



THE NEW YORK BOTANICAL GARDEN



Springer

---

An Exchange of Botanical Information in the Early Contact Situation: Wisakon of the Southeastern Algonquians

Author(s): William L. Merrill and Christian F. Feest

Reviewed work(s):

Source: *Economic Botany*, Vol. 29, No. 2 (Apr. - Jun., 1975), pp. 171-184

Published by: [Springer](#) on behalf of [New York Botanical Garden Press](#)

Stable URL: <http://www.jstor.org/stable/4253595>

Accessed: 26/10/2012 12:58

---

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at

<http://www.jstor.org/page/info/about/policies/terms.jsp>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



New York Botanical Garden Press and Springer are collaborating with JSTOR to digitize, preserve and extend access to *Economic Botany*.

<http://www.jstor.org>

# An Exchange of Botanical Information in the Early Contact Situation: Wisakon of the Southeastern Algonquians

WILLIAM L. MERRILL  
and  
CHRISTIAN F. FEEST\*

*The term wisakon, recorded among Southeastern Algonquian Indians in the seventeenth and eighteenth centuries, frequently has been identified as one of several plant species. However, it appears that wisakon referred not to any particular plant species but to a general category of substances that included both plant and nonplant materials. The misunderstanding illustrates some of the problems and procedures involved in the exchange and integration of botanical information by Europeans and Indians in the early culture contact situation.*

In the late sixteenth and early seventeenth centuries, English colonists began arriving on the Eastern shores of the North American continent, intent upon establishing an English foothold in the New World. To maintain their tenuous existence, these settlers sought to acquaint themselves with the natural resources available in the territory surrounding their settlements. Of special interest were those species of local plants that could be exploited economically as food, shelter, fibers, medicines, and so forth. Lacking any extensive familiarity with the local flora, these colonists solicited the assistance of the neighboring Indian groups. To do so, they were forced to overcome vast linguistic and cultural barriers, and, in the process, developed a number of misconceptions of native Indian culture. One such misunderstanding maintained by the English settlers in Virginia and North Carolina was their interpretation of the meaning of the Southeastern Algonquian term *wisakon*.

---

\*Ethnobotanical Laboratory, Museum of Anthropology, University of Michigan, Ann Arbor, Michigan 48104, and Museum für Völkerkunde, A-1014 Wien, Neue Burg, Austria, respectively. Submitted for publication December 11, 1973.

## THE SOURCES

The earliest writers usually identified the Southeastern Algonquian term *wisakon* with one of several specific plant species, apparently unaware or unconcerned with contradictions in meanings for this term that appeared in their various reports.<sup>1</sup> The earliest record of this term is contained in the caption of one of John White's watercolors, painted in 1585 or 1586 on the coast of North Carolina. It reads: "Wysauke. / The hearbe w<sup>ch</sup> the Sauages call Wysauke / wherew<sup>th</sup> their cure their wounds w<sup>ch</sup> / they receeue by the poysoned arroes / of their enemies."<sup>2</sup> A later version of the same drawing spells the word "Wisakon" (Hulton and Quinn 1964: vol. 1, 113-114; vol. 2, pls.

---

<sup>1</sup>Although the early writers employed a number of different spellings for this word (*wisacan*, *wysoccan*, etc.), the form *wisakon* seems to convey in simplest terms the Algonquian word that these authors were attempting to record.

<sup>2</sup>Unfortunately, none of the early writers reveals the identity of the substances with which the Virginia Indians poisoned their arrows. Gabriel Archer (Barbour 1969:90) mentions but does not identify a root that the Arrohateck Indians employed to poison their arrows, but John Clayton (Hoffman 1964:17) was unable to verify this practice among the Virginia Indians.

49, 97 [a]). In his *Herball* of 1597, John Gerard (1597:752) includes an engraving based upon a copy of White's original watercolor of this plant and labels it: "*Wisanch, siue Vincetoxicum Indianum. / Indian Swallow woort.*" He suggests that the plant depicted in this picture should be known botanically as *Asclepias Virginiana* or *Vincetoxicum Indianum* and commonly as "Virginia Swallow woort, or silke woort of Norembega."<sup>3</sup> In the discussion accompanying this illustration, Gerard acclaims the white silky fibers produced by the plant and notes that this material can be found not only in the seed pods but in abundance on the leaves and stems as well. On the basis of information probably derived from a verbal account of the plant given him by a member of the Roanoke expedition (Quinn 1955: 44n.5), Gerard reports that the Indians of Pomeioc and adjoining provinces in Virginia utilized this fiber to cover the genitals of their young virgin females; he notes no medicinal use for it.<sup>4</sup>

The medicinal value attributed to *wisakon* by John White was again reported in an anonymous account of the first English expedition up the James River from Jamestown in 1607. While visiting in the territory of the Arrohatock Indians, these men were shown an herb known as "wisacan," which resembled liverwort or bloodwort and was noted for its efficacy in healing poisoned wounds. The author of this account (probably Gabriel Archer, one of the first colonists of Virginia) later refers to the plant in question as "Wisacan or Virginia bloud wort" in the margin of his discussion of the beneficial commodities to be found in Virginia (Barbour 1969:90, 102). George Percy, a member

of the same exploring party and for a short time president of the colony, confirms his companion's statement in a note published by Samuel Purchas: "They haue a certaine herbe called Weysake, like Liuerwort which they chew and spit into poisoned wounds, that are thereby healed in foure and twenty houres" (Barbour 1969:146).

John Smith, a leader and explorer of the Virginia colony until his return to England in 1609, frequently mentions "wighsacan" in his writings and apparently believed that this term referred to the root of a single plant noted for its efficacy in healing illnesses of all kinds but especially fresh wounds. According to Smith, the Indians also drank the juice of this root in an annual spring ceremony in which they purged themselves so severely that they did not recover for three or four days thereafter (Barbour 1969: 348,363,364). William Strachey, a contemporary of Smith and secretary of the colony in 1610-1611, plagiarized most of his discussion of *wisakon* from Smith's accounts, but on at least two occasions provides information on this subject not previously supplied by Smith. For example, Strachey relates that during storms the Indians cast "whesican, Tobacco, Copper, Pocones or such trash into the water to pacefy that god, whome they thinck to be very angry in those stormes" (Strachey 1953:98).<sup>5</sup> But Strachey's most enlightening comment on this subject is that the Indians employed the term "*Wassacan*" for all things that have a spicy taste (Strachey 1953:81). Strachey seems to imply here that the term *wisakon* may have referred not to a specific plant but to several plants that shared a certain charac-

<sup>3</sup>Norembega is a name applied by sixteenth-century cartographers to the Penobscot River in Maine, an early focus of English colonizing attempts in eastern North America. Here it is applied by extension to the first English "Virginia" colony in what is now coastal North Carolina.

