

GITKSAN TRADITIONAL MEDICINE: HERBS AND HEALING

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ABSTRACT.—The Gitksan people live along the Skeena River in northwest British Columbia, Canada. Gitksan traditional medicine is still practiced as an adjunct to modern allopathic medicine. Medicinal plants are used as decoctions, infusions, poultices, and fumigants, or are chewed for a wide variety of medical conditions. Traditional Gitksan life involved seasonal movement to utilize a wide variety of plant and animal resources. The Gitksan people viewed their environment as a harmonious interacting whole which included people as one of its elements. Maintenance of this balance was crucial to the health of the environment and the survival and health of the people. Shamans, bone-setters, midwives and herbalists all contributed to maintenance of health and treatment of illness in the traditional system. Extensive use was made of plant products as medicines.

INTRODUCTION AND SETTING

The Gitksan people of northwestern British Columbia, Canada, live along the Skeena River and its tributaries (Fig. 1). The natural environment consists of densely forested wide glacial valleys separated by rugged mountain ranges with alpine meadows, glaciers and rocky cliffs at their summits. The region lies in the transition between the Pacific Coast Forest types which extend from Central California to Southeast Alaska and the Boreal Forest which extends across Canada and Central Alaska. The Gitksan culture, too, is transitional, combining coastal fishing strategies with interior hunting and trapping. It is part of the North Coast culture area (Drucker 1955; Woodeock 1977) and their language is closely related to Tsimshian (Drucker 1955; Garfield 1939; Duff 1959, 1964). The neighboring Wet'suwet'en are an Athabaskan speaking group allied to the Carriers of the interior of central British Columbia. The Wet'suwet'en have acquired many coastal cultural characteristics from prolonged contact and intermarriage with the Gitksan, and some diffusion of cultural adaptations and words with Wet'suwet'en roots has occurred in Gitksan. The eastward extent of Coastal cultural adaptations into the interior in the Nass and Skeena areas is made possible by the inland extension of western red-cedar (*Thuja plicata*¹) and the presence of large navigable rivers with abundant salmon.

Traditionally subsistence involved seasonal movement to utilize different resources, notably four species of salmon (*Oncorhynchus* spp.), steelhead trout, oolachan (*Thalichthys pacificus*, an anadromous smelt), spring greens, berries, edible roots, and caribou, mountain goat and marmot. Periods of dispersal on the landscape were interspersed with winter residence in large centrally located villages. Before European contact, all activities of the Gitksan were conducted in the context of this annual cycle of movement (Fig. 2) and the people saw themselves as an integral part of the natural system.

Movement on the land to utilize the resources necessary for survival was shaped by the structure of the society which organized people into matrilineal clans and clan subdivisions called houses (*wilp*) (Cove 1982; Adams 1973; Neil Sterrit Jr., Don Ryan, personal communication) characterized by crests and governed by hereditary chiefs. These

houses were the units which controlled access to the resources which were owned by the chief on behalf of his [her] people. The chiefs and their houses had specific territories which were hunting, gathering, and fishing grounds. The high chief controlled harvest of the resources and ensured, through sharing, that the needs of all were met. Some flexibility in where a family hunted or fished was afforded since either the husband's or wife's territory could be exploited, and the father's rights could be used until he died.



FIG. 1.—Gitksan Traditional Territories.

Resources in this landscape are extremely patchy (non-uniformly dispersed in space and in time)². Gathering activities were intensive in season because of the marked seasonality of resource availability and the long winters. In past times not only fish and meat but also berries were dried and smoked for winter provision.

In the present time, most Gitksan live in the six large villages, which are Indian Reserves, or in the nearby towns. Subsistence activities are still very important in village economy. Fish and berries form a significant part of the local diet. Today canning and freezing largely replace smoking and drying food for winter storage. Purchased foods supplement wild foods especially in winter.

TIME	ACTIVITY	ANIMALS	PLANTS	MEDICINES	PLACE
DEC	Feasting	consume dried fish & meat, oolachan grease	consume dried & stored berries, fruits		winter villages
DEC	Purification			purification before & during trapping	
FEB	Winter Trapping	marten, mink, fox, wolverine, weasel, wolf, coyote, fisher			trapping territories
MAR	Spring Trapping & Fishing	beaver trapping over-wintering steelhead trout		gather devil's club bark, calla stems	
MAR	Oolachan Grease Trade	oolachan & other marine resources			grease trail & coast
APR	First Salmon Feast	chinook salmon		blessing to keep fish coming	
MAY	Spring Salmon Fishing	chinook salmon	cow parsnip, red cedar bark, pine cambium, soapberries, fireweed stalks	gather yellow pond lily root	fish camps
JUN	Summer Salmon Fishing/Smoking	sockeye salmon	saskatoon berries, nettles for cordage	gather yellow pond lily root, soapberry leaves	fish camps
JUL	Berry Picking & Preserving	black bear	huckleberries, lowbush & highbush blueberries, highbush cranberries		berry patches
AUG	Purification			purify self & gun with <i>mulgwaxw</i>	hunting territories
SEPT	Fall Hunting	moose, mountain goat, caribou, deer, marmot		gather <i>mulgwaxw</i> , valerian root, devil's club, yellow pond lily	fish camps
OCT	Fall Salmon Fishing/Smoking	coho salmon, steelhead			
NOV	Preparation For Winter	moose hunting, smoke meat	collect firewood		winter villages

FIG. 2.—Generalized annual cycle of activities and resource gathering among the Gitksan in the late nineteenth and early twentieth centuries. Travel to the coast for commercial fishing and cannery work has been omitted from the present diagram.

Fishing sites remain valuable property of individual chiefs and river salmon fishing is conducted in accord with the traditional system. In contrast, berrying, gathering and hunting activities are much more opportunistic and reflect centralization of residence in villages and ease of access to sites by vehicle. The modern version of the hunting territory is the "trapline." The primary nature of a chief's "trapline" is not simply a trapping area, but rather a word for his traditional hunting territory.

Reflecting beliefs about the harmonious interaction of people and the land and the balance of natural forces, the fundamental Gitksan approach to health is holistic and preventative. When problems arose in pre-contact times, healing was handled by various specialists. *Halayt* [spiritual healers], herbal healers, bone setters, and midwives all participated in the maintenance of health and prevention and treatment of disease. Extensive use was made of plant products as medicines. In the past sixty years with the influence of the missionaries and modern Canadian life, the *halayt*, bonesetters and midwives have largely disappeared. However, traditional herbal remedies have continued to be employed, and some people who were trained in herbal healing are still living.

The present study is part of a program to preserve and transmit traditional knowledge of plant uses and preparation of indigenous medicines among the Gitksan and Wet'suwet'en peoples. Until very recently, the low status of traditional lore and the cultural emphasis on ownership of knowledge made these practices very private, but the renewed interest and pride in culture in recent years has generated considerable interest in learning about and reviving this knowledge.

METHODS

We have conducted interviews with 23 Gitksan elders and other knowledgeable Gitksan people about medicines and plant use⁴. Interviews were in Gitksan and English, and written notes and tape recordings made. Photographs were taken in the field of significant plants and herbarium specimens were collected. Identifications were verified by informants from growing or fresh material. Supplemental verification of plant identity was made from photographs or line drawings. Plant determinations were made by Gottesfeld and Gitksan language interviews were conducted by Anderson. Botanical specimens, photographs, and tape recordings are housed in the Gitksan-Wet'suwet'en Tribal Council Archives and Library in Hazelton British Columbia. A set of voucher specimens is housed in the British Columbia Provincial Museum Herbarium in Victoria.

