

months they are allowed to be relieved by other representative men of their tribes." The accompanying photograph depicts some of these hostages, who may be taken as types of the tribe.

The people live in rude huts and seldom build substantial houses, like the settled Mantze. Whilst termed "Lolo" by the Chinese, they call themselves "Nosu," alternatively spelt "Nossu" and "Nesu." The former appellation appears to us to be the same that is applied by the Tibetans to these and other savage tribes on their borderland, namely "Lalo" (spelt *kla-klo*). Their features seem to us to resemble those of the head-hunting Indo-Mongolian tribes of Assam, called "Nāga" by the Indians. They are said by Mr. Fergusson to be "certainly not" Tibetan. Their mode of tying up the hair (see Fig. 1) is suggestive of that of the Lepchas, whose non-Tibetan and proto-Malayan affinities have been indicated by Lieut.-Colonel Waddell.

Lieut. Brooke won the distinction of being "the first Englishman to shoot" that rare Eastern antelope, the takin (*Budorcas* sp.: see Fig. 2), and to study it in its haunts, of which we have here a detailed description.

Mr. Fergusson furnishes a detailed map of the southern part of the country plotted out by himself, a valuable contribution to Chinese geography.

RUBBER CULTIVATION.¹

TO students of African rubber, the volume (1) by Dr. Cuthbert Christy will prove of considerable value. Dr. Christy was for a considerable time connected with the Mabira Forest Rubber Company, Uganda, and had many opportunities of obtaining first-hand information regarding the environment most suitable for *Funtumia*, the yields of rubber obtainable, and the chemical and physical problems associated with the coagulation of the latex. The author first gives a general account of the African rubber industry, and shows the fluctuation in exports of raw rubber from the Gold Coast, Sierra Leone, Southern Nigeria, Liberia, the French Ivory Coast, Togoland, the Kameruns, the Belgian Congo, and East Africa. There is, however, nothing which would lead one to expect that Africa will henceforth increase its crop of raw rubber, despite the large number of vines and trees which have been planted during the last few years.

A considerable amount of information is given on the botany, life-history, and structure of *Funtumia elastica*, Stapf, known in the early days as *Kickxia elastica*, Preuss. It appears that in Uganda this tree loses most of its leaves during the dry, hot period of January to March. It is, however, never quite leafless. Young shoots are produced and old leaves fall more or less freely at all seasons of the year. The trees flower from November to December, and

¹ (1) "The African Rubber Industry and *Funtumia elastica* ('Kickxia')." By Dr. C. Christy. Pp. xvi+252. (London: John Bale, Sons, and Danielsson, Ltd., 1911.) Price 12s. 6d. net.

(2) "The Physiology and Diseases of *Hevea brasiliensis*, the Premier Plantation Rubber Tree." By T. Petch. Pp. iv+268. (London: Dulau and Co., Ltd., 1911.) Price 7s. 6d. net.

(3) "The Whole Art of Rubber Growing." By W. Wicherley. Pp. 154. London: West Strand Publishing Co., Ltd., 1911.) Price 5s. net.

the fruits are mature six months later. The author is of the opinion that the wind-blown seeds carried beyond the limits of the forest never produce permanent plants, owing to the long grass covering the country outside the forest areas. In the scrub formation (*Acanthus*) the seeds appear to have a better chance. The permanent *Funtumia* trees are found largely in belts where the forest is hilly; though these belts are usually well-defined, their distribution appears to be influenced by water-level conditions. In

