

## Cinchona Cultivation in Nineteenth Century Ceylon

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Cinchona cultivation in nineteenth century Ceylon is yet an unexplored field in the island's history. However, it has received passing mention in the works of several authors.<sup>1</sup> The following is only an attempt to narrate cinchona's history with more details so as to bring out its significance rather explicitly to the student of Ceylon's economic history.

"In nothing has the immense utility of the Botanical Establishment been shown more completely," said the New Products Commission of 1881, "than in the history of (cinchona) cultivation."<sup>2</sup> Unlike cinnamon, coffee, tea, rubber and cocoa, the development and success of this export product of nineteenth century Ceylon were entirely due to the assiduous efforts of Dr. Thwaites, the Director of the Royal Botanical Gardens (RBG) at Peradeniya, and the personal influence of Sir William Gregory, the Governor of Ceylon (1872-1877).<sup>3</sup> Between the arrival and departure of Gregory, the cinchona acreage in Ceylon had increased from 500 to 6,000 and the "planters had begun thoroughly to appreciate the value of the new product, its suitability for the hill country and climate of Ceylon and the profits to be made from judicious cultivation."<sup>4</sup> Thus, although the significance of this industry loomed large after the coffee crash in early 1880s, its origin really dates back to the early 'sixties and 'seventies of the nineteenth century.<sup>5</sup>

Cinchona bark, the primary raw material for the manufacture of that most valuable febrifuge or antipyretic medicine, quinine, was originally obtained from the forests of New Granada, Ecuador, Peru<sup>6</sup> and Bolivia, through the Indian Cascarillos or Cascadores whose "wasteful and reckless manner of procuring" the bark are said to have threatened an early exhaustion of those priceless forests.<sup>7</sup> Therefore, in order to guarantee a regular supply of quinine — the nineteenth century talisman for almost all human ailments — several

1. See D. M. Forrest, *A Hundred Years Of Ceylon Tea 1867-1967*, London, 1967, pp. 88-93; L. A. Mills, *Ceylon Under British Rule*, London, 1933, pp. 248-250; L. A. Wickremaratne, in *University of Ceylon History of Ceylon* (ed.), Vol. III, pp. 106-112; S. Rajaratnam, "The Growth of Plantation Agriculture in Ceylon 1886-1931," *The Ceylon Journal of Historical and Social Studies*, Vol. IV, No. 1, 1961.
2. *Sessional Paper, No. XIII of 1881* (hereafter S. P.)
3. *Ibid*; *Tropical Agriculturist*, 1st November 1884, p. 379; D. M. A. Jayaweera, "History of Cinchona Culture in Ceylon," *Tropical Agriculturist*, 1943, No. 2.
4. J. Ferguson, *Ceylon in 1893*, Colombo: 1893, p. 75.
5. "S. P. XIII of 1881; D. M. A. Jayaweera, *op. cit.*
6. Cinchona bark is also known as Peruvian bark or the Jesuit bark.
7. *Encyclopaedia Britannica*, 11th edn.

attempts were made from 1849 onwards for the systematic propagation of the invaluable tree. After many initial disappointments, its cultivation was finally proven a success in Java; and the successful experience of the Dutch induced their chief economic rival, the British, to follow suit. Soon an expedition was sent under Sir Clements Markham, the Under-Secretary of State for India, to obtain young trees from South America. In 1861, a consignment of plants thus arrived and was planted in the Nilgiri Hills in India.<sup>8</sup>

No sooner the success story of cinchona reached Ceylon, Dr. Thwaites with the help of the Ceylon Government selected the present Hakgala Gardens as the site for a cinchona plantation and obtained the services of Mr. Mac-Nicholl, an experienced gardener from England.<sup>9</sup> However, experiments in cinchona cultivation went on both at Peradeniya and at Hakgala. As early as in 1862 the RBG at Peradeniya possessed more than 2,000 cinchona plants of all types, while Hakgala had as many as four hundred.<sup>10</sup> In the following year Dr. Thwaites was able to report that "not the least doubt need now be entertained as to the climate of Ceylon being suitable for the growth of cinchona."<sup>11</sup> By 1865, he was confident that it would become "before very long, one of the most important products of the island."<sup>12</sup> After visiting Hakgala, Sir Markham reported that "no place in the East has so vividly reminded me of the cinchona pajonales of Peru as the view from the Hakgala plantation."<sup>13</sup>

It is a known fact in economic theory that entrepreneurs are normally reluctant to invest in new economic ventures unless they are assured of a substantial profit. In the context of a capitalist economy no agriculturist or industrialist will ever produce a new commodity unless he feels confident of a ready market and a profitable price for his product. In Ceylon also, especially when King Coffee was promising high profits and a bright future during the fifth, sixth and seventh decades of the nineteenth century, an initial reluctance in undertaking the cultivation of cinchona was evident among the planters. Coffee was considered to be the safest speculation for profitable investment, and cinchona was grown at the beginning mostly as ornamental trees, or to provide shelter to the coffee plants and to mark the boundaries of the estates.<sup>14</sup> But when its commercial value became evident the planters' demand for young plants increased annually. Up to 1865, altogether 43 persons had applied for a total of 439,274 plants, of whom three had requested to have as many as 100,000 each.<sup>15</sup> The Director of the RBG could not