MEDICINAL PLANTS

Use of medicinal plant preparations forms an important part of Gitksan traditional medicine. Medicinal plant preparations are used as tonics, purgatives and emetics, expectorants and demulcents, wound dressings and antiseptics, poultices, ophthalmic and aural preparations, as skin washes, and as fumigants. Herbal preparations are used to prevent illness and promote health, to treat specific symptoms of disease, for purification, and for protection from witchcraft. In the Gitksan concept, illness results from an imbalance in the individual or the environment. Purification has as its aim the restoration of the disturbed balance, the cleansing of the affected individual. Likewise, there is a strong emphasis in treatment of disease by purgatives or emetics, which drive out the impurity or illness, leaving the body clean and ready for the return to normal body function.

A number of plants have been used by the Gitksan for medicinal purposes in the past and at present. Important and widely used plants include Devil's club (*Oplopanax horridum* (Smith) Miq.), yellow pond lily (*Nuphar polysepalum* Engelm.), soapberry *Shepherdia canadensis* (L.) Nutt., lodgepole pine (*Pinus contorta* Dougl. ex Loudl), subalpine fir (*Abies lasiocarpa* (Hook.) Nutt.) and spruce (*Picea engelmannii* Parry and *glauca* (Moench) Voss.), False or Indian hellebore (*Veratrum viride* Ait.) red elderberry (*Sambucus racemosa* L.), cow parsnip (*Hexacleum lanatum* Michx.), common juniper (*Juniperus communis* L. subsp. *nana* (Willd.) Syme) and wild calla (*Calla palustris* L.). These plants are used alone or as mixtures for a wide variety of conditions. They are administered as poultices, decoctions, infusions, external washes, or as smudges.

Devil's Club.—*Wa'uumst, Hu'ums* [*Oplopanax horridum* (Smith) Miq.] [Fig. 3]. Devil's club is a sprawling deciduous shrub 1 to 5 m high which grows in moist coniferous and mixed forests, and in avalanche tracks. It is common in northwest British Columbia. The stems can be gathered after the leaves senesce or when the plant is dormant, but not in spring when it is just leafing out. It is not "ripe" or ready then. One elder stated it should be gathered after the first snowfall in October.

The leafless spiny stems are the part used by the Gitksan. For most uses the inner bark or cambium layer is scraped off of the stems. The prepared inner bark can be used fresh to prepare an infusion or decoction; it can be chewed, or applied as a poultice for dressing wounds (Wilson *et al.* 1984), or dried and stored as "chips" for later use. The pliable fresh bark strips are sometimes formed into "pills" for later chewing. Some recipes which involve boiling devil's club do not require scraping the inner bark from the stems. Some elders boil chunks of fresh, unpeeled devil's club stems to make decoctions of devil's club.



FIG. 3.—Elder Elsie Morrison gathering Devil's Club (*hu'ums*, *Oplopanax horridum*).

The inner bark of Devil's club is used fresh or dried for rheumatism, respiratory ailments, as a general tonic, for stomach ulcers and stomach pain, and for gynecologic cancers. The fresh inner bark is used as a dressing for open wounds (Wilson *et al.* 1984). Regular chewing of fresh devil's club inner bark is believed to maintain good health. Good health and vigor among older people has been attributed to regular use of devil's club. An infusion of fresh devil's club bark is a tonic and "energizer." An infusion of dried devil's club bark is used to treat stomach pain and ulcers. Devil's club tea was also drunk in conjunction with fasting in certain purification rituals. Devil's club is generally used by hunters and trappers to improve their luck and because bathing in a solution of devil's club is reputed to remove human scent (Wilson *et al.* 1984). Regular chewing of (preferably fresh) devil's club bark is reported to be helpful in treating rheumatism or stiffness of the joints. An elder from Kitwancool reported that he was able to cure arthritis in his right shoulder in one month by chewing devil's club every day. The chewed bark is swallowed by the user.

Devil's club is also an ingredient of a number of herbal mixtures (Wilson *et al.* 1984; H. Smith 1926). We have collected recipes for tonics which employ devil's club in combination with juniper boughs, alder bark (*Alnus incana*), wild calla stems (*Calla palustris*), subalpine fir bark (*Abies lasiocarpa*), mountain ash bark (*Sorbus sitchensis* or *scopolina*) and spruce bark (*Picea engelmannii* or *glauca*). These decoctions are used as tonics, to prevent or treat influenza, respiratory ailments or tuberculosis, and to achieve spiritual well-being.

The inner stem bark or the root bark of devil's club is widely used by all native groups throughout its range for a variety of medicinal purposes (Table 1) (see review by Turner 1982; and Gunther 1973; Turner *et al.* 1980, 1983; Justice 1966; Smith 1983; Smith 1928; MacGregor 1981). It is generally reputed to be helpful in arthritis and rheumatism, stomach ailments, wound treatment, childbirth or pregnancy, cancer, and respiratory ailments. In addition to the many uses listed in Table 1, it has been reported to control blood sugar levels (Justice 1966). Some modern Gitksan have employed it for control of diabetes after learning about it from Tsimshian relatives. Devil's club is burned as a fumigant to ward off sickness by the Wet'suwet'en or purify a dwelling of bad spirits by the Tsimshian. The Niska'a of the Nass Valley also place high value on it for medicine.

Devil's club was also widely used for its spiritual power in purification rituals and for "luck" (Turner 1982). The Wet'suwet'en, whose territory adjoins the Gitksan to the south and east, place high value on devil's club for purification and luck. Bathing with devil's club, and consumption of devil's club tea formed important parts of the ritual preparation for the winter hunting and trapping. The hunter who completed the extended preparation, it was believed, would be very lucky and successful in his endeavours.

It appears that no definitive investigation of the chemistry of devil's club stem bark has been made. Smith's (1983) review of the pharmacognosy of devil's club states that a 1927 study (Kariyone and Morotomi 1927, cited in Smith 1983) of an ether extract of devil's club roots and stems isolated two oils, a sesquiterpene named equinopanacene, and a sesquiterpene alcohol, equinopanacol. The general constituents of devil's club extracts include oleic and unsaturated fatty acids, glycerides, saponins and tannins (Stuhr and Henry 1944, cited in Smith 1983). Devil's club is in the Araliaceae, the same family as the widely used *Panax* spp. (ginseng). Like the ginsengs, a major use is as a tonic or to promote general health.

Table 1.—Uses of Devil's Club by different Indian groups.

