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 cinchonias 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)
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
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.**

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1801.</td>
<td>Waste vegetable fibres applied to paper-making.</td>
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<tr>
<td>1806</td>
<td>Rhatany root (<em>Krameria triandra</em>) introduced as a medicine.</td>
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<tr>
<td>1807</td>
<td>Rohun bark (<em>Smyrida febrifuga</em>) introduced as a medicine.</td>
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<td></td>
<td>Gambier or Terra Japonica (<em>Uncaria Gambier</em>) introduced about this time.</td>
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1809.—Quassia wood (Picrasma excelsa) introduced as a medicine.
    Belladonna leaves (Atropa Belladonna) introduced as a medicine.
    Cowhage (Mecuna 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 dyestery 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 Sohamanthus) introduced about this time for perfumery.

1826.—Vegetable ivory (Phytelephas 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 (Neolandra Rodiei) first received attention as a tonic and febrifuge.

1837.—Beetroot Sugar Refinery established at Chelsea.
    Gama grass or buffalo grass (Tripsacum ductiloides) 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 Kousso (Hagenia abyssinica) attracted some attention as an anthelmintic.

1840.—Tibet hay (Prangos pabularia) introduced as a fodder plant.
    Ordeal bean of Old Calabar (Physostigma venenosa) introduced.
    Groundnut (Arachis Hypogea) introduced.
    First vineyard planted in S. Australia.

1842.—Tussock grass (Aira Flabellata = Dactylius cespitosus) introduced as a fodder plant.
    Juto (Corymbus capularius) introduced about this time.
    Gutta-percha first brought to notice.
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 (Minuops elata) milk and China grass (Bahrnorio nies) first brought to notice about this time.
1850.—Cedron (Sinaba Cedron) introduced as a medicine.
Sumbul (Purula [Eurygraphis] Sumbul) introduced as a medicine.
Bael fruit (Egle Marmelo) introduced as a medicine.
1851.—Experiments made in cultivation of Uluva tuberosa as a substitute for the potato.
Shea butter (Butyrospermum Park.) introduced about this time for soap-making.
1852.—First lime-fruit orchards planted in Montserrat.
1854.—Mexican fibre (Agave heteroanthera) introduced about this time for brush-making.
1856.—Paper first made from Esparco.
Blue gum (Eucalyptus Globulus) introduced for cultivation, and for its medicinal properties.
Guarana (Paullinia sorbilis) introduced, and again in 1870.
1858.—Larch bark (Larix europea) first used as a medicine.
1859.—Balata (Minuops globosa) introduced.
Uluka fat (Trevingia 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.—Tecula 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.—Palmite (Prinium palmita) introduced for brush and paper-making.
Indian poke root (Veratum viride) introduced as a medicine.
1863.—Wild black cherry bark (Prunus serotina) introduced as a medicine.
1864.—Podophyllum peltatum, Mallotus philippinensis, and Hemidiumus indica admitted to British Pharmacopoeia.
1866.—Elands Bontjes (Elephantorrhiza Burkeilii) first brought to notice, but not used in this country for tanning till 1866.
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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 (*Baphia Roffia*) introduced for tying plants about this time.

Betel nuts (*Areca Catechu*) first used in medicine.

1868.—Botanical source of Zanzibar Anime determined.

1869.—Sambul plant (*Ferula Sambul*) discovered in Samarkand.

Coffee plantations attacked in Ceylon by *Hemileia vastatrix*.

1870.—Jalap (*Ipomoea purga*) first cultivated in India.

Strychnos first brought to notice.

*Telphera 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.—Caudurango (*Marsdenia caudurango*) 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 corticosus* flowered for the first time in England at Royal Botanic Gardens, Regent’s Park.

Coca (*Erythroxylon Coca*) first brought prominently to notice in this country.

Gos 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 (*Casuarina brevisetosa*) introduced for tanning.

Sambul plant flowered at Moscow, and scientific name determined.

Seeds of Central American rubber plants (*Castilllas*) collected for transmission to India.
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Carnauba roots (*Copernicia cerifera*), Caroba leaves (*Cybistax antisyphilitica*), and Dita bark (*Alstonia scholaris*) introduced to medicine.

1876.—Paper first made from Baobab bark.

*Uncia 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 (*Castilla 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 Glatiovii*) 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 feasting 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.

*Catalpa gigantea*, *Cavanillesia plataniifolia*, and *Typha brevifolia* suggested as paper materials.

1878.—*Molina ca. leu* and *Ischnasum angustifolium* introduced for paper-making.

Pods of *Wagoua scipeta* introduced from India for tanning.

"Zulu" hate from *Cyperus rotundiformis* introduced.

Queensland Fever Bark (*Alstonia constricta*) and Chaulmugra (*Gynocarpia 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 (*Chestnut 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.

Sceotra Aloeas 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.

Gutta Sundek seeds introduced from Parak 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-asu (*Jussiea prionopus*) and Cheken (*Myrtus Cheken*) introduced to medicine.

Jalap (*Ipomoea 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 pulchiflora* introduced to medicine.

1883.—Manaca (*Francisca uniflora*) and Casura Sagrada (*Ehmannia Purshiana*) introduced to medicine.

Ogea Gum (*Daniellia sp.*) introduced.

Discovery of Inhambane Copal (*Cupressa Gorskiana*).

Kittised fibre (*Caryota urens*) first used commercially for brush-making.

Seeds of *Hyptis speigera* 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 angolese* and *Polygala rarifolia* imported as oil seeds.

1885.—Cape boxwood (*Buxus Maowensi*) introduced.
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Dundake bark (*Sarcocephalus esculentus*), Mabee bark (*Colubrina roeliata*), and Cascara Amarga (*Picaunia antidesma*) introduced to medicine.

Choco (*Siechium 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 (*Passiana inbricata*) 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.

Cromes tubers (*Stachys tuberifera*) grown in this country and introduced as a vegetable.

1888.—Demerara rubber (*Forsteronia gracilis*) and Jamaica rubber (*F. forthiada*) introduced for trade.

Brazilian gum arabic (*Peptadenia macrocarpa*) introduced to commerce.

Bombay aloe fibre brought to notice at Kew.

Jarrah wood (*Eucalyptus marginata*) first used for road-paving in London.

1890.—Bobololo fibre (*Honobunya fischeria*) 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-