Min:
Anishinaubag Ogimaawi-minan
BlueBerry: First Fruit of the People

Collected and Retold by
Keewaydinoquay

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Preface

In the spring of the year that I was a woman-beginning, there was an untimely 'winter'. When we were expecting snow banks to melt away and sap to rise in the maples, great storms shrieked out of the north and snow piled up as if it were still the Long Night Moon. How exceptional it really was I did not realize, for in those days I did not remember many winters. The elders were all saying how dreadful it was, but I didn't put much credence in that. Didn't elders always complain--and then tell the children they must endure hardships without complaining?

I didn't complain. It meant a postponement of the drudgery in the mud of the maple sugar groves and more time to gather in the story-telling lodge. It was not merely because I was a child of the Crane Clan* that I loved those hours about the winter fires; I had been born with an extra 'bump' of curiosity and would continue to carry it all my life. Long years after, I realized the extra legacy of traditional lore which became ours as a result of that 'winter in spring'.

Pleasure is found by repetition of the familiar in every culture. That is why every Long Night Moon is begun with retelling the same tales. It is the custom of anyone,

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*Traditionally, members of our Dodem are charged with retaining and disseminating customs, knowledge and mores.

requesting a particular tale from a particular elder, to place a gift on the edge of the blanket belonging to the person who knows the story. Of course people cannot ask for stories they cannot remember or have never heard! If it had not been for our Grandfather, we Crane children might never have heard many of the older legends. But even our learned Grandfather selected the tales HE wished to relate! It was the bonanza of that extra story-telling time, when the familiar had already been happily retold, which gave me the courage to lay my pink shell necklace upon the blanket of aged Nagowikwe* and ask for some stories the younger children had never heard before.

Perhaps Nagowikwe sensed how much the pink shell necklace meant to me. Perhaps she loved to tell stories. Perhaps she herself had been thinking of certain origin legends the 'youngers' ought to hear. At any rate, she responded to that gift with two weeks of night stories which kept even our parents enthralled. The stories were so good, in fact, that, as the snows began to abate at the end of the fourteen days, women began to bring a pile of sap buckets to mend as they sat about the fire--rather than have the series discontinue--and that was an unprecedented compliment to Nagowikwe. With charcoal she sketched out the old symbols of the birth moons on the heartwood side of

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*'Sand-Woman', for long years an accomplished story-teller at CatHead Village, Leelanau County, Michigan.

a log before she put it on the fire, and beadwork and quill designs began to form in the minds of both men and women as they listened with anticipation. Like children, they could scarcely wait for Nagowikwe to begin the season of their own special sign.

Interest in the story-telling lodge was at an all-time high that unexpected spring-winter. As I thought about it later, HOW GLAD I WAS FOR NAGOWIKWE that circumstances had combined to give her the sense of satisfaction in contribution she must have felt. Among the instructions she gave us were understandings about the meaning of the BlueBerry Moon (Min-Gissis), a time period corresponding roughly with the month of August. That year, when the season of the real Min-Gissis came and I joined with all the others in the abundant harvest, HOW GLAD I WAS FOR US. There was enlightenment in the harvest, and we had obtained the meanings of the old traditions just in time, for Nagowikwe herself was no longer with us.

Remembering the instructions she had given, and with the lush harvest available, we put away a copious supply of minan*. During the ensuing winter, not one child or youth of our village was unhealthy! We laughingly called ourselves the 'Purple-tongued People' for everyone had stained tongues from quantities of batéminabo* we had consumed.

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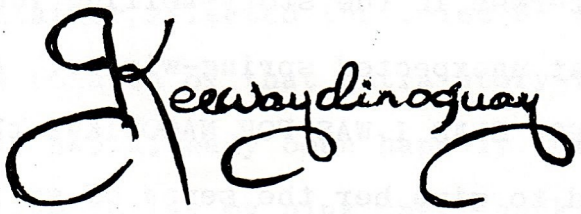
*plural of 'min' is 'minan'.

Batéminabo is the rehydrated liquid (soup, drink) made from the dried BlueBerries.

How many of the children who sat at the feet of Nagowikwe **subsequently maintained healthier families of their own would now be uncountable.**



Keewaydinoquay

Dodem AuZheekZheek

Mashkikikwe O Minis-Kitigan

Bedok-Widagiming-Gissis

(April, 1978)

MIN: ANISHINAABEG OGIMAAWI-MINAN

(The Berry: We-The-People-Our-Chief-among-Fruits)

BLUEBERRY: FIRST FRUIT OF THE ANISHINAABEG

Of all fruits found in the biomes of the Northern Hemisphere, the BlueBerry is considered supreme by the Anishinaabeg. These following phrases are commonly used in speaking of the fruit: 'Nitamendagwad' (It-is-considered-the-first); 'Ninwidjindimin' (Wherever we go, it goes with us, i.e. we-go-together); 'Kagwagwissin' (It-is-never-failing-purpose-because-of moldiness).

The descriptive phrases also indicate the main reasons why BlueBerry is so highly esteemed.

(1) In a race where tradition is highly regarded, and the whole structure of society finds its expression in the natural world, BlueBerry is the First-of-All-Fruits, the Min.

(2) The range of the genus Vaccinium is circumboreal; the range of species within the genus is fantastic in variety and number. Although specific local conditions may offer other fruits, they are not always to be depended upon. The BlueBerry is always there: in the bog, in the forest, on the mountain or plain.

(3) BlueBerries possess five qualities which have made them highly useful to the Amerind:

a. No special energies need to be invested every year for production. Harvesting is accomplished with comparative ease.

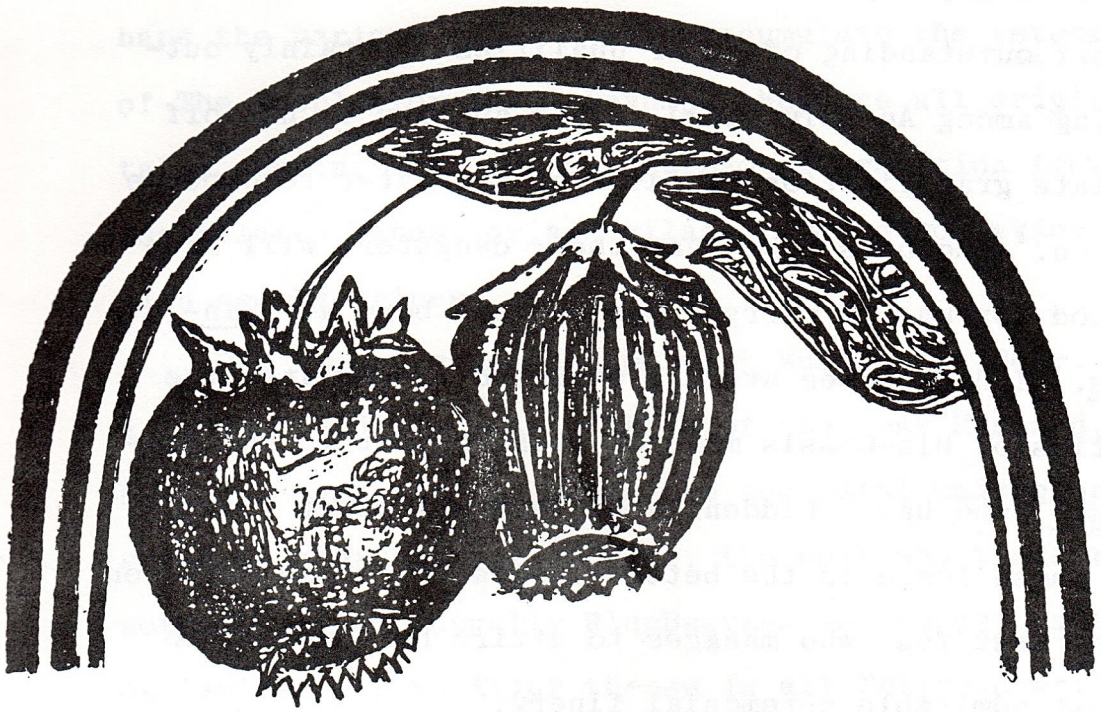
b. BlueBerries can be prepared for storage and future use under the most primitive and adverse conditions.

c. They are highly resistant to decay.

d. The nutrition not only sustains life but provides a source of healthful vitamins.

e. They taste delicious.

The Traditional Aspects



This is the symbol for the season called the Blue-Berry Moon (Min-Gissis in the Anishinaabem language) which corresponds roughly to the month of August. Exhibit A, the Appendix, shows designs adapted from the symbol and from other species of Vaccinium.

Some people have construed the symbols of the seasons to zodiac-like predictions. The Anishinaabeg have no such thing as astrology. It is believed, however, that occurrences in the natural world at the time of a person's birth do give some indication of innate qualities which he may develop to his benefit as the personality matures.

"Let them become fifty times their size, a beautiful red, and growing on trees so I do not have to stoop over." Thus Mishimin, the apple, comes into being. Before Nanabozhu can satisfy his hunger with apples, herds of deer thunder in, nudging him away with their horns, and eat up all of the ripe apples. Nanabozhu is furious.

"I'll show those Deer Beings. They can't take away my food and leave Nanabozhu hungry." He takes a handful of the half-ripe wild Mishiminan (apples) and throws them on the ground.

"Let them become fifty times this size and growing right here beside me so I can grab them first." In his haste and anger Nanabozhu forgets to mention either the color or type of growth. Thus the ogwissimin (pumpkin and squash) comes into being, but its color never comes to the full ripeness of red and its vines are insufficient to support its fruit. The vines are immediately covered with chewing caterpillars, gnawing rodents, and gluttonous blackbirds. Nanabozhu is raging! He snatches a handful of the little green apples[4] and throws them down with another command. In his violence he forgets to mention any details at all. These become the ogwissiminishan, the gourds, which are green and contain no flesh worth eating at all. One taste, and Nanabozhu runs howling to the nearest spring with his mouth twisted out of shape! (This is supposed

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[4]Little green apples have belly ache in them. They are also bitter and sour. Because Nanabozhu seized the little green apples, all gourds are unpalatable and have belly ache in them.

to be tremendously funny.) The tales go on and on as most of the minan (fruits) of the Native American world are created. Note that their names all contain the syllable min.[5]

At the close of the tales Nanabozhu has either been thwarted from enjoying his creations or they are singularly lacking in flavor. He shrugs, declaring that he really didn't want any of them anyway; he only made them for the pleasure of his nephews (the Anishinaabeg). He retires to the swamp. Standing in mucky water over his leggings, he pacifies his hunger at least with the sweetness of the original min.

Another tale involving the beloved BlueBerry is a part of the series concerning the Great Megis Migration. This recounts the history of the Anishinaabeg as they wander from the shore of the Gitchi-Gitchi-Gumme (Great-Great-Supernatural Sea) across the continent of Minissah towards a promised homeland of Keewaydinaukee.[6] Their adventures have some similarity to the experiences of the children of Israel as they wandered in the wilderness of Sinai, except that, instead of being led by a fiery, cloudy

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[5]See Appendix, Item B, for an expanded list of fruits containing the core syllable.

