HISTORICAL TRAJECTORY OF IMPERIAL FOREST SCHOOL (1878-1906)

DISSERTATION

Submitted to
Babasaheb Bhimrao Ambedkar University
(A Central University)
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2022

DEDICATED

TO

MY PARENTS

Mrs. Manju Maindola

Mr. Sudhir Chandra Maindola

DECLARATION

I hereby declare that the dissertation entitled **HISTORICAL TRAJECTORY OF IMPERIAL FOREST SCHOOL (1878- 1906)** submitted to the Babasaheb Bhimrao Ambedkar University, Lucknow, for the award of the degree of **Master of Philosophy** in History is an authentic record of original and independent research work carried out by me under the supervision of **Dr. V.M. Ravi Kumar,** Associate Professor, Department of History, School of Ambedkar Studies for Social Sciences, Babasaheb Bhimrao Ambedkar University (A Central University) Lucknow. I further declare that this research work has not been previously submitted before for the award of any other degree or diploma to any University or Institution. In keeping with the ethical practice in reporting research information, due acknowledgment have been made wherever the findings of others have been cited. This is also declare that the M.phil Dissertation is free from all kinds of plagiarism.

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CERTIFICATE

This is to certify that the M.Phil dissertation titled **HISTORICAL TRAJECTORY OF IMPERIAL FOREST SCHOOL (1878- 1906)** submitted by **Ms. Shivangi Maindola, Enrolment No. 1233/19**, is an original research work and has not been previously submitted in part or full for the award of any other degree or diploma to this or any other university. The dissertation submitted to Babasaheb Bhimrao Ambedkar University Lucknow satisfies all the requirements as stipulated in the Master of Philosophy (M.Phil)/ Doctor of Philosophy (Ph.D.) Regulations (amended in 2019) and it is fit for submission and evaluation for the award of degree of Master of Philosophy (M. Phil.) of the University.

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Place: Lucknow ***Shivangi Maindola***

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Chapter 1

Introduction

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Introduction

In writing the history of India, historians have the scope of unmasking the realities of the past. Philosophy in history gives the blanket to the historians to utilize various methodologies to review the events from fresh perspectives. Environmental History in the history writing holds an interesting place in the stratum; it crucially dabbles between various disciplines to highlight nature's role and response in making of history. Another question which arises in the psyche of a historical thinker is also based on the importance of man's actions or the role of determinism in history.

In the current context, environmental history holds an important place in the understanding of contemporary times. The crisis of global warming and ecological catastrophe has further aggravated the need to understand man's role in this tragedy. Due to fast growing depletion of environmental quality the task of writing environmental history becomes more challenging. When the first academic environmental history was crafted in India it opened the gates to the untouched narratives and soon by the turn of the century the domain was flooded with new environmental accounts. The various writings were immersed in new essence which had unlimited new sources to register the wide arenas. The environmental history generated accounts on ecological human thought, the human interaction with nature and agencies of ecological management.

Since its inception in 1980's, the Environmental history in India has come a long way. The rich revisionist literature has vastly epitomized the historical paradigm. The complexity and interwoven character of Indian history offers opportunities to

historians to polish their standpoints. Three decades of environmental narratives has still left a wide gap in the historical knowledge. The realm of institutional history has roughly been highlighted from an ecological perspective. The micro analysis of scientific forestry in the colonial period has the scope to fill the gaps in our understanding of colonial policies. By closely examining the foundation of the school in the regional and global context we can understand the motives and endeavors of the Empire. Through the keen observation of the important works of various foresters associated with the institution we can try to understand the dual concept of 'exploitation' and 'conservation', as the eminent colonial foresters were an active agent of this scientific infusion.

The period of the 19th century witnessed the political growth of the empire and by the 1850's entire subcontinent had fallen into the hands of the empire. The numerous wars and population growth had deteriorated the conditions of forests. It was believed that these concerns could only be addressed by the application of scientific principles, therefore to mitigate the problem of forest denudation and desiccation, a forest management was introduced. These administrative steps provided the department tremendous success and financial growth. To further strengthen the pillar of Indian Forestry the appointment of natives was considered a very crucial step. The Ranger school was created on the model of continental schools of France and Germany, which were both the prominent founders of Forestry Education in Europe.

The arrival of colonial governance in the Indian Subcontinent introduced massive changes in governance patterns. The old political structures were either dissolved or were meshed into the colonial mix. The British rulers introduced education and European etiquettes to the masses of the country. The Introduction of scientific forestry in itself was a very interesting aspect of colonial regime. Scientific Forestry,

both as a professional methodology and as an academic domain carried a lot of significance to the Empire. In this context, the proposed study attempts to create a historical account of Modern Forestry Education through the chronological journey of Imperial Forest School. As a modern discipline, forestry infused Continental working techniques into the veins of Indian Forestry, which in retrospect does have a compartmentalized impact. The investigation of the trajectory of scientific forestry as an academic discipline can help us re-understand the colonial motivations. We can comprehend the stature of forestry as an imperial souvenir in the colonial context and view the position of the Imperial Forest School in solidifying the Empire.

This chapter introduces the importance of study in the larger picture and provides a detailed account on the methodology of the study. The section also introduces the context of Study, its wide Scope, and the important objectives, hypothesis, the historical methodology, detailed review of literature and brief account on the chapterisation of the study. Comprehensively the chapter discusses the research design and its various tools utilized in the making of this study. It simultaneously also introduces the framework of the study. Additionally it also highlights the important challenges and limitations briefly associated with the study.

1.1 CONTEXT OF STUDY

The modern environmental history of India was introduced by Ramchandra Guha, whose work on the *Chipkoo Andolan* magnificently generated a narrative on scientific forestry and its consequences on the Himalayan region of Uttar Pradesh. Guha brilliantly tapped various resources and produced an ecological historical account of the region. In his study he discussed the damaging consequences of British Forestry and its continuance in the Post colonial period along with its impact in the form of an

ecological movement. Similarly another crucial perspective from a new angle by Richard Grove dropped a fresh narrative on the presence of ecological sensibilities in British actions. Both the studies were monumental in the making of Environmental History of India. The two opposing narratives gifted the discipline with differing but enticing frameworks. The Guha model showcased the Marxian-Nationalistic model of ecological prudence, while Grove introduced the Imperial and neo-colonial model of Environmental History. After the advent of these two frameworks the historians rapidly registered themselves in the prevailing models.

With the passage of time a new post- Foucauldian interpretation poured in to fill the gaps in the historical understanding of environmental history. The new interpretation of environmental history reached the deep untouched corners in the field. These studies uncovered the heterogeneous nature of Colonial ecological policy and captured the diversified nature of human ecological response. Writing on the lines of revisionist view of history, the study aims to place the narrative in the objective historical process.

The study firstly is a part of larger debate on Environmental History of Modern India, It showcases the preliminary stages of forestry as an academic discipline and generates an institutional historical account to fill the gap in the historical understanding. Additionally the study also discusses the evolution of bureaucratic setup in the colonial Forest department. Most importantly the Institute's trajectory is highlighted to generate a lucid picture in its contemporary time, space and context. The study has aimed to capture the objective picture of the domain through the deep analysis of the institution.

Environmental history has a plethora of analysis on various dimensions of scientific forestry, including forest policies and ecological resistance. This study aims to throw light on an uncovered domain of institutional history in the field of scientific forestry. This study will discover the history of forestry school and generate a fresh account of its workings. The study would firstly provide a historical narrative of the institution and then move on to fill the gaps of environmental history using the history of the institute as a case study. The study would prove to be fruitful for understanding history of forestry education with new dimensions and in understanding the contours of imperial motives.

1.2 SCOPE OF STUDY

The study sheds light on the historical journey of the Imperial Forest School, which was started in 1878 to train the Ranger Class for the executive staff of the Forest Department. The school was inaugurated in 1878 which later evolved into a College in 1906. The period of the Study stretches from 1878 to 1906 and generates an evolutionary picture of the institution. The account further introduces the making of professionally trained Executive Class in India. The research additionally illustrates the Institute's history to revise the meta narratives drawn out of the past. Using the School's position in the historical past we can suggest that, in a nutshell it views history as the process.

The study places the institution in the Indian context to facilitate historical understanding. It explores the importance of the institution in the Scientific Forest Management. Fundamentally the study is placed in the environmental debate to furnish accuracy in the understanding of the past. The study does not claim to challenge any theory or framework but rather it views the history of scientific forestry

from the School's perspective. The temporal boundations of the study, limits us from drawing any major theoretical claims. The study concludes with a proposed speculation about the working of the institution in the twentieth century, thus leaving it in the capable hands of the future historians to uncover its nature in war timelines.

1.3 OBJECTIVE OF STUDY

The research study primarily postulates the following Objectives –

i. To explore the contextual growth of Scientific Forestry and its impact in the Indian Subcontinent in the Nineteenth Century.

ii. To generate a historically accurate account on the establishment and evolution of Forestry Education in colonial India.

iii. To prudently engender an important narrative on institutional history in Indian history.

iv. To document the narrative of the establishment and growth of the Imperial Forest School in India.

v. To analyze the evolutionary character of the school and its profound impact in the growth of Forestry Education in India.

vi. To highlight the connection of institutions with the globalized currents in the contemporary context.

vii. To capture the trajectory of creation of professionally trained executive class of the Forest Department in the colonial Era.

viii. To narrate the stature of Forest School in the Larger Framework of Environmental History.

ix. To further highlight the historical gaps in domains of Institutional History and Environmental History.

1.4 HYPOTHESIS OF STUDY

The study primarily proposes to write an Institutional History of Imperial Forest School in relation to the Environmental History framework.

i. The paucity of institutional history leaves a historical gap in the understanding of history. The study hypothesizes the presence of a profound association of Forest School with the working of the Forest Department.

ii. The study postulates the Institution as the disseminator of Scientific Forestry in India vitally in relation to global intellectual current of its time. The contribution of schools in the creation of a network of scientific forestry education is extensively proposed.

iii. The inception of the Institution is profound in relation to the formation of the Executive Class of Forest Bureaucracy in the Indian subcontinent.

iv. The study hypothesizes the profound role of the Institution in stabilizing the Forest Department and its impact on the future endeavors of the department.

v. The investigation of the historical trajectory of the institution speculates the presence of colonial flexibility in the workings of the school.

vi. The deeper analysis of the Institution facilitates the closer examination of Scientific Forestry, thus providing a fresh perspective in the environmental narrative in history writing.

1.5 METHODOLOGY OF STUDY

The meaning of research entails the investigator to precisely utilize a scientifically accurate research methodology. The respective study has utilized analytical, descriptive and case study methods to document the History of Imperial Forest School. The wide range of methods adopted in the making of the study provides a deep analysis on the historical development of the Institution. The aims and objectives of the study provide a clear roadmap to the study's purpose, which implies objectivity in research through description of accurate historical character of the institution in the respective time. The Descriptive method in the study highlights the causation factors associated with the making of Institution and also illustrate the evolutionary trajectory of the Institute. The analytical method in the historical enquiry fills the gap in the understanding by analyzing the historical event and scrutinizing the Institute's standpoint in its particular time, space and context. Lastly the Case Study method employed in the research is an important methodology tool which places the Institute in the centralized position to comprehend the history from its unique stance.

The study has aimed to capture institutional history in the environmental studies. The idea is to explore the untouched spectrums in the environmental history of India. The Institute forms the central theme in the analysis of the environmental approach of the Colonial Empire. The relationship of School with the contemporary intellectual trends is analyzed to create a historical narrative. The study has primarily focused on the institutional commencement and evolution, along with the existing patterns in Scientific Forestry in the Subcontinent, which lastly gets situated in the environmental history debate on modern Indian history.

The study is composed using a wide range of primary and secondary sources. Large number of published books and articles are consulted in the research process. The primary data is extracted from contemporary journals and Official Administrative Reports. Primarily the study has been conducted using a historical conceptual framework to draw an objective account of the Institution. The Institution features exclusively in Environmental History to provide answers to the popular query on colonial motivations.

1.6 REVIEW OF LITERATURE

The study aims to present a composite image of the establishment of Ranger School in Colonial India. The intent is to understand the reason behind the establishment, its growth over the years and the role it played in fostering the needs of the empire. The paucity in the studies of colonial forestry can be filled through the drawing up of institutional narrative. A detailed review of literature is appropriate to understand the wide range of existent historical literature in the environmental History debate.

The historical search for understanding the motives of colonial scientific attitudes is a widely studied domain in modern Indian historiography. The penetration of European Science carried different meanings for different individuals, simply placing the scientific forestry under one framework limits human understanding. The complexes of scientific agendas had an intimate relationship with the intellectual environmental thought and attitudes. The well knitted web of Scientific Forestry served as an important strand in European ecological management, which in return served the purpose of the state and additionally also created a sense of ecological resistance against the regime. The mosaic of contrasts in the agenda of the Scientific Forestry in the Indian subcontinent is an interesting image to capture. Historical accounts on

environmental history possess the key to the understanding of various contrasting contours in Indian History.

Globally, the domain of environmental history has evoked a debate on ecological use in history. The trend of writing environmental history in India was inaugurated by an Esteemed Environmental Historian named Ramchandra Guha. Guha's monumental work called, *The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalayas* changed the face of history writing in India.[1] The book is considered a first systematic attempt to understand the repercussions of Scientific Forestry in Colonial and Post Colonial Himalayas. The monograph set the tone for a conceptual framework called a Marxist- Nationalistic interpretation in Environmental History. Another book by Guha named, *Environmentalism: A Global History* gives a holistic account of the various environmental ideas throughout the globe.[2] He emphasized on the global scale of environmentalism and highlighted the incidents of several environmental movements under different socio-cultural contexts. The book talks about two waves of environmentalism, one which is located in the colonial period and another in the post-colonial period. The first wave is characterized by the introduction of scientific conservation under the threat of environmental degradation. Guha has criticized these remedial measures and policies which had ulterior economic motives. The second wave draws attention to the 1960s, where Guha discovers several environmental movements taking place across the globe under the influence of social and cultural justice. He also endeavored here to do a comparative study of different ecological movements and developments happening around the globe in the post colonial era.

[1] Guha, Ramchandra. *The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya.* Oxford University Press, Delhi, 1989.

The thought evoking academic currents of the 1980's precisely emphasized on the implications of Colonial Forestry. Some of the landmark ecological works established the fabulous contrasting connections between the British Forest policies and indigenous ecological attitudes. Another historian to have prepared a paradigm shifting interpretation is Richard H. Grove, whose diligently crafted book *Green Imperialism- Colonial Expansion, Tropical Island Edens and the Origin of Environmenatalism, 1600-1860,* attempted to trace the origin of environmentalism under the supervision of the Edenic anecdotes.[3] The book is a classic work, which talks about global intellectual environmental thoughts of the Colonialists, who had discovered the new enriched science with their close encounter with the tropics. Groove intelligently establishes the interventionist colonial imagery of the Europeans in various colonies. He widely emphasized on the development of ecological consciousness amongst the European scientists in the colonies under the prevailing concerns over eternal extinction of species. The study observes the early colonizers as the architects of Scientific Intellectual Temperament in the various Tropical colonies. The book marks the beginning of the Neo- colonialist model of Indian environmental history which uprooted the old exploitative image of the colonial masters.

The two crucial models on Environmental history facilitated a development of a wide range of work. Another important work on the colonial ecological regime was *The Fissured Land: An Ecological History of India,* by ecologist Madhav Gadgil and Ramchandra Guha.[4] The book postulates the British Intervention in the Indian subcontinent as the Paradigm shifting moment in determining the course of Indian

[2] Guha, Ramachandra. *Environmentalism: A Global History*. Penguin Books Limited, India, 2014.

[3] Grove, Richard, H. *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Envirinmnetalism, 1600-1860*. Cambridge University Press , Indian Reprint, Foundations Books, Delhi, 1995.

[4] Gadgil, Madhav, Guha Ramchandra. *The Fissure Land: An Ecological History of India.* University of California Press, Berkeley, 1993.

History. The book is a systematic attempt to compose a complete ecological history of India. It describes the ecological patterns and resource use in different societies and sheds light on the Colonial form of Ecological Governance.

The Historical Analysis of sacred groves in Indian History uncovered a vital attribute of traditional ecological management in the Indian cultural system. An enticing study on *Sacred groves of India- a plea for continued conservation* by Madhav Gadgil and V. D. Vartak brilliantly highlighted the existence of well conserved traditional forests, which were protected in the contemporary era through the intense traditional religious and cultural institutions.[5] Another study on this theme was crafted by Nanditha Krishnan who in her article named *Ancient Forests and Sacred Grooves* provided a brilliant insight into the ancient past. Krishnan's study highlights the presence of well diversified Sacred Groves (*tapovana)* in ancient India which were represented by valuable plant deposits.[6]

The traditionalist model of Environmental History was also represented by Atlury Murali in the monograph named *Whose trees? Forest Practices and Local Communities in Andhra,1600- 1922.*[7] Murali's analysis highlights an existence of symbiosis between various structures of political regime, agricultural system and forest management in the traditional Andhra society, which was disturbed by Colonial rule.

A crucial study has been presented by Historian V.M. Ravi Kumar in his Essay *Green Colonialism and Forest Policy in South India, 1800- 1900* has shed light on the

[5] Gadgil, Madhav &,Vartak, V.,D. "Sacred groves of India- a plea for continued conservation*." Journal of the Bombay Natural History Society*, No. 72 (2), pp. 314-320.

[6] Krishna, Nanditha. "Ancient Forests and Sacred Grooves." *Critical Themes in Environmental History of India*, Chakrabarti, Ranjan (eds.), Sage Publications, New Delhi, 2020.

[7] Murali, Atluri. "Whose trees? Forest Practices and Local Communities in Andhra, 1600- 1922*." *Nature, Culture, Imperialism: Essays on the Environmental History Of South Asia*, Arnold, David. & Guha, Ramchandra. (eds.), Oxford University Press, Delhi, 1995, pp.86-122.

colonial desiccationist discourse in relation to the southern region. The study explores the desiccationist concerns of the colonial government which were highlighted to facilitate state control over forests.[8]

Additionally the theme of environmental history was explored by another esteemed Environmental Historian named Dhirendra Dutt Dangwal, whose work *Forests, farms and peasants: Agrarian economy and ecological change in the U.P. hills 1815-1947* illustrates the ultimate consequences of scientific management on the agricultural economy of the U.P. Hills.[9] He highlights the disastrous impact of colonial ecological management on the traditional agricultural patterns of the hills. The study demonstrates the ecological history of the Hills from a new perspective of agrarian systems and demographic patterns in different decades.

Another dimension of Indian ecology was introduced by Vandana Shiva and Marie Mies in their vastly celebrated work *Ecofeminism.* The authors propose a theory which demonstrates the centralized role of women in operating the primordial ecological institutions in their own community bases. Shiva Additionally discusses the vital role played by women in regulation of agro ecological systems through customary practices, which is severely ruined by the expansion of Modern Market based structures.[10] Her analysis is monumental in understanding the ecological history from a feminist perspective.

Historian Arun Agarwal in his work *Environmentality: Technologies of Government and Making of Subjects* traces the ecological standpoint of the regional population of

[8] Ravi, Kumar,V.M. "Colonialism and Forest Policy in South India, 1800- 1900." *Global Environment: A Journal of History and Natural Science and Social Science,* No. 5, 2010.
[9] Dangwal, Dhirendra, Dutt. "Forests, farms and peasants: Agrarian economy and ecological change in the U.P. hills 1815-1947." *Studies in History,* Vol. 14, No,2, July- December, pp.349-371.
[10] Shiva,Vandana, & Mies, Maria. *Ecofeminism.* Bloomsbury Academic, United Kingdom, 2014.

Kumaun region in different time periods. The study is a fresh attempt to view the history of ecological resource use and resistance in changing times. While revisiting the argument on innate ecological sense in the Community setup, he craftily takes a fresh ecological stance. Agarwal traces the regional community's shifting responses in the altering political regimes in the twentieth century Kumaun.

In his celebrated work *Environment and Ethnicity in India 1200-1991* Sumit Guha creates a fresh perspective on Tribal history from an ethnographic standpoint. Guha re-questions the tribal isolation hypothesis by discussing the tribal community's social engagement with regional peasantry. Guha has brilliantly captured the display of political vigour by tribal communities in reshaping the political forces in differing time contexts.[11]

An exhaustive account on the indigenous resource management was attempted by Neeladri Bhattacharya in his article *Pastoralists in a Colonial World* in which he explores sustenance patterns of pastoral communities and their changing social and economic position in the Colonial era.[12] The study discusses the loss of grazing and forest access privileges by the nomadic groups under Legal framework of Colonial Regime. He explores the pastoral stance under the expanding Agrarian economy and Land acquisition.

The ecological history of India showcases a large number of studies on the Forest Policy of India. The colonial timeline exclusively features in the assortment of narratives on environmental perspectives. Sivaramkrishnan's study *Modern Forests:*

[11] Guha, Sumit. *Environment and Ethnicity in India 1200-1991*. Cambridge University Press, Cambridge, 2006.

[12] Bhattacharya, Neeladri . "Pastoralists in a Colonial World." *Nature, Culture, Imperialism: Essays on the Environmental History of South Asia*, Arnold, David. & Guha, Ramchandra. (eds), Oxford University Press, Delhi, 1995, pp.49- 85.

