

as petioles are of two kinds, (1) some that appear to have arisen through a narrowing of the base of the blade, and (2) others through a narrowing of the primitive sheath. The name-foot is suggested for a specialized portion of the leaf sheath that serves as a petiole. Both the petiole and the foot are represented in many plants, in such families as the Amygdalaceae, Rosaceae, and Magnoliaceae. Stipules, bud scales, bracts, ligules, and pulvini are other specializations of the primitive sheath element, and the blade also appears to have arisen as an outgrowth or expansion of the sheath.

ETHNOBOTANY.—*Identity of cohoba, the narcotic snuff of ancient Haiti.*<sup>1</sup> WILLIAM EDWIN SAFFORD, Bureau of Plant Industry.

The natives of Hispaniola, or Haiti, at the time of the Discovery made use of a narcotic snuff, which they inhaled through the nostrils by means of a bifurcated tube. This snuff induced a kind of intoxication or hypnotic state, accompanied by visions, which were regarded by them as supernatural. While under its influence the necromancers, or priests, were supposed to hold communication with unseen powers, and their incoherent mutterings were regarded as prophesies or revelations of hidden things. The same practice was also followed by their physicians in treating the sick, in order to ascertain the cause of maladies and to determine remedies which should be used for their cure. This snuff was called in the language of the islanders "coxoba" (the sound of the *x* approaching that of the German *ch*, or the guttural Spanish *j*). In Spanish orthography the word was written "cojoba," and in Italian "cogioba," a form which has been incorrectly transcribed "cogiba" and "cojiba." These various forms of the word might lead to confusion, were it not for the fact that Las Casas clearly indicates its pronunciation, as follows: "These powders and these ceremonies, or acts, were called *cohoba*, the middle syllable long in their language, in which they pronounce as in the Arabic, or like the Germans confusedly."<sup>2</sup>

<sup>1</sup> Published with the permission of the Secretary of Agriculture.

<sup>2</sup> LAS CASAS. Apolog. Hist. de las Indias, Chapt. 166, pp. 445-446, ed. Serrano y Saenz, Madrid. 1909.



FIG. 1. Cahoba, *Piptadenia peregrina* (L.) Benth., the source of the narcotic snuff of Hispaniola. Natural size.

By nearly all authors who have written of ancient Haiti or on the history of tobacco, *cohoba* snuff has been confused with tobacco, and the bifurcated snuffing tubes have been mistaken for nose pipes used for smoking. This confusion can be traced to Oviedo, whose account of tobacco is misleading and incorrect. Oviedo, indeed, is responsible for many mistakes that have been handed down from writer to writer. His statements are often contradictory, and not infrequently he confesses that he writes from memory or from the testimony of others. In his first work, *De la natural historia de las Indias* (1526), he does not mention either *cohoba* or tobacco, in connection with the natives of Hispaniola. In his *Historia general de las Indias* (1535) he says nothing of snuff but speaks of the evil custom of taking certain fumigations, which the Indians call tobacco, in order to lose their senses; "and this they did with the smoke of a certain herb, which, according to what I have been able to learn, is of the quality of hen-bane [*Hyoscyamus*] but not resembling that plant in form and habit;"<sup>3</sup> and he further states that the smoke was inhaled through certain canes with two tubes, of which he presents a Y-shaped figure, which, like his description of the method of using them, was certainly drawn, not from his personal observation, but from the descriptions of others. Oviedo, unfortunately, has been quoted by many authors, and his Y-shaped figure, with its branches so diverging that they could not possibly have been simultaneously inserted in the nostrils of a human being, has been copied again and again.<sup>4</sup>

#### EARLIEST ACCOUNTS OF COHOBA

The ceremonial use of *cohoba* is described in the very first work which treats of the ethnology of the New World, written in 1496

<sup>3</sup> "Usavan los indios desta isla entre otros sus vicios uno muy malo, que es tomar unas ahumadas que ellos llaman tabaco para salir de sentido: y esto hazian con el humo de cierta yerva, que a lo que yo he podido entender es de calidad del veleño: pero no de aquella hechura o forma a la vista." OVIEDO, *op cit.*, fol. xlvii. 1535.

