE.

While engaged in a botanical survey of the plains of southeastern Oregon in the summer of 1896 the writer spent three days, August 21 to 23, at Fort Klamath and the Klamath Indian Agency, where he was enabled to secure information as to the principal plants used by the Klamath Indians. The notes made at the time are here brought together for publication, with a view to their use by others in securing fuller and more detailed data about the aboriginal uses of plants by this tribe. The writer hopes, when the necessary material has been collected, to prepare a comprehensive paper on the subject.

Most of the information here recorded was obtained from Joe Kirk, an educated Klamath Indian, who for several years has been the official interpreter at the agency, and from White Cindy, a Klamath medicine woman who lived on a small ranch on the lake shore a few miles south of the agency. Capt. O. C. Applegate, of Klamath Falls; Mr. Charles E. Worden, the allotting agent for the Klamath Indians, and Jesse Kirk, the brother of Joe Kirk, gave additional information.

The diacritic marks used to indicate the pronunciation of the Indian names are those employed in the Century Dictionary.

LICHENES.

Alectoria fremontii Tuckerm.

A lichen consisting of slender black threads hanging in masses often a foot in length from the branches of trees in the pine forests, particularly abundant on the black or lodge-pole pine, *Pinus murrayana*. The plant was sometimes used in former years as a famine food. To the present white inhabitants of the region it is commonly known as "black moss."

Evernia vulpina (L.) Ach.

Shwā'-wi-sām.—A bright yellow lichen, often called "yellow moss," which grows in abundance on the trunks of yellow pine and other trees. Porcupine quills obtained from the Modocs are immersed in a decoction of this lichen and take on a beautiful bright yellow permanent stain. These quills are then interwoven into baskets to form any yellow pattern desired.

EQUISETACEAE.

✓ *Equisetum hyemale* L.

Wü-chäk'-wis.—One of the common jointed scouring rushes. This was formerly used to smooth arrow shafts, just as a carpenter uses sandpaper to smooth the surface of wood.

PINACEAE.

Abies concolor (Gord.) Lindl.

Bä.—The white fir of the region, a tree occurring more or less abundantly throughout the yellow-pine forest. The wood of the tree is called *bä'-näm*. The bark is sometimes used to dye and tan buckskin, giving it somewhat the appearance of ordinary tan-colored leather.

Juniperus occidentalis Hook.

The common red cedar of the region, often made into bows for boys, rarely in former days into those used by men, the yew being much superior.

Libocedrus decurrens Torr.

Wöl'-wänsh.—The "cedar" of the region, a large tree occurring sparingly, or in particular places abundantly, throughout the yellow-pine forests. The wood of this tree (*wöl-wän'-shäm*) was used in former times for fire blocks. My informant stated positively that the bark of the tree, which some authors say is used for this purpose, is not the part employed. For a twirling stick a dry, dead twig of yellow pine, about 6 mm. (one-fourth inch) in diameter, seasoned and somewhat softened by the weather, is often employed; but the best stick is made of sagebrush, *Artemisia tridentata*.

At one of the Indian houses was seen a large V-shaped pack basket, woven from strands of light, flexible wood, which apparently had been split from large pieces of *Libocedrus decurrens*.

The branches and twigs of this tree are often used in administering a sweat bath to a sick person.

Pinus lambertiana Dougl.

Ktä'-lö.—The great sugar pine, occurring in greater or less abundance in the yellow-pine forests, particularly at their higher elevations. The seeds are sometimes gathered for food.

Pinus murrayana Balf.

Wä'-kō.—The lodge-pole pine, also called black pine and tamarack pine, an abundant tree in the low and moist portions of the yellow-pine forests. Sections of bark from trunks of the proper size are often used to make buckets for gathering berries, particularly huckleberries. The cylinder of bark is sewed together on the slitted side and at one end, the bottom therefore being wedge-shaped. Huckleberries when placed in such receptacles and properly covered with large leaves retain their freshness for a long time.

The pitch of this tree is sometimes used as a remedy for sore eyes, a very small fragment being placed inside the lid.

The trunks of young lodge-pole pines stripped of their bark are used for the poles with which dugouts are pushed through shallow water.

I was informed by Capt. O. C. Applegate that in April the cambium layer of this tree is scraped off and eaten, either as a relish or in time of famine, in exactly the same manner as the inner bark of the yellow pine.

Pinus ponderosa Dougl.

Nkōs.—The yellow pine, the most abundant forest tree of the region, which furnishes the Klamaths with their chief timber. Their boats, called dugouts, are made from single logs of yellow pine, hollowed out by fire carefully manipulated. Most of the sawed lumber now used by the Indians in the construction of their modern houses is of yellow pine. For the use of yellow-pine twigs as twirling sticks in producing fire by friction, see *Libocedrus decurrens*.

Käp'-kä is the name applied to a young tree of the yellow pine. In the spring, usually in the month of May, a broad strip of the bark is removed, and the sweet mucilaginous layer of newly forming tissue (stop'-älch) between the bark and the sap wood is scraped off and eaten. This is seldom practiced now, but in former years it must have been done commonly, for in the forest between the Chiloquin and Yainax bridges many old trees were seen whose trunks bore great scars, perhaps a meter in height and one-third or one-half as broad, where the bark had been removed when the tree was young.

TAXACEAE.

Taxus brevifolia Nutt.

Tsö'-pink'-shäm.—The yew tree, an evergreen, with leaves similar to those of a hemlock or spruce, and red berries. Abundant on the western slope of the Cascades, occurring on the eastern slope in Union Creek and on Pelican Bay, Klamath Lake. It furnished the favorite wood for bows before the adoption of firearms. These yew bows may still be seen occasionally among the Klamaths, but apparently they are kept only as relics, not for actual use. They are commonly about a meter in length, backed with sinew, the tips covered with fishskin and the string made of twisted sinew.

TYPHACEAE.

Typha latifolia L.

Pō'-päs.—The common cat-tail or cat-tail flag, abundant about Klamath Lake, Klamath Marsh, and marshy places generally. The short tuberous rootstocks late in the season, when full of stored food, are eaten under the name of *ktōks*; the leaves are used in the manufacture of mats very much after the manner of *Carex*; and the down of the fruiting spikes has been employed in recent times as a stuffing material for pillows.

SPARGANIACEAE.

Sparganium eurycarpum Engelm.