Use	Group	Source ⁵
emetic/cathartic/ purgative	Gitksan	Smith 1928
	Tlingit	Smith 1973
	Eyak	Smith 1973
	Bella Colla	Turner 1973; Smith 1928
	Southern Carrier	Smith 1928
	Wet'suwet'en	Smith 1928; Morice 1893
laxative	Haida	Turner 1973
	Tlingit; Kaigani Haida	Justice 1966
	Heiltsuq (Bella Bella)	B. Rigsby in Turner 1982
	Southern Kwakiutl	Turner & Bell 1973
	Tsimshian	MacGregor 1981
	Gitksan	Wilson <i>et al.</i> 1984
	Tanaina (Upper Inlet)	Kari 1977
Tlingit; Kaigani Haida	Justice 1966	

Table 1.—Uses of Devil's Club by different Indian groups. (continued)

Use	Group	Source ⁵
Arthritis/rheumatism	Bella Coola	Smith 1928
	Thompson	Turner <i>et al.</i> In Press
	Gitksan	this study
	Tlingit, Kaigani Haida	Justice 1966; MacGregor 1981
	Haida	Turner 1970
	Bella Coola	Smith 1928
	Ohiat Nootka	Rollins 1972
	Nitinaht	Turner <i>et al.</i> 1983; Rollins 1972
	Sechelt	Bouchard 1977; Rollins 1972; Turner & Timmers 1972
	Squamish	Rollins 1979
	Upriver Halkomelem	Galloway 1979
	Lilloet	Turner 1972
	Tsimshian	MacGregor 1981
Tonic	Tlingit, Kaigani Haida	Justice 1966
	Haida	Turner 1970
	Bella Coola (with <i>Ribes</i>)	Bouchard 1975
	Sechelt	Bouchard 1977
	Cowichan/Halkomelem	Rollins 1972
	Thompson	Turner <i>et al.</i> In Press
	Gitksan	this study; Wilson <i>et al.</i> 1984
Childbirth	Carrier	Morice 1893
	Skagit (with <i>Chimaphila</i> and <i>Rhamnus</i>)	Gunther 1973
Fever	Tanaina (Kenai & Upper Inlet)	Kari 1977
Tuberculosis	Tanaina (Upper Inlet)	Kari 1977
	Tlingit, Kaigani Haida	Justice 1966
	Southern Kwakiutl	Turner & Bell 1973
	Nitinaht (with <i>Abies</i>)	Rollins 1972
	Skagit with <i>Chimaphila</i> and <i>Rhamnus</i>)	Gunther 1973
	Okanagan-Colville	Turner <i>et al.</i> 1980
	Sahaptin	D. French in Turner 1982
	Gitksan (alone and in mixture)	this study; Wilson <i>et al.</i> 1984

Table 1.—Uses of Devil's Club by different Indian groups. (continued)

Use	Group	Source ⁵
Respiratory ailments/ coughs/colds	Gitksan	this study, Wilson <i>et al.</i> 1984
	Tanaina (Upper Inlet)	Kari 1977
	Tlingit; Kaigani Haida	Justice 1966; MacGregor 1981
	Haida	Turner 1970
	Squamish	Bouchard & Turner 1976
	Cowichan/Haikomelem	Rollins 1972
	Cowlitz	Gunther 1973
	Okanagan-Colville	Turner <i>et al.</i> 1980
	Tsimshian	MacGregor 1981
Poultice or wound dressing/disinfectant/ topical analgesic	Tlingit	Smith 1973
	Tlingit; Kaigani Haida	Justice 1966
	Central Carrier	Central Carrier Linguistic Comm 1973
	Gitksan	this study, Wilson <i>et al.</i> 1984
	Wet'suwet'en	unpublished study of authors
Cancer	Tlingit; Kaigani Haida	Justice 1966
	Gitksan	this study
	Tsimshian	MacGregor 1981
General sickness, flu	Haida	Turner 1970
	Carrier	Central Carrier Linguistic Comm 1973
	Bella Coola	Bouchard 1975-77 in Turner 1982
	Thompson	Annie York in Turner 1982
	Kootenay	Hart <i>et al.</i> 1981
Diabetes	Heiltsuq (Bella Bella)	MacDermott 1949
	Sechelt	Bouchard 1978
	Squamish (with <i>Abies</i>)	Bouchard & Turner 1976
	Tsimshian	Large & Brocklesby 1938; unpublished study of authors
Skin Wash	Mainland Comox	Bouchard 1973
	Sechelt	Rollins 1972; Turner and Timmers 1972
	Gitksan	Wilson <i>et al.</i> 1984

Table 1.—Uses of Devil's Club by different Indian groups. (continued)

Use	Group	Source ⁵
Ashes or charcoal for sores burns or swelling	Tlingit	Krause 1956
	Southern Kwakiutl	Roas 1966
	Sechelt	Bouchard 1977
	Thompson	Steedman 1930
Purification	Haida	Newcombe unpub. notes ca 1901 (in Turner 1982)
	Gitksan	this study
	Wet'suwet'en	unpublished study of authors
	Tlingit	Krause 1956
Amulet (protection)	Haida	Turner 1970
	Bella Coola	Turner 1973
Luck (hunting or gambling)	Haida	Newcombe unpub. notes ca 1901 (in Turner 1982)
	Wet'suwet'en	unpublished study of authors
	Tsimshian	Boas 1916
	Gitksan	Wilson <i>et al.</i> 1984
Scent removal	Gitksan	Wilson <i>et al.</i> 1984, this study
	Tsimshian	M. Seguin in Turner 1982
Fumigant	Bella Coola	Bouchard 1975
	Wet'suwet'en	unpublished study of authors
	Tsimshian	unpublished study of authors

Yellow Pond Lily. — *Gahidaats* [*Nuphar polysepalum* Engelm.] (Fig. 4) Yellow pond lily is a rooted aquatic growing in small ponds and shallow lakes and marshes in 1 to 2 m of water. The leaves emerge in early May and senesce in the fall. The thick rootstock or rhizome, the portion used by the Gitksan overwinters, rooted in the muddy pond bottom. The rhizome is the portion of the plant used. It is laborious to dig. Because of this, floating rhizomes loosened by beavers are used if possible. According to one elder yellow pond lily should be harvested in May, or after flowering, in the fall. Other informants feel that the time of gathering during the growing season is not significant. The cortex and adhering leaf bases are peeled off of the fresh rhizome, it is sliced, and the slices strung on a stick to dry. They are stored in this manner until needed or powdered when dry and stored in sealed glass jars. It is necessary to rehydrate the root slices to use them; powdered root can be infused in boiling water for use. Powdered root can also be sprinkled on food and eaten.

Table 2.—Uses of *Veratrum Viride* by different Indian groups.