<sup>4</sup> Among the earliest writers to cite Oviedo was Purchas, who states that the natives of Hispaniola "had tobacco in religious veneration, not only for sanity, but for sanctity also, as Oviedo writeth, the smoke whereof they took into the nose

by Ramon Pane, who accompanied Columbus on his second voyage. This paper, originally in Spanish, is best known through an Italian translation published as an appendix to the *Historie* of Fernando Colombo (1571), now a rare work, a copy of which is in the Library of Congress. The author, whose name appears in the introduction as "Frate Roman, povero Eremita del l'ordine di San Gieronimo," wrote, in obedience to the command of the illustrious Lord Admiral and Viceroy, what he was able to learn concerning the beliefs and idolatry of the Indians. In describing their snuff he calls it in one place *cohoba* and elsewhere *cogioba* (Italian orthography, like "*Gieronimo*," quoted above). Writing in the present tense, he says: "This powder they draw up through the nose, and it intoxicates them to such an extent that when they are under its influence they know not what they do."<sup>5</sup> In striking contrast to Oviedo, Fra Ramon wrote only what he had actually seen, and he confined the field of his observations to the natives of the island of Hispaniola, stating: "Color, de' quali ciò scrivo, son dell'Isola Spagnuola; percioche delle altre Isole io non so cosa alcuna, non havendo mai veduto."<sup>6</sup>

Peter Martyr's account of the inhabitants of Hispaniola, in his *De Orbe Novo*, is simply a paraphrase of Fra Ramon's paper, in Latin. It adds nothing to his description of *cohoba*, but on the other hand it is misleading, since it refers to it as "an herb which they pound up and drink;" and though it states that the natives "absorb the intoxicating herb called cohobba, which is the same as that used by the bovites to excite their frenzy," it fails to

with a forked pipe fitted to both nostrils, holding the single end in the smoke of that herb burning in the fire until they became senseless. Their priests most used this, who, coming to themselves after this sleepy fume, delivered the oracles of their zemes or devils, which sometimes spake by them."—*Purchas, His Pilgrimage*, 5: 957. 1626. Among the latest authorities to be misled by Oviedo is H. Ling Roth; see his account of tobacco in *The aborigines of Hispaniola*, in *Journ. Anthropol. Inst.* 16: 258. 1887. See also, BOURNE, EDWARD GAYLORD, in *Proceedings of the American Antiquarian Society of Worcester*, n. s., 17: 327. 1906; and FEWKES, J. W., in *Twenty-fifth Ann. Rept. Bur. Amer. Ethn.*, 630. 1907.

<sup>5</sup> "Una certa polvere, chiamata Cohoba, tirandola a se per il naso, la quale gli imbriaga de tal maniera, che non sanno quel, che si fanno."—RAMON PANE, (1496), in appendix to Fernando Colombo's *Historie*, cap. XV, f. 134. 1571.

<sup>6</sup> RAMON PANE, op. cit., f. 126. 1571.

specify that they breathed it through their nostrils by means of a forked tube. Nothing is said of the apparatus by which the snuff is taken, and indeed Ramon Pane himself neglects to give a description of it. Fernando Colombo, however, in the work already cited, states that for holding the snuff the natives had a finely wrought table of a round form, resembling a trencher (*come un tagliere*), and that they took it by means of a bifurcated tube: "*con una canna di due rami, che si mettono al naso.*"

The description of Las Casas, who was an eye-witness to the ceremony of the cohoba, is even more precise. The snuff-tray he describes as "a plate, not flat but slightly concavish or deep, made of wood, so handsome, smooth, and pretty, that it could not be very much more so, were it made of gold or silver; it was almost black and polished like jet" (*cuasi negro y lucio como de azabache*). The tube, he says,

was fashioned the size of a flute and was quite hollow like a flute. From two-thirds of its length onward it divided by means of two hollow canes, just as we open the two middle fingers, leaving out the thumb, with the hand extended. The ends of these two canes inserted into the windows of the nostrils, and the base of the flute, let us say, into the powder on the plate, they would draw in their breath and snuffing up, would receive through the nostrils as much of the powder as they wished to take, which, when taken, would go at once to the brain, almost as though they had drunk strong wine; for they would become drunk or almost drunk. . . . It was their custom, in coming together to decide difficult matters, such as the manoeuvres of one of their war parties, or the performance of other things which they deemed important, to make their cohoba and with it intoxicate themselves or nearly so to do. . . . I saw these people on several occasions celebrate their cohoba, and it was an interesting spectacle to witness how they took it and what they spake. The Chief began the ceremony, and while he was engaged all remained silent. When he had taken his cohoba (that is, when he had snuffed up the powder through his nostrils, as I have described), they being seated on certain handsomely carved low benches which they called *duohos* (the first syllable long), he remained silent for a while with his head inclined to one side and his arms placed on his knees. Then he raised his face heavenward uttering certain words which must have been his prayer to the true God, or to him whom he held as God; after which all responded, almost as we do when we say *Amen*; and this they did with a loud voice or sound. Then they gave thanks and said to him certain complimentary things, entreating his benevolence and begging him to reveal to them what he had seen. He described to them his vision, saying that the *Cemi* had spoken to