<sup>4</sup>The use of *Asclepias* fibers to cover the genitals of young girls is not otherwise documented. Thomas Hariot, in commenting upon the engraved version of White's watercolor of a woman and female child of Pomeioc, points out that girls of about seven or eight years of age

employed the "mose of trees" for this same purpose (Quinn 1955:418; cf. Hulton and Quinn 1964:vol. 1, 88).

<sup>5</sup>The word "whesican," missing from the Princeton copy of Strachey's manuscript, has been supplied from the British Museum copy (Strachey 1849:94) by Wright and Freund, the editors of the Princeton copy (Strachey 1953:98). The word "Pocones" (or, more commonly, *puccoon*) mentioned in the quote refers to a plant or group of plants frequently mentioned by the early writers as being employed by the Indians as a medicinal and

teristic taste. Comparative linguistic evidence discussed below supports this contention.

The late seventeenth-century sources on the Virginia Algonquians appear to agree that *wisakon* referred not to any particular plant but to medicine or physic in general. John Clayton, minister at Jamestown in the 1680s, relates in 1687 that the Indians prepared a highly esteemed medicinal drink from the leaves of an aromatic shrub that Clayton calls "the lesser sassafras." According to Clayton, "The name which the Indian gave me hereof was *Wisochis*, which since I understand is the general word for Physick" (Hoffman 1964:10-11). While Clayton gives no indication whether his information on the meaning of "*Wisochis*" was derived from Indian or non-Indian sources, it may be that it was suggested to him by John Banister, a contemporary Virginia minister with a strong interest in natural history. Banister comments on *wisakon* in his manuscript on the natural history of Virginia, recently published for the first time:

They call their Physic Wisoccan; so that Wisauk is not the name of the plant Vincetoxicum Indianum, Ger. nor Winanck of the Sassafras tree; nor is Woghsacan the name of any particular plant, as Parkinson makes it, all which words seem to have their original from Wisoccan, which is a general word & signifies any kind of medicine, be it simple or compound. By this name also they call Rum or brandy, or other intoxicating liquors, that disturb their bodies & make them sick like Physick (Ewan and Ewan 1970:378).

John Lawson (1967:234), a surveyor-general of North Carolina in the early

source of a reddish dye. As was the case with the term *wisakon*, these authors apparently were unclear about the Indians' meaning for *puccoon* and subsequently applied it to several different plants. It may be that this word originally was a general term for several plants from which a reddish dye could be extracted or possibly for the dye itself. Conversely, *puccoon* may have initially referred to just one plant but was adapted by Europeans to name a whole group of plants from which this red dye could be obtained. The plants usually identified as *puccoon* include *Sanguinaria canadensis* L., *Lithospermum canescens* (Michaux) Lehm. (Radford et al. 1968:882-883), *Lithospermum carolinense* (Walt.) MacM. (Ewan and Ewan 1970:379-380, 393n. 35), and perhaps *Phytolacca americana* L. (Strachey 1953:7ln. 2).

eighteenth century, provides confirmation for the last part of Banister's statement by reporting that "*Weesaccon*" was the word for rum in Pampticough, a closely related Algonquian language of North Carolina. But Banister appears to have been mistaken in at least part of his discussion. Banister's spelling of *wisakon* as "Wisauk" instead of Gerard's "Wisauck" derives from Bauhin (1623:303) who misprinted from Gerard "Wisauck sive Vincetoxicum Indicum, Gerar." in his text while including Gerard's original form "Wisauck" in the index; "Wisauck" is itself a misprint or misreading by Gerard of presumably "Wisauk." The reference to Parkinson's use of the term "Woghsacan" is puzzling since this author employs this word neither in his *Paradisi in Sole Paradisus Terrestris* (1629) nor in his *Theatrum Botanicum* (1640). On the other hand, Parkinson quotes "Wisauck" from Gerard and thinks that this word and plant may be identical to Smith's "wighsacan" (Parkinson 1629:444-445). "Winauk," reported by Hariot (Quinn 1955:329) as the North Carolina Algonquian word for "sassafras," is not related linguistically to *wisakon* (cf. Delaware *winachk* 'sassafras' [Zeisberger 1887:164] and Miami *winakatwi* 'spicewood' [Voegelin 1940:423]).

Banister (Ewan and Ewan 1970:386) also relates that the Virginia Indians rubbed "a sort of wysoccan" on their traps. The recipe for this particular variety of *wisakon* (which Banister implies contained more than one ingredient) was a closely kept secret known to only a few of the elder men. By keeping this information esoteric, the elders were able to control the younger men of the group who depended upon these older men for their supply of the preparation.

Robert Beverley (1947:218), copying from Banister's then unpublished account, also states that "Wisoccan" was the Indians' term for "Physick" or "Medicine in general," not any particular plant. He adds that Hariot, de Bry, Smith, Purchas, and de Laet had wrongly applied this term to a specific root; however, Beverley was mistaken about Hariot who never mentions *wisakon*. In the process of his discus-

sion, Beverley miscopies "Wisank" for "Wisauk" and erroneously interprets the abbreviation "Ger." in "Vincetoxicum Indianum, Ger." as "Germanicum" instead of the correct "Gerard."

Beverley also mentions *wisakon* in connection with the Huskenaw ceremony, a special initiation rite performed by Algonquian groups in North Carolina, Virginia, and Maryland (but apparently absent from the Eastern Shore of Virginia). Although Beverley plagiarized much of his discussion of the Huskenaw from Banister's account of this ceremony, he apparently drew on additional sources of information as well. In his description, Beverley reports that, during the several months of the Huskenaw, the young male initiates were confined in the woods where they were given

no other sustenance, but the Infusion, or Decoction of some Poisonous Intoxicating Roots; by virtue of which Physick, and by the severity of the discipline, which they undergo, they become stark staring Mad: In which raving condition they are kept eighteen or twenty days. [. . .] Upon this occasion it is pretended, that these poor Creatures drink so much of that Water of *Lethe*, that they perfectly lose the remembrance of all former things, even of their Parents, their Treasure, and their Language. When the Doctors find that they have drank sufficiently of the *Wysoccan*, (so they call this mad Potion) they gradually restore them to their Sences again, by lessening the Intoxication of their Diet (Beverley 1947:207-208).<sup>6</sup>

Most of the other early writers who discuss the Huskenaw describe in some detail the preliminaries of the ceremony, but none was permitted to view the events that followed and none mentions that the participants in this ceremony drank an infusion of any sort.<sup>7</sup> On the other hand, both John Lawson (1967:241, cf. 106) and the anonymous author of "An Account of the Indians in Virginia. . .1689" (Pargellis 1959:234-235) report that a

Huskenaw medicine was consumed by the participants in this ceremony, but neither writer states that the Indians referred to this medicine as *wisakon*. In view of what other early writers said about *wisakon* it is clear that Beverley either deliberately employed "*Wysoccan*" as a cover term for 'medicine' (according to Banister's definition that he copied), or was told by his informant(s) that "*Wysoccan*" was the name of the infusion used in the Huskenaw, again probably referring to the cover term and not to any specific plant. Moreover, Beverley states explicitly that "*Wysoccan*" referred specifically to the "mad Potion" and not to any one of its ingredients. Only the specific nature of the uses mentioned by earlier writers for plants known as *wisakon* may have suggested to later readers of Beverley that a single plant was employed in the Huskenaw medicine.