Pöd'-chäk.—The bur-reed, a marsh perennial, commonly a meter in height, with flat leaves somewhat resembling those of a cat-tail but of a bright green color, the fruit borne in spherical bur-like heads. It is common about Klamath Lake, and doubtless in other similar situations. The young rootstocks late in summer develop at their ends tubers which have a sweetish taste and are used for food. The bulbous expansion at the base of the stem, similar in its qualities, is likewise eaten, and is called *klop'-ä*.

SCHEUCHZERIAEAE.

Triglochin maritima L.

Gil-lën'-ä.—A rush-like perennial, of usually alkaline marshes, with numerous slender thickened basal leaves and a long naked flowering stem bearing a spike of greenish flowers, each succeeded by six seed-like carpels. These are parched and eaten, and sometimes, according to one Indian woman, roasted and used as a substitute for coffee.

ALISMACEAE.

Sagittaria arifolia Nutt.

Chö-ä'.—Arrowhead or wappatoo, a marsh plant, with large tender leaves shaped like arrowheads, and white flowers, common in permanently muddy soil everywhere. In autumn the slender rootstocks develop at their ends white tubers filled with starch and very nutritious. The Chinook name for the plant, wappatoo, which is widely used in the Northwest for this and another species, *Sagittaria latifolia* Willd., is a good popular designation.

From the fact that the tubers bear a general resemblance to those of the cultivated potato the name *chö-ä'* was at once applied to that plant when it first became known to the Klamaths. The name *Chewaucan*, applied to a great marsh in the Oregon plains east of the Klamath Reservation, was derived from this word, with the addition of the suffix

can, a place, the whole meaning the place where the arrowhead grows. Frémont, passing across Chewaucan Marsh, December 19, 1843, wrote on page 208 of his report:

Large patches of ground had been torn up by the squaws in digging for roots, as if a farmer had been preparing the land for grain.

POACEAE.

Agrostis perennans (Walt.) Tuckerm.

Nō'-tāk.—A small low grass, with a loose airy panicle, of common occurrence about Klamath Agency. The minute seeds are gathered for food. Though no specimens were collected, the plant is probably referable to this species, which is known to occur in the region.

Beckmannia erucaeformis (L.) Host.

Chäp'-tö.—Slew-grass, a perennial species, often a meter in height, the inflorescence a narrow panicle with spike-like branches. The species is of frequent occurrence in natural meadows and on the borders of summer pools. Its seeds are sometimes used for food.

Elymus condensatus Presl.

Gla'-i pi.—A tall grass, 1 to 2 meters (about 3 to 6 feet) in height, growing in bunches along river bottoms and locally known as "rye grass." The large grains were formerly and still are to some extent used for food under the name *gla'-i-pi-äm''*.

The size of the grains and the fact that this grass, the grain-filled heads of which are one of the most nutritious winter horse foods, covers countless acres along streams in the plains, suggests that it may be worthy of experimentation as a cultivated grain for that region.

Panicularia fluitans (L.) Kunze.

Käm'-chö-dā''-lis.—A stout marsh grass, often called "sugar grass," about a meter in height, with short, broad leaves, commonly 25 cm. by 1.5 cm. (about 1 foot by three-fifths of an inch), and bearing a spreading panicle of small flower spikes. It is common in all the marsh lands. The seeds are a favorite article of food among the Klamaths.

Phragmites phragmites (L.) Karst.

Tsäl, or *shäl*.—The common reed, in this part of the country known usually as "cane grass," a tall marsh plant, higher than a man, bearing a large plume of feathery flowers. Selected strands peeled from the surface of the stem and split till they have a width of commonly 2 to 3 mm. (one-twelfth to one-eighth of an inch) are used in the surface finish of some of the finer baskets. These strands are of a pale straw color, smooth and shining, and are known by the name *tköp*.

The seeds of *Phragmites* are sometimes used for food.

The stems are used to make arrow shafts for hunting small game, such as waterfowl. The rod-like tips of such arrows are made of currant wood, probably *Ribes cereum*.

CYPERACEAE.

Carex sp.

Bha'-nē.—A tall sedge or marsh grass with pubescence on the base of the leaves and the upper part of the leaf sheaths, abundant along the muddy margins of Klamath Lake, on the shoreward side of the tules. The long, tough, but rather light and buoyant, leaves are woven into mats, commonly 1 to 2 cm. thick (about two-fifths to four-fifths of an inch). The mats consist of small parallel bundles of the leaves fastened together at intervals by interlaced strands of some strong textile material, commonly in old times the Rocky Mountain flax, *Linum lewisii*. The plant was not seen in flower or fruit, but it is probably a *Carex*.

Carex sp.

Wich'-pī.—A tall, coarse sedge, common about the margins of Klamath Lake, in shallow water. It was not seen in flower or fruit, but probably belongs to the genus *Carex*. In early summer the growing stems, stripped of leaves and peeled, are used fresh for food, the white pith-like tissue being filled with a very palatable sugary juice. The tuberous base of the stem is also used for food under the name *khā-äls'*.

Scirpus lacustris occidentalis Wats.

Mü'-i.—The common tule of marshes and lake borders, abundant in the Klamath country. The stems are commonly used in the construction of mats after the manner of *bha'-nē*, *Carex* sp. In the making of certain closely woven baskets, especially the small ones used as hats, thin strips from the surface of a tule stem, twisted, doubled, and twisted again, are used, under the name of *twäch*, for the uprights. *Mök'-wäs* is the name used for the stained tule strands of which the black figures in these baskets are made. The color is obtained by immersing selected stems of tule in the black mud which surrounds the sulphur springs of the region. The yellow patterns are made with porcupine quills, *smī'-äm*, dyed with a yellow lichen, *Evernia vulpina*, which see.

The seeds of tule, *mä'-ēm lä'-wäls*, are sometimes used for food.

JUNCACEAE.

Juncus balticus Willd.

Tsin'-ä'-ō.—The commonest rush of the region, growing on sandy shores, especially in alkaline soils, and everywhere known as wire grass. The tough green stems are sometimes used in the weaving of mats and light baskets, and the Indians often weave from them small spoons for temporary use.

LILIACEAE.

Calochortus macrocarpus Dougl.