him and had predicted good times or the contrary, or that children were to be born or to die, or that there was to be some dispute with their neighbors, and other things which might come to his imagination, all disturbed with that intoxication; or if perhaps without it, what the devil, to deceive them and win them to his worship, had brought to them.<sup>7</sup>

The snuff itself was described by Las Casas as "finely ground and of the color of cinnamon or powdered henna" (*de color de canela ó de alheña molida*).<sup>8</sup>

#### THE COHOBA TREE STILL PERSISTS IN HAITI

That a substance with the intoxicating effects of *cohoba* should have been identified with tobacco seems strange; but if not tobacco, what could have been its origin? Is the custom of taking a narcotic snuff by means of a bifurcated tube still in existence in any part of America? If so, from what plant is the snuff prepared, and is this plant to be found growing on the island of Haiti? These questions may be answered as follows: The custom of taking a narcotic snuff still prevails in various localities of South America, showing that at one time it must have been widely spread. In inhaling it some tribes used bifurcated tubes which correspond very closely with the descriptions of those used in Hispaniola. The plant from which the snuff is derived is *Piptadenia peregrina*, a tree which grows both spontaneously and in cultivation on the banks of the Orinoco and Amazon Rivers and their tributaries. This tree does grow on the island of Hispaniola, or Haiti, as well as upon the neighboring island of Porto Rico and several other of the Antilles; and—most interesting and convincing of all facts connected with it—it still bears the name *cohoba*, which was applied in ancient times both to the snuff itself and to the ceremonial practice of using it.

<sup>7</sup> LAS CASAS. Apol. Hist. de las Indias, Chapt. 166, pp. 445-446, ed.-Serrano y Saenz, Madrid. 1909.

<sup>8</sup> Alheña is the name of the so-called Egyptian pñivet, *Lawsonia inermis*, the powdered leaves of which, called henna, were used by the Egyptians for coloring their finger-nails. The fragrant flowers of this plant are the principal source of the perfume wafted by the breezes of "Araby the Blest."

## NARCOTIC SNUFFS OF SOUTH AMERICA

It was in connection with his studies of the economic plants and plant products of the aborigines of America that the writer came upon a description of the custom of snuff-taking by certain tribes of Indians inhabiting the tributaries of the Orinoco, in Padre Gumilla's *El Orinoco Ilustrado*, printed in Madrid in 1741. In describing the customs of the Otomaco Indians this venerable missionary bewails their use of inebriants, as follows:

They have another most evil habit of intoxicating themselves through the nostrils, with certain malignant powders which they call *yupa*, which quite takes away their reason (*que les quita totalmente el juicio*), and furious, they grasp their weapons; and if the women were not adept at seizing and tying them, they would commit cruel havoc every day; this is a tremendous vice. They prepare this powder from certain pods of the *yupa* (*unas algarrobas de yupa*) from which the name is derived, but the powder itself has the odor of strong tobacco. That which they add to it, through the ingenuity of the devil, is what causes the intoxication and the fury. After eating certain very large snails which they find in the inundated areas along the river they put their shells into the fire and burn them to quicklime whiter than snow itself. This lime they mix with the *yupa* in equal quantities, and after reducing the whole to the finest powder there results a mixture of diabolical strength; so great, that in touching this powder with the tip of the finger, the most confirmed devotee of snuff cannot accustom himself to it, for in simply putting his finger which touched the *yupa* near to his nose, he bursts forth into a whirlwind of sneezes. The Saliva Indians and other tribes of which I shall later treat also use the *yupa*, but as they are people gentle, benign, and timid, they do not become maddened like our Otomacos, who, even on account of this, have been and still are formidable to the Caribs; for before a battle they would throw themselves into a frenzy with *yupa*, wound themselves, and full of blood and rage (*Ulenos de sangre y de saña*) go forth to battle like rabid tigers.”<sup>9</sup>

