The Brazilian Babassu

Tropical Forests Natural Storehouses for Great Quantities of High Quality Oil

By ALAN PORTER LEE*

OF the many and varied natural resources of Brazil, none is so inadequately exploited or presents such glowing prospects of rich rewards from industrial commercialization as the babassu nut palm (*Attalea Funifera, Familia Cocoineoe*). The babassu palm grows in abundance over a large portion of the vast area of Brazil. The kernel of the babassu nut yields an oil which has been adjudged at least equal to coconut oil for most of the purposes for which the latter is employed. The babassu kernels have been in considerable demand in Europe during recent years and every shipment finds a ready market. The total of nuts exported from Brazil in 1927, however, was less than 26,000 metric tons. The great difficulty facing the babassu industry is the extraction of the kernels from the husks in commercially profitable quantities, sufficient to insure steady and ample supplies for export.

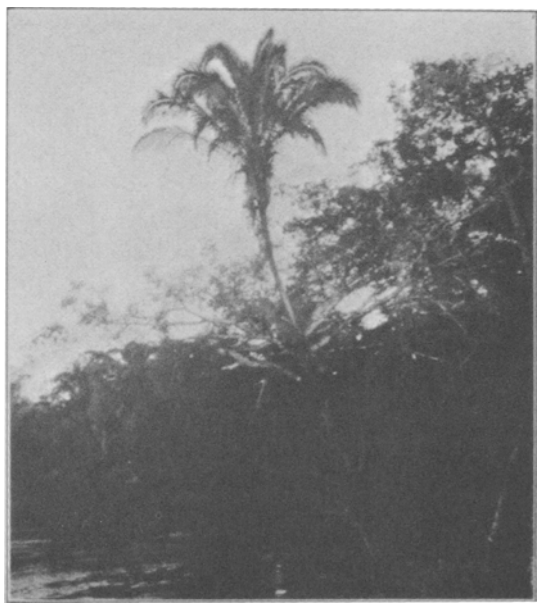
Babassu enthusiasts maintain that the major potential wealth of the nut lies in the husk, rather than in the kernel. It is claimed that the husk will yield on distillation many valuable chemical substances, leaving a residue of metallurgical coke of superior quality.

Much has been written and many prognostications made, yet industrial exploitation of the babassu nut is still in its infancy, and although hundreds of thousands of dollars have been expended in its development, the industry is still struggling for its initial success.

History and Extent

THE babassu nut first attracted world attention in 1914, when due to the shortage of coal incident to the World War, entire nuts were utilized as fuel in the boilers of Brazilian steamships. The nut had been used, however, by the natives in northern Brazil from the earliest days of their tribal recollection. The rubber workers of the Amazon valley have used it (together with the urucury nut), as fuel for the smoking of rubber. The use of whole nuts as fuel is now prohibited by state and federal decrees. It is said that the smoke fumes serve as an excellent disinfectant for the destruction of animal life encountered in the rubber latex. The forest and plain dwellers of the north have for some time extracted the oil from the kernels for purposes of illumination. The husks have been used for fuel in the modest iron foundries in northern Brazil. Moreover, there has also existed a considerable commerce in babassu nuts, both whole and broken, as fuel. It is only since 1914, however, that the babassu nut has figured in Brazilian exports.

Babassu palms are found in the Brazilian states of Amazonas, Para, Maranhao, Piauhy,