Yänch.—A plant described as similar to camas—that is, in its bulb, doubtless—and like it an article of food. A boy was sent out into the sagebrush to get some, but on account of the lateness of the season, the last week in August, he could find none of the tops. From the description of the plant, however, it is probably *Calochortus macrocarpus*. It bears from 1 to 6 large, tulip-like, white or pale-purple flowers.

Quamasia quamash (Pursh) Coville.

Päks.—The well-known camas, a liliaceous plant with a raceme of blue flowers, narrow almost grass-like leaves, and a bulb resembling that of a tulip. It is common in the open meadows of the yellow-pine forests, and from its extreme abundance gives to them the popular designation "camas meadows." The bulbs are gathered in spring, about the 1st of April, and either stored, without preparation, for future use, or steamed in pits after the manner of *Valeriana edulis*.

Capt. O. C. Applegate informed me that in the Willamette Valley before the days of cultivated fruits the early settlers' wives used camas bulbs in making pies. The camas of that region is probably *Quamasia leichtlinii* (Baker) Coville.

In gathering camas, a pointed instrument, in the old days usually made of the wood of mountain mahogany, *Cercocarpus ledifolius*, is thrust into the ground and the bulbs pried out. A modern camas stick, manufactured by an Indian blacksmith, was made of a bar of three-fourths inch steel 76 cm. (30 inches) long, with a crossbar at the top 12.7 cm. (5 inches) long, the lowermost 10 cm. or more tapering to a sharp point, and bent forward about the diameter of the bar.

Zygadenus venenosus Wats.

Scä'-ō, or *scou*.—A plant popularly, and doubtless correctly, supposed to poison cattle; well known locally under the name "poison camas," "white camas," and "lobelia," and common in the natural meadows. The roots when eaten cause extreme vomiting. See under *Iris*.

IRIDACEAE.

Iris missouriensis Nutt.

Ghü'-güm läk'-ō.—The blue flag or Iris of the region, common in moist meadows, especially those in which the soil becomes dry later in the season. The dried rootstocks are sometimes used by medicine men as a smoking material, mixed with white camas, *Zygadenus venenosus*, and a little tobacco, to give a person a severe nausea, in order to secure a heavy fee for making him well again.

SALICACEAE.

Populus balsamifera L.

Kō-osh'.—The so-called "cottonwood" of the region, properly known as the balm of gilead poplar. A long time ago the bark of this tree, when peeled and split, was used in the manufacture of an Indian cloth.

Populus tremuloides Michx.

Vö'-lä'l.—The aspen, more commonly known in the region as quaking asp. In former times its bark was peeled off and used to make hats.

Salix sp.

Yäs.—A general name for willow, several species of which occur on the Klamath Reservation. The frames of snowshoes are usually made of willow wood. The mesh in old times was commonly made of the Rocky Mountain flax, *Linum lewisii*, less commonly of nettle fiber, *Urtica breweri*.

The young shoots of willow, called *yä'-yäk*, usually stripped of their bark, are commonly used as a material for pack baskets.

BETULACEAE.

Alnus tenuifolia Nutt.

Wip'-läm.—The characteristic alder of the region, common along streams and the margins of bodies of fresh water. The bark is taken from the tree in the spring by peeling, at other seasons by whittling, and in either a fresh or dry state is boiled in water for use as a dye. The color, described as a bright reddish yellow, is doubtless orange, and before the advent of the dyes of civilization was in common use in coloring horsehair ropes, cinches, etc. Along the stream at old Fort Klamath in the latter part of August, 1896, I saw an alder tree which had been stripped of its bark only a few days previously, doubtless by one of the Indian women who live in the vicinity.

FAGACEAE.

Castanopsis chrysophylla minor (Hook.) A. DC.

The so-called chinquapin of the region, a shrub of the higher mountains, seldom more than a meter in height and often forming dense thickets, its nuts borne in burs similar to those of the chestnut, but smaller. The nuts are sometimes gathered by the Indians for food.

Corylus californica (DC.) Rose.

The hazelnut of the Northwest Coast. The nuts of this plant, which in the form of a small shrub penetrates the Cascades from the west through the valley of Klamath River as far as Pelican Bay, on Klamath Lake, are occasionally used for food by the Indians.

URTICACEAE.

Urtica breweri Wats.

Sleds.—The native species of nettle, a tall perennial with opposite leaves and four-angled stems, provided with stinging hairs. The fiber of the stems is used in the manufacture of cords and nets. See also under *Salix*.

POLYGONACEAE.

Eriogonum stellatum Benth.

Ba-bäk'-'-bak-lha'-näm.—A low shrub, the small, rounded, cottony leaves of which, about 20mm. (four-fifths of an inch) in diameter, are placed on burns to soothe the pain by protecting the surface from the air.

Eriogonum elatum Dougl.

Kā'-a-lum-kēs.—The plant is not used, nor was the significance of the name discovered.

Polygonum douglasii Greene.

Kāp'-i-önks.—A slender, usually much-branched plant about 50 cm. (approximately 1½ feet) high, with black, shining seeds shaped like those of buckwheat, but smaller, and narrow sheathing leaves. At maturity the seeds are inclosed in the dry, papery calyx or "hull," and in this condition they are gathered. The hulls are rubbed off by hand, and the seeds parched and often ground. This meal is either eaten dry or mixed with water and boiled, a process which turns the material red. No growing specimens were seen by the writer, but the seeds secured were from a lot gathered in dry, sandy soil on the east side of Klamath Marsh, where the plant is abundant.

Rumex geyeri (Meisn.) Trelease.

Ken-ä'-wüt.—This is a plant of which the leaves and stems are eaten fresh, and the seeds, which are "flat like those of a parsnip," are eaten when ripe. From the description given by the Indians the plant may belong to this species.

Rumex salicifolius Weinm.

Gō'-klaks.—One of the native species of dock, common in low, open, somewhat alkaline soils. The seeds are used for food. My informant stated that there were three kinds of this plant, from his description apparently all belonging to the genus *Rumex*, each with a different Indian name, and also used for food.

CHENOPODIACEAE.

Chenopodium fremonti Wats.

Kōts-on'-iks.—The native goosefoot or lamb's quarters of the region, a common annual weed in cultivated fields. The minute, black, lens-

shaped, shining seeds are gathered at maturity, in late summer, and after the customary roasting and grinding are used for food. It is of interest to note that a species of the same genus, *Chenopodium quinoa*, has for centuries constituted the chief farinaceous food of the inhabitants of the high plateau of Bolivia and Peru and has now become a cultivated plant.