Shortly afterwards (1743) M. de la Condamine, while exploring the Marañon River, found the Omagua Indians living at a village near the mouth of the Rio Napo making use of two narcotic plants:

One called by the Spaniards *floripondio* [*Datura arborea*], with flowers shaped like a drooping bell, which has been described by Père Feuillée; the other in the native vernacular called *curupa*, both of them purgatives. They cause intoxication lasting 24 hours, during which it is pretended that they have strange visions. The *curupa* is taken

<sup>9</sup> GUMILLA, JOSEPH. *El Orinoco Ilustrado*, pp. 117-118. 1741.

in the form of powder, as we take tobacco. but with more apparatus. The Omaguas make use of a cane tube terminating in a fork, of a Y-shaped form, each branch of which they insert into one of their nostrils. This operation, followed by a violent inspiration, causes them to make diverse grimaces.<sup>10</sup>

This snuff, called *curupa* and also, according to Gilii, *curuba*.<sup>11</sup> was afterwards identified by Humboldt with the *yupa* or *ñupa* of the Otomac Indians, described by Gumilla, and the *paricá* of Brazil,<sup>12</sup> and traced to a tree, which he called *Acacia Niopo*. Humboldt states that the missionaries on the Orinoco commonly call it tree-tobacco (*tabac en arbre*) to distinguish it from the ordinary herbaceous tobacco (*Nicotiana*).

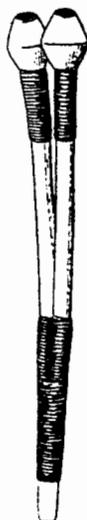


FIG. 2. Bifurcated tube for snuffing powdered seed of *Piptadenia peregrina*. Used by Otomac Indians of the Orinoco River. Berlin Museum. Scale  $\frac{1}{2}$ .

#### HUMBOLDT'S DESCRIPTION

Humboldt, who observed a party of Otomac Indians at Urana, a mission on the Orinoco River, says of them:

... they throw themselves into a peculiar state of intoxication, one might almost say of madness, by the use of the powder of *niopo*. They gather the long pods of a Mimosacea, which we have made known under the name *Acacia Niopo*, cut them to pieces, moisten them, and cause them to ferment. When the softened seeds begin to turn black they are ground into a paste, and after having mixed with them some flour of cassava and some lime made from the shell of an *Ampullaria*, they expose the whole mass to a very brisk fire, on a gridiron of hard wood. The hardened paste is given the form of little cakes. When wanted for use it is reduced to a fine powder, and placed on a dish five or six inches wide. The Otomac holds this dish, which has a handle, in his right hand, while he inhales the *niopo* by the nose, through a forked tube of bird's bone. This bone,

<sup>10</sup> See, *Relation abrégée d'un voyage fait dans l'intérieur de l'Amérique méridionale*, etc. par. M. de la Condamine, in *Mém. de l'Acad. Roy. des Sciences*, Année 1745, p. 428. Paris, 1749.

<sup>11</sup> GILII, F. S. *Saggio de storia Americana*, 1: 201-202. 1780.

<sup>12</sup> HUMBOLDT & BONPLAND. *Voyage aux régions équinoxiales*, 2: 620. 1819.

without which the Otomac believes he could not take this kind of snuff, is seven inches long: it appeared to me to be the leg-bone of a sort of plover.

A snuffing tube of the Otomac Indians, corresponding to this description of Humboldt and now in the Berlin Museum, is shown in the accompanying illustration, drawn by Mrs. R. E. Gamble after Max Uhle (fig. 2). Its form is closely similar to that of the polished wooden tubes of the Tainos of ancient Haiti, as described by Las Casas.

#### RUBBER SYRINGES OF THE OMAGUAS

De la Condamine, after describing the use of narcotic snuff by the Omagua Indians of the Marañon, tells of their peculiar use of syringes of rubber (*Cahuchu*). It was from these Indians, he says, that the Portuguese of the Pará learned to make rubber "pompes ou seringues" which do not require a piston.

