

COMMERCIAL BOTANY OF THE NINETEENTH CENTURY.

INTRODUCTION.

IN considering this subject, the whole history of Economic Botany may be said to be placed under review, for it is quite within the last thirty years that anything like real or general attention has been directed to the subject.

It is true that in the present century no single plant has been introduced either to commerce or for home cultivation of such widespread importance as the tobacco and potato plants, nevertheless what has been accomplished in a comparatively few years in the cultivation of the cinchonas and the various caoutchouc-producing plants in various parts of the world will bear favourable comparison with anything done in a similar direction in previous centuries, and judging from the present rate of scientific progress the importance of these plants alone in future years may, and probably will, equal those of the tobacco and potato.

It would be impossible to form any correct idea of what has been attained in the knowledge of plants, useful or otherwise, without referring to the results of the principal expeditions which have left our shores for different parts of the world during the present century, such, for instance, as Ross's Antarctic Expedition, which resulted in "The Botany of the Antarctic Voyage of H.M. Ships *Erebus* and *Terror*, in the years 1839 to 1843," by Dr. (now Sir)

B

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J. D. Hooker ; or Captain Kellet's voyage of the *Herald*, after which appeared "The Botany of H.M.S. *Herald* during the years 1845 to 1851," by Berthold Seemann ; or in still later times Captain Nares' *Challenger* Expedition from 1873 to 1876, the botany of which occupies two large volumes, principally the work of Mr. W. B. Hemsley, F.R.S. Not that these expeditions have resulted directly in the introduction of any one useful plant either for general culture or commerce, but they have been instrumental in imparting a knowledge of the resources of the several countries visited, and in this way have awakened an interest in them. Important, indeed, as these expeditions have been in elucidating the botany of the world, still more so has been the formation of the several museums in the principal centres of the United Kingdom for the especial purpose of developing the economic resources of the vegetable, animal, and mineral kingdoms, such as the Food Collection, first at South Kensington in 1857 and later at Bethnal Green, the Industrial Museum at Edinburgh, and the Museums of Economic Botany at Kew, founded in 1847. These, together with the Royal Botanic Society of London, founded in 1839, and the Pharmaceutical Society of Great Britain, founded in 1841, must always be considered the centres from which knowledge on these points has flowed, and continues to flow. Nor must we forget the several International Exhibitions since 1851, where the vegetable resources of the globe, especially of our colonies, have been prominently brought to the notice of millions of people. Then, in connection with these museums and exhibitions is the literature which emanates from them, such as the handbooks and guides, in which, though published mostly for a few pence, a mass of valuable information is given. We cannot leave this part of the subject without a word of high commendation on the handbooks and catalogues issued by the several colonies at the Colonial and Indian Exhibition

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CHRONOLOGICAL TABLE OF PLANTS.

3

of 1886, which should be in the library of everyone interested in Economic Botany.

In the following notes the difficulty has been to keep them within what might be considered reasonable bounds. It was found impossible to even enumerate all the plants reputed to have economic properties that have been introduced to the United Kingdom during the present century, therefore those that seemed to have but little claim for notice have been omitted. On the other hand, such important plants as those yielding india-rubbers, gutta-perchas, cinchonas, etc., whose cultivation in other countries than their own is of vast importance to our commerce, and to the prosperity and welfare of our countrymen in our widely-spread dominions, have received a large share of attention, because it was thought that the information here brought together would be useful were it more widely disseminated than it has hitherto been.

Throughout these pages it will be seen how often fresh products have been brought forward and have shown promise of becoming important commercial articles, and then have collapsed, sometimes finally, and sometimes to crop up again after a lapse of years. It is hoped that a perusal of these facts will inspire those who have opportunities to take up new products, or even to resuscitate those recorded here as having failed, to persevere in thoroughly testing their properties, or placing them in the proper channels for so doing.

A commercial rather than a scientific arrangement has been adopted, as being probably the more generally useful.

CHRONOLOGICAL TABLE OF PLANTS.

1801.—Waste vegetable fibres applied to paper-making.

1806.—Rhatany root (*Krameria triandra*) introduced as a medicine.

1807.—Rohun bark (*Soyimida febrifuga*) introduced as a medicine.

Gambier or Terra japonica (*Uncaria Gambier*) introduced about this time.