[6]Warren, William W., History of the Ojibway Nation; Minneapolis, Minnesota: Ross and Haines, Inc., 1957, reprinted by permission of the Minnesota Historical Society, pages 62-104.

pillar, they are led by the Divine Megis.[7] The resemblance of these stories to accounts of the Old Testament, plus the presence of a deluge tale, caused the antiquity of the Anishinaabeg oral traditions to be discredited altogether--until it was discovered and recognized that practically all of the ancient cultures have a flood story. In this account the Anishinaabeg wander between fiery mountains and the glacial snows and they are sustained everywhere they go, not by Manna, but by Minan![8]

Yet another tale concerns the sorry remnant of the Anishinaabeg washed ashore beside the Great Salt Sea after their home island, Wahnishinaukee, had been literally consumed with fire. The Mainlander Tribe welcomed and would gladly have taken them in. The Wahnishinaubeg, however, refused to be assimilated. Stung by this rejection, the Mainlanders forcibly confined them to the shorelines and the salt marshes.

One morning as a gaunt elder welcomed the day with prayer, sun splinters radiated from dew on a BlueBerry. Reverently the old man touched Mother Earth and thanked Sun Father.

Then he called to the People:

"MINISSAH!"

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[7] An oceanic shell of the genus Cypraea, symbol of the ancient religion on Wahnishinaukee and still today the symbol of the Midéwiwin.

[8] cf. preface of this paper and especially page 1, phrase of reference, #3.

When our traditional people were numerous, the pros and cons of this oft-quoted announcement were as hotly debated as any modern anthropological problem. Great rifts between clans were caused by ascribing different meanings to the phrase. Whatever the old man meant then, ever since that day, the North American continent has been called Minissah by our people.

These are some of the ways in which that phrase has been translated:

The Island answers

The Island calls

Answer from the Island

Berry Spirit speaks

Berry Spirit with us

Good with us

Good Spirit Answers

Good! Spirit answers

Hear Good Spirit

Good back again (returned)

Berry back again (returned)

Berry is answer

Good answer

Good! We survive!

The language which eventually became Algonkian must have been in its rudimentary stages then. Tradition has it that, as the tribes became greater in number and migrated further, the style of the language, as it was spoken at the time, remained at each stopping place on the migration route. This is why, say our old ones, we can find brothers who speak similarly all over the North American continent.[9]

Throughout Algonkian America, words with the root of Min are spoken, and always they have the connotation of beneficence. It takes no linguistic genius to see the interrelationships.

Min	BlueBerry (Berry or fruit)
Minan	BlueBerries (Berries or fruits)
Mino	Good, well
Minogin	It produces well
Minokamig	In springtime
Minikan	Seed
Minishkwah	Survive
Mina (& pronoun)	Give, make a present
Minawis (& pronoun)	Am happy, content

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[9]The prevalence of this language was also the main reason Champlain chose to ally France with the Anishinaabeg, assuming the greater strength would be in numbers. What he did not realize was that, although the Algonquin speakers did feel a strong bond of brotherhood, organization was FAR from their main talent, and warfare in general--unlike the Sioux and Iroquois for whom it was a part of their cultural pattern--was simply not to their liking. Anytime, anywhere, and with almost anyone, an Anishinaabe would rather have a party! ...We have not changed. (Personal comment; KMP)

Mino aiawin . . . Comfortable, happy existence

Minobilia . . . . It is navigable

Minodeewin . . . Goodness of heart

Minwassin . . . . Driven by a fair wind

Minawa. . . . . Again, more, anew

In the area of 'BlueBerry Tradition' reference should be made to its use by the exceedingly obscure and highly cryptic Miskwedo cult. It has been thought that the successful efforts of government officials, missionaries, civilization and education have eradicated this primitive practice. There are still a few devotees, however, who are able to use the divine mushroom[10] for the purpose of focusing subliminal knowledge upon a given problem.

At one time different customs for ingesting the mushroom were practiced and may even have been a delineation of rank within the cult. Among present practitioners of this ancient skill, reputed to be Paleo-Indian in origin,[11] the divine mushroom is always ingested with a bowl of BlueBerry liquid.

Is the use of the minawabo merely a traditional association serving to ally the practitioner with the mystic force which preserved his ancestors? Or does the BlueBerry liquid

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[10] Amanita muscaria

[11] Wasson, R. G. Soma, Divine Mushroom of Immortality N.Y.: Harcourt Brace Jovanovich, Inc.; no date

speed up the action of the hallucinogen? Perhaps the BlueBerry components negate certain undesirable reactions or even fatal poisoning? The answers to these questions remain chemical hypotheses [12] since no Meda admits to the knowledge or practice.

When Kee first began teaching country school (Glidden's Creek, 1936) it was the custom for the older girl students to take turns supervising the very youngest children in playground games. The little ones liked a game taught to them by one Susie Shaba, which greatly resembled 'Ring-a-round-a-Rosie.'

They chanted these words in singsong as they went in a circle

Strawberry- Strawberry-
Eat it all up,
Raspberry, Raspberry,
Put it in a cup.
BlueBerry- BlueBerry-
Set it in the sun,
It will still be waitin'
When the other ones are gone.
*Bend your knee this way-
Everybody grab!

One line* always seemed out of order, but I didn't think much about it at the time. Suddenly I realize this is an English transliteration of "Bezhig Niizh-Nisswe"--One, Two, Three! This seems to cinch Ojibwe origin. The song indicates knowledge that BlueBerries can be preserved by sun drying.

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[12] Haard, Richard and Karen, Poisonous and Hallucinogenic Mushrooms. Seattle, Washington: Cloudburst Press, 1975, pp. 98-100.

Traditional lore and linguistic derivations are not considered scientific data. There are many of us who feel that the clues contained in these two sources are closer to the truth than the computerized data of archaeological fragments. It will be argued, however, that these are at best merely indicators and not sufficient evidence on which to build a premise.

Accepting this (but also noting that we do indeed appear to have some strong indications within tradition and linguistics), let us turn to the more recognized sciences of botany, archaeology, chemistry, pharmacology and nutrition analysis. Let us see if procedures of these disciplines will give support to the importance of BlueBerries among Native Americans, particularly the Anishinaabeg.

The Incredible Botanic Truth

Botany tells us that there are two genera which are commonly called 'BlueBerries, both of the unconventional family Ericaceaes. To country people and the Native Americans, this will be no surprise, although they may not have seriously thought upon the matter. To the armchair botanist and the archaeologist, however, it may well come as a surprise, for it is not the usual case to find the fruit of two genera SO similar as to be completely confused,

to be found growing in the same or similar environment, to be of similar edibility--even with similar taste and aroma. These two genera are Gaylussacia and Vaccinium.

Not only are the berries of these two genera mixed together in almost every BlueBerry picker's pail but they are all called 'blueberries' or 'minan' and are used for the same purposes in the same manner indiscriminately. Only the botanist separates the two. To further complicate matters beyond these external look-alikes being of different genera, there are, in our area, four bonafide members of the genus Vaccinium which DO NOT look like BlueBerries at all, i.s. Vaccinium Vitis-Idaea L., Vaccinium macrocarpon, Vaccinium microcarpum, Vaccinium Oxycoccos. These are the cranberries whose fruits are red and whose vegetation is considerably more dwarfed and resupinate.

To further complicate the whole matter (this is just the beginning of complication), pioneers and many popular authors used/use the term 'BlueBerries' when referring to other plants with blue colored berries. For example, the first of two references under this heading in the card catalogue of the University of Michigan's natural science library designates an author who writes, one discovers, not of either 'BlueBerry' genera, but a species of Sambucus![13]

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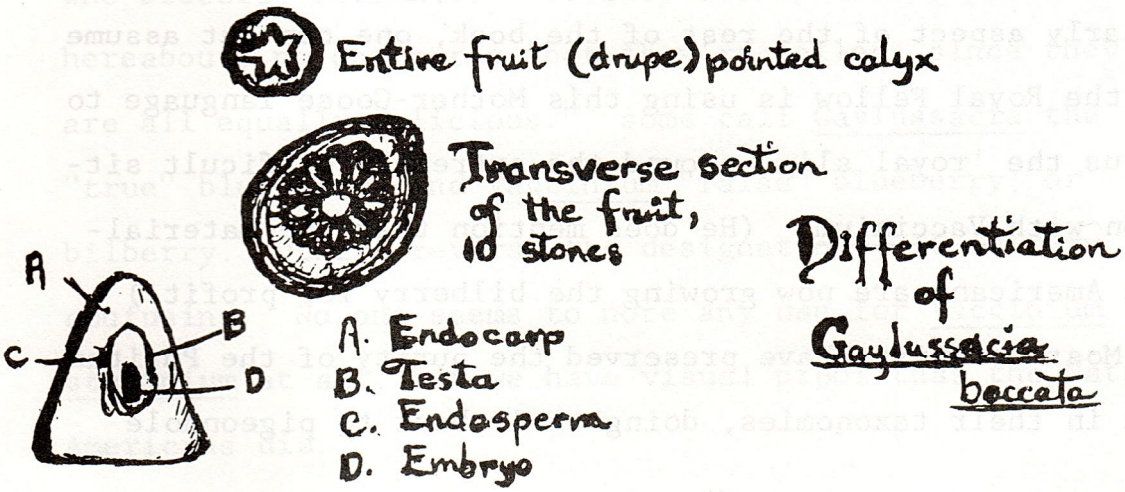
[13]Sweet, Muriel, Common Edible and Useful Plants of the West, Heraldsburg, California: The Naturegraph Co., 1962, pg. 30

Huckleberries are the fruit of Gaylussacia bacatta, and they are black, according to B. Brouk in his generally definitive and recent work on plants consumed by man.[14]

Brouk, a Royal Fellow, says, "The plant (Gaylussacia) and its fruit are similar to the blueberry (The American bilberry). It is a shrub about 1 m. tall, growing wild in North America. It is not cultivated and is not collected for commercial exploitation. The red flowers, and later the black fruits, appear in short, dense, drooping clusters or racemes. The fruit, despite its external similarity to blueberries, is not a berry but a drupe containing ten stones. The common name huckleberry is a corruption of 'hurtleberry' a synonym for whortleberry (bilberry), derived from the French hurte. It received its generic name in honour of the French chemist and physicist, Louis Joseph Gay-Lussac."



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[14]Brouk, B., Plants Consumed by Man,: N.Y., N.Y.:Academic Press, Inc.; London, G.B.: Academic Press Ltd.; 1975.

It appears that the majority of the literature on BlueBerries--and also the greater amount of chemical analysis--has been concerned with the European species, Vaccinium myrtillus, commonly called bilberry in Europe. The shrub is 20-60 cm. tall and has a creeping rhizome from which much-branched erect stems originate. The berries are small, about 8 mm. in diameter, dark blue and with a glaucous bloom.