They have the form of hollow pears, pierced with a little hole at their end, in which a tube of wood is fitted . . . . This instrument is much used by the Omaguas. When they assemble together for some fête the master of the house does not fail to present one, as an act of courtesy, to each one of the guests, and its use always precedes, among them, the repasts of ceremony.<sup>13</sup>

Why such a peculiar custom should have become established among these Indians seems at first inexplicable; but the testimony of other travellers shows that similar practices exist, or did exist, among other tribes inhabiting the shores of tributaries of the Amazon; and that for these injections not water was used, but an extract of the same narcotic seeds as those from which snuff was made.

#### ACCOUNT OF SPIX AND MARTIUS

After describing the use of *paricá* snuff by the Mura Indians of the Rio Negro, Spix and Martius, in the narrative of their travels, tell of a custom of these people, during their strange annual assemblies which last eight days and are accompanied by all sorts of debauchery, of taking a decoction of *paricá* in the

<sup>13</sup> DE LA CONDAMINE, in *Mém. de l'Acad. Roy. des Sciences*, Année 1745, pp. 430-431. 1749.

form of an enema: "Ein anderer Gebrauch des *Paricá* ist, einen Absud davon sich selbst als Klystier zu geben." Administered in this way, they say, the narcotic effect of the *paricá* is similar but weaker than when taken in the form of snuff. Commenting upon the custom, they continue:

Man kann nicht umhin, durch diese viehische Lustbarkeit an die eckelhafte Sitte der Ostiaken und Kamtschadalen erinnert zu werden, welche sich bekanntlich durch den Genuss des Fliegelschwammes [*Amanita muscaria*] . . . zu einer ähnlichen Wuth erhitzen.<sup>14</sup>

#### ROBERT SOUTHEY'S ACCOUNT OF PARICÁ SNUFF

The Mura Indians of the Rio Negro, instead of Y-shaped tubes, made use of tubes of another form, by means of which the men, in pairs, blew the snuff into each other's nostrils. The following description, published in 1819 by Robert Southey, was taken by him from the MS. of P. Joam Ribeiro:

Some of the Rio Negro tribes have an extraordinary and tremendous ceremony, for which a large house is set apart in all their villages. It begins by a general flogging, the men in pairs scourging and lacerating one another with a thong, and a stone at the end: this continues eight days, during which the old women, who, among the American savages, officiate at most works of abomination, roast the fruit of the Parica tree, and reduce it to a fine powder. The parties who had been paired in the previous discipline are partners also in the following part, each in turn blowing this powder with great force through a hollow cane into the nostrils of his friend. They then commence drinking; and the effect of the drink and the deleterious powder is such, that most of them lose their senses for a time, and many lose their lives. The whole ceremony continues sixteen days: it is observed annually, and is called the feast of the Parica.<sup>15</sup>

#### IDENTITY OF TREES YIELDING SNUFF

In early descriptions of *cohoba* snuff of Hispaniola there is nothing to indicate the nature of the plant producing it. Oviedo, as we have seen, confused it with tobacco. On the other hand nearly all the descriptions of similar snuff used by South American Indians pointed to a mimosaceous tree bearing algaroba-like pods as its origin. Humboldt, as cited above, described the *yupa*, or *niopa*, as an Acacia; Spix and Martius, in the narrative

<sup>14</sup> SPIX UND MARTIUS. Reise in Brasilien, 3: 1075. 1831.

<sup>15</sup> SOUTHEY, ROBERT. History of Brazil, 3: 722-723. 1819.

of their travels, referred to the *paricá* tree as a species of *Inga*; specimens collected by Schomburgk were described by Bentham under the name *Mimosa* (?) *acacioides*; Lieutenant Herndon, U. S. Navy, in the report of his exploration of the valley of the Amazon (1853) called it *Acacia angico*. Finally Bentham made a careful study of all the botanical material he could lay his hands on, and came to the conclusion that all the South American trees above referred to as the source of narcotic snuff were probably one species, and were identical with Linnaeus' *Mimosa peregrina*, which was first described in 1737 from a seedling growing in the celebrated Clifford Garden in Holland. In studying the flowers of this tree Bentham came to the conclusion that it could be regarded neither as a true *Mimosa* nor as an *Acacia*, but that it must be placed in a closely related genus, which he called *Piptadenia*, and consequently, in accordance with the rules of priority, be called *Piptadenia peregrina*. In his synonymy he made no reference to the *cohoba* tree of Haiti and Porto Rico. In Martius's *Flora Brasiliensis* this and several very closely related species are set apart as a section of *Piptadenia*, called *Niopo*. It is quite possible that some other of these species, especially *Piptadenia macrocarpa* Benth., are also a source of narcotic snuff; and it is either this species or *P. peregrina* itself from which the Quichua Indians derived their intoxicating *huillca*, or *vilca*, with which, according to Acosta, they used to get gloriously drunk (*emborracharse bravamente*).