Statemaking and Environmental change in Colonial Eastern India explores the Colonial history of Bengal. His work investigates the regional variation in governmental policy in Colonial Bengal.[13] He highlights the existence of unique system of co- governance of forests and fluid land proprietorship He has discussed the interplay of several factors in Forest policy of colonial government. While reviewing the historiography in environmental history in *Forests and Environmental History of Modern India,* Sivaramkrishnan highlights the complexity in the imperial scientific agendas and Professional scientific endeavors. He discusses 'empire of science', which in his observation was a widely contrasting concept, as the professional scientific community's interests intersected with the imperial agendas, professionalism, resource management and other influencing factors.[14]

Another Historian of eminence Mahesh Rangarajan in his magnificent study *Fencing of Forests: Conservation and Ecological Change in India's Central Provinces, 1860-1914,* discloses the repercussions of Colonial Forest Policy on the Peasant population of Central Province. In this study Rangarajan reveals new dimensions of Colonial forest policy, which discuss the impact of policy on peasantry and tribal groups, in association with the shifting cultivation and hunting. The book represents the revisionist view of history which primarily views the history as a process rather than an event. [15]

Ajay Skaria's Book *Hybrid Histories: Forests, Frontiers and Wildness in Western India,* explores the history of Dang Community under the Colonial Regime. He

[13] Sivaramakrishnan, Kalyanakrishnan. *Modern Forests: Statemaking and Environmental change in Colonial Eastern India*. Stanford University Press, California, 1999.

[14] Sivaramkrishnan, Kalyanakrishnana. "Forests in the Environmental History of Modern India." *The Journal of Peasant Studies,* 36:2, 299-324, 2009.

[15]Rangarajan, Mahesh. *Fencing of Forests: Conservation and Ecological Change in Central Provinces, 1860- 1914.* Oxford University Press, Delhi, 1996.

vigilantly discusses the gaps in mainstream understanding on Wilderness. Additionally he highlights the history of the tribal community in association with changing political representation and their formal stance in different regimes. Skaria's work in an important discourse on tribal history, it revisits the concept of tribal imagery and brings out a unique narrative of changing stature of the Dang community in various timelines and contexts.[16]

A remarkable study by historian Satpal Sangwan investigates the agenda of the Professional Scientific Community in the colonial period in his celebrated article *Gentlemen Amateurs to Professionals: Reassessing the Natural Science Tradition in Colonial India 1780- 1840*. He explores the cultural context of colonial science in the Imperial era. Sangwan's remarkable study provides a trajectory of Professional Scientific development in the Indian Subcontinent and propagates the argument that the Scientific Community at the periphery held high stature and additionally exhibited relative environmental genius.[17]

A globalized history of forestry was attempted by Gregory Allen Barton in his study *Forestry and the origin of Environmentalism.* In his study he traces the history of Global Environmentalism as an intellectual stratum by placing the British Empire at the epicenter to understanding origin and its effects. In his study the genesis of environmentalism is traced in the wide spectrum of Imperialism which gradually generated a mechanism of professional forest management.[18] In a nutshell the book establishes the argument that while the ever expanding machinery of British

[16] Skaria, Ajay. *Hybrid Histories: Forests, Frontiers and Wildness in Western India*. Oxford University Press, New Delhi, 1999.
[17] Sangwan, Satpal. "From Gentlemen Amateurs to Professionals: Reassessing the Natural Science Tradition in Colonial India 1780- 1840." Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal (eds.) *Nature and Orient*, Oxford University Press, New Delhi, 2000, pp.,210- 236.
[18] Barton, Gregory. A. *Empire Forestry and Origin of Environmentalism*. Cambridge University Press, Cambridge, 2002.

governance continued to expand with an imperialist mindset, the forest cadre pursued conservation practices for the sake of conservancy and not profit assimilation.[19]

An enticing study by S. Ravi Rajan, titled *Modernizing Nature: Forestry and Imperial Eco- Development 1800-1950* tackles the intellectual origin of modern forestry. He introduces fresh insight by essentially highlighting a very important aspect of Continental Scientific Forestry. He traces the origin of colonial forestry in France-German tradition and analyzes the growth of continental forestry in the modern period which fundamentally was reshaped by the European experience in the colonies. He uses prosopography to understand the collective psyches of the foresters. He discusses the formation of the transnational community and its major expansion after 1850. In his commendable work he has attempted to obtain a panoramic view of the agendas and ideologies of the science of forestry across the empire. The Study also views the Science of Forestry as an independent entity throughout the British Empire. The book is an essential read to understand the inner incongruity in Scientific Forestry Motivations.[20]

The area of Institutional History holds the key to fill gaps in the Historical understanding. A very crucial attempt in drawing an Institutional History is made by Richard Drayton in his *Nature's Government: Science Imperial Britain, and the "Improvement" of the world*. The book is a masterpiece to understand the contributions of Kew Garden in fostering the British colonial expansion and legitimizing the imperial claims. It is a fine example of an institutional history which sheds light on the fusions and exchanges occurring within the Empire. While discussing the Kew Garden he highlights the role of the Institution as a chief

[19] Ibid.

[20] Rajan, Ravi, S. *Modernising Nature: Forestry and Imperial Eco- Development 1800-1950*. Orient Longman, New Delhi, 2006.

repository of Botanical specimens and its important influence in creating a botanical network.[21]

The environmental history of India is a widely studied domain which has produced large amounts of historical narratives from various angles. The collected works in Environmental History have a major contribution in reinvigorating the environmental debate. The new works by environmental historians keep the domain breathing and generate new questions of enquiry. A very important collected work titled *Nature, Culture, Imperialism: Essays on the Environmental History Of South Asia* edited by Ramchandra Guha and David Arnold feature a wide range of Important studies on the Environmental history of South Asia. The essays stage various dimensions of environmental understanding.[22]

Another important collected work which enriched the environmental understanding was featured in *Nature and Orient,* edited by historians Richard Grove, Vinita Damodaran and Satpal Sangwan. The book provides important essays in the environmental history of South Asia. The geographical limit of the book is extremely wide. It aims to provide British forest history in the Asian region and also rigorously discusses the various issues on climate, ecology, nature and ecological sustenance in the colonial era.[23]

Ranjan Chakraborty's edited work *Critical Themes in Environmental History of India* is an important collection of essays on new themes. The volume showcases essays on very crucial aspects of forestry, climate change, wildlife, water management and land

[21] Drayton,Richard. *Nature's Government: Science Imperial Britain, and the "Improvement" of the world*. Orient Longman, New Delhi, 2005.
[22] Arnold, David. & Guha, Ramchandra. (eds).*Nature, Culture, Imperialism: Essays on the Environmental History Of South Asia*, , Oxford University Press, Delhi, 1995.
[23] Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal (eds)*Nature and Orient*, Oxford University Press, New Delhi, 2000.

resource use. The book gives new insight in fresh themes and focuses on revising the methodological aspect of environmental history.[24]

Richard Tucker's *A Forest History of India* showcases important essays on British Forest Policy in India. The book comprises various essays by Tucker, on different aspects of Forest use and conflict on resource use in the colonial and post colonial periods. The essays on the Forest Policy in the Himalayan region are exclusively featured in the collection. The book gives a detailed historical account of forest history in India.[25]

The historical understanding of the institution of colonial forestry is incomplete without discussing the works of major British foresters, who became deeply engrossed in the forests of India. The accounts provided by Foresters of Imperial services often were mere daily experiences of these bureaucrats. These accounts, though personal in nature, are able to capture the wilderness of the woods. Amongst the most prominent forestry writings, is Dietrich Brandis's *Forestry in India: Origins and Early Developments* is a rich book written on the forest policies in India. This book is a well composed account on the distribution of forest cover and points out their role in maintaining the irrigational and the climatic system. Additionally the book also discusses the developments of scientific forestry in the Indian Sub-continent.[26]

The book *Forestry in British India*, by German Forester Barthold Ribbentrop is a very important account to understand the colonial administrative and legal system of forestry in India. The book highlights the contemporary measures taken by the state in the domain of forest surveys, settlements and conservationist policies. It also provides

[24] Chakrabarti, Ranjan. (eds.) *Critical Themes in Environmental History of India*. SAGE Publications, India, 2020.
[25] Tucker, Richard, P. *A Forest History of India.* Sage Publications, Delhi, 2011.
[26] Brandis, Dietrich. *Forestry in India: Origins & Early Developments*. Natraj Publications, Dehra Dun, 1994.

an insight in the internal developments in the administrative circles and briefly sheds light on the progress of forestry.

E.P. Stebbing's significant work titled *The Forests of India*, written in four volumes gives an insight in the forest policy of British India. The book chronically portrays the making of Colonial Forest system in India. It gives important administrative details in form of statistical reports and budgetary accounts, thus giving a comprehensive description. The volumes collectively form a brief narration of the British policies in various provinces in colonial India.[27]

A very crucial account by Forester R.S. Troup titled *Colonial Forest Administration* is a marvelously composed book. The book is a global history of British Forestry which discusses the administrative and scientific developments of Forestry in different British Colonies. Furthermore the book provides a large sum of official scientific findings and tables. It is a well referenced source to understand the various aspects of forestry administration. Due to the content and illustration the book is considered a masterpiece in Scientific Forestry Literature.[28]

1.7 CHAPTERISATION OF THE STUDY

In order to narrate a scientifically accurate historical account, a proper systematic description is required. A methodical chapterisation in a study makes the account objective and impeccable. A well organized historical account promotes a historian's craft. The study is crafted in a systematic manner to endorse appropriate research methodology. This study has been classified into the following chapters:

[27] Stebbing, Edward, Percy. *The Forests of India*, Vol.1, Jane Lane, London, 1921; Stebbing, Edward, Percy. *The Forests of India*, Vol.2, Jane Lane, London, 1922; Stebbing, Edward, Percy. *The Forests of India*, Vol.3, Jane Lane, London, 1926; Stebbing, Edward, Percy. *The Forests of India*, Vol.4, Champion, H.G.,(eds.), Oxford University Press, Oxford, 1962.
[28] Troup, Robert, Scott. *Colonial Forest Administration*. Oxford University Press, Oxford, 1940.

1. The first chapter of this study is the introductory chapter which aims to deeply introduce the title of the study. It deals with important introductory aspects which provide a concise roadmap of this study. The section inaugurates the topic and discusses the research plan and methodology utilized in the study. It provides the context of the study, the objectives, hypothesis, review of literature and chapterisation.
2. The second chapter titled Brief '*History of Forestry in the Nineteenth Century'* deals with the contextual portion of the topic. The chapter is divided into three sections, the first one discusses the continental forestry developments in Europe the next section explores the infusion of scientific forestry in nineteen century India, while the last section specifically discusses the development of scientific forestry in the colonial U.P. Hills.
3. The third chapter is the core chapter of the study, which is titled '*A Historical Account on Imperial Forest School*'. The chapter primarily discusses the vision of the Imperial Government while introducing Forest education in India. The chapter explores the detailed trajectory of the institution by investigating the foundation and evolution of the School. It provides eloquent details of the school's evolving working methodology and academic curriculum. The section is a comprehensive account of Imperial forest school's historical journey from its own unique standpoint.
4. The fourth chapter is the concluding chapter of the study which places the School in the Environmental History debate. The chapter firstly explores major environmental history frameworks and highlights their contribution in the generation of historical understanding. The chapter lastly discusses the school's distinctive intellectual standpoint in its particular time, space and context.

Chapter 2

History of Forestry in the Nineteenth Century

Chapter 2

History of Forestry in the Nineteenth Century

2.1 THE INFLUENCE OF CONTINENTAL FORESTRY

The Indian Subcontinent in the 18th century witnessed massive political and social changes on several fronts. The period marked the establishment of newer structures of power and the liquefying of some traditional kingdoms. The East India Company, a purely mercantile company flourishing under the ideology of *Laissez Faire* clearly marked its prominence on the Indian subcontinent in a short span of time. The ideology of *Laissez Faire* backed up the capitalistic endeavor of market expansionism of the Company. The tropical colonies or 'peripheral' zones posed as an important asset and these assets which were viewed as inexhaustible, were already in the depleting stages in the metropolis. The 18th century colonial expansion was the offshoot of growing capitalistic ideology. The phase of expansionism coincided with the organization of new modern establishments in which the new establishments or structures were both methods of expansion and 'improvements'.

The modern ideology in this context of colonial acquisition meant the application of the western technocracy on the eastern tropical lands. Similarly, the allocation of 'scientific' or western principles on nature was seen as necessary. The initial phase of expansion in the subcontinent proved to be distressing for the forests as it was based on inadequate tropical knowledge and scanty evidence.[29] State ownership of forest products led to massive forest destruction and breakage of traditional resource

[29] Pouchepadass, Jacques. "Colonialism and Environment in India: Comparative Perspective." *Economic and Political Weekly* 30, no. 33 (1995): 2059-067.

management structures[30]. In some instances the new system of resource utilization had inadequate space for traditional practices and communal rights[31]. Commonly the initial period focused mostly on the economic value of the forest resources. The importance of the rich deposits only became a matter of grave concern in the second quarter of the 19th century and the attention on the depletion was provided merely on realization of timber paucity. It was when the colonial government attempted to bring German expertise, that the real 'systematic' forestry was introduced in India. The metamorphosis of German scientific principles and English bureaucracy painted the ecological picture for the Indian forests. The road from the early phase of laissez faire beliefs to the introduction of Utilitarianism of Bentham through Dalhousie's Forest Charter of 1855 was indeed a long one.[32] It can be stated unambiguously that scientific forest management in India was an offshoot of continental forestry practices. The imperial system, on forestry aped the continental forestry principles and applied it on the tropical lands to organize a modern system of forestry.

The roots of colonial environmental concerns could be traced in the works of continental scientific community of the 18th century. The preceding centuries of enlightenment had left an impressionable remark on the scientific minds. This period also witnessed the emergence of mechanization in production, industrialisation and naval expansion. The Age of industrialisation also showcased the age of expansion, the augmentation through both war and trade. Meanwhile, the constant combat for power amongst the European states drained the treasury and destroyed the forest

[30] Guha, Ramachandra. "Scientific Forestry and Social Change in Uttarakhand." *Economic and Political Weekly*, vol. 20, no. 45/47, 1985, pp. 1939–52, http://www.jstor.org/stable/4375015.

[31] Murali, Atluri. "Whose trees? Forest Practices and Local Communities in Andhra, 1600- 1922*." *Nature, Culture, Imperialism: Essays on the Environmental History Of South Asia*, Arnold, David. & Guha, Ramchandra. (eds.), Oxford University Press, Delhi, 1995,pp.86-122.

[32] Barton, Gregory. "Keepers of the Jungle: Environmental Management in British India, 1855-1900." *The Historian* 62, no. 3 (2000): 557-74.

reserves. In the race for superiority and resource gain the several damages were made on the continental forests at home. The display of Incognizance and ignorance had left the forests on the brink of extinction.

Meanwhile, the connection between the rainfall and forests captured the interests of the scientific minds in the 18th century. Several prominent scientists and explorers were actively investigating the connection between forest clearances and regional climate [33] Naturalist Compte de Buffon's study claimed that deforestation led to climate change and to heating up of the planet, and that the lands with dense forest had colder climates.[34]There was a prevalent belief amongst the continental scientists, that the rapid growth of population was leading the world towards resource depletion and climate catastrophe. Evidently in order to maintain economic stability, environmental effects were noticed and scientifically studied. Paradoxically the prevailing views on humanification of nature and Edenic anecdotes of garden also attracted attention of writers and poets. [35] The unexplored lands in the popular literature and travelogues attracted the wandering eye of the explorers. In the view of George Basalla, the initial period marks the application of Baconian advice of drawing historical collection in the tropical lands, by the new settlers. [36]

By the beginning of the nineteenth century, a substantial amount of scientific literature had been fashioned on the subject of importance of forests. The gradual development of the scientific temperament in the field of forestry gave birth to the

[33] Rajan, Ravi, S. *Modernising Nature: Forestry and Imperial Eco- Development 1800-1950*. Orient Longman, New Delhi, 2006. pp.,23.
[34] Ibid., pp., 23.
[35] Grove, Richard, H. *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Envirinmnetalism, 1600-1860*. Cambridge University Press, Indian Reprint, Foundations Books, Delhi, 1995.
[36]Sangwan, Satpal. "From Gentlemen Amateurs to Professionals: Reassessing the Natural Science Tradition in Colonial India 1780- 1840." Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal (eds)*Nature and Orient*, Oxford University Press, New Delhi, 2000, pp.,210- 236.

professionalization of the domain. In context to the emerging environmental dangers the importance of forests was highlighted proficiently. In the new literature it was established that the forests had an impact on the local climate of a region and they could avert several other calamities.[37] The over utilization of land for agricultural purposes and commercial activities were leaving a mark on the forests. It was realized that the extension of cultivation had created sizable demand, resulting in the diminution of forest. In order to keep the forest resources abundant for future use a sustained yield based on demarcation, classification and scientific management was carefully crafted. To further facilitate the agenda of forest management, professionalization in forestry was promoted. The professionalization of forestry was initially started as state initiatives in the form of formal Forest Schools in France and Germany.

In Germany the destruction of wood supplies and regular demand of the state had given birth to the realization of the apocalyptic dangers associated with forest resources. The thirty year war fought by the German state had also aggravated the prevailing dangers on forests. While the exploitation of forests for the purpose of game by private landed gentry damaged young saplings.[38] Their depleting condition raised a question on the mode of resource utilization, both traditional and formal. To maneuver emerging demands and deterioration, the inception of professional forestry in Germany was seriously being considered. The professionalization of forestry gradually sprouted under the influence of Cameralism, which propagated the ideology of state control for the betterment of the masses. Progressively several methods of continental forest management were devised over time, which were later rigorously

[37] Troup, Robert, Scott. *Colonial Forest Administration*. Oxford University Press, London, 1940, pp.,31.
[38] Saldahna, Indrani. " Colonialism and Professionalism: A German Forester in India." *Economic and Political Weekly*, Vol. 31, No. 21, May 25 1996, pp.1265- 1273, pp. 1266.

applied by the German foresters in British India. These techniques included demarcation of forests on the basis of tree classification, application of empirical methods and mathematical calculations. Through the sophisticated use of mathematics, foresters prepared maps, demarcated areas and calculated total forest mass.[39] In Germany the emphasis was laid on fast growing coniferous trees, which greatly changed the composition of forests.[40] Simultaneously, rapidly growing anxieties towards timber depletion were answered by the implementation of regulations on felling.[41] To further strengthen the state forestry mechanism, the German State proposed the opening of several forest schools which would train the recruits for propagation of new methods.

Similarly in France, a school for forestry was established at Nancy in 1824, to educate the budding foresters. The French foresters propagated similar scientific attitudes, which focused on the application of modern scientific principles in place of traditional methods. The French forests soon were converted into mono-cultural forests with limited variation. The mixed forests were replaced by lucrative species of wood. With time these schools became a cradle of continental forestry and they created a class of European foresters who would rule the tropical jungles of the world. The continental institutions functioned on the modern principles of scientific forestry, which precisely emphasized on the concept of state ownership, mono-culturalism in forests and application of modern methodology. With the passage of time, these acknowledged methodological concepts of continental Forestry were transmitted into new geo-political zones. The same principles reached the shore of India and progressively infused itself in the fabric of Forest Departmental workings.

[39] Opcit. Ravi Rajan, pp. 28.
[40] Opcit. Saldahna, pp.1266.
[41] Ibid. pp.1266

2.2 BEGINNING OF FORESTRY IN INDIA

The period of the 19th century in the Indian subcontinent was marked by vast political and economic expansion of the British Empire. Massive gains were made on economic, political as well as social levels. The gains or expansions by the East India Company were primarily achieved through the power of expansionist military and strong naval bases. The needs of the strongest growing power were met by tapping several resources in the Country. India as a sub- tropical region was basically an enormous opportunity for quenching the thirst of the empire with respect to its growing economic and political needs. The isolated virgin lands of the subcontinent offered a wide variety of flora, which eventually in the long run made the British Empire victorious in the race of colonial expansion. Later we find that the indigenous Timber became the most important asset of the Forest Department in India.

In the beginning of the 19th century the substantial forests of the subcontinent were considered inexhaustible by the Company officials.[42] The diversified composition of forests offered in India was an economical solution to the British Empire's growing needs. The ample supply of Indian timber was widely used for military endeavors and naval expansion of British power. Meanwhile, England had almost lost a vast amount of forests, thus increasing their timber dependencies on tropical colonies.[43] It was the Indian Teak, the most reliable of shipbuilding timbers which saved England during Napoleonic Wars.[44] The misconception of forest abundance led to the quick destruction of the forest reserves by both private merchants and the government

[42] Opcit. pouchepass, pp. 2062.
[43] Ibid., pp. 2062.
[44]Guha, Ramachandra. "Forestry in British and Post-British India: A Historical Analysis." *Economic and Political Weekly*, vol. 18, no. 44, 1983, pp. 1882–96, http://www.jstor.org/stable/4372653.; winters 559.

officials, and it was observed in the first half of the nineteenth century that in the Western Ghats timber merchants had recklessly exploited the forests.[45] The rampant colonial ignorance towards forests was accompanied by several other misguiding attitudes. Commonly it was stated in the official's circles that the forests were hardly a revenue producing asset and that agriculture was more important than stagnant Trees. Additionally the clash between the departmental officials on the issue of land use was a highlighting matter in the initial stages.[46] Agricultural land expansion for regular land revenue was the major roadblock towards the conservation of forests. Evidently in Europe scientific conservation had majorly been adopted and applied, meanwhile in India it received formal attention in mere installments through individualistic efforts. The initial application of scientific forestry principles in India failed to produce any concrete result on a large scale and it was only after the arrival of strong scientific figures like Hugh Cleghorn, Gibson and most importantly Dietrich Brandis that the Department of forestry turned from being a liability to being an asset.

