

Section on Scientific Papers

Papers Presented at the Sixty-First Annual Convention

COCA—"THE DIVINE PLANT OF THE INCAS."*

JOHN URI LLOYD.

History.—*Erythoxylon coca* is a small tree or bush native to the slopes of the Andes (see p. 1247), where, especially in Bolivia, large plantations are cultivated. The leaves have been highly valued, from the earliest records, by the natives of Peru, Chili, Colombia, and Bolivia, the tree being called "The Divine Plant of the Incas." In 1569, Monardes¹, of Seville, published an article on the drug, reproduced, 1577, in London. (Dowdeswell².) This is among the first references to the drug in print, known to us, and it was followed by the botanical description, by Clusius³, in 1605.

The history of Coca, in its many phases, is presented by several travelers and authors, one of the first of these to introduce it to Europeans being W. J. Hooker⁴, in his "Companion to the Botanical Magazine," London, 1835. Several pages of this work are devoted to the South American uses of Coca, the same being credited to Dr. Poeppig's "Reise in Chile, Peru, und auf dem Amazonenstrom." From this historical contribution we present (see p. 1243) portions pertinent to the Coca subject.

Among the most interesting of the more recent publications treating of Coca is a large illustrated volume of near 600 pages, by W. Golden Mortimer, M. D., under the title, "Peru, History of Coca," New York, 1901. From this work we also gain much insight into the early history and customs of the Coca users, as indicated by the passages that follow.

That Coca was honored in their sacred ceremonies by the natives of the lands producing it, is evidenced by the following "recital"⁵ addressed to the sovereign:

Oh, mighty lord, son of the Sun and of the Incas, thy fathers, thou who knoweth of the bounties which have been granted thy people, let me recall the blessings of the divine Coca which thy privileged subjects are permitted to enjoy through thy progenitors, the sun, the moon, the earth, and the boundless hills.

A plant so regarded necessarily fell under the adverse criticism of the devoutly religious, early Spanish explorers, who naturally directed their efforts against everything that, in their opinion, constituted a part of heathen worship and diverted the natives from the true God. This is shown by the following quotation from Mortimer:

In 1569 the Spanish audience at Lima, composed of bishops from all parts of South America, denounced Coca because, as they asserted, it was a pernicious leaf, the chewing

*Part of this historical record is from a paper first published in the *Practical Druggist and Pharmaceutical Review of Reviews*, October, 1910. Republished in *Lloyd Library Bulletin*, No. 18, "History of the Vegetable Drugs of the Pharmacopœia of the United States," by John Uri Lloyd, 1911.

of which the Indians supposed gave them strength, and was hence: "*Un delusio del demonio.*"

In this connection the following quotation will indicate how distasteful are the methods of the natives, even yet, to those whose first duty consists in suppressing such ceremonies as are therein described:

When the period for departure (on a dangerous journey.—L.) actually arrives, the Indians throw Coca in the air, just as did the Incan priests of old to propitiate the gods of the mountains, who, presumably, do not wish their domains invaded.

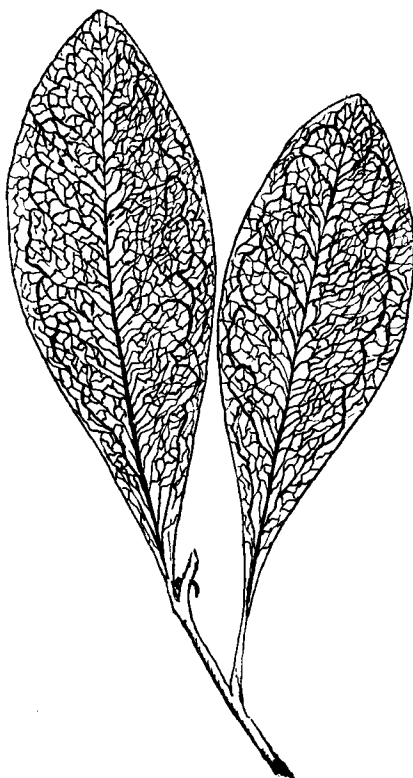
The native Indian use of Coca was unquestionably exhibited where it was necessary for men to make the most exhausting physical effort, as the Indian "runners" of the Andes, carrying with them a modicum of food or other burdens. A few coca leaves sufficed as a hunger pacifier, and upon this as a basis the runners underwent the most exhausting and exacting journeys. It was accepted by observing travelers that the leaves being chewed, would yield an abundance of "vital strength." The endurance of people thus employing the drug is noted also by the Jesuit Father Blas Valera⁶ under the name *Cuca*. After observing the methods of the Jesuit explorers, he writes as follows:

It may be gathered how powerful the *Cuca* is in its effect on the laborer, from the fact that the Indians who use it become stronger and much more satisfied, and work all day without eating.