#### SEBIL AND HUILLCA SNUFF OF ARGENTINA AND PERU

Still another very closely allied species of *Piptadenia* was described by Grisebach from specimens growing in the vicinity of Cordova, Argentina. A careful study of Grisebach's description inclines the writer to believe it possible that the plant in question, described by Grisebach first under the name *Acacia Cebil* and afterwards as *Piptadenia Cebil*, is a variety of *P. peregrina*, or of *P. macrocarpa*. Grisebach does not indicate the narcotic properties or indeed any uses of this plant, but in his first description he gives its vernacular name in Tucuman as *cebil*.<sup>16</sup> Of the

<sup>16</sup> See GRISEBACH, in *Abhandl. der königl. Gesellsch. der Wissensch. zu Göttingen*, 19: 136. 1874; *ibid.*, 24: 121. 1879.

use of the fruit of this same tree for snuff we have an early account, written about the year 1583. In Pedro Sotelo Narvaez's *Relacion de las Provincias de Tucuman*, he says of the Indians living in the vicinity of Cordoba:

They do not make such great use of *azua* (fermented chicha) as the Indians of Peru. They take through the nostrils the *sebil*, which is a fruit like the *vilca*; this they pulverize and inhale through the nostrils (*hácenla polvos y bébenla por las narices*).<sup>17</sup>

*Vilca*, also written *huilca*, or *huillca*, described by certain writers as little beans (*frisilloos que llaman vilca*), remained unidentified until very recently, although, as cited above, it was mentioned at a very early date by Acosta as an intoxicant used by the Quichuas. Specimens were secured by Mr. O. F. Cook, of the U. S. Department of Agriculture, from an Indian drug-vender in southern Peru, in 1915. They were labeled *huillca*, and proved to be seeds of a *Piptadenia*, if not identical with *P. peregrina*, at least very closely allied to that species.



FIG. 3. Snuffing tube of llama bone from Tiahuanaco, Bolivia. Philadelphia Museum. After Uhle. Scale  $\frac{1}{2}$

*Huillca*, like *cohoba*, *ñopa*, and *cebil*, was snuffed up by means of tubes. Max Uhle obtained a remarkable snuff tube, in all probability used in the process by the ancient Quichuas, at Tiahuanaco, Bolivia, in June, 1895. This tube (fig. 3) is now in the Philadelphia Museum of Science and Art (No. 36095). It resembles closely a specimen, recently discovered in a burial cave at Machu Picchu by the Peruvian Expedition sent out under the auspices of Yale University and the National Geographical Society.<sup>18</sup> The fork of the snuffing tube is formed by the bifurcation of the distal end of the metatarsus or leg-bone, of a llama. The Tiahuanaco specimen, finished and ornamented by incised carving, has been slightly chipped at the lower end; the Machu Picchu specimen, in the first stages of manufacture, has a trans-

<sup>17</sup> *Relaciones Geograficas, Peru*, 2: 152. 1885.

<sup>18</sup> See, EATON, GEORGE F., in *Mem. Conn. Acad. Arts and Sciences*, 5: 58, pl. 4, fig. 8. May, 1916.

verse cut across the bifurcation; this in all probability was intended to be cut off, so that the ends might fit the nostrils.

The Tiahuanaco specimen is described at length by Max Uhle, who published a photographic illustration of it,<sup>19</sup> from which the figure here shown was drawn. Uhle believed that this tube was used for snuffing tobacco; but this I think doubtful. Humboldt, as already quoted, says that *Piptadenia* was commonly called "tree-tobacco," and the custom of snuffing its powdered seeds was common among many tribes inhabiting the banks of the tributaries of the great rivers of South America, which extended to the boundaries of Peru and Bolivia; and we have the definite statement that the snuff made from the seeds of *P. Cebil* was quite similar to the *vilca* (or *huilca*) of the Peruvians.