The growing demands and political expansion caused a sensation of panic amongst the British Government regarding the[47] position of depleting forest resources. The increasing timber demands for naval service also coincided with the growing concern about rapid deforestation, siltation, water shortages and desiccation. The urgency to secure the forests in India was first time felt in 1805, when a committee was constituted for the enquiry on the condition of the prevailing forests in the Malabar Region. The committee reports pointed out that the teak supply had been

[45] Opcit., Pouchepass, pp. 2062.
[46] Ribbentrop, Berthold. *Forestry in British India*. Office of the Superintendent Of Government Printing, India, 1900, pp. 146.
[47] Stebbing, Edward, Percy. *The Forests of India*, Vol.1, Jane Lane, London, 1921, pp. 63.

overestimated and the mature forests had been massively destroyed.[48] They further highlighted that the forests could be regenerated after restriction on free access.[49] Committee also suggested the reservation of teak trees as the 'royal asset' which was to be accessed only by the Company.[50] The proclamation on exclusive reservation of Teak was based on the previous reservation policy of Tipu Sultan which had provided 'Royal' status to the Teak and reserved the right of feeling.[51]

The Enquiry Committee further proposed the appointment of a special Forest Officer for the upkeep of forests in the Palghat region.[52] In 1806 Captain Watson of the police department was appointed as the, at least in name the 'First Conservator of Forests in India'.[53] His duties involved securing the Teak timber and saving precious Timber species from further deterioration. This urgency of securing the timber was a product of maltreatment expressed by the private proprietorship. On the other hand, company demands for the Navy supplies had applied additional strain on the timber trade. It can be postulated that the forests kept depleting at a speedy rate and were lastly secured only to provide access to the English royal needs. In principle, this conservatorship focused on restricting the felling by checking on the private proprietorship and imposing duty on Timber.

[48] Winters, Robert K. "Forestry Beginnings in India." *Journal of Forest History*, vol. 19, no. 2, 1975, pp. 83–90. *JSTOR*, https://doi.org/10.2307/3983237.

[49] Opcit., Stebbing. vo1. pp.64.
[50] Ibid., pp.64.
[51] Brandis, Dietrich. *Forestry in India : Origins & Early Developments*. Natraj Publications, Dehra Dun, 1994, pp.98.
[52] Negi, S.S. *History of Forestry*, Vol. 1.,Bishendra Singh Mahendra Pal Singh, Dehra Dun, 2013.
[53] Opcit., Winters.

The initiative of conservatorship failed to provide security to the Forests, in fact it was recorded that the trees were cut in private forests as well as in the cultivated lands.[54] The establishment of the new system met with resistance from local communities and private timber traders. Due to the constant rise of conflict the Conservatorship was abolished in 1823. It was observed that forests remained severely damaged with no regeneration initiated. [55] The consequences of mismanagement had forced the government to reconsider the approach towards Forest Management. In a nutshell, the first conservatorship failed to establish Forest Monopoly in the Malabar region.

The efforts to re-establish the conservatorship did not take shape for another few decades. Meanwhile, it was observed that the deterioration of trees continued on a mass scale. The imperial narrative had pointed out that the incessant greedy behavior of private proprietorship and uncontrolled felling had left the forests in a pitiful condition. The initiative of restrictive use of forest resources had failed to improve the condition of the forests. Meanwhile, the increasing economic demand and deforestation had left the forests in a dreadful state.

Amongst the administrators of the Company, population growth and agricultural expansion were seen as a major threat to the ecological stability of the Colony. According to the early foresters, colonial forests faced severe adversities due to the aggregated demands of cash crops. Large tracts of forest lands were being converted into agricultural lands to receive the fruits of regular land revenue. It was observed that the increased demand and reckless working methodology had depleted the natural forests. The lack of concrete forest policy had also created gaps in the matters of

[54]Opcit., Stebbing, Vol.1, pp. 70.
[55] Opcit., Ribbentrop, pp.,65,66.

resource utilization. The enthusiasm lacked administrative support, as the forests were still not considered important for revenue generation.

By the second quarter of the nineteenth century the sentiments towards securing the resources had begun to mushroom in the Official Proceedings. It can be observed that Silvicultural and Arboricultural principles were gaining momentum in the policies of the British Government. On economic grounds, the traditional practices of forest burning, shifting cultivation and grazing were viewed as the reason behind denudation and deforestation. It was expressed that common people extracted endlessly to meet their needs.[56] The practice of burning was considered the most difficult obstacle in forest management. The fire, according to the imperial administration, was a major threat to the forest regeneration; it was considered a destroyer of young tree saplings and potent seeds. Under the traditional practice fire was ignited by the villagers to burn the dry grasses in the dry season to expect lush green grass for cattle fodder in the post monsoon season. Imperial officers condemned the practice on the grounds of conservation. Often the forest fires, under the influence of winds used to spread into large areas, delivering further damage to the surrounding forests. It is said that fire protection is undoubtedly a sine qua non to secure the forests.[57]

Another traditionally followed agricultural practice of Shifting cultivation was practiced in many parts of the subcontinent with different names, like kumri, khil, jhum and taungya. To the imperial eyes, the system of shifting cultivation meant rapid felling of forests and speedy depletion of forest repository. In response, the practice of shifting cultivation was banned on several occasions by the government.[58] In Burma, where the shifting cultivation called taungya was practiced by the Karens, Brandis

[56] Ibid., pp. 59.
[57] Ibid., pp.178.
[58] Opcit., Brandis, pp. 107.

convinced them in 1856 to incorporate shifting cultivation with teak plantation.[59] Applying the method of his homeland, Brandis developed an arrangement of Linear Valuation System, which focused on the calculation of teak trees and their classification.[60] In a nutshell, the continental system of forestry was a proponent of crafting monocultural forests along with a minimum private intervention to enhance Governmental Control. These methods of intervention were supported by the growing scientific anxiety towards the problem of deforestation and desiccation, which were quite profound in various parts of the subcontinent.

In dry and arid regions of India livestock grazing was another important matter of imperial concerns. In the summer seasons often the Dry Regions struggled to support the fodder supplies for the livestock population. The lack of regular water resources also posed a major challenge to the ruling authorities. In context to the arid region, Brandis had stated, "*In India, where directly or indirectly, the success or failure of the crops depends on rain at the right time and in suitability quantity, it is natural that the conservancy and improvement of its forests should have been regarded as one of the means to be employed for better regulation of the rainfall*".[61] To secure the existing resources in difficult terrains, the problem of over-grazing was resolved by securing the forests and judiciously limiting their use. It was recommended by the State that the reserved forests were only to be opened during scarcity. These measures of reservation were laid on the tenets of scientific observations in different regions.[62]The scientific observations highlighted the importance of forests in increasing the number

[59] Opcit. Ribbentrop, pp.191.
[60] Rajan. S. Ravi. "Imperial Environmentalism or Environmental Imperialism?: European Forestry, Colonial Foresters, and the Agendas of Forest Management in British India 1800–1900." Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal (eds) Oxford University Press, New Delhi, 2000, pp. 345.
[61] Opcit., Brandis, pp. 28.
[62] Troup, Robert, Scott. *Colonial Forest Administration*. Oxford University Press, Oxford, 1940, pp. 24.

of rainy days.[63] Based on the Colonial Recommendation in 1874 it was observed that Ajmer State passed a special regulation to form State Forests securing special rights for the villagers for their resource needs.

The importance of forests and their ecological impact was highlighted in the collective voices of the colonial foresters. The proponents of forest conservation based their arguments on the prevalent European Scientific theories on disastrous effects of deforestation.[64] The Scientific literature stated that the forests regulated the climate and were important for soil conservation, climate regulation, and preservation of natural water resources and also regulation of rainfall.[65] Colonial scientists in the first half of the nineteenth century were additionally driven by these intellectual currents and saw themselves as the agents of change.[66] Exhaustive use of forest resources had left bare patches in many parts of the subcontinent. The patches were often viewed as the result of irregularities in resource management. It was believed that the restriction of human activities in the forests could help in the regeneration.[67] The importance of forests on local climate and soil fertility were stressed upon. It was precisely stated that the rain water on the open patches could easily carry away the upper layer of the soil and even change the river topography. To arrest the issue of soil productivity, foresters advocated the monitoring of torrents and river movements. Planting of flora was especially prescribed for the hilly region to not only fill the land but also to produce valuable species in forests.[68] The foresters believed that the climatic changes or desiccation were the repercussion of exponential deforestation.

[63] Ibid., pp. 25.
[64]Opcit., Ravi Rajan, pp. 62;Troup, pp.24.
[65]Opcit., Troup, pp. 21.
[66] Opcit., Ravi Rajan, pp.63.
[67]Opcit., Ribbentrop, pp.38.
[68]Opcit., Brandis,pp. 51.

The availability of substantial scientific literature metamorphosed the impact of forests on the local climate.

The dual aspect of depletion and demand was balanced by the Government, through the implementation of legal actions and appointments of committees. The second quarter of the nineteenth century witnessed the growth of enquiry reports on forest conditions in different parts of India. In 1837, Dr. Nathaniel Wallich produced an important report on Teak resources of Burma, which affirmed the unmatched Teak quality prevailing in the region; it further advised the government to ponder the provision of Restrictive use of Teak.[69]

Meanwhile, due to the potential Teak Forests, the Madras and the Bombay forests were given special attention. The Malabar Report of 1838, by Clementson had revealed that the majority forests had allowed cutting of teak without considering the girth and age of the tree.[70] Collector M.H. Blair's report of 1838 on the Canara Forests provided details on the classification of forests into two categories based on the quality and location.[71] Following the previous reports, Malabar Collector Mr. Underwood produced another important report on the Malabar Forests.[72] Most importantly, Underwood explicitly advocated revival of Conservatorship and extensive purchase of Forests for regeneration.[73] Similarly the Bombay government also urged Dr. Gibson, the Superintendent of Bombay Botanical Garden to inspect and formulate a report on the prevailing conditions of the forests.[74]

[69]Opcit., Robert k winters , pp. 85.
[70]Opcit., Stebbing, Vol. 1 pp. 74.
[71] Ibid., pp. 76.
[72] Opcit., S.S. Negi. Vol 1. pp.50.
[73] Opcit.,Stebbing. Vol 1. pp.85.
[74] Opcit.,Stebbing Vol. 1 pp.78.

The second quarter of the nineteenth century interestingly represented a blend of various ideas for saving the forests. The reports represented the psyche of the government or the fears of permanent Timber loss. The reports differed in their advocacy of direct government intervention. Based on the investigative reports the Conservatorship was reintroduced in the subcontinent. The return of the post was a crucial stride in the making of the Forest department.

It was observed that Arboriculture was brought into the picture to provide supply to the new ventures, especially the railway industry which originated in 1853. In 1842, the Court of Directors recommended establishment of teak plantations to manage the growing demands.[75] The first major experiment in this direction was conducted by Mr. Conolly, the collector of Malabar (Madras Province) in the form of Nilambur Teak Plantation in 1840. The enticing feature in the endeavor was the application of various experimental techniques to comprehend the Teak germination process. Various officers linked to the experiment proposed diversified methods to facilitate the germination of Teak seeds. It was estimated that the plantation in its mature stage had the potential to fetch high revenue estimates.[76]

To further secure the needs of development and growth, major provinces were put under Conservatorship charge. In 1847 Dr Gibson was appointed Conservator of forests in the Bombay Presidency and in 1856 Dr Cleghorn was appointed the Conservator of Madras Forests. During the tenure, Dr. Gibson visited the Northern Canara Forests to identify and examine the tracts of the region.[77] Gibson repeatedly toured various regions and observed the ramifications of Forest clearance on Climate

[75] Opcit., Ribbentrop, pp.67.
[76] Opcit., Ribbentrop,pp.190.
[77] Opcit.,Stebbing, vol 1. pp.119.

change and its deep impact on river flow.[78] Another issue which was found in the region was of *Kumri* cultivation which was generally considered catastrophic to the Forest regeneration but remained predominantly unchecked due to vagueness on private individualistic rights. Gibson's three prime objectives were focused on suppression of *Kumri* cultivation, formation of Teak plantations and probing the climate change factors.[79] Similarly Dr. Cleghorn also propagated the introduction of greater clarity in defining proprietary rights and increment in governmental control to promote Forest conservancy.[80]

The foresters collectively presented a united front through their reports to propagate their ideologies of greater governmental intervention. They exclusively espoused the implementation of fire protection schemes, ban on shifting cultivation, removal of 'inferior' species and protection of Teak forests. At the onset of imperial conservatism in the first half of the nineteenth century, the proponents prominently voiced the problem of private proprietorship.[81] Cleghorn's position in the British Association meeting in 1850 highlighted his concern over the drying up of water resources due to forest depletion.[82] The reports and proclamations collectively materialized a gradually growing organ of the Government.

In the history of Indian Forestry the advent of Lord Dalhousie marked a significant moment. On 3rd August 1855, Governor General Lord Dalhousie laid the tenets of new Charter of Indian forests, which declared the formation of state forest and

[78] Ibid.
[79] Ibid., pp.325.
[80] Opcit., Ribbentrop, pp. 68.
[81] Schlich,William. *A manual of Forestry: Forest Policy in the British Empire*, vol. 1, Bradbury Agnew, London, 1922, pp. 95.
[82] Opcit., Stebbing, Vol.1, pp. 214.

protection of teak by imposing duty.[83] Lord Dalhousie is additionally also credited for the appointment of Dr. Dietrich Brandis for the management of the Pegu forests. It was primarily with the advent of Dietrich Brandis that, in the 1850's the shift towards the continental system of forestry was strongly materialized. Brandis brought with himself his personal experience of German forests which gradually spread its wings in the Indian setup. At the onset of his superintendence, Dr Brandis successfully calculated the forest yield and generated a working plan. He also urged the indigenous population to carry out teak planting with shifting cultivation.[84] By late1850's the gloomy sightings of deforestation by overutilization had opened the eyes of the administration. Brandis stated that, "*the experience gained here (pegu) and in the Attaran forests has taught a lesson, which public men in India have gradually learnt. It is not safe in India at present to entrust the management of public forests to private enterprise, the State therefore must step in and undertake the management of this source of public wealth.*"[85] With keeping the growing concern in mind, in 1862 Dietrich Brandis was asked by the Secretary of State to establish an efficient working system for the entire Indian Territory. Subsequently on 1st April 1864 he was appointed as the first Inspector General of Forests by the Government of India.

The inception of the Forest Department under the jurisdiction of the Public Works department marked the arrival of a new age for the foresters. The department gave a firm stand to the environmental policy of the British administration. It is said that the department was formed to fulfill the demands of the railway industry.[86] To ensure the efficient workings of the department a hierarchical structure was created, starting with

[83] Opcit., winters, pp. 563,564,568.
[84] Opcit., Ribbentrop, pp. 73.
[85] Opcit., Brandis, pp. 114.
[86] Guha, Ramachandra. "An Early Environmental Debate: The Making of the 1878 Forest Act." The Indian Economic & Social History Review, vol. 27, no. 1, Mar. 1990, pp. 65–84, doi:10.1177/001946469002700103.

the Inspector General at the top. Inspector general of forest was appointed to advise the government of India and to supervise the regional governments on matters of forests. At the provincial level the highest officer was the Chief Forest Officer or the Chief Conservator, followed by Deputy and assistant Conservator, then ranger and at the lowest level, a forester. Initially each forest circle had only one conservator, as the forest administration grew, the number of conservators in each province rose and it was evident that on 1st January 1884 there were a total fifteen conservators.[87]

The service of forestry was divided into two branches, the former being the administrative or controlling staff and latter the executive branch. At the commencement of Indian forestry, there was a lack of technically trained men. The paucity of trained forest staff was addressed in 1866 by Brandis, who made a special arrangement to select the best men for further training to the continental forest schools. This exceptional arrangement was made only for the recruitment of the Controlling Staff for the Indian forest Service. The system smoothly ran and in 1869, the first batch of trained professional men arrived in the service. This system of continental training continued till the year 1885, when England's own Forestry school opened in its own soil at Cooper's Hill. At the same time, Dr. Brandis also selected Dr. William Schlich and Berthold Ribbentrop, two promising forest Officers from Germany for the expansion of Scientific Forestry in India.

The growth of Forest Bureaucracy coincided with the application of scientific management. To secure the forests for better evaluation of resources, a legal mechanism became a priority. The period in the 1850's was marked by restrictive lines drawn by the government on private use of forests. These lines were darkened by the concrete structure of the legal framework, including the Forest Acts of 1865

[87] Opcit., Brandis, pp.55.

and 1878. The Forest Act of 1865 empowered the Local Governments to draft Forest Rules for their own regions; the act also divided the forests into "Reserved" and "Unreserved" forests, and laws associated with their access.[88] In the Reserved forests, The Act prohibited cutting of Reserved Species and other traditional practices of firing, grazing and shifting cultivation without any permission.[89]

The acts were accompanied by the system of developing working plans. At Burma, Brandis had proved the importance of a functioning working plan, which could help in establishing a smooth revenue flow along with the conservation of lucrative timber.[90] The Indian Forest Act of 1865 was passed to create state forests and demarcate the forest territories. The state forests were protected under Forest Rules at regional level under the Land Revenue Settlements. The Act of 1865 had provided promulgation to many regional rules, like the Central Province Rules of 1865, the Rawalpindi Rules of 1865, the North Western Rules of 1866, the Oudh Rules of 1866, the Berar Rules of 1871, the Coorg Rules of 1871 and Bengal Rules of 1871. [91] The 1865 Act was found to be ineffective in establishing a well structured Forest Regulation and it was observed that around 1869, Brandis drew attention to the need for a new act. It was discovered that the Act of 1865 had failed to demarcate the distinction between reserved, protected forests or private forests; also the act could not provide assistance in settling the local forest rights and in securing the minor forest products.[92] In 1878 the second Indian Forest Act was passed, the new act was applicable to all the Indian provinces, except for Madras, Burma, the Hazara district,

[88] Stebbing, Edward, Percy. *The Forests of India*, Vol.2, Jane Lane, London, 1922, pp. 12.
[89] Ibid., pp. 13.
[90] Opcit., Brandis, pp. 122.
[91] Opcit., Ribbentrop, pp. 108; Negi, pp. 71,72.
[92] Opcit., Ribbentrop, pp.109.

Ajmer, Coorg, Berar, and Baluchistan.[93] The act also dealt with the subject of Forest Staff and their functions.

The Act of 1878 provided a foundation to the Forest Administration and provided the government to fashion out the forest map of India. Under section 34 of the act, the local government, after careful consideration, could demarcate the forests into protected or reserved forests. Chapter III of the Act provided the provision of creation or protection to village forests. The act of 1878 acted as an instrument in securing vast forest territories and it was evident that by the end of 1881- 82, there were 49,213 square miles of reserved forests and 8,612 square miles of protected forests.[94] To facilitate the demarcation process, a separate Forest Survey Branch was established in 1872 and was placed under the charge of IG of Forests. Captain F. Baily, Deputy Conservator of North West Province was appointed as Superintendent of Forest Survey Branch and Working Plans. The system of management was developed on the principle of maintaining the equilibrium of supply and demand, to prevent both under or overutilization of forests.[95] The success of the department progressively increased with the effective network of railways and communication. The triumph can be traced by pointing at the surplus accumulation. The surplus during the period between 1864-65 and 1868-1869 had been found to be £ 1,40,000 which had dramatically jumped to £ 3,50,000 in the year 1882-1883.[96]

Second half of the nineteenth century marked the beginning of a landmark endeavors in the shape of a highly functioning Forest Department, which in spite of bureaucratic

[93] Opcit., Ribbentrop, pp.109.
[94] Opcit., Ribbentrop, pp.121.
[95] Rajan, Ravi. "Imperial Environmentalism or Environmental Imperialism? European Forestry, Colonial Scientists in Establishing the Mechanisms of Global Climate Teleconnections 1770- 1930." *Nature in Orient*, Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal (eds.), Oxford University Press, New Delhi, 2000, pp. 346.
[96] Opcit., Brandis, pp. 47.

hurdles successfully produced results. The internal power struggles for the forest administrators were immense.[97] Foresters had a dual duty towards forest conservation and revenue generation through timber. It was noted that constant scuffle for investment strained the efforts in the direction of conservation.[98] In the scenario of limited investment and low administrative support, pioneers of forestry indeed managed to produce remarkable results. The exceptional efforts by the first generation of foresters led to the foundation of Forest Administration. The system produced an effective system of management on the lines of efficient working plans, sylviculture and arboriculture. The features of Continental Forestry were clearly reflective in the Indian system of management. The introduction of a formal Training system for Indian Forest Service in 1866 was a landmark decision and to further corroborate the system it was decided in Circular No. 34, dated 1st July 1878 a Forest school was to be established for Rangers in Dehradun.[99]

2.3 HILL FORESTS OF UNITED PROVINCE BEFORE 1878

The utilization of forests for the hilly regions carried great significance, as the fragile young Himalayas cater to large numbers of ecosystems and micro climates. The dependence of the indigenous population on the forests is tremendous as agriculture in the hills is vastly supported by the surrounding forests. The hilly communities sustain on the adjoining forest resources, which provided fodder for the livestock, fuel for household and minor products for economic sustenance. The Himalayan region of the United Province caters to a wide floral repository; it showcases tall Himalayas, river

[97] Opcit., Rajan, Imperial Environmentalism, pp. 354.
[98] Opcit., Saldahna.
[99] SCHOOL CIRCLE. N.W. PROVINCES AND OUDH. ANNUAL PROGRESS REPORT OF FOREST ADMINISTRATION FOR THE YEAR ENDING 31ST MARCH 1879. BY CAPTAIN F.BAILEY, R.E., CONSERVATOR OF FOREST SCHOOL CIRCLE. DATED DEHRA DUN 15 JULY 1879. Forest Department Library, Lucknow, Uttar Pradesh.

valleys, meadows and even deep dark jungles. Since antiquity, the hilly communities have inculcated forest usage in their wide cultural and social institutions, for instance some hill tops are attributed to local deities making them pious to the local population.[100]

Prior to the advent of colonial power all the lands, in theory belonged to the regional kings. It is noted that Hilly kings left the common lands to the villagers for basic usage. The common lands were very crucial for surviving the harsh settings of hills; the forests provided fruits, vegetables, tubers, fuel, fodder, pastures and additional irrigational means. It is argued by N.S Jodha that common lands not only provide basic raw material for sustenance but also support additional income and provide wider employment opportunity, thus reducing inequality.[101] The common lands were extremely crucial for the survival of the hill economy; these lands were barely touched in the pre- colonial period. The kings did collect small returns on export of forest products.[102] It can be observed that traditionally, the village communities exercised enormous control on the forests and its products. Apart from the wide utilization of forests the village communities also preserved the sensitive ecological zones though their regional social institutions. The conservation of hill forests could even be traced from sacred grooves lying around the temples where large trees remained preserved by the efforts of local inhabitants.[103] In the pre- British era

[100] Guha, Ramachandra. "Scientific Forestry and Social Change in Uttarakhand." *Economic and Political Weekly*, vol. 20, no. 45/47, 1985, pp. 1939–52. *JSTOR*, http://www.jstor.org/stable/4375015.