Use	Group	Source
internal use of infusions or decoctions of root or of fresh root juice	Haisla	Lloyd Starr pers. comm.
	Lillooet	Nancy Turner pers. comm.
	Tsimshian	MacGregor 1981
	Bella Coola	Edwards 1980
	Yakutat Tlingit	de Laguna 1972
external use of infusions or decoctions or of root piece	Gitksan	Wilson <i>et al.</i> 1984; this study
	Bella Coola	Edwards 1980
	Tsimshian	MacGregor 1981
	Yakutat Tlingit	de Laguna 1972
snuff	Tsimshian	MacGregor 1981
	Okanagan-Colville	Turner <i>et al.</i> 1980
poultice of the leaves for arthritis, sores or fractures	Tsimshian	MacGregor 1981
	Okanagan-Colville	Turner <i>et al.</i> 1980
	Bella Coola	Edwards 1980
purification with infusions or decoctions of the root	Gitksan	this study
fumigant for purification and spiritual purposes	Gitksan	this study
	Haisla	Lloyd Starr pers. comm.
	Bella Coola	Edwards 1980
amulet for luck and protection; protection from witchcraft	Lillooet	Nancy Turner pers. comm.
	Haisla	Lloyd Starr pers. comm.
	Gitksan	this study
	Bella Coola	Edwards 1980
magical uses	Okanagan-Colville	Turner <i>et al.</i> 1980

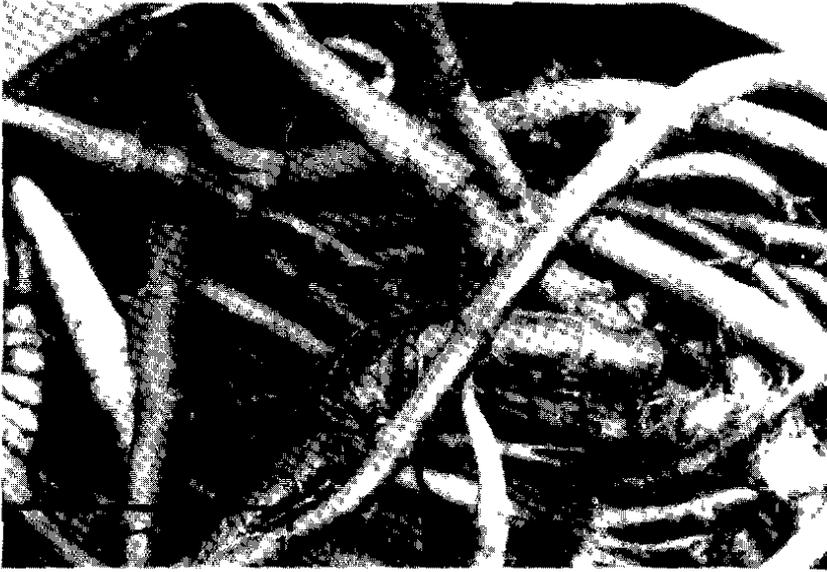


FIG. 4.—Dried *gahldaats* root slice (*Nuphar polysepalum*).

The sliced rootstock of yellow pond lily is used as a poultice for arthritic joints, fractures, and skin ulcers, and the decoction of the fresh rootstock is drunk as an appetite stimulant for weak and sickly persons such as tuberculosis patients. Yellow pond lily has been used along with devil's club in the treatment of tuberculosis victims. Several people have reported they were cured of tuberculosis by using this medication. An infusion of the powdered dried rootstock is said to be useful for cancer and stomach complaints. It "cleans the lungs and the insides." It may also have been employed for birth control in the past (H. Smith 1926). One informant reported that too much will "make a man sterile." Powdered dried rootstock can also be added to warmed spruce pitch for application as a hot plaster.

The rhizome of the yellow pond lily is utilized by the neighboring Wet'suwet'en in combination with other ingredients for tuberculosis, and alone as a tonic. The Haida use a decoction of yellow pond lily rootstock and common juniper for tuberculosis treatment (Deagle, unpublished manuscript). An infusion of the rhizome of the yellow pond lily is used by the Nitinaht as a general tonic (Turner 1983).

Soapberry.—*Is* [*Shepherdia canadensis* (L.) Nutt.] Soapberry is present over a wide elevation range from low elevations to montane sites except in the immediate coastal area. The berries contain saponins which causes their foaming properties and bitter taste. The constituents of leaves or branches are not known.

The berries are widely gathered in northwest British Columbia for food for home use and trade in June and early July. Some people gather green berries while others prefer the ripe ones. These are whipped with water (and sugar) to make "Indian ice-cream" *yal is*, a traditional dessert for feasts (People of Ksan 1980). Soapberries are an important item for trade with Coastal peoples as they are rare in the wet coastal forest.

An infusion of the dried leaves is used for a diuretic and to treat bladder and uterine infections. Dried leaves are steeped in about one gallon of water "to make a light tea" for these purposes. The berries are reported to speed childbirth and act as a uterine

stimulant. The leaves are gathered for medicine after the berries dropped off. Smith (1926) reports use of a decoction of the whole plant, roots, branches and leaves, for treating chronic cough.

An infusion of soapberry twigs is drunk by the Central Carrier (Carrier Linguistic Committee 1973) for relief of constipation. Soapberry tea is also used by the Okanagan-Colville as a laxative, tonic or stomach medicine (Turner *et al.* 1980). The Lillooet use soapberry for heart attack and indigestion (Turner 1978). Common uses of soapberry decoctions among other native groups include use as a purgative, stomach tonic, skin wash or cough medicine (Turner 1981). It is used in a contraceptive mixture among the Okanagan-Colville, and as a treatment for amenorrhea by the Stoney (Turner 1981).

Conifer Pitch (Skyen) and Conifer Bark.—Lodgepole pine [*Pinus contorta* Dougl. *ex* Loud]; Subalpine Fir [*Abies lasiocarpa* (Hook.) Nutt.]; Spruce [*Picea engelmannii* Parry and *P. glauca* (Moench) Voss and hybrid populations]

Pitch from lodgepole pine, subalpine fir and white or englemann spruce and their hybrids is called *skyen*. These kinds of pitch are all valued as wound dressings and antiseptics. Different qualities and grades of pitch are recognized. Pitch from the different tree species is used similarly, but informants will usually specify the kind of pitch in the recipe. Pine pitch is used as an antiseptic dressing for open wounds and boils. It is collected year round as needed and used fresh. Pitch is also an ingredient in medicinal mixtures. One such mixture includes spruce pitch, alder bark, or immature female catkins, and pine and spruce "tips" (newly expanded terminal buds). This forms a salve which is part of an arthritis treatment. Spruce pitch may also be mixed with powdered dried yellow pond lily rhizome and applied as a hot plaster.

The liquid pitch of subalpine fir blisters is particularly valued. Its Gitksan name, *stu'uhl hoo'owxs*, translates as 'the tears of the balsam [subalpine fir]'. A term for the pitch blisters, *motix hoo'owxs*, means 'the teats of the balsam [subalpine fir]'. The liquid pitch is used as a wound dressing and also in liquid medicines for respiratory problems. One recipe mixes subalpine fir pitch with rendered hoary marmot grease. This is taken internally "for cleaning the insides out."

Bark strips taken from young spruce and subalpine fir are also ingredients of various medicines. These bark strips contain tannins as well as a lot of pitch. Typically, a bark strip of a given dimension will be specified in a recipe. The fresh bark will then be chopped into pieces and boiled or steeped alone or as part of a mixture to release its medicinal principles. Subalpine fir bark forms an ingredient of a spring tonic mixture. Spruce bark is used in an anti-tubercular tonic. Another use for spruce bark is as a treatment for serious burns. The whole spruce bark (*'ootx*) is roasted and pounded to a powder, then sprinkled over the burned area.

Conifer bark and pitch have non-medicinal uses as well. Spruce pitch was chewed like gum in the past. The modern word for chewing gum in Gitksan is *skyen*.

Pine cambium and inner bark (*gan hix*, 'pine noodles') is gathered for food in June on a sunny day. It is very sweet but perishable, and is used fresh by the Gitksan. It is not commonly eaten now.

Pine, spruce and fir pitch are used by the Carrier Indians for sores or eye injuries. The barks of these trees are also used as medicine (Carrier Linguistic Committee 1973). The Wet'suwet'en use a decoction of spruce "tips" for cough. The Okanagan-Colville use fir (*Abies* spp.) pitch for ulcers. (Turner *et al.* 1980).