B 2

- 1809.—Quassia wood (*Picranea excelsa*) introduced as a medicine.
 Belladonna leaves (*Atropa Belladonna*) introduced as a medicine.
 Cowhage (*Mucuna pruriens*) introduced as a medicine.
- 1813.—Cajuput oil (*Melaleuca leucadendron*, var. *minor*) introduced about this time.
 Patent granted for an invention for making fabrics air-proof by being treated with India-rubber or Caoutchouc.
 The use of Ipecacuanha as a specific in dysentery confirmed in England.
- 1819.—The development of the India-rubber trade commenced about this time.
- 1820.—Colchicum seeds (*Colchicum autumnale*) introduced as a medicine.
- 1821.—Buchu leaves (*Barosma crenulata*, *B. serratifolia*, and *B. betulina*) introduced as a medicine.
- 1825.—Rusa or ginger grass oil (*Andropogon Schenanthus*) introduced about this time for perfumery.
- 1826.—Vegetable ivory (*Phytélephas macrocarpa*) introduced about this period.
- 1829.—Indian tobacco (*Lobelia inflata*) introduced as a medicine.
- 1832.—Lemon grass oil (*Andropogon citratus*), introduced for perfumery.
- 1835.—Greenheart bark (*Nectandra Rodiaei*) first received attention as a tonic and febrifuge.
- 1837.—Beetroot Sugar Refinery established at Chelsea.
 Gama grass or buffalo grass (*Tripsacum dactyloides*) introduced for fodder.
- 1839.—Cherry-laurel (*Prunus Laurocerasus*) introduced for making cherry-laurel water.
 Cultivation of cinchona plants suggested in India.
 From this period to 1841 Koussou (*Hagenia abyssinica*) attracted some attention as an anthelmintic.
- 1840.—Tibet hay (*Prangos pabularia*) introduced as a fodder plant.
 Ordeal bean of Old Calabar (*Physostigma venenosum*) introduced.
 Ground nut (*Arachis hypogæa*) introduced.
 First vineyard planted in S. Australia.
- 1842.—Tussock grass (*Aira flabellata* = *Dactylis cæspitosa*) introduced as a fodder plant.
 Jute (*Corchorus capsularis*) introduced about this time.
 Gutta-percha first brought to notice.

CHRONOLOGICAL TABLE OF PLANTS.

5

- 1844.—Introduction of glycerine to commerce.
- 1847.—Cotton seeds first imported as oil seeds, and piassaba fibre introduced about this time for brush-making.
- 1849.—“Child’s night-lights” introduced.
 Masseranduba (*Mimusops elata*) milk and China grass (*Bahmeria nivea*) first brought to notice about this time.
- 1850.—Cedron (*Simaba Cedron*) introduced as a medicine.
 Sumbul (*Ferula* [*Euryangium*] *Sumbul*) introduced as a medicine.
 Bael fruit (*Ægle Marmelos*) introduced as a medicine.
- 1851.—Experiments made in cultivation of *Ullucus tuberosus* as a substitute for the potato.
 Shea butter (*Butyrospermum Parl.*) introduced about this time for soap-making.
- 1852.—First lime-fruit orchards planted in Montserrat.
- 1854.—Mexican fibre (*Agave heteracantha*) introduced about this time for brush-making.
- 1856.—Paper first made from Esparto.
 Blue gum (*Eucalyptus Globulus*) introduced for cultivation, and for its medicinal properties.
 Guarana (*Pavllinia sorbilis*) introduced, and again in 1870.
- 1858.—Larch bark (*Larix europea*) first used as a medicine.
- 1859.—Balata (*Mimusops globosa*) introduced.
 Udika fat (*Irvingia Barteri*) first brought to notice.
 Expedition arranged under Mr. Clements Markham to proceed to the South American Forests to collect cinchonas for transmission to India.
- 1860.—*Urceola esculenta* first noticed as a rubber-yielding plant.
 Black snake root (*Cimicifuga racemosa*) introduced as a medicine.
 Belladonna root (*Atropa Belladonna*) introduced as a medicine.
 Pine wool introduced to commerce about this time.
- 1861.—Briar-root pipes introduced about this time.
- 1862.—Palmito (*Prionium palmita*) introduced for brush and paper-making.
 Indian poke root (*Veratrum viride*) introduced as a medicine.
- 1863.—Wild black cherry bark (*Prunus serotina*) introduced as a medicine.
- 1864.—*Podophyllum peltatum*, *Mallotus philippinensis*, and *Hemidesmus indicus* admitted to British Pharmacopœia.
- 1866.—Elands Bontjes (*Elephantorrhiza Burchellii*) first brought to notice, but not used in this country for tanning till 1886.

