

**REPORT ON THE
CAOUTCHOUC
OF COMMERCE**

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Report on the caoutchouc of commerce by James Collins

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JAMES COLLINS

**REPORT ON THE
CAOUTCHOUC
OF COMMERCE**

REPORT
ON THE
CAOUTCHOUC OF COMMERCE,
BEING
INFORMATION ON THE PLANTS YIELDING IT, THEIR GEOGRAPHICAL
DISTRIBUTION, CLIMATIC CONDITIONS, AND THE POSSIBILITY
OF THEIR CULTIVATION AND ACCLIMATIZATION
IN INDIA:

BY

JAMES COLLINS, F.B.S. EDIN.,
HONORARY CORRESPONDING MEMBER OF THE SOCIETY OF PHARMACY OF PARIS; OF THE PHYTOLOGICAL
AND MICROGRAPHICAL SOCIETY OF BELGIUM; AND OF THE SOCIETY OF NATURAL AND PHYSICAL
SCIENCES OF CARACAS. LATE CURATOR OF THE MUSEUMS OF THE PHARMACEUTICAL
SOCIETY OF GREAT BRITAIN.

WITH TWO MAPS, FOUR PLATES, AND WOODCUTS.

WITH A MEMORANDUM ON THE SAME SUBJECT

BY DR. BRANDIS,

INSPECTOR GENERAL OF FORESTS, TO THE GOVERNMENT OF INDIA.

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P R E F A C E.

THE numberless uses to which Caoutchouc is now applied has placed it in the front rank of vegetable products, rendering a large and constant supply imperative, and this necessity early led me to the consideration of the sources of supply, and how such supplies could be increased and insured.

In consequence of some inquiries made by Major-General Strachey, C.S.I., and Clements R. Markham, Esq., C.B., I was charged by Her Majesty's Secretary of State for India in Council to prepare this Report. When I had handed in the manuscript and it had been approved of, the Indian Government liberally granted my request that the Report should be illustrated with plates, &c.

To Trelawney Saunders, Esq., of the Geographical Department of the India Office, I have to tender my thanks for the oversight he has taken in the production of the maps, and to my friend Gustav. Mann, Esq., for kindly undertaking the production of the Assam map, and in a high degree to Dr. Forbes Watson, M.A., for material assistance in carrying out my previous inquiries in this subject.

The excellence of the four plates of plants by Mr. Blair speak for themselves, and to W. Carruthers, Esq., F.R.S., of the British Museum, I am indebted for the critical examination of my new species here described, and for his careful oversight in the production of the plates.

My new species, *Castilloa Markhamiana*, I have dedicated to C. R. Markham, Esq., C.B., as a small mark of my humble appreciation of his scientific attainments, of his untiring zeal and success in the acclimatization of the Cinchonas in India, and of the great interest he has taken in the production of this Report.

To Dr. Hooker, C.B., F.R.S., I owe many thanks for aid and facilities rendered me in this and other researches for a long period, and to Professor Oliver, F.R.S., J. G. Baker, F.L.S., and J. R. Jackson, A.L.S., Esqrs., my best thanks are due for assistance and facilities in consulting the Herbarium and Museum.

To my late dear friend Dr. Friedrich Welwitsch I am indebted for matter relating to Africa, and but for his death this Report would have been graced with a promised monograph on the *Landolphias*.

To Dr. Richard Spruce's kindness I am indebted for the most valuable information relating to the *Heveas*, and to my numerous correspondents at home and abroad I tender my warmest thanks for their invariable kindness in replying to my queries and requests.

11, Arthur Street, Deptford, London, S.E.
30th August 1872.

To C. R. MARKHAM, Esq., C.B., F.R.G.S., &c.,
India Office, London.

SIR,

I HAVE the honour to submit, as directed by you, for the information of Her Majesty's Secretary of State for India, a Report on the caoutchouc of commerce, the methods of collecting it, the plants yielding it, their geographic distribution, climatic conditions, and the possibility of their being cultivated and acclimatized in India.

I have arranged my Report in the following manner:—Part I. Sources of supply (Botanical and Geographical), and Part II. The cultivation and acclimatization of the plants yielding caoutchouc.

I also send herewith a set of specimens of the different commercial varieties, which I beg to present to you for the purpose of being placed in England or India, wherever you may deem that they may be likely to prove most useful for purposes of reference.