#### BOTANICAL IDENTIFICATION OF *WISAKON*

The preceding survey of the sources has demonstrated that the Algonquian-speaking Indians of North Carolina and Virginia employed the single term *wisakon* to express a variety of concepts that were considered to be distinct in the English language. Because of the number and diversity of concepts included under the term *wisakon*, untrained European observers in the sixteenth, seventeenth, and eighteenth centuries attributed a correspondingly large number of English meanings to it. Given the ambiguous nature of many of these meanings and the inadequate identifications supplied by the early writers for the plants they called *wisakon*, a number of different plants could have been included under this cover term. In order to demonstrate the diversi-

---

<sup>6</sup>In Greek mythology, the River of Lethe was the stream of oblivion or forgetfulness, flowing through Hades, from which the souls of the departed drank to lose all recollection of their mortal existence.

<sup>7</sup>In the early years of the colony, the Huskenaw ceremony was noted by William White (Barbour 1969:147-149); John Smith, who relied heavily on William White (Barbour

---

1969:367-368); William Strachey, who expanded on Smith with some additional information from George Percy (Strachey 1953:98-99); Henry Spelman (Arber 1884:cv-cvi); and the anonymous author of the 1634 account entitled "A Relation of Maryland" (Hall 1910:85).

Beverley plagiarized much of his later account of this ceremony from that of John Banister (Ewan and Ewan 1970:380-381).

ty of these plants, it will be helpful to summarize the meanings attributed to *wisakon* by the early writers and to attempt botanical identifications of the plants they identified as *wisakon* or described as being used specifically by the Indians for the same purposes as *wisakon*.<sup>8</sup>

1. A plant employed to cure wounds, particularly those caused by poisoned arrows, and from whose fruit, leaves, and stems some of the Southeastern Algonquians obtained a silklike fiber to cover the genitals of their young girls; compared especially with swallowwort (White, Gerard).

A fairly detailed description of this plant can be gleaned from John White's watercolor of it (Hulton and Quinn 1964: vol. 2, pl. 49), complemented by the later written description and engraving of the same plant provided by John Gerard (1957:752). The solitary stem of this plant, greenish-gray in color, is approximately one foot in height. The five pairs of oblong-elliptic leaves are in opposite arrangement with entire margins and a small point at the apex of each. The venation is clearly marked and compared by Gerard to that of "Ribwoort or Plantaine" [probably *Plantago lanceolata* L.]. Gerard reports that the flowers appear at the top of the stem, but he had not personally observed them; neither White's watercolor nor Gerard's engraving illustrates the inflorescence of this plant. Instead the terminal umbel consists of two reddish-brown, lance-fusiform follicles, each carried erect on pedicels that dip downward and then curve upward. Gerard

---

<sup>8</sup>Because no one source was employed in the botanical identifications attempted here, no citation is given for any one of these identifications. In making these identifications we have employed and compared information from the following sources: Fernald 1950; Fernald and Kinsey 1958; Krochmal *et al.* 1971; Lawrence 1951; Porcher 1863; Radford *et al.* 1968; Small 1933; Sturtevant 1972; and Vogel 1970. In addition, for further verification we have consulted herbarium specimens of the plants in question in the United States National Herbarium, Smithsonian Institution, Washington, D.C.

compares the follicles of this plant to those of "Swallow woort" [perhaps *Cynanchum* spp.] and states that they are full of "most pure silke." In these silky hairs appear the seeds, which, according to Gerard, resemble a bird's tongue or that of the "herbe called Adders toong" [*Ophioglossum* spp.?]. In White's illustration and Gerard's engraving, the follicle on the left is partially split along the suture, revealing several grayish-green seeds topped by bluish-white silk. Gerard mentions that the leaves and stems of the plant also are covered with this silk. The single pinkish-brown root (which is not connected to the main stalk of the plant in White's watercolor) first twists in a righthand direction near ground level and then curves downward in a serpentine fashion to a tapered point. Gerard's engraving deviates from White's watercolor in three particulars: (1) the root and stem are connected, (2) the stem carries only two pairs of leaves, and (3) each leaf is more distinctly apiculate than those illustrated by White. Gerard claims that this plant flowered in both summer and winter "as do many, or most of the plants of that countrie." He probably is mistaken in this assertion, perhaps falling prey to one of many misconceptions of the New World held by Europeans of his time.

While the follicles represented in White's watercolor bear a decidedly close resemblance to those of *Asclepias* L., the leaves appear to be very much like those of the genus *Apocynum* L. (especially *A. cannabinum* L.).<sup>9</sup> White may have combined elements from these two closely related genera or compromised the accuracy of his watercolor by painting from memory or notes rather than from life.

---

<sup>9</sup>The discrepancy between the leaves and follicles of the plant depicted in Gerard's engraving of this watercolor was noted in the early seventeenth century by John Parkinson (1629:444). Parkinson remarks that Gerard accurately portrays the seed pods of this plant but fails to achieve a comparable level of accuracy in his rendering of the rest of the plant. Unfortunately, Parkinson misidentifies the plant in this engraving as an *Apocynum* rather than an *Asclepias* on the basis of an erroneous assumption that only *Apocynum* and not both *Asclepias* and *Apocynum* produce a milky sap.

Nevertheless, on the basis of the erect follicles, this plant probably can be identified as an *Asclepias* rather than an *Apocynum*, perhaps *Asclepias syriaca* L., *A. variegata* L., or *A. purpurascens* L. Of these three species, *A. syriaca*, the common milkweed or "Virginian swallowwort," most closely resembles the illustrations of White and Gerard, but the follicles of *A. syriaca* are muricate while the follicles of the plant illustrated by White and Gerard are smooth.

The root of *Asclepias syriaca* has been employed in the past as an emetic, cathartic, expectorant, antirheumatic, diaphoretic, and diuretic (Porcher 1863: 488-490; Krochmal *et al.* 1971:68). In the twentieth century, Frank G. Speck notes that the Rappahannock Indians of eastern Virginia rubbed the milky sap of this plant on warts and patches of ringworm to cure them, and the Pamunkey Indians in the same area healed sores by applying the juice of milkweed to them. According to Speck, the Pamunkeys formerly believed that the milky sap of this plant could cure cancer (Speck *et al.* 1942:32; Speck [1920-1940]).