Brouk continues with these general comments on Vaccinium: "Bilberries grow in mountainous woods and on heaths; the plant is native to northern parts of Eurasia and is also called WHORTLEBERRY or BLAEBERRY. The name bilberry is derived from the Danish Boelle-Baer, meaning 'ball berry'. The small fruits are used for tarts, cakes, pastries and in particular for preserves--bilberry sauce. Raw, fresh bilberries are eaten mainly with milk or cream and sugar."[15] Considering the recency of publication and scholarly aspect of the rest of the book, one can but assume that the Royal Fellow is using this Mother-Goose language to give us the 'royal slip' around the extremely difficult situation with Vaccinium. (He does mention that the materialistic Americans are now growing the bilberry for profit.)

Most botanists have preserved the purity of the Puritan ethic in their taxonomies, doing their best to pigeonhole

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[15] ibid.

the species and variety, carefully assigning to each a typical environment within a described continental area. The majority of taxonomists write almost as if they might have copied one another and come up with something like this:

> North America has a number of species of the genus Vaccinium, but none of them are myrtillus. Many of them are cultivated, whereas Eurasian bilberries only grow wild. Some of the blueberries are vigorous shrubs up to 4-5 m. tall, and the berries up to 2-5 cm. in diameter, grow in clusters. High-bush blueberries, V. australe, are blue-bloomed berries; they grow mainly in New Jersey, North Carolina and Washington. The low bush blueberries, V. lamarkii, have black berries with a bloom. They form the bulk of the commercially grown plants, mostly in Maine, Michigan, and Minnesota. Rabbitseye blueberries, V. ashei, are grown from South Georgia and Alabama to North Florida. Their fruit is black with very little bloom.

All very neat and orderly.

There are hints of peculiarities, however, in popular botanical writings, such as those of Euell Gibbons,[16] who breezily recounts: "...they are specially prolific... hereabouts no one cares what they're called, since they are all equally delicious." some call Gaylussacia the "true" blueberry, and Vaccinium "false" blueberry, or bilberry. Others reverse the designation. It is very confusing. No one seems to note any use for Vaccinium staminium at all, but we have visual proof that the Native Americans did.[17]

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[16]Gibbons, Euell, Stalking the Good Life: My Love Affair with Nature, New York, N.Y., David McKay Co., Inc., 1974.

[17]Appendix, Exhibit A_1 and A_2.

Scientists will say that they recognize lines like those of Gibbons as 'prattling for profit,' of course. But we have a real premonition that something very unusual is afoot among the Vaccinium when such august botanical authorities as Fernald and Kinsey of the Gray Herbarium at Harvard University write: "These (meaning Vaccinium BlueBerries) are difficult of classification, consisting of possibly many distinct species, THE EXACT CHARACTERS OF WHICH ARE NOT CLEARLY UNDERSTOOD. The berries are either blue with a bloom, or black, or sometimes purple, or sometimes an amber-pink." [18]

Nelson Coon, the master horticultural writer, puts the situation humorously but accurately when he says, "A listing of the various genera and species as above should make the ordinary blueberry picker not feel upset when confronted first by a bush of blackish blueberries, then by low spreading ones on the ground, or finally by giant bushes of choice berries all more or less in the same area.

"Some of these sorts of berries are found in the North, some in the South or in the West, and for all of them there are other common names than those given, as well as a number of species WHICH THE BOTANISTS ARE NOT TOO READY TO NAME."

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[18] Fernald, Merritt Lyndon, and Kinsey, Alfred Charles, Edible Wild Plants of Eastern North America, New York, Harper & Row, Publishers, 1958, Revised and edited by Reed C. Rollins.

A seventy-five page scientific monograph published in 1945, (W. H. Campbell, Blueberries, Britonia) fails to untangle all of it! "One can only say that the blueberries are all good or better, and may be eaten fresh, dried like the Indians used to do, or more modernly, frozen."[19] Euell Gibbons, in his detailed instruction of preparing blueberries for pie making, tells the botanifood buff exactly how to freeze the berries for storage and immediate use from the freezer. The main pitch he makes for this process appears to be convenience, but he also hints that not using water but just selecting clean berries keeps in volatile and water-soluble elements which otherwise are lost.[20]

It takes the specialists, however, to call the exchanges in the Vaccinium square dance of genetic entrepreneurology. (It seems that commercial growers of Vaccinium are now going to considerable lengths to inhibit the sexual activity of their plants and asexually producing new plants in order to make the berry products more uniform.) After five monographs of genetic research and ten studies of Vaccinium chromosomology we come to the conclusion that the BlueBerries, like the Pteridophytes, have flung off the stultifying influence of specie-al conventionality and gone environmentally and genetically wild. Now a species which was once expected to grow

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[19] Coon, Nelson. The Dictionary of Useful Plants, Emmaus, Pennsylvania: The Rodale Press, 1974.

[20] cf. "Identification of the Major Volatile Components of BlueBerry" by Thomas Parliment and Michael Kilo in the Journal of Food Science - Volume 40 (1975); Appendix: Exhibit C-1

in marshlands is climbing the cliffs of the stern and rock-bound coast; dwarf species which were assigned to the mountain plateaus are marching happily across sandy clearings in the woodlands. As for the goings-on inside the private tents of their urceolate corollae, it is enough to startle a confirmed profligate! Here are a few examples which were worked out before investigators threw in the xy towel:

Species Designation	Variety (If Named)	Chromosome Condition (When Researched)
Vaccinium uliginosum	pubescens Lange	mostly TETRAPLOID (with more than a few free swingers)
" "	microphyllum Lange	DIPLOID (Supposed to be confined to Europe but no one who speaks BlueBerry told the plant)
Unnamed, resembles diploid above	grows in N U S	Chromosome Count unknown
Vaccinium Elliotii Chapm.		DIPLOID
" Lamarckii Camp.		TETRAPLOID
" Brittonii Porter		TETRAPLOID
" Constablaei Gray		HEXAPLOID
" australe Small		TETRAPLOID
" astrococcum (Gray) Heller		DIPLOID
" corymbosum L.		A "HIGHLY VARIABLE" TETRAPLOID COMPLEX
" marianum Wats		AMPHIPLOID!

Gleason and Cronquist, whose Manual of Vascular Plants is produced by the New York Botanical Garden and whose

taxonomic work is considered authoritative for northeastern United States,[21] end the taxonomic description of Vaccinium with the terse understatement: "Hybrids ABOUND."

What has botany told us about the BlueBerry which would relate to its importance for the Amerind?

(1) The BlueBerry is highly adaptable; therefore, it is possible that wherever the hunter and gatherer might wander, he would find the BlueBerry.[22]

(2) The BlueBerry is multiploidal; therefore, cross-pollination and reproduction can and do take place under circumstances which would make it impossible for many other plants.

(3) BlueBerries can be easily dried and stored for future use.

(4) It is known by botanists that Indians dried the BlueBerries in large quantities and also included them in pemmican.

(5) Wild food botanists recommend storage of the Blue-Berry by drying and/or freezing over other methods.

Contributions from Ecology--and the Computer

A mass of information from 65 years of research on the foods of American wildlife is sifted and organized in a report, American Wildlife and Plants,[23] published by agreement with the U. S. Dept., of the Interior, Fish and Wildlife Service,

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[21]Gleason, Henry A. and Cronquist, Arthur Manual of Vascular Plants of Northeastern United States and Adjacent Canada New York: Van Nostrand Reinhold Company, 1963.

[22]cf. hic op. cit., pg. 1, line 5, common Anishinaabeg descriptive phrase #2 re Vaccinium spp.

[23]Martin, Alexander, Zim, Herbert S., and Nelson, Arnold L. (A Guide to Wildlife Food Habits) New York: Dover Publications, 1961 republication of 1951 report edition of McGraw-Hill.

and the Bureau of Sport Fisheries and Wildlife.

The ratio of 57/53 users indicates that BlueBerries are more than important to American wildlife. Out of 53 tabulated users in all areas, 57 use BlueBerries.

Wildlife listed as users of BlueBerries are:

Waterbirds (fruit)
- Gull, Herring

Marshland Birds and Shorebirds (fruit)
- Crane, Florida
- Crane, Sandhill

Upland Game birds (fruit, leaves)
- Grouse, Blue
- Grouse, Franklin
- Grouse, Ruffed
- Grouse, Spruce
- Pigeon, Band-tailed
- Turkey, Wild

Songbirds (fruit)
- Bluebird
- Catbird
- Chat, Yellow-breasted
- Chickadee, Black-capped
- Crow
- Flicker, Yellow-shafted
- Flycatcher, Crested
- Jay, Blue Florida
- Jay, Blue Northern
- Jay, Florida
- Kingbird
- Oriole, Baltimore
- Oriole, Orchard
- Phoebe
- Robin
- Sparrow, Pine-woods
- Sparrow, Tree
- Sparrow, White-throated
- Tanager, Scarlet
- Thrasher, Brown
- Thrush, Gray-cheeked
- Thrush, Hermit
- Thrush, Veery
- Thrush, Wood
- Titmouse, Tufted
- Towhee, Red-eyed

Fur and Game Mammals (fruit, twigs, foliage)
- Bear, Black
- Fox, Gray
- Fox, Red
- Opossum
- Pika
- Rabbit, Cottontail
- Raccoon
- Skunk, Eastern
- Skunk, Spotted, Allegheny
- Squirrel, Fox

Small Mammals (fruit)
- Chipmunk, Least
- Ground Squirrel, Mantled
- Mouse, Red-backed
- Mouse, White-footed

Hoofed Browsers (branches, foliage, fruit)
- Deer, Mule
- Deer, Black-tailed
- Deer, White-tailed
- Elk

(The Cedar Waxwings, Juncos, Evening Grosbeaks, Lined Ground Squirrels, Field Mice, Bog Lemmings, and Meadow Voles would be utterly disconsolate to know that BlueBerries are not officially a part of their menu. Fortunately for them, the United States Department of the Interior is not as yet adequately staffed to enforce the computer's decisions.)

Of the wildlife listed, BlueBerries are of the greatest importance to Grouse, Scarlet Tanagers, Bluebirds, Thrushes, Black Bear, Chipmunks, White-footed Mice, and White-tailed Deer.

Food-habits data on more than 300 species of birds and mammals have made it possible to determine approximately the extent to which about 250 different genera of plants have been used by wildlife. This food-use information, though far from perfect, can aid in planning wildlife habitat

developments on farms, forests, marshlands, grazing ranges, wildlife refuges, and residential areas. In a national listing of woody plants used by wildlife for food, BlueBerries stand eleventh in a listing of thirty-five most highly used plants.[24] In a listing which makes available more detailed indication of the extent to which particular kinds of plants in different regions have been utilized by each of seven wildlife categories, the rating of BlueBerry among the woody plants is even higher. BlueBerry is ninth in wildlife food usages in the Northeastern region of the United States and Canada.[25] The category which is the greatest user is song birds, followed by fur and game mammals. According to this study, the only category which does not make use of BlueBerry in some way is that of Marshland and Shorebirds.[26]

Naturally, these listings of wildlife BlueBerry users do not include human beings, wild or domesticated, historic or prehistoric. However, in the section on Vaccinium, this usually crisp, concise, computer report interpolates, "The fruits are the chief attraction--probably for the same juicy, sweet tastiness that appeals to us."[27] (Hmm. Very unscientific of the computer. So even machines enjoy

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[24] cf. Appendix, Exhibit D, for National Rating Chart of the thirty-five most highly used food plants.