In the paper above cited, Uhle recognized that *cohoba* snuff and tobacco had been confused by various authors, and even suggests the possibility of the common origin of the names *cohoba* and *curupa*, but he says nothing of the actual presence of *Piptadenia peregrina*, the true "tree-tobacco," in Hispaniola. It was not until the writer consulted Urban's recent work on the flora of the Antilles that he found mention not only of the tree itself but of the ancient name by which it was known to the aborigines of Hispaniola.<sup>20</sup> Urban, however, gives no hint of its former use as a source of snuff, or of the narcotic properties of its seeds.

#### BOTANICAL DESCRIPTION OF COHOBA

- Piptadenia peregrina*** (L.) Benth. Journ. Bot. Hook., 4: 340. 1842.  
*Mimosa peregrina* L. Sp. Pl., 1504. 1753. (*Mimosa inermis*, etc. Hort. Cliff. 209. 1737.)  
*Inga Niopo* Willd. Sp. Pl., 4: 1027. 1806.  
*Acacia peregrina* Willd. Sp. Pl., 4: 1073. 1806.  
*Acacia microphylla* Willd. Sp. Pl., 4: 1073. 1806.  
*Mimosa Niopo* Poir. in Lam. Encycl. Suppl., 1: 48. 1810.  
*Acacia Niopo* Humb. & Bonpl., Relation Hist., 2: 620-623. 1819;  
 H. B. K., Nov. Gen. et Sp., 6: 282. 1823; Kunth, Synop. Pl., 4: 20. 1825.  
*Acacia angustiloba* DC. Prodr., 2: 470. 1825.  
*Mimosa* (?) *acacioides* Benth. Journ. Bot. Hook., 2: 132. 1840.  
*Piptadenia Niopo* Spruce, Notes of a Botanist, 2: 426. 1908.

<sup>19</sup> See, Bull. Mus. Science and Art, University of Pennsylvania, Vol. 1, No. 4. 1898.

<sup>20</sup> URBAN, I. Symbolae Antillanae, 4: 269. 1905.

*Piptadenia peregrina* is a Mimosa-like shrub or a tree reaching the height of about 60 feet, with a trunk about 2 feet in diameter. The bark is often more or less muricated, but the branches and leaves are unarmed. The leaves are bipinnate, resembling those of many Acacias and Mimosas, with 15 to 30 pairs of pinnae and very numerous minute leaflets (30 to 80 pairs), these linear in shape and apiculate at the apex. On the petiole at some distance from the base there is a conspicuous oblong nectar-gland and on the rachis, between the last pair or last two or three pairs of pinnae, there is usually a minute gland, as in many of the Mimosaceae. The inflorescence is in the form of spherical heads of minute white flowers, borne on long slender peduncles in terminal or axillary racemose clusters. As seen under the lens the calyx and corolla are both 5-toothed, the former campanulate, the latter connate to the middle. The 10 stamens are free, much exerted, the anthers at anthesis bearing a minute stipitate gland. The ovary contains several to many ovules, and develops into a broadly linear, flat, leathery, or woody 2-valved legume, rough on the outer surface and thickened along the sutures, and resembling that of an Inga, but without pulp surrounding the seeds. The seeds are flattish and orbicular, greenish at first, at length black and glossy.

So far as the writer can ascertain, no figure of this species has hitherto been published. The accompanying illustration (fig. 1) is from a photograph of a specimen in the U. S. National Herbarium (No. 847320), collected on a hillside near Mayagüez, Porto Rico, in March, 1906, by John F. Cowell (No. 630).

#### GEOGRAPHICAL DISTRIBUTION

*Piptadenia peregrina* has a most appropriate specific name, for it has a wide geographical range. This has undoubtedly been increased by human agency. Various travellers have noticed it planted near villages, as well as growing spontaneously in the forests bordering the great rivers of South America. It was in all probability carried to Haiti and Porto Rico by the ancestors of the Tainos, whom Columbus found inhabiting those islands. Including with it the very closely allied *Piptadenia macrocarpa* Benth. and *P. Cebil* Griseb., its distribution may be roughly indicated as follows:

HAITI, or HISPANIOLA, where according to Ramon Pane and Las Casas, it was called *cohoba*, or *cogioba*; PORTO RICO, where it is still called *cojoba* or *cojobo* (Urban), or *cojobana* (Cook and

