WESTERN RUBBER PLANTING ENTERPRISE IN SOUTHEAST ASIA 1876 - 1921
# CONTENTS

Acknowledgements vii
List of Figures xi
List of Tables xiii
Statistical Appendices xv
Introduction xvii

1 Diffusion of Rubber in South and Southeast Asia 1
   Collection of Rubber Plants in Tropical America
   Distribution of Plants from Kew
   The Role of Ceylon and Malaya as Seed Suppliers
   The Recipients of Rubber Plants

2 The Period of Experimentation 14
   Contest of the Species
   The Emergence of *Hevea brasiliensis*

3 Pioneer Plantings 25
   Prelude to Western Planting
   Genesis of Pioneer Plantings

4 Capital Investment and the Rise of Western Plantations 40
   The Beginning of Corporate Organization 1895–1904
   The On-set of Western Capitalist Penetration 1905–1908
   The Rubber Boom and Investment 1909–1912
   Financial Consolidation 1914–1921
   Sources and Directions of Investment
   The Role of Agency Houses and Investment Trusts

5 Growth of Plantations in Malaya 68
   The Spread of Planting 1906–1908
   The Rubber Boom 1909–1911
   The Post-Boom Recession 1912–1921
   Patterns of Distribution

6 Growth of Plantations in Other Parts of Southeast Asia 89
   Java
   The East Coast of Sumatra and Outer Provinces of the Netherlands
   East Indies
   North Borneo
   Burma
   Indochina
   Siam
   The Philippines

7 Variations in the Regional Distribution of Plantations 129
   The Physical Environment
   The Role of Proprietary Planters
   Labour Supply
   Land Alienation Policies
8 Control and the Position of the Western Rubber Industry
The Controlling Bodies
Profits and Dividends
Ownership
Implications of Control

9 Conclusion
Statistical Appendices
Bibliography
Geographical Index
General Index
CHAPTER I
DIFFUSION OF RUBBER PLANTS IN
SOUTH AND SOUTHEAST ASIA

Rubber was first mentioned by a European historian over 480 years ago, but its potentiality as an industrial raw material was not realized until Charles Goodyear discovered the process of vulcanization in 1839. Raw rubber became sticky when heated and hardened on exposure to extreme cold. Goodyear’s discovery rendered rubber tough and durable, and by this process rubber was converted at once into an essential industrial raw material Consumption of rubber in England, for example, rose from 24 metric tons in 1830 to 7,727 metric tons in 1870. The rubber was the ‘wild’ rubber collected from tropical forests and the bulk of it came from Brazil.

Increasing demand for rubber resulted in suggestions being advanced for the domestication of rubber-yielding plants. In 1798 James Howison, a surgeon stationed at Penang, had advocated an experimental planting of Urceola elastica in the island preliminary to its cultivation in Bengal, “should it be deemed an object to attempt plantations of the elastic gum vine”. His words went unheeded. In 1830, the proprietors of the freeholds Pamanukan en Tjiasemlanden or the ‘P & T’ Lands in Java drew the attention of the manager to the possibility of cultivating rubber for the European market. Twenty-seven years later, Thomas Hancock, the founder of the world’s first rubber factory, called for the cultivation of the best kinds of rubber plants in the East and West Indies. He foresaw “every probability of success” of this cultivation because of the mounting demand for rubber. Very little seemed to have been done and in

3 J. Ferguson (compiler), All About Rubber and Gutta Percha, Colombo, 1899, p. ii.
1868, Gustav Mann, Conservator of Forests of Assam, was moved by the possible exhaustion of wild rubber supply from Assam to declare the desirability of starting "some plantations" to ensure future supplies of this "valuable commodity."\(^7\)

These suggestions of rubber cultivation implied the domestication of indigenous species. It was only in 1870 that Clements Markham conceived the idea of introducing rubber from South America to India for commercial cultivation. This venture with rubber was a natural sequel to his successful introduction of cinchona from Peru to India in 1859.\(^8\) James Collins was commissioned to undertake the investigation on rubber plants and in 1872, he advocated the immediate cultivation of *Ficus elastica* in Assam, and the introduction of the *Hevea* and *Castilloa* species into India.\(^9\)

**COLLECTION OF RUBBER PLANTS IN TROPICAL AMERICA**

Several attempts were made to collect rubber seeds and plants from tropical America for despatch to England. The India Office of Great Britain initiated the first attempt in 1873 and it soon enlisted the participation of the Royal Botanic Gardens at Kew. The first consignment of 2,000 *Hevea* seeds obtained at Cameta by a Mr. Farris was forwarded by Markham to Kew in mid-1873. Only a dozen seeds germinated, indicating the difficulty involved in the trans-continental dispersal of this valuable but fragile plant.\(^10\) In 1875, an organized attempt at collection was undertaken by Robert Cross, one of the quinine explorers, under commission by Markham. The species *Castilloa* was to be collected on account of its greater latitudinal spread than the *Hevea* and also because it belongs to the family *Artocarpaceae* which was well represented in India. It was argued that the *Castilloa* might thus acclimatize successfully in India. Cross brought back to Kew 7,000 *Castilloa* seeds and numerous cuttings from the vicinity of the Chagres river in Central America.\(^11\)