8. *Ibid.*

9. *S. P. XIII of 1881.*

10. Report of the Director of Royal Botanical Gardens (RBG) in *Ceylon Administration Reports (CAR)*, 1862.

11. Report of RBG in *CAR*, 1863.

12. Report of RBG in *CAR*, 1865.

13. Report of C. R. Markham contained in *S. P. XIV of 1866.*

14. *Tropical Agriculturist*, 1st October 1883, p. 261; J. Ferguson, *op.cit.*, p. 237.

15. Report of RBG in *CAR*, 1865.

satisfy the entire demand and the total supply was only 180,000.<sup>16</sup> In 1866, another 213,300 were issued from Hakgala and in that year Dr. Thwaites abandoned the idea of establishing large scale cinchona plantations at Hakgala and decided to keep it as the sole centre for experimentation and distribution.<sup>17</sup>

Until 1872, young plants were distributed free of charge to the applicants in order to popularise their cultivation.<sup>18</sup> After that there was a change of policy. By now things had changed. The suitability of the climate had been proved and the profitability of the enterprise had been witnessed. Already a small consignment of bark exported from Ceylon had fetched a price of 2s. 6d per lb. in London, which was much higher than those obtained by the Ootacamund exports from India.<sup>19</sup> And the consignee in London mentioned in his observations that "there must be something in the soil or climate of Ceylon peculiarly adapted to the perfect growth of this plant, which we think should make it more extensively grown in the island."<sup>20</sup> From a paltry 28 ozs. in 1869 worth Rs. 50/- cinchona exports from Ceylon had increased to nearly 11,500 lbs. in 1872 fetching a total value of Rs. 64,000/-.<sup>21</sup> Because of its profitability, some of the planters, without depending on the Hakgala supply, began establishing nurseries of their own for the propagation of plants from seeds and cuttings.<sup>22</sup> Therefore, as a matter of policy, it was now decided not to issue young plants from Hakgala freely, but to sell them at a price of Rs. 5/- per thousand.<sup>23</sup>

The price did not deter the prospective applicants. Within the next four years, from 1873 to 1876, a total of not less than 3,400,000 plants were issued.<sup>24</sup> As expected, cinchona was steadily capturing a significant place in Ceylon's planting scene. "It is no less gratifying to perceive," addressed the Governor to the Legislative Council on planting, "that this growing enterprise is not confined, as was formerly the case, almost solely to the cultivation of coffee, but that there is a manifestly increasing disposition to cultivate other plants of economic value to which the climate of Ceylon is equally congenial."<sup>25</sup> Obviously Gregory was commenting on cinchona. "A fresh string had been added," as a planter observed, "to the planters' bow."<sup>26</sup>

There are many varieties of cinchona trees among whom as many as thirty-six have been distinguished. But of these only about a dozen were

16. Report of C. R. Markham in *S. P. XI* of 1865.

17. Report of RBG in *CAR*, 1866.

18. Report of RBG in *CAR*, 1872.

19. Governor's Address to the Legislative Council, 25th Sept. 1872; Report of RBG in *CAR*, 1871.

20. Report of RBG in *CAR*, 1871.

21. Customs returns, published in *Tropical Agriculturist*, 1st August 1881, p. 222.

22. Report of RBG in *CAR*, 1873.

23. Report of RBG in *CAR*, 1872.

24. The amounts for individual years being, 1873-617,500; 1874-826,000; 1875-794,500; and 1876-1,196,000. From reports of RBG in *CAR*, 1873, 1874, 1875, and 1876.

25. Governor's Address to the Legislative Council, 8th September 1875.

26. F. Lewis, *Sixty Four Years in Ceylon*. Colombo: 1926, p. 78.

economically utilised as furnishing the commercial cinchona.<sup>27</sup> Chief among them were the *cinchona succirubra*, *cinchona officinalis*, *cinchona calisaya* and *cinchona ledgeriana* varieties. The commercial value of their barks depended on the content of quinine, quinidine, cinchonine and cinchonidine — the chief alkaloids from which the medicinal drug was extracted.<sup>28</sup> Although the *calisaya* and *ledgeriana* varieties were superior in their alkaloid contents, these were not extensively cultivated in the 1870's. The *succirubra* and *officinalis* varieties were the common ones. Yet, after 1870 Hakgala shifted its emphasis to the superior varieties and concentrated mainly on their propagation, while the planters had to be content with their own nurseries for the supply of *succirubra* and *officinalis*.<sup>29</sup>