[25] cf. Appendix, Exhibit E 1 - 2, for Chart of Woody Plant Food Usage in the Northeastern Region.

[26] This depends, of course, on the exact delineations by which one classifies species under such a general heading. Kee has been soundly scolded, when she attempted to collect marsh blueberries, by birds who were also blueberrying there. These were birds WHICH HABITUALLY INHABIT MARSHLANDS.

[27] op. cit., pg. 356

juicy BlueBerries? Or could this refer to the authors? KMP)

There are numerous accounts of land being burned over both by Indians and whites to implement BlueBerry production. Sometimes, especially when the land was flat, black soil, not only BlueBerry production was implemented. The land was used for pioneer gardening. The Amerinds found that BlueBerry production was enhanced, and there was more room for the spread of bracken fern (Pteridium aquilinum), the fronds of which they were fond of eating, and for Fire Flower (Epilobium angustifolium) which is abundant only in burned over places. The cleared, sunny places were also attractive to game birds, such as the ruffed-tailed and sharp-tailed grouse, which were admired in the stew pot and admired just as much for their plumage and dancing techniques. The cleared land brought also the smaller mammals who fed upon the vegetation or upon the birds who fed upon the vegetation. Thus hunting for these particular species was also facilitated.

In certain areas, land was designated for regular burning by common consent, and the burning was carefully watched over by native bands who frequented the area. Within the confines of such an area no permanent villages were built. A tract of land like this was called 'Kaskaskia', land-to-be-burned-over-at-regular-intervals. From this designation come the names of all the cities now called 'Kaskaskia' or

'Kashkiya', such as Kaskaskia, Illinois. The name of Kalkaska, Michigan, is a corruption of this word. It is remembered by local Anishinaabeg that the flat land between rivers was regularly burned over. Whole bands would migrate into this area during BlueBerry season. Often, while the old folk, women, and children were engaged with the berry harvest, the men would drive herds of wild pigs into the bog sloughs where they were slaughtered. This tribal memory was once thoroughly discredited because of someone's determination that the area is beyond the northern limit of peccary habitation--plus the lack of living species remnant within the time of European settlement. In recent years discoveries of wild boar tusks, tusk ornaments, and peccary remains throughout Antrim County have upheld the original account.[28]

Without any doubt, this custom of Kaskaskiawiwewin[29] has preserved for the Kirtland Warbler the northern habitat with young pines and burned pine cones which it requires for its peculiar existence.

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[28]Dialogue, summer 1964, with numerous senior citizens of the Village of Rapid City on Torch Lake (Waswagoning), Michigan, and with members of the Antrim County Rock Association, Alba, Michigan, summer 1965.

[29]Gerund of future intent: 'it-shall-be-being-burned-over-again (for purposes of improving production)'

Another Michigan example of the Amerind custom of burning over land with the express purpose of intensifying BlueBerry production, is the name of a lake contained within the northwestern sector of Miniss-Kitigan (Garden Island in the Beaver archipelago, Lake Michigan). It is called 'Sorry Burn' Lake because of an incident with homesteaders when local 'Indians' were kaskaskiawiwewin.[30]

From Ecology we learn that

(a) Wild animals (humans? -and computers?) find the BlueBerries very tasty; they gorge themselves on the ripe fruits, and many of the smaller mammals store them in burrows and hollow logs. This is one of the major means of dispersal.

(b) Animals attracted to BlueBerries as food are in turn a food source for man.

(c) BlueBerry plants thrive on acid soil where many other plants cannot thrive.

(d) Man discovered early that he could implement the production of BlueBerries by burning over areas suitable for the plants at regular intervals.

(e) Enhancing the habitat for BlueBerries also enhances the habitat for animals which feed upon them, making it easier to hunt those animals.

(f) Michigan contains a number of ecological niches which have developed from the regular use of burning over an extended period of years.

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[30] cf. Appendix, Item F, statement of Grandma Lettie Schlesinger on the naming of Sorry Burn Lake; personal communication to Keewaydinoquay, 1961.

Surely, if Vaccinium spp. were so important to both historic and prehistoric 'Indians', archeological evidence would have noted it before now? Oh, but it has! The evidence has just not been particularly pointed out for a number of reasons:

(1) Excavation at Great Lakes sites is unbelievably pauciform compared to excavation in other areas.

(2) Of Vaccinium spp. generally only the berries were collected.[31] The fruits have no husks, shells, cases, thick ovary walls, nuts, pits or other hard parts--not even large seeds--which are likely to survive desication and digestion and become fossilized through extended time.[32]

(3) The almost total absence of BlueBerry remains at excavated Great Lakes archeological sites[33] would indicate that:

(a.) BlueBerries did not grow in the Great Lakes area in the time period of 1970 B.C. to 1670 A.D. (Dates radiocarboned from actual sites).

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[31] In some cases Russians and Scandinavians have used the BlueBerry leaves and tender twigs, (Hutchens, Alma R. Indian Herbology of North America. Kumbakonam, S. India: Homeo House Press, 1969) Amerinds eschew this usage because of the extremely high tannin content and the possibility of cancer of the esophagus. True, a decoction could be used for skin sores, wounds, etc. but a woodland mashkiki would have better.

[32] Seeds deposited in animal feces have an immediate source of natural fertilizer. Whether the germination becomes a mature plant or not depends upon the biotic environment. Excavators wonder about the lack of coprolites at Great Lakes sites. Only in caves will they ever be found. Superstitious and firmly fastidious beliefs prevent its being otherwise.

[33] In an almost miraculous incidence of preservation, a spray of BlueBerry remains from ca. 1120-1700 was found in stratum 18 at the Juntunen site, Bois Blanc Island, Straits of Mackinaw. It

(b.) If BlueBerries grew here between 1970 B.C. and 1670 A.D., they were
(1.) Not eaten, OR
(2.) Eaten raw in the woods but not carried back to established sites for eating, preparation, or storage, OR
(3.) Prepared for storage but eaten up in a matter of months, OR
(4.) Carried away to other locations.

"Man has occupied parts of the upper Great Lakes region for 12,000 years. Most of the Great Lakes region has been occupied for the past 9,000. Apparently, the first 3,000 years of that time the occupation was by a people who hunted with spears tipped with fluted blades of flint. Plant foods that are available in northern Canada today were eaten." [34] That MOST CERTAINLY includes Minan! From the late Archaic on, use of BlueBerries is sufficiently documented by literature to anyone's satisfaction. (3ab)

It is difficult to imagine any person of any era facing a bog or hillside of sweet ripe BlueBerries without helping himself to some. The aroma of ripe BlueBerries in the sun is an irresistible impact! [35]

No group of people scrounging subsistence from the

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was found with Zea mays above what appeared to be the remains of a birchbark container. "This was the only occurrence of BlueBerries, and it was by the merest chance that they were preserved in an identifiable condition." Yarnell, Richard Asa. Aboriginal Relationships Between Culture and Plant Life in the Upper Great Lakes Region. Ann Arbor: U of M, 1964, 1976.

[34] Griffin, James, B. in Post Glacial Ecology and Culture Changes in the Great Lakes Area of North America. Great Lakes Research Division, Institute of Science and Technology, the U. of Michigan, Publication 7.

[35] The importance of BlueBerries in American diet and dietary economics appears to be dwindling along with the wild lands which were their original home. Recent literature is more concerned with such things as adding hydrogen ions to

environment, slurping frogs' eggs and chewing rock tripe, is going to turn down the stored energy and pure gustatory delight of a mellow BlueBerry Crop. (3b.1)

Without doubt tons of BlueBerries have been consumed in the woods, with the transport between producer and consumer reduced to a few inches. (3b.2) But when individual satiation was reached, every available woodland hand, from grandmother down to her one-year-old great-grandchild, continued to harvest.[36] Everyone knew that the juicy berries would dry easily in the summer sun. In ten days they would be ready to pack into the birchbark mukuks.[37] Both the berries and the mukuk would resist decay and preserve the food for that cold day when father and uncle had no luck at the hunt. (3b3) Mother and Grandmother and Eldest Daughter would pound the surplus berries into pemmican bars, along with tallow, meat, chenopodium, maple sugar, and nuts. These would be carried by men of the family on distant hunts and trips to the Trader. (3b.4) Knowledge of the 'keeping qualities' of Minan was not confined to Native Americans, although they were undoubtedly the source of that knowledge. When the whole group moved, either because of

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the soil of commercially grown berries so they can be conveniently harvested by machines on flat land. Detailed chemical studies are only available in old cannery books written when wild berries were still an unlimited supply. The most recent chemical study is directed to the research of the volatile oils of BlueBerries for the express purpose of producing synthetic blueberry flavor and synthetic blueberry aroma!! (op. cit.; Appendix, Exhibit C-1)

[36] It was an experience in the BlueBerry swamp which gave Kee-waydinoquay her baby name. On the remote islands Native Americans were still living woodland style when Kee was very young. This experience was not remarkable; other families were similarly occupied. cf. Appendix, Item I.

[37] cf. Appendix, Exhibit G, method of packing birchbark mokuks with BlueBerries.

going to winter headquarters or in flight, the first items to go along were the mukuks of Minan. In comparison to the total carrying weight--both the dried berries and the mukuks were very light--the amount of stored energy was great. Older family members would be assigned to transport the heavier maple sugar; young children could carry large amounts of BlueBerries dried. (3b.4) If the berries were prepared and stored at the wintering site, the first of the prepared foods to disappear were the favored BlueBerries which were added to 'almost everything' as flavoring. (3b.3)

Whenever abandonment became necessary, food was cached...if there was sufficient time. If there wasn't, honey, maple sugar, dried fish, and meat were abandoned, and the BlueBerries went along. In rain, snow, or travel escape down rivers or across water, maple sugar and honey would dissolve, dried meat and fish would rehydrate and spoil. But BlueBerries in mukuks, besides being better contained and lighter of weight for rapid flight, would float and help support the young and the aged. If the berries eventually became wet, they could be eaten without lighting tell-tale fires, or being redried and repacked. Blessed be Minan!!

If the foregoing reconstruction seems too imaginative, consider an ethnographic analogy.

A suburban family is about to depart for the summer cabin. Mother and the girls pack up the food they're taking, leaving only a few items in the refrigerator for munchies. Before the van pulls out, the boys polish off all the bologna, the cheese, a box of Snax crackers and a dozen twinkies, which was most of the food left--except for some wilted endive, two opened jars of pickles, and a box of Arm & Hammer baking soda.

A thousand years later, archeologists, investigating the ruins of Suburbia, make the following report: "Citizens of this particular city appear to have been vegetarians, their favorite foods being cucumbers (carefully kept in special jars) and dried endive. A strange white powder, believed by the inhabitants to develop the muscles, supplemented the diet."

