CHAPTER II

IMPERIAL BOTANY AND WILLIAM ROXBURGH IN THE COROMANDEL COAST

Advancement in mathematics and the making of scientific instrument\(^1\) in the fifteenth century facilitated navigation and encouraged the exploration of sea routes. It helped in providing a large area to ‘discover’ the natural resources for the service of empire. By the eighteenth-century, natural history contained a chain of inquiry which included local studies of botany and zoology, collection of natural artefacts, geographical and meteorological descriptions, geological study, landscape and gardening design, and other forms of inquiry.

In the eighteenth and the early nineteenth century, British and French entered in the field of natural exploration. France gradually improved its natural information from different colonies and got one of the wealthy region of ‘St. Domingue’.\(^2\) As far as Britain was concerned, as David Mackay pointed out in his book *In the Wake of Cook* that Britain entered very late in the scramble for colonies and got less productive areas. For Britain, the information of natural world became foremost need to sustain in front of their rivals. That is why natural exploration was well supported by political gallery as well as intellectual arena from the seventeenth century onwards.

Colonies were seen as land ready to be fenced off, which could be cultivated and converted into private property. The influence of natural philosophy upon the intellectual origins of the

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\(^1\) The only way navigators could estimate a vessel’s longitude was by dead reckoning and measuring variation. Celestial navigational instruments were designed to help find a vessel’s latitude, the approximate time, and the direction of true south. The quadrant, the earliest device used to find latitude, first taken to sea around 1460. Astrolabe was another early latitude device which first known to be at sea about 1481.

\(^2\) By 1776 the single colony of Saint Domingue produced more wealth than the whole of the Spanish Empire in the Americas. Contemporary Saint Domingue meant a great deal of France and rightly called a ‘pivot’ in the world economy. Because of its contribution the French West Indian possession was then the world’s leading producer of both sugar and coffee. For details see, James E. MacClellan III, *Colonialism and Science: Saint Domingue in the Old Regime* (Chicago: The University of Chicago press, 2010).
British Empire developed through three phases between the late sixteenth to the early eighteenth century. First phase was laid by Francis Bacon through his monumental work *New Organon* (1620). He observed new world as a storehouse of information which could be explored by the travellers and merchants. At the beginning, for Bacon, colonies posed the dangerous moral threat of corruption. But gradually, as population in New England multiplied, the colonies began to impress to natural philosophers. In the second phase, especially through the efforts of Robert Boyle, a programmatic suggestion was put forward. He embraced a view in which man’s dominion over nature can be restored by promoting a relationship between naturalists and the English colonies. This relationship enabled England to harness a wealth of information from the ‘new world’. Boyle’s ideas regarding the beneficial coexistence of colonies and natural philosophy were put into practice by the Royal Society, London. In due course of time, different voyages and expedition, such as, Sir Hans Sloane travelled to Jamaica and St. Helena; Edmond Halley travelled to America, enhanced the natural knowledge as well as colonial possession of Britain. The third and final development was connected with the John Locke’s philosophy of epistemic empire. The idea of improvement was the abiding core of Locke’s Philosophy. Improving the world was a central belief of Locke’s epistemology. Locke argued that the land which we cultivate could be legitimately taken as private property. Locke’s theory had implications for the Atlantic colonies. In this context of these three philosophies, British started their way forward for natural exploration.

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4 John Lock worked as a secretary to the Lords Proprietors of Carolina from 1668, served as the Secretary to the Council for Trade and Plantations and was subsequently the most influential member of that Council’s successor, the Board of Trade.
The philosophical developments induced the need of learned societies where knowledge was not checked in one point. Italy\textsuperscript{6} was the first country to establish scientific societies and academies for the advancement of philosophy, literature and the arts. However, the focus on practical and technical disciplines, like Cartography and naval sciences, started only from the eighteenth century.\textsuperscript{7} ‘Cabinets of Curiosity\textsuperscript{8} became more scientific and specialized by this time and mere curiosity was not remained the driving force behind the natural exploration. During the eighteenth century, curiosity became closely linked to commerce and luxury. The desire for novelties was understood as a stimulus to trade, and objects of curiosity were treated as luxury items. In contrast, a more widespread view defended curiosity as a passion for inquiry, and in particular, a desire to learn more about rare, new and remarkable things spread. In Britain ‘The Royal society’ became foremost stage for fulfilling this activity. In the eighteenth century, need for alternative resources for the trade opened a new path for the natural inquiry. Especially, after the defeat in the American War of Independence, the search for alternative species of luxurious item became primary motto for the British Empire.

At the same time, Sir Joseph Banks emerged as a key figure in the British scientific and political stage. Banks received much popularity and became public figure after his return from the first of Cook’s great voyage in 1771, and in the next year he became a member of

\textsuperscript{6} Among the earliest may be mentioned the \textit{platonic Academy}, founded at Florence, in the year 1474, by Lorenzo de Medici, chiefly for the purpose of studying the works of Plato.


\textsuperscript{8} The collections were created as a result of a growing desire among the peoples of Europe to place mankind accurately within the grand scheme of nature and the divine. This need developed during the fourteenth century and continued into the seventeenth century (the period of the Renaissance). These collections were generally known as cabinets or curiosity cabinets. The cabinets could contain rare, valuable, historically important or unusual objects, which generally were compiled by a single person, normally a scholar or nobleman, for study and entertainment. Seventeenth century onwards different institution and universities started to create their own cabinets so here onwards the museum and art gallery had been the representative of curiosity. For detail see, P. Fontes da Costa, “The Culture of Curiosity at The Royal Society in the First Half of the Eighteenth Century”, \textit{Notes and Records of the Royal Society of London}, Vol. 56, No. 2 (May, 2002), pp. 147-166. Melissa Tan, \textit{The World at Home: Curiosity Collecting in the First Age of Globalisation}, c. 1550-1750, Dissertation for the Degree of MA (University of Warwick, Sep. 2010).
the Society’s Council. The main concern of Empire was to find the naval way of new territories and protection of his Army from devastating tropical diseases. The observation of the transit of Venus was connected with the first need of naval way, so the Cook expedition to Tahiti (1769), actually, served this purpose. The second need was served by Sir John Pringle (then President of Royal Society), also called as the ‘father of military medicine’, when he published *Observations on the Diseases of the Army* in April 1752. Over the next two decades, Pringle writing was proclaimed as the first volume on the new subject of military medicine. After the defeat in the American War of independence and the election of Pitt as the Prime Minister (1784), the relation between science and government was more visible. The impact of French progress was clearly reflected in the British imperial policy. In 1784, the Crown assumed direct supervision over Britain’s overseas affairs and Pitt made Privy Council as the master of the affairs of the East Indian Company under its Committee for Trade and Plantations. Banks used the connection with the King and Lord North’s government, who were under pressure to the French economic and scientific development and wanted to become influential figure in the political gallery of Britain. About the same time, the commercial enhancement became the most essential part for the establishment of empire. As John Gascoigne pointed in his book that Dundas was appointed in 1784, along with Hawkesbury, as one of the commissioners of the re-constituted Privy Council Committee for Trade. Dundas and Hawkesbury both drew the moral from the American Revolution and focussed that “colonies should be maintained as trading posts and permanent

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9 *This Observation* was based on the Pringle’s experiences in the War of the Austrian Succession. Soon after its publication a new era of military medicine evolved with the writing of Richard Brocklesby and Donald Monro, French military physician Jean Colombier (1772), the German physician Ernst Baldinger (1765). For the detail see Stephen C. Craig “Sir John Pringle MD, Early Scottish Enlightenment Thought and the Origins of Modern Military Medicine”, *Journal of Eighteenth-Century Studies*, Vol. 38 No. 1 (2015).