Although cinchona cultivation was expanding throughout the 'seventies, its product did not gain much prominence in the country's exports until after 1880. One reason was the usual time lag between planting and harvesting that is common to all agricultural commodities. A period of four to six years was the average time lag in the case of cinchona. But the factor that really pushed cinchona to the forefront of exports was not the natural increase in its output but the alarming drop in the exports of coffee which hitherto dominated the export scene. The total exports of coffee dropped from 2,505,000 cwts. between 1878 and 1881 to 1,385,000 cwts. between 1882 and 1885, a decline of nearly forty-five per cent.<sup>30</sup> *Hamelia vestatrix*, the notorious leaf disease, had ruined the coffee estates and its impact had been catastrophic. As Governor Gordon remarked, the planters were "reduced from affluence to embarrassment by no error or fault of their own, but through the mysterious ravages of a microscopic fungus."<sup>31</sup> According to one observer many of the plantations were deserted, the capitalists took fright, superintendents were thrown out of employment and set off to other countries. Of the 1700 planters, according to him, at least 400 had migrated.<sup>32</sup> "Those who could clear out had cleared out, but many there were who were faced with the double calamity of being unable to go, and unable to see a hope before them."<sup>33</sup> To those indomitable ones, cinchona was the immediate salvation. Thus in the early 'eighties of the century when many of them took to its cultivation on a large scale, it became the "foremost product of Ceylon." In some of the older districts the *succirubra* variety was found completely supplanting the coffee which was allowed gradually to go out of existence as the former grew up amongst it.<sup>34</sup>

27. W. Elborne, "A Summary of the Cinchona Barks of Commerce," *Tropical Agriculturist*, 1st March 1883, p. 704-707.

28. *Ibid.*

29. Reports of RBG in *CAR* 1879 and 1880.

30. *Blue Books of Ceylon*.

31. Governor's Address to the Legislative Council, 6th Dec. 1883.

32. John Ferguson's interview to the "Pall Mall Budget" reproduced in *Tropical Agriculturist*, 1st October 1884, p. 331.

33. F. Lewis, *op. cit.* p. 124.

34. Report of RBG in *CAR*, 1882.

The expansion of cinchona cultivation in the 'eighties and its decline in the 'nineties is clearly depicted in the following export figures:

TABLE I : Total Exports of Cinchona from Ceylon (1871-1901)<sup>35</sup>

	<i>Volume in thousand lbs.</i>		
1871 - 77	..	..	202.8
1878 - 81	..	..	3,170.7
1882 - 85	..	..	37,746.4
1886 - 89	..	..	49,727.1
1890 - 93	..	..	24,656.1
1894 - 97	..	..	5,417.3
1898 - 1901	..	..	2,751.6

From about 3 million lbs. in 1878-81 to over 37 million in 1882-85 is more than an increase of 1200 per cent. The forty-five per cent decline in coffee exports noted earlier was more than adequately compensated by cinchona. But what was more important at that time was not the volume but the value of exports. The planters' interest in cinchona was purely pecuniary and even in that its results were encouraging. Between 1878-81 and 1882-85 the value of coffee exports dropped from a total of Rs. 128,955,000 to Rs. 55,620,000. This is a decline of nearly 57 per cent.<sup>36</sup> In contrast, the value of cinchona exports for the same period jumped from a total of Rs. 3,222,000 to Rs. 16,468,000, an increase of more than 500 per cent. Of course cinchona filled only 18 per cent of the gap left by coffee earnings. But coffee had a growth of more than forty years while cinchona was only completing its first decade. Thus from the point of view of the planters cinchona seemed to be promising a bright future. Hence, the rush for its cultivation in the early 'eighties. In the light of this background it should be stressed that the view that "neither the origin of the (cinchona) industry nor its popularity had much connection with the decline of coffee"<sup>37</sup> needs re-examination. The "popularity," if not the "origin," of cinchona during the early 'eighties certainly did have close links with the collapse of coffee.

There were two contrasting influences that worked to expand the cinchona industry. One was the attractive prices prevailing in the London market during the 'seventies and early 'eighties which pulled the planters towards cinchona, and the other stemmed from the cumulative adversities arising from the coffee crash and the Oriental Bank Corporation's crash in early 1884, which pushed them to search desperately for some alternative source of income.

35. *Blue Books of Ceylon*. Up to 1877 the export figures are given in terms of pounds and packages. In addition to the amount shown in the table a further quantity of 794 packages had been exported up to 1877 whose weight is not known.

36. *Blue Books of Ceylon*.

37. L. A. Wickremeratne in *University of Ceylon History of Ceylon*, Vol. III., p. 110. It is not clear what Mr. Wickremeratne means by the statement that "coffee had brought about a certain climate which was frankly uncongenial to the development of cinchona cultivation." Whether this refers to the geographical or economic or, for that matter the institutional, environment, the statement is factually incorrect.

With regard to the former one, the demand for cinchona bark was a derived demand. It was not a commodity for direct consumption like cinnamon or coffee, but the chief raw material for the manufacture of the quinine drug. Hence, the price fetched by the bark depended very much upon the price offered for quinine. During the 'seventies and early 'eighties the price for a unit of quinine was high and so was that for the bark. The following figures show this correlation unmistakably.