[101]Jodha, N. S. "Common Property Resources and Rural Poor in Dry Regions of India." *Economic and Political Weekly*, vol. 21, no. 27, 1986, pp. 1169–81. *JSTOR*, http://www.jstor.org/stable/4375858.

[102]Opcit., Guha, Forestry in British., pp.1883.

[103] Opcit., Guha, Scientific Forestry., pp.1940.

regional village communities had an informal management system, according to which each village had a fixed boundary and had vast grazing and customary rights.[104]

In the early nineteenth century, the Hilly region fell into the hands of the East India Company after defeating the mighty Gorkha Rulers in 1815. The Gorkha were then expelled from the region and both the Kumaun and Garhwal regions were brought under the colonial rule. To maintain an amicable relationship with the regional power, Garhwal's Tehri region was returned back to the Garhwal King thus reinstating his powers again.

Meanwhile under English governance some changes were introduced in the forest management and proprietary rights. The foremost emphasis was laid on the expansion of agricultural lands for higher revenue collection. The First half of the Nineteenth century in the United Province Hills witnessed a spike in population and agrarian activity.[105] The imperial policy also majorly favored expansion of agriculture over pastoral economy.[106] The agriculture sector was commonly viewed as the economic cradle by the Government. In order to significantly increase agricultural lands, revenue settlements and land demarcations were deemed necessary. Commissioner G.W. Traill's San Assi Bandobast of 1823 is considered the first step towards land measurement in the region; the settlement also provided villagers an opportunity to own fallow and waste lands for cultivation at nominal rates.[107] Additionally the settlement also recognized the rights of villagers on forest and waste lands for wood collection and pasturage. Simultaneously it also proposed the leasing of certain forests for private usage and also the reservation of terraced land or 'thaplas' in the adjoining

[104]Ibid.

[105] Datt, Dhirendra. "Forests, Farms and Peasants: Agrarian Economy and Ecological Change in the U.P. Hills, 1815—1947." Studies in History, vol. 14, no. 2, Aug. 1998, pp. 349–371, doi:10.1177/025764309801400210.

[106] Ibid.

[107]Tuker, Richard. *A Forest History of India,* Sage publishers, India, 2011, pp. 69.

lower ranges for timber for the government usage.[108] It can be observed that immediately after the takeover, the ecology of the hills began to alter drastically. The emphasis on expansion of agriculture, unmonitored auctioning of leases and reservation of important timber for commercial purposes were evidently the motivations behind the revenue settlements.

The story of maltreatment of forests was repeated in the management of Dehradun Forests. Prior to the British possession of Dehradun, the valley showcased thick forests and favorable climate. Similar to other parts of hills the initial years were filled with dreadful incidents of maltreatment of forests. The sloppy management was evident through the thoughtless lease auctions in this period. The unregulated imposition of transit duties on forest products and irregular opening of leases were a common sight in the initial period.[109]

By 1840's the demands on forests of the hills and Dehradun valley had aggravated massively. Monumental Projects like the construction of Upper Ganga Canal and road networking imposed heavier burdens on the hill forests for construction purposes. The lease ownership became a matter of great interest to the government officials, the profitable returns and growing commercial demands formed the motivations behind advocacies for government ownership of leases. Interestingly Captain H. Huddleston showed reluctance on government ownership of Forest Leases, on the grounds of futility.[110] Huddleston had instead suggested the appointment of Armed Foresters for better protection of degraded hill forests.[111] His arguments proved to be in vain as the

[108]Rawat, Ajay, S. *Political History of Uttarakhand: Stone Age to 1949,* Ankit Prakashan, Haldwani, 2021, pp.203.

[109] Walton, H.G., *The Gazeteer of Dehra Dun,* Natraj Publication (reprint), Dehra Dun, 2016. pp.14.

[110] Dangwal, Dhirendra Datt. *Colonial Forestry and Agrarian Transformation in the U.P. Hills, 1815-1947: An Ecological History of the Central Himalayas.*1996, Unpublished PHd Thesis , Centre for Historical Studies, Jawahar Lal Nehru Univeristy, New Delhi. pp. 22.
Unpublished thesis D.D. Dangwal, JNU, page 22

[111] Huddleston to Lushington, no 25, 6-8-1844, Revenue Letters Issued, vol.10, Post Mutiny Records, Collection Pauri, Regional Archives Dehradun.

government lastly decided to hold the lease of the forests under its direct control. The internal discord and disagreements in the forest management was an interesting feature seen widely in the nineteenth century hills.

In the absence of any proper forest management several accounts of mindless felling were encountered. Both private contractors and government officials failed to understand the need for scientific conservation. A dreadful account of Mr. Fredrick Wilson highlights the extent of insatiability and irresponsibility towards the timber. In 1850's Mr. Wilson leased the Harsil deodar forests from Garhwal raja and attempted to float logs of deodar through hilly rivers, his attempts nearly depleted the deodar strands of Tehri.[112] Wilson is considered a local villain in the Garhwali folk memory, who was cursed by the regional deities for his mistreatment of Harshil forests and its wildlife.[113]

Similarly In 1853, the lower forests of Garhwal and Kumaun were put under the jurisdiction of Captain Read and Mr. Finn. They were later found to be responsible for severe devastation of forests.[114] The wastefulness of timber on the forest floor by Captain Read was even captured in the reports of Major Pearson, the first conservator of North Western Province. H.G. Walton writes in his Gazetteer of Dehradun, that the management system was nothing but a "forest revenue collecting agency" and there were no serious attempts towards systematic forest conservation.[115]

[112] Opcit.,Tucker, pp.76.
[113] Robert A. Hutchison, *The Raja of Harsil: The Legend of Frederick "Pahadi Wilson",* Roli Books, Delhi, 2010.
[114] Nanda, Neeru. *Forests for Whom? Destruction and Restoration in U.P. Himalayas.* HAR ANAND PUBLICATIONS, New Delhi, 2001, pp. 26.
[115] Opcit., Walton, pp.15.

On the other hand, the mutiny had pushed the need for a better communication network which meant generation of sturdy roads, railway and telegraph network.[116] The railways were to become a beacon of law and order and most importantly a revenue regulator. Railway was to fetch revenue by connecting the supply chain to the demand. The appointment of Survey officers was to establish a network of data collection on the various species of wood available in the remotest corners, including the hills of United Province. Alternative sources were being explored as it has been recorded that the Teak reserves of Malabar had already suffered severe felling for the creation of Bombay railway line.[117] In the north, Sal which was considered a potential timber for railways had already been depleted due to recklessness of private merchants and revenue department.[118] The rarity of Burma Teak and Sal led to the exploration of Deodar strands in the entire north western Himalayan belt. The Forest Department also recommended the exploration of other alternative soft timbers.

The crown had realized the value of forests for revenue generation, which is why the forests were to be reserved for the imperial needs. The systematic attempt of regulating the forest governance was inaugurated by making the Commissioner the *ex-officio* Conservator of Garhwal and Kumaun region in 1860. In the hills, Commissioner Henry Ramsay suggested restricted timber use and rotational workings of forest with the practice of marking the trees selected for felling.[119] Application of continental forestry lessons and principles of scientific management were considered decisive for conservation.

[116] Opcit., Stebbing, The Forests of India, Vol.1., pp.295.
[117] Opcit.,Tucker, pp. 77.
[118] Opcit.,Walton, pp. 15.
[119] Opcit., Rawat, Political History, pp. 233.

The next move was made in the direction of land survey under the authority of T.W. Webber, which included registering the forest extent, accessibility and its timber composition.[120] His report suggested that in the Garhwal and Kumaun regions some very valuable trees of good quality were available and amongst most precious were the Sal forests of the Dun, Bhabar and hills, and Deodar forests of Jaunsar- Bhabar and Bhagerathi.[121] The demand for wood for railway expansion was prioritized over other operations. Viewing the loaded forest availability in the hill and bhabar region we find that the Cutting of wood for the Railway Sleeper production was first officially registered in 1864-65.[122] In the notes of Dietrich Brandis, the first IG of Forests, he writes, "The stock of timber that can be floated down the Jumna and the Ganges rivers, and that can thus be made available for the Delhi- Rewaree line, is believed to be larger than the stock of growing timber in the hill forests under the Punjab Forest Department. But much less is known regarding the quantity available in the different forests than in the Punjab, and up to the time of Major Pearson's appointment operations in the Meerut Division were carried on in a most irregular and unbusiness-like manner, so that the Conservator must be allowed some time to organize efficient establishments, and to arrange a regular system of operations. It would not be prudent to rapidly extend operations before that portion of the forest establishment of the North- West Provinces has been placed upon a satisfactory footing; very great damage would be done to the future prospects of the forests if careless and irregular cutting were allowed".[123]

[120]Opcit., Stebbing, Forests of India,Vol1., pp. 501.
[121] Opcit.,Stebbing. Forests of India, Vol. 2, pp. 303.
[122] Opcit.,Stebbing, Forests of India, Vol.1, pp. 508.
[123] Opcit. Stebbing, Forests of India, Vol.2. pp. 310.

Takeover by the British crown led to changes in the governance pattern, the previous mistakes of mismanagement of forests had to be rectified.[124] The forests which were freely exploited by sheer greed had been ruined drastically and their regeneration was now being prioritized by the government. After serious contemplation a Forest Department was inaugurated in 1864 to provide the right direction to the Government of India in matters of Forests and their cautious utilization. It was considered a landmark move in the context of severely depleting forests of the Indian subcontinent. The Forest Department was the centralized figure on which the regional forest departments were based. Following the central authority, the Forest Department of North – West Province was inaugurated in 1868 and G.F. Pearson was officially appointed as the Conservator of the region. The regional department followed the guidelines of centralized authority and drew its Forest Rules on similar lines.

Legislation was a major part of scientific forestry as it determined the restrictive and vigilant use of Forest Resources. The Forest Act of 1865 and 1878 were major bedrock on which the entire Forest Department worked. The Acts categorized the forests into different kinds and ensured restrictive use. In the northern region the 1865 Act further reserved the Sal forests, which were to feed the future needs of the forest department and reserved forests were to secure the young saplings from fire damage procured on them by the people. The goal of the Forest Act was to systematize the operational management of large numbers of forests and ensure their logistic and conservation needs. The dearth of timber in the hills was also managed by drawing forest contracts with the hilly princely state.[125] The 1878 Act was stringent in

[124] Opcit., Stebbing, The Forests of India, Vol.1. pp. 299.

[125] Tucker, Richard P. "The Forests of the Western Himalayas: The Legacy of British Colonial Administration." *Journal of Forest History*, vol. 26, no. 3, 1982, pp. 112–23. *JSTOR*, https://doi.org/10.2307/4004579. pp. 117.

its legal position with greater emphasis on clarity over types of forests for forest use. The 1878 Act created a class of reserved and protected forests. The reserved forests with no open access were to provide sustained yield for future use. It has been recorded that the reservation of Sal during the formative days of Forest department in the shiwalik region provided fruitful results in the 1890's.[126]

Geographically the scientific intervention was slower in the Hills of United province than other parts of the country. Though, the serious exploration of Timber by British officials had lured the Government to observe the Forests of United Province Hills. Railway and other important constructions were a prime factor in vast cuttings of Forests in this belt. The cuttings had to be watchfully carried to ensure a sustained yield for the future, as the timber of fine quality was scarce. The reservation laws and rules had secured the forest for sensible usage. The next step required a regular source of army for Forest Management. The task of exploration of potential timber, demarcation work and proper management required a vast number of trained men. The forest work which was initially commonly carried on by the officers from Public Works Departments or Army was now being viewed as insufficient. It was realized by the Forest Department that the work of Scientific Management was a more complex activity than just focusing on Demarcation, Classification and Calculation, but was primarily a synthesis of various sciences. Under the circumstance of scarcity of important resources, the consolidation of the scientific structure was prioritized. It was consented that only a well-built organizational structure could provide an efficient force.

It is in this light that the First Forestry Institution of the British Empire was established in 1878 in Dehra Dun region of North- West Province. The Institute was

[126] Ibid., pp.118.

exclusively established to provide training to the Executive Branch of the Forest Service. Being the First School of Ranger Training in the British Empire it created a legacy in Forestry Education and unquestionably contributed in propagation of Scientific Forestry in the entire Sub-continent.

Chapter 3

A Historical Account on Imperial Forest School

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3.1 THE VISION FOR THE SCIENTIIC FORESTRY

In the Indian Subcontinent the first half of the nineteenth century was characterized by reckless treatment of timber and an absence of scientific conservancy. Initially the British government primarily focused on the expansion of agriculture and landed estates for revenue and military requirements. In order to facilitate the growth of agricultural lands, a large number of virgin forests were converted into farm lands. Meanwhile the collective damages executed by the military endeavors of East India Company, private auctioneers of timber and the absence of systematic forestry, further exhausted the existing jungles. An extreme urgency of introducing the Scientific Forestry was felt after witnessing numerous episodes of wasteful treatment of forests by both the native population and the ruling government. The indigenous treatment of forests and its resources was seen as the primary evil to the 'conservationist' tenets. Additionally, the resource profligacy exhibited during early colonial encounters had also left the jungles barren in various geographical zones.

Meanwhile, in the second quarter of the Nineteenth century the scientific literature written by Priestly, Humboldt and Boussingault discussed the effects of deforestation. The Scientific compositions had gained wide recognition amongst the British Officials, especially amid the Medical experts and Botanists.[127] Medical expert Hugh

[127]Grove, Richard, H. *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Envirinmnetalism, 1600-1860*. Cambridge University Press, Indian Reprint, Foundations Books, Delhi, pp. 427.

Cleghorn, an apostle of environmental conservation was foremost amongst the proponents of the environmental crisis in the Bureaucratic circle. Hugh Cleghorn generously attempted to raise the issue of deforestation in India in the meeting of the British Association for the Advancement of Science (BASS). Cleghorn's initiative proved to be fruitful, as by 1850 he had convinced the Association to sponsor the research to be conducted on the rapidly occurring deforestation in the Indian Subcontinent. The final research report was produced in 1852, which later in 1855 formed the basis of Dalhousie memorandum.[128]It was observed that these crucial attempts and scientific ventures made in the first half of the nineteenth century were only made by a handful of colonial officers. Concisely these micro level efforts though virtuous and extremely vital, did not establish any large scale colonial scientific mechanism for the forests. On the Contrary by 1850's abundance of forests was forming to be a concept of the past and precious Timber raw material was on the verge of extinction.

Logistically, the Nineteenth century also exhibited the growth of better infrastructure in the form of railways, canals and public building, which in turn increased large demands for timber and wood.[129] On the other hand the Forest Department was inaugurated to facilitate the management of the existing forests. The department's inauguration was an important step taken towards the establishment of an Imperial Forest Governance mechanism. It was noticed that since the inception of the department the workload had been around demarcation and protection work. Besides regular work it had an additional burden of producing heavy amounts of revenue to keep the government content. In the years between 1874-75, 1875-76 and 1876-77, it

[128] Ibid., pp. 461.
[129] Brandis, Dietrich. *Forestry in India: Origins & Early Developments*. Natraj Publications, Dehra Dun, 1994, pp. 30.

was observed that through timber operations, on an average the government had earned Rs, 19,71,721 per year.[130] The department was expected to increase its annual yield and simultaneously also its reserved forest lands. On reviewing the budget estimate for the year 1878- 79, SOS had expressed, "*The areas of forest at present reserved and demarcated throughout India bear but a small proportion to what, it is hoped, may eventually be taken up by the department, and as the areas are annually extended, it may be expected that the expenditure required for their conservancy will also increase. It is undoubtedly desirable that this increase of cost should be covered by receipts from the sale of forest produce, and under careful management this will no doubt be the case. At the same time it must be borne in mind that the present operations of the department are more with a view to the protection of forests from destruction, and the extension of their resources so as to meet the increased demands that may be expected to be made on them in the future, than for the purposes of present revenue. Someday, however, it may be hoped that the State Forests will contribute, to no inconsiderable extent, to the resources of the empire*".[131]

Apart from the establishment of the Forest Department, numerous measures were taken to hire professional foresters for management of diversified Indian forests. Starting from inviting German Botanist Dietrich Brandis for forest consultancy to the establishment of the Forest Department, serious measures were made towards establishment of scientific conservancy in the Indian Subcontinent. A large number of changes were introduced to concretize the foundation of the Department and also to save the existing Forests of the sub continent from complete depletion. Establishing the tenets of Continental Forestry was a taxing endeavor for the early foresters. The

[130] The Budget Estimate of the Forest Department for 1878-79, *The Indian Forester,* Vol. IV, July 1878, pp. 67.
[131] Ibid., pp.70.

issue of internal skepticism present amongst the colonial officers and the boiling debate on the importance of professional forestry training were few of the influential factors which raised obstacles in the initial days. Apart from merely securing the position, the department faced an added challenge of producing heavy revenue for government repository. It can be observed that amongst these existing complications, Botanist Dietrich Brandis intended the introduction of Continental Forestry in the Indian Subcontinent. Devotedly believing in the tenets of scientific treatment of forests, Brandis efficiently applied his continental teachings into the management of Burma Forests, which had been a solid victim of greed exhibited by private enterprise. It was later observed that the yield had increased drastically after the conservatory measures of Brandis.[132] As the strongest proponent of Continental Forestry Brandis declared that the target of scientific forestry was to conserve and utilize forests in such a manner which would provide permanent and annually increasing yield in timber and in revenue.[133]

The environment of constant depletion and degradation of forests had motivated the Imperial Government to establish a concrete managerial authority. A separate Forest Department was established in 1864 to counter the damages made to the Timber repositories. To consolidate the position of the department, Dietrich Brandis was appointed as the first Inspector General of Forests in India. The department started off by taking over the forests of the subcontinent and then decided to divide them into various classes after meticulous geographical survey, as it was the retaining and control of important forest tracts which could secure their numbers.[134] Additionally in the Imperial eyes, the State Forests in India were to fetch solid revenue resources to

[132] Opcit., Brandis, pp.120.
[133] Ibid., pp.121.
[134] Ibid., pp.32.

the government.[135] To further secure the institutionalized scientific interests of the government Dietrich Brandis managed to secure the proposal of sending two men to the continental forest school for professional training. This venture included sending selected men annually to the continental schools for superior staff training. The proposal sanctioned by the Secretary of India in November 1868 further consolidated the organization of superior staff, which had made training necessary for the superior cadre.[136] The professionally trained foresters were to provide the right vision to the forest department and bring in more systematic methodology into use. It was made evident that the burden on the forest department had to be handled prudently. Only an army of well trained administrative as well as ground staff could unburden the daunting tasks.

Evidently the superior staff had been secured through the continental training which was intended to look after the affairs of the Forest Department. Meanwhile there was also a greater demand for the strengthening of the departmental staff, for which a well trained executive staff was required. To produce an efficient class of executive staff a native ranger school was imagined. The Pan native ranger school was decided firstly to create a well trained subordinate staff and secondly to save the governmental expense of traveling. A local technical school was imagined to provide opportunities to the students in order to explore the local forests and also to get rightly placed in the bureaucratic setup. The vision of establishing the first ever Indian Ranger School was a daunting task, as it was believed that foresters could be easily made out of civil officers who were naturally good sportsmen with some common sense. A formal training was seen as a sheer wastage of resources by some officials, for instance on

[135] Ibid.,pp.35.
[136] Ibid.,pp.129.

20th August 1878, Cecil Bagshawe, Deputy Conservator of Forests, Jaunsar Division, expressed dismay in notes made on India appointed officers. He further attempted to justify the merit of several India or home appointed officers, who by far had contributed to the works of the department. Dismissing the fundamental role of training he further stated, "*It seems to me that Forestry is no occult science, and that the study of the first principles of Forestry cannot be called difficult; further, it must be allowed that Practical Forestry in India will for a long time consist in the application of first principles under the guidance of common sense*". He also added that," *I believe that any India appointed forest officer, after some experience and observation , combined with an intelligent study of theory of Forestry, has but himself to blame if for the forest service in India he is in any way inferior to an officer educated in the French or German forests*".[137] It was observed that regarding the subject of professional training, such skeptical arguments along with a hint of disagreement were a common sight in the administrative circles of British India.