11 Henry Dundas, 1st Viscount Melville, Was a Scottish advocate and Tory politician. He became first Secretary of State for War. He was the key factor in-the encouragement of the Scottish Enlightenment, in the prosecution of the war against France, and in the expansion of British influence in India. See for more detail, J.A. Loval-Fraser, *Henry Dundas Viscount Melville* (Cambridge: Cambridge University Press, 1916).
settlement of British colonists should be discouraged as likely to produce eventual demands for autonomy.” As it was mentioned:

“It is quite a separate question, how far it would be right to hold our Indian possessions upon principles of colonial monopoly?...It is sufficient, in point of fact, to observe, in answer to the Merchants and Ship-owners, that it is thought expedient for the interests of the empire, at large, that the east India possessions should not be regulated on the principles of colonial exclusion; and, therefore, no part of the subjects of Great Britain can be permitted to set up a separate interest of their own, against general policy.”12

According to Dundas ‘Navigation and commerce’ were inseparably connected. He focussed that the nation must have control over its maritime and should possess extensive commerce. Dundas saw commerce as a weapon against the enemies of the British State. He argued that ‘we ought, as early as we can at the commencement of a war, to cut off the commercial resources of our enemies, as by so doing we infallibly weaken or destroy their naval resources.’13 These views of Dundas supported the search for alternative resources. At the same time, due to Joseph Banks’s interest, natural scientific research got importance. Banks made his remarkable appearance in the naval and colonial policy with his connection to King and friends like Lord Mulgrave.14 After the death of Solander in 1782, Banks became more and more involved in the duties of the Royal Society, and acted as chief counsellor in all scientific matters to the King. At the same time he had virtual control of the Royal Gardens at Kew. Due to his indefatigable exertions and support15 to new expeditions, Royal

12 Letters from the Right Hon. Henry Dundas to the Chairman of the Court of Directors of the East India Company, upon an Open Trade to India, 2nd April and 28th June 1800 (London: 1813), p. 22.
13 John Gascoigne, Science in the Service of Empire: Joseph Banks, the British State and the Uses of Science in the Age of Revolution (Cambridge: Cambridge University Press, 1998), pp. 102-103.
14 Lord Mulgrave was a member of the both bodies and a major architect, along with Dundas, of the Anglo-French commercial treaty over India in 1786.
15 Services of an international character were rendered by him when, in the course of war, the collections of foreign naturalists had been captured by British vessels and on no less than eleven occasions where they restored to their former owners through the direct intervention of Banks with the Lords of the Admiralty and Treasury. For the Detail see Sir Joseph D. Hooker, ed. Journal of the Right Hon. Sir Joseph Banks: During Captain Cook’s First Voyage in H.M.S. Endeavour in 1768-1771 to Terra del Fuego, Otaheite, New Zealand, Australia, the Dutch East Indies etc. (London: MacMillan and Co. Ltd, 1896).
Gardens at Kew was raised to the position of the first in the world, and the collectors were sent to the West Indies, the Cape Colonies, and Australia to send living plants and seeds, and herbaria for the Royal Gardens. He developed science under the political connection, which was reflected in his increasing range of activities with the government. For example, on the 29\textsuperscript{th} March, 1797, he was admitted as a member of His Majesty’s Privy Council. Banks supervised the expenditure of a royal grant of £ 3,000 towards the cost of an official geodetic survey of England.\textsuperscript{16} Several expedition supported by Banks made difference for the imperial financial resources.\textsuperscript{17} Such as Jeffries, from America, made the first voyage across the English Channel and Henry Smeathman explored Africa. Banks was well connected to different naturalist and travellers throughout the world. In India, he was well communicated by Robert Kyd, Koenig, George Forster\textsuperscript{18}, F.W. Pemberton (1790), William Roxburgh and others. So, his efforts opened the way of natural exploration in the colonies and new occupied areas. In India, various explorations was needed, because, the defeat in the American War of Independence broke the financial status of British Empire. Only after the financial problem the gradual control over East India Company by British parliament started to take place. The economic and the geographical status of the Coromandel Coast attracted all the western naturalist and the area became hub of the exploration.

\textbf{The Coromandel Coast}

\textsuperscript{16} Joseph Banks got higher estimation by getting accommodation in one of the royal places. See for the detail, John Gascoigne, \textit{Science in the Service of Empire: Joseph Banks, the British State and the Uses of Science in the Age of Revolution} (Cambridge: Cambridge University Press, 1998), pp. 24-29.


\textsuperscript{18} He participated in the botanical exploration in Lucknow and Nagpore Letter from George Forster to Sir Joseph Banks, ‘concerning botany in India’, (Lucknow, 22 July 1787).
In the seventeenth century, the coastlines of Coromandel region consisted of modern states of Tamilnadu, Andhra Pradesh and the southern tip of Orissa. In 1765, the Mughal Emperor Shah Allum, granted the Diwani, or the right of collection of revenue of Bengal, Bihar and Orissa to the East India Company. The Emperor also granted the Northern Circars to the Company as inam or free gift. For the whole of the Circar, the Company had to pay an annual ‘pescush’ or tribute of seven lacs of rupees to the Nizam. By virtue of the payment, British took the full sovereignty in Circar.\(^{19}\) The system of a permanent settlement of territorial revenue was introduced during the years 1802 and 1804 in the region. Further, the Northern Circars was divided into five regular jurisdictions/collectorates- Ganjam, Vizagapatam, Rajmundry, Masulipatam, and Guntoor.\(^{20}\) This region of Southern Indian had an advantage in trade and commerce due to its proximity with ports. As Sinnappah Arasaratnam wrote:

“The northern part of the Coromandel coast, north of Godavari point, because of its indented character with its bays, headlands and promontories, was held to be a safer region for ships to harbor in.”\(^{21}\)

Ganjam, Masulipatnam, Bimilipatnam, and Coringa Bay were famous ports in this region. The Ganjam port was the centre of rice trade. It had an important role in the coastal trade southwards to Madras, Paleacat and other places, where rice was in demand. In the last quarter of the eighteenth century, when the Southern region faced deficit in food grains because of famine, Ganjam became the lifeline for the region by supplying rice. Masulipatnam was one of the few Indian ports in the Coromandel Coast, which had direct

\(^{19}\) *Reports from Committees: East India Company Affairs*, Vol. XIV, Session 6 December 1831-16 August 1832, p. 177.