TABLE II : Average Price of Quinine and Quinine Bark in the London Market<sup>38</sup>

			Quinine (price per oz.)	Quinine Bark (price per lb.)
1871	..	..	7sh. 3d.	2sh. 5d.
1872	..	..	7" 8"	1" 9 1/2"
1873	..	..	7" 9"	1" 9 1/4"
1874	..	..	7" 10"	1" 10 1/4"
1875	..	..	6" 10 1/2"	1" 9 3/4"
1876	..	..	8" 6"	1" 10 1/4"
1877	..	..	13" 6"	2" 0 1/2"
1878	..	..	11" 10 1/2"	2" 10 1/4"
1879	..	..	12" 3"	2" 11 1/4"
1880	..	..	11" 10 1/2"	2" 7 3/4"
1881	..	..	10" 0"	2" 7 "
1882	..	..	9" 10 1/2"	

The average price of quinine bark provided in the table does not reveal the whole truth. In fact the Ceylon product was fetching much more than the average prices because its quality was superior to that of many of her rivals. "If planters could only see the dullness of the South American bark sales at auction compared with those of India and Ceylon," wrote one observer, "they would be much inspired. The cinchona salesroom every alternative Tuesday is becoming quite a rendezvous for Ceylon planters in England."<sup>39</sup> According to Ferguson, some of the early planters of cinchona had profited heavily to the tune of £100 or more for an acre.<sup>40</sup> In the case of two estates Frotoft and Tymawr, with a total extent of 250 acres fully planted with *cinchona officinalis* 40 acres were harvested in 1881 which earned a gross revenue of £8,000 at an average of £200 per acre.<sup>41</sup> As another example, Patree estate at Dickoya had 4000 trees of the *succirubra* variety which, when coppiced for one year, yielded no less than 6 tons of marketable bark at an average rate of 3 3/4 lbs. per tree while the prices realized were much higher than the average prices given in the foregoing table, exceeding 4sh. and 5sh. per lb. for a considerable portion of the bark.<sup>42</sup> Thus, in the cultivation of cinchona up to the mid-eighties "the return per tree or per acre was not simply handsome, but enormous."<sup>43</sup>

38. *Tropical Agriculturist*, 1882-1883, p. 764; Also see *Tropical Agriculturist*, 1st November 1884 for the average fortnightly prices at the London sales.

39. *Tropical Agriculturist*, 1st September 1882, p. 241.

40. J. Ferguson, *Ceylon in 1893*, p. 237.

41. *Tropical Agriculturist*, 1st March 1882, p. 745.

42. *Tropical Agriculturist*, 1st October 1881, p. 357.

43. J. Ferguson, *op.cit.*, p. 237.

While higher prices and handsome profits encouraged the planters to invest in cinchona, their financial straits pushed them further towards it. While coffee itself was ailing from natural factors, the planters faced another calamity from the world of finance. This followed the failure of the City of Glasgow Bank in England. In the context of the other financial difficulties there, this event had disastrous effects on the Oriental Bank Corporation in Colombo and thereby on the planting enterprise. The OBC, which was very closely involved in financing the coffee estates, closed its doors for business on the 3rd of March 1884. This accentuated the difficulties arising out of the failure of coffee. A large number of important business firms in the island, such as the Sabonadiere Co., and Alston Scott and Co., which were running a number of coffee estates, were closed down as a result.<sup>44</sup> "The crisis was acute. The colony was practically in a state of paralysis."<sup>45</sup> "The planters were in sheer desperation. And in that background of darkness cinchona provided a saving light.

Besides, the comparatively small amount of investment needed to open up a cinchona plantation also acted as an additional incentive for the bankrupt planter.

The first impact of Ceylon's entry into the world cinchona market was to drive out the South-American supplies. Since the supply from Ceylon almost flooded the world market, prices were depressed and at those reduced values South-American producers could not bear the cost of harvest and transport.<sup>46</sup>

Besides the South-American natural source, the world's position in cinchona cultivation during the mid-eighties was as follows.

TABLE III : World Production of Cinchona Bark<sup>47</sup>

Country	Acreage	Estimated no. of trees
India .. .. .	18,300	26.5 million
Java .. .. .	15,000	20.0 ..
Ceylon .. .. .	64,000	128.0 ..
Strait Settlements Burma, ) Borneo, North ) Australia etc. )	500	1.0 ..

Estimating the total extent of the planted area Ceylon is not an easy task, because of the scattered nature of the cinchona trees among coffee and bushes. Cinchona was the sole crop only in 23,853 acres by 1885.<sup>48</sup> In others it was interspersed with either coffee or tea or with both. According

44. Thomas Villiers, *Mercantile Lore*, Colombo: 1940, p. 147.

45. F. Lewis, *op.cit.*, p. 128.

46. J. C. B. Moens, "The Cinchona Market in 1884 in Europe and America," *Tropical Agriculturist*, 1st July 1885, pp. 57-61; Also see the report of RBG in *CAR*, 1884.