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- 1867.—About this time attention began to be directed by the Indian Government to the introduction and cultivation of Ipecacuanha in India.
 Roffia (*Raphia Ruffia*) introduced for tying plants about this time.
 Betel nuts (*Areca Catechu*) first used in medicine.
- 1868.—Botanical source of Zanzibar Anime determined.
- 1869.—Sumbul plant (*Ferula Sumbul*) discovered in Samarkand.
 Coffee plantations attacked in Ceylon by *Hemileia vastatrix*.
- 1870.—Jalap (*Ipomœa purga*) first cultivated in India.
 Strophanthus first brought to notice.
Telfairea occidentalis seeds first received at Liverpool as oil seeds.
 Ispaghul (*Plantago ovata* or *Ispaghula*) introduced.
 Quantities of red cinchona bark from Darjiling arrive in the London market.
- 1871.—Cundurango (*Marsdenia cundurango*) introduced for the cure of cancer.
- 1873.—Para rubber plants (*Hevea brasiliensis*) introduced to India.
 Pituri (*Duboisia Hopwoodii*) introduced to medicine.
Rheum officinale introduced to cultivation in this country.
 Mahogany (*Swietenia Mahagoni*) introduced for cultivation in India.
 Experiments made at Chatham with a paint prepared with Euphorbia juice.
- 1874.—*Cinnamodendron corticosum* flowered for the first time in England at Royal Botanic Gardens, Regent's Park.
 Coca (*Erythroxyton Coca*) first brought prominently to notice in this country.
 Goa powder (*Andira Araroba*), Jaborandi (*Pilocarpus pennatifolius*), Boldo (*Peumus Boldus*), and Damiana (*Turnera diffusa*) introduced to medicine.
 Liberian coffee (*Coffea liberica*) introduced for cultivation in Jamaica, Bahamas, Barbados, Bermuda, Dominica, Montserrat, New Granada, Rio de Janeiro, Mauritius, Natal, Ceylon, East Indies, and Java.
- 1875.—Paper first made from Bamboo.
 Algaroba (*Casalpinia brevifolia*) introduced for tanning.
 Sumbul plant flowered at Moscow, and scientific name determined.
 Seeds of Central American rubber plants (*Castilloa*) collected for transmission to India.

CHRONOLOGICAL TABLE OF PLANTS.

7

- Carnauba roots (*Copernicia cerifera*), Caroba leaves (*Cybistax antispyhilitica*), and Dita bark (*Alstonia scholaris*) introduced to medicine.
- 1876.—Paper first made from Baobab bark.
Uniola virgata tested for paper-making.
 Bamia cotton introduced.
 Kava (*Piper methysticum*) began to attract some attention for its medicinal properties.
 Seeds of *Cassia occidentalis* introduced as a substitute for coffee.
 Ipecacuanha dried and prepared for use in India from native-grown plants.
 Central American rubber plants (*Castilloa elastica*) introduced into West Africa, Ceylon, Java, etc.
 Para-rubber plants (*Hevea brasiliensis*) introduced into West Africa, Dominica, Jamaica, Java, Queensland, Singapore, and Trinidad.
 Ceara-rubber plants (*Manihot Glaziovii*) introduced to Kew for transmission abroad.
- 1877.—First crop of cinchona bark received in London from Jamaica plantations.
 Attention first drawn to Mahwa flowers (*Bassia latifolia*) for feeding cattle, and for distilling purposes.
 Attempts first made to introduce African rubber plants for transmission abroad.
 Prickly comfrey (*Symphytum peregrinum*) introduced as a fodder plant.
Calotropis gigantea, *Cavanillesia platanifolia*, and *Yucca brevifolia* suggested as paper materials.
- 1878.—*Molisea ca. lea* and *Ischæmum angustifolium* introduced for paper-making.
 Pods of *Wagatea spicata* introduced from India for tanning.
 "Zulu" hats from *Cyperus tegetiformis* introduced.
 Queensland Fever Bark (*Alstonia constricta*) and Chaulmugra (*Gynocardia odorata*) introduced to medicine.
 Wourali poison (*Strychnos toxifera*) first brought to notice in this country.
 Liberian rubber plants (*Ficus Vogelii*) introduced.
 About this time a considerable amount of attention was given to the properties of the Papaw (*Carica Papaya*).
- 1879.—White Quebracho (*Aspidosperma Quebracho-blanco*), Yerba Reuma (*Frankenia grandifolia*), Menthol, and Tonga introduced to medicine.