Figure: 2.1 The Coromandel Coast and Ceylon c.1790.

Source: http://www.columbia.edu/itc/mealac/pritchett/00fwp/#fwp
sailing to the Red Sea port of Mokha, the South Arabian port of Muskat, and the Persian Gulf ports of Basra and Bandar Abbas.

The Northern Circars, which was watered by the numerous rivers, was considered as the “granary of the Carnatic” during the North monsoon. The region produced bay-salt, tobacco\(^{22}\), and teak timber of the best sort and of largest sizes. The forest of Rajahmundry\(^{23}\) also had an abundance of teak trees. Rajahmundry was one of the important regions on the east side of the Bay of Bengal which furnished this durable species of timber.\(^{24}\) Rajahmundry district had a great cultivated area. The principal towns of this district were Rajahmundry, Ingeram, Coringa, Bundermalanca, Peddapoor, and Pettipoor. The cultivation of sugar was carried on to a considerable extent in the Peddapore and Pettipoor zemindaries, along the banks of the Elyseram River. Though the river was small, but had a constant flow of water throughout the year. In this regard, Coromandel Coast and its nearby areas in Southern Peninsula were more favorable for the research stations or Botanic Gardens. William Roxburgh established a botanical garden at Samalkot in Rajahmundry district for botanical research and cultivation of pepper and coffee. The well connectivity of Coromandel region with sea and river route helped naturalists to send their findings in their mother country.

Apart from British, Denmark also participated in the exploration of natural history in the Coromandel region. As Edward Smith, the President of the Linnaean Society, wrote:

“Denmark had possessed some acute and learned botanist, and had, more than most other countries, been supplied with dried specimens of plants, as an article of commerce, from West or East Indian establishments.”\(^{25}\)

\(^{22}\) Tobacco from the vicinity of Masulipatam, was known everywhere for its superior excellence.

\(^{23}\) Forest included the area from the commencement of the hill along the banks of the Godavary to Palooshah on the frontiers of Cummumait. A division in the Hyderabad province, of which it occupies the eastern extremity, where it borders on the British district Rajahmundry. See the detail Walter Hamilton, *The East India Gazetteer*, Vol. I (London: 1828), p. 461.


Figure: 2.2 A Geographical Map of the Northern Circar Drawn in 1794

Source: https://www.vialibri.net/552display_i/year_1794_50_0.html

A Geohydrographic Draught of the Northern Circars or Maritime Provinces on the Coast of Golconda and Orissa from all the Original Surveys Extant of Those Parts, Published by Laurie and Whittle, London 1794. https://www.vialibri.net/552display_i/year_1794_50_0.html, accessed on 12th December 2015.
In India, Danes participated in the natural exploration through the effort of Dane-Halle missionaries and Moravians missionaries.

**MISSIONARY APPROACH**

Between the second half of the sixteenth century and the mid-eighteenth century, Jesuits played a key role in the circulation of information and knowledge about Asian and New World plants to all over the Europe.\(^{27}\) Jesuits were skilled in the different professions which helped them in missionary activity. For example, Medicine was not the part of the Jesuits educational curriculum, but medical training was given in the Jesuits colleges at Goa and Macau.\(^ {28}\) The medical and pharmacological information was a decisive asset for the missionaries, which helped them in religious conversion. Through this knowledge, they could attract and convert the natives of Asia and Africa into the Christianity. Consequently, Jesuits and other missionary orders became pharmacological specialist. They had wider reach to local knowledge in the overseas colonies.\(^ {29}\) In this context, Jesuits helped in the transmissions of knowledge in the field of natural history, mathematics and astronomy, which is also evident from Almeida and Joseph work on correspondence of Jesuits missionaries from Kerala to their headquarters in Rome.\(^ {30}\) It means that the missionaries were keen to collect local knowledge. Subsequently, they used local knowledge for the enhancement of medical botany.

Christian missionaries explained the nature as the work of the God. The development of modern science and technology in the post-Renaissance period widened the scope of

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\(^{27}\) They were also became the ambassador for the western medicines. As an example the western medicine was first brought to china by the Jesuit scholars of Peking.


exploration of divine creation. Spanish and Portuguese Jesuits missionaries involved themselves in discovering the ‘rare and wonderful’ creations of nature in America, Asia and Africa. In Portuguese colonies, Jesuits missionaries were acknowledged by their contemporaries as ‘masters of medical herb-lore’. Jesuits’ apothecary shops were commonly found in Goa and Madurai.\(^{31}\) Father Mathew of the Order of St. Joseph’s Carmelite helped Van Rheede in his compilation of *Hortus Indicus Malabaricus*, from his own observations.\(^{32}\)

In the America and the West Indies too, missionaries were involved in a range of medical activities, such as, collecting medicinal plants from the forests, using medicines to attract slaves, converting Amerindians to Christianities and selling European drugs.\(^{33}\)

The Danish brought the first protestant mission to India, known as, Danish-Halle Mission. The Danish-Halle Mission settled in Tranquebar\(^{34}\) on the Coromandel Coast. In 1706, Bartholomaus Ziegenbalg (1683-1719) and Heinrich Plutschau (1678-1747), the German Lutherans from the University of Halle, reached at the Danish settlement of Tranquebar. Bartholomaus Ziegenbalg\(^ {35}\) sent a letter in 1709. The Letter consisted a report on “local diseases and medicines”, along with the information on weather observations, ethnological characteristics and animal and plant kingdom.\(^ {36}\) Because of the contribution of August Hermann Franke, Professor of Theology at the University of Halle, and his followers—Paul Anton and Joachim Lange, Halle became the centre of Pietism, a movement within Lutheranism. Later the Pietism widely diffused over Germany and also influenced Danish-

\(^{31}\) Palmira Fontes da Costa, ed. *Medicine, Trade and Empire: Garcia de Orta’s Colloquies on the Simples and Drugs of India (1563) in Context* (Burlington: Ashgate Publishing Ltd., 2015), p.226

\(^{32}\) Ibid. p. 28.


\(^{34}\) Port of Tranquebar, which was of some significance in the coastal and Bay of Bengal trade, was ceded to the Danes by the ruler of Tanjore in 1618. Danes constructed a fort there, Fort Danesburg. See for the detail, Sinnappah Arasararnam, *Merchants, Companies and Commerce on the Coromandel Coast 1650-1740* (Delhi: Oxford University Press, 1986), p. 27.

\(^{35}\) He was a member of the Luthern clergy and the first Pietist missionary to India.