47. *Tropical Agriculturist*, 1st November 1884, p. 379.

48. *The Ceylon Handbook and Directory*, 1885-86, pp. 26-27.

to the *Ceylon Directory* which contains the most "substantially accurate statistics" regarding the planting enterprise, there was a total extent of 70,133 acres in which cinchona was planted along with coffee; in another 6,574 acres it was planted amidst tea, and a further 22,822 acres had all three crops, namely coffee, cinchona and tea.<sup>49</sup> It is also said that the acreage under cinchona in 1885 was 16,000 fewer than it was in 1883.<sup>50</sup> Taking all these into consideration, one can accept the 64,000 figure as the maximum acreage under cinchona during its peak period.

Of the 47 major planting districts enumerated in the *Directory* only Dimbulla and Pussellawa had more than 2,000 acres each solely devoted to cinchona. In addition, the former had about 18,700 acres and the latter about 3,300 acres in which cinchona was cultivated with coffee. Three other districts, namely, Madulsima, Badulla and Uda Pussellawa came next in rank with about 1,500 to 2,000 acres each planted entirely with cinchona. They also had a total of about 12,700 acres mixed with coffee and cinchona. Five more districts — Dickoya, Haputale, Kotmale, Lower Hewaheta and Nuwara Eliya — had between 1000 and 1300 acres each with cinchona as the only crop and a total of 14,725 acres with both cinchona and coffee. Of the remaining 37 districts, five had cinchona plantations of more than 500 acres each, seventeen between 100 and 500 acres each and fifteen with less than 100 acres each. A few of these did not have any.<sup>51</sup> All in all it can be concluded that cinchona was grown in most districts which had an elevation of at least 3,000 feet.

With nearly 65 per cent of the world's cinchona acreage and with more than 70 per cent of its planted trees, Ceylon was supplying almost three-fourths of the world bark manufacture.<sup>52</sup> It was no exaggeration when one observer commented that "the price of cinchona depends entirely on the shipments from Ceylon."<sup>53</sup> According to one estimate 300,000 lbs. would have been the annual world consumption of quinine at that time, and to produce that quantity 15 million lbs. of bark would have been adequate.<sup>54</sup> But in 1886 alone, Ceylon exported an all time record of 14,675,663 lbs., a figure which surpassed all expectations.<sup>55</sup> Before that in 1885, the Director of RBG had reported that Ceylon exports "completely dominated the London market."<sup>56</sup>

However, the prosperity of cinchona was only a meteoric phenomenon. Soon came its downfall. In a sense the main reason for its doom lay in its very success. "In the matter of cinchona," wrote one planter, "Ceylon has

49. *Ibid.*

50. *Ibid.*

51. *Ibid.*

52. *Tropical Agriculturist*, 2nd August, 1880, p. 138.

53. *Op. cit.*, p. 276.

54. *Tropical Agriculturist*, 1st March 1882, p. 812.

55. *Blue Book of Ceylon*, 1886. According to the annual report of RBG the exports for that year had been even more — 15,364,912 lbs.

56. Report of RBG in *CAR*, 1885.



for a time committed both murder and suicide."<sup>57</sup> Murder because the destruction of coffee, according to him, was "accelerated in many instances by the cinchona planted in its rows;" and suicide because the emphasis was always on quantity rather than on quality.<sup>58</sup> Yet, a more detailed analysis is necessary before accepting this verdict on the causes for its rapid extinction.

As early as 1882, amidst the buoyancy in the cinchona trade, it was discovered that a large quantity of inferior bark from Ceylon had gone into the market. Messrs. Rucker and Bencraft's *Weekly Circular* of 21st December 1882 had the following to say in this respect. "The shipments from Ceylon are very heavy, and altogether beyond what was at present expected, but they are also somewhat deceptive. A very considerable portion of the barks are twigs, scrapings, weak branch and barks, which in bales appear important and affect statistics, but from a sulphate of quinine point of view, of little value."<sup>59</sup> In 1883, the Director of RBG also commented on the "poor stuff" exported from Ceylon.<sup>60</sup> And in 1884, Governor Gordon must have meant the same when he said that the "increased exportation must not be attributed to any improvement in the prospects of the cinchona planters, but rather to causes which are by no means indications of prosperity among those who have devoted themselves to its culture."<sup>61</sup> Above all these, the declining average values of cinchona exported from Ceylon between 1880 and 1889 explains what was going on underneath.