The 'favored foods' of the 'inhabitants' are not even listed! They have all been eaten up (3b.3) or carried away. (3b.4)

Chemical and Nutritional Analysis

Native Americans have garnered, dried and stored BlueBerries since time immemorial. The dried berries were added to pemmican, the original 'energy bar' intended to fortify warriors and hunters on the trail or sustain whole migrating bands. In the winter, berries were rehydrated in stews, broths, dressing, soups, etc. They were also made into the now famous Minanaboo[38] -- a sort of 'instant breakfast' drink. At any time of year, the berries, fresh or dried, were added to the staple cornbread.

The BlueBerry Festival was once the important all-social event of 'Indian Summer'. BlueBerries were added to the food served at meals celebrating the First-Fruits-Feast of each child approaching puberty; this was a form of blessing all participants. (These both were times when the legend of Nanaboshu and the BlueBerries was told and retold.) In the early spring, when all hands were needed

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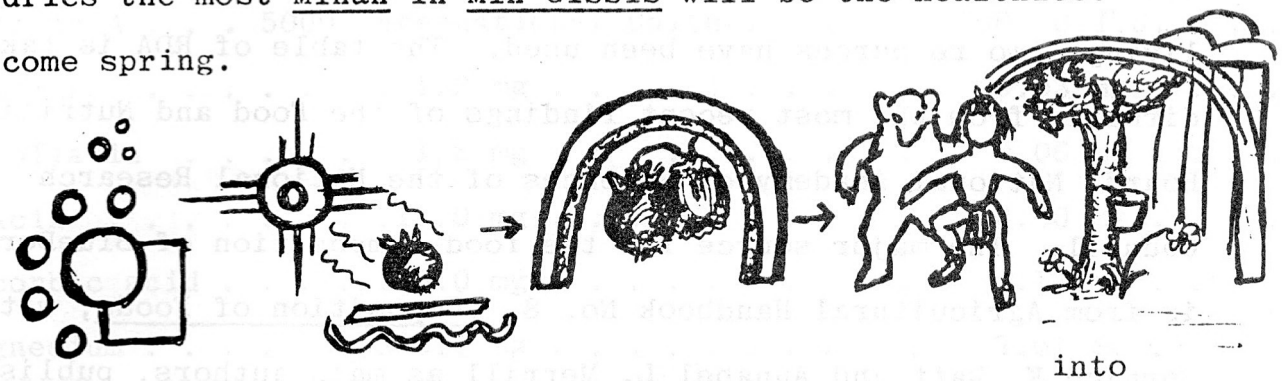
[38]Literally, 'liquid blueberries'. Conventionally it was prepared cold, a small amount of maple syrup added, this and the berries beaten up together in the same liquid used for rehydration, by means of a clean sassafras whisk.

to labor in the maple sugar groves and primitive procedures provided little time off for supplementing the diet otherwise, dried blueberries mixed with very slightly thickened sap provided extra energy. This same concoction, in which the dried caps and stipes of Amanita muscaria had been rehydrated, was, for thousands of years before contact, the only means of intoxication used by the woodland Indians.

Among our people there is a saying that the family which dries the most Minan in Min-Gissis will be the healthiest come spring.

Ojibbeweg:



Symbol Idea:	Family unit	Sun dry	BlueBerries many Uncountable	BlueBerry in Moon	Walk with the Bear will	into Moon of Our Good Tree
Ojibwe Words:	Ogowko-dewissiian	Gissis-wiwewin	Nibiwa Minan	Od Min-Gissis	Wenwibimossog eMukwah	NinAutig Gissis pagamish-kamagad
Trans-lation:	That family which	sun dries	Plenty blue-berries	in the BlueBerry Moon	They will walk in strength	When Spring comes to pass.

More often than not this did seem to be right.

Assuming that the old saying may have had some truth, let us examine some possible causes. Reasons which come readily to minds of both cultures are:

a. BlueBerries contain a high proportion of macronutrients and micronutrients which are necessary to maintain good health.

b. BlueBerries supply some medicinal property which suppresses diseases and/or infections, especially those common in winter.

c. BlueBerries have a supernatural quality which blesses and protects the consumer.

d. BlueBerries taste so good that the saying was merely made up to justify frequent consumption; the healthful benefits are really in mental attitude, which in turn affects the physical.

In order to compare the nutritional content of BlueBerries with the minimum daily requirements of healthy nutritional living, two resources have been used. The table of RDA is taken directly from the most recent findings of the Food and Nutrition Board, National Academy of Sciences of the National Research Council. The major source for the food composition of BlueBerries is from Agricultural Handbook No. 8, Composition of Foods, with Bernice K. Watt and Annabel L. Merrill as main authors, published by Consumer and Food Economics Research Division, Agricultural Research Service, U.S. Dept. of Agriculture.

COMPARISON CHART BETWEEN RECOMMENDED DAILY DIETARY ALLOWANCES AND THE AVERAGE COMPOSITION OF BLUEBERRIES

Recommended Daily Dietary Allowances Designed for the Maintenance of Good Nutrition of Healthy People (U.S.A.) (adult males)		Composition of BlueBerries Per 100 Grams, Fresh
Energy (Kcal)	2700	62.00
Protein (Gm)	56	.07 grams
Fat	grams	.05 grams
Carbohydrate (Total)	300 grams	15.30 grams

COMPARISON CHART BETWEEN RDA & BLUEBERRIES (Cont'd)

Carbohydrate (Fiber)	grams	1.50 grams
Ash	grams	.30 grams
Calcium	800 mg	15.00 mg
Phosphorus	800 mg	13.00 mg
Iron	10 mg	1.00 mg
Sodium	No RDA; 3-6 gm. av. daily intake.	1.00 mg
Potassium	No RDA; 2-5 gm. av. daily intake	81.00 mg
Vitamin A	5000 International Units	100.00 I.U.
Thiamine	1.2 mg	0.03 mg
Riboflavin	1.6 mg	0.06 mg
Niacin	18.0 mg	0.50 mg
Ascorbic acid	45.0 mg	.14 mg
Magnesium	350.0 mg	2.67 mg
Water		83.20 grams

This chart shows that BlueBerries contain a surprising amount of the recommended daily dietary allowances. There has been considerable speculation on how the Native American obtained in his diet adequate amounts of the vital minerals of calcium, phosphorus, and iron. In diet reconstruction, sufficient calcium amounts had been wondered about because of the complete lack of dairy products of any kind before contact-- and for a long time afterward, for that matter. Here we see a favored food which, for a vegetable source, provides a high ratio of Ca. Of course the Amerinds didn't/don't measure out exactly 100 grams of Blue-Berries and cease consumption at that point! (When the berries

are in season,we still imitate our wildlife friends and consume quantities right off the bushes.) But not even when they were in season was the major part of diet BlueBerries, so that there were always other foods providing part of the Minimum Daily Requirement. (MDR)

The roles of calcium and phosphorus are closely related. These two elements comprise 70% of the mineral weight of the body, being found mainly in the bones and teeth as special mineral salts. According to the table, the RDA's are each about .8 gm a day for adults.

Since the ratio of calcium to phosphorus in the bones is about 2:1, it suggests that intake through food should be about the same ratio. Look at the ratio in BlueBerries!! Just about perfect.

It is the ratio of USABLE iron in BlueBerries that is the real surprise. Then we recall how they frequently stand in bogs where the water shows a high accumulation of dissolved iron. (Of course we mashkikikweg have known that at the height of BlueBerry intake the feces will appear similar to one who suffers from internal bleeding. BlueBerry ingestion is recommended for women needing iron supplementation to the blood, for persons suffering with diabetes, for children with anemia. A sort of BlueBerry Brandy is made for violent continuous diarrhea, dysentery, and derangements of the bowels. Teas, decoctions, syrups, and poultices are also used as an astringent treatment for gastric colitis and other stomach conditions.) If enough iron is not

consumed, the number of red blood cells which contain the hemoglobin is reduced, and not enough oxygen can be brought to the cells. A person in this condition becomes lethargic--certainly not an efficient asset in a hunting and gathering society.

For a long time one of the 'gift medicines' of the Midewiwin[39] was a 7 x 7 prescription for women of child bearing age who naturally have loss of blood (thus iron also) through menstruation. The '7 x 7' involves the monthly assimilation of Minan. It is no wonder that so many mothers and young children whose families had stored large quantities of the Minan came out of the winter in excellent health.

Another content of the berries which contributes to well-being over winter is the percentage of ascorbic acid, Vitamin C. Fruits and vegetables contain this vitamin. At one time the lack of it caused scurvy, especially among sailors--it still would, but the lack of it doesn't often take place. Probably the Anishinaabeg of days past didn't have much better understanding than the sailors, but they did know they'd not develop this disease as long as they had the dried fruits of the Minan. (They also knew, as far back as the early 1500's, how to take care of scurvy in a hurry, if necessary with the needles of fir and pine.)

It is true that the dried fruits of the wild rose would give even more Vitamin C, but they do not have the pleasantness

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[39] Being given the knowledge of such 'gift medicines' was/is one of the immediate physical values of membership in Midewiwin. There are also spiritual values. One may use the prayers and medicines for his own family; he may also use them for the benefit of others in exchange for 'offerings'.

of flavor and aroma of the BlueBerry. Rose hips are also difficult to prepare, but they are used, especially for exceptional needs. Unless an individual sustained many old wounds, the tissues of which would reopen without strong dosages of Vitamin C, the flavorful and aromatic Min was always the first choice.

The carbohydrate content of BlueBerries, together with the volatile oils and anthocyanins, are undoubtedly the reasons for the 'tastiness'. That content is also the source of energy. Carbohydrates and fat must also be present in order for the body to manufacture the nonessential amino acids.

No one knows exactly when maize became an item in the diet of the Anishinaubeg. We do not claim that it was always there; in fact, there are no less than three origin tales! Certainly corn was added to BlueBerries, not BlueBerries to corn.

Our 'corn' was never the pure white or yellow developed and preferred in the south. It has always been the mottled, striped, speckled, versi-color variety which has now become known as a Thanksgiving decoration. Most Chemukmaun ('Long Knives'--our word for those of European descent) are quite startled to discover that we are still raising maize for food purposes; they are even offended to find out we prefer it! If their interest ever goes so far, however, as to try our corn soup (mahndahminabo) or our Ohgonsah, wrapped in giant basswood leaves and buried to bake under coals, they will understand. The colors of the Indian corn do not appeal to the whiteman's choice for

food colors, but the remnant of our 'true maize' is one reason why the diet of the Ojibwe has not been quite so lacking in lysine as that of our Mexican brothers and those of the Southwest. Another reason is the opportunity to use many other dietary supplements which are found in the abundance of our woodland environment--but the **REALLY IMPORTANT REASON** is **Minan**. In Anishinaabeg culinary art, Corn and BlueBerries belong together, like pancakes and syrup, eggs and bacon, apple pie and cheese. Until very recently BlueBerry corn muffins, BlueBerry corn pancakes, BlueBerry cornbread were not made for 'company' meals--they were ordinary fare.[40]

It was the content of those little blue fruits from the boggy bush combined with the versicolor fruits of ancestral corn that for hundreds of years kept our diet balanced.[41] Not that anybody had it all figured out. Their 'spirits' were compatible, everything tasted better that way, and The People were happy.