2. A plant or its root used to cure poisoned and "greene" wounds as well as physical maladies in general (Archer [?], Percy, Smith).<sup>10</sup>

The authors who discuss these uses for *wisakon* may be referring to several different plants. Archer (?) calls this plant "Virginia blood wort" and states that "it is like lyverwort or blood wort;" Percy compares it with liverwort (Barbour

1969:90, 146). The colloquial name bloodwort refers to a number of Old and New World plants that have red leaves or roots or are believed to increase or decrease the flow of blood. The term liverwort generally has been applied to plants that possess liver-shaped parts or are employed in the treatment of liver ailments.<sup>11</sup> Unfortunately, Archer and Percy do not reveal whether it was the physical characteristics or the curative powers of *wisakon* that led them to compare it with bloodwort and liverwort.

Similarly, Smith (Barbour 1969: 348) does not give a description of the plant he calls "wighsacan," stating only that it was efficacious in healing fresh wounds as well as "hurts and diseases." William Strachey (1953:110-111), who copied much of his discussion of *wisakon* from Smith, does not attribute *wisakon* with the ability to cure fresh wounds, a malady for which he reports the Indians employed the juice of several unnamed herbs. Henry Spelman (Arber 1884:cx) reports that the Indians applied the powder of a certain unidentified root to wounds to cure them.

George Percy (Barbour 1969:146) relates that the Indians healed wounds by first chewing the root or some other part of the herb known as *wisakon* and then spitting the resultant juice into "poisoned wounds," which, as a result of this treatment, were healed in twenty-four hours. John Clayton (Hoffman 1964:5-6) reports that the Indians with whom he was familiar adopted essentially the same procedure for the treatment of wounds and sores. According to Clayton, the Indians

<sup>10</sup>When the early writers report that a "root" was especially useful in curing a certain affliction, they may be recommending not only the rootstock of the particular plant but, by extension, the entire plant or any other part thereof. By way of comparison, Frank G. Speck notes that the Catawba Indians of South Carolina employ the term *wi'ti'* to cover the concepts of both "root" and "medicine" (Speck 1937:181). Also, in Shawnee, the word for "medicine" (*hocepi?ki*) is derived from the same linguistic root as the Shawnee word for "root" (Voegelin 1940:446).

<sup>11</sup>The Haemodoraceae is the Bloodwort Family; however, this family has no representatives in Europe and only one or possibly two

monotypic genera in North America. Other plants known as bloodwort include *Sanguisorba officinalis* L., *Sanguisorba minor* Scopoli, *Achillea millefolium* L., *Sambucus ebulus* L., *Sanguinaria canadensis* L., and *Rumex sanguineus* L. The genus *Hepatica* Mill. is perhaps the most familiar of the plants known as liverwort. In addition to *Hepatica* Mill., a number of other New and Old World plants have been known as liverwort: *Marchantia polymorpha* L. (stone liverwort), *Agrimonia eupatoria* L. (liverwort, agrimony), *Peltigera canina* (L.) Willd. (ground liverwort), *Riccia* spp. (marsh liverwort), *Ranunculus aquatilis* L. (water liverwort), *Parnassia palustris* L. (white liverwort), and *Lobaria pulmonaria* (L.) Hoffm. (wood liverwort).

first cleansed the wound by sucking it and then chewed "biting Persicary," afterwards spitting the juice into the wound. Then they prepared a salve by macerating one or more of their "salve-herbs," which they mixed with grease and bound onto the wound with bark or silk grass. Clayton believed that the great degree of success that the Indians achieved in curing wounds resulted from this method of dressing them.

Because the Indians employed the same method in applying "biting Persicary" to wounds as the one related by Percy for the application of "Weysauke," it may be that Percy's "Weysauke" was "biting Persicary." On the other hand, the Indians may have adopted this procedure in applying a variety of different plants to wounds. In any case, "biting Persicary" probably can be identified as a member of the genus *Polygonum* L. since the name "Persicary" suggests the old generic name *Persicaria* L., now a section of *Polygonum*. Of the plants in this section, *Polygonum hydro-piper* L. is known as "biting persicary" and has been employed as a diuretic and hemostatic (Krochmal *et al.* 1971:204).

John Clayton (Hoffman 1964:5-6) lists several other plants that the Indians used in curing wounds. The first, "Indian-weed, which perhaps may be referred to the Valerians, and be said to be *Plantani foliis*," possibly can be identified as a member of the Valerianaceae or Valerian Family; however, none of the plants of this family can be characterized as *Plantani foliis*, that is, having leaves like the plane-tree. (The Plantanaceae or Plane-tree Family is represented in Virginia by *Platanus occidentalis* L., the sycamore). A second plant, called by Clayton "*Gnafalium Americanum*" or "white Plantain," probably can be identified as a member of the genus *Gnaphalium* L., perhaps *G. obtusifolium* L. (rabbit tobacco or everlasting), a common representative of this genus in Virginia. Finally, Clayton mentions that an old "Apomatick" Indian doctor prepared a salve for curing wounds from an herb whose leaves resembled "Selfheal" in winter and were red underneath and perhaps on the upperside as well. Selfheal is *Prunella vulgaris* L., but it is not readily apparent to which plant

Clayton is referring here. John Lawson (1967:100, 103) reports that the inhabitants of Carolina (presumably including the Indians) extracted "a most odoriferous Balsam" from the "Nuts" of bald cypress (*Taxodium distichum* [L.] Richard), which infallibly cured fresh wounds. He also notes that the ground and dried bark of the elm (*Ulmus* spp.) was highly effective in healing a "cut or green Wound."

3. A plant, the juice of whose root was drunk with water in an annual spring purging ceremony (Smith).

To implement a purge, the Virginia Indians could have adopted several different procedures, all designed to eliminate physical or spiritual impurities from the body: emesis, urination, defecation, or sweating. However, Smith (Barbour 1969:363-364) relates that the Indians made themselves sick by drinking this infusion, perhaps implying that vomiting was the method of purging adopted on this occasion.<sup>12</sup> John Clayton (Hoffman 1964:9-10) reports that the Virginia Indians often resorted to purging and he lists a number of plants that they used for this purpose. One of these, "poake root" or "*Solanum bacciforme*," was described by Clayton as being a very large plant with purple berries, considered poisonous by some but eaten in boiled salads when immature. Undoubtedly this plant is pokeweed (*Phytolacca americana* L.), which, in earlier times, was classified as a *Solanum*. This plant has been used in the past as an emetic and strong purgative and as the source of a crimson dye. In some areas of the United States, the young shoots and leaves are eaten as "poke salad," but the mature plant can prove toxic (Krochmal *et al.* 1971:190; Porcher 1863:365-368). A second plant, *Ver-*

<sup>12</sup>John Lawson (1967:97-98, 229-230) reports that the coastal Carolina Indians purged themselves almost daily with an infusion of *yaupon* tea, prepared from the parched leaves and small twigs of the *Ilex vomitoria* Ait. shrub. This decoction was widely employed as a medicinal and ceremonial beverage by Indian groups all over the southeastern United States; however, it is unlikely that Smith is referring to this plant here since there is no evidence that the Virginia Indians ever employed it.