The intensification of the stirring idea of a Forest School was a prolonged process which formalized into a formal structure over a long time period. In 1869 Sir Dietrich Brandis in circular number 11.F. communicated to the local governments on the idea of training natives for superior staff.[138] The report collectively suggested only an appointment of a handful of apprentices.[139] Evidently in the initial period an attempt was made towards direct training for natives. Under the scheme some native men were indeed selected and were placed under the charge of officials for receiving

[137] Cecil Bagshawe, Deputy Conservator of Forests, Jaunsar Division, to G. Greig, Conservator of Forests, N.W. Provinces, 20 August 1878, in ' Forest Officers Appointed in England and in India', *The Indian Forester*, Vol.4,1878-79, pp.154-61.
[138] The Forest School at Dehra Doon. *The Indian Forester*. No. 1, Vol. IV, July 1878, pp. 53.
[139] Ibid.

practical instructions.[140] The scheme did not take root in the system as the officials were often found to be swamped in departmental works. Similarly another initiative was planned for the appointment of natives, which involved granting training to young men at their own provinces for a year or two and then to be sent off to Engineering College at Roorkee or elsewhere for a year of theoretical instruction.[141] This experiment also did not produce impressive results and was abandoned after a few years. The Roorkee trial was found to be ineffective in giving quality lessons on silviculture and forestry related matters. In 1873 Dr Schilich additionally suggested the introduction of forestry classes for the training of natives, but lastly this suggestion was also discarded.[142] Evidently it was noticed that in the initial period the idea of an Individual forest school did not engage large audiences.

The first idea for the establishment of an institute was put forward by Sir Richard Temple in 1876. Temple had proposed a special provincial Forest School in Bengal region.[143] The idea proposed by Sir Temple could not formulate into reality. Later working on the same lines as Temple, Sir Dietrich Brandis submitted a complete proposal to the government of India for the establishment of Central Forest School in Dehra Dun. The location of the school was meticulously selected, as Dehra Dun was situated in the foothills of Himalayas and it already fostered Topographical Survey of Forests, the region additionally was also blessed with hilly forests which resonated with the Forests of Europe. At the beginning, the aim was to provide a functional executive class at the department's disposal and then increase the scope by broadening the training for controlling class of forestry. The amusing vision was carried only for

[140] Ribbentrop, Berthold. *Forestry in British India*. Office of the Superintendent Of Government Printing, India, 1900, pp. 233.
[141] Ibid.
[142] Ibid., pp. 234.
[143] The Forest School at Dehra Dun. *The Indian Forester.* No.2, Vol. VII, October 1881.pp. 111.

the recruitment of the natives for the post of forest rangers and foresters. In order to execute the planned scheme for the creation of the school, a concrete plan was devised. The school was to be established in a new separate forest circle with a Director at the top.[144] To facilitate the establishment of forest school in Dehra Dun a team of proficient forest staff was recruited. Strong emphasis was laid on the native recruitment in the forest school.

3.2 THE ESTABLISHMENT OF THE SCHOOL

The formal training of controlling staff in 1866 for the Forest Department was the major stride for the forestry education in the subcontinent, the Initiative provided the Forest Department with professionally trained foresters who were to become in charge of senior positions. It had been decided that school was intended to be established for training the native students for subordinate services and eventually the institution would further provide training for the controlling branch.[145] In British India, Forest Staff comprised three classes, firstly Controlling Branch or Imperial Service, secondly Executive branch and lastly Protective staff. The Controlling staff was selected amongst the Englishmen by the Secretary of State of India after which they received training in Europe while the Protective Branch was recruited locally. The Executive Staff consisted of Forest Rangers, Foresters with Lower Certificate, Extra Assistant Conservators and Extra Deputy Conservators. At the beginning even the Executive Staff was initially selected amongst the Englishmen. The new initiative of establishing an Indian Forest school was planned to provide capable Native Rangers and Foresters, who would form the Executive staff members. Professionally

[144]Ibid., pp. 112.
[145] Opcit., The Forest school. *The Indian Forester*. No. 1, July 1878, pp. 54.

trained staff was expected to bring their scientific knowledge to use, thus reducing the excessive burden.

Lastly in 1878 the plea of the forest department was answered by forming a new institution for Ranger training which was to provide a high yielding Executive Staff of the Forest Department. The introduction of Professional training was the goal set for the new class, which was to bring scientific temperament and methodology into use. The prime purpose set for the school was to provide training to the Natives and help them to get appointments in the Provincial Service. The stress was greatly put on the recruitment of the native population for Forest related works. The British Government contemplated that this attempt was utterly crucial for infusion of natives into the departmental fold as the natives were understood to be exceedingly acquainted with the Native Forests.

The Central Forest School was established in Dehra Dun on 1st September 1878 by the orders of government of India in Circular Number 34.F., dated 1st July 1878 of Department of Revenue, Agriculture and Commerce. This circular also formed a separate forest circle which was to include Forests and civil districts of Dehradun (including Jaunsar), Saharanpur (except the Patri Forest) and some leased forests around Jumna, Tons and Pabar river valleys.[146] The Circle was majorly formed to provide Forests for Practical Instruction and to protect the associated forests from any damage, both departmental and traditional. The forest circle was to provide exclusively dense forest for practical instructions and serve as model forests to put theoretical forestry lessons at use. Captain Fredrick Baily, R.E. was selected to be the

[146] SCHOOL CIRCLE. N.W. PROVINCES AND OUDH. ANNUAL PROGRESS REPORT OF FOREST ADMINISTRATION FOR THE YEAR ENDING 31ST MARCH 1879. BY CAPTAIN F.BAILEY, R.E., CONSERVATOR OF FOREST SCHOOL CIRCLE. DATED DEHRA DUN 15 JULY 1879. Forest Department Library, Lucknow, Uttar Pradesh.

Conservator of the School Circle Forest and was also appointed as the Director of the School and temporarily an additional charge of Superintendent of Forest Survey was also handed onto him with a salary at Rs. 1000 per mensem.[147]

During the onset of the school it was contemplated that the institution was only to be opened for candidates belonging to provincial governments and further exceptions could be made for candidates of other presidencies and local governments.[148] The minimum qualifications for apprentices were set at knowledge of basic ability to read or write in their own language with some additional grasp of arithmetic aptitude including vulgar and decimal fractions along with supplementary knowledge of vernacular accounts. [149] It was expected that applicants would be acquainted with some general English and their age limits were fixed at 18- 25 years. At the beginning it was decided that the course for Rangers certificate would last for two years.[150] The government initially had also made scholarship provisions for exceptionally promising students who could not afford Professional training. Later it was observed the fee was eliminated and no student paid the instruction fee.[151]

The period of establishment also marked some changes in the departmental staff organization. The staff which was earlier directly hired without prior training had been provided with new opportunities to gain professional training. Apart from the direct recruitment at the school initially another idea was discussed in the higher bureaucratic circles. It was being contemplated by the government that for implementing improved prospects of native superior staff, the Forest Rangers who were found suitable for the promotion to the superior staff were to be sent to the

[147] Opcit,. The Forest School. *The Indian Forester*. No. 1, July 1878, pp. 56.
[148] Ibid.
[149] Opcit., The Forest School. *The Indian Forester*. October 1881,pp.113.
[150] Ibid.
[151] The Indian Forest Survey and Forest School. *The Indian Forester*. No. 12, Vol. XI, 1885, pp. 558.

Forest School as Probationers and after satisfactory completion would be promoted to the rank of Sub- Assistant Conservator.[152] Later a Resolution No. 6F., dated 3rd February 1879, introduced a change which allowed training of probationers for superior staff. The proposition allowed Native forest rangers or forest officers with good educational background without any prior association with forest service and even some European men to apply for the course at school.[153]

On another instance a resolution by Home, Revenue and Agricultural department, No. 40 F. dated 23rd October 1879 provided a provision to older meritorious Forest Rangers to gain promotion at the discretion of Local Governments. This resolution exclusively primarily focused on opening new professional avenues for the existing Rangers. The Provision stated that in order To gain the proposed appraisal the Rangers had to complete probation in their respective provinces.[154]

In 1880 Dietrich Brandis, the Inspector General of Forests and founder of the Forest school expressed his plans for the growth of the school and desired to expand the scope of the school. He suggested the relaxation of admission procedure for the students which could help them to directly apply to the school and not through the long channel of local governments. The recommendation was precisely made to facilitate the growth of Continental Scientific Forestry in India. He also recommended greater involvement of the Director in the selection process and training of the

[152] OFFICIAL PAPERS, Joint Report On the First Theoretical Instruction at the Central Forest School, Dehra Dun, By D. Brandis, Inspector General of Forests, and Major F. Baily, R.E. Director of The Forest School,- Dated Dehra Dun, the 3rd October 1881. *The Indian* Forester. No. 4, Vol. VII, April 1882.

[153] Opcit., The Forest School. *The Indian Forester*. October 1881.pp.116.

[154] Changes in the System of Admission of Candidates to the Forest School. *The Indian Forester*. No.2, Vol. VII, October 1881.

candidates.[155] The remarks and legal provisions were all part of a grand scheme, which focused on the injection of Scientific Forestry into the veins of the country.

The school conducted courses for both Apprentices and Probationers who were to become an important organ in the Executive Staff force. The course for probationers ran for two years and after its completion the probationers were to receive either lower certificate suitable for ranger position or a higher certificate of being eligible for post of Sub- Assistant Conservator after serving two years as rangers. In addition to apprentices and probationers, junior officers of the forest staff were also invited for a smaller period for a refresher course. The Apprentices on the other hand generally received training to become forest rangers. In conclusion the Apprentices on completion were eligible to receive Forest Ranger Certificate after a proper two years training meanwhile Probationers were eligible to receive Higher Certificate on satisfactory completion.[156]

The School practically functioned to generate the future employees of the Forest Department. It was recorded that the students before entering the Classroom Instruction were directed towards field work, which generally meant working with the Working Plans Branch to gain Practical Exposure. The objective of stationing the candidates before formal theoretical instruction was mainly twofold, firstly it was to facilitate theoretical learning and secondly to eliminate the feeble minded candidates to avoid futile investment of time and money.[157] The students were employees of the Forest Department and were provided a salary to maintain their expenses while

[155] Review of Forest Administration during 1878-79 by Dr. Brandis, Inspector General of Forests. Budget Estimates of the Forest Department for 1880-81.*The Indian Forester*. No.1, Vol.VII, July 1881.
[156]Opcit., OFFICIAL PAPERS, Joint Report On the First Theoretical Instruction. *The Indian* Forester. No. 4, Vol. VII, April 1882.
[157] Opcit., The Indian Forest Survey. *The Indian Forester*. 1885, pp.558.

studying at school.[158] It was recorded that in 1879 students Babu Karuna Nidhan Mukerji as Probationer and Fazl- ud -din and Jag Mohan as apprentices were employed in this Working Plans Branch.[159] In addition, the services rendered by the students were highly appreciated by Mr. Dansey and they were also found to be extremely cost efficient.[160]

To maintain the optimum standards of School and to supervise the matters Circular No. 34F (July 1878) also established a Board of Inspection, which was to include three vital members, first the Inspector General of Forests, Dietrich Brandis as President of the Board, second always a conservator of forester, who was in this case Dr. Schlich and third member was Assistant to the Inspector General, Mr. J.S. Gamble.[161] The function of the Board was to provide guidance to the School on its management and make a timely check on its progress. The Board of inspection was formed to supervise the School in matters of curriculum and educational standards. Another Major attachment to the School was the Working Plan Division under the Supervision of Mr. Dansey, an Assistant Conservator. The Working Plan division was a significantly important branch for the Practical exposure of the school students. The division acquainted candidates with the field work and in-depth workings of the Forest Department.

[158] Ibid.

[159] REPORT OF THE VALUATION SURVEYS IN THE NORTH WESTERN PROVINCES AND OUDH FOR THE YEAR 1879-1880.of the Valuation Surveys in the North Western Provinces And Oudh. Forest Department Library, Lucknow, Uttar Pradesh.

[160] Ibid.

[161] Opcit., ANNUAL PROGRESS REPORT, March 1879.

3.3 THE CAMPUS

The Imperial Forest School Building was earlier the residence of the Commanding Officer of Sirmoor Battalion.[162] The building then was purchased in 1879 for Rs, 20,000 and the necessary alterations were made by the Public Works Department, for further additional cost. The work also included conversion of the Small Detached building into a functional Laboratory at a cost of Rs 1,500. Overall the settlement of the school premises came to be Rs 43,000. The first year's total cost on the setting up was roughly Rs 5,000, which included the Traveling expense of officers for study and the travel expense of Mr. Baden Powell. In the upper storey of the building an office of the Conservator of Forests was organized and an office of the Forest Survey was set with a repository for the collection of Maps. The Ground Floor had two Large Class rooms, the library, the rooms of the Director, and the other officers and most importantly the office of the Working Plan Branch. A small museum established inside the campus exhibited a Collection of Forest Tools and Wood specimens. [163]

Approximately two miles away from the school campus at Ambari Road a Forest Garden was established for providing an ideal model nursery for instructional purposes for the school staff.[164] Apart from the Working Plans Division the School compound also housed a forest Survey Branch Office.[165] The presence of Forest Survey Branch proved to be vital for the development of School Curriculum as Dehra Dun received a large number of exceptional foresters for survey works who occasionally also provided practical guidance.

[162] IMPERIAL FOREST SCHOOL, DEHRA DUN, THE ANNUAL PRIZE DAY. PIONEER. *The Indian Forester.* No. 4, Vol. XIX, April1893.
[163]Opcit., OFFICIAL PAPERS. *The Indian Forester.* No. 4,Vol. VII, April 1882.
[164] Ibid.
[165] THE SCHOOL OF FORESTRY AT DEHRA DOON, INDIA. *NATURE*. Vol. XXXIX., November 1888- April 1889.

The Herbarium at the School was organized with the help of Mr.Gamble, officiating Conservator of Forests of Bengal region. Gamble exclusively provided assistance in procuring dried plants for the Herbarium collection.[166] Later the Herbarium received a generous collection from South India which was presented by Dr. Brandis.[167] A nursery was also established in the school compound for enabling deeper understanding of Botany. The Nursery exhibited well- labeled plants and trees of various indigenous and foreign species.

The laboratory at the school was fitted by Mr. Warth which had the capacity to accommodate six students for qualitative analysis. It was recorded that Mr. Warth also added Geological Collection to the Lab and Mr. Medlicott Superintendent of Geological Survey of India helped him in increasing the mineral collection.[168] Some exceptional contributions were made through liberal donations, for instance Mr. Smythes donated a Microscope to the Lab for educational intent.[169] Later, In Dec 1884 the School received its first Mercurial Barometer to study the atmospheric phenomenon.[170]

Rapidly over a few years the compound of the School converted into a place of scientific experimentation and empirical learning. Supplementary to the regular

[166] SCHOOL CIRCLE. N.W. PROVINCES AND OUDH. ANNUAL PROGRESS REPORT OF FOREST ADMINISTRATION FOR THE YEAR 1879-80. BY CAPTAIN F. BAILY, R.E. CONSERVATOR OF FORESTS, SCHOOL, CIRCLE, Forest Department Library, Lucknow, Uttar Pradesh.

[167] N.W. PROVINCES AND OUDH. SCHOOL CIRCLE. ANNUAL PROGRESS REPORT OF FOREST ADMINISTRATION FOR THE YEAR 1882-83. BY MAJOR F. BAILEY, R.E.CONSERVATOR OF FORESTS. Forest Department Library, Lucknow, Uttar Pradesh.

[168] Opcit., Joint Report. *The Indian Forester*. Vol. VII, April 1882.

[169] N.W. PROVINCES AND OUDH. SCHOOL CIRCLE. ANNUAL PROGRESS REPORT OF FOREST ADMINISTRATION FOR THE YEAR 1881-82. BY MAJOR F. BAILEY, R.E.CONSERVATOR OF FORESTS. Forest Department Library, Lucknow, Uttar Pradesh.

[170] N.W. PROVINCES AND OUDH. SCHOOL CIRCLE. ANNUAL PROGRESS REPORT OF FOREST ADMINISTRATION FOR THE YEAR 1884- 85. BY W.R. FISHER, B.A., CONSERVATOR OF FORESTS, SCHOOL CIRCLE. Forest Department Library, Lucknow, Uttar Pradesh.

courses an arrangement was made to study the recordings of temperature and rainfall in the region. To facilitate the recording process two different apparatus were set up in the Forest School Compound. The apparatuses measured the percolation for meteorological observational purposes.[171]

3.4 THE STAFF AT THE INCEPTION

The establishment of the school was an endearing task for the Government as the school was to be the first forestry school of India for the Rangers. The venture was a unique measure as the school was to be the first of its kind, and until now all the schemes for teaching forestry to aspiring foresters had disastrously failed. The careful selection of the staff for teaching and managing the school and its forests was a major challenge. On the other hand it was an extension of formal forestry education to the natives, which again was a testing assignment and on the other internal skepticism prevalent amongst the officers created bureaucratic hurdles. It can be easily accepted that on many levels the decision of starting a school was an arduous enterprise.

Firstly the fabrication of proper curriculum required intelligent selection of diligent and zealous staff. The staff had to be handpicked cautiously for the correct development of the scheme. In the matter of directorship it was accepted that Major Baily was the suitable candidate for the designation, as his experience in survey work was unmatched, therefore Director Baily was made in charge of teaching of surveying to the students. Another strong authority, Mr. W.R. Fisher joined the staff as Deputy Director of the school. It was recorded that Mr. W.H. Reynolds joined as Deputy Superintendent of Forest Survey. Most importantly Mr. S.F. Warth was hired as an instructor of Natural Sciences.

[171] Opcit., ANNUAL PROGRESS REPORT, 1881-82.

It was observed that school management invited diligent and talented staff members for the establishment of the school. Forest Officer Mr. E McA. Moir, in charge of Tons Division, was attached to the staff of the school and Mr. E.E. Fernandez was put in charge of the Working Plan Branch which was stationed at the School Compound. Officer Mr. A. Smythes was in charge of the Deoban Division. Forest Officer Mr. E.F. Litchfield was attached to the Survey Branch, which was a subdivision responsible for creating detailed maps on forests. In addition Mr. F.B. Bryant and Mr. A.F. Broun from French Forest School later joined on 12th Feb 1881 for the first ever theoretical course.[172] Entomology professor was also arranged in the form of Mr. Clifford and he was expected to join in 1882.[173]

At the beginning of 1880 the Probationers who had arrived at school were, Mr. Heinig, Mr. Copeland, Mr. Spread, Mr. Lowrie and Babu Karuna Nidhan Mukerji. During the year Forest Rangers Mr. J. Mendes and Babu Sharma Charn Chakarbatti arrived from Bengal and Ranger Babu Chandar Kumar Chattarji joined from Central Provinces. Meanwhile, at the beginning of 1880 Fazl – Ud- din and Jagmohan were also present in the school and Nanak Chand, Niam ud-din Ahmed and Kripanath joined later in the year. It was recorded that in 1880 all the residing Probationers and Apprentices were either attached to the ranges or were employed under the Working Plans Division.[174] In Oct 1880, the total students who had entered had been 5 probationers and 2 apprentices and they had all been employed for the forest work.[175]

[172] Opcit., The Forest School. *The Indian Forester*. October 1881.
[173] Ibid. pp. 115.
[174] SCHOOL CIRCLE. N.W. PROVINCES AND OUDH. ANNUAL PROGRESS REPORT OF FOREST ADMINISTRATION FOR THE YEAR1880-81. BY MAJOR F. BAILEY, R.E., CONSERVATOR OF FORESTS. Forest Department Library, Lucknow, Uttar Pradesh.
[175] ORDERS OF GOVERNMENT. NO.978A. OF 1880. RESOLUTION. REVENUE (FORESTS) DEPARTMENT. Dated Naini Tal, the 19th October, 1880. Forest Department Library, Lucknow, Uttar Pradesh.

3.5 OTHER ORGANS UNDER THE SCHOOL'S WING

The location of the school was a very important factor for the growth and development of the School. The school campus housed very talented and proficient officials as instructors. Apart from brilliant guidance the school campus had very important departments attached to it. The Working Plans branch, Forest Survey Branch and most importantly the office of the journal, 'The Indian Forester' were attached to the School. The Journal was established in 1875 with the help of Dr. William Schlich who became the first honorary editor of the Journal. With the establishment of the Central Forest School, the editorship of the prestigious journal moved under the jurisdiction of School.[176] The Journal's Editorship was granted to Mr. Gamble in 1878 which later in 1882 passed into the hands of Mr. W.R. Fisher, of the Central Forest School. With the elevation in demands the supervisors decided to increase the frequency of the Journal from Quarterly to Monthly publication. The new system of monthly publication was implemented from 1st January 1883.[177]

The publication of Indian Forester Journal under the School's jurisdiction proved to be very vital to the School. The Journal was the first Forestry Journal in India belonging to the Forest Department and it became an official platform for the government to release official papers on subjects related to forestry. The journal was also a stage for scientific discussions on forestry; it provided an intellectual space and reading audiences to the new ideas. The Journal provided crucial insight in the working of the Forest Department and Central Forest School.

[176]TO OUR READERS. *The Indian Forester*. No. 2,Vol. VIII, October 1882.
[177] Ibid.