Babassu palm on river bank

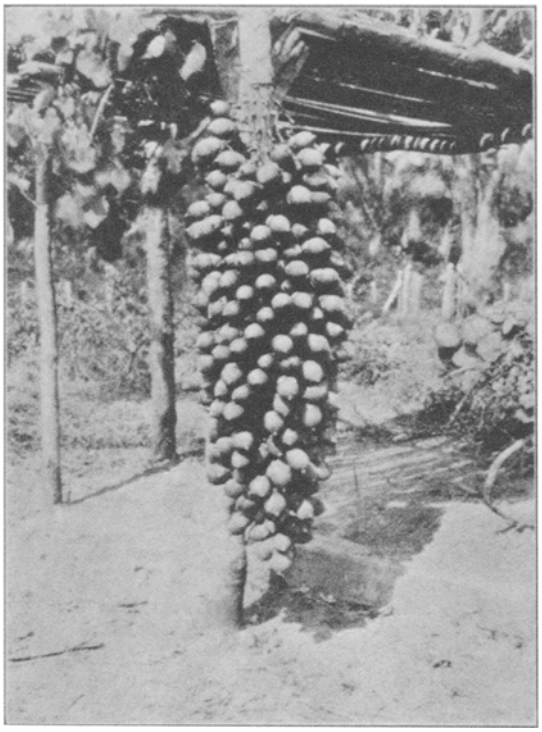
*Based on information furnished by The Foodstuffs Division, Bureau of Foreign and Domestic Commerce.

Ceara, Bahia, Espirito, Santo, Sao Paulo, Minas Geraes, Goyas and Matto Grosso. This palm is possibly found also in the states of Pernambuco and Rio de Janeiro under the name of pindoba, or indaya. Exploitation of the palm has been carried on principally in Maranhao and to a less extent in Piauhy. An American expedition into Piauhy some years ago estimated the number of babassu palms in that state alone at 400,000,000. The total in Brazil would thus probably run well into the billions of trees.

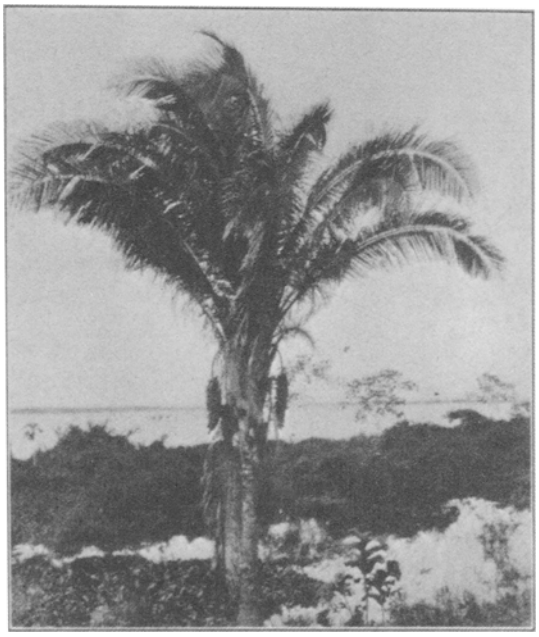
Babassu growth occurs in Brazil mainly in two forms, the one "palmeiral" and the other in virgin forest. The former is a dense growth almost exclusively of babassu on land that has formerly been cleared. Only the palms that gain access to light and air bear fruit under these conditions. Exploitation of such growth requires cutting out the inferior trees. The growth in the virgin forest is not so dense and the babassu is interdispersed with other varieties of trees.

Commercial Uses

THE utilization of the kernels both at home and abroad for the production of oil constitutes the chief commercial use of the babassu at present. The oil greatly resembles coconut oil, and is useful in the manufacture of vegetable margarines, shortening, chocolate fats, soap, shampoos, and other toilet preparations, light lubricants, etc., in fact, wherever coconut oil is employed. Babassu oil has been employed to a small extent in Brazil for the operation of Deisel engines, but its use for such a purpose is an obvious extravagance. The press-cake remaining after the expression of the oil is a superior cattle feedstuff, equal in all respects to copra cake. An analysis of the oil as reported by the Imperial Institute of London is given below:



Typical cluster of babassu nuts



Babassu palm with ripe nut clusters

Melting point (open tube)	26°C.
Solidification point	23°C.
Specific gravity at 100°/15°	0.868
Acid number	5.5
Saponification number	249
Iodine number	15.6
Unsaponifiable matter	0.3%
Soluble volatile acids	5.8%
Insoluble volatile acids	10.2%

The babassu kernels are exported principally from the port of Sao Luiz, Maranhao, and the nearby island of Cajueiro. During 1927 there was exported from Brazil to a total of 25,977 metric tons of babassu kernels valued at 24,000 contos of reis. (*A conto of reis is equivalent to* 1000 *milreis: at present rates of exchange* 1 *milreis is equal to approximately* 12 *cents.*) During the first ten months of 1928, total exports amounted to 18,191 metric tons valued at 19,519 contos of reis. This would indicate a substantial rise in the export values

of the babassu kernel in 1928 as compared with previous years.