AMARANTACEAE.

Amarantus blitoides Wats.

Bä-lō'-ōch.—A small amaranth, probably of this species, occurring as a weed in cultivated grounds or waste places. The black shining lens-shaped seeds, about 1 mm. (one twenty-fifth of an inch) in diameter, are sometimes used for food.

NYMPHAEACEAE.

Nymphaea polysepala (Engelm.) Greene.

Wō'-kās.—The great yellow water lily, occurring at Wocus Bay and a few other places on Klamath Lake, and in endless amount in Klamath Marsh. The large mucilaginous seed pods are gathered in boats, the seeds extracted after some process of drying the pods, and then stored for use during the year. The common method of preparing the seeds for use is to roast them either in an open basket with live coals, or more commonly in recent years in an iron frying pan over a fire. When treated thus the seeds swell and crack their coats much after the manner of parched corn. The roasted seeds are commonly eaten dry without further preparation, tasting very much like popcorn, but sometimes they are ground into meal and made into a porridge or a bread.

This is probably the most important farinaceous food of the Klamaths. They gather enormous quantities of it during the months of July and August, nearly all the old women of the tribe going to the marsh for the purpose. It is such a favorite food with the tribe that its use is likely never to be wholly given up.

BERBERIDACEAE.

Berberis repens Lindl.

Bä-bäi'-ō-säm.—The most widely distributed species of Oregon grape, a small, low shrub of the yellow-pine forests, seldom more than 15 cm. (6 inches) high, with holly-like evergreen leaves and clusters of small, grape-like, sour, blue berries, these known by the name *gä'-ō gä'-ō-säm*. The berry is said not to be eaten by the Klamaths, nor could I learn of any use, medicinal or other, to which the plant is put.

BRASSICACEAE.

Sisymbrium incisum Engelm.

Chēp'-ūs.—A slender, branching annual, commonly 25 to 50 cm. (10 to 20 inches) high, with pinnatifid, canescent leaves, yellow flowers,

and slender racemes of narrow, divergent pods. It occurs in open, upland soils, often as a weed in cultivated fields. The seeds, called *chēp'-sām*, are parched and ground for food.

SAXIFRAGACEAE.

Philadelphus lewisii Pursh.

A shrub with white or cream-colored sweet-scented flowers about 2.5 cm. (1 inch) in diameter. The stems of this shrub were used in the manufacture of arrows for war purposes or large game. In the Willamette Valley the plant is common and is known under the names "arrow wood," "flowering shrub," and "sweet syringa;" on the plains side of the Cascades, it grows at Wocus Bay, near the head of Upper Klamath Lake.

Ribes aureum Pursh.

Chōms'-kām.—The yellow-flowered currant common along streams. The sharply acid berries, *chōm'-chāk*, which vary in color at maturity from yellow to red or even purplish, are used for food.

Ribes cereum Dougl.

Chmār'-lūk.—A common currant of upland soils, with a bright red, almost tasteless, but juicy and mucilaginous berry. It is frequently gathered for food. For the probable use of the wood for arrow tips, see *Phragmites phragmites*.

Ribes oxycanthoides saxosum (Hook.) Coville.

Lhō-lō'-ē lō'-ē-sām.—The only gooseberry of the region, and locally known as such among the white people. It is a common shrub in moist bottom lands among willows and other bushes, bearing a smooth, reddish amber-colored berry 6 to 10 mm. (one-fourth to two-fifths of an inch) in diameter, with a faint bloom or glaucousness and a pleasant, slightly acid taste. It is eaten fresh or dried by the Indians, and among white people also is a favorite berry.

ROSACEAE.

Amelanchier alnifolia Pursh.

Chāk'-ām.—The common service berry or service berry of the region. It occurs abundantly on rocky slopes, on the edges of forests, and along streams in almost all parts of the reservation. The fruit, *chāk*, is gathered in large quantities in August, spread out on mats to dry, and kept for winter use. When fresh the juicy berries, which are of a dark purple color with a bloom, nearly spherical or somewhat obpyriform, have a sweet, pleasant taste similar to that of a huckleberry, but with a much less pronounced flavor. The objectionable feature of the berry is its large seeds, which are similar to those of an apple, though smaller, and become mucilaginous when chewed.

Cercocarpus ledifolius Nutt.

Yök'-mä-läm.—The well-known mountain mahogany of the region, oftener called simply mahogany, a small tree commonly 3 to 5 meters (10 to 16 feet) in height, common in openings of the yellow-pine forests, particularly at their lower elevations. The exceedingly hard wood of the tree was formerly used for root diggers or camas sticks, and for the heads of fish spears.

The coast species, *C. betulaeifolius* Nutt., crosses the Cascade Range through the valley of Klamath River, and may have been used also among these Indians. It has large toothed leaves similar to those of a birch or alder, while *C. ledifolius* has small, narrow, entire leaves with revolute margins.

Fragaria virginiana Duchesne.

Jō'-i-jiks.—The native strawberry. This fruit is eaten fresh only. The Klamaths do not dry it as they do most of their other fruits. The strawberry is not abundant in this region, but occurs here and there in patches in the yellow-pine woods.

Kunzia tridentata (Pursh) Spreng.

Chäk'-lō.—A shrub commonly 1 to 1.5 meters (about 3 to 4½ feet) in height, of a much darker green color than sagebrush (*Artemisia tridentata*), with 3 toothed leaves, and yellow five-petaled flowers nearly an inch in diameter. It is a characteristic plant of the yellow pine forest and extends to somewhat lower altitudes in the upper parts of the sagebrush belt proper. From the fact that it is a reputed favorite food of the antelope, it often passes under the name "buck brush." The roots after steeping in water are drunk as a remedy for coughs and other lung and bronchial troubles. I was informed by an Indian that this is the best medicine they have for this class of complaints. They "use it all the time."

The dry ripe fruits, which are intensely bitter, mashed in cold water and drunk are sometimes used as an emetic. The purple stain derived from the outer seed coat is also sometimes used to produce a temporary color on arrows, bows, and other objects.

Prunus demissa (Nutt.) Walp.

De-wich'-kūsh.—The common chokecherry of the West, abundant in openings of the yellow-pine forests, particularly along streams. The wood is known as de-wich'-ksäm. The ripe fruit is an important article of food, being gathered in large quantities in September, and dried.