I have the honour to remain,

Your obedient Servant,

JAMES COLLINS, F.B.S.E.

INTRODUCTION.

The history of India Rubber or Caoutchouc is an exceedingly interesting one. Amongst the earliest accounts we have is that given by Herrera*, in his account of Columbus' second voyage, in which he mentions a game played by the natives of Hayti, with balls made of this substance. Juan de Torquemada† mentions also a similar use made of it, and notes the name of the tree which yielded it, as the *Ulequahuitl* or Ule-tree, the Aztec name for *Castilleja elastica* Cerv. M. Charles de la Condamine gave the first accurate information respecting the Caoutchouc yielded by the "Cahout-chou" or *Siphonia* (*Hevea*) of botanists. M. Fresnau, an engineer, residing at Carzenove in Guiana, next turned his attention to the subject, and his researches were published by the French Academy in 1751. M. Fusé Aublet first described one of the species yielding "Para" Caoutchouc, in his Flora of Guiana, under the name of *Hevea Guyanensis*. In the Old World the credit of the first discovery of a plant yielding Caoutchouc is due to Mr. James Howison, a surgeon in Prince of Wales Island, and who gave an account of it under the title of "An Elastic Gum Vine." Howison's plant was named by Dr. Roxburgh *Urceola elastica*. The next discovery was by Dr. Roxburgh himself, who, receiving a turong lined with Caoutchouc, which, on inquiry he found to be the produce of a fig tree, afterwards named by him *Ficus elastica*.

India Rubber, or Caoutchouc, as we prefer to call it, is the inspissated milk or juice of various shrubs and trees, natives of both hemispheres. This milk is found in certain anastomosing

* Herrera, Historia, decada i., libro iii., cap. iv.

† Torquemada, De la Monarquia Indiana, tom ii., cap. xliii., p. 663, Madrid 1615. For the references and passages of these and other accounts, see my paper on "India Rubber, its History, Commerce, and Supply." Jour. Soc. Arts, London, Dec. 17th, 1869. The Council of the Society of Arts awarded their Lecturer's Medal for this Paper.

vessels termed *Cinenchyma* or laticiferous vessels, and are found in the greatest abundance in the *Mesophloeum* or middle layer of the bark (Fig. 1). This milk is only yielded in quantity sufficient for commercial purposes by certain plants within the isotherms of 70° Fahrenheit, and with a mean annual temperature not lower than 61° and averaging about 76°, and with an annual rainfall not lower than about 90 inches. I have appended to this Report two maps, in order to give some idea of the

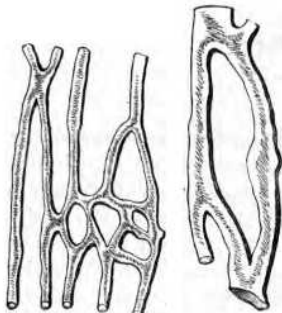


FIG. 1.—Laticiferous Tissue.

geographical distribution. The first shows the general distribution over the globe (Map I.), and the second that in Assam (Map II.). The former must, however, be taken as an approximation to the truth, as it is the first attempt to thus illustrate the subject. These shrubs or trees are restricted to three natural orders, viz.; *Euphorbiaceæ*, *Artocarpaceæ*, and *Apocynaceæ*, and in this Report these various plants are treated in this order.

The following list gives the geographic and botanic sources of the different varieties of Caoutchouc:—

I. *American Varieties*:—

Brazil:—

Pará.	<i>Hevea Brasiliensis</i> Müll. arg., &c.
Maranham.	<i>Hevea</i> sps.
Pernambuco.	<i>Hancornia speciosa</i> Müll. arg., &c.
Ceará.	<i>Hevea</i> sps.
French Guiana.	<i>Hevea Guyanensis</i> Aubl.
British Guiana.	<i>H. paucifolia</i> Müll. arg.
Venezuela.	<i>H. Brasiliensis</i> Müll. arg.
New Grenada or "Carthagena."	? <i>Castilloa elastica</i> Cerv.
Ecuador or "Guayaquil."	<i>Castilloa elastica</i> Cerv.
Peru.	{ <i>Castilloa elastica</i> Cerv. ? <i>Hevea peruviana</i> ?