The bulk of the exportation in recent years has been conducted by four firms, two of which are Brazilian, one Brazilian-German and one German. The exporting firms have staffs of buyers all through the interior of Maranhao and Piauhy, principally along the railway between Sao Luiz and Therzina and along the Itapicury and Parahyba rivers. Competition

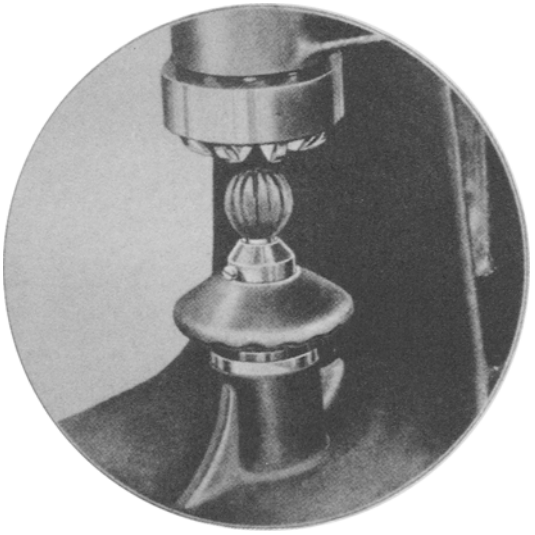
Natives extracting babassu kernels by hand methods

is keen and the buyers seek out the natives, or caboclos, in their dwellings. The latter never need take the initiative in order to sell their hoards of kernels. The transportation of the merchandise to the seaport is handled entirely by the buyer.

Extraction of the Kernels

THE babassu industry to date has been carried on almost entirely in the native manner. As the nuts fall when ripe, the caboclo has only to gather them from the ground. To extract the kernels he breaks open the nuts with an axe or mallet. The procedure is as follows: holding the axe between his feet, the native places the nut on the blade of the axe, then strikes down sharply with a stick of wood, driving the nut onto the axe blade.

There have been many and various types of machines for cracking the babassu nut placed on the market, but there are very few in actual use on an industrial scale. The machine must be of rugged construction, in order to obviate delays in production due to breakdowns. It must be, in addition, of such design that the kernels are not injured in the cracking of the shell. To date no machine has been developed into successful commercial operation, but one American inventor has developed



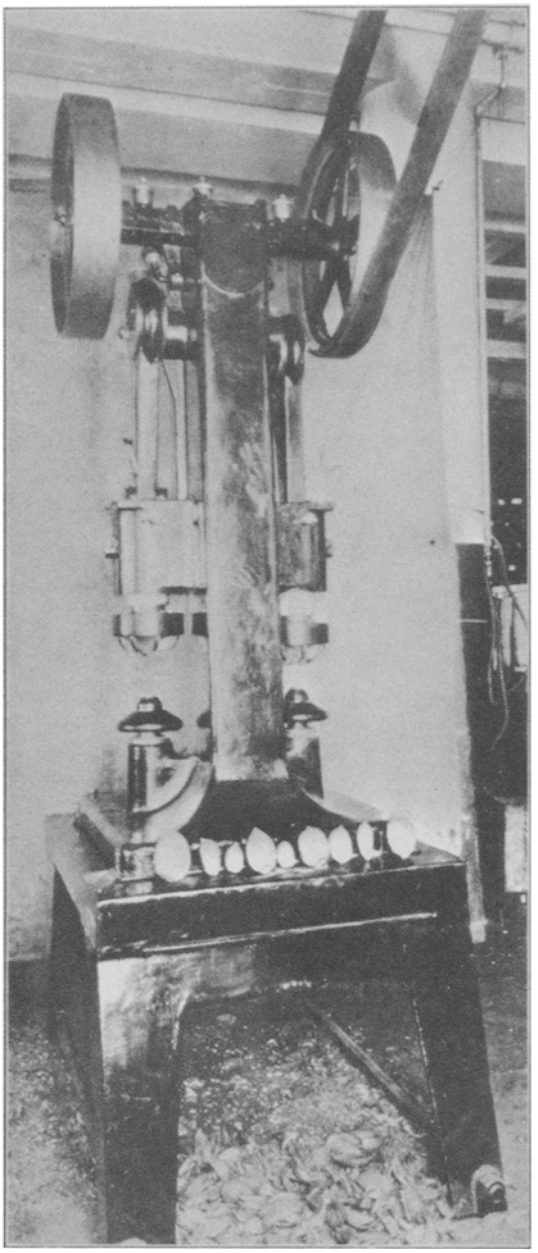
Anvil and knives of babassu nut cracking machine