TABLE IV : Annual Exports of Cinchona from Ceylon (1880-1889)<sup>62</sup>

				Volume (lbs)	Value (Rs.)	Average Value (Rs. Cts.)
1880	..	..	..	1,161,989	1,267,141	1.09
1881	..	..	..	1,314,554	1,264,615	0.96
1882	..	..	..	4,665,944	3,849,171	0.83
1883	..	..	..	7,489,005	4,493,403	0.60
1884	..	..	..	11,865,280	3,973,879	0.35
1885	..	..	..	13,736,171	3,370,250	0.29
1886	..	..	..	14,675,663	4,370,250	0.29
1887	..	..	..	13,113,067	2,440,212	0.19
1888	..	..	..	12,482,817	1,804,012	0.14
1889	..	..	..	9,455,641	1,687,559	0.18

This is a classic case of a backward sloping supply curve. There were two reasons for this downward trend in average value. One was the drop in the price of manufactured quinine that caused a reduction in bark prices. Howard's quinine which was 12sh. 2½d. in 1878-79 fell to 4sh. per ounce in 1884 and to 2sh. 4d. in 1886-1887.<sup>63</sup> The other was the desire on the part

57. A Planter (R. W. Jenkins), *Ceylon in the Fifties and Eighties*, Colombo: 1886, p. 18.

58. *Op.cit.*, p. 17.

59. Quoted in the Report of RBG in *CAR*, 1882.

60. Report of the RBG in *CAR*, 1882.

61. Governor's Address to the Legislative Council, 15th October 1884.

62. *Blue Books of Ceylon*.

63. Report of the RBG in *CAR*, 1884; J. Ferguson, *op.cit.*

of the planters to increase their income as much as possible even in the face of declining prices. Their sheer desperation forced them to sacrifice quality for quantity, which then furthered the trend. The market price of bark fell as a consequence from 2sh. 10¼d. per lb. in 1878 to 5½ to 6d. in 1884 and to 2d. in 1888.<sup>64</sup> "My poverty and not my will consents," said one planter, "to harvest bark from young, immature trees."<sup>65</sup> "Who could have expected," said a cinchona merchant to Ferguson, "that when we gave out £75,000 in advances to South America on contracts based on 48 to 50 cts. of a dollar per lb. for 2 per cent bark, Ceylon was going to bring the price down to 1d. the unit."<sup>66</sup> Such was the calamitous influence of Ceylon's entry.

There was yet another reason which also contributed significantly to the falling prices of cinchona bark. This was the formation of a European and American Quinine Manufacturers Convention in 1883. Its twin objects were to limit the manufacture of sulphate of quinine and to keep the price of that medicine at an artificially fixed height.<sup>67</sup> As a result of this syndicate, the "proper proportion between the value of quinine in the bark and that of the prepared sulphate of quinine was entirely disturbed."<sup>68</sup> Imported barks were all not utilised and the resulted pile of stocks militated against the free play of market forces. Ultimately, the bark producers got the worst out of the deal. Of course, the ring of quinine makers broke up in January 1884 which was soon followed by the failure of the great quinine factory in Milan.<sup>69</sup> Yet, there was no recovery in prices. With the already accumulated stocks, the increasing supply of high and low quality barks from exporters continued to keep the prices down.

Above all, the inelasticity of demand for cinchona — a factor common to all medicinal commodities — would in any case have restricted the expansion of this industry.

However, inelasticity of demand for a commodity need not necessarily be a disincentive for the producers if they can control and regulate their supply. As early as the year 1880 there were suggestions that the producers of bark in Ceylon should form a syndicate to regulate the annual supplies.<sup>70</sup> These suggestions fell on deaf ears. The *Tropical Agriculturist* in an editorial note stated that "Ceylon cinchona planters have, for several years to come, more to fear from themselves in the way of competition than from any other quarter."<sup>71</sup> In 1883, the Director of RBG was even thinking of a local manufactory to help the local planters. "A local factory for extracting alkaloids on the spot," he wrote, "will be an equal benefit to the growers of cinchona and consumers of

64. Reports of the RBG in *CAR*, 1884 & 1888; J. Ferguson, *op.cit.*

65. J. Ferguson, *op.cit.*

66. *Ibid.*

67. J. C. B. Moens, *op. cit.*.

68. *Ibid.*

69. *Tropical Agriculturist*, 1st July 1885, p. 39.

70. *Tropical Agriculturist*, 2nd August 1880, pp. 138, 273 & 276.

71. *Tropical Agriculturist*, 1st November 1886, p. 329.

the febrifuge alkaloids in the East."<sup>72</sup> But before Ceylon could implement or even plan this project, India had already established a manufactory and produced as much as 9,296 lbs. of alkaloid mixture between 1880 and 1881.<sup>73</sup>

Another way out of the situation was for the planters to have concentrated on better varieties like *c. calisaya* and *c. ledgeriana*. According to J. C. B. Moens, the Director of the Java Plantations, the Ceylon barks contained an average of 1½ to 2 per cent of quinine while that of the Javanese varieties ranged from 2.22 to 3.5 per cent. In extreme cases, the air dried barbs of *ledgeriana* had even yielded as high as 9.8 per cent.<sup>74</sup> By 1885 even the London Brokers were doing all they could to attract the Javanese barks. Some attempts were made in Ceylon also to introduce these better varieties but not with much success.