Red elderberry.—*Sk'an loots'* (*Sambucus racemosa* L.) Red elderberry is an abundant shrub in moist bottomland forests from the Hazelton area to the coast. It is more common to the west. Red elderberries were important as a source of food for the Gitksan because

of the abundance of their fruits. Although they are widely reported in the literature as poisonous (*e.g.* Hulton 1968), they are utilized mixed with other berries at traditional Northwest Feasts and we have never observed or heard of adverse reactions to ingestion of the fruits of the local populations of elderberries [see Turner 1975 for comments on edibility].

The bark of the red elderberry and its roots are used for medicine. The red elderberry root bark is used to prepare an emetic. The inner bark of the root is scraped off, as in the preparation of devil's club. A small quantity of the bark shavings are then added to boiling water and set to steep. The resulting milky fluid is drunk lukewarm, followed by lukewarm water. After the patient vomits, a cup of lukewarm water is given. This is repeated until vomiting ceases. Patients were treated with this medicine during the 1918 flu epidemic. Weakness, general illness and inability to eat were presenting symptoms for the use of the emetic preparation. Harlan Smith (1926) reports use of red elder roots as an emetic and purgative in the 1920's. Another reported use of elder bark is for tuberculosis. It can also be administered as a smudge as part of a medicine to cure a victim of evil witchcraft. For this purpose it is used with juniper (*Juniperus communis*) and cow parsnip (*Heracleum lanatum*) root. Red elder is used as purgative by the Nitinaht (Turner *et al.* 1983).

Chemical constituents of the root or bark have not been well characterized with modern techniques. Kingsbury [1964:390] states that the root is the most toxic part, containing purgative substances. A triterpene, ursolic acid, has been isolated from the roots and choline has been isolated from the bark (Borokov and Belova 1967; Yardin 1936).

Cow parsnip.—*Ha'mook*, *Huukx* (*Heracleum lanatum* Michx.) Cow parsnip is abundant in moist and open situations including river floodplains, meadows and avalanche tracks. In the Skeena area it grows from valley bottoms to moderate elevations.

Cow parsnip is locally called 'Indian rhubarb' or 'Indian celery.' These names point out the similarity of the portion eaten, the leaf stalk and flower bud stalk (*huukx*), to common introduced European vegetables. Cow parsnip stalks are suitable for food only for a short portion of the year in the spring. They are highly prized and still widely collected. After the flowering stalk exceeds about 40 centimeters in height, it is considered poisonous.

Mature cow parsnip contains abundant furanocoumarins which react with sunlight to cause blistering of the skin [Camm *et al.* 1976]. Kuhnlein and Turner [1986] have found that peeled young cow parsnip stalks contain about half the concentrations of furanocoumarins of unpeeled young cow parsnip stalks, demonstrating that preparation techniques reduce potential toxicity.

The parsnip-like root can be gathered for medicine at any time. Medicinal uses include a poultice of the fresh root for rheumatism, and use with red elder bark and juniper boughs as part of a smudge treatment to counteract bewitchment. Cow parsnip root is also used as a poultice for rheumatism by the Central Carrier (Carrier Linguistic Committee 1973).

Common Juniper.—*Laxsa laxnok*, *T'seex* [*Juniperus communis* L. subsp. *nana* (Willd.) Syme] Juniper is fairly abundant in the central Skeena valley. It is restricted to drier more open plant communities of low to mid elevations. It can be gathered fresh when needed.

A number of studies have been made of the constituents of the foliage and stems of common juniper. Flavonoids, benzenoids, lignans, alkenes, diterpenes polyphenols, malic acid, malonic acid, oxalic acid, phenyl pyruvic acid, aconitic acid, tartaric acid, vanillic acid, and ascorbic acid have been isolated by a number of different investigators, largely from European samples [for example see De Pascual *et al.* 1980; Lamar-Zarawaka

1977; Linder and Grill 1978]. The fruits show embryotoxic effects *in vivo* in several studies performed on rats and antitumour and antiviral effects *in vivo* and *in vitro* (Agrawal *et al.* 1980; Belko *et al.* 1952; May and Willuhn 1978 and others).

The juniper has a long history of medicinal use in both Europe and North America. Its foliage is employed among the Gitksan. Fresh juniper boughs are chopped and boiled as part of mixtures of plants to obtain a decoction which is drunk for medicinal purposes. These mixtures include devil's club and other ingredients. Juniper boughs can also be burned as a fumigant to purify a dwelling. Its name, *laxsa laxnok*, translates as 'boughs of the supernatural' which indicates the power attributed to the plant. Some informants restrict this name to a specific ecotype of juniper growing in rocky places in the mountains, calling low elevation plants *t'seex*, while others call all common juniper *laxsa laxnok*.

Harlan Smith (1926) reports use of a decoction of the whole plant of juniper for hemorrhage of the mouth and kidney trouble. It was reported to be a purgative and diuretic, and "to make one strong" (Luke Fowler, in Smith 1926). Fowler called the plant *sk'an naxnok* which means 'supernatural plant.'

Juniper is used by the Okanagan-Colville for respiratory illnesses and tuberculosis and as a tonic before a sweat (Turner *et al.* 1980). The Wet'suwet'en used juniper for a tonic to ward off flu or respiratory ailments. The Central Carrier use juniper for tuberculosis (Carrier Linguistic Committee 1973). The Haida also use juniper to treat tuberculosis and stomach ulcers (Deagle, unpublished manuscript).

Wild Calla.—*Hisgahldaatsxw* [*Calla palustris* L.] *Calla palustris* grows in swampy areas and the shallow margins of ponds in wet mucky soil or up to 0.5 m of water. In the Skeena Valley it does not occur west of Seeley Lake, just west of Hazelton. The prostrate creeping stem and buds of wild calla are gathered in the early spring after the ice is gone but before leaf expansion. Our material was collected in mid April.

The entire plant contains irritating saponin-like substances and oxalic acid crystals which are rendered harmless by prolonged boiling (Hulten 1968; Kingsbury 1964). The preparation of the medicine involves boiling the fresh stems for six hours. Ingestion of medicine which has not been cooked long enough will cause throat irritation. Ingestion of raw calla will cause severe irritation of the oral cavity and throat, swelling and difficulty in swallowing.

Wild calla is reported as a medicinal plant used by the Gitksan by Harlan Smith (1926). He reports the name "*shien*" for this plant. Uses reported by his informant, Luke Fowler, included use of a decoction of calla for cleaning the eyes of the blind, for hemorrhage of lungs or mouth, for short breath and for treatment of influenza (Smith 1926). Our informant called the plant "*hisgahldaatsxw*," which means resembles or similar to *gahldaats*, the yellow pond lily. Our informant uses this plant as a part of a mixture employed as a spiritual spring tonic. The use of *Calla palustris* for medicinal purposes is not reported for any other group in the herbal and ethnobotanical literature we have examined.

Indian Hellebore.—*Mulgwasxw*, *Sk'an Ts'iks* [*Veratrum viride* Ait.] (Fig. 6) Indian hellebore, *Veratrum viride*, grows in avalanche tracks, meadows and moist open montane plant communities. In Gitksan territory *V. viride* is found from about 450 m to timberline at around 1400 m. Near the coast *Veratrum viride* also grows in low elevation bottomland environments.