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[40]Kee well remembers her own mother, Minosoahnikwe, filling cornbread dough with BlueBerries, shaping them into bannocks on a maple plank, and baking them, reflector style, beside the fire. In winter she used a kerosene stove.

WaubOshtigwan would bite open a bannock, pour in a dollop of maple syrup, and mumble through its sweetness, "Ondjondjita." Not by accident was mother's English name translated as 'Sarah GoodCook'.

[41]cf. Appendix, Exhibit H, Chart of Comparison of the Composition of Corn and BlueBerries.

APPENDIX

Exhibit A-1

"Mittens, c.1830, Huron tribe (?), H.10" x W. 5½". Nat. Museum of Man, Ottawa, Collected by the Earl of Caledon. Black buckskin with floral design in moosehair embroidery." (The design is not floral, but fruit design, showing a cross-section of each.) The portions of this design relating to this study are:

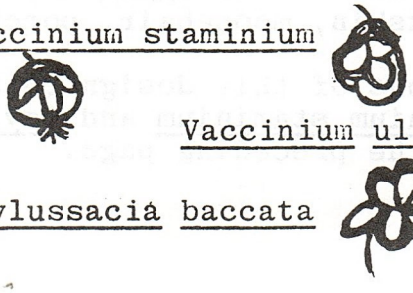
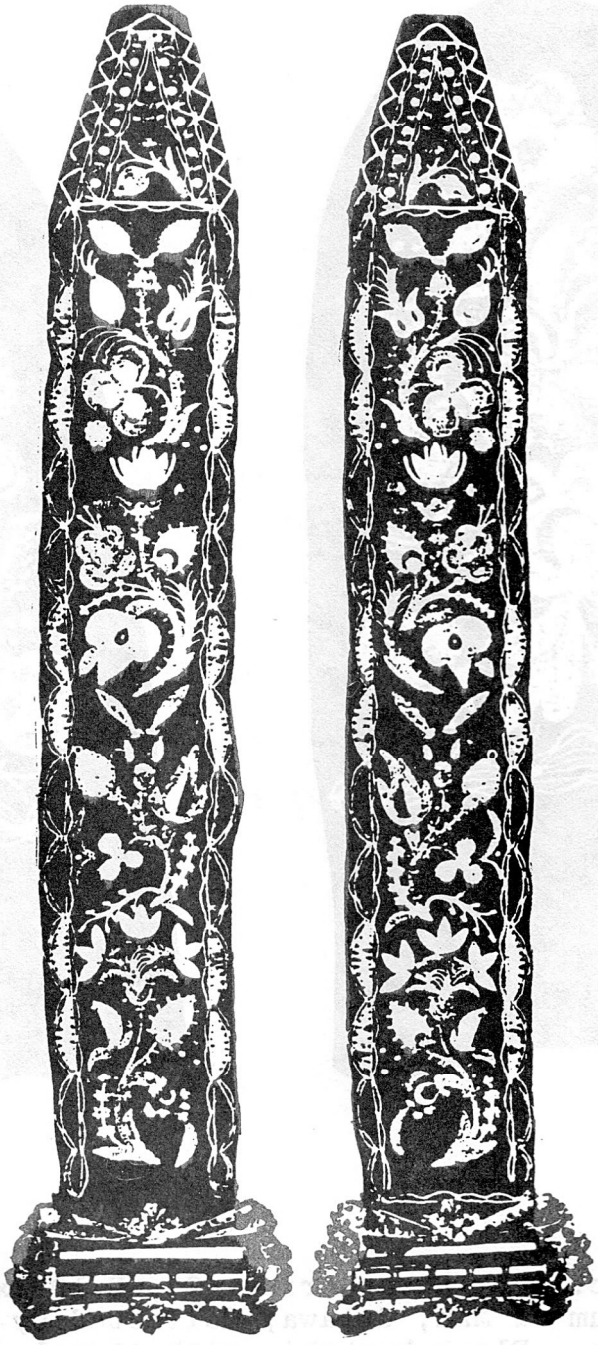


Exhibit A-2



"Garters, c.1800, Huron tribe, L 18½" x W 2 3/4", Museum of the American Indian, Heye Foundation. Black buckskin, moosehair, porcupine quill decor."

The portions of this design relating to this study are Vaccinium staminium and Gaylussaccia baccata, shown on the preceding page.

Appendix

Item B

EXPANDED LIST OF FRUITS WHOSE NAMES CONTAIN THE CORE SYLLABLE OF MIN

Min	BlueBerry
Minan	BlueBerries
Nokomisomin	Grandmother's Berries (Gaylussacia baccata)
Miness	Thornberry
Mishimin	Apple
Okwemin	Cherry
Pagessanimin	Plum
Osigwakomin	Pear
Jomin (Shomin)	Grape
Odatagagomin	Mulberry
Gandaigwassomin	Thimbleberry
Makatemin	Blackberry
Miskwimin	Raspberry
Minikan	Seed
Mashkigimin	Cranberry
Mishidjimin	Currant
Jabomin	Gooseberry
Ogwissimin	Pumpkin
Mondahmin	Corn

Appendix: Exhibit C-1

JFS BASIC SCIENCE

THOMAS H. PARLIMENT and MICHAEL G. KOL
General Foods Technical Center, White Plains, NY 10

IDENTIFICATION OF THE MAJOR VOLATILE COMPONENTS OF BLUEBERRY

INTRODUCTION

THE BLUEBERRY is a plant native to North America which is grown commercially for its edible fruit. The flavor components of blueberries have received little attention; Nursten and Williams (1967) omitted them from their review of fruit flavor components. Hall et al. (1970) reported the fruit of the lowbush blueberry (*Vaccinium angustifolium*) contains acetaldehyde, methyl acetate, ethyl acetate, ethanol and ethylene. The volatiles of other members of the genus *Vaccinium* have been studied. For example, von Sydow and Anjou (1969, 1970) investigated the bilberry (*Vaccinium myrtillus*), a fruit native to Europe. They identified a large number of compounds and concluded that trans-2-hexenal, ethyl-3-methyl butyrate and ethyl-2-methyl butyrate are of the major importance to bilberry aroma.

The volatiles of the high-bush blueberry (*Vaccinium corymbosum*), grown commercially in the mid-Eastern United States, have not been previously reported. The purpose of this study was to identify the major compounds of commercial high-bush blueberries and to establish the relative importance of these compounds to the characteristic blueberry aroma.

MATERIALS & METHODS

Blueberry concentrate

900g of high-bush blueberries (*Vaccinium corymbosum*) were obtained from commercial sources. These were placed in a commercial Waring Blendor with 300 ml water, the container flushed with nitrogen for 3 min. sealed, and the system was macerated for 30 sec. The resultant slurry was vacuum distilled at 25 in. Hg (54.4°C) for 1 hr and the volatiles were trapped in a dry ice-acetone bath. This yielded 525 g of volatile material which was saturated with sodium chloride and extracted with three 200-ml portions of diethyl ether. The ether was washed with a small quantity of 5% sodium carbonate to remove the free acids. The ethereal solution was then dried and concentrated by slow distillation to a volume of about 1 ml.

Separation and identification

Separation of the mixture was accomplished by gas-liquid chromatography (GLC) in a Perkin-Elmer Model 990 gas chromatograph using 8 ft × 1/8 in. o.d. column containing 10% SP 1000, a modified Carbowax 20M, on 80–100 mesh Supelcoport. The column was temperature programmed from 60°C to 275°C at 6°C per min. Mass spectra were obtained using tandem gas chromatography-mass spectrometry. The column effluent was passed through a glass jet separator maintained at 275°C into the ion source of a DuPont Model 21-491 mass spectrometer. Mass spectra were obtained at 70eV and a source temperature of 250°C.

Sample identification was accomplished by comparison of mass spectra and gas chromatographic retention times of the isolated materials to that of known standards. Where mass spectral identification was not unequivocal, as in the case of the trans-2-hexenal and trans-2-hexenol, infrared spectra were prepared. The individual components were trapped in a dry ice-cooled melting point tube and the condensed components were transferred to a pair of sodium chloride plates. The spectra were run as capillary films in a Perkin-Elmer Model 467 infrared spectrophotometer.

Sample quantitation was performed by triangulation of the GC peaks and the data are reported as area percent.

RESULTS & DISCUSSION

IN ANY MEANINGFUL ANALYSIS of natural products it is important that the concentrate which is analyzed represents accurately the composition of the starting material. In the

Table 1—Components identified in blueberry essence

Peak no.	Identity	Rel. R_t^a	Conc. (%)
1	Ethyl acetate	0.18	0.29
2	Ethanol	0.24	5.74
3	Ethyl isovalerate	0.56	0.13
4	1-Hexanal	0.59	4.86
5	1-Penten-3-ol	0.77	0.30
8	Limonene	0.96	0.97
9	trans-2-Hexenal	1.00	71.13
10	2-Penten-1-ol	1.28	0.24
11	1-Hexanol	1.40	2.0
12	cis-3-Hexenol	1.50	0.41
13	trans-2-Hexenol	1.56	12.39
14	1-Heptanol	1.72	0.01
15	2-Ethyl-1-hexanol	1.81	0.04
16	Linalool	2.00	0.67
18	1-Nonanol	2.35	0.02
19	α-Terpineol	2.45	0.03
20	Nerol	2.75	0.04
21	Geraniol	2.85	0.61

[a] Relative to trans-2-hexenal = 1.00

Appendix: Exhibit C-2

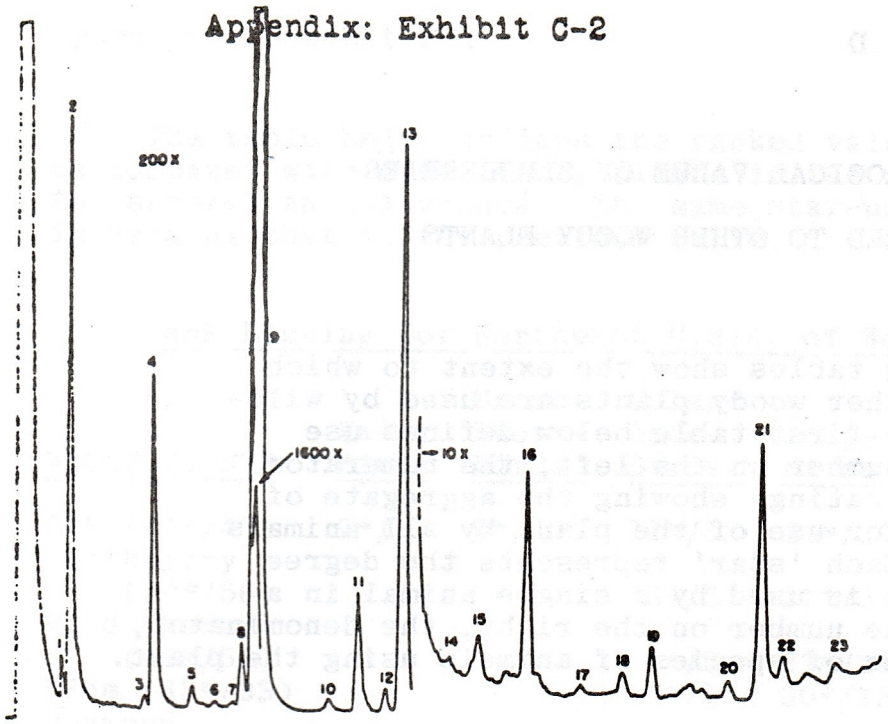


Fig. 1—Gas chromatogram of the neutral components of blueberry. 8 ft X 1/8 in. SP 1000 column programmed from 60°C to 275°C at 6°C per min with a helium flow rate of 25 ml per min.

present case, the aroma of the aqueous distillate was found to be characteristic of fresh blueberries. The ethereal essence retained this character although the green note seemed disproportionately high.