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- Paper Mulberry bark (*Broussonetia papyrifera*) and Rye straw first used for paper-making.
- Chestnut flour (*Castanea sativa*) brought to notice as a probable article of food.
- Sugar made in America from *Sorghum saccharatum*.
- African rubber plants (*Landolphia*) introduced into Australia, Ceylon, North America, Demerara, Fiji, Jamaica, Rio de Janeiro, Natal, Singapore, and Trinidad.
- 1880.—Cocoa plants (*Theobroma Cacao*) transmitted from Trinidad for acclimatisation in Ceylon, Singapore, and Fiji.
- Socotra Aloes plant introduced to cultivation.
- Ledger bark (*Cinchona Calisaya*, var. *Ledgeriana*) attracts considerable attention.
- China Cuprea (*Remijia spp.*) appears in the English market.
- Artificial Indigo introduced.
- First consignment of Indian boxwood received.
- Lallemantia iberica* seeds introduced as oil seeds.
- Gutta Sundeek seeds introduced from Perak for cultivation in Ceylon.
- Kola-nut plant (*Cola acuminata*) propagated at Kew and transmitted to India, Ceylon, Java, Singapore, Demerara, Dominica, Mauritius, Sydney, and Zanzibar.
- 1881 —Anda-assu (*Jcannesia princeps*) and Cheken (*Myrtus Cheken*) introduced to medicine.
- Jalap (*Ipomœa purga*) successfully cultivated in Jamaica.
- Plantain and Banana stems proposed for paper-making.
- Myristica surinamensis* seeds imported as oil seeds.
- Jequirity (*Abrus precatorius*) and *Euphorbia pilulifera* introduced to medicine.
- 1883.—Manaca (*Franciscea uniflora*) and Cascara Sagrada (*Rhamnus Purshiana*) introduced to medicine.
- Ogea Gum (*Daniellia sp.*) introduced.
- Discovery of Inhambane Copal (*Copaifera Gorskiana*).
- Kittool fibre (*Caryota urens*) first used commercially for brush-making.
- Seeds of *Hyptis spicigera* imported as oil seeds.
- About this time Paraguay tea (*Ilex paraguariensis*) was introduced as a substitute for Chinese tea.
- 1884.—Chew stick (*Gouania domingensis*) introduced to medicine.
- Seeds of *Myristica angolensis* and *Polygala rarifolia* imported as oil seeds.
- 1885.—Cape boxwood (*Buxus Macowani*) introduced.

CHRONOLOGICAL TABLE OF PLANTS.

9

- Doundake bark (*Sarcocephalus esculentus*), Mabee bark (*Columbrina reclinata*), and Cascara Amarga (*Picramnia antidesma*) introduced to medicine.
- Choco (*Secchium edule*) introduced into Ceylon, India, and Singapore.
- 1886.—Fresh fruits of various kinds from West Indies, British Guiana, Australia, and North America received at Colonial and Indian Exhibition, and sold in the Colonial market.
- Piche (*Fubiana imbricata*) introduced to medicine.
- About this time Gum Euphorbium was introduced for mixing with rubber.
- 1887.—*Lophira alata* seeds introduced as oil seeds.
- Shantung cabbage (*Brassica chinensis*) grown at Kew.
- Crosnes tubers (*Stachys tuberifera*) grown in this country and introduced as a vegetable.
- 1888.—Demerara rubber (*Forsteronia gracilis*) and Jamaica rubber (*F. floribunda*) introduced for trade.
- Brazilian gum arabic (*Piptadenia macrocarpa*) introduced to commerce.
- Bombay aloe fibre brought to notice at Kew.
- Jarrah wood (*Eucalyptus marginata*) first used for road-paving in London.
- 1889.—Bolobolo fibre (*Honckenya ficifolia*) introduced from Lagos.
- Madagascar and Lagos Piassaba first brought to the notice of the Kew authorities, though the former appears to have been known in commerce for some years.

CHAPTER I.

INDIA-RUBBER OR CAOUTCHOUC.

FEW, if any, products, vegetable or otherwise, have made such rapid advances in any given time as has caoutchouc or India-rubber. When we remember that it was quite unknown in this country till the latter end of the last century, and when we try to think of what the world would now be without it, we are able to realise to some extent the great value of this remarkable and interesting substance.

The introduction of Para-rubber antedates by some years the period within our review. It will perhaps be of some use to briefly sketch the history of the development of caoutchouc in this country.

In a work on "Perspective," by Dr. Priestley, published about 1770, the writer speaks of the rubber as a new and important discovery for "wiping from paper the marks of a black-lead pencil," and he says that it could then be obtained at only one place in London, the price being three shillings for a cubical piece of about half an inch. In 1836-37 Para-rubber of good quality was imported into this country to the extent of 141,735 pounds, which had increased twenty years later to 3,477,445 pounds.

The first patent granted in the present century in connection with caoutchouc was in 1813 to John Clark, for an invention by which fabrics treated with India-rubber were made air-tight and applicable for air-beds, pillows, cushions, etc. ; but for the greater improvements in the India-rubber manufactures we are indebted to Mr. Thomas Hancock, so long connected with the firm of Charles Macintosh and Co. ; and though the commencement of the trade in this country dates from about the year 1819, its greater development has been effected within the last thirty years. In 1839 India-