Veratrum viride roots (*mulgwasxw*) are gathered in the fall after the leaves senesce. This is frequently done by men in conjunction with hunting trips. The plants are located

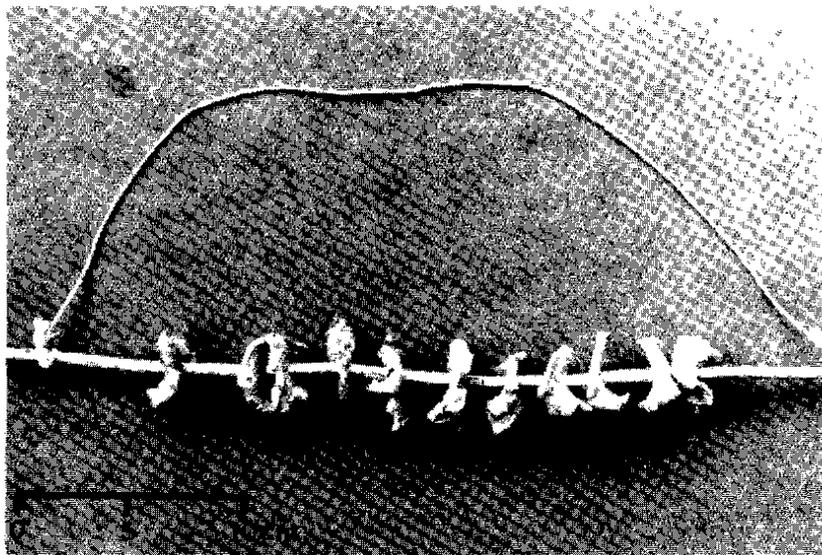


FIG. 5.—Freshly gathered wild calla *hisgahldaatsxw* (*Calla palustris*).

by the dead stalk and pieces of the rhizome dug up. The cleaned rootstock pieces are hung to dry and then stored.

'*Mulgwasxw*' is the most important herb in use among modern Gitksan people. It is the rootstock of the Indian hellebore plant, *Veratrum viride*. The whole plant is called *sk'an ts'iks*. '*Mulgwasxw*' appears to differ from "ordinary" medicinal herbs in that it has high spiritual value. It is an herb of purification as well as healing. The proper state of mind is required to gather and use it. One should purify oneself before gathering '*mulgwasxw*' by fasting and use of devil's club tea, and express proper thanks for the gift by saying a prayer and leaving a return gift.

The smoke of '*mulgwasxw*' is used to assist the spirit of sleepwalkers in returning to the body properly. The grated dried root is used medicinally steeped in bath water for skin conditions (Wilson *et al.* 1984). The grated root can also be added to laundry water and used to purify or cleanse clothing. '*Mulgwasxw*' is used to purify a house ("to kill the germs" or "to remove bad spiritual vibrations") by being burned as a smudge or fumigant on the (wood) stove top. It is believed to confer luck. Use of '*mulgwasxw*' is intimately involved with purification rituals for hunting and trapping, and a piece may be carried as an amulet for luck in hunting and in gambling. '*Mulgwasxw*' is highly valued, treated with respect and not left untended.

Turner (personal communication 1986) reports that the Lillooet use Indian hellebore root as a powerful medicine and that it is believed to confer luck. Infusions were used internally with great caution by these people. The Okanagan-Colville use it for rheumatism or arthritis and as a snuff. It is also reportedly used "to jinx people" (Turner *et al.* 1980). The Bella Coola use it for a skin wash, as a compress for sprains, bruises and fractures, and for luck. It is used internally with great care (Edwards 1980). The Haisla, a Northern Kwakiutl group, also use Indian hellebore root as an amulet for luck. Like the Gitksan the Haisla burn Indian hellebore root as a fumigant to drive away evil spirits. A dilute infusion of the grated rootstock, mixed with other herbs, is also taken internally by some Haisla. Victims of the 1918 influenza epidemic were treated with Indian



FIG. 6.—Dried '*mulgwasxw* (*Veratrum viride* root).

hellebore root infusions (personal communication, Lloyd Starr). The Tsimshian in Southeast Alaska (originally from Metlakatla, B.C.) use Indian hellebore ("skookum root") for scalp disease and as a snuff for sinus infections. The leaves were used to treat arthritis. The root was used in a treatment for insanity. A decoction of the whole root was evidently taken internally, but it is not clear for what purposes (MacGregor 1981). Haida of Southeast Alaska apparently use Indian hellebore for a tranquilizer and pain killer (MacGregor 1981). Decoctions of "skookum root" were used for treatment of diverse illnesses, including menstrual cramps and [with devil's club] pneumonia by the Yakutat Tlingit (de Laguna 1972). Like other groups they treated baldness and scalp conditions with "skookum root."

Veratrum viride contains a number of toxic alkaloids including veratrine, veratrasine, veratramine, veratrin (Edwards 1980; Jeger and Prelog 1960; Kingsbury 1964). These alkaloids act to depress blood pressure, and can cause "salivation, prostration, depressed heart action, and dyspnea . . . additional subjective symptoms include burning sensations of the mouth and throat, hallucinations and headache" (Kingsbury 1964:460). It is an extremely toxic plant, and only knowledgeable persons should use it. Overdoses can be fatal. It is not normally used internally by the Gitksan. Chemical components of the smoke of burning Indian hellebore root have not been investigated nor have the medical effects of smoke inhalation been described.

DISCUSSION

Opportunities to obtain medicinal plants depended in the past on the annual cycle of movement on the land. The location of seasonal subsistence activities determined which plant communities were available. This exerts some control on medicinal plant use in the present as well. For example, different plants are available in floodplain forests adjacent to fishing sites and subalpine meadows near berry picking areas. The phenology

of desired plants must also be taken into account as the properties and chemical composition of plant parts changes with the stage of maturity. Some plants can be gathered when available at the right stage and dried for later use such as yellow pond lily root or Indian hellebore, while other plants must be gathered fresh for immediate preparation and use. The selection of which plants to utilize to treat a condition is, therefore, influenced by what plants are available for use at the time they are needed. Plants which have to be used when freshly gathered can only be used if available nearby at the right stage, whereas other products can be used from stored supplies at any time.

As in European and Asian folk medicine, Gitksan medicines are used as tonics or for the treatment of specific symptoms of disease. Purification differs from these approaches because its goal is the treatment of the whole individual to prevent or overcome a diseased state. The role of 'purification' in Gitksan medicine has parallels in the medical practices of other indigenous groups in northwestern North America (Vogel 1970; Kew & Kew 1981). As the person and the environment are seen as harmoniously interacting wholes, imbalance in the individual or environment is believed to have potentially far-reaching consequences for health. Therefore, purification, the removal of impurity and the restoration of the natural balance, is seen as an important aspect of maintenance of health.

Many Gitksan teaching stories warn of the consequences of disturbing the balance of nature such as the famous story of the One-Horned Goat of Temlaham (Harris 1974; Barbeau-Beynon notes). In this drama failure to respect the mountain goats results in overhunting, mistreatment of the animals and subsequent disaster for the village as the goats wreak their vengeance. A virtuous man who remembers the proper behavior and acknowledges the equality of living things is permitted to survive and teaches the remaining people how they must act to maintain the balance and bring prosperity for their people.