\(^{36}\) Letter from Bartholomäus Ziegenbalg to [unknown], 03.10.1709, Tranquebar. [http://192.124.243.55/cgi-bin/dhmeng.pl?t_show=x&reccheck=20978](http://192.124.243.55/cgi-bin/dhmeng.pl?t_show=x&reccheck=20978)
Halle Mission to India. August Hermann Franke’s was also curious about natural history. As he had asked to Johann Peter Kolb, for providing some seeds and specimens for the ‘Hortus Medicus’, a natural history cabinet. Further, Hortus Medicus, a botanical garden was founded in 1698 at the University of Halle. The early years of the ‘Hortus Medicus’ was not very much successful. In 1749, only 191 species were counted in the garden. A permanent short of fund and the focus on only medicinal plants created major problem. However, the situation changed in the last decades of eighteenth century, when the Chancellor of the University, Karl Christoph von Hoffmann (1735-1801) extended the size of garden by following the English landscape gardens. About the same time Halle was emerging in the field of medical science, medicine production and trade. The Halle Orphanage Foundation began their pharmaceutical manufacture in the Early 1700s. Gradually its Medicinal trade occupied a large portion in the European pharmaceutical trade. The number of medical faculty and number of students studying at the University of Halle increased with the effort of Johann Junker, the Professor of Medicine.

The study on natural sciences continued after the death of Ziegenblag. Tranquebar Danes-Halle missionary was getting more eager for the collection of local plants and the study of local medicinal text like Ayurveda and Siddha. In 1712, a book, The Malabar Doctor was published. The book provided a brief account of ‘heathen’ principles of medicine and about the manner in which native people cured the sick and the medicines they used. This book was collected and translated by Johann Ernst Gründler for the information of doctors in

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37 Kolb went to the Cape of Good Hope to compile a comprehensive description of South Africa and astronomical and surveying research. He was published a checklist of Cape fauna in 1719. Letter from August Hermann Francke to Johann Peter Kolb. From Halle, 1709/1710, http://192.124.243.55/cgi-bin/dhmeng.pl?t_show=x&reccheck=25221
38 http://www2.biologie.uni-halle.de/bot/boga/english/history.html, 11th July, 2015. 8.25 pm.
40 The number of students who studied medicine course was just 144 between 1644 and 1700; see, W Zumkeller, “The University of Halle through the Centuries”, Mol Pathol. 2001 Feb; 54(1): 36-37.
Europe from the medical books of the Malabarians. Samuel Benjamin Cnoll, was sent to Tranquebar from Halle in 1732 and served for 35 years. He was one of the first physician, who was sent from Halle. Further, linguist Benjamin Schultze (1689-1760) and Christian Frederic Schwartz (1726-98), the educator and natural history enthusiast Christopher Samuel John (1747-1813) and the lexicographer John Peter Rottler (1749-1836) contributed to the acquire more knowledge about south India. As a result of Danish-Halle Missionary knowledge about tropical medicine, Halle Medicine got popularized in England. In these ways, Danish-Halle Mission was conscious about the publication of tracts of medicine along with the Bible publication.

Altogether, Tranquebar Danes-Halle missionary medical knowledge was recognised by Europeans Company and societies. Danes acted as neutral third parties in the intra-Asiatic trade. Without much political ambition as French or English, they were trading peppers and cloves, and took part in the regional trade with local merchants. Their settlement in Tranquebar and the country trade played crucial role in supplying medicines to English surgeons. About the mid-eighteenth century rivalry between French and English, Danish ships became the major network between England and India. Roxburgh also sent specimens

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41 1712, Place: Porayar, Language: German and Tamil. This book contains the first part in ten chapters, which show the principles of medicine among the Malabarians. This includes three things- main diseases, the causes of diseases, names of diseases prevalent among them and diet to be followed when ill. The second part, which contains in twelve chapters, shows how they cure the sick and what medicines they use. This includes medicines used against fever and tumours, against ear, nose and throat diseases, against stomach ailments etc. [http://192.124.243.55/cgi-bin/dhmeng.pl?t_show=x&reccheck=24942](http://192.124.243.55/cgi-bin/dhmeng.pl?t_show=x&reccheck=24942)

42 Taking over the transport costs for a consignment of books and medicines from Halle for J. M. Boltzias by Albinus; making Halle medicines known in England; enquiry about plant seeds and about a particular kind of paper. From- London, Date: 18.09.1756, Letter from Samuel Theodor Albinus to Gotthilf August Francke. [http://192.124.243.55/cgi-bin/dhmeng.pl?t_show=x&reccheck=25635](http://192.124.243.55/cgi-bin/dhmeng.pl?t_show=x&reccheck=25635), Letter from Bartholomäus Ziegenbalg to Mr. Kaltschmid. 16.09.1712, Tranquebar, Dispatch of herbs and fruit from India; Indian medicine; dispatch of a tract about Indian medicine to Europe. [http://192.124.243.55/cgi-bin/dhmeng.pl?t_show=x&reccheck=14848](http://192.124.243.55/cgi-bin/dhmeng.pl?t_show=x&reccheck=14848)

Figure: 2.3 Tranquebar District and Fort, c.1750


Bellin's "Carte du district de Tranquebar," from Prevost, Histoire generale des voyages, 1753, with modern hand-coloring. 
from Samulcottah to Joseph Banks in England through Danish Ships, named as ‘Neutral’.45 Meanwhile, the educator and natural history enthusiast Christopher Samuel John and the lexicographer John Peter Rottler, of Danes-Halle Missionary shared their information to William Roxburgh also.46

At the close of the year 1795, Rottler proceeded on a tour to Ceylon in the capacity of naturalist in Company. He was accompanied by Cleghorn, Secretary to Lord North, first British Governor of Ceylon.47 Rottler was engaged by the English Government in 1796 to make a tour in Ceylon after the island was captured from the Dutch. Dr. Rottler acquaintance with the native language and the knowledge of botany enabled him to collect much valuable information. Dr. Cleghorn exhibited a drawing of the Rottleria tinctoria, named by Roxburgh in the honour of Rottler.48 Rottlera tinctoria was in great request in India, especially amongst Muslims, for dyeing purposes, and as an article of commerce. In these ways, the acquiring knowledge crossed the lines of the empire. The Danish missionary helped British in this process. Subsequently, The Moravians Missionary received imperial patronage from the Danish and British Crowns. Moravians strongest ties were with the natural history networks of Saxony and German state. The small agricultural village of Herrnhut was the administrative headquarters for all Moravian settlements in Europe.49

46 Rottler constantly forwarded specimens of the South Indica Flora to Dr. Schreber, professor of Natural History in the University of Erlangen. Different extensive collections of Rottler’s Plants exists at the Royal Herbarium at Munich, Musee Botanique of the renowned M. Benjamin Deleseert at Paris, and third one purchased at madras by Dr. Wight. Rottler’s own private Herbarium forming his principal collection, upon which he appears to have worked up to the time of his death, is in the possession of King’s College, London. The Madras Journal of Literature and Science, Vol. XXI. No. 48, Old Series (Madras: 1859), p. 5.
In 1758, Moravian mission got the permission from the Danish Court to work in the Danish East Indies and established their own churches and missions in the region. However, Lutheran missionaries from Halle did not appreciate the Moravian competition. As Younger Franke complained in 1759:

“Another piece of news, which I have received, has struck me very much, and troubled me not a little, namely that the Moravians are trying to establish themselves in Tranquebar.”