Prunus emarginata (Dougl.) Walp.

Wō-dō-ghōt'-säm.—The wild bitter cherry of the region, occurring abundantly throughout the yellow-pine forest and sometimes forming dense thickets as high as a man. Its bright red, juicy fruit, about the

size of a garden pea, has an intensely bitter taste which has given rise to the local name "quinine cherry." The Indian name is derived from wö-dö-ghöts', whip, because the slender branches are so often used for whips. The name wit-am'-mäm ē'-wäm, given me by one Indian, the derivation being wit-am'-mäm, bear, and ē'-wäm, berry, was not known to my other informant.

Prunus subcordata Benth.

To-mö'-lö.—The wild red plum of Oregon, abundant in openings of the yellow-pine forests throughout the reservation, but particularly at Modoc Point. By the aborigines it was eaten either dry or fresh, and among the white ranchers it is a common and favorite fruit for stewing. It resembles in flavor some of the sour cultivated plums, but has an additional slightly bitter taste.

Rosa fendleri Crepin.

Chö-it'-i-äm.—The common wild rose of the region. The fruit is occasionally eaten, while the stems are sometimes used for light arrow shafts or for pipestems.

Rubus leucodermis Dougl.

Mäs'-lä.—This was the name given me for a plant said to be a raspberry. It was described as growing at Modoc Point, on the eastern shore of Klamath Lake, reaching a height of about a meter (3 or 4 feet), and bearing a bluish-black berry. The Indians now eat them fresh, and formerly were in the habit of drying them also.

Rubus vitifolius Cham. & Schlecht.

Tö-tänk'-säm.—This is the Indian name given me at different times by different Indians as the proper designation for the blackberry. It is said to be used for food, but I did not learn where it grows.

LINACEAE.

Linum lewisii Pursh.

Köl'-ä-käms, or *köl'-käms*.—The Rocky Mountain flax, a perennial plant with slender, little-branched stems about half a meter (1½ to 2 feet) in height, numerous small narrow leaves, and large blue flowers about 2 cm. (nearly an inch) in diameter. The stems produce a remarkably strong fine fiber which is made into strings and cords. These are employed in certain parts of baskets and mats, in the meshes of snowshoes, and in the weaving of fish nets. (See under *Salix* and *Carex*.)

The plant grows in openings of yellow-pine forests and in the upper altitudes of the sage plains, and could doubtless be propagated successfully in such areas without irrigation. It deserves careful experiment as a source of commercial fiber.

RHAMNACEAE.

Ceanothus prostratus Benth.

Ga-ga'-e-süm sä'-wäls.—A prostrate shrub, common in most parts of the yellow-pine forest, forming broad, dense mats not more than a decimeter (4 inches) in height, and known in some parts of California as "mahala mats." The plant has no use among the Indians. Its name, however, is interesting on account of its derivation from *ga-ga'-es*, hawk; *äm*, plant, and *sä'-wäls*, arrowhead—from the saying among the Indians that in the old days when the animals lived like men the hawks used the leaves of this plant for arrowheads. The significance of this saying is evident from the thick, holly-like, coarsely toothed leaves which closely resemble an inverted arrowhead of a certain type.

Rhamnus purshiana DC.

Sär'-um-bäk-ish.—A tall shrub usually 2 to 3 meters (about 6 to 10 feet) high, with black-skinned berries, their flesh soft, greenish, and insipid or slightly bitter, common in moist woods and rocky places along streams in the western part of the reservation, abundant between the agency and the old fort, and at Modoc Point. The bark of this plant is commercially used in medicine under the Spanish name *cas-cara sagrada*, though in this part of Oregon it apparently was not gathered for the market. The foliage, twigs, and bark are made into a tea by the Indians and used as an emetic. The berries also act as an emetic.

LOASACEAE.

Mentzelia albicaulis Dougl.

Lö'-läs.—A branching annual with roughly canescent pubescence, pinnatifid leaves, white or nearly white stems, and small yellow orange-centered flowers, common in cultivated ground and old fields. The minute, grayish seeds are much used for food.

ONAGRACEAE.

Oenothera hookeri Torr. & Gr.

Wä'-süm chön'-wäs.—The native evening primrose of the region, a common weed in cultivated ground and in waste places around dwellings. Its yellow flowers, which open at night, are about 7.5 cm. (3 inches) in diameter. The Klamath name of the plant, derived from *wäs*, coyote, *äm*, plant, and *chön-wäs*, vomit, is associated with the following story, in which I have retained as nearly as possible the sentiment and sequence of the Indian narrator. A long time ago, when the animals lived and talked like men, the coyote, or prairie wolf, who was very keen and smart, but a good deal of a sneak, just as he is to day, met one day the Indian Christ, Isis, who could do anything he wanted to—could make flowers, "grub" (i. e., food), anything. The

coyote said, in a bragging way, that he, too, could do these things just as well as Isis, and Isis said: "Very well, go ahead and make a flower." Then the coyote, who knew that he really couldn't make much of anything, was greatly ashamed, but he went off in the grass a little way and vomited, and on that spot pretty soon this great, rank, yellow-flowered weed came up. And that was the best the smart coyote could do.

umbelliferæ

APIACEAE.

Carum gairdneri (Hook. & Arn.) Gray.

Ndälk.—A plant closely related to épâ (*Carum oreganum*), and so much like it as not to be distinguishable to an unpracticed eye. Épâ has shorter, stouter roots than ndälk, and a slightly different taste. The roots are a common article of food not only among the Klamaths, but among the Umatillas, who call it sâ-hwēt'; among the Utes, who call it yam'-pä, and in many other tribes.

Carum oreganum Wats.

E'-pâ.—A slender, white-flowered, umbelliferous plant, without a popular English name, but rather commonly known among the whites by its Indian designation. This is one of the earliest spring plants gathered for food, the roots being dug about the 1st of May, at which time the contents are soft and milky. The root is commonly dried and eaten raw. (See also *Carum gairdneri*.)

Cicuta maculata L.

