

## Production and Use of the Tagua Nut

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Many people in the United States and Europe have been using vegetable ivory buttons for many years without knowing that they are made from tagua nuts.

Vegetable ivory comes from two or more species of palms. They are native to the tropical regions of Central and South America and are found chiefly along low altitude damp streams, although they will grow at higher altitudes if sufficient moisture and sunshine are present. They are mostly found in separate groves, not mixed with other trees or shrubs.

Tagua is the name used by the Indians for both the plant and its fruit. In business circles the ripened fruit is called vegetable ivory, while to the botanist it is the fruit of the *PHYTELEPIAS MACROCARPA*.

The tree is a species of palm that appears to be stunted as its height is generally under twenty feet. The short thick trunk is usually marked by spiral lines left by fallen or decayed leaves. The huge leaves, resembling those of the banana plant but more lacy, spring from the trunk, which grows slowly, being only a few feet high at the age of four or five years. It does not begin to bear fruit until it is about six years old.

There is a marked difference between the male and female species. On the male tree, which bears no fruit, the leaves extend from the ground upward in a clustered and somewhat disorderly growth. The female tree, on the other hand, utilizes the trunk largely to produce the tagua nut. The fragrant blossoms appear at the base of the lower leaves, and later develop into the round burrs in which the nuts are formed. These burrs are usually about the size of a man's head and weigh approximately twenty pounds.<sup>1</sup>

The fruit which looks similar to the cocoanut grows in from fifteen to twenty-five burrs to the tree. Each burr consists of a woody, fibrous wart covered wall which incloses from twenty to forty seeds. The nuts are of hard white composition, fine grained, and approximate real ivory in all characteristics.

The fruit matures slowly and more than a year may pass from the blossoming to the opening of the burr. They do not all ripen at the same time, but continue to ripen during the entire year, with the greater number ripening during the winter months.

After the fruit ripens, the burrs fall to the ground and usually burst open, the nuts either falling out or sticking in the fibrous pulp. Rodents and other wild animals, fond of the pulp, eat it and clean the nuts, which are then gathered by the natives.<sup>2</sup>

In its very young state the seed contains a clear insipid fluid sometimes used by travelers to allay thirst. As it grows older this fluid becomes milky and of a sweet taste, and it gradually continues to change both in taste and consistence until it becomes so hard as to make it valuable as a substitute for animal ivory.

In their young and fresh state the seeds are eaten by animals. As the nuts ripen at different times of the year, gathering ripe nuts in quantities becomes a real problem. In former times natives often felled the trees to gather the nuts, a practice which was highly destructive to the industry. Unripe nuts gathered from the trees have a red tinge and bring a lower price than the ripe ones. The government of Ecuador has passed laws that prohibit the gathering of green or unripe nuts, and has imposed penalties for offering the unripe article at any of the trading centers.

The industry depends upon very cheap labor and transportation. In the early history of the industry one of the chief sources of supply of the nuts was the port of Iquitos, on the upper Amazon, 2300 miles from the Atlantic. At that time Iquitos was one of the chief rubber ports of the world and tagua nuts was its second most important export. The nuts were brought in on rafts and small boats over a network of streams. When the native rubber industry declined it became difficult to market the tagua nuts at a profit because of the great distance from ocean transportation, and this area soon declined in importance as a tagua region.<sup>3</sup>

In recent times most of the tagua nuts are gathered in the forests on the Pacific slope and in the Atrato and the Magdalena basins, the best quality coming from the Sagamoso tributary of the Magdalena River.<sup>4</sup> Ecuador and Colombia produce most of the vegetable ivory that is exported to other countries.<sup>5</sup>

The gathering of the nuts is an occupation that is followed by the natives in the jungles of the Pacific slope of Ecuador and Colombia. These workers are known as *tagueros*. As a rule they depend upon the wholesale buyer or merchant to assist them with funds to undertake each season's work. Their outfit consists of a machete, an ax, a gun, ammunition, a few cooking utensils, and such foods as rice, beans, and flour. A *taguero* may also own a canoe or raft.

Although a few *tagueros* work alone, most of them take their families along and work in groups, staying in the jungle for months at a time. When they arrive in the tagua area they establish a camp and proceed to build huts or cabins. These are built upon a foundation of poles planted in the ground. The floor may be five or six feet above the ground. The sides of the hut are made of bamboo slats or banana leaves woven together to give protection from sun or rain. The roof is made of palm leaves and is also water proof.

Once the temporary home is completed, baskets must be made to gather the nuts. As the tagua groves are scattered over a large area and ripen over a long period of time, it is quite a task to gather the nuts, especially as they are heavy and must be carried long distances through jungle growth. During the dry season the natives gather the nuts from the ground where they have fallen when ripe. When waters are high and parts of the lowlands are submerged it is impossible to gather from the ground, so small boats are used and the nuts are gathered from the partly opened burrs. When sufficient nuts are collected to fill the available craft the *tagueros* return to civilization.