Purification in traditional Gitksan society was sought in each season for different functions. Men underwent purification before setting out for such important activities as trapping and hunting. Women underwent purification in connection with puberty, menstruation and childbirth. The springtime was the most important season for purification. This process was accomplished through various means such as fasting, bathing in cold water, sweat baths, solitary meditation or use of herbal preparations. Herbs such as Indian hellebore and devil's club were utilized for this purpose. Purification was an individual matter. Each person sought to resolve conflicts and achieve harmony through his or her own efforts.

Concepts of purification are finding a role in the present particularly in dealing with stress and emotional disorders. Purification can provide a means for the stressed individual to alleviate or remove the stress and thereby improve mental and physical health. The *Wilp-si-Satxw* (House of Purification) Society, a modern group sponsored by the Gitksan-Wet'suwet'en Tribal Council to deal with problems of mental health and substance abuse, is investigating ways to integrate traditional approaches to purification with a modern drug and alcohol abuse treatment program.

THE EFFECT OF EUROPEAN CONTACT ON GITKSAN TRADITIONAL MEDICINE

In the period of contact, a systematic disruption of aboriginal culture took place, particularly by the agency of Christian missionaries. The *Wilp si Satxw* (house of purification) and the *Halayt* were banned as pagan. Healing was taken out of the hands of the traditional practitioners. The holistic preventative approach of traditional healers

was largely supplanted by Western allopathic medicine. New infectious diseases and alcohol had arrived with the Europeans, creating previously unknown health problems. The outlawing of the potlatch (literally, "the Gift") was a fundamental attack on the integrity of the aboriginal culture as the feasts were the place where all important public business and much of the education took place, with the community participants as witnesses [Neil Sterrit Jr., personal communication]. The so-called "Potlatch Law," which came into effect January of 1885, prohibited potlatches and winter ceremonies and provided six months imprisonment as the punishment for participation in such activities (Raunet 1984). These clauses were finally dropped from the Indian Act in 1951 (Duff 1964).

As in much of North America, the government and missionaries, from the turn of the century until the 1960s, deliberately supplanted the traditional culture by isolating the children in residential schools where they were forbidden to speak their language (Levine and Cooper 1976). Strong pressure was applied to children to reject their own cultures as primitive and backward. This disrupted both the extended family and the nuclear family and removed the children from the process of cultural transmission and traditional education at about six years of age. The pivotal role of elders in traditional education was particularly undermined, especially as the children lost fluency in their native tongue. Botanical and healing concepts and spiritual values were difficult for elders to express in an unfamiliar tongue. This knowledge has therefore been especially vulnerable.

Despite these policies Gitksan is still widely spoken in the Skeena Valley. The Gitksan Wet'suwet'en Tribal Council estimates the number of Gitksan speakers at about 800 people. However, children are rarely fluent speakers in spite of efforts to revive the language with the establishment of language programs in the local schools (Powell and Stevens 1977; Jensen and Powell 1979).

Although there have been far reaching changes to Gitksan society in the past one hundred years, traditional medicinal practices have survived and are being practiced today. A great deal more information on the aboriginal medical practices of the Gitksan remains in the minds of elders still living. The paucity of young Gitksan speakers makes the interviewing of these elders and the translation of their knowledge of traditional culture into English an activity which should not be delayed. The resurgent interest in traditional culture has extended to Gitksan traditional medicine. This project is an outgrowth of the renewed interest in Gitksan traditional medicine by the Gitksan people, and their desire to preserve their knowledge of medicines and healing.

CONCLUSION

Gitksan use of plants for medicines must be seen within the cultural context of views of the nature of health and healing. Plant utilization will also reflect availability to potential users in the course of their annual activity patterns, changes in plant properties at different phenological stages, and the storage qualities of the herbal preparation produced.

The three most important medicinal plants used by the Gitksan today are Indian hellebore (*Veratrum viride*) root, devil's club (*Oplopanax horridum*) bark, and yellow pond lily (*Nuphar polysepalum*) rootstock. Gitksan plant uses are similar to uses reported for the plants by other British Columbia Indian groups, particularly those of similar geographic and cultural regions. However, some differences in emphasis are notable, and certain plants, such as wild calla (*Calla palustris*), do not seem to be utilized by other groups reported in the literature.

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LITERATURE CITED

- ADAMS, J. W. 1973. The Gitksan Potlatch: Population Flux, Resource Ownership and Reciprocity. Holt, Rinehart & Winston of Canada, Ltd., Toronto and Montreal.
- AGRAWAL, O. P., J. S. BHARADWAJ and R. MATHER. 1980. Antifertility effects of fruits of *Juniperus communis*. *Planta Medica Suppl.* 40:98-101.
- BARBEAU, M. and W. BEYNON. Unpublished interview notes in Archives, National Museums of Canada.
- BELKIN, M., D. B. FITZGERALD and M. D. FELIX. 1952. Plants Used as Diuretics. *Nat. Cancer Instit.* 13:741.
- BOROKOV, A. V. and N. V. BELOVA. 1967. Ursolic acid in certain plants. *Khim. Prirod. Soedin* 3:62A.
- CAMM, E. L., W. CHI-KIT and G. H. N. TOWERS. 1976. An Assessment of the roles of furanocoumarins in *Hexacleum lanatum*. *Canadian J. Botany* 54:2562-2566.
- CARRIER LINGUISTIC COMMITTEE. 1973. *Hanuyeh Ghun 'Utni-i*, Carrier Linguistic Committee, Fort Saint James, British Columbia.
- COVE, J. 1982. The Gitksan Traditional Concept of Land Ownership. *Anthropologica*. 24:3-17.
- DEAGLE, G. Haida Medicine, unpublished manuscript.
- DE LAGUNA, F. 1972. Under Mount Saint Elias: The History and Culture of the Yakutat Tlingit, Part Two. Smithsonian Institution Press, City of Washington.
- DE PASCUAL, T. J., A. F. BARRERO, L. MURIEL, A. SAN FELICIANO and M. GRANDE. 1980. New Natural Diterpene acids from *Juniperus communis* Phytochemistry 19:1153-1156.
- DRUCKER, P. 1955. Indians of the Northwest Coast. American Museum of Natural History, New York.
- DUFF, W. 1959. Introduction. In *Histories, Territories and Laws of the Kitwanoool* (W. Duff, ed.). Anthropology in B.C. Memoir No. 4. British Columbia Provincial Museum, Victoria.
- DUFF, W. 1964. Indian History of British Columbia Vol. 1: Impact of the White Man. Anthropology in British Columbia Memoir 5. Provincial Museum of Anthropology and Natural History, Queen's Printer, Victoria, British Columbia.
- EDWARDS, G. T. 1980. Bella Coola Indian and European Medicines. *The Beaver Winter* 4-11.
- GARFIELD, V. 1939. Tsimshian Clan and Society. Univ. of Washington, Seattle.
- GUNTHER, E. 1973. Ethnobotany of Western Washington, the Knowledge and Use of Indigenous Plants by Native Americans, Rev. Edit. Univ. Washington Press, Seattle and London.
- HINDLE, L. and B. RIGSBY. 1973. A Short Practical Dictionary of the Gitksan Language. *Northwest Anthropol. Res. Notes* 7(1).
- HULTEN, E. 1968. *Flora of Alaska and Neighboring Territories, a Manual of the Vascular Plants*. Stanford Univ. Press, Stanford, California.
- JEGER, O. and V. PRELOG. 1960. Steroid Alkaloids, Veratrum Group. Pp. 363-417 in *The Alkaloids*, V. VII, (R. H. F. Mansie, ed.). Academic Press, New York.
- JENSEN, V. and J. V. POWELL. 1979. Learning Gitksan, Book 1, Western Dialect. Kitwanoool, Kitssegukla and Kitwanga Indian Bands, Kitwanga, British Columbia.