Skä'-wänks.—One of the species of water hemlock, white-flowered, umbelliferous plants, common in swamps and along streams, the roots containing a deadly poison. It is not clear from the specimens collected whether the species of the Klamath country is *maculata* or some very closely related one. The roots mashed and mixed with poison from a rattlesnake's poison sacs or with the decomposed liver of a deer or some other animal, which has been buried in the ground a few days, was used to poison war arrows, the heads of the arrows being dipped in the moist mixture and dried over a special kind of fire with a certain ceremonial. *Cicuta* was sometimes used among Indians to poison people in very much the same way as arsenic or other well-known poisons are used in civilized communities. It was also stated that pieces of dead fish dried in a certain manner (my informant did not know exactly how) are a deadly poison when taken in food.

Cicuta roots have the reputation of killing horses and cattle. In tramping in marshes where the plants abound, the animals crush the roots, and the poisoned water in the hoof holes is afterwards drunk or the exposed roots eaten.

Heracleum lanatum Michx.

Pöd'-chō.—Not identified, but perhaps the cow parsnip, a coarse, rough-hairy, umbelliferous plant growing in moist meadows. The young shoots when about 15 cm. (6 inches) high are used for food, and the roots are employed medicinally. The plant was said to grow at Modoc Point on Klamath Lake.

Peucedanum canbyi Coult. & Rose.

Lhe'-hūs.—A low umbelliferous plant with white flowers, finely dissected leaves, and tuberous roots. This is a food used comparatively little among the Klamaths, but a staple article among the Modocs at the Yainax subagency, who gather it in the neighborhood of Lost River and Tule Lake, in Klamath County. The sample that came to the writer's notice was a long necklace-like string of the roots which a Klamath Indian had brought from Yainax. The product is often handled in this form as well as loose in sacks. Each root is shaped like an onion, with a diameter of 2 to 3.5 cm. (about $\frac{3}{4}$ to $1\frac{1}{2}$ inches), of a yellowish or buff color on the cross-veined surface, after the removal of the blackish outer skin, and a creamy white color within. The interior has a mealy and slightly spongy appearance, is soft enough to be easily masticated without other preparation than drying, and has a faintly carrot-like taste. It belongs, indeed, to the same family as the carrot and parsnip. The roots are eaten in their simple dried form or are mashed and boiled into a mush.

Sium cicutaefolium Gmel.

Wá'-käm.—A common marsh perennial, commonly a meter in height, with simply pinnate leaves and dentate leaflets, the white flowers borne in compound umbels. The herbage of this plant, which has an aromatic flavor, is eaten as a relish.

ERICACEAE.

Arctostaphylos patula Greene.

Shle-shläp'-shäm.—The common manzanita of the yellow-pine forests, growing to a height of 1 to 1.5 meters (about 4 or 5 feet) and often forming dense thickets. Its broad, evergreen leaves, red berries, and smooth, red-brown bark make it a conspicuous and handsome shrub. The green berries are sometimes eaten, and the leaves, picked and dried at any season, are mixed with tobacco for smoking.

Arctostaphylos nevadensis Gray.

Kā-mü'-mī.—The bearberry, a small, red-stemmed shrub closely resembling the manzanita in leaves and berries, but creeping on the ground and seldom rising more than 20 cm. (about 8 inches) above it. Its dried leaves mixed with tobacco are used for smoking. A closely related

species, *Arctostaphylos uva-ursi* (L.) Spreng., occurs in northern latitudes all the way across the continent, and was one of the favorite tobacco mixtures of many other tribes. This species grows in the Cascade Mountains of middle and northern Oregon, but so far as known does not occur in the neighborhood of the Klamath Reservation. *A. nevadensis* is abundant along the road from Fort Klamath to Crater Lake, above the yellow-pine forests.

Vaccinium membranaceum Dougl.

Ē'-wām.—The common tall huckleberry of the mountains, commonly a meter in height, with large, finely serrate leaves, acute at the apex, and a purple-black luscious fruit. About the third week in August nearly all the old women of the Klamath tribe and many whole families cross the divide of the Cascades by way of Anna Creek to Huckleberry Mountain or *Ē'-wām-can*, the place of the huckleberries, a few miles southwest of Crater Lake. Here they spend a few weeks picnicking, feasting, and gathering and drying their supply of huckleberries for winter use.

Vaccinium scoparium Leiberg.¹

A low huckleberry of the forested mountain slopes, seldom 30 cm. high, with angular stems, small leaves, and sweet red fruit. The berries are eaten either fresh or dried.

APOCYNACEAE.

Apocynum cannabinum L.

Nōt, the o much prolonged. Knowing that this milky-juiced plant was widely used among the American aborigines as a source of one of their best fibers, and not learning of its use among the Klamaths, I described it to a very intelligent Indian, who then recollected that a fiber plant agreeing with my description occurred in the Lost River country south of the reservation and was used by the Modocs. No opportunity was afforded, however, to verify the identification.

POLEMONIACEAE.

Gilia aggregata (Pursh) Spreng.

Ōhl'-sām bōn'-wās.—A beautiful scarlet-flowered biennial plant of the yellow-pine belt, about 50 cm. high (approximately 18 inches), with finely divided leaves and a tubular, funnel-form corolla, commonly 3 cm.

¹This is Hooker's variety *microphyllum* of *Vaccinium myrtilloides*, which, with its lower stature and broom-like habit, smaller leaves, obsolescent calyx lobes, and red fruit, appears specifically distinct from *V. myrtilloides*. On account of the older *Vaccinium microphyllum* of Reinwardt, a new specific name, from Mr. Leiberg's manuscript, is here adopted.

(about $1\frac{1}{4}$ inches) in length. The name, from *ōhls*, dove, *ām*, plant, and *bōn-wās*, drink, commemorates the legend, current among the Indian children, who pluck the flowers and suck the nectar, that in the old days when the beasts and birds lived together and understood each other's language the wild dove's drink was the nectar of this flower, and nothing else.

NEPHTACEAE.

Labiatae

Mentha canadensis L.

Mūch-ūs'-sām.—The native true mint, frequent in the borders of marshes. A tea is made from its herbage.

SCROPHULARIACEAE.

Solanaceae

Nicotiana attenuata Wats.

Kūch'-kul.—The native wild tobacco of the region, commonly appearing as a weed in cultivated fields. My informant stated that the Indians never cultivated it, and that it makes an exceedingly strong smoking mixture.

VIBURNACEAE.

Caprifoliaceae

Lonicera conjugialis Kell.

Ō-tām.—One of the bush honeysuckles, locally but incorrectly known as "cranberry," a common plant in moist, open forests of lodgepole pine, *Pinus murrayana*. It occurred in considerable abundance at several points between the agency and Fort Klamath post-office.