3.6 THE FIRST THEORETICAL INSTRUCTION

The first ever regular theoretical Course of the Central Forest School in Dehra Dun was started on 10th July 1881 and ended on 15th October 1881.[178]In the beginning the subjects which were to be taught were forestry, surveying and mathematics and gradually the expansion of these core subjects was imagined. The first theoretical Course was attended by two classes of students, firstly the apprentices and probationers and Secondly the Officers from other provinces, who stayed from 15th August to 15th September. In mid 1881 the total strength stood at 12 candidates, amongst whom 5 were probationers and 7 were apprentices. It was recorded that later 2 apprentices were sent back. One of the probationers attending the course named Mr. Lowrie, was also in charge of Saharanpur Forest Division again retained back the charge of his post in between the course. It was observed that excluding Mr. Lowrie all the regular students were natives of India.[179] Some of the Superior staff officers who joined the school for a month were Mr. A. Campbell from Oudh, Mr. J.C. McDonell from Punjab, Mr. A.M. Ruther, Mr. J. Copeland, Mr. E. Murray and Mr. G.H. Foster.[180] The officers had joined the school to benefit from the ongoing scientific teaching, which was earlier not available. By the end of 1881 it was observed that total candidates receiving training were 23 in number, out of which 7 were probationers, 7 were apprentices and 9 were junior officers from different provinces.[181]

The first theoretical instruction was a historical event in the history of Scientific Forestry in India, as the English Government was inaugurating a school which was

[178]Opcit., ANNUAL PROGRESS REPORT, 1881- 82.
[179]Opcit., Joint Report. *The Indian Forester*. Vol. VII, April 1882.
[180] Opcit., ANNUAL PROGRESS REPORT, 1881-82.
[181] Opcit., The Forest School. *The Indian Forester*. October 1881.

the first of its kind. It firmly and cautiously established a structure for introducing Modern Forestry Education in India. The roadmap which was built by the School's management was a prime building block for Professional Scientific Forestry as an Academic domain. In order to facilitate the agenda of dissemination the school hours were crafted meticulously in accordance with the requirements of the Indian Forests. The prime focus remained on teaching the basic tenets of Forestry to ensure the precise implementation of sciences in the upkeep of the Timber. The dissemination of knowledge began by teaching general subjects with careful detailing. The timetable of the courses was sorted out meticulously based on the audience of the lecture.

The subject of Forestry was taught one hour daily by Mr. Fisher to the regular students and one hour by Mr. Fernadez to the Officers. The Subject of Forestry comprised four chapters, Sylviculture, Timber and other forest produce, Mensuration and valuation surveys and Working Plans. The section on Sylviculture was theoretically taught by Dr. Schilich. Meanwhile, Mathematics and Surveying was taught by My Mr. Fisher to the regular students for two hours on alternate days. On the other hand Mathematics and Surveying was taught to the apprentice class by Mr. Reynolds, Deputy Superintendent of Forest Surveys for two hours on alternate days. During the course Mr. Baden Powell also delivered special lectures on law from 23rd August 1881 to 10th September 1881. It was observed that these special lectures were also open to Regional staff officers who desired understanding Forest Law in Depth. To facilitate the learning process amongst the Regular students, a Junior Officer named Mr. Broun was hired to repeat the content of each lecture.[182]

The subject of Botany was taught to the students by Mr. Duthie who was also the Superintendent of the Saharanpur Botanical Garden. His instruction stretched to one

[182] Opcit., Joint Report. *The Indian Forester*. Vol. VII, April 1882.

and a half hours daily. He taught for two months from 18th July to 18th September to the regular students, and one hour daily to the Officer's class. Interestingly Dr. Brandis also occasionally took part in teaching Botany. He personally took deep interest in infusing botanical knowledge in the native students. Instructor for Natural Sciences, Dr. Warth taught daily for an hour to the regular students and he also taught Chemical Particles to the advanced student class for daily two hours. Mr. Warth's instruction was partly theoretical and partly practical, the practical portion of the subject was taught in the laboratory of the School.[183] Mr. Warth was explicitly involved in setting a composite repository of geological and mineral specimens. His contribution was not only limited to teaching and lab observations but he was intensively involved with scientific visits, exclusively ones which showcased potential rich mineral deposits.

By 1883, Entomology and Road making and Building were also added to the subject list of the School Curriculum.[184] Entomology was considered a vital subject for the course on Rangers training, which included learning the diseases or damages caused by insects, fungi or parasites. For the teaching of Entomology Mr. Clifford was selected at Nancy and he arrived in December 1882 to join the service. Mr. Clifford's course focused on holistically teaching Entomology, which included the study of all injuries and diseases caused by external reasons including damage caused by climbers or epiphytes, the subject also highlighted the process of decay and preservation of timber. The course comprehensively came to be known as Forest Etiology.[185] With the advent of time new subjects were added to the program of study. Precisely the syllabus was updated over time to create a composite course for the Ranger class.

[183] Ibid.
[184] Opcit., ANNUAL PROGRESS REPORT, 1883-84.
[185] DEHRA DUN FOREST SCHOOL. *The Indian Forester.* No. 1, Vol. XI, January 1885.

3.7 THE EVALUATION SYSTEM

Every Fortnight the regular students of the School gave oral examinations in Forestry and Botany. To further supervise the progress of the regular students a monthly report was produced which showed the growth of each student. For officer's class oral examination was conducted weekly by Mr. Brandis, in Forestry and Botany, and in Law by Mr. Baden Powell.[186] The final analysis took place at the end of each course. It was registered that in 1881, the first batch completed their course in the school and amongst them 3 students received ranger certificate and 2 received Sub- Assistant Conservator's Certificate. [187] The final evaluation of the probationary students consisted of essay writing in which they had to pick a subject of their own choice. The essays were an integral part of the final examination. The essays displayed the intellect and craftsmanship of these budding foresters. The essays written by Forest School students Daulat Ram Bhimbat, Chandra Kumar Chatterjee, Mian Moti Singh and Kripa Nath Dey were even published in The Indian Forester Journal of 1882.[188]

3.8 MANUALS

During the initial period Official Study material was explored to facilitate instruction at the School. The management placed an exclusive command to generate manuals for the curriculum. It was registered that Mr. Fisher and Mr. Fernandez were instructed to execute a suitable manual on Sylvilculture. For teaching and learning Botany Oliver's "First Book of Indian Botany " and "Forest Flora of North West and Central India" were considered suitable. A vital book for the course, "The Manual of Indian

[186] Opcit., Joint Report, The Indian Forester, Vol. VII, April 1882.
[187] Opcit., Brandis, pp. 154.
[188] The Teaching of Forestry at the Central Forest School, Dehra Dun. *The Indian Forester*. No. 3. Vol VIII, October 1882.

Timbers" written by Mr. Gamble for the study of the structure of Timber was considered next for publication. For Chemistry Mr. Roscoe's book named "Lesson in Elementary Chemistry " was utilized. Meanwhile Blanford's "Rudiments of Physical Geography for Indian School" was exclusively referred for understanding Physical Geography. Similarly In the initial period Mr. Baden Powell's manual on Forest Law was also an awaited book.[189]

The Joint Report on First Theoretical Course dated, 3rd October 1881 concluded, "*The experience gained during the first term of theoretical instruction has convinced us that, besides imparting instruction to students who are working for the Forest Ranger's certificate, as well as to others, the school may reasonably be expected to maintain an important position in developing the science of Forestry in India. The attempt to teach Forestry, and the auxiliary sciences as applied to forestry, will compel officers to arrange the facts regarding the growth of trees and the conditions which affect the development of forests in a systematic manner. This must lead to a closer scrutiny of the state of our knowledge in this respect, and it will induce officers to make observations and experiments in more systematic manner. The truth of saying docendo discimus, "we learn by teaching," has been confirmed by the experience gained in teaching at the Forest School"*.[190]

3.9 THE FOUNDATIONAL YEARS (1881-1884)

The official data revealed by the Forest Department highlighted the extreme dearth of trained staff in the department. The data on 1st July 1881 stood at only 97 Forest Rangers in the Forest Department for the management of the entire subcontinent. To further tackle the issue of dearth the government instructed the department.

[189] Opcit., Joint Report. *The Indian Forester*. Vol. VII, April 1882.
[190] Ibid.

It was registered that the government instructed the department to provide at least 600 forest rangers in the next ten years.[191] The task of producing such a large number of men for the Ranger post fell directly on the shoulders of Central Forest School. The school being the first of its kind in the region had to produce successful results not just for its own growth but also to set an example for the future enterprises in Forestry Education.

Later, in October 1881 the government decided to abandon the Probationer scheme. The endeavor of training the native probationers did not provide adequate results, therefore the resolution was rolled back. It was decided that in replacement, a training of second or higher course was to be provided to the Forest Rangers trained at School after the completion of minimum two years Ranger service.[192] The Rangers after the completion of this course could become eligible for Sub Assistant Conservators. It was prescribed that no ranger could be older than 30 years to receive the higher training. The changes in the admission rules and training were often introduced to ensure a proper development of scientific training in India and build a proper channel for infusion of Forestry Education amongst the Natives. The constant appraisal of rules was part of the evolutionary growth of school as an Imperial Institution.

Next, in 1882 the Second Theoretical Course was started on 1st July and ended on 31st October, which was attended by 24 officers from subordinate staff and 9 from the superior staff. The superior staff attended till 15th September. At the end of the course total 5 Subordinate officers went to their own provinces for practical training, 14 members stayed in the school circle for practical work and remaining 5 had left the

[191] Opcit., The Forest School. *The Indian Forester*. October 1881.
[192] Ibid.

school all together.[193] Each year, the school admitted students from various provinces and native states. The importance of professional training over informal instruction was being preferred by both official governments and native rulers. The change in the attitudes was the result of positive outcomes of school training. Soon, in the year 1883 it was reported that two passed out students from school named Babu Jogeswar Sur of Assam and Mahadeo Rao Palnaitkar of Central Province were both promoted to the post of Sub Assistant Conservator.[194] In 1884 there were a total 46 students of all classes studying in the school and had 8 students from Madras and seven from Native States. [195] The increasing number of enrollment was the outcome of active participation by candidates from Native states. New opened avenues and increased prospects for the professionally trained natives were a major driving force behind the escalating popularity of Central Forest School.

The school compound was an apostle of scientific temperament. The school had provided space to a forestry museum, library and most importantly a herbarium. In order to polish the conceptual learning of the students the school curriculum vastly promoted practical field work. It was noticed that in 1883, the findings of the observations and field research conducted by Mr. Warth in the neighboring area of Mussuorie were also taught to the students. Additionally, under the guidance of Mr Warth students were also engaged in timber analysis.[196]

As the school grew in importance the scope of the curriculum grew simultaneously. It was desired that the new program of study would be composite in nature. The stress was laid on bringing new disciplines into the academic fold. In 1884 the course on

[193] Opcit., ANNUAL PROGRESS REPORT, 1882-1883.
[194] Opcit., ANNUAL PROGRESS REPORT, 1883-1884.
[195] Opcit., The Indian Forest Survey. *The Indian Forester*. 1885.
[196] Opcit., ANNUALPROGRESS REPORT, 1883-84.

Morphological and Physiological Botany was separated from the course of Sylviculture which earlier was taught as an introductory portion, meanwhile the course on Sylviculture was directly being taught in the School Forests and not in the conventional classroom setup. The lectures on Utilization and the elements of the Organization of Forests were also added to the new curriculum which was to end with practical work on Forest estimation and working plans. The practical work also included a visit to Changa Manga and Sailaba Plantation near Lahore and to the Pabbi region. As part of the evolving curriculum a pamphlet on Systematic Botany by Mr. Hearle was published to facilitate learning.[197] A constant evaluation in the internal running can commonly be viewed in the temporal journey of the School.

3.10 CONVERSION INTO IMPERIAL FOREST SCHOOL

The G.G.O. Circular No. 7F, dated 3rd June 1884 transferred the control of the School from the North West Province to the Imperial Government, for which a separate sum of 25,000 was secured from the imperial funds.[198] The separation of School from the School circle made the School an Imperial Institution. The school's authority was directly placed under the Jurisdiction of the Forest Department. The name also changed from being called Central Forest School to Imperial Forest School. The transfer of authority for the school meant improved financial aid and greater recognition. To further increase the scope of the school, in 1884, Sir Alfred Lyall sanctioned accommodation building in the School Compound for students of the Forest School, with a capacity of 64 student quarters.[199]

[197] Opcit, DEHRA DUN FOREST SCHOOL. *The Indian Forester.* January 1885.
[198] Opcit., ANNUAL PROGRESS REPORT, 1884-85.
[199] Ibid.

Another significant development under the imperial authority was the introduction of the Vernacular Class for Foresters. The decision of introducing the vernacular medium was to shape a better functioning Forester class. The forester class represented the staff which usually worked directly on the field and interacted the most with the natives, therefore it was understood a proper course of forestry was an integral part of their training. The course was decided to be of twelve months in duration. The instruction for the vernacular class was given in Hindustani by the Deputy Director. It was recorded that in January 1885 there were a total of 6 men in the Vernacular Class. In order to attain admission in this course the applicant needed to pass in the Middle Class Examination in the North- West Provinces or Oudh or an exam of equal stature in other provinces and additionally they were also required to possess deep understanding of Urdu and Hindi.[200] The school offered two courses for the training of the Provincial Staff, one in English and another in Hindustani, the former one was called higher and latter was now called lower. In the year 1887 total 11 students obtained a Forester's certificate in the Vernacular Class.[201] Later, an alumni of the School Babu U.N. Kanjilal was appointed as the Instructor for the Vernacular Course.[202]

The memorandum of the Forest Government released on 3rd June 1884, on the admission conditions at the School provided more flexibility to the Students. The memorandum declared that students of School were to receive either Ranger's or Forester's Certificate. The provision stated that, if a student failed for a Ranger's exam then he could be granted a Forester's Certificate. The students who cleared for

[200] Memorandum of Conditions for the admission and training of Students at the Forest School, Dehradun, dated the 3rd June, 1884. *The Indian Forester*. No. 1, Vol. XI, January 1885.
[201] IMPERIAL FOREST SCHOOL, DEHRA DUN. *The Indian Forester* .No. 4, Vol. XIV,1888.
[202] Imperial Forest School, Dehra, THE PRIZE DAY, No. 4, Vol. XX. *The Indian Forester*. April 1894.

the ranger's exam were given a ranger's Certificate and after returning to their provinces were to be hired as Forest Rangers. On the other hand, students who qualified for the forester's exam received, Forester's Certificate. The Forester's after qualifying were to be posted as Foresters and they were to serve for two years intensively before applying for promotion to the Ranger's course.[203]

The department also encouraged the untrained superior officers of the staff to attend the courses for brushing up on the Sylvicultural principles and Forestry lessons, for instance, in 1885 three Forest Officers of the Superior Staff, and an officer in the Canal Department, also attended a portion of the course. Interestingly students from the native states also attended the school. The native state students were sent by their native rulers to learn Scientific Forestry for better management of their forests. The representation of students from native states depicts the picture of general acceptance of Scientific Forestry amongst the Indian Rulers. It was only the Bombay Government which preferred sending their candidates to Poona College of Science for forestry training.[204] The Vernacular class of 1885 witnessed a well composite audience. The students arrived from various provinces, including the native states. The composition of the class was very diversified and the number stood at, North West Provinces 16, Madras and Punjab sent 11 each, Bengal 4, Coorg, Burma and Central Province 2 each, and Ajmer 1. A sum of 10 students was sent by Native States of Baroda, Patiala and Jeypore, and 4 students were private candidates.[205]

In the 1880's the school progressed to become the epitome of forestry education, showcasing the growth of Scientific Forestry in India. The school explicitly became a representative of Continental Forestry in India. As the first forestry school of the sub

[203] Ibid.
[204]Opcit., Dehradun Forest School**.** *The Indian Forester.* January 1885.
[205] DEHRA DUN FOREST SCHOOL. *The Indian Forester.* No. 1, Vol. XII,1886.

continent, the school became an epicenter for propagation of modern forestry tenets. Throughout its trajectory the school hosted some of the most influential forestry figures of the nineteenth century. In 1886 a conference was organized in Dehradun from15th October to 24th October which was attended by representatives of different provinces. It was recommended in the conference that after finishing the theoretical course at Cooper's Hill the Controlling staff should be sent to the Dehra Dun Forest School for a two years course, in order to practically understand the Forests of India.[206] The recommendation did not formulate into any policy, although it did showcase the importance of school for transmitting Forestry education in India and simply highlighted the high stature held by the school in the contemporary times.

The School attracted a wide range of students from various provinces, who received practical and theoretical training from the school. Professional training had its roots in the management system of the Forest department. The growing demand of revenue from the forest department was the primary reason behind the popularity of professional training. In 1888, the Government at Ceylon also showed interest in training their officers and appointed Messrs Tatham and Hansard as Foresters and instructed them to join the Imperial Forest School at Dehra Dun to receive training for eighteen months.[207] Perceiving the growing responsibility and popularity of the School the Government reorganized the school in 1890 and put the management of the school Under the Board of Control.[208] The board became an important authority for the academic monitoring of the school and held the power to take academic decisions.

[206] THE FOREST CONFERENCE AT DEHRA DUN. *The Indian Forester.* No. 12, Vol. XII, December 1886.
[207] TRAINING OF CEYLON FOREST OFFICERS. *The Indian Forester*. No. 7, Vol. XIV, July 1888.
[208] VII- EXTRACTS, NOTES, AND QUERIES. The Imperial Forest School. PRIZE DAY AT DEHRA DUN. *The Indian Forester*. No. 4, Vol. XXI, April 1895.

The Board of Control of the School guided the school in school policy formation. It was also responsible for guiding the School in the right direction, for instance in 1892 the Board while showing concern, shed light on the increasing number of European and Eurasian Candidates amongst the new entries. In order to ensure the placement of natives in the executive service, the Board unambiguously expressed that European and Eurasian entries should be discouraged.[209] The strength of the school in 1892 was recorded at a total number of 104, out of which 32 were Europeans and 72 were natives of India.[210]

In the following years school progressed exponentially through overall academic growth. The school successfully maintained a reputation for providing exceptionally trained Rangers. Regular focus on training was laid by the department, which in return helped the school to expand its prospects. The life at the School campus focused on creating an appropriate atmosphere for knowledge assimilation. The focus was on development of both intellectual and physical abilities. Due to the nature of the service the students were not only encouraged to play sports but also to participate in regular drills with the Local Battalion and Dehra Dun Mounted Rifles.[211] The idea behind the introduction of physical drill was to prepare the forestry students for the harsh Jungles of the unknown terrain.

In 1893 it was registered that the new student quarters built in the school premises were ready for accommodation and they could house 80 students.[212] The opportunities provided through the professional training massively increased for the native candidates. In 1893, a student trained from Ranger School prepared a working plan

[209] Report of the Board of Control of the Forest School Dehra Dun. *The Indian Forester*. 1892.
[210] OFFICIAL PAPERS & INTELLIGENCE.The Dehra Dun Distribution of Prizes & Certificates. *The Indian Forester.* No. 5, Vol. XVIII, May1892.
[211] Opcit., The Imperial Forest School. *The Indian Forester.* 1894.
[212] Opcit., The Imperial Forest School. *The Indian Forester.* April 1895.

for Gorakhpur forests and in 1894, another former student named Keshavanand prepared a working plan for Charda Forests in Oudh.[213] The knowledge and practical exposure created a bridge of opportunities to enter the forest service at respectable positions. Later it was recorded that Pandit Keshavanand was hired as a Conservator in native Tehri- Garhwal State.[214]

Apart from awarding course certificates the school endorsed scientific learning through acknowledgement of meritorious students.[215] The best performers in various disciplines and activities were awarded to ensure periodic appreciation. The Annual Prize distribution ceremony was regularly conducted since 1891 and since then it became an annual tradition for the School. Each year, the school board invited a large number of Proficient Forest Officers as guests, who motivated the students through masterful speeches and lectures. The students were awarded prizes and certificates for winning at athletic events as well. The Prestigious Brandis Prize Fund was set up in 1890 on recommendations of Sir Dietrich Brandis, this esteemed fund was awarded to current or previous students of Dehra Dun School or any other forest school on writing scientifically authentic papers.[216] The fund was initiated to promote the scientific intellect amongst the Foresters and to ignite the spirit of curiosity for scientific advancement of the department. In 1891 the Brandis Prize of Rs 40 was awarded to Pundit Keshavanand and of Rs. 30 to Babu Upendranath Kanjilal.[217] In

[213] Opcit., Brandis**,** pp. 157.
[214] Kanjilal, Upendra Nath, *Forest Flora of the Siwalik and Jaunsar Forest Divisions of the United Provinces of Agra and Oudh*, Superintendent Government Printing, Calcutta, 1911.
[215] Opcit., III OFFICIAL PAPERS AND INTELLIGENCE, THE DEHRA DUN FOREST SCHOOL. *The Indian Forester.* No.5, Vol. XVIII, May 1892.
[216] Brandis Prize Fund. *The Indian Forester.* Vol. XVI, 1890.
[217] Ibid.