Identification of the major neutral components of blueberry is given in Table 1. The GC curve is presented as Figure 1. The composition of the essence is given in the table in terms of area percent, calculated on a solvent free basis. The compounds which we have identified represent over 99% of the total volatiles of the essence.

It is worth noting that a large percentage of the volatile components identified in this study are composed of six carbon compounds. Taken together these hexanols, hexenols, hexanals and hexenals comprise over 91% of the volatiles. These compounds were all judged to contribute to the pleasant, fruity, fresh green character of blueberries. Organoleptic evaluation demonstrated that linalool also makes a major contribution to the characteristic flavor. Arctander (1969) states that linalool is used in imitation blueberry flavors and that it possesses a floral-woody odor with a faint citrusy note. Although the level of linalool in this essence was less than 1%, in other samples it was found to be as high as 6%. To demonstrate the organoleptic importance of these compounds, a synthetic mixture of trans-2-hexenal, trans-2-hexenol, and linalool was evaluated in a sucrose-citric acid base. The consensus of an informal bench-top evaluation of this system was that it possessed the character impact of fresh blueberries.

SUMMARY & CONCLUSIONS

VOLATILE COMPONENTS of high-bush blueberries (*Vaccinium corymbosum*) were separated from the fruit by vacuum steam distillation, extracted with ether and concentrated by distillation. The essence was fractionated by gas chromatography. Eighteen individual components were identified by mass spectrometry, infrared analysis and gas chromatographic retention times. The concentrations of the components in the essence were determined by peak area measurement. The major component is trans-2-hexenal; and the next largest is trans-2-hexenol. Other compounds present at greater than 1% levels are ethanol, hexanal, hexanol and limonene. Minor compounds identified include ethyl acetate, ethyl isovalerate, 1-penten-3-ol, 2-pentenol, cis-3-hexenol, 2-ethyl-1-hexanol, linalool, nonanol, α-terpineol, nerol and geraniol.

Recombination of the identified compounds demonstrates the importance of trans-2-hexenal, trans-2-hexenol and linalool to the characteristic blueberry flavor.

REFERENCES

Arctander, S. 1969. "Perfume and Flavor Chemicals," Vol 2, Monograph 1803. S. Arctander, Publisher, Montclair, N.J.

Hall, I.V., Forsyth, F.R. and Lightfoot, H.J. 1970. Volatiles from developing fruit of Vaccinium angustifolium. Can. Inst. Food Technol. 3(1): 1.

Nursten, H.E. and Williams, A.A. 1967. Fruit aromas: A survey of components identified. Chem. & Ind. 486.

von Sydow, E. and Anjou, K. 1969. Aroma of bilberries (Vaccinium myrtillus). Lebensm.-Wiss. Technol. 2: 78.

von Sydow, E. and Anjou, K. 1970. Aroma of bilberries (Vaccinium myrtillus). 2. Lebensm.-Wiss. Technol. 3: 11.

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APPENDIX: Exhibit D

RANKED ECOLOGICAL VALUE OF BLUEBERRIES

AS COMPARED TO OTHER WOODY PLANTS

The following tables show the extent to which blueberries and other woody plants are used by wildlife as food. The first table below defines use nationally. The number on the left, the numerator, is the 'star-user-rating' showing the aggregate of 'stars' recorded for use of the plant by all animals in all regions. Each 'star' represents the degree to which the plant is used by a single animal in a single region. The number on the right, the denominator, is the total number of species of animals using the plant.

Rank Listing for U.S.A. of Woody Plants

Oak	263*/96	Fir	40*/23
Pine	234*/82	Sagebrush	40*/22
Blackberry	118*/97	Beech	38*/31
Wild Cherry	104*/81	Willow	37*/25
Dogwood	75*/64	Spruce	36*/22
Grape	69*/75	Manzanita	36*/19
Poison Ivy	66*/61	Alder	36*/16
Cedar	66*/44	Mulberry	35*/38
Pricklypear	62*/44	Snowberry	32*/27
Maple	61*/33	Gooseberry	31*/32
Blueberry	57*/63	Douglas Fir	30*/20
Hackberry	54*/48	Saltbush	29*/22
Birch	52*/25	Persimmon	28*/19
Mesquite	52*/24	Greenbrier	27*/33
Elderberry	51*/79	Blackgum	26*/33
Serviceberry	46*/58	Virginia creeper	26*/30
Sumac	46*/50	Holly	25*/36
Aspen	46*/28		

Appendix: Exhibit E-1

The table below defines the ranked value of blueberries as compared with other woody plants in the northeast region, for several animal groups. The same star-user-rating system is used as that in the previous table.

Rank Listing for Northeast U.S.A. of Woody Plants

WOODY PLANTS	Water Birds	Marsh-Shore-Birds	Upland Game-Birds	Song-Birds	Fur & Game Mamm.	Small Mamm.	Brow-sers
Oak (71*/43)	7*/3	0*/1	11*/5	25*/17	21*/14	4*/2	3*/1
Blackberry (50*/56)	-	-	13*/5	27*/34	4*/10	4*/5	2*/2
Wild Cherry (44*/56)	-	-	4*/5	27*/29	9*/13	2*/7	2*/2
Pine (43*/33)	-	-	1*/2	30*/18	8*/10	2*/2	2*/1
Dogwood (42*/47)	3*/2	-	6*/5	25*/28	4*/6	1*/4	3*/2
Grape (37*/53	1*/1	-	15*/5	14*/37	7*/8	0*/2	-
Maple (36*/27)	-	-	2*/4	13*/7	12*/11	3*/3	6*/2
Beech (34*/31)	1*/1	-	2*/3	8*/12	21*/12	2*/2	0*/1
Blueberry (29*/37)	1*/2	-	3*/2	9*/21	9*/7	5*/3	2*/2
Birch (27*/22	-	-	6*/3	8*/12	9*/8	0*/2	4*/2
Sumac (23*/28)	-	-	4*/3	10*/19	7*/4	-	2*/2
Aspen (23*/17)	-	-	5*/3	0*/1	12*/10	0*/1	6*/2
Spruce (20*/16)	-	-	-	11*/8	9*/6	0*/1	0*/1
Hickory (17*19)	-	-	0*/1	6*/6	9*/9	2*/3	-
Fir (16#/13)	-	-	0*/1	6*/4	4*/5	0*/1	6*/2
Alder (14*/11)	-	-	2*/3	7*/3	3*/3	-	2*/2
Poison Ivy (13*/28)	-	-	2*/4	11*/21	0*/3	-	-
Blackgum (13*/27)	0*/1	-	0*/3	9*/18	4*/5	-	-
Mulberry (13*/25)	-	-	-	11*/21	2*/4	-	-
Elm (13*/15)	2*/1	-	0*/3	8*/6	3*/4	-	0*/1
Cedar (13*/8)	-	-	-	13*/7	0*/1	-	-
Serviceberry (12*/39)	-	-	0*/2	6*/25	5*/6	0*/4	1*/2
Hazelnut (12*/16)	-	-	3*/3	0*/1	6*/6	2*/4	1*/2
Willow (12*/13)	-	-	2*/3	-	5*/7	0*/1	5*/2
Hemlock (12*/13)	-	-	0*/1	7*/5	3*/4	0*/2	2*/1
Greenbrier (11*/23)	0*/1	-	4*/3	6*/14	1*/5	-	-
Ash (11*/18)	0*/1	-	1*/2	6*/6	3*/5	0*/2	1*/2

Appendix: Exhibit E-2

Northeastern area, continued:

WOODY PLANTS	Water Birds	Marsh-Shore-Birds	Upland Game-Birds	Song-Birds	Fur & Game Mamm.	Small Mamm.	Brow-sers
Elderberry (10*/36)	-	-	1*/2	8*/28	1*/3	0*/2	0*/1
Virginia creeper (10*/22)	-	-	-	10*/10	0*/3	-	-
Tuliptree (10*/14)	-	-	-	7*/7	1*/4	1*/2	1*/1
Mountain Ash (10*/9)	-	-	3*/2	4*/5	-	0*/1	3*/1
Holly (6*/20)	-	-	0*/1	5*/14	0*/2	0*/2	1*/1
Hawthorn (6*/15)	-	-	1*/3	3*/3	2*/6	0*/1	0*/2
Black Walnut (6*/4)	-	-	-	-	6*/4	-	-

Appendix: Exhibit F

STATEMENT OF GRANDMA LETTIE SCHLESINGER ON THE MAKING OF SORRY BURN LAKE, GARDEN ISLAND

You will find it hard to believe maybe, being a teacher, but I was once a teacher too, when I was fifteen years old! My father had taken up a homestead on Garden Island and there was just no one to see to the little school there, so they asked me if I would do it. I said I didn't think I knew enough, but the men just answered that there wasn't much to doing it- just to be there on time, show the kids what I could about reading and numbers. They thought school was mostly to keep the little ones out of their mothers' way anyhow--so they could get some work done, you know.

I loved that place. It was so beautiful walking to and from school, especially in the spring and autumn. Our homestead was near a little lake in the northwest section of the island. One fall, after the blueberries were in the drying racks, the Indians started to burn over the marsh area as they did every four or five years to make the blueberries grow better. Well sir, the wind changed unexpectedly, as it often does out there, and before we knew it our house and barn were on fire. All our family, with a lot of Indians helping, tried to put it out, but the hard work we'd put in for two years was ruined. Just so we'd have shelter, we had to move into the pig pen. We cleaned it all out of course, and my mother fixed it up so it was really nice.

