
Mgoa Rubber in British East Africa. (*Mascarenhasia elastica*, K. Sch.)

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AURICULIDAE.

Carychium minimum, Müll. Along the Strip.

One of our smallest land snails. Under a lens, the eyes, which are very black, may be seen even through the transparent shell. Not scarce in damp places but easily overlooked on account of its minute size.

LAMELLIBRANCHIATA.

UNIONIDAE.

Unio pictorum, Linn. The Lake.

The somewhat pearly shells of this species were formerly used by Dutch painters to contain their colours, hence the name bestowed by Linné. Though not the Pearl Mussel, this occasionally contains small pearls of inferior quality.

XLV.—MGOA RUBBER IN BRITISH EAST AFRICA.

(*Mascarenhasia elastica*, K. Sch.)

OTTO STAPP.

Mr. E. Battiscombe, Acting Conservator of Forests at Nairobi, B.E.A., communicated recently specimens of flowers and fruits of a rubber tree found by him in the Shimba Hills, near Mombasa. On comparison they proved to belong to *Mascarenhasia elastica*, K. Sch., a species previously known only from the neighbourhood of Dar-es-Salam, German East Africa, where it is worked occasionally by the natives for a kind of ball rubber called Mgoa rubber in the Zanzibar trade.

Mascarenhasia elastica was discovered by Dr. Stuhlmann in 1898 near Dar-es-Salam, and described and figured by the late Dr. Schumann in the *Notizblatt* of the Berlin Botanic Garden and Museum, vol. I. (1899), pp. 268–270. This is what the author says of it as a rubber tree: "Between the villages of Vikindo and Mbaffu there grows in moist places a robust tree which contains rubber latex and yields a superior kind of caoutchouc. The trunk branches usually low down and attains a height of 10 m. The pale grey bark is covered with scars from the knives of the rubber collectors, who produce from it large balls of rubber known as Mgoa in the Zanzibar trade. It is not particularly pure, containing fragments of bark, etc." Samples of this rubber received at the Botanic Museum, Berlin, are described by Dr. Warburg (*Der Tropenflanzer*, III., p. 220) as consisting of pale brown drawn-out caoutchouc threads intermixed with small particles of caoutchouc. In 1899 Herr Hedde, Government gardener at Dar-es-Salam, was commissioned to explore the neighbourhood of Dar-es-Salam and to study the distribution and properties of the tree. Dr. Schumann published an abstract from Hedde's official report in the *Notizblatt* of the Botanic Garden and Museum at Berlin, vol. III., p. 43. According to it *Mascarenhasia elastica* is fairly common in the

district visited by Hedde along streams as well as over underground water. It makes fine smooth and straight trunks which are much sought for by the natives, who use them in building their shambas. On the other hand Hedde found the flow of latex too slow to make collecting profitable. He further adds that the rubber produced does not sell well, possibly, as he says, on account of the crude mode of preparation. Attempts to take *Mascarenhasia elastica* into cultivation have been so far successful, as the plants grew fast even in dry soil, and flowered and fruited in their fifth year; but the flow of latex at that age was far too scanty (*Der Tropenpflanzer*, X., p. 44).

As other species of *Mascarenhasia*, natives of Madagascar, are said to produce fairly good rubber, known as "Black Madagascar (Madagascar noir)," it was desirable to have an exact analysis of Mgoa rubber. This was made at the Imperial Institute from a sample communicated by Mr. Battiscombe last February to that establishment. Thanks to the courtesy of the Director of the Imperial Institute, we are able to publish the results of the examination of the sample mentioned.

Report on the composition of the rubber from the Shimba Hills, by the Director of the Imperial Institute.

Mark and weight of sample.—"Rubber from Shimba Hills, East Africa Protectorate," 104 grams.

Description.—Single ball of rubber, about $2\frac{1}{4}$ inches in diameter, evidently formed by winding threads of rubber upon a central mass; it was light brown, and contained a considerable quantity of vegetable impurity. The rubber was fairly strong.

Results of examination.—

—					Sample as received.	Composition of dry rubber.
					per cent.	per cent.
Moisture	...	...	...	...	10·0	—
Caoutchouc	...	...	...	...	69·0	76·6
Resin	...	...	...	...	6·1	6·8
Proteids	...	...	...	...	3·5	3·9
Insoluble matter	...	...	...	...	11·4	12·7
Ash	...	...	...	...	2·29	2·54

Commercial value.—3s. 6d. per pound in London; the current price of fine hard Para from South America was 5s. 2d. per pound.

Remarks.—The sample has the usual appearance of Landolphia rubber; it is of very fair quality though the amount of insoluble matter is rather high. This defect could be remedied by careful collection so as to exclude, as far as possible, fragments of bark from the rubber.

Consignments of this rubber, if well prepared, would be readily saleable at satisfactory prices.

Since the above was written a specimen of *Mascarenhasia elastica* has been received from the Uganda and British East Africa Exploration Syndicate, accompanied by a short note by Mr. Henry Dalziel, who reports: "The enclosed specimens of leaves, fruits, and wood are from a new kind of rubber tree, lately discovered by the natives in Wanga District, British East Africa, and called by them 'Goa.' This tree is generally found on the banks or near the sides of running streams where its roots can get easy access to the water. The stems are from a few to 18 inches in diameter, and form a bole 20 feet high to where it branches out. In old trees the bole has generally a great number of hollows, with a rough scaly bark which can easily be rubbed off; the inner bark is a quarter of an inch thick, and easy to cut. When the tree is cut the latex oozes out very slowly."

A specimen of the wood of *Mascarenhasia elastica* from the Wanga District, collected by Mr. H. Dalziel, is exhibited in Case 78, Museum No. I.

XLVI.—GUAYULE RUBBER.

(*Parthenium argentatum*, A. Gray.)

J. M. HILLIER.

Among the plants of economic value belonging to the natural order *Compositae* none are more interesting than those known to contain rubber or a substance analogous to rubber. During the last decade considerable attention has been directed to two such plants of this order, viz:—the Colorado Rubber Plant (*Hymenoxys* sp.), a note on which appeared in *Kew Bulletin*, 1906, No. 6, pp. 218, 219, and the Guayule of Mexico, the subject of the present note.

The first communication received at Kew on the subject of Guayule was from the Mexican Land and Colonization Co., Ltd., 4, Moorgate Street, E.C., dated 29th December, 1902, requesting information regarding the following extract from Circular No. 28 issued by the United States Department of Agriculture:—

"An illustrative instance of the dangers likely to beset investments in rubber comes to hand as this Circular is being sent to the printer. A well-known journal* notices a new substitute for rubber, describing it as a gum obtained by grinding up the bark and 'comparatively hard wood' of a 'small scrubby bush' and then macerating in gasoline or other hydrocarbon solvent. 'By this process the gum that comes out is chemically pure and suitable at once for manufacture, and it forms a new composition consisting of resin of the plant combined with a residual portion of the hydrocarbon solvent.' The shrub, which has no milky

* *Scientific American*.