It was Sir Joseph Hooker, Director of Kew, who had determined botanically the tree producing 'Para' rubber as *Hevea brasiliensis* in 1873, who initiated the introduction of what was believed to be the "true 'Para' of commerce". With the backing of the India Office, Sir Joseph Hooker commissioned Henry Wickham to

---


\(^11\) Ibid., p. 515.
collect rubber seeds in Brazil in 1876. Wickham secured 70,000 *Hevea* seeds from the highlands between the Tapajos and Madeira rivers, where "the true forests" of *Hevea* rubber were found. The collection was loaded on the ss. *Amazonas*, which was returning to England just when the seeds which were "prone to quickly lose its vitality" were ripe. Wickham's successful accomplishment of his mission has been variously described as one of "resource, initiative, and organizing capacity" and an example of "colossal 'nerve'", implying a shade of illegality in the operation. Although Wickham himself was certain that the Brazilian authorities would detain the ship if they "guessed the purpose of what I had on board" and later writers have tended to view the feat as "smuggling" and Wickham as "le prince des contrebandiers", the operation was not illegal. Indeed, there was then no formal prohibition on the export of *Hevea* seeds from Brazil. Wickham's anxiety was due more to his fear that the delays that might conceivably be caused by the port authorities would reduce the germinating power of the seeds.

Wickham's seeds were sown at Kew Gardens on the 4th of June, 1876. Only 2,700 seeds germinated, or 4 per cent of the total, confirming an earlier experience that securing planting materials from *Hevea* seeds was difficult. Yet that this eventually became the parent stock of the rubber industry in Asia underlines the significance of the quantity of Wickham's original collection. Although 2,700 plants were not a large stock for the needs of British India, they ensured a fair chance of success for the perpetuation of the supplies of seeds and plants from this stock. Besides Wickham, success of the mission must partly be attributed to the skilful guidance and devotion of Sir Joseph Hooker and the Kew Gardens, and the support and foresight of Markham and the India Office. The fourth attempt to introduce rubber plants from South America, like the second one, was made by Robert Cross, again engaged by Markham. Cross left for South America three days after Wickham arrived with his collection. Having gathered 1,080 *Hevea* seeds around Para, he proceeded to Ceara province and collected 700 seeds and plants of *Manihot glaziovii* (commonly known as Ceara). The plant materials arrived at England in late 1876; about 3 per cent of the *Hevea* and 55 Ceara plants were raised.

---

12 Wickham was then resident at Santarem, Brazil, and had working experience with wild rubber since the 1860s. It was from his drawings and specimens of *Hevea brasiliensis* which he sent to Kew in 1873 that enabled Sir Joseph Hooker to determine the species of the plant. Petch, *op. cit.*, p. 439; H.A. Wickham, *On the Plantation, Cultivation, and Curing of Para Indian Rubber (Hevea brasiliensis)* with an account of its introduction from the west to the eastern tropics, London, 1908, pp. 46–47.


15 This large collection was probably induced by monetary reward. Wickham's commission was "a straight offer to do it; pay to follow result", Wickham, *op. cit.*, p. 47.

16 Petch, *op. cit.*, pp. 441 and 505.
The four British attempts to collect rubber plants, in retrospect, were unnecessary duplications, for sufficient subsequent planting materials were able to be derived from Wickham's collection alone. Although the India Office was financially involved in all four attempts, those by Cross and Wickham were apparently not related, at least by design. The strong association between Hooker and Wickham on the one hand and Markham and Cross on the other points to the execution of independent projects by these pairs. These introductions resulted in the collection of 73,000 *Hevea* seeds, 7,000 seeds and some cuttings of *Castilloa*, and 760 *Ceara* seeds and plants.

There were subsequent attempts at seed collection in South America, such as *Hevea* seeds bought to Pasir Utjing estate in Java. A trade in *Hevea* and *Ceara* seeds was started by Scott Blacklaw in England in 1881 to supply demand from private or official sources. However, they had minimal effects on development of the rubber industry in Asia, where virtually all planting materials were derived from the first few generations of Wickham's original collection.17

**DISTRIBUTION OF PLANTS FROM KEW**

*Hevea* rubber first arrived in Asia in 1873 when six plants raised from the Farris collection were taken to the Calcutta Botanic Gardens. The choice of Calcutta was probably influenced by the fact that the plants were taken out by the Superintendent of the Gardens himself, and that Calcutta possessed the major botanic gardens in India. Cuttings were subsequently sent from Calcutta to Sikkim, showing a complete lack of understanding of the climatic requirement of *Hevea*. These plants, together with a further consignment to Calcutta in 1875, did not survive the cold. Henceforth, Calcutta ceased to be the depot for *Hevea* in India and Sir Joseph Hooker and Markham agreed to Wickham's recommendation of sending the seedlings to Tenasserim, Burma;18 but the depreciation of the rupee and retrenchment of expenditure by the Indian Government killed the scheme. The choice then fell on Ceylon which possessed a botanic gardens sufficiently well equipped to serve as a depot for the propagation and distribution of *Hevea* plants to India and Southeast Asia. It is left to speculate whether the history of rubber development might have been different had Burma in fact served as the depot.