In any case, a trend of apathy had set in after the mid-eighties towards cinchona cultivation in Ceylon. The decline, not only in the annual value but also in the annual volume, continued unchecked throughout the rest of the century. The average annual exports dropped from 12,600,000 lbs. in 1885-89 to 5,437,000 in 1890-94 and to 910,000 lbs. in 1895-99, while their corresponding values fell from Rs. 2,855,000 to Rs. 604,000 and to Rs. 64,000. By the end of the nineteenth century the average value per lb. of cinchona was only about 7 cents.<sup>75</sup> "Our poor barks are however, now scarcely worth harvesting," wrote the Director of RBG in 1891.<sup>76</sup>

One reason suggested for this rapid extinction was the unsuitability of Ceylon's climate and soil. This sounds rather strange because Thwaites himself, an able botanist, was speaking to the contrary and was expressing confidence in the 'sixties. But his successor, Henry Trimen had begun to take a rather different view by 1883: "much of our shallow soil and cold sub-soil, and many of our wet windy and exposed hill sides are very unsuitable for cinchona as a permanent cultivation."<sup>77</sup> This reveals that the expansion which took place in the early 'eighties was not so much the expression of a prosperous future for cinchona in Ceylon, but more that of the desperate situation faced by the planters. Cinchona was just a floating raft for an otherwise sinking ship. As its cultivation proceeded through the 'eighties a heavy mortality rate was noticed among seedlings and young trees. "Thousands and thousands of cinchona are planted out every year," wrote a planter from Dickoya, and "the results get worse and worse as years go on."<sup>78</sup> "I feel convinced," said another, "that the trees we are now cultivating from

72. Report of RBG in *CAR*, 1883.

73. *Tropical Agriculturist*, 1st August 1882, p. 177.

74. J. C. B. Moens, *op.cit.* Also see the comments on Moens' paper in *Tropical Agriculturist*, 1st July 1885, pp. 28-29.

75. *Blue Books of Ceylon*.

76. Report of RBG in *CAR*, 1891.

77. Report of RBG in *CAR*, 1883.

78. *Tropical Agriculturist*, 1st October 1883, p. 261.

seed grown in the island have not the same vigour as the original parents first planted, and that the second generation is even more enfeebled."<sup>79</sup>

Thus the indiscriminate cultivation that led to the mad rush in the late 'seventies and early 'eighties had come to a virtual halt after 1885. This means that the exports after that were the product of the trees planted in the late seventies and not the result of replanting or fresh expansion. Falling prices and increasing mortality had discouraged many by 1884 and in several estates cinchona was either removed to make room for the new favourite, tea, or to give old King Coffee a better chance.<sup>80</sup> The preference for tea is understandable in the light of its increasing popularity after 1880. But the preference for coffee once again shows that cinchona, for all its explosive increase in volume, meant very little in per unit value as compared to coffee. Neither when cinchona was at its zenith nor when coffee was at its nadir did the total value earned by the former exceed that of the latter. Furthermore, with the emergence of tea on the planting scene, the destiny of cinchona was sealed. Already, during the heyday of cinchona, between 1882 and 1885, tea exports had brought in a total earning of nearly 5.7 million rupees. And in the next four years between 1886 and 1889 the value of its total exports had exceeded that of cinchona by nearly 33.5 million rupees. Table V below explains these points very clearly.

TABLE V : Total Volume and Value of Coffee, Cinchona and Tea Exports from Ceylon<sup>81</sup>

	Coffee		Cinchona		Tea	
	Volume (thousand cwt.s.)	Value (thousand Rs.)	Volume (thousand lbs.)	Value (thousand Rs.)	Volume (thousand lbs.)	Value (thousand Rs.)
1878 - 1881	2504.9	129,050	3,170.7	3,222	612.2	580
1882 - 1885	1385.2	55,963	37,746.4	16,468	9,128.7	5,786
1886 - 1889	585.2	33,429	49,727.1	10,302	79,850.8	43,888
1890 - 1893	278.5	19,024	24,656.1	2,820	268,069.7	126,623
1894 - 1897	140.3	11,867	5,417.3	377	408,518.8	184,161
1898 - 1901	51.2	3,360	2,751.6	261	545,597.6	200,945

Acreage under tea also had increased from 250 in 1873 to 35,000 in 1883; and by 1885 more than 87,000 acres were planted solely with tea,<sup>82</sup> although only 4,700 acres of them were actually yielding a crop.<sup>83</sup> On an average, although a lb. of tea was bringing more money than a lb. of cinchona between 1878 and 1885, yet the planters preferred the latter for various reasons; such as, the costliness of tea cultivation, lack of sophisticated skill to prepare tea for the market and the high demand for Chinese tea in the U.K. market.<sup>84</sup> But it was only a matter of time for that preference to be reversed. Ceylon tea

79. From Mr. Owen's paper read before the Maskeliya Planters' Association, as reported in the *Tropical Agriculturist*, 1st October 1883, p. 278.

80. *Tropical Agriculturist*, 1st February 1884, p. 559; L. A. Mills, *op.cit.*, p. 249.