The method used in transporting the nuts to market may be either boats or rafts. The dug-out canoes used by the Ecuadoreans may be 20 to 50 feet long, and are capable of carrying several tons of cargo. When rafts are used they are usually made of balsa, which is one of the lightest woods known. Balsa rafts often transport many tons of tagua, besides serving as houseboats for the wives and children of the *taguero*.

Tagua is dispatched to such ports as Guayaquil, Manta, Esmeraldas, and Bahia de Caraquez, where large steamers stop to take it its destination. In former years Italy, Great Britain, France, Czechoslovakia, and Germany were the chief purchasers of tagua, but in recent times the United States and Argentina have been buying larger quantities. Vast areas of tropical rainforest favor the growth of the tagua trees on plantations, but the low value of the nut prohibits the establishment of costly plantations and restricts the output to the activities of the native tagua gatherers.

The South American tagua industry began about ninety years ago, when some of the ripe nuts were shipped to Europe as ballast and reached some manufacturers where ivory from African jungles was being used. Experiments proved that it resembled elephant ivory and that it could be used in making buttons, dice, ornaments, umbrella handles, and other serv-

iceable articles. The dried nut could be sawed, carved, and polished, and it readily absorbed coloring matter. It seemed particularly suited to the manufacture of buttons and even today this is one of the most important uses. In more recent times the jewelry trade has found it a convenient material from which to make small articles, while the native fashions miniature objects from tagua that are sold as curios.

Vegetable ivory buttons are made from blanks cut from the tagua nut and from the "Palmdun" nut from Africa. These buttons are used primarily on suits and other outer garments. United States' production of ivory buttons declined steadily from 12,000,000 gross in 1925 to 2,900,000 gross in 1929, and in recent years has declined more because of competition of other kinds of buttons.<sup>6</sup>

When the nuts come to the factory they look like small potatoes. They are dried and the hard dry shell is removed. Next they are sawed into thin pieces, the slices being taken off the sides. As the slices of ivory are further dried, their bluish-white color changes into a creamy hue and they are ready to be made into the finished product.

Although export figures are not always available for Colombia and Ecuador, in 1911 the value of vegetable ivory shipped from Colombia was \$739,419.00.<sup>7</sup> The following table shows the exports of tagua nuts for Colombia and Ecuador for the period 1913-1929, when the industry was declining in importance.

TAGUA EXPORTS<sup>8</sup>

COLOMBIA						
Year	1913	1919	1923	1925	1928	1929
Tons	11,651	8,022	6,013	12,082	5,764	5,498
Value	\$819,000	\$599,000	\$223,000	\$892,000	\$216,000	\$199,000
ECUADOR						
Tons	31,684		22,981	22,430	23,826	25,792
Value	\$2,141,000		\$716,000	\$2,997,000	\$1,258,000	\$1,215,000

By 1952 Ecuador's export of tagua nuts had dropped to 6356.7 tons, which was only about one-fifth of what she exported in 1913.<sup>9</sup> With the exception of the World War II years, when the United States army selected tagua buttons for use on military garments such as shirts, trousers, and mackinaws, the tagua industry has been gradually declining.

As buttons have been the chief tagua product in this country its competitors have been many in recent years. Some of its competitors are as follows: glass, synthetic resin, pearl, shells, galalith buttons made from casein hardened by formaldehyde, fabric covered buttons,—a metal or fiber base covered with cloth, agate buttons made of feldspar, horn and composition horn buttons made principally from the horns and hoofs of cattle. Even though vegetable ivory buttons are protected by a high tariff of one and one-fourth cent per line (diameter of button, one-fortieth inch) plus 25 percent *ad valorem* the industry has steadily declined. At one time there were more than forty vegetable ivory factories in the United States, while today the chief centers of manufacture in this country are Rochester, N. Y., New York City, Newark, N. J., and Springfield, Mass.

## LITERATURE CITED

1. *Tagua*: Pan American Union, Washington, D.C., (1943), pp. 4-6, 11.
2. Clarence F. Jones: *Commerce of South America*, Ginn and Company, New York, (1928), p. 427.
3. Frank G. Carpenter: *Lands of the Andes and the Desert*, Doubleday, Page and Company, New York, (1926), pp. 44, 102.
4. Anna S. Peck: *Industrial and Commercial South America*, Thomas Y. Crowell Company, New York, (1927), p. 45.
5. Clarence F. Jones: *South America*, Henry Holt and Company, New York, (1930), pp. 5-24, 523.
6. United States Tariff Commission: *Summaries of Tariff Information*, Vol. XV, (1948), pp. 98-99, 108-109.
7. Phanor J. Eder: *Colombia*, Charles Scribner's Sons, New York, (1913), p. 125.
8. *Foreign Trade of Latin America, 1910-1929*, Pan American Union, Washington, D.C., (1931), pp. 41-43.
9. Arthur Eichler: *Ecuador—Snow Peaks and Jungles*, Thomas Y. Crowell Company, New York, (1955), p. 216.