Ceylon received its first consignment of 1,919 *Hevea* seedlings from Kew in August, 1876 in excellent condition. Two days later, some 50 to 100 seedlings landed in Singapore, but delays in freight payment by the India Office resulted in a serious loss.19 In the same year a small number of plants was sent to Buitenzorg, Java; 50 to Burma; and 100 to Saharumpore, India. In 1877, four despatches were made, consisting of 22 plants to Singapore, 100 to Ceylon, 50

---

17 Whether or not, or to what extent, Cross's plants were distributed was not definitely known, for no distinction was made between the plants collected by Wickham and Cross. No one, however, alleged that Cross's plants were never distributed. Petch, *ibid.*, p. 442; P.J.S. Cramer, "Wild Rubber and Selection," *Rubber Recueil*, Batavia, 1914, p. 24.


DIFFUSION OF RUBBER PLANTS IN SOUTH AND SOUTHEAST ASIA

FIG 2. DISTRIBUTION OF SEEDS AND PLANTS OF HEVEA BRASILIENSIS KEW GARDENS TO SOUTH AND SOUTHEAST ASIA, 1873–1877.

Seedlings re-directed from Colombo, Calcutta and Singapore are not quantitatively represented.

to Calcutta, and four to Buitenzorg 20 (Fig. 2).

Of the 2,300 Hevea seedlings consigned to the East, Ceylon was by far the largest recipient, though some of the seedlings were re-directed to other territories. In contrast, Singapore received less than 122 plants, of which only the second consignment of 22 survived. Nine of these were taken to Kuala Kangsar in 1877 by Murton, Director of Gardens, Singapore. Of the Calcutta plants, one-third was sent to Assam and 16 to Burma. At Mergui, eight of the plants survived and were planted in the Forest Office compound. 21 At Buitenzorg, only two plants survived to produce seeds; more than a dozen plants in the Cultuurtuin and several in various estates were off-springs of these trees. 22 By and large, seedlings distributed by Kew were almost entirely forwarded to British colonial territories and British initiative from the start thus directly influenced

subsequent British domination in the rubber industry and the patterns of location of rubber development in Southeast Asia.

The *Castilloa* seeds collected by Cross in 1875 failed to germinate at Kew, but plants were raised from cuttings. In 1876, 31 plants were sent to Ceylon, and six to Buitenzorg. In the following year, 24 more plants were sent to Ceylon, and small consignments were also made to Singapore, Liberia and the Mauritius. In 1878 Burma and Calcutta received two plants each from Ceylon. The first *Ceara* seedlings were sent to Singapore from Kew in 1877, involving four plants. Ceylon and Calcutta obtained 50 plants each later in the same year. Meanwhile 400 more plants were raised at Kew and these were distributed to Madras, Calcutta, Java and elsewhere in Oceania, Africa, and the West Indies.

A fairly large number of plants of the three major species of rubber was despatched to ensure successful propagation of future supplies in the various botanic gardens and by 1877, the function of Kew Gardens in distributing rubber plants to South and Southeast Asia might be considered to be at an end. The total cost of introducing the plants had amounted to £300, which, together with payments of £700 to Wickham and £505 to Cross, totalled £1,505, a small initial sum which eventually led to the development of an important agricultural industry in Southeast Asia.

**THE ROLE OF CEYLON AND MALAYA AS SEED SUPPLIERS**

The diffusion of rubber plants from Kew to Asia occurred in several successive 'waves', each reaching further and wider areas than the previous one. Standing at the apex of the hierarchy of seed suppliers, Kew initiated the first 'wave' of diffusion to the botanic gardens in Ceylon and British Malaya, which in turn disseminated seeds to botanic gardens and experimental stations in the other territories of Southeast Asia. The various local gardens completed the last phase of seed diffusion by supplying seeds and plants to increasing numbers of planters.

Ceylon sent substantial numbers of seeds and plants to India and Southeast Asia (Fig. 3A). In 1878, 516 plants, almost certainly from the original stock received from Kew, were consigned to Burma and a few cases to Nilambur, India. By 1880, 1,211 plants were disseminated from Ceylon to various botanic gardens as well as private planters. In 1881 the Andaman Islands and Johore were the recipients, and a Mr. Davidson in Singapore obtained 12 plants.

In the early 1880s, some of the trees in botanic gardens in Ceylon and Malaya began to yield seeds for distribution. The first *Hevea* tree to flower in Asia was one planted at Kuala Kangsar in 1877. It flowered in 1880, followed closely by

---


DIFFUSION OF RUBBER PLANTS IN SOUTH AND SOUTHEAST ASIA