a machine which gives the greatest promise of commercial success. This machine has been demonstrated in Para and has excited the most favorable comment from Brazilians who are acquainted with the requirements of a successful babassu cracking machine. The demonstration machine has been sold to the federal experimental station. Another of the same design is installed in Sao Luiz. The machine splits the nuts on radial planes into eight cuneiform sections. The central column is cored away from the kernel cell walls with the object of reducing to a minimum any crushing or cutting of the kernels, thus retaining the original oil content in the kernels and insuring maximum kernel recovery. Illustrations of this machine are shown herewith.

(*Turn to Page* 107)

Brazilian Babassu

(*From Page 93*)



Machine for cracking babassu nuts

Various Uses of the Palm

THE uses of the babassu palm are numerous. The green leaves serve as roofing and thatching material, and for the manufacture of hats, baskets, sails and sail bases. The stems of the fronds are used in making special baskets and shades.

The sap is used as a feedstuff and foodstuff, both raw and cooked, and is a satisfactory raw material for the manufacture of sugar. The fibrous covering of the nut is useful for the manufacture of cord, brushes and mats. The mealy substance between the shell and the kernels is used as a food by the natives and also as a cattle feed. It contains some considerable quantity of tannin and starch. The shell, which is very hard, is said to be used in the manufacture of buttons and other articles of domestic use, and would undoubtedly be of value for the preparation of active carbons for various purposes.

The state of Maranhao has sent to New York a film depicting the babassu industry, showing the forests, transportation methods, primitive methods of gathering and kernel extraction, as well as machine extraction by means of the machine described above.

Shortening and Oil Prices

Prices of shortening and salad and cooking oils on Thursday, Feb. 20, 1930, based on sales made by member companies of the Shortening and Oil Division of the National Cottonseed Products Association, were as follows:

SHORTENING

	Per lb.
North and Northeast:	
Carlots, 26,000 lbs.	@10¾
3,500 lbs. and up	@11
Less than 3,500 lbs.	@11½
Southeast:	
3,500 lbs.	@10½
Less than 35,000 lbs.	@11
Southwest:	
Carlots, 26,000 lbs.	@10½
10,000 lbs. and up	@10⅝
Less than 10,000 lbs.	@11⅛
Pacific Coast:	@11¼

SALAD OIL

North and Northeast:	
Carlots, 26,000 lbs.	@10½
5 bbls. and up	@11
1 to 4 bbls.	@11½
South:	
Carlots, 26,000 lbs.	@10¼
Less than carlots	@10¾
Pacific Coast:	@10¾

COOKING OIL—WHITE

⅛c per lb. less than salad oil.

COOKING OIL—YELLOW

¼c per lb. than salad oil.

The Sanitary Utility Company, manufacturers of grease recovery apparatus, formerly of 400 West Madison Street, Chicago, are now located in new quarters in the McCormick Building, 332 South Michigan Avenue.