1894 attempts were made by the Board of Control to establish a separate prize named Campbell- Walker Award in Forestry for the students from Madras.[218]

The Prize distribution functions were also a platform to inaugurate or discuss any new reform in the Forest Department. Sir Edward Buck while speaking at the 1893 Annual Prize distribution ceremony of the school praised the new proposals put forward to the Secretary of State, which increased the scope of salary for the students trained in the School. He mentioned that, "*Hitherto students trained at Dehra have ordinarily had no prospect of promotion to more than Rs. 100 or 200 per mensem at the end of their service. Under the new scheme presented to the Secretary of State they will, if they do their duty, be able to rise to salaries of from Rs. 200 to Rs. 350 per mensem; and may, if they do exceptionally good service, obtain Rs. 600 per mensem before they take their pensions*".[219]

Through the reorganization of executive services it was ensured that the qualified individual would receive ample opportunities at dignified posts. The salaries of Rangers increased over a course of time and promotion opportunities were opened up for seizing. After the Dehra Forest School Certificate the students usually began their career with lowest grade of Ranger with a salary varying from Rs 50 at the joining to 150 per month after promotions and later additional five years as Ranger further made them eligible for the post of Extra Assistant Conservators which offered salaries varying from Rs 200 to Rs 350 per month. Handful of Extra Assistant Conservators of exceptional intellect were even selected to hold important posts and become eligible

[218]OFFICIAL PAPERS & INTELLIGENCE. The Campbell- Walker Prize for Forestry at the Dehra Dun Forest School. *The Indian Forester.* No.2 ,Vol. XX, February 1894.
[219] Imperial Forest School Dehra Dun, The Annual Prize Day, PIONEER. *The Indian Forester.* No. 4, Vol.XIX, 1893.

for Extra Deputy Conservator, which had four grades and offered salaries of Rs 450, Rs500, Rs 550 and Rs 600 per month.[220]

The results of the students varied from year to year, on some occasions the annual prize ceremonies were left without any honors students, while on some the cases differed. Since the inception of the school it successfully ran the courses without any major glitch. Within the interval of 15 years (1895) the Imperial Forest School had professionally trained a total of 355 natives, out of which 273 had received Ranger Certificate and 82 had received Forester's Certificate.[221] First time in 1897 it was recorded that all the 24 students in the upper course received Ranger's certificate and in the lower class 8 out of 9 gained forester certificates.[222] In order to attract more exemplary students for the Provincial Forest Service the government proposed to provide Stipendiary benefits to all students ranging from Rs 30 to Rs 50 per month.[223] The stipends were considered necessary to attract capable students. It was recorded that the number of students grew gradually over the years. On the prize day of 1901 the school provided certificates to the largest class of to have ever entered the school, we find that a total of 47 out of 50 students received the certificates.[224]

With the passage of time the institutional maturity in terms of both infrastructure and curriculum aggravated. The rules and regulations were constantly revised to facilitate higher standards of learning. A resolution dated 1895 stated that each year the annual commencement date of the course would change from 1st July to 1st April. It was contemplated that the initial few months would be accompanied with regular studies

[220] Recruits for the Forest Department II. *The Indian Forester.* No. 3, Vol. XX, March 1894.
[221] Opcit.,Brandis, pp.154.
[222] Prize Day At the Imperial Forest School, Dehra Dun. *The Indian Forester.* No. 4, Vol. XXIII, April 1897.
[223]Opcit., Recruits for the Forest Department, March 1894.
[224] EXTRACTS NOTES & QUERIES. The Prize Day at the Indian Forest School, Dehra Dun. *The Indian Forester*. No. 6, Vol. XXVIII, June 1902.

and practical work. The proposed changes were inspired by the European forest schools. The Resolution was to come in force from January 1st 1897. The resolution also increased the duration of the course from 21 months to 23 ½ and proposed to conduct the entrance exam in January instead of March.[225] In 1901 approximately 90 candidates appeared in the Ranger School entrance examinations.[226]

Meanwhile the course at the Copper's Hill was also extended from a period of two years to three years to suit the needs of the department. The outline of the course had both detailed theoretical and practical instruction.[227] Later, at Oxford a new arrangement was made for obtaining Upper Controlling Staff. The course curriculum at both the institutions had similarities with the one being taught at Dehra Dun. The Oxford course stretched to a period of three years with both two years of theoretical and one year of practical instruction.[228] The subjects taught in both the institutions were fabricated in accordance with the forests of India.

Since the inception of professional training the Indian government has laid constant emphasis on formal training for recruitments and promotions of the staff. The officials were numerous times asked to attend the courses offered by the School. In 1894 the Government of India had suggested the government of Bombay to utilize the service of the School for training and instruction of their native candidates.[229] Later, in 1903 the Bombay Government decided to send their candidates to the Dehra Dun School for Ranger training.[230] By 1904 the Poona School was completely abandoned by the

[225] Alteration of the Forest School Rules. *The Indian Forester*. No. 12, Vol. XXI, December 1895.
[226] Imperial Forest School Dehra Dun, Prize Day. *The Indian Forester*. No. 6, Vol. XXVII, June 1901.
[227] Recruits for the Forest Department. *The Indian Forester.* No. 1, Vol. XX, January 1894.
[228] Forestry Tuition At Oxford And Dehra Dun. *The Indian Forester*. No. 4, Vol. XXXII, April 1906.
[229] Imperial Forest Report 1892-93. *The Indian Forester.* No. 10, Vol. XX, October 1894.
[230] VI EXTRACTS, NOTES, AND QUERIES. Prize Day at the Imperial Forest School, Dehra Dun, The Pioneer. *The Indian Forester.* No. 8, Vol. XXIX, August 1903.

Bombay Government for the training of their candidates and in replacement Imperial Forest School became the sole institution for Bombay students.[231]

The Ranger school fashioned the careers of several natives in the Forest Department. Evidently the school course provided a professional platform to the students in the field of forestry. The finest example of learning was set by Babu Upendranath Kanjilal, who was awarded Higher Certificate with Honours in his class and had been employed by the school as Vernacular Instructor. In 1901 U.N. Kanjilal produced a very significant book unfolding the flora of the School Circle region. The book was especially composed as part of the curriculum and was written under the instructions of J.S. Gamble, the Director of the School. The book was published by the Government Press and in return for his penmanship U.N. Kanjilal received a sum of Rs 750 as honorarium. [232]

3.11 THE IMPACT OF THE SCHOOL

The Imperial Forest School had made a distinguished mark in the Indian Forestry, it provided efficiently trained Rangers. With its impeccable growth, it presented itself as a successful model for future endeavors. The Institution was the foremost forestry school in the Indian Subcontinent making it the parent institution of the Indian region. The courses were composite and comprehensive, but the school had its limitations. The location of the school was most accessible to the northern students and also the language barrier stood for many other students who lacked knowledge of both English and Vernacular. The school was without any contention a vital institution for the growth of trained officials, but as the department grew there was greater stress on

[231] The Training of Forest Officers. *The Indian Forester*. No. 3, Vol. XXX, March 1904.
[232] Opcit.,The Prize Day. *The Indian Forester*. June 1902.

increasing trained staff. The increasing pressure on maintaining a substantial number of trained students led to the idea of starting new schools in different regions.

The Burma region was known for its dense teak forests which were an important asset to the Government and the management of the circle required highly efficient staff. In 1883 the Burmese government sent candidates to the Imperial Forest School for Professional Training, but the courses which were instructed in only English and vernacular proved ineffective for Burmese students. After serious deliberations in 1898 some actions were taken to start a new forest school for Burma and it intended to only serve the natives of Burma. The outline of the new school's curriculum was majorly based on Dehra Dun School's program of study. The school was to be situated in Tharrawaddy division and was to be put under the administration of the Conservator of Pegu Circle. Similar to Dehra Dun the Board of Circle of the Thrarawaddy School was to assist in the academic management of the School. The course was fixed at Eighteen months and was to include both practical and theoretical lessons. Similar to its predecessor the new school was offering a Higher Certificate for Ranger and Deputy Ranger and a Lower Certificate for the grade of Forester. The rules of admission were also produced on the model of Imperial Forest School.[233]

Citing the contribution of Imperial Forest School it was envisaged by the Government that a Forest School for the Madras region would be necessary. It was contemplated that the Madras School would instruct the students in the native language to facilitate better learning. In 1905 a proposal was finalized for starting a new local forest school in Madras. The proposal channelized better prospects for the Regional Protective Staff

[233] OFFICIAL PAPERS & INTELLIGENCE. A Vernacular Forest School For Burma. *The Indian Forester.*No.7, Vol. XXV, July 1899.

of the Department. The Madras school was formalized for training the Deputy Rangers and Foresters at their own expense.[234]

3.12 THE CONVERSION OF RANGER SCHOOL TO IMPERIAL FOREST RESEARCH INSTITUTE AND COLLEGE

The formation of Central Forest School in 1878 was a landmark in the history of Scientific Forestry in India. The school progressed gradually and transitioned into an Imperial Institute, which specifically trained the Executive Staff of the Government in both English and in Vernacular. The school proved to be a successful model and it was realized that the institution needed further expansion for the purpose of Departmental growth. The massive increment in workload and expansion of departmental forests required a more dynamic workforce. In 1906 the Government decided to further enhance the role of the School to Forestry Research Institute. The focus on research was the main ambition for the Transition of the school into a specialized research facility. The school being the first Ranger School in the subcontinent ultimately became the first Research Institute and College in the subcontinent. The progression in the status of the School corresponded with the abolishment of the vernacular course or the lower course. In essence the advancement of School meant the increment of specialized Imperial staff and promotion of research to gain more grasp on the countless Minor Forest Produce.[235]

The reorganization of the school also meant introduction of changes in the recruitment process of the Provincial staff. The lower certificate was abolished and it was decided

[234] EXTRACTS FROM OFFICIAL PAPERS, A Forest Training School In Madras. *The Indian Forester*. No. 5,Vol. XXXI, May 1905.

[235] EXTRACTS FROM OFFICIAL PAPERS. CREATION OF IMPERIAL FOREST RESEARCH INSTITUTE AND COLLEGE AT DEHRA DUN. Circular No. 11- 166 2-F. GOVERNMENT OF INDIA, DEPARTMENT OF REVENUE AND AGRICULTURE, FORESTS, Simla the 5th June 1906. *The Indian Forester*. No. 6, Vol. XXXII, June 1906.

that the training of Subordinate Executive Staff was to be left under the jurisdiction of Respective Local Governments. The new course at the Forest College was to be only in English stretching to a period of two years. The course would train Rangers for the provincial services and at the end of two years they would receive any of the three certificates, which were Honours, Higher Certificate and Lower Certificate. The attainment of Higher Certificate made candidates eligible for admission in the third year of course. After satisfactory completion of the three years a candidate might be posted either for appointment of Ranger or as probationary Extra Assistant Conservator. The three year course was introduced to provide an opportunity to the candidates for an early appointment in the executive service.[236] The changes in the Courses were to facilitate the requirement of the contemporary times. The new institution, just like its predecessor, played a significant role in providing Forestry Education and in determining the Bureaucratic History of the Forest Department.

The Evolution of Central Forest School to Imperial Forest School was the first step in the evolution of the institution. Throughout the ages the school successfully produced highly trained Rangers and Foresters. The Imperial Forest School was established in India when the British lands did not have any Forest School at home. The massively crucial institution evolved into a Research College in 1906, to explore the nature of forest products and to pursue research required in the domain. In the Twentieth Century the research institute proved to be a vital organ for understanding the properties and uses of Timber and its related products. The Institution still stands in the Dehra Dun and runs on the similar lines on which it was established.

[236] EXTRACTS FROM OFFICIAL PEPERS. REVISED RULES FOR THE TRAINING OF CANDIDTES FOR THE PROVIINCIAL AND SUBORDINATE FOREST SERVICES. Circular No. 28 F/166 4 , GOVERNMNET OF INDIA, DEPARTMENT OF REVENUE AND AGRICULTURE, FORESTS, Simla the 9th October 1906. *The Indian Forester*. No. 11, Vol. XXXII, November 1906.

Chapter 4

Situating Forest School in the Environmental History of India

Chapter 4

Situating Forest School in the Environmental History of India

4.1 AN ASSORTMENT OF NARRATIVES ON ENVIRONMENTAL HISTORY

The twentieth century in the global context marked a special meaning in terms of decolonization, advent of post modernism and re-emergence of massive climatic and ecological consciousness; the new intellectual currents exposed the socio-economic forces at play. The world at the arrival of the second half of the century had witnessed massive human outrage and catastrophe, meanwhile the decolonization of large territories posed new challenges to the new nations. Innovative questions based on the legitimacy of world systems were being asked, and academia was looking at deeper levels of solutions for societal problems. The academic shift in history writing, at this point, was an inevitable phenomenon; it is in this light that the Environmental History in India took its shape. It would be an inaccurate presumption to accept the paucity of any environmental history writing being done before the 1970's; though the Environmental History as an academic discipline developed only after the 1970's. The arrival of this period marked wide creative fusions and in this light many disciplines were merging to provide accurate accounts of social reality. The social memory of different cultures and societies were being documented to provide answers to the missing links in knowledge. The Modern Environmental History which is relatively new in India attempts to narrate the various accounts on environmental theme, which are commonly related to Irrigation, Soil management, agro-ecology, forest

management, ethno botany, eco feminism, etc. The lack of historical accounts on the environmental changes and its impact on the Human society were the reasons for the rise of Environmental History.

In the Hills of Uttarakhand when the Chipko movement began in 1973, it acted as the catalyst in the Indian History writing. The Chipko movement was the first ecological movement of India which gained the attention of a global audience for the display of ecological consciousness and non violent techniques of protest. The movement was a *Jan Andolan* (People's Movement), as it had local peasants including a large sum of women as active participants. The movement was a shout against the cutting of trees by private contractors in the fragile Himalayas. The people sung the chipko song[237] which spoke explicitly about the exploitative Forest laws. The people poured their voices to save their priceless hills and its ecology from the disasters of nature; it was not just an ecological movement but an expression of outrage against the misuse of forests and misuse of privilege. The movement successfully gained the attention of environmentalists, historians, sociologists and many known journalists. The most prominent question which emerged was about the forest policies and its implications both in retrospect and in current times. The roots of scientific forestry were being traced to unearth the flaws in the forest management system. The Historians of Modern Indian Historiography took upon themselves to uncover the history of Scientific Forestry in Colonial India, to disclose the motives of Colonial Government.

The path breaking work by Ramchandra Guha in 1980's laid the foundation of Modern environmental history in India.[238] His works opened the doors to many new

[237] Shiva, Vandana, & Mies, Maria. *Ecofeminism*. Bloomsbury Academic, United Kingdom, 2014, pp.246.

[238] Guha, Ramachandra. "Scientific Forestry and Social Change in Uttarakhand." *Economic and Political Weekly*, vol. 20, no. 45/47, 1985, pp. 1939–52, http://www.jstor.org/stable/4375015. Guha,

questions which revolved around the nature and motives of Colonial Scientific Forestry. According to Guha the British government introduced Scientific Forestry and monopolized the forests to create a massive surplus for monetary gains and imperial expansion. The Imperial Government endorsed the restriction on forest use by indigenous people and destroyed the traditionally communal forest management practices, thus shattering the indigenous systems of ecological management. He also highlighted the Forest Law in both pre and post independent India and drew comparisons between the two periods; he declared them both to be identical and exploitative in nature.[239] The forests were not merely a source of resources, but a method to dictate or to rule the indigenous people by means of restrictive laws. Guha's work represented a model which showcased Marxist relationship of man with nature and British Forces acting as the agent, which alienated the man from its environment or his means of production. He traced the roots of ecological destruction in independent India to the commercialized forestry in the Colonial era.

Gradually many important works on new themes poured in. An important study by Jayanta Bandhyopadhyay and Vandana Shiva unveiled the emergence of ecological movements in relation to the advent of commercialized economy in the modern era. The work highlights the presence of traditional ecological sense amongst various societies; it diligently covers the issue of economic class struggle in the urban-industrial society. The argument talks about the survival of microeconomics in the dominant market based economy and puts across the view that ecological movements

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Ramachandra. "Forestry in British and Post-British India: A Historical Analysis." *Economic and Political Weekly*, vol. 18, no. 44, 1983, pp. 1882–96, http://www.jstor.org/stable/4372653. Guha, Ramchandra. *The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya.* Oxford University Press, Delhi, 1989.

[239] Guha, Ramachandra. "Forestry in British and Post-British India: A Historical Analysis." *Economic and Political Weekly*, vol. 18, no. 45/46, 1983, pp. 1940–47, http://www.jstor.org/stable/4372677.

are people's response for their survival and preservation of their life support systems.[240] Vandana Shiva has been vastly vocal about the importance of indigenous agro ecology and sustainable food systems. In her globally acknowledged work on Eco- feminism, she has thrown light on the role of women in regulating the traditional ecological systems. According to Shiva women are the custodian of biodiversity, they preserve traditional knowledge through practice, and this crucial role has been vastly ignored by 'progressive' market favoring economies.[241]

Similarly an enticing study by Neeladri Bhattacharya unearthed the implications of colonial rule on the pastoralists of the Northern region of the subcontinent. Bhattacharya's work introduced the various pastoral communities and their traditional sustenance patterns. His work shed light on the British intervention in the forests and grazing lands through stringent legal mechanisms and its deep impact on the survival of this fragile system. The colonial government's boost on the agrarian economy and land acquisition through strict bans, further affected the migration patterns. The neglect of colonial consideration to the pastoral life systems had various economic and social effects; the communities were even ridiculed for their demeanor and lifestyles.[242]

Another important study by Dhirendra Datt Dangwal highlighted the implications of scientific forestry in the U.P. Hills region. He has put forward the argument that the commercial forestry in the Hilly terrain introduced several changes in the ecological

[240] Bandyopadhyay, Jayanta, and Vandana Shiva. "Political Economy of Ecology Movements." *Economic and Political Weekly*, vol. 23, no. 24, 1988, pp. 1223–32, http://www.jstor.org/stable/4378609.

[241] Shiva, *Ecofeminism.* Op.cit., pp. 164.

[242] Bhattacharya, Neeladri . "Pastoralists in a Colonial World." *Nature, Culture, Imperialism: Essays on the Environmental History of South Asia*, Arnold, David. & Guha, Ramchandra. (eds), Oxford University Press, Delhi, 1995, pp.49- 85.

setup which in return drastically affected the hill agriculture.[243] Dangwal has underlined the increased demands on agricultural production by the British Government in the nineteenth and twentieth century and its further deteriorating condition due to the restriction on use of common lands for traditional use.[244] The restriction on use of common lands alienated the indigenous population from utilizing the lands for fuel, fodder and other crucial raw material, which majorly impacted the traditional agricultural pattern.

Similarly, Atluri Murali's study attempted to highlight the mutually coexisting system of agriculture, pastoralism and forest in the pre- colonial Andhra. Murali mentions the imbibed ecological sustenance in the traditional system of religion, culture and political regime which was disturbed under the colonial 'scientific' rule. He stressed on the various imperial methods of exclusion which created unrest amongst the regional masses. The restriction on the communal use of forests and imposition of heavy dues on the people ultimately gave rise to popular discontent in the form of peasant and tribal movements in 1920's.[245]

An important representation of traditional conservation forest systems were highlighted through the study of Sacred Groves in various parts of India. Sacred Grooves were those forests in India which were maintained through various religious and cultural institutions. Madhav Gadgil in 1975 wrote an article on the Sacred Grooves of Maharashtra region, he pointed out the prevalence of well conserved forest patches which exhibited climax vegetation, thus signaling the successful

[243]Dangwal, Dhirendra, Dutt. "Forests, farms and peasants: Agrarian economy and ecological change in the U.P. hills 1815-1947." *Studies in History*, Vol. 14, No,2, July- December, pp.349-371.
[244]Ibid., pp.349-371.
[245] Murali, Atluri. "Whose trees? Forest Practices and Local Communities in Andhra, 1600- 1922*." *Nature, Culture, Imperialism: Essays on the Environmental History Of South Asia*, Arnold, David. & Guha, Ramchandra. (eds), Oxford University Press, Delhi, 1995,pp.86-122.

survival of these forests.[246] The author highlighted the importance of these crucial forest pockets as a repository of traditional medicines and herbs. According to Gadgil, these forests promoted preservation of biological diversity. These Sacred forests were closely tied to the surrounding communities who associated these forests with various Taboos and religious beliefs. Nanditha Krishnan has also worked on the importance of Sacred Groves in the conservation of various biological species and economic systems. She has judiciously illuminated the changing perception of forests in the various periods of time and space. Her study traces the existence of sacred groves in the ancient times, in the form of *tapovana* and brings to attention the latest figures on the existing grooves in various parts of India while also pointing out the presence of precious plant species in these regions.[247]

In retrospection we observe that based on the two decades of historical accounts on environmental history two models emerge in the Picture. The two models highlight narratives from different angles using various sources in different time periods. The historians of modern environmental history do not agree on the motivations and implications of the British Forest Policy. In Modern Indian History we have encountered two models which have tried to unearth the pattern of Colonial Action in the ecological context. The first model is the Guha- Gadgil model and another is Grove model, both models provide rigorous arguments from their suitable angles. Guha-Gadgil Model of environmental history supports the existence of a strong conservation and prudent ecological sense amongst the indigenous masses of the subcontinent and the destruction of pre- existing traditional conservation institutions by colonial governance. The model supports the view that the Colonial Scientific

[246] Gadgil, Madhav &,Vartak, V.,D. "Sacred groves of India- a plea for continued conservation." *Journal of the Bombay Natural History Society*, No. 72 (2), pp. 314-320.
[247] Krishna, Nanditha. "Ancient Forests and Sacred Grooves." *Critical Themes in Environmental History of India*, Chakrabarti, Ranjan (eds), Sage Publications, New Delhi, 2020.