Moravian mission came to Tranquebar, on 2 July 1760, and established a Moravian settlement Brudergarten, the Garden of the Brethren. The important botanist in this mission was Benjamin Heyne. He arrived in 1792 in Tranquebar as a physician. After Roxburgh’s invitation, Heyne became his successor in Samulcotta Botanical Garden. Subsequently, after the establishment of Bangalore Botanical Garden in Mysore, he was put in charge in 1801. Benjamin Heyne played a significant role in the coconut and potato plantation. As he wrote:

“I was enabled by government to supply with Seed Potatoes of the best kind from the St. Helena stock, and to offer them a sale for their produce, which however, they soon found for themselves, in all parts of the country where Europeans reside. Since that time they have even supplied Madras, where their potatoes are preferred to those of Bengal.”

Along with botanist pursuit, Heyne had keen interest in Mineralogy. His *Tracts, Historical and Statistical, on India*, 1814, provided key information on Rock formation and the minerals and soil of the Southern Peninsula. In 1812, he left Bangalore Botanical Garden to assist Francis Buchanan in his Mysore Survey. He gave a large consignment to the German botanist Albrecht Wilhelm Roth. Albrecht Wilhelm Roth *Novae Plantarum Species Praesertim Indiae Orientalis* was based on Heyne’s collections.

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For Joseph Banks, missionaries were a potential source of information collectors on indigenous *Material Medica*. Banks’ connection with Moravian missionaries became beneficial in collecting plants in Labrador in 1765. Banks thereafter remained a supportive and influential friend of the missions. Moravians continued to add to his herbarium, as Daniel Solander wrote to Joseph Banks:

“London, August 21, 1775. My dear Sir, Mr. Harlock has sent to your house the plants I mentioned in my last letter. They are collected near Tranquebar by the Brethern of the Moravians, and as good specimens as I have seen…”

James Hutton (1715-1795), book dealer and chair of the Moravian Society for the Propagation of the Gospel, maintained close connections to the British Admiralty. Unitas Fratrum missionaries in Labrador and in South India compiled botanical collections, which Hutton passed on to Sir Joseph Banks and Dr. Daniel Solander. These two met with James Hutton shortly after their return from Cook’s first voyage to discuss the possibility of establishing a mission in either New Zealand or in New Holland. In 1765 the admiralty offered free passage for a Moravian missionary to America to accompany Samuel Wallis and Philip Carteret. The election of Moravian Philip Hurlock, as a surgeon and an active member of SFG, in 1780 reflects the acceptance and consideration of British government towards Moravians. Bank’s eyes were on effective outcomes from the Moravian knowledge. Moravians played the role of informal agents of British Empire. United Brethren

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53 His interest towards Moravian missionaries aroused by his mother, she had lived near the Moravians in Chelsea since 1761. For the detail see J.C.S. Mason, *The Moravian Church and the Missionary Awakening in England* (Suffolk: The Boydell Press, 2001), pp. 51-53.  
55 James Hutton, son of a clergyman and cousin to Sir Issac Newton, was born in London and followed for some years the trade of a bookseller. In 1739 he visited the Moravian Settlement at Herrnhut, where he became acquainted with Count Zinzendorf.  
57 Society for the Furtherance of the Gospel (SFG) was a missionary organization of the British Moravians. British Government agreed to grant to the Unitas Fratrum and SFG for the right to occupy and possess 100,000 acres of land at “Esquimaux Bay”.  
or The United Brothers was contracted to sell dried plants to Banks. They send 500 dried plants between 1775 and 1778. Tranquebar missionaries also influenced Indian efforts in natural exploration.

Native efforts

The first episode of native investigation towards modern sciences, especially natural science, was resounded in the period of Raja Sarfoji II (1798-1832) of Tanjore. In his early age, he came in contact with the Halle Lutheran missionaries, and Christian Frederick Schwartz and Wilhelm Gericke of the ‘Society for the Propagation of Christian knowledge’. Apart from it, Christopher Samuel John, John Peter Rottler, Johann Gerhard Klein and others also influenced Raja Sarfoji II. Schwartz and Gericke introduced Serfoji to the subjects like arithmetic, economics and geography. Later Company’s surgeon, James Anderson taught him sericulture and anatomy. So, in the very early period of his life, Sarfoji II interacted with all modern knowledge.

After his succession in 1798, Raja Sarfoji II tried to build a network for accumulating the contemporary discoveries. In fact, Savithri Preetha Nair compared his contribution with Joseph Banks as a ‘native counterpart’. Nair described Serfoji’s network in three main strands: 1) the Tranquebar missionaries; 2) the Company officials including Governors- John Huddleston and Lord Horbart, Company Surgeons- James Anderson, W. Ainslie and W.S. Mitchell, Residents- Benjamin Torin and William Blackburne and other Company officials, like, Colin Mackenzie of the Mysore Survey, Madras Collector and Tamil scholar, Francis Whyte Ellis; and 3) the subaltern strand of native medical practitioners, mechanics, animal

cares, painters, musicians, gardeners, hunters, and printers. Serfoji’s teacher Schwartz was well connected with Roxburgh, Andrew Berry and powerful Company officials like Alexander Dalrymple and Andrew Ross. Later, Schwartz’s network was enlarged by different eminent travellers, like, Lady Clive, George Annesley, Claudius Buchanan, and Alexander Johnston, who visited the Tanjore Court. The efforts of Tranquebar missionaries and natives in the field of natural science helped William Roxburgh studies on Indian botany and natural history.

**William Roxburgh: From Edinburgh to Madras**

Botany is generally divided in two principal branches- 1) Economic Botany, consisting of discussion on agricultural and medicinal plants; and 2) Systematic or Practical Botany, consisting of anatomy, physiology, and classification, description and geographical distribution of plants. The first contribution to the knowledge of the systematic botany of India by Europeans was *Hortus Malabaricus*. It was compiled by a Dutch, Van Rheede, the Governor of Malabar. East India Company also recruited naturalist for the exploration of Indian flora and fauna. Joseph Banks stressed on following Carl Linnaeus’s artificial classification and binomial nomenclature, as it was easy to understand. After the emergence of Carl Linnaeus’s artificial classification and binomial nomenclature, naturalists and botanists were sent to newly occupied areas to explore the resources.

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61 Later became Vice-President of the Royal Asiatic Society, London.