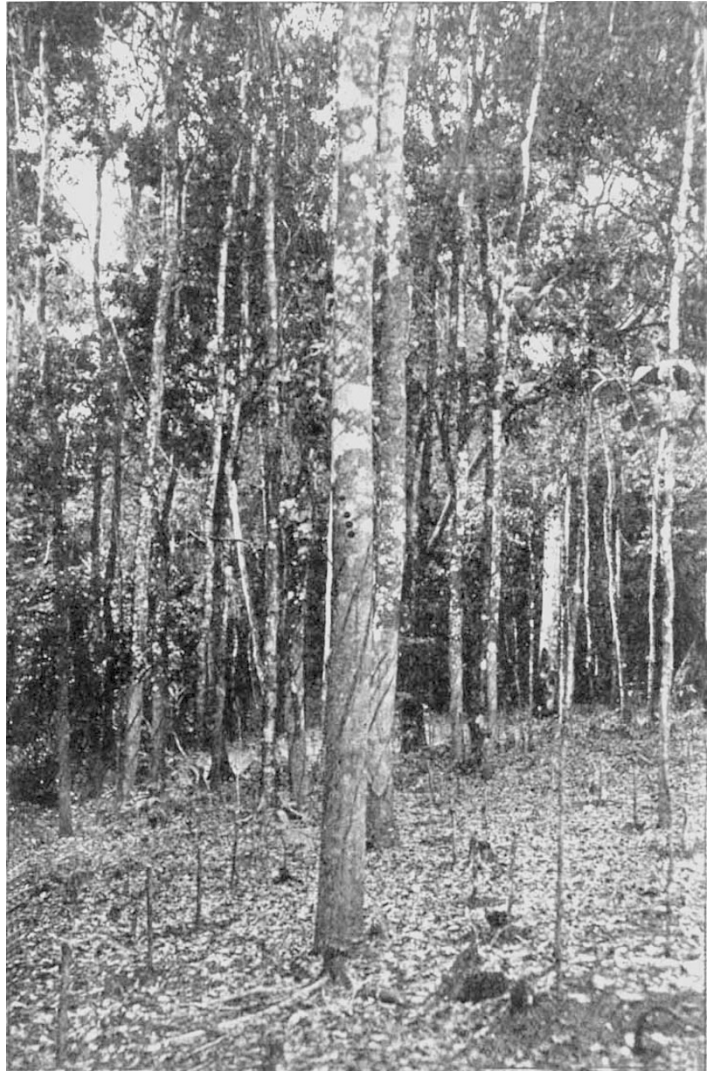


FIG. 1.—Chagwe Forests, Uganda. An area cleared or underwood and seed sown at stake. Nearly all the trees in view are *Funtumia elastica*. From "The African Rubber Industry and *Funtumia elastica*."

Uganda the trees appear to grow in large groups varying from family parties to large belts and areas several square miles in extent; in some cases the growth is entirely made up of this species, but in other cases the species is scattered.

After discussing the distribution, climate, and soils for *Funtumia*, the author goes into detail regarding other species of *Funtumia*—*Funtumia latifolia*, and *Funtumia africana*—the latex from which, however, possesses very little rubber, though it may be used

even intentionally, by natives for adulteration. The chemical and physical characters of the latex and the methods of coagulation have received attention by Dr. Christy in Uganda, and his chapters on these subjects provide much interesting matter. The book is, however, one which must necessarily appeal to a limited section owing to the relative unimportance of the species dealt with as sources of rubber. It is true that *Funtumia* has supplied large quantities of Lagos-silk rubber in the past, and will continue to do so for many years to come. Nevertheless, it is a species which does not lend itself to cultivation; wherever it has been tried—in Ceylon, Malay, Samoa, New Guinea, &c.—its growth has been so slow and the yields so small that planters have abandoned all hopes of ever cultivating the tree profitably.

(2) This a book which deals with a very special side of the rubber industry, and is mainly of interest

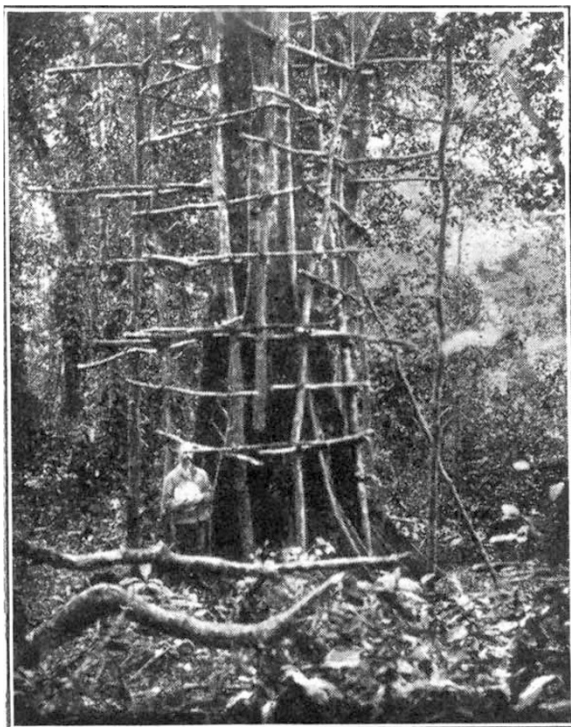


FIG. 2.—High-tapping *Funtumia* (Mabira Forest). From "The Whole Art of Rubber Growing."

to planters in the East, and to students of mycology elsewhere.