81. *Blue Books of Ceylon*.

82. *The Ceylon Handbook and Directory*, 1885-1886, pp. 26-27; J. Ferguson, *Ceylon in the Jubilee Year*, Colombo: 1887, p. 76.

83. S. Rajaratnam, "The Ceylon Tea Industry," *The Ceylon Journal of Historical and Social Studies*, Vol. 4, No. 2.

84. L. A. Mills, *op.cit.*, pp. 249-250.

which satisfied only 2 per cent of the U.K. tea consumption in 1885, had increased its percentage to 33 by 1895.<sup>85</sup> In terms of value also, while the price of cinchona had fallen drastically from 35 cents a lb. in 1884 to 14 cents in 1888,<sup>86</sup> that of tea reached as much as 66 cents a lb. in 1884 with a slight reduction to 63 cents in 1888.<sup>87</sup>

But above all there was another factor that drove out cinchona from the planting scene. That was the increasing competition from Java — the traditional enemy of Ceylon in commercial exports. "Our place as dominating the market is being taken by Java," wrote the RBG Director in 1889. "I consider it has been sufficiently proved by experience," he continued, "that neither the soil nor the climate of Ceylon are well suited for cinchona trees, which have shown themselves here to be, as a rule, short-lived and unhealthy..... With the large consignments of bark of high quality from Java to complete with, it will be more than ever useless to grow inferior varieties."<sup>88</sup> "The history of cinchona culture in Ceylon — a most interesting and instructive one — is drawing to its close," he reported again in 1891, "the future of this industry belongs to Java, which has followed wiser counsels and has known how to wait."<sup>89</sup>

The decline of cinchona cultivation in Ceylon was as quaky as its explosive rise. Yet, one cannot belittle the significant role it played during one of the most crucial moments of Ceylon's economic history.

TABLE 6 : Annual Values of Coffee, Cinchona and Tea Exports (1878-1901)<sup>90</sup>

	Values in thousand rupees				Percentages		
	Coffee	Cinchona	Tea	Total	Coffee	Cinchona	Tea
1878	33,952	171	21	34,144	99.4	0.5	0.1
1879	40,292	519	120	40,931	98.4	1.3	0.3
1880	33,337	1,267	215	34,819	95.7	3.6	0.7
1881	21,373	1,265	323	22,961	93.1	5.5	1.4
1882	17,985	3,849	592	22,426	80.2	17.2	2.6
1883	13,521	4,493	918	18,932	71.4	23.7	4.9
1884	11,798	4,152	1,436	17,386	67.9	23.8	8.3
1885	12,317	3,974	2,844	19,135	64.4	20.8	14.8
1886	7,964	4,370	5,107	17,441	45.7	25.1	29.2
1887	11,429	2,440	8,301	22,170	51.6	11.0	37.4
1888	7,729	1,804	12,625	22,158	34.9	8.1	57.0
1889	5,972	1,688	17,860	25,520	23.4	6.6	70.0
1890	5,742	1,053	22,900	29,695	19.3	3.5	77.2
1891	5,731	670	30,474	36,875	15.5	1.8	82.7
1892	3,294	822	32,527	36,643	9.0	2.2	88.8
1893	4,257	275	40,723	45,255	9.4	0.6	90.0
1894	2,817	202	46,103	49,122	5.7	0.4	93.9
1895	2,857	74	49,291	52,222	5.5	0.1	94.4
1896	1,721	69	41,836	43,626	3.9	0.2	95.9
1897	1,472	33	46,931	48,436	3.0	0.1	96.9
1898	879	98	47,734	48,711	1.8	0.2	98.0
1899	1,350	48	51,865	53,263	2.5	0.1	98.4
1900	594	65	53,735	54,394	1.1	0.1	98.8
1901	537	50	47,611	48,198	1.1	0.1	98.8

85. S. Rajaratnam, *op.cit.*

86. See table IV, p. 11.

87. S. Rajaratnam, *op.cit.*

88. Report of the RBG in *CAR*, 1889.

89. Report of the RBG in *CAR*, 1891.

90. *Blue Books of Ceylon*.

The falling values of the total export earnings in the planting enterprise between 1879 and 1886, as shown in table VI, amply proves the fact that had it not been for cinchona the plantation sector would have found it hard to survive. True, its role was vital for only about five years from 1882. Yet, they were the most desperate years when "the prospect of improvement was doubtful in the extreme."<sup>91</sup> Between 1882 and 1886 cinchona had contributed quite substantially to the total value of plantation exports. While the grand staple, coffee, was in its death agonies and while tea was still in its embryonic stage, it was cinchona that became the life saver. The planters who survived the crisis wondered later "how people kept their heads" in the midst of such "black despair." Undoubtedly it was cinchona that kept the planting enterprise going. As mentioned already cinchona was only a raft until tea became a rescue ship carrying the shipwrecked capitalists and others to Valhalla. Yet, the life saver was not the ship but the raft.

91. F. Lewis, *op.cit.*, p. 128.

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