62 This book, which is in twelve folio volumes and is illustrated by 794 plates, was published at Amsterdam between the years 1686 and 1703. The *Hortus Malabaricus* was based on specimens collected by Brahmins, on drawings of many of the species made by Mathaeus, a Carmelite missionary at Cochin, and on descriptions originally drawn up in the vernacular language of Malabar, which were afterwards translated into Portuguese by Corneiro, a Portuguese official in Cochin, and from that language finally done into Latin by Van Douet.
British scientists from Oxford, Cambridge and Edinburgh Universities were sent to the colonies for natural exploration. Edinburgh University was ahead than of other British universities in the field of scientist research (see Table I). Most of the naturalists were recruited from Edinburgh University and William Roxburgh was one of them. In the first half of the eighteenth century, the Edinburgh University was remodelled on the model of Leiden University, a key centre of scientific research in Holland where Carl Linnaeus had studied. By the 1740s the Town Council had appointed college professors of anatomy, botany, materia medica, clinical medicine, civil history, Scots and civil law at Edinburgh. The idea behind this designing was to attract the sons of the nobility, gentry and even dissenters of the Kirk, a Church of Scotland, to promote scientific knowledge.

William Roxburgh was born at Ayrshire in Scotland. There is lack of unanimous information on his date of birth and year. Bengal Obituary, Annual Biography and Obituary, has given his date of birth as 29th June of 1759, while Dictionary of National Biography and

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**TABLE: 2.1 Recruitments of Scientists from Different Universities.**

<table>
<thead>
<tr>
<th>Time Period</th>
<th>% Oxford educated</th>
<th>% Cambridge educated</th>
<th>% Edinburgh educated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1726-1745</td>
<td>11</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td>1746-1765</td>
<td>16</td>
<td>13</td>
<td>24</td>
</tr>
<tr>
<td>1766-1785</td>
<td>8</td>
<td>12</td>
<td>17</td>
</tr>
</tbody>
</table>


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63 The Scottish universities were providing comparatively cheap form of education in professions such as law or medicine which in England were largely provided outside the universities.
64 After the union of Scotland with England in 1707 and create the United Kingdom, under the deal Scotland’s landed families gained access to the East India Company and gradually become its main feature. The first three Governor-Generals of India were Scots. Basically Henry Dundas, President of the Board of Control in 1784, ‘Scoticised’ India. Benjamin Heyne, Francis Buchanan, Robert Wight was among the contemporaries naturalists of William Roxburgh.
King noted 3rd June 1751. After meticulous research, Tom Robinson\textsuperscript{65} concluded that Roxburgh was possibly born in June 1751. Roxburgh studied anatomy and surgery in his matriculation under Dr. Alexander Monro \textit{secundus}.\textsuperscript{66} Roxburgh always referred himself as a pupil of John Hope. So, his botanical understanding can be better understood through the Hope’s vision on botany.

John Hope studied anatomy under Alexander Monro \textit{primus}\textsuperscript{67} guidance, and botany and \textit{Materia Medica} with Linnaeus’s main rivals, Benard de Jussieu, of the Jardin du Roi and Charles Alston of Edinburgh University.\textsuperscript{68} Charles Alston was the lecturer in \textit{Materia Medica} and botany at Edinburgh University. He was also the superintendent of the botanical gardens at Edinburgh University. He studied at Leyden University under Dutch physician Hermann Boerhavve and was a critic of Linnaeus’s system of plant classification.\textsuperscript{69} However, John Hope was interested in Linnaeus classification and initiated the study of Linnaeus system at the Edinburgh University. John Hope accepted the simplicity of the Linnaeus’s system of plant classification. In these ways, Edinburgh became the centre for Linnaeus studies and Roxburgh came in contact with Linnaeus system through John Hope.

In 1761, John Hope succeeded Alston as a Professor of Botany and \textit{Materia Medica}. Botany was a part of the medical curriculum at Edinburgh University until the second half of the twentieth century. This led on to a tradition by which many doctors became botanists. Hope’s lectures were based on three important concepts- 1) critical reading of the established texts, 2) geographical description of field in which plants grew, and 3) the focus on proper experiments with scientific controls and the ability to repeat the experiments to obtain same

\textsuperscript{65} T.M Robinson, p.5.
\textsuperscript{66} He was the son of the Alexander Monro \textit{primus}.
\textsuperscript{67} Alexander Monro (1697-1767) was the founder of Edinburgh Medical School. To distinguish him as the first of three generations of physicians of the same name, he is known as or called \textit{primus}.
The university had its own botanical garden, which itself worked as learning hub. Hope had a very wide circle of correspondents. Thus he received plants from America, West Indies, and other places. In these ways, Roxburgh also came in contact with varied knowledge of plants world at the university.

Dried plants were also one of the important tools for understanding botany. Dried plants helped in preserving plants in long sea voyages. Hope was aware about the importance of preparation of dried plants and gave prizes to the students, for the preparation of best dried plants *hortus siccus*. These all aspects are very important to understand the development of Roxburgh’s working style. Nearly five per cent of Hope’s students joined the East India Company as a doctor in India and Roxburgh was one of them.

In the first voyage, Roxburgh left Edinburgh in 1772 as a Surgeon’s Mate of the East India Company’s ship *Houghton* and returned back on 4th June, 1774 covering Cape, Madras, Bengal and St. Helena. His second voyage started on 19th October 1774 and via Ceylon he arrived at Madras on 23rd June 1775. These two voyages were very helpful in his understanding of natural resources of different area. In his second voyage to the East Indies, William Roxburgh was offered a post of an assistant Surgeon at Madras, which he accepted. Roxburgh was appointed as an assistant Surgeon at the General Hospital, Fort St. George on 28th May in 1776 in Madras.

Roxburgh sudden appointment suggests that he may have carried some letter of introduction from one of his patrons– Hope, Boswell^72^, or Pringle.^73^ Roxburgh sent his first observation, the Meteorological Diary, from Fort St. George to Sir John Pringle, President of

^71^ Ibid., p.11.
^72^ Dr. John Boswell (1707-1780) had studied at Leiden University under Boerhaave and was the last British student to be promoted by him. He was Treasurer of the Royal College of Physicians of Edinburgh and became its President during the time Roxburgh was staying with his second son Bruce Boswell (1770-02). After the death of second wife Roxburgh married to John Boswell’s grand-daughter Mary Boswell.
^73^ Ibid., pp.14-20.
the Royal Society, London. Pringle included the information in *Philosophical Transactions of the Royal Society*. In the Meteorological Diary, Roxburgh observed about the two diurnal rising and fallings of the barometer (aerial tides) in low latitudes. Roxburgh also sent the *Gum Arabic* and *Mimosas* plants to Pringle. After two years, he was posted to Nagore as a Full Surgeon. Indeed, Roxburgh was never employed in the regular line after his first few years of service. In 1781, Roxburgh was driven out from Nagore, because of Anglo-Mysore War. He wrote- “the beginning of 1781 we were obliged to evacuate Nagore in a great hurry, by which I lost my thermometers and many things of value.” Thereafter he went to a nearby area Corianga, and started his own experimental garden at Samulcotta and worked on pepper plantation. Again he faced a disaster in Coringa in 1787, when cyclone destroyed much of the Coringa and his house. As Patrick Russell, the Company naturalist wrote to Joseph Banks “You will from public accounts hear of the dreadful hurricane inundation that happened last month at Coringa, Ingeram, &c... Poor Roxburgh with his family made their escape with the utmost difficulty; his house at Cochinara was totally destroyed.” Roxburgh not only lost 10,000 Pagodas, but most importantly, he lost his valuable botanical library, Manuscripts, Drawings and preserved specimens of plants. Later Roxburgh was recommended for appointment by seniority to the third European regiment, but the Government could not spare his services. In 1787, he was appointed as Superintendent of the Pepper Plantation at

79 Robinson 25.
Samulcotta, and in 1789, became Company naturalist and succeeded Patrick Russell. In 1793, Roxburgh was sent to Calcutta to succeed Robert Kyd, who was trying to establish a garden, the ‘Garden of Acclimatization’, near Calcutta. In these years of stay at Madras from 1775 to 1793, Roxburgh got influenced by many of his contemporaries’ works.