*atrum viride* Ait., also has been referred to as pokeroot and Indian poke and has emetic, diaphoretic, sedative, and analgesic properties (Krochmal *et al.* 1971:262).

According to Clayton (Hoffman 1964:9-10), the Indians also employed the roots of two sorts of "Tythimel" as purges, one "*flore minime herbaceo*" and the other "*flore albo*." Clayton notes that the Indians used the type called "*flore albo*" more frequently since it was an excellent purge especially effective in treating "Gripes." These plants probably can be identified as members of the genus *Euphorbia* L. since Tythimel is an old name for the spurges (formerly classified under *Tithymalus* and *Tithymalopsis*, both names now synonymous with *Euphorbia* L.). The type labeled as *flore minime herbaceo* may be wild Ipecac (*Euphorbia ipecacuanhae* L.), well known for its emetic and diaphoretic properties but deemed rather unsuitable as a substitute for the South American ipecacuanha from which it derived its name (Porcher 1863:127). The type called *flore albo* perhaps is *Euphorbia corollata* L. (flowering spurge or tramp's spurge), a prominent white-flowered species of spurge common in Virginia. During the Civil War, Southern doctors advocated the use of this plant as an emetic, diaphoretic, and cathartic and considered it to be as effective as ipecacuanha (Porcher 1863:126-127).

Clayton (Hoffman 1964:10) mentions another plant, known simply as "*Indian purge*," which the Indians employed as a purgative agent. He describes this plant as having "several woody stalks, growing near 3 feet tall, and as I remember *perfoliat*, it bears yellow berrys, round about the joynts..." From this description it appears that Clayton may be speaking of *Triosteum perfoliatum* L., a plant commonly known as feverwort, wild coffee, wild ipecacuanha, and horse gentian. This plant has been employed as a cathartic, febrifuge, and a substitute for coffee, and the bark of its roots is known to be emetic (Porcher 1863:407). Clayton states that the Indians also prepared a purge from "the small *flower de Lice*," a fragrant plant that grew no taller than a hand high and flowered in March. Since *fleur de lis*

refers to the genus *Iris* L., this plant probably can be identified as *Iris verna* L., an early spring bloomer known as the Dwarf or Violet Iris.

Clayton (Hoffman 1964:10-11) lists two plants that the Virginia Indians employed specifically to induce emesis: "a little sort of *squills*" (perhaps *Camassia scilloides* [Raf.] Cory) and "*lesser sassafras*" (*Lindera benzoin* [L.] Blume? See section 6 below). In addition, Clayton mentions that the Indians purged themselves with several different species of the genus *Apocynum* L. (dogbane or Indian hemp), especially the species referred to by Gerard as *Vincetoxicum Americanum* (Hoffman 1964:10). Clayton probably is referring here to Gerard's *Vincetoxicum Indianum*, an *Asclepias* species that Thomas Johnson, editor of the 1633 and 1636 editions of Gerard's *Herball*, confused with an *Apocynum* (Gerard 1636:899-900). Because both of these genera possess a milky sap and silklike fibers, it is understandable how they could have been confused. In any case, several species of *Apocynum* (in this area of Virginia, perhaps most notably *A. cannabinum* L.) have been employed in the past as sometimes toxic purgatives, diuretics, cathartics, diaphoretics, and expectorants (Porcher 1863:482-485; Krochmal *et al.* 1971:50-52; Fernald and Kinsey 1958:59-60).

4. A substance rubbed on animal traps; contrasted with castoreum<sup>13</sup> (Banister).

The identity of the ingredients in this preparation is unknown since, according to Banister (Ewan and Ewan 1970:386), only a few old men knew how to make it. This preparation probably did not contain the secretion of the musk glands of any animal since Banister notes that it lacked the characteristic smell of castoreum. Presumably, the Indians rubbed this substance on their traps for any or all of the following reasons: (1) to attract animals to the traps; (2) to camouflage the traps so that they would blend into their natural

<sup>13</sup>Castoreum or castor is the pleasant smelling musk released from the castors, paired anal scent glands that occur in both sexes of the beaver.

surroundings (if steel traps were being used); or (3) to disguise or remove the human scent of the trapper from the traps (Randall E. Merrill 1973: personal communication).

5. An infusion or concoction of several "intoxicating" plants employed in the Huskenaw ceremony (Beverley).

Although Beverley was the only author to identify the Huskenaw medicine as *wisakon*, all the early writers who discuss this medicine emphasize two singular effects induced by its consumption: (1) a delirious state bordering on insanity that gradually subsided when the administration of this physic was rescinded; and (2) varying degrees of memory loss, the extent directly related to the amount of medicine consumed. It may be that these dramatic effects did not result solely from the consumption of the Huskenaw medicine but from the administration of this reportedly toxic infusion in a situation of extreme physical deprivation involving beatings and insufficient nourishment for rather long periods. In addition, several writers report that if, upon completion of the ceremony, any of the individuals undergoing the Huskenaw should remember any details of their pre-Huskenaw existence, they would be forced to repeat the ordeal (Beverley 1947:208; Pargellis 1959:235).

Beverley provides no clues as to the identity of any of the plants included in this "mad Potion." John Lawson (1967:106,241), in his description of the Huskenaw ceremony of the North Carolina Algonquians, reports that these Indians prepared a similar "Composition" from "Pellitory-Bark, and several intoxicating Plants, that make them go raving mad as ever were any People in the World." According to Lawson, this Pellitory-Bark grew on the sandbanks and islands of the Carolina coast and, because of its ability to produce a noticeable increase in the flow of saliva, it was efficacious in curing a toothache. This plant may be *Zanthoxylum americana* Mill., commonly known as pellitory bark and the toothache tree and noted as a sudorific, tonic, and antispasmodic as well

as for its "extraordinary property of exciting salivation" (Krochmal *et al.* 1971:276; Porcher 1863:136-137). A second plant, *Parietaria floridana* Nutt., also is colloquially referred to as pellitory and appears in the maritime forests of the Carolina coast (Radford *et al.* 1968:394).

One plant specifically mentioned by these early writers that has effects similar to those described for the Huskenaw medicine is Jamestown weed or jimsonweed (*Datura stramonium* L.). None of the early writers state that the Virginia or North Carolina Algonquians consumed *D. stramonium* in the Huskenaw ceremony or on any other occasion; however, at least two writers report that these Indians employed jimsonweed *externally* for certain maladies. John Clayton (Hoffman 1964:19) reports that the Indians applied the flowers of "*Stramonium*" to their temples to induce an opiate effect to counteract the insomnia resulting from sickness or fever. John Brickell (1911:21) relates that the Indians employed this plant externally to soothe and heal inflammations and burns, but if it was taken internally, a temporary delirium resulted.