Collins); VENEZUELA, where it is called *curuba*, *ñupa*, *ñopa*, *niopa*, *niopo* (Gumilla; Gili; Humboldt); NORTHEASTERN PERU, on the Marañon, where it is called *curupa* (de la Condamine); SOUTHERN PERU, where it is called *vilca*, *vilca*, *huilca* (Acosta; O. F. Cook); ARGENTINA, where it is called *cebil*, or *sebil* (Grisebach; Sotelo Narvaez); GUIANA, where two varieties are found, *paricá* and *black paricá* (Schomburgk); BRAZIL (many parts), where it is generally known as *paricá* (Spix and Martius; Lieutenant Herndon; Spruce).

#### CHEMICAL PROPERTIES AND PHYSIOLOGICAL ACTION

The most remarkable fact connected with this narcotic is that its chemical properties are still unknown. An exhaustive search through literature, in a vain attempt to find something bearing upon the subject, indicates that it has never been studied chemically or therapeutically. The only authority who mentions it is Dragendorff, who dismisses it with the statement: "Der Same zu Schnupftabak (Niopo, Nupa), der stark aufregen soll, verwendet." No authority is quoted, except for the botanical name and its synonyms. This may have been in consequence of the remark Humboldt made in connection with the snuff:

La famille des Légumineuses varie singulièrement dans les propriétés chimiques et médicales de ses graines, de ses suc et de ses racines; et quoique le suc du fruit du *Mimosa nilotica* soit très-astringent, on ne peut croire que ce soit principalement la silique de l'*Acacia Niopo* qui donne la force excitante au tabac des Otomaques. Cette force est due à la chaux fraîchement calcinée.<sup>21</sup>

That Humboldt was mistaken is indicated by Spruce's observations. Moreover it is not so strange, as Humboldt would indicate, that the seeds of certain Leguminosae have narcotic properties. The red seeds of *Sophora secundiflora* of Texas and northern Mexico are very narcotic and are still used by certain Indian tribes to cause intoxication. They are used in certain secret ceremonies by the "Red Bean Society" of the Iowa Indians, which takes its name from them. Spruce witnessed the preparation of *ñopa* snuff without the addition of lime, in June, 1854, by a party of Guahibo Indians from the Rio Meta, temporarily

<sup>21</sup> HUMBOLDT & BONPLAND. Voyage aux régions équinoxiales, 2: 621. 1819.

encamped near the cataracts of the Orinoco. In his account of it he says: "In the modern *niopo*, as I saw it prepared by the Guahibos themselves, there is no admixture of quicklime, and that is the sole difference [from the method of its preparation described by Humboldt]." He describes the process of roasting and powdering the seeds, and the snuff-tube made of the leg bones of birds, shaped somewhat like a tuning fork, with the forked ends tipped with small black knobs (the endosperms of a palm). This instrument, which he secured and deposited in the Museum of Vegetable Products at Kew, is almost identical in form with that of the Otomac Indians in the Berlin Museum (fig. 2), and also very much like the one used in ancient Haiti, so accurately described by Las Casas and incorrectly figured by Oviedo.

#### SUMMARY

*Cohoba*, a narcotic snuff which the aboriginal inhabitants of Haiti took by means of a bifurcated tube, has hitherto been regarded by most writers as a form of tobacco. It was, however, prepared from the seeds of a Mimosa-like tree, *Piptadenia peregrina*. This tree is widely spread in South America, and by several tribes of Indians its seeds are used, or have been used until recently, as a source of snuff, the effects of which are highly intoxicating. Among several of these tribes the snuffing tubes are bifurcated and very similar to those of the ancient Haitians. The source of the snuff on the island of Haiti has remained unknown for so long a time on account of the early annihilation of the aborigines and their replacement by Africans, who did not adopt the habit of snuffing. The most remarkable fact connected with *Piptadenia peregrina*, or "tree-tobacco," is that, though its fruit has been reported by many explorers and botanists as highly narcotic, it has never been studied chemically or therapeutically, and the source of its intoxicating properties still remains unknown. Abundant material may be obtained from the island of Porto Rico, where the tree is common, and it is hoped that a careful study may be made of the seeds, the peculiar properties of which were noticed in the very first work which treated of the ethnology of the New World.