**William Roxburgh and His Contemporaries**

About the same time of Roxburgh arrival, other medical officers of Madras were also interested in the advancement of knowledge in the natural sciences. Fusee Aublet, a Jean-Baptist, work on Mauritius natural history and German Naturalists Johann Reinhold Forster and George Forster (Father and Son duo) writing *Observations Made during a Voyage Round the World* (London, 1778) influenced Joseph Banks in promoting the idea of stationing resident ‘colonal botanist’ or ‘naturalist’.

Subsequently, on 17th March, 1778, Dr. Johann Gerhard Koenig, pupil of Linnaeus, entered in the East India Company as a first naturalist. After his death in 1787 Dr. Patrick Russell was appointed as a Company naturalist.

Dr. James Anderson, Physician-General, was another key figure in this natural investigation. He joined the East India Company in 1759 and after death of Surgeon-General Pasley in 1781, he was nominated as his successor. He obtained a large piece of land from the Madras

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81 The second voyage of James Cook 1772-1775, was designed to circumnavigate the globe as far south as possible to finally determine whether there was any great southern landmass, or Terra Australis. Alexander Dalrymple like person believed about the existence of Terra Australis. Forster duos were the part of Cook’s second voyage in 1772-1775, in the ship Resoluton. Forster observed: “And this circumstance likewise shows, how much that immense part of the globe, India, with its isles, wants the labour of a new, accurate, and modern observer, accompanied by a faithful draughtsman, used in the drawings of natural history in order to make us better acquainted with the rich treasures of these extensive regions; and it raises in each patriotic breast the hope that, as the British Empire in India is so extensive, so much respected and its subjects there so wealthy and powerful”. See, Richard Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1860* (Cambridge University, 1995), p. 330.


Government near Fort St. George in 1778, where he established a Nopalry Botanical Garden. This garden became the centre of experiments for the silkworm, cochineal insects, and commercial plants such as sugar cane, coffee, and Bourbon cotton seed (American seed). Anderson was also keen for the cultivation of Bastard Cedar (Guazuma tomentosa). Roxburgh’s farm in Samulcotta was very near to Nopal plantation. In these ways, Roxburgh got influenced with the cultivation at the Nopalry Botanical Garden and published a paper on Cochineal insects (see chapter III for the details).

Robert Kyd was another important naturalist, who worked in India and introduced the importance of Botanical Garden as the research station for the transplantation. Kyd introduced various economic plants, such as hemp, coconut, teak, and sago. Roxburgh implanted Kyd’s idea in a large scale. In the last years of the eighteenth century, Robert Kyd received information of Persia through Captain Scott of ship Beglerbeg. Captain Scott was asked to collect some plants and seed from Persia. Kyd received Persian tobacco, a ‘Cabul Ram’, plants of Shiraz grapeand and a Persian sheep. Further, he received several articles from Cachick Arrackell, the Armenian who was the owner of Captain Scott’s ship. Kyd got the seeds of peach, apricot, plumb, and cherry from the Resident of Bushire. He received two tea plants from china. He also sent some of the Ceylon cinnamon and seeds of the

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84 The Register of Grants of Ground records an assignment of 1,524,745 square feet, or about 35 acres, to James Anderson in 1778 at a rent of Pags. 40. In January, 1792, Government recommended that the additional area (of about 76 acres) should be given him free of quit rent and the Directors assented. It is judged that the boundaries of the extended garden were: North- College Road and the river; East- the river and Mackay’s Gardens; South- a nullah; West- Hadow’s Road. Evidence derived that no doubt that Anderson’s residence was the house now called Pycroft Garden. For the detail see Henry Davison Love, *Vestige of Old Madras, 1640-1800, Vol. III* (London: 1913), 335-336.

85 A beverage of crushed seeds soaked in water is used to treat diarrhea, dysentery, colds, coughs, contusions, and venereal disease. It is also used as a diuretic and astringent. James Anderson introduced and sent to various part of India. James Anderson, *Communications: from October the 1st, until the 12th December*, (Madras: 1795).

86 For the detail see, James Anderson, *Communications from October the 1st, until the 12th of December 1795* (Madras: 1795).

87 In the middle of the eighteenth century, the pirate menace had abated and Persian control of Arabia was shifted to Ghafari family that was strongly pro-British. One anti-French treaty signed in 1798, by the son of the founder of this new dynasty that kept the French out of Arabia. The East India Company interest lied on this area mostly military and political.
Rajahmundry teakwood to the Collector of Ramgur and Gyah (Gaya). These contemporary natural explorations of Banks, Koenig, Anderson and Kyd, also influenced Roxburgh in his botanical exploration.

**William Roxbutgh and Samalkota**

Altogether, William Roxburgh stationed at Samalkota (Samulcotta) in Rajahmundry district, between 1781 and 1793. He established a garden in this region and introduced various economic plants such as pepper, coffee, and indigo. As discussed previously, the location of Rajahmundry helped in vegetation and production. The high ground near the banks of the Godavari, and abundance of minerals, saltpeter, iron, beds of marl in its black cotton soil helped in cultivation. Various Plants from British colonies, especially from Moluccas Islands, was brought at Samalkota Botanical Garden. He wrote:

“Since the end of 1781, I have been stationed here, and as soon I became a little acquainted with the seasons, soil and produce of the country hereabouts, I formed an idea that pepper and coffee would thrive as well in the Circar as in any parts of Asia; my natural turn for botany, agriculture, and meteorological observations enabled me to form the idea upon pretty certain grounds.”