In the twentieth century, Frank G. Speck reports that the Indians of eastern Virginia utilized *Datura stramonium* externally in the treatment of several physical maladies. The Rappahannock Indians, for example, applied this plant or a salve prepared from it to sores and inflammations and to the chest to break up the congestion associated with pneumonia (Speck *et al.* 1942:27-28). According to Speck, the Pamunkey Indians also employed jimsonweed as a vermifuge and smoked the seeds to relieve asthma (Speck [1920-1940]).

Although the Virginia and North Carolina Algonquians were familiar with *Datura stramonium* and did employ it on occasion, there is *no* direct evidence that this plant was an ingredient in the Huskenaw medicine. In fact, most of the more recent confusion surrounding the meaning of *wisakon* has arisen from the statement of William E. Safford, an economic botanist of the early twentieth century, to the effect that the principal ingredient of the Huskenaw medicine known as *Wysoc-*

can "undoubtedly" was *Datura stramonium* (1922:557-559).<sup>14</sup>

6. A certain aromatic shrub or its leaves from which an infusion was prepared and drunk warm by the Indians to induce vomiting; called "lesser sassafras" (Clayton).

The aromatic quality attributed to this plant by Clayton (Hoffman 1964: 10-11) along with the English name "lesser sassafras" that he gave for it immediately suggest the Lauraceae (Laurel) Family. This family is represented in Virginia by three genera: *Persea*, *Lindera*, and *Sassafras*. Clayton probably is not speaking of sassafras here since he employs the term "Sassafras" to refer to the single species of the genus *Sassafras* that appears in Virginia (*S. albidum* [Nutt.] Nees.). Perhaps he is describing *Lindera benzoin* (L.) Blume, the spicebush or allspice. The leaves, bark, and fruit of this plant are highly aromatic and have been employed as the main ingredient in a fragrant tea, as a condiment, and as a medicinal infusion taken to alleviate the distress associated with dysentery, coughs, colds, and worms (Krochmal *et al.* 1971:160; Porcher 1863:354-355).

7. All things that have a spicy taste (Strachey).

To better understand Strachey's gloss of "Wassacan" as "all things that have a spicy taste," it is important to consider the context in which he made this statement. Strachey (1953:81) uses the word "Wassacan" and the meaning that he understood for it as the basis for his supposition that the Indians may have had

some kind of spice trees, "though not perhaps such as elsewhere." This statement would indicate that he perhaps picked up the word and its meaning in an English rather than Indian context. Had his Indian informants referred to "Wassacan" in connection with native food, Strachey probably would not have had to rely on suppositions regarding the existence of native spice trees. During the time in which Strachey was secretary of the colony of Virginia, Indian-White relations did not invite fieldwork outside the confines of the small English colony. We also know that Strachey derived some of his information from Indians who came to Jamestown to visit with the English. It is therefore likely that the gloss for "Wassacan" was given in connection with the consumption of spiced English food by one of Strachey's Indian informants. The phrase "though not perhaps such as elsewhere" may imply that the taste of the spices offered to the Indians by the English could not be identified by the visiting Indians with that of any plant they knew and used. Since, contrary to Strachey's assumption, the Indians did not have spice trees nor are known to have seasoned their food except with ashes, there probably was no linguistic category for "spicy" in the language of the Virginia Algonquians. The use of the term *wisakon* (probably translatable as 'it is bitter') for spices should therefore be seen as an attempt to describe a new taste in terms of existing taste categories.

An interesting confirmation is supplied by the words for spices in Ojibwa, a related Algonquian language: 'pepper' is there called *ga-wissagang* ('a thing that is bitter') and 'nutmeg' is *kitchi gawissagang* ('a big thing that is bitter') (Baraga 1878: vol. 2, 127, 194). Similarly, in Shawnee the root for 'bitter', *wiθa-*, is employed to describe a peppery taste and, interestingly enough, is also used in the formation of the Shawnee word for 'whiskey' (Voegelin 1940:419).

8. Rum, brandy, and other intoxicating liquors (Banister, Lawson).

Banister (Ewan and Ewan 1970:378) believes that the Indians referred to intoxicating liquors by the term *wisakon* be-

<sup>14</sup>Safford probably was led to this conclusion because Robert Beverley (1947:139, 207-208) reports similar effects resulting from, on the one hand, the consumption of "Wysocan" in the Huskenaw ceremony and, on the other, from the accidental consumption of *Datura stramonium* by English soldiers in a 1676 episode at Jamestown. In both cases, these effects included the inducement of a state of delirium followed by a loss of memory. Writing several years before Beverley, John Clayton (Hoffman 1964:19) provides essentially the same story in relation to this Jamestown happening, an incident from which the common name Jamestown weed for *D. stramonium* apparently originated.

causes these distilled beverages made them sick like physic, which Banister claims also was known as *wisakon*. Lawson (1967:234, 240) agrees that the Indians called rum and physic by the same name and lists "*Weesaccon*" as the Pamp-ticough word for rum. However, in view of comparative linguistic evidence, it appears that the Southeastern Algonquians may have classified alcoholic beverages as *wisakon* on the basis of taste rather than effect by equating the taste of alcoholic beverages with that expressed by *wisakon* (probably 'bitter'). It should be noted that the Southeastern Algonquians apparently did not prepare any fermented beverages prior to the arrival of Europeans, and the process of distillation as practiced later in Virginia was entirely of European provenience. Most early writers agree that the usual and, in most instances, only beverage of the Southeastern Algonquians was water (Strachey 1953:81; Hoffman 1964:18; Pargellis 1959:230; Beverley 1947:182).

9. Physic in general and any kind of medicine, simple or compound (Banister, Clayton, Beverley).

Clayton (Hoffman 1964:10-11), Banister (Ewan and Ewan 1970:378), and, quoting from the latter, Beverley (1947:218) state that the true meaning of the term *wisakon* was "physic" or "medicine." However, the definition that these writers intended to convey was not "medicine" in the broadest sense of the word but rather the more restricted conception of medicine as specific medicaments or preparations employed in the treatment of disease. In both European and Southeastern Algonquian culture, these medicaments frequently possessed or were associated with a bitter taste. Since it appears that *wisakon* was a general category for substances that possessed a bitter taste, the Indians identified at least some of these herbal medicines as *wisakon*. As a result, the English writers concluded that *wisakon* could be translated simply as "physic" and, in doing so, unduly restricted its meaning.