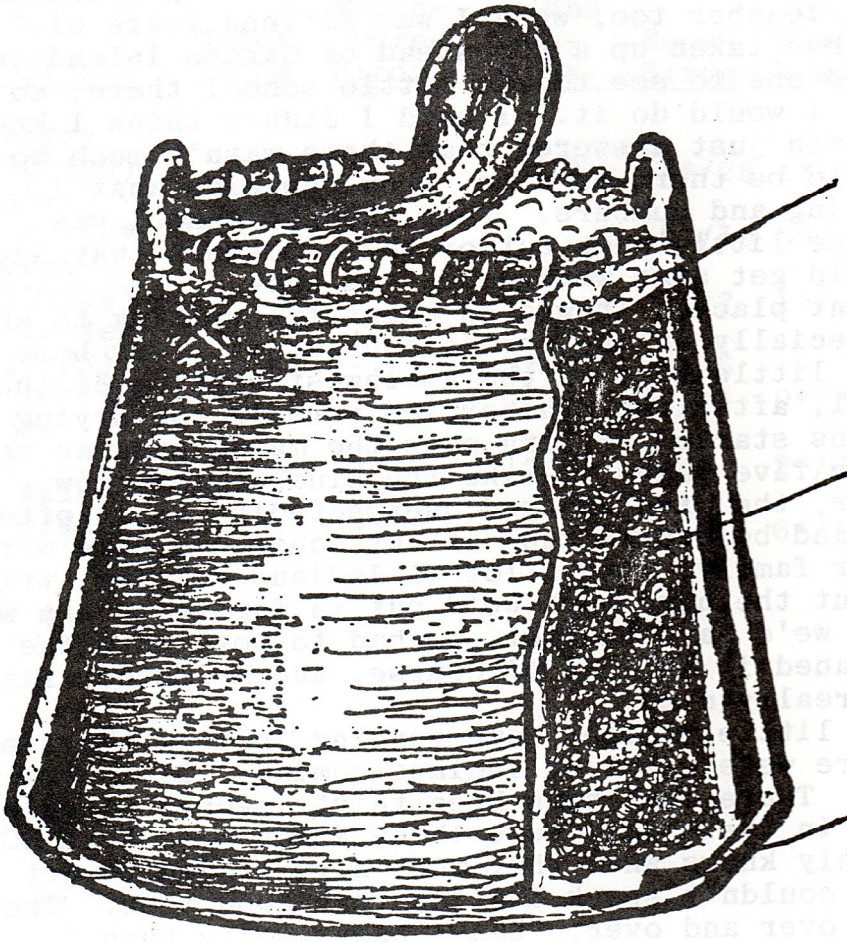
One day my little brother came running in from the field yelling that there were a lot of Indians coming. Of course we went out to see. There must have been thirty people standing around outside. In the middle were three women with FULL BOLTS of cloth. God only knows what they must have traded to get that much. They couldn't speak English very good then. They just kept saying over and over, "Lady, lady, sorry burn."

After that, all the school children and everybody called our place and the lake "Sorry Burn". We used to laugh about it, but we liked it too.

One day my father came back from shopping on Beaver without the things he went to buy. Someone had offered him a job over there, and part of the payment was the use of a house for the winter. So we packed up and moved. That was the end of my time as a schoolteacher.

Lettie Schlesinger
1928 Rosalyn, near George Cooke School
Detroit, Michigan
March, 1957

Appendix, Exhibit G



Birchbark mukuk packed with dried Minan for winter storage.

Appendix, Exhibit H

CHART OF COMPARISON OF THE COMPOSITION OF CORN AND BLUEBERRIES

-Per 100 Grams of Fresh Material-

	BlueBerries	Corn
Calories	52	96
Water	83.2 grams	72.7 grams
Protein	0.7 grams	3.5 grams
Fat	0.5 grams	1.0 grams
Carbohydrate (Total)	15.3 grams	22.0 grams
Carbohydrate (Fiber)	1.5 grams	0.7 grams
Ash	0.3 grams	0.5 grams
Calcium	15.0 mg	3.0 mg
Phosphorus	13.0 mg	111.0 mg
Iron	1.0 mg	0.7 mg
Sodium	1.0 mg	trace
Potassium	81.0 mg	280.0 mg
Vitamin A	100.0 I.U.*	400.0 I.U.
Thiamine	0.03 mg	.15 mg
Riboflavin	0.06 mg	.12 mg
Niacin	0.5 mg	1.7 mg
Ascorbic Acid	14.0 mg	12.0 mg
Magnesium	5.67 mg	48.0 mg

*International Units

Table Equivalents arranged with the help of Jerry Valdéz

Appendix, Item I

BEARS AND BLUEBERRIES NAME A BABY

When an infant is 'held East' and then his little feet placed upon Mother Earth, that is the beginning of his life walk in this cycle. He has been pointed the way along his own special Sun Trail. This is the important thing to do when a child first becomes one of The People.

Usually, at the same time, he is given a baby name, but it is not required to be given until nine months have passed; it is important, however, that it should be done by that time. Each spirit in each being needs to be recognized as being of special value and having a separate entity. The baby name is only temporary until the individual comes to puberty and seeks to know his own spiritual name in the vision fast.

Kee was not given a baby name when she was held East. There was a problem in choosing a name which would be satisfactory to the grandparents on both sides of the family. So her parents put off the naming. A number of times the medicine person confronted her father, WaubOshtigwan, with a warning, but the matter was still delayed.

When the BlueBerry Moon came, Kee's parents, like every other family in the village, went to gather berries. They worked very hard. Nursing mothers and little children need 'plenty Minan', and WaubOshtigwan himself was exceptionally fond of BlueBerries. Kee was put on a blanket in the sun. She would be happier if she could move around a little and she would be safe because she couldn't walk yet--or so the parents thought.

One time when the parents came back to check, Kee was gone. They found the baby not far away standing between two bears. The bears were avidly raking the lush, ripe berries off the bushes and cramming them into their giant maws by the pawful. Kee was doing the same.

The frightened parents decided that the best thing to do was to wait quietly. When the bushes were empty and the bears moved on, they would step in quickly and collect the child before she fell over. But when the bears moved on, the baby took hold of their fur and walked away between them!

After this happening, there was no point in further procrastination over a name. No matter what else might be suggested, The People would call her 'Walks-With-Bears-Girl'.

The medicine man said that, since the parents had not given a name in the required period, the Bear Spirits and the BlueBerry Spirits--both powerful medicine forces--had taken the situation in hand and taught The People what her name should be.

BIBLIOGRAPHY

Aldersley, Mrs. F.M., "Notes from Fellows," Royal Horticultural Society Journal 99:369, Aug '74

Alexander, Taylor R. and Fichter, George S., Ecology, Golden Press, N.Y., Western Publishing Co., Inc., Racine, Wisconsin., 1973.

Ballington, J.R. and Galleta, G.J., "Potential Fertility Levels in Four Diploid Vaccinium Species," American Society of Horticultural Science Journal 101: 507-09, Summer 1976.

Bender, Arnold E., Dictionary of Nutrition and Food Technology, third edition, Arcnon Books, London, 1968.

Bhatia, D.S., et al, editors, Reviews in Food Science and Technology, Volume 4., Association of Food Technologists Research Reports, Mysore 2, India, 1963.

Billington, Cecil, Shrubs of Michigan, Bulletin No. 20, Cranbrook Institute of Science, The Cranbrook Press, Bloomfield Hills, Michigan, December, 1943.

Brouk, B., Plants Consumed by Man, Academic Press Inc., N.Y., N.Y., 1975.

Chase, Myron C., Field Guide to Edible and Useful Wild Plants of North America, Nature Study Aids Inc., Red Wing, Minnesota, 1965.

Coon, Nelson, The Dictionary of Useful Plants, Rodale Press, Emmaus, Pennsylvania, 1974.

Darrow, G.M., "BlueBerries at Home", Plants and Gardens, 27: 19-21, Autumn 1971.

Bibliography continued

Fernald, Merritt Lyndon, and Kinsey, Alfred C., Edible Wild Plants of Eastern North America, Harper and Row, Publishers, New York, N.Y., 1958. Revised and edited by Reed C. Rollins.

Flint Institute of the Arts, Staff Project Exhibit, Art of the Great Lakes Indians, text published in Flint, Michigan, 1973.

Gibbons, Euell, Stalking the Good Life: My Love Affair With Nature, David McKay Co., New York, N.Y., 1974.

Gleason, Henry A. and Cronquist, Arthur, Manual of Vascular Plants of Northeastern United States and Adjacent Canada, Van Nostrand Reinhold Co., New York, N.Y., 1963.

Shook, Edward E. Advanced Treatise in Herbology co-published by Trinity Center Press and CSA Press, Lakemont, Georgia, 1978.

"Use and Delight", an anthology from The Herbarist, a publication of the Herb Society of America, Dover Publications Inc., New York, N.Y., 1974.

LIST OF REFERENCES

Berglund, Berndt, and Bolsby, Clare *The Edible Wild* N. Y.: Charles Scribner's Sons, 1971

Coon, Nelson *The Dictionary of Useful Plants* Emmaus, Pa.: Rodale Press, 1974.

_____ _____, *Using Plants for Healing* Hawthorne Press Inc. 1963.

Densmore, Frances *How Indians Use Wild Plants for Food, Medicine, and Crafts* N.Y.: Dover Inc. 1974

Fernald, Merritt L., and Kinsey, Alfred C. *Edible Wild Plants of Eastern North America* N.Y. & Evanston: Harper & Row, 1943, 1958

Foulsham, William & Co. *Culpepper's Complete Herbal* Exeter, G. B.: A. Wheaton & Co. 1850

Gleason, Henry A. and Cronquist Arthur *Manual of Vascular Plants of Northeastern United States and Adjacent Canada* N.Y.: Van Nostrand-Reinhold Co., 1963

Grieve, Mrs. M. *A Modern Herbal* Vol. I of 2 vols. Harcourt, Brace & Co. 1931

Harris, Ben Charles *Eat the Weeds* Keats Publishing Co. New Caanan, Connecticut: 1973

Hulten, Eric *Flora of Alaska and Neighboring Territories* Stanford, Cal.: Stanford University Press, 1974.

Martin, Alexander, Zim, Herbert S., and Nelson, Arnold L., *A Guide to Wildlife Food Habits* New York: Dover Publications, 1961 republication of 1951 report edition of McGraw-Hill

References continued

Merck Index of Biochemical Analysis, 1968

Meyer, Joseph E. The Herbalist Indiana Botanic Gardens: 1934

Millspaugh, Charles E. American Medicinal Plants Philadelphia: J.C. Yorston & Sons, 1892

Moorhouse, Grandmother Mistiquay Personal communications to Walks-With-Bears-Girl, 1929

Nagowikwe Public Communication at the winter storytelling to the people of CatHead Village, Leelanau County, Michigan, 1928

Norris, Marian, and other elders of Rapid City, Michigan, area Personal communications to Keewaydinoquay 1964

Niethammer, Carolyn American Indian Food and Lore N. Y.: Collier Books, 1974

Shaba, Susie Personal communications to the children of Glidden's Creek School, 1936

Warren, William W., History of the Ojibway Nation Minneapolis, Minnesota: Ross and Haines reprint, 1957

Wasson, R. G. Soma, Divine Mushroom of Immortality N. Y.: Harcourt Brace Jovanovich, Inc.

Wasson, R.G. The Wondrous Mushroom N. Y.: McGraw-Hill, 1980