At Samalkota, Roxburgh started exploration of native species of commercial plants. But he wanted to read Rumphius and Rheede’s book on Asian plants and contemporary publication on natural history. Andrew Ross, the Mayor of Madras, provided him a large

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89 In a small village like Pittapore annually manufactured best quality of saltpeter of approx 5000 lb. Marl is calcium carbonate. It formed thousands of years ago when an aquatic plant, chara, extracted calcium carbonate from the lake waters of melting glaciers and stored the chemical in its branches. From the generations, farmers valued marl as a fertilizer for lime-deficient soils and as a soil conditioner for sandy soil. The lime in marl cements sand grains together, so the soil can better retain heat and water. See, [http://dnr.wi.gov/warmag/html/stories/2001/aug01/marl.htm](http://dnr.wi.gov/warmag/html/stories/2001/aug01/marl.htm)
90 Extracts of Public letter from Fort St. George, Dated 9th October 1800.
stack of books “at Mr. Davidson’s Sale and otherways”. On 25th April 1786, he was informed about the native quality of pepper and asked favour from the Sir A. Campbell. In this respect government gave the orders to the Chief and Council of Masulipatam, “to furnish Dr. Roxburgh with all the necessary disbursements, to enable him to proceed, and to give orders to the zemindars to assist and encourage the undertaking.” Roxburgh found a new species of pepper *Piper Trioicum*, against the popular pepper-plant, the *Piper Nigrum*, found in Sumatra and in the coast of Malabar. *Piper Trioicum*, was equally good Pepper like of *Piper Trioicum*, but *Piper Trioicum* was more difficult to cultivate. At last the pepper plantation in Samulcotta was a failure. As per Roxburgh view, the cultivation of pepper failed, because he had picked up a nearly allied species. However, Benjamin Heyne, thought it differently. Benjamin Heyne analysed that the Malays planted the pepper vine at distances of five cubits in every direction, and supported it on pieces of Mootchy tree, so that the pepper grew luxuriantly where it had much moisture, and the strength and vigor of the plant was maintained. As per Heyne, the omission of this manipulation in the company’s plantation at Samulcotta was the cause of failure. Benjamin Heyne looked after the botanical garden at Samakota after Roxburgh departure to Calcutta. But, the East India Company planned to abolish the garden, as it failed in pepper plantation. As the Fort St. George felt: “Company’s Nopalry at Marmalon and the Botanical Garden at Samulcottah to be abolished, the intention of their original establishment having entirely failed...In the proposed botanical establishment in Mysore, we trust that attention will be paid to economy.”

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93 Ibid., p. 54.
94 He succeeded Dr. Roxburgh in the charge of the pepper plantation after Roxburgh moved to Calcutta Botanic garden, later he also became the superintendent of Mysore Botanical garden.
By 1799, East India Company abolished the garden at Samalkota and proposed a new botanical garden at Mysore, after the publication of geographical, astronomical and statistical survey of Mysore by Captain Mackenzee and Brigade Major Lambton. Roxburgh used to send the packets of drawing and descriptions of native plants to Joseph Banks at London. First of such packet was received in 1791 at London and last in June 1794. Meanwhile, when the number of sent plants reached to five hundred, Joseph Banks suggested Roxburgh to publish them and Banks himself took the responsibility of publication. The corrections and editing was done by Dr. Patrick Russell, and the book was published in 1795, entitled as, “A Progressive Work, in which a Preference was given to Subjects Connected with Medicine, the

Figure: 2.4 Map of Samulcottah


Arts, and Manufacture”[^98]. This publication was later known as Roxburgh’s Coromandel Plants. Roxburgh also collected information about fauna and animal kingdom of the region.

He mentioned ‘goat’ as a beneficial animal for Great Britain and fifteen goats were sent on ship Asia and General Goddard.\(^99\)

Madras was known for its continuous frequency of cyclones and droughts. The natural calamity around Madras influenced Roxburgh research and area of interest. As discussed, he himself suffered from cyclone at Coringa in 1787. During the dreadful famine of 1791-93, the population of the Northern Circars reduced to nearly one-half. In this regard, his one of the letter to Banks also highlighted a major difference between the approach of Moguls and the Company as rulers. Roxburgh wrote that the Moguls had a fatalistic attitude to these calamities, while the Europeans, not being used to seeing such mass starvation, took a Christian view, to try and obviate suffering. But, they were often hampered hoarding of merchants, who waited for the prices to rise.\(^100\) The disasters forced Roxburgh to cultivate some vegetables for the needy and poor people. As he wrote “these distresses have been a means of bringing to my knowledge many indigenous Vegetables that the poor in great measure live on.”

Roxburgh suggested for the plantation of coconut and sago during drought of 1793. The Government was pleased with Dr William Roxburgh’s suggestions and was intended to adopt his proposals. Fort St. George directed Resident of Nagore to cultivate coconut and further, noticed Resident of Travancore to plant sago.\(^101\) At the same time, Roxburgh referred a fruit called Mellore, from the Nicobar Iceland, which was supposed to be infinitely superior

\(^{99}\) Letter from William Roxburgh to the Sir John Shore, Governor General in Council.Home Department, Public Branch, 18\(^{th}\) April, 1796, A, No. 28.


to the breadfruit. Koenig had also described the features of the breadfruit and Joseph Banks was keen to introduce breadfruit as a slave food. In fact, Bligh expedition was centred to discover the breadfruit. Roxburgh saw Mellor as a good source of food during the years of food scarcity. Roxburgh also described the importance of the cultivation of *leguminous* plants (ex. *Lathyrus Sativus* - Kessari, *Phaseolus aureus* - Sona Moog etc.), and *tuberous* roots (ex. Potato) during drought. Even after Roxburgh, Benjamin Heyne was indulged in spreading the cultivation of these plants. As Heyne wrote:

“The distribution of plants in the Circar is what requires to be at present chiefly attended to; I will persuade all those natives, who have received this year Jack and Coconut plants, to take an equal number of Cactus into their gardens, and myself will disseminate as many as possible, and in the Corconda district, every village shall have a Plantation, as soon as plants enough can be procured.”

Altogether, the efforts made by William Roxburgh at Samalkota and other places not only provided botanical information to empire, but also helped natives to get some substitute food items in the years of drought, famine and other calamities. In these ways Roxburgh developed his interest in plants apart from being a professional surgeon, which earned him a placed in the Company’s leading naturalists. He also worked on economic plants, such as hemp, indigo, sugar and others that enabled empire to maintain expenses during the war times. Roxburgh contribution in the field of economic plants would be discussed in the next chapter.

102 Letter dated 25th May 1789 from Dr. Roxburgh to John Hollond Governor and President in Council at Fort St. George, Madras, Requests a specimen plant be sent to England. This letter informs the Court that one was to be sent to St. Helena and two will be kept by Roxburgh. IOR/P/241/12 26 May 1789 pp 1609-16. http://www.bl.uk/manuscripts/Viewer.aspx?ref=ior!p!241!12_26_May_1789_pp_1609-16_f001r, accessed on 2015, 28th May 2015.

103 In 1787, Bligh took command of the *Bounty*. In order to win a premium offered by the Royal Society, he first sailed to Tahiti and then to Caribbean, to obtain breadfruit trees.


105 Letter from Benjamin Heyne to James Anderson (Samulcotta, October 5th, 1795), James Anderson, *Communications: from October the 1st, until the 12th December, (Madras: 1795)*, p.6.