The preceding discussion of the Southeastern Algonquian term *wisakon* as employed in colonial Virginia and North Carolina has demonstrated that *wisakon* cannot be equated with any specific plant species. In fact, comparative linguistic evidence (hinted at above) supports the conjecture that *wisakon* is of a higher level in the taxonomic system of the Southeastern Algonquians than the specific level attributed to it by most early writers. Historically, *wisakon* is a regular reflex of the Proto-Algonquian *\*wisakanwi* 'it is bitter', with forms in many Algonquian languages: Choptank, *wee-suck-un* 'bitter' (Speck 1927:56); Delaware, *wisachcan* 'bitter' (Zeisberger 1887:24); Natick *wesogkon* 'bitter' (Trumbull 1903:190); Shawnee, *wiθakanwi* 'it is bitter' (Vogelin 1940: 419); Ojibwa, *wissagan* 'it is bitter' (Baraga 1878: vol. 2, 421); and Cree, *wi·sakan* 'bitter' (Faries 1938:23). Since all these related terms denote a particular bitter taste, *wisakon* perhaps can be seen as similarly referring to a general taste category into which a wide range of substances were categorized on the basis of a commonly held bitter taste.<sup>15</sup>

The realization that *wisakon* is a general rather than specific term is necessary in understanding and avoiding the mistakes made by the early writers in attempting to establish a meaning for this term. On the other hand, this confusion is of some value since it helps to illustrate

<sup>15</sup>An interesting variation of this term is *Wisochis*, recorded by John Clayton (Hoffman 1964:10-11) as the Southeastern Algonquian term for "lesser sassafras" and "Physick" in general. This term possibly is the animate form of *wisakon* and is comparable in gender to the Ojibwa *wissagisi* (Baraga 1878:vol. 2, 421) and the Cree *wi·sakisiw* (Faries 1938:23). The animate gender in Algonquian languages usually includes words for persons, animals, spirits, trees, and a number of other, nonpredictable nouns. If *Wisochis* is the animate form of *wisakon*, Clayton perhaps was mistaken in applying it to physic since John Banister (Ewan and Ewan 1970:378) recorded the inanimate form of *wisakon* ("Wisoccan") for "Physick" and "any kind of medicine."

some of the procedures involved in the exchange and integration of botanical information by Europeans and Indians in an early contact situation and, further, concerning the methods adopted by Europeans in their initial attempts to identify and describe new and unfamiliar plants.

Most of the early authors on the Indians of colonial America were not trained botanists. As such their knowledge of plants probably did not extend far beyond a general familiarity with the more common European species, and, in the case of some medicinal plants, perhaps included an awareness only of their economic importance and not of any of their distinctive physical characteristics. Coupled with this grossly inadequate understanding of botanical principles was a general lack of concern on the part of many early writers with either botanical or linguistic accuracy. The reports of most of these early writers were not intended to be scientific treatises; rather they were promotional tracts designed to convey information on the useful commodities of this newly discovered land in terms understandable both cognitively and economically to an equally untrained European audience. As a result, these writers tended to emphasize and, on occasion, exaggerate the economic potential of New World plants and to compare these aspects with the useful properties of known European plants. If these writers chose to describe these new plants in morphological and thus botanically significant terms, they generally were forced, because of their unfamiliarity with botanical terminology, to resort to description by analogy with European plants with which they were only cursorily acquainted. As a result, their botanical descriptions were only approximate comparisons of the superficial morphological features of New World plants with those of European plants.<sup>16</sup>

---

<sup>16</sup>Little has been done so far in the study of European folk taxonomies of the time, although the knowledge of the principles on which they operated would be helpful both for comparative purposes and for a better understanding of the procedures employed by early writers in their attempts to describe and classify New World plants.

The early writers' lack of botanical expertise was surpassed only by their general ignorance of native linguistic and taxonomic systems. In discussing a native plant, these authors frequently retained the Indian term for it but, from a lack of understanding of native terminology, altered its meaning to correspond to their understanding of it or intentions for it. Thus, when early observers were confronted with reports of several different plants, some of which they probably had never seen, being used for different purposes by the Indians but all known by the same name—*wisakon*—they assumed that the Indians were employing the same plant in every instance. Only with the arrival in the field of serious students of the local flora, such as Clayton and Banister, accompanied by an increased understanding of native culture by Europeans, did the situation improve to the point where *wisakon* was recognized as a general rather than specific term.

Like the Europeans, the Indians were confronted with a number of foreign substances that needed to be labeled and described in terms that were cognitively satisfying. In the case of two substances of undoubtedly European introduction—spices and alcoholic beverages—the Southeastern Algonquians categorized them as *wisakon*, a term probably translatable as 'bitter' or 'it is bitter'. In doing so, the Indians combined under one term taste concepts that are mutually exclusive if not contradictory in the European mind—i.e., spicy and bitter not to mention alcoholic. The Southeastern Algonquians adopted this categorization because they apparently lacked a term for 'spicy' or 'alcoholic', and therefore incorporated these new tastes into an existing taste category, *wisakon* or 'bitter'. It is interesting to note that these Indians probably were acquainted with these foreign materials only in their manufactured state and not with their original plant sources. It may be for this reason that they seem to have chosen taste rather than the morphology of the plant sources as the distinguishing characteristics by which they identified and integrated these substances into their linguistic system.

The early writers were relatively unsuccessful in their attempts to interpret the Indians' categorization of these new products. For example, because the Southeastern Algonquians associated the bitter taste signified by *wisakon* with at least some of the plants they employed as medicaments, the English observers believed that *wisakon* referred only to these medicaments. Similarly, since the Indians called both alcoholic beverages and medicaments *wisakon*, the colonial authors thought that the Indians were categorizing alcoholic beverages as "physic" when in fact they were categorizing both alcoholic beverages and medicaments as *wisakon* because of the characteristic tastes of each.

In summary, it must be remembered that these early writers were among the first Englishmen to contact Indian groups in the New World for any extended period of time. As such, they were confronted with the task of overcoming almost insurmountable linguistic and cultural barriers in their attempts to discover native products that were adaptable to their purposes. Once gained, the information about these commodities had to be interpreted and communicated in ways that were comprehensible both to themselves and to their European audiences. In the process, as would be expected, a number of misconceptions about native Algonquian culture was established and perpetuated in the European mind. In part these misconceptions arose from the vast differences that separated the two cultures, heightened by difficulties in communication between them. Unfortunately, they also resulted to a large degree from a general disinterest on the part of the early colonists in any aspects of native culture that were not economically exploitable. The case of *wisakon* is but one example of the superficial attitude assumed by the early settlers in their dealings with the Indians and is indicative of the misunderstandings that characterized and hampered the initial exchange of information between Europeans and Indians in colonial North Carolina, Virginia, and Maryland.

#### ACKNOWLEDGEMENTS

This paper was completed while Feest was a Smithsonian Fellow in the Department of Anthropology, Smithsonian Institution, and Merrill was a research assistant in the Center for the Study of Man, Smithsonian Institution. The authors express their gratitude to the staff of the Smithsonian Institution for their assistance during the completion of this paper and especially to William C. Sturtevant and Richard I. Ford for their comments and suggestions.