The red or purplish berries, which have a mild, sweet flavor, are eaten fresh, but not to a great extent. They are never dried.

Sambucus glauca Nutt.

Slō'-lōs.—The common elder of the region, which bears large clusters of pale-blue berries, densely covered with bloom or glaucousness. The berries, *slō'-lō-sām*, are an article of food.

One curious use of the plant, now rarely resorted to, but formerly common among the Snake Indians, consists in punching out the pith from sections of the stem, ramming them full of large crickets, *Anabrus simplex* Hald., and plugging the ends. The contents of the stems were used for food in the winter.

VALERIANACEAE.

Valeriana edulis Nutt.

K-ōl'.—A perennial with a thick, deep root, deeply linear-lobed basal leaves, and a nearly leafless stem, bearing at the summit a close cyme of white flowers, these becoming long-stalked in age and ripening into small feathered nutlets. It grows along streams and in natural meadows; for example, along Wood River, between the agency and the old

fort. In cooking, a hole perhaps a meter or more (about 3 or 4 feet) in diameter and half as deep is dug in the ground and lined with stones. A fire is then built in the hole, and after burning for a sufficient time is cleared out. Fresh grass is next laid over the hot stones, then *k-öl'*, then more grass, and the whole covered with earth. The mass is then allowed to cook and steam the rest of the day and over night, when the pit is opened and the cooked roots are ready for eating.

The odor of the root is very disagreeable to white people, to such a degree, indeed, that the use of the plant about the agency was formerly forbidden.

The Snake name of the plant is *kwē'-yā*.

CARDUACEAE.

Achillea millefolium L.

Läl-wäl'-säm.—Yarrow, a weed common in meadows and pastures in the Eastern United States, and, from the evidence of its occurrence even in very remote and unsettled parts of the plains and from the statements of the Indians, unquestionably native in our Northwest. Many years ago, before the building of mill and irrigation dams, when the salmon ran up Williamson and Sprague rivers and the Indians were in the habit of drying them, it was their custom, after a fish was split open, to lay in the body cavity a yarrow stem with its leaves and flowers still attached. This treatment, by holding the fish open, hastens the drying process and prevents the decomposition that would be likely to follow if the walls were allowed to collapse. My informant knew of no special significance attached to the use of this particular plant and of no special adaptability it had for this purpose, except that it did not give the dried fish such a bad taste as some other plants.

Artemisia tridentata Nutt.

Ghät, or *bōl'-whē*.—The largest, most abundant, and most widely distributed species of sagebrush, composing probably nine-tenths of the shrubby vegetation of the plains of southeastern Oregon. In medicine a decoction of the herbage is used internally to check diarrhea, externally as an eyewash, while the mashed herbage is used as a substitute for liniment.

In the production of fire on wood by friction, the ordinary method of obtaining fire before the advent of the white man and still occasionally resorted to, small dead stems of it are used as twirling sticks, this being the most widely used and satisfactory wood for the purpose.

Away from the timber, sagebrush is the almost universal fuel of the region, not only among the aborigines, but among the white ranchmen. The short trunks, often 10 cm. (4 inches) in diameter, but more commonly one-half to two-thirds as much, have a wood of not very great solidity, which, assisted by the loose stringy bark, takes fire readily and produces fairly good coals.

Tetradymia canescens DC.

Kat-kat'-süm.—A composite yellow-flowered shrub, 1 to 2 feet in height, with silvery white, oblanceolate leaves, blooming in July and August. This is often eaten by horses, but otherwise it is a plant of no importance to the Indians.

Wyethia mollis Gray.

Stü'-mák.—A plant very similar to *Balsamorhiza*, but the canescent leaves not cordate at the base. It is abundant in the yellow-pine forests. The roots of a plant, which from the description is probably this, are mashed and used as a poultice for swellings.

Balsamorhiza sagittata (Pursh) Nutt.

Lbü.—A stout low plant, about 30 to 50 cm. (approximately 1 to 1½ feet) high, with yellow flower heads similar to a small sunflower, and large, grayish, arrow-shaped leaves often 30 cm. long, the whole plant resembling the introduced elecampane, *Inula helenium* L., of our Eastern pasture lands. Horses have a marked fondness for these leaves and are continually cropping them while under the saddle. The seeds of this plant and those of the similar *B. deltoidea* Nutt., which the Indians do not distinguish from it, are gathered, roasted, and ground as a farinaceous food. Both plants are abundant on the reservation in the yellow-pine forests.

Chondrophora nauseosa (Pursh) Britton.

Wäl'-wäl.—One of the plains shrubs known as rabbit brush. A silvery-white variety of this species about 4 feet high, with narrowly linear leaves, and bearing yellow composite flowers in September, is common in the margins of the yellow-pine forests about the agency. Its mashed herbage, aromatic and resinous, is used to raise blisters.

Chrysothamnus bloomeri (Gray) Greene.

Wäl'-mi.—A yellow-flowered composite shrub, 1 to 3 feet high, with slender, bright green foliage. A poultice of the mashed leaves and flowers is used to draw blisters. The name appears to be applied also to other related shrubs containing aromatic-resinous principles, and used in a similar manner.

Madia glomerata Hook.

Gö'-ē-whä.—A glutinous, yellow-flowered, composite annual plant, one of the several species called "tarweed." The seeds are often used for food.

ALPHABETICAL LIST OF INDIAN NAMES, WITH THEIR TECHNICAL EQUIVALENTS.