LITERATURE CITED (continued)

- JUSTICE, J. W. 1966. Use of Devil's Club in Southeast Alaska. *Alaska Medicine* 8:36-39.
- KARIYONE, T. and S. J. MOROTOMI. 1927. The essential oil of *Echinopanax horridus*, Decne et Planch. *J. Pharma. Soc. Japan* 546:671-674.
- KEW, M. and D. KEW. "People need friends, it makes their minds strong," a Coast Salish curing rite. In *The World is as Sharp as a Knife*, [D. Abott, ed.] 29-36. British Columbia Provincial Museum, Victoria.
- KINGSBURY, J. M. 1964. Poisonous plants of the United States and Canada. Prentice-Hall, Englewood Cliffs, New Jersey.
- KUHNLEIN, H. and N. J. TURNER. 1986. Cow Parsnip (*Hetacleum lanatum* Michx.): an indigenous vegetable of Native People of Northwestern North America. *J. Ethnobiol.* 6[2]:309-324.
- LAMER-ZARAWAKA, E. 1977. Flavonoids of *Juniperus communis*. *Rocz Chem* 51:2131- .
- LEVINE, R. and F. COOPER. 1976. The Suppression of B.C. Languages: Filling Gaps in the Documentary Record. *Sound Heritage* (3&4):43-75.
- LINDER, W. and D. GRILL. 1978. Acids in conifer needles. *Phyton* (Horn, Austria) 18:137- .
- MACARTHUR, R. H. and E. R. PLANKA. 1966. An optimal use of a patchy environment. *Amer. Natur.* 100:603-609.
- MACGREGOR, M. 1981. Native Medicine in Southeast Alaska: Tsimshian, Tlingit, Haida. *Alaska Medicine* 23(6):65-69.
- MAY, G. and G. WILLUHN. 1978. Antiviral activity of aqueous extracts from medicinal plants in tissue cultures. *Drug Res.* 28(1):1-7. (in German)
- PEOPLE OF 'KSAN. 1980. *Gathering What the Great Nature Provided*. Douglas & McIntyre Ltd, Vancouver British Columbia and Univ. Washington Press, Seattle, Washington.
- POWELL, J. V. and R. STEVENS. 1977. *Gitsanimx*. Gitsan Language Book 1. Kispiox Band, Hazelton, British Columbia.
- RAUNET, D. 1984. *Without Surrender, Without Consent*. Douglas & McIntyre, Vancouver.
- SIH, A. 1982. Optimal patch use: variation in selective pressure for efficient foraging. *Amer. Natur.* 120:666-685.
- SMITH, G. W. 1983. Arctic Pharmacognosia II. Devil's Club, *Oplopanax horridus*. *J. of Ethnopharma.* 7:313-320.
- SMITH, H. I. 1926. Gitsan Ethnobotany. Unpublished manuscript prepared for the National Museum of Canada, on file National Museums of Canada.
- _____. 1928. *Materia Medica of the Bella Coola and Neighbouring Tribes of British Columbia*. Pp. 47-68 in 1927 Annual Report of the National Museum of Canada. Kings Printer, Ottawa.
- STUHR, E. T. and E. B. HENRY. 1944. An investigation of the root bark of *Fatsia horrida*. *Pharma. Archives* 15:9-15.
- TREASE, G. E. and W. C. EVANS. 1983. *Pharmacognosy*, 12th Edition. Bailliere Tindall, Eastbourne.
- TURNER, N. 1975. Food Plants of British Columbia Coastal Indians, Part 1, Coastal Peoples. British Columbia Provincial Museum Handbook No. 34. British Columbia Provincial Museum, Victoria.
- _____. 1978. Food Plants of British Columbia Indians, Part 2, Interior Peoples. British Columbia Provincial Museum Handbook No. 36. British Columbia Provincial Museum, Victoria.
- _____. 1981. Indian Use of *Shepherdia canadensis*, Soapberry, in Western North America. *Davidsonia* 12(1):1-11.
- _____. 1982. Traditional Use of Devil's-Club (*Oplopanax horridus*; Araliaceae) by Native Peoples in Western North America. *J. Ethnobiol.* 2(1):17-38.
- TURNER, N., R. BOUCHARD and D. I. D. KENNEDY. 1980. Ethnobotany of the Okanagan-Colville Indians of British Columbia and Washington. British Columbia Provincial Museum No. 21, Occasional Papers Series. British Columbia Provincial Museum, Victoria.
- TURNER, N., J. THOMAS, B. F. CARLSON and R. T. OGILVIE. 1983. Ethnobotany of the Nitinaht Indians of Vancouver Island. British Columbia Provincial Museum, Occasional Papers Series No. 24. British Columbia Provincial Museum, Victoria and Parks Canada, Western Region.
- VOGEL, V. 1970. *American Indian Medicine*. Univ. Oklahoma Press, Norman.
- WILSON, S. P. PIERRE, M. HOWARD and G. RUSSELL. 1984. Some Medicinal Remedies of the Gitsan People, unpub-

LITERATURE CITED (continued)

- lished manuscript, Kitsegukla Band Council, Kitsegukla, B.C.
- WINTERHALDER, B. 1981. Optimal Foraging Strategies and Hunter-Gatherer Research in Anthropology: Theory and Models. Pp. 13-35 in *Hunter-Gatherer Foraging Strategies*, (B. Winterhalder and E. A. Smith, eds.). Univ. Chicago Press, Chicago and London.
- YARDIN, H. 1936. Presence of alkaloids in *Sambucus* species. *Compt. Rend. Soc. Biol.* 122:155-156.

NOTES

¹Botanical nomenclature follows Eric Hulten, *Flora of Alaska and Neighboring Territories*, Stanford University Press, Stanford, California 1968 except for *Oplopanax horridum* (Smith) Miq.

²Patchiness is an ecological concept relating to the distribution of resources in the environment. A patchy environment is an environment where the attribute or resource under consideration is not uniformly or evenly dispersed. Within a patch the resource may be abundant and efficient to utilize; between patches, the resource is absent or too dispersed for efficient use. See MacArthur & Pianka, 1966, Winterhalder 1981, and Sih 1982 for discussions of foraging efficiency in patchy environments.

³Gitksan names are transcribed following the orthography used in the Western Gitksan and Gitksanimx language text series (Jensen and Powell 1979; Powell and Stevens 1977). Some spellings were also derived from Lonnie Hindle and Bruce Rigby's *Practical Dictionary of the Gitksan Language* (1973).

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⁵References not included in the citations for this article will be found in Nancy Turner's review article on Devil's Club (Turner 1982).