#### LITERATURE CITED

- Arber, Edward, Ed. 1884. Captain John Smith's Works. 1608-1631. The English Scholar's Library 16. Birmingham: Unwin Bros.
- Baraga, Frederick. 1878. A Dictionary of the Ojibwe Language, Explained in English. 2 vols. Montreal: Beauchemin & Valois.
- Barbour, Philip L., Ed. 1969. The Jamestown Voyages Under the First Charter, 1606-1609. 2 vols. Works Issued by the Hakluyt Society. 2nd series, vols. 136-137. Cambridge: University Press.
- Bauhin, Caspar. 1623. Pinax, Theatri Botanici Caspari Bauhini. Basel: L. Rex.
- Berkeley, Edmund, and Dorothy S. Berkeley, Eds. 1968. Another "Account of Virginia" by the Reverend John Clayton. Virginia Magazine of History and Biography 76, no. 4:415-436.
- Beverley, Robert. 1947. The History and Present State of Virginia. Louis B. Wright, Ed. Published for the Institute of Early American History and Culture, Williamsburg, Virginia. Chapel Hill: University of North Carolina Press. [1st published in London in 1705].
- Brickell, John. 1911. The Natural History of North Carolina. J. Bryan Grimes, Ed. Raleigh: The Trustees of the Public Libraries. [originally published in 1737, Dublin: James Carson].
- Ewan, Joseph, and Nesta Ewan, Eds. 1970. John Banister and His Natural History of Virginia 1678-1692. Urbana, Chicago, London: University of Illinois Press.
- Faries, Richard, Ed. 1938. A Dictionary of the Cree Language. Toronto: The General Synod of the Church of England in Canada.
- Fernald, Merritt L., Ed. 1950. Gray's Manual of Botany. 8th ed. New York: Van Nostrand Reinhold Company.
- Fernald, Merritt L., and Alfred C. Kinsey. 1958. Edible Wild Plants of Eastern North America. Revised by Reed C. Rollins. New York and Evanston: Harper & Row.

- Gerard, John. 1597. *The Herball or Generall Historie of Plantes*. London: John Norton.
- . 1636. *The Herball or Generall Historie of Plantes*. . . Very much Enlarged and Amended by Thomas Johnson. London: Adam Islip, Joice Norton and Richard Whitaker.
- Hall, Clayton C., Ed. 1910. *Narratives of Early Maryland*. New York: Charles Scribner's Sons.
- Hoffman, Bernard G., Ed. 1964. John Clayton's 1687 Account of the Medicinal Practices of the Virginia Indians. *Ethnohistory* 11, no. 1:1-40.
- Hulton, Paul, and David B. Quinn, Eds. 1964. *The American Drawings of John White 1577-1590, With Drawings of European and Oriental Subjects*. 2 vols. London: The Trustees of the British Museum; Chapel Hill: University of North Carolina Press.
- Krochmal, Arnold, Russell S. Walters, and Richard M. Doughty. 1971. *A Guide to Medicinal Plants of Appalachia*. U.S. Department of Agriculture, Forest Service, Agriculture Handbook No. 400. Washington, D.C.: U.S. Government Printing Office.
- Lawrence, George H.M. 1951. *Taxonomy of Vascular Plants*. New York: Macmillan Company.
- Lawson, John. 1967. *A New Voyage to Carolina*. Hugh T. Lefler, Ed. Chapel Hill: University of North Carolina Press. [1st published in London in 1709].
- Pargellis, Stanley, Ed. 1959. An Account of the Indians in Virginia. *William and Mary Quarterly* 16, no. 2:228-243. [manuscript of 1689].
- Parkinson, John. 1629. *Paradisi in Sole Paradisus Terrestris*. London: Humfrey Lownes and Robert Young.
- . 1640. *Theatrum Botanicum, The Theater of Plantes or An Universall and Compleate Herball*. London: Thomas Cotes.
- Porcher, Francis P. 1863. *Resources of the Southern Fields and Forests*. Charleston, S.C.: Evans & Cogswell.
- Quinn, David B., Ed. 1955. *The Roanoke Voyages, 1584-1590*. 2 vols. Works Issued by the Hakluyt Society, 2nd series, vols. 104-105. London: Hakluyt Society.
- Radford, Albert E., Harry E. Ahles, and C. Ritchie Bell. 1968. *Manual of the Vascular Flora of the Carolinas*. Chapel Hill: University of North Carolina Press.
- Safford, William E. 1922. *Daturas of the Old World and New: An Account of their Narcotic Properties and their Use in Oracular and Initiatory Ceremonies*. Annual Report of the Board of Regents of the Smithsonian Institution for 1920:537-567.
- Small, John K. 1933. *Manual of the Southeastern Flora*. Chapel Hill: University of North Carolina Press.
- Speck, Frank G. [1920-1940] Pamunkey medicines and poisons. Unpublished manuscript, American Philological Society, Philadelphia, Pennsylvania.
- . 1927. *The Nanticoke and Conoy Indians*. Papers of the Historical Society of Delaware, new series, vol. 1. Wilmington: The Historical Society of Delaware.
- . 1937. *Catawba Medicines and Curative Practices*. Publications of the Philadelphia Anthropological Society, Twenty-fifth Anniversary Studies 1:179-197.
- Speck, Frank G., Royal B. Hassrick, and Edmund S. Carpenter. 1942. *Rappahannock Herbals, Folk-Lore and Science of Cures*. Proceedings of the Delaware County of Science (Media, Pa.) 10 no. 1:1-55.
- Strachey, William. 1849. *The Historie of Travaille into Virginia Britannia*. R.H. Major, Ed. Works Issued by the Hakluyt Society. 1st series, vol. 6. London: Hakluyt Society.
- . 1953. *The Historie of Travell into Virginia Britania (1612)*. Louis B. Wright and Virginia Freund, Eds. Works Issued by the Hakluyt Society. 2nd series, vol. 103. London: Hakluyt Society.
- Sturtevant, E. Lewis. 1972. *Sturtevant's Edible Plants of the World*. U.P. Hedrick, Ed. New York: Dover Publications. [1st published in 1919].
- Trumbull, James H. 1903. *Natick Dictionary*. Bureau of American Ethnology, Bulletin 25. Washington, D.C.: Government Printing Office.
- Voegelin, Charles F. 1940. *Shawnee Stems and Jacob P. Dunn Miami Vocabulary, Part V*. Prehistory Research Series 1, no. 10:409-478. Indianapolis: Indiana Historical Society.
- Vogel, Virgil J. 1970. *American Indian Medicine*. Norman: University of Oklahoma Press.
- Zeisberger, David. 1887. *Zeisberger's Indian Dictionary*. English, German, Iroquois — the Onondaga, and Algonquin — the Delaware. Cambridge, Mass.: John Wilson and Son.