| | |
|-----------------------------|-----------------------------------|
| Bä..... | <i>Abies concolor.</i> |
| Ba-bäk'-bak-lha' näm | <i>Eriogonum stellatum.</i> |
| Bä-bä'-ö-säm | <i>Berberis repens.</i> |
| Ba-lö'-öch | <i>Amarantus blitoides.</i> |
| Bä'-näm | <i>Abies concolor.</i> |
| Bha'-nē | <i>Carex.</i> |
| Böl'-whē | <i>Artemisia tridentata.</i> |
| Chäk'-äm | <i>Amelanchier alnifolia.</i> |
| Chäk'-lö | <i>Kunzia tridentata.</i> |
| Chäp'-tö | <i>Beckmannia cruceiformis.</i> |
| Chēp'-äs | <i>Sisymbrium incisum.</i> |
| Chmār'-lāk | <i>Ribes cereum.</i> |
| Chō-ä' | <i>Sagittaria arifolia.</i> |
| Chō-it'-i-äm | <i>Rosa fendleri.</i> |
| Chōm'-chäk | <i>Ribes aureum.</i> |
| Chōms'-kām | <i>Ribes aureum.</i> |
| De-wich'-kūsh | <i>Prunus demissa.</i> |
| De-wich'-ksäm | <i>Prunus demissa.</i> |
| E' pá | <i>Carum oreganum.</i> |
| Ē'-wām | <i>Vaccinium membranaceum.</i> |
| Ga-ga'-e-säm sä'-wāls | <i>Ceanothus prostratus.</i> |
| Gä'-ö ga'-ö-säm | <i>Berberis repens.</i> |
| Ghā'-gum läk'-ō | <i>Iris missouriensis.</i> |
| Ghāt | <i>Artemisia tridentata.</i> |
| Gil-lēn'-ä | <i>Triglochin maritima.</i> |
| Gla'-i-pi | <i>Elymus condensatus.</i> |
| Gla'-i-pi-äm'' | <i>Elymus condensatus.</i> |
| Gō'-ē-whä | <i>Madia glomerata.</i> |
| Gō'-klaks | <i>Rumex salicifolius.</i> |
| Jō'-i-jiks | <i>Fragaria virginiana.</i> |
| Kā'-a-lum-kēs | <i>Eriogonum elatum.</i> |
| Käch'-kul | <i>Nicotiana attenuata.</i> |
| Kām'-chō-dā''-lis | <i>Panicularia fluitans.</i> |
| Kā-mä'-mī | <i>Arctostaphylos nevadensis.</i> |
| Käp'-i-önks | <i>Polygonum douglasii.</i> |
| Käp'-kä | <i>Pinus ponderosa.</i> |
| Kat-kat'-säm | <i>Tetradymia canescens.</i> |
| Ken-ä'-wät | <i>Rumex geyeri.</i> |
| Khä-äls' | <i>Carex.</i> |
| K-öl' | <i>Valeriana edulis.</i> |
| Köl'-ä-käms | <i>Linum lewisii.</i> |
| Köl'-käms | <i>Linum lewisii.</i> |
| Kō-osh' | <i>Populus balsamifera.</i> |
| Kōts-on'-iks | <i>Chenopodium fremonti.</i> |

| | |
|---------------------------|--|
| Ktä'-lö | <i>Pinus lambertiana.</i> |
| Kwē'-yā | <i>Valeriana edulis.</i> |
| Läl-wäl'-säm | <i>Achillea millefolium.</i> |
| Lbä | <i>Balsamorhiza sagittata.</i> |
| Lhō-lō'-e lō'-ē-säm | <i>Ribes oxycanthoides saxosum.</i> |
| Lō'-läs | <i>Mentzelia albicaulis.</i> |
| Mäch-äs'-säm | <i>Mentha canadensis.</i> |
| Mä'-ēm lä'-wäls | <i>Scirpus lacustris occidentalis.</i> |
| Mä'-i | <i>Scirpus lacustris occidentalis.</i> |
| Mäs'-lä | <i>Rubus leucodermis.</i> |
| Ndälk | <i>Carum gairdneri.</i> |
| Nkōs | <i>Pinus ponderosa.</i> |
| Nöt | <i>Apocynum cannabinum.</i> |
| Nō'-täk | <i>Agrostis perennans.</i> |
| Öhl'-säm bön'-wäs | <i>Gilia aggregata.</i> |
| Ö'-täm | <i>Lonicera conjugalis.</i> |
| Päks | <i>Quamasia quamash.</i> |
| Pöd'-chō | <i>Heracleum lanatum.</i> |
| Pō'-päš | <i>Typha latifolia.</i> |
| Sá-hwēt' | <i>Carum gairdneri.</i> |
| Sär'-um-bäk-ish | <i>Rhamnus purshiana.</i> |
| Scä'-ō | <i>Zygadenus venenosus.</i> |
| Scou | <i>Zygadenus venenosus.</i> |
| Shäl | <i>Phragmites phragmites.</i> |
| Shle-shläp'-shäm | <i>Arctostaphylos patula.</i> |
| Shwā'-wi-säm | <i>Evernia vulpina.</i> |
| Skü'-wäns | <i>Cicuta maculata.</i> |
| Sleds | <i>Urtica breweri.</i> |
| Slō'-lös | <i>Sambucus glauca.</i> |
| Slō'-lö-säm | <i>Sambucus glauca.</i> |
| Stä'-mäk | <i>Wyethia mollis.</i> |
| Stop'-älel | <i>Pinus ponderosa.</i> |
| Tköp | <i>Phragmites phragmites.</i> |
| To-mō'-lö | <i>Prunus subcordata.</i> |
| Tō-tänk'-säm | <i>Rubus vitifolius.</i> |
| Tsäl | <i>Phragmites phragmites.</i> |
| Tsim-ä'-ō | <i>Juncus balticus.</i> |
| Tsō-pink'-shäm | <i>Taxus brevifolia.</i> |
| Vō'-lä | <i>Populus tremuloides.</i> |
| Wä-chäk'-wis | <i>Equisetum hyemale.</i> |
| Wä'-käm | <i>Sium cicutaeefolium.</i> |
| Wä'-kō | <i>Pinus murrayana.</i> |
| Wöl'-wäl | <i>Chondrophora nauseosa.</i> |
| Wä'-mi | <i>Chrysothamnus bloomeri.</i> |
| Wä'-säm chōn'-wäs | <i>Oenothera hookeri.</i> |
| Wich'-pī | <i>Carex.</i> |
| Wip'-läm | <i>Alnus tenuifolia.</i> |
| Wit-am'-mäm ē'-wäm | <i>Prunus emarginata.</i> |
| Wō-dō-ghōt'-säm | <i>Prunus emarginata.</i> |
| Wō-käs | <i>Nymphaea polysepala.</i> |
| Wöl'-wänsh | <i>Libocedrus decurrens.</i> |
| Wöl'-wän'-shäm | <i>Libocedrus decurrens.</i> |
| Yam'-pä | <i>Carum gairdneri.</i> |
| Yänch | <i>Calochortus macrocarpus.</i> |
| Yäs | <i>Salix.</i> |
| Yä'-yäk | <i>Salix.</i> |