In further support of this phase of the Coca subject, Dr. Poeppig, in the beginning of the last century, records as follows, in his work on Chili and Peru:

The miner will perform, for twelve long hours, the formidably heavy work of the mine, and, sometimes, even doubles that period without taking any further sustenance than a handful of parched maize, but every three hours he makes a pause for the purpose of chewing Coca (*coquear.*) He would work ill and reluctantly if the proprietor let him want his favorite herb.

* * * The same holds good with the Indian, who, as a porter, messenger, or vender of his own productions, traverses the Andes on foot. Merely chewing Coca from time to time, he travels with a load weighing one hundredweight, on his back, over indescribably rough roads, and accomplishes frequently ten leagues in eight hours. During the Revolutionary War the undisciplined patriot troops, chiefly consisting of Indians from the Sierra, by dint of ample supplies of Coca and brandy, traversed long distances in a very short time, and thus became very dangerous to the Spaniards. Where Europeans would have halted and bivouacked, the ill-clad, barefooted Indians merely paused, for a short interval, to chew their Coca.—From the "*Reise in Chile, Peru,*" etc., of Dr. Poeppig. *Companion to the Botanical Magazine*, by W. J. Hooker.



Erythroxylon Coca, natural size. Pen drawing by Miss Eda Van Guelpen.

These reviews and descriptions, showing conditions in times gone by and

reaching backwards to the earliest European acquaintance with that land, are remarkably supported by the methods of the Indians yet out of reach of civilization. As a record of these conditions, we introduce herewith a recent description by Mr. J. T. Lloyd, as follows:

THE MOMBROEROS (COCA USERS) OF COLOMBIA.

JOHN THOMAS LLOYD.*

The Journey.—The Andes Mountains (see map, Fig. 1) appear in Northern South America as three distinct ranges, which soon before leaving the Republic of Colombia, unite to form a single chain. Only a short distance north of their place of union we crossed two ranges of these mountains, descending thence by the way of the Magdalena River, whose course we followed from its very source until it emptied into the Caribbean Sea.

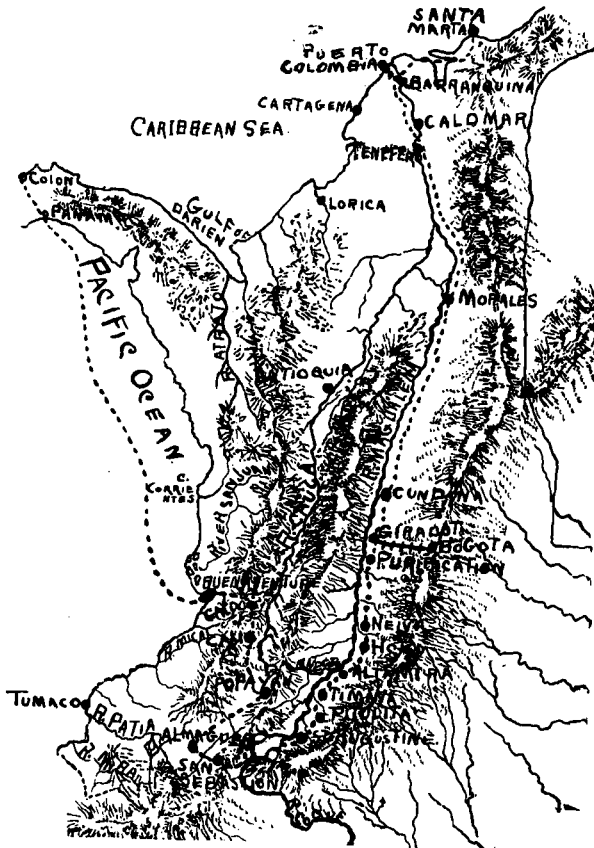


Fig. 1.

Map of the part of Colombia, South America, explored as shown by dotted lines, Colon to Santa Marta.

Entering Colombia at the little seaport town of Buenaventura, on the Pacific Coast, we first climbed the Western or Coast Range of the Andes, descending thence to the city of Cali (altitude 3300 feet). From Cali we traveled south of southeast, following the valley of the Cauca River, to the inland city of Popayon, this being a seven days' trip for pack animals. During the first two days' travel, the valley was almost as flat as a sheet of water, and very fertile. In the evening of the second day we entered the "lomas," or foothills, where the mountain chains begin to fuse. These lomas grew continually larger and rougher, until reaching Popayon, which, situated at an altitude of more than 6,000 feet, lies fairly against the Central Range. Beyond Popayon

*In the early winter of 1912 two young men from Cornell University visited regions of Colombia that are almost unknown to the scientific world. Mr. A. A. Allen, from the department of Zoology at Cornell, was conducting research for the American Museum of Natural History, and Mr. Lloyd, assistant in Limnology, was independently studying the insects. Their observations of the Indians' methods of using Coca are recorded by Mr. Lloyd in this publication.