After giving a general introductory statement on the structure of *Hevea brasiliensis*, its latex and rubber, and the tapping systems employed on plantations, the author comes to the special part for which he is qualified to deal, viz., plant sanitation from the mycological point of view. Leaf diseases—*Helminthosporium heveae* and *Gloeosporium heveae*—are dealt with, and the result of an examination of fallen leaves is described, it being shown that conspicuous defoliation was not due to these diseases. Among root diseases, the author pays particular attention to *Fomes semitostus*, which is now reported from most estates in Ceylon, Malaya, Sumatra, Java, and even Africa; to the Brown root disease—*Hymenochaete noxia* and to *Sphaerostilbe repens*, and he deals also with numerous miscellaneous fungi observed by himself and others on the roots of this particular tree.

Stem diseases are dealt with in a separate chapter.

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Phytophthora Faberi is described as a parasitic fungus affecting the stem and fruit of *Hevea brasiliensis*; it has also been associated with cocoa, with which rubber trees are often interplanted. Pink disease—*Corticium salmonicolor*, B. and Br.—formerly extensively known in Java as *Corticium javanicum*, Zimm., is also described. This disease appears to originate generally in the fork of the tree or where several branches arise close together from the main stem; it has caused considerable damage, especially in Java and Malaya. A new stem canker, *Coniothyrium sp.*, is reported to have made its appearance on a Ceylon estate in 1909; this apparently appears on young green shoots, the first sign of its appearance being the production of hard, yellowish patches due to the development of a corky layer under the epidermis. Stem diseases of seedlings and the sterilisation of nurseries also receive attention.

Some abnormalities in *Hevea* in the form of twisted seedlings, nodules, and twisted stems (fasciation) are well illustrated, and should prove of interest to teratological students.

Much of the information has already been published in Ceylon, but this should not seriously detract from its value. References to literature on each subject are freely given, and in this way the reader is enabled to secure further detail if he desires to do so.

It is to be regretted that this book deals only with diseases due to fungi and bacteria. The book would have been much more useful to planters and to others in Europe had it taken into consideration the numerous animal pests which at the present time are a source of great anxiety to all cultivators of rubber trees. It is the only book of its kind, and should find a place in the library of all who wish to maintain an interest in tropical agriculture.

(3) Mr. W. Wicherley's booklet covers a series of general problems connected with *Hevea brasiliensis*, *Manihot glaziovii*, *Ficus elastica*, *Castilloa elastica*, *Funtumia elastica*, and three of the new *Manihots*. The majority of the essays have already appeared in the London Press. The writer acknowledges his indebtedness to the officials of the Ceylon Botanic Gardens, and pays a tribute to past and present officers for the work they have done in connection with this cultivation.

The statistics given of planted acreages and probable future yields (p. 144) are, in our opinion, calculated to give a wrong impression; the acreages now under rubber are, and the future annual crops will be, much larger than those suggested by the author.

There are some interesting illustrations, especially those showing high tapping of *Funtumia* trees in Uganda, and of methods of tapping adopted on trees of *Manihot dichotoma*. The book deals almost exclusively with matters relating to plantation subjects, and will be found useful by the general reader who is anxious to acquire a general knowledge of this section of the industry.

THE COAST OF NORTH DEVON.¹

THIS is a book which should be in the hands of all who are interested in the scenery of the British Isles, and especially of those who intend to visit any of the holiday resorts on the northern or western coasts of Devon. It is not an ordinary guide-book, and it is not a geological treatise, but a description and explanation of some of the most picturesque and interesting coast scenery to be found in England or Wales.

¹ "The Coast Scenery of North Devon." Being an Account of the Geological Features of the Coast-line Extending from Porlock in Somerset to Boscastle in North Cornwall. By E. A. Newell Arber. Pp. xxiv+261+2 sketch maps. (London: J. N. Dent and Sons, Ltd., 1911.) Price 10s. 6d. net.