Actions and policy making was solely driven by commercial and materialistic interests. The advent of British Forces was seen as the Watershed moment by these historians.[248]

The second model was presented by Richard Grove in 1994 in his brilliant and challenging study, in which he made an ambitious attempt to provide a glimpse on the genesis of the scientific network in the early colonial expansion. Taking away the attention from the European center he focused on the emergence of Scientific Conservation attitudes or Concerns in the Islands in response to the aggravating environmental destruction and Biological Extinction. [249] Grove showcases the importance of peripheral scientists in shaping the scientific temperament in the metro pole regarding the evolution of colonial science and environmental context, which later was prudently utilized by the European authorities to promote their environmental agenda. He credits the initial scientific agents who used their position in the peripheral Islands to promote the desiccationist concerns to their respective governments. Drawing the examples of display of Scientific Prudence in St Helena and Mauritius he provided an excellent insight on the generation of Environmental Consciousness in the Periphery rather than the European Metropole.[250]

Historian Ravi Rajan in the monumental work on origin and evolution of Continental Scientific Forestry introduced new insight in the understanding of Colonial Forestry and its motivations. The scholar unearthed new resources to illuminate the character of Continental Forestry Education and attempted to take away the attention from the

[248] Gadgil ,Madhav and Guha Ramchandra. *This fissured land: An Ecological History of India*. Oxford Publications, India, 1993.
[249]Grove, Richard, H. *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Envirinmnetalism, 1600-1860*. Cambridge University Press ,Indian Reprint, Foundations Books, Delhi, pp. 478
[250] Ibid., pp. 485.

generic debate on Colonial state motivations and provide a separate stature to Forestry Science in reshaping the State Attitudes. By primarily uncovering the roots of Continental Forestry in France and Germany, Rajan craftily reconnects the Scientific Forestry tradition infused by the British Government throughout its Empire.[251] The study creates an enticing account on the Science of Forestry as an independent entity transcending continental borders through the diffusion of scientific culture in the entire British Empire.

In an attempt to captivate the Globalized History of Forestry in the British Empire Gregory Allen Barton traces the origin of environmentalism as an intellectual layer in global context. He introduces the origin and expansion of professional forest machinery throughout the British Empire, which gradually by the 20th century almost covered the entire globe. Using official data to uncover the extent of Empire Forestry, Barton mapped out the forest history from introduction of Dalhouise's Charter to the post Second World War world. He places the origin of environmentalism in the strokes of British Imperialism which formulated a space for dexterous forest management.[252]

Meanwhile, Richard Drayton's work on Kew Garden is a fascinating study in the domain of institutional history. His work paints the history of the British Empire from a new angle of Nature, presumed as vastly abundant in 'precious elixir', and the role it plays in fetching the empire with a garden like Eden, both economically and aesthetically. The work starts by describing the origin of Botanical Garden tradition under the influence of religious desire for search of Eden or 'Paradise' for the

[251] Rajan, Ravi, S. *Modernising Nature: Forestry and Imperial Eco- Development 1800-1950*. Orient Longman, New Delhi, 2006.
[252] Barton, Gregory. A. *Empire Forestry and Origin of Environmentalism*. Cambridge University Press, Cambridge, 2002.

improvement of mankind. Similarly, he places the Kew Garden at the center of his thesis and points out its major role in being the Empire's primary repository for Botanical resources and its function in justifying the Colonial Acquisition. By tracing the history of scientific men, Drayton provides an insight into the world of plant knowledge and Kew's vital position in shaping the Botanical network of the world.[253]

The studies in historical writing further moved into unexplored domains of environmental questions. The post structural paradigm in history under the Foucauldain influence posed new insight to the environmental viewpoint. It helped to understand the multiplicity of various narratives in history. The primary focal point in these studies was to capture the various processes at play rather than viewing history as an event. Mahesh Rangarajan in his celebrated study on the Forest management in the Central province region provided an insight on various methods of restrictions imposed on the forest usage by the rural population. Rangarajan highlights the evolving political strategy of the forest service in the central province in relation to the goal of land acquisition, thus breaking away from the 'watershed moment' of environmental history.[254] There were variations in the power ownership in different topographical contexts, the distorted and diverse forest policies on fire protection were an example of existing parallel realities.[255] Sivramkrishnan's study on Forestry in Colonial Bengal draws attention to contextual governance in various regions, where the power dynamics were determined by an assortment of regional factors at play,

[253]Drayton,Richard. *Nature's Government: Science Imperial Britain, and the "Improvement" of the world*. Orient Longman, New Delhi, 2005.
[254] Rangarajan, Mahesh. "Production, Desiccation and Forest Management in the Central Provinces 1850- 1930." *Nature in Orient*, Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal (eds), Oxford University Press, New Delhi, 2000. pp.596- 635.
[255] Rangarajan, Mahesh. "Polity, Ecology and Landscape: New Writings on South Asia's Past." *Studies in History*, vol. 18, no. 1, Feb. 2002, pp. 135–147, doi: 10.1177/025764300201800107.

making the forest governance full of internal contradictions, additionally the co-management of forests and shifting land ownership was an interesting feature.[256]

The studies on colonial science have made major strides on global history; the center-periphery origin has been the focal point for debates in colonial science. Satpal Sangwan's critical study on colonial science takes away the attention from the geographical perspectives to cultural context of colonial science by throwing light on the scientific endeavors of scientists at the periphery. His argument supports the grant of equal stature to colonial science at the periphery, which was in matured stages an epitome of contextual environmental brilliance.[257] He shed light on the process of scientific development in the colony, which initially under the Baconian impact promoted exploration and collection of natural history specimens to the Linnaean phase which focused on classification of various species.[258] The work focuses on the process of professional knowledge assimilation by scientific minds at periphery in the nineteenth century context, which challenges the linear view on the motives of colonial science.

Sumit Guha in fresh insight through the ethnographic lens provided an interesting take on the Tribal 'characteristics' or 'patterns' defined in prior narratives. His work sheds light on the display of fluidity and engagement of forest tribes in the active political dynamics of their respective regions, throughout various temporal contexts. The fresh view on the social engagement of forest communities sustaining in symbiosis with the peasant groups breaks the outlook on 'tribal isolation', additionally he illuminates the

[256] Sivaramakrishnan, Kalyanakrishnan. *Modern Forests: Statemaking and Environmental change in Colonial Eastern India*. Stanford University Press, California, 1999.
[257] Sangwan, Satpal. "From Gentlemen Amateurs to Professionals: Reassessing the Natural Science Tradition in Colonial India 1780- 1840." Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal (eds)*Nature and Orient*, Oxford University Press, New Delhi, 2000. pp.,210- 236.
[258] Ibid.,pp. 210- 236.

shifting ecological practices of communities in differing times for economic turnover and survival. The geographical extent of Guha's study ambitiously uncovers the social and economic transitions showcased of various forest communities and their formation of Internal Hierarchies in a vast time period ranging from 1200- 1991.[259]

The study by Akay Skaria on the Dangs of Western India in the Colonial period generated an interpretation on Ethnocentrism. He has focused his perspective around the concept of Wilderness or being *'jungali'* by identifying the political standings of Dang Community.[260] He questions the basic presumptions of mainstream narratives of Jungle Harmony present in Forest Tribes. In his work, Skaria aimed to bring out the crucial political role played by the Dangs in the Post- Mughal decline. He urges the readers to re-question the decline debate and understand the politics of state-making from the lens of Wilderness, which had its own methods of creating power supremacy in the different time and context. The study also examines the position of 'Tribe' in Colonial Context, which later paradoxically represented both exotic imagery and uncivilized savagery.

Another scholar of vigor, Arun Agarwal attempted to rewrite the history of Kumaon Hills through a new lens of curiosity. Taking way the attention from works of traditional ecological prudence and eco- feminist derivations, he presents new narrative on innate Ecological understanding of Communities. Using a wide range of sources and methodology he attempted to showcase the changing Political Ecology in the 20th Century and evolving response and consciousness of the communities and villages to the governing ethos, which often were determined by varying factors. His

[259] Guha, Sumit. *Environment and Ethnicity in India 1200-1991*. Cambridge University Press, Cambridge, 2006.
[260] Skaria, Ajay. *Hybrid Histories: Forests, Frontiers and Wildness in Western India*. Oxford University Press, New Delhi, 1999.

work is an important historical account under the postmodernist currents, which captures the shifting perceptions of the regional community under the decentralized governmental regime. In his analysis, the evolving perceptions held by people towards ecological consciousness get coined as 'Environmentality'.[261]

The various works on environmental history have recently mushroomed in a wide range of disciplines. The historical models presented in Modern Indian history gets divided, fused and even overlaps in certain studies. The Guha-Gadgil model favors the traditional ecological prudence in indigenous communities against the British Colonial Professional Forestry; meanwhile Grove model highlights the scientific conservationist ideologies presiding amongst Early East India Company Officials. Both the models have their shortcomings, for instance the former one overlooks the role of class distinction and caste based privileges in control of resources, while the latter one primarily utilizes the Colonial testimonies as sources to justify his claims and missed the evolution of desiccationist discourse.[262] Though both the models have their shortcomings, they still do remain classic interpretations. Other than these two popular models we have another important interpretation which views history as a process and not as a watershed. The new model invites environmental narratives from a vast number of academic disciplines; it gives space to new theories and fresh interpretations. Studies by Mahesh Rangarajan, Sumit Guha, Ajay Skaria, etcetera, are some examples which engage topics from wide new angles of History.

[261]Agarawal, Arun. *Environmentality: Technologies of Government and Making of Subjects.* Duke University Press, Durham, 2005.

[262] Skaria, Ajay. "Timber Conservancy, Desiccationism and Scientific Forestry: The Dangs 1840's – 1920's." *Nature and Orient*, Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal (eds) Oxford University Press, New Delhi, 2000, pp. 597- 635.

4.2 SITUATING RANGER SCHOOL IN THE INTELLECTUAL FRAMEWORK OF SCIENTIFIC FORESTRY

The massive amount of work in the Environmental History of India has touched on a vast number of insightful historical works, especially on the Modern period. We observe that the colossal literature has still left a serious lacuna in various strands of history. One such domain of massive importance is of Institutional History, which has not grabbed much attention. Institutional History holds the potential to bridge the gap in our understanding of Environmental History. The micro analysis of an institution can formulate our understanding about the gaps and overlaps happening in the environmental debate. The nature of Indian history serves a vast number of opportunities to reframe and revise the old narratives using fresh interdisciplinary methods.

After the creation of the Forest Department in India the Colonial Government under the guidance of Sir Dietrich Brandis planned to create a strong bureaucratic base. It was recommended that only a professionally trained staff member had the maximum intellect and patience to manage the Forests. Scientific Forestry was to be infused into the veins of the Empire and in this injection of valuable modern temperament, various Forestry institutions played a significant role. The initial period marked the introduction of European Forestry training for Controlling or Superior staff in Germany and France.[263] The scheme was fashioned out by Dietrich Brandis himself; it was precisely introduced to vigilantly launch Continental Forestry in India. Although the continental training for officers was a concrete step in launching Scientific Forest Management, it still was far from being adequate. The department

[263] Brandis, Dietrich. *Forestry in India : Origins & Early Developments*. Natraj Publications, Dehra Dun, 1994, pp. 129.

needed a strong network of trained men for handling a wide range of works; it precisely needed Foresters at all official levels working on the same line of scientific principles.

After the inception of the Forest Department, a large number of efforts were drawn to introduce professional training for the executive staff. Vast schemes over time were introduced to formulate a permanent supply of trained Ranger groups, even the enticing venture of introducing theoretical training at Roorkee Engineering College failed tragically.[264] Primarily the failures occurred due to the absence of officially designated instructors and infrastructure. It is in this light that a separate Institution for Ranger Training was imagined. The first idea of Producing a Ranger School was pitched by Sir Richard Temple in 1873, which was meant for the Bengal region.[265] The Bengal Ranger School idea did not take root in the system, but it did inspire the department to contemplate a Ranger School. It was lastly under the vision of Sir Dietrich Brandis that a fine proposal was devised to introduce Forestry Education in India for the natives.

The Imperial Forest School was started in 1878 Dehra Dun, as the Central Forest School for the training of Rangers and Foresters in British India.[266] The Ranger Training was exclusively created to inculcate natives in the Forest Departmental working. The school was created to produce separate subordinate staff or executive staff for the department. Being the first school of the British Empire the challenges were numerous. This venture was an important opportunity for the natives to enter the British services and gain promotion to the ranks of Controlling Staff.

[264] Ribbentrop, Berthold. *Forestry in British India*. Office of the Superintendent Of Government Printing, India, 1900, pp. 233.
[265] The Forest School at Dehra Dun. *The Indian Forester*. No. 2, Vol. VII, October 1881, pp. 15.
[266] Walton, H., G. *The Gazetteer of Dehradun*, Natraj Publishers, Dehra Dun, 2016, pp. 162.

The creation of school in the Dehra Dun region invited changes in the systematic management of the region. The Dehra Dun region under the North West Province of British India was demarcated into a separate circle, providing a perfect forest land for practical instruction.[267] The selection of Dehra Dun for the inception of this important institution was a thoughtfully crafted decision. The Forests around the Dun valley exhibited wide tree species ranging from sal, deodar, oak, pine and fir, which accurately matched the desirable composition.[268] Being closely associated with the Forest Institution, the circle of Dehra Dun became a beacon of Systematic Forestry.

The school was set up in the heart of the city with a beautiful campus showcasing lecture halls, Study Lab, Herbarium, Museum and a Hostel. By 1880 school received interested candidates for the training purpose and by the end of the year all were employed in forest Work.[269] The students were considered as the employees of the government and their practical service was reimbursed accordingly. The first theoretical instruction was inaugurated in July 1881 which was attended by two classes of attendees, first had ranger and forester group and second one had Forest Officers.[270]The courses were conducted in either English or Hindustani granting at last the certificate of either Ranger or a Forester. The enrolment in the School courses primarily granted candidates with an enticing opportunity to gain foothold in the governmental setup. The school was highly successful in creating the Ranger class of high intellect for the Provincial services.

[267] Walton, H., G., pp. 163.

[268]Stebbing, Edward, Percy. *The Forests of India*. Vol. II, Jane Lane, London, 1922, pp. 504.

[269] ORDERS OF GOVERNMENT, Resolution No. 978A. Of 1880, Revenue (Forest) Department, Dated Nainital, 19, October, 1880. Forest Department Library, Lucknow, Uttar Pradesh.

[270] OFFICIAL PAPERS. Joint Report on the first course of theoretical instruction at the Central Forest School, Dehra Dun, by D. Brandis, Inspector General of Forests, Major F. Baily, R.E., Director of the Forest School, dated Dehra Dun, the 3rd October 1881. *The Indian Forester*. No. 4, Vol. VII, April 1882.

In July 1881 the data revealed that British India had merely 97 Rangers in the Forest Department for the executive management of the entire subcontinent.[271] Therefore the Government strongly suggested that the department produce at least 600 trained Rangers in the next ten years.[272] The school was envisioned as the Jonah of Scientific Forestry to build a stringent structure of trained men for the upkeep of the Jungles. Concisely the burden of producing finely trained men was on the shoulders of the school.

The school each year received ambitious students, both private and sponsored. The growth of the school from being a provincial to an Imperial Institution in 1884 was a significant up-scaling event. The June 1884 memorandum of the Government transferred the school to the center and granted an additional Imperial fund of 25,000 for the upkeep.[273] Due to the display of constant appraisal in the rules, the school evolved into an Exemplary Institution. In 1888, the Government of Ceylon instructed two of their officers to join Imperial Forest School for receiving the important training in Forestry.[274]

The Imperial Forest School was undoubtedly a successful organ of forestry in British India; the school not only created proficient men but also perfected professional forestry education in India. The Imperial Forest School was often compared to the contemporary schools of greater infrastructure. In 1897 Dietrich Brandis stated that, "*One of the most important results of the Dehradun Forest School has been, that several native officers, who had received their professional training at the school, are*

[271] *The Indian Forester*. Oct. 1881, Op.cit., pp. 121.
[272] Ibid., pp. 121.
[273] 1. Separation of Forest School from the Circle. ANNUAL PROGRESS REPORT OF FOREST ADMINISTRATION FOR THE YEAR 1884-85 N.W. PROVINCES AND OUDH. SCHOOL CIRCLE. BY MR. W.R. Fisher, B.A., Officiating Conservator of Forests, School Circle. Forest Department Library, Lucknow, Uttar Pradesh.
[274] Training of Ceylon Forest Officers. *The Indian Forester*. No. 7, Vol. XIV, July1888, pp. 321.

now being employed on the preparation of working plans for important forests, and that their work compares favorably with the work of Englishmen educated on the continent of Europe or at Cooper's Hill College".[275] The school was set up with the motive to form an institution which in case of necessity could fill the shoes of Nancy or German schools.

The staff of the school consisted of men of great caliber having compassion for forestry; these men of vigor were the pillars on which the students climbed the bureaucratic ladders. The inclusion of a wide range of Forestry and allied sciences in the curriculum was indicative of the school's commitment towards generating a far-sighted Staff. James Sykes Gamble said in 1886 that, "*The Forest School at Dehra is, with the staff that we had the pleasure of meeting in October last, quite able to instruct any men who may be sent to that institution, and it does seem a waste of power that this well manned and well furnished and well housed School should not be utilized to a far greater extent than it now is by the Government. It should, under well considered regulations, be thrown open to the public, and in that case I believe that the School will not only turn out an ample supply of good forest officers for India, but also other parts of the Empire. Australia, New Zealand, the Cape, Mauritius, Egypt even, are all in want of such men, and that Dehra School, with the pine and oak forests of the Himalayas on one side, and the varied forests of the plains on the other, is the place where the widest experience can with the greatest facility be brought to bear on practical forest training*".[276]

The Pioneer figures associated with the School were the founding fathers of Forestry Education in India. To understand their motivations and their contributions we should

[275] Brandis, Op.cit., pp. 156.
[276] The Forest Conference At Dehra Dun, James Sykes Gamble. *The Indian Forester*. No. 12, Vol. XII, December 1886.

examine the facts in their respective time and context. The Forest Department had since its birth dabbled between conservation of forests and regular revenue generation. With dual responsibility on shoulders, another issue which rested was of gaining similar stature to other government departments. The lower salaries than other governmental employees were another factor responsible for creating mental unrest amongst the Foresters. Mr. Fisher in 1885 mentioned in the Directorial report of the School that, " *It is evident, however, that the main object of the Dehra Dun Forest School is to train Rangers, and it is hoped that, now that well educated young men are coming forward for these appointments, the proper status of Forest Rangers may be recognized by Civil Officers, and that they may be ranked, by the authority of the Government of India, in the same position, and be treated with the same consideration, as Inspectors of Police and other Public officers drawing similar pay to their own. This far from being the case at present, and the absence of such consideration is a substantial grievance and hinders our obtaining better men for the Forest Department, the steady improvement in the revenues of which depends principally on the exertions of the men in charge of the ranges*".[277]Similarly in 1886, J.S. Gamble mentioned that the pay of Inspector General of Forests was lower than a District Collector.[278]

In retrospect the School favorably advocated the needs of Native Forestry Students. The Introduction of the Vernacular Course of Forestry in the 1884 Memorandum was one fine example of the school's flexibility. The vernacular class under the School's wing granted lower certificates to foresters. The course was started especially to train the Foresters who worked on the Forest Frontlines to defend the Empire's Forests

[277] The Forest School at Dehra Dun. *The Indian Forester*. No. 10, Vol. XII, October 1886, pp. 449.
[278] *The Indian Forester*, Dec 1886, Op.cit.

from any destruction. Another glimpse of the school's flexibility can be captured in the provision of grant of lower certificate to rangers in case of failure in higher classes.[279] The departmental structure even provided further opportunities to gain timely promotions and stature over a certain period of time. These provisions or prospects were fashioned out by the scientific leaders engaged in the School's Board. In simple words the school was an expression of High Scientific temperament carried by the first generation foresters of the Subcontinent.

Another major branch associated with the Forest School was the journal named *The Indian Forester*. The journal was a standardized platform for the Foresters to discuss and initiate scientific conversations related to forestry and allied sciences. Satpal Sangwan credits the journal for being a baton of Scientific Forestry; he highlights that the journal was indeed the face of people's expression and due to its outreach it was prominent in shaping the Tenets Forest Department in India.[280] The journal was an important stage for crucial discussions on scientific and bureaucratic matters like the importance of forests in climate change, Local Proprietary Rights, Internal discord amongst Civil and forest administrators, importance of Botany in Forestry Education, etcetera. The lively debate remained ignited through the channel of the journal cautioned the government about the serious issues and thus in return helped to formulate its strategy.

The final promotion of status from being a school to a forestry college in 1906 and later in 1929 into Research Institute clearly states the obvious success the school had.

[279]Memorandum of Conditions for the admission and training of Students at the Forest School, Dehra Dun, dated the 3rd June, 1884, Dehra Dun Forest School. *The Indian Forester*. No. 1, Vol. XI, January1885, pp. 15

[280] Sangwan, Satpal. "Making of a popular debate: The Indian Forester and the emerging agenda of state forestry in India, 1875- 1904". *The Indian Economic and Social History Review*, No. 2,Vol. 36, Sage, New Delhi, 1999, pp. 187- 237.

The Research Institute or the Forest Research Institute still holds an important place in the Forestry Education in India. The impact of the school is invaluable in terms of Scientific Forestry Education. Its position is unmatched in the history of the subcontinent, as not only was it the first Forest School of the British Empire it also gave a successful model of a Forest school to the world. Following the example of Imperial Forest School other schools were also made on similar patterns. It was registered that by 1900 the school had granted 360 ranger's certificates and 112 vernacular certificates.[281] Mere reservation of forests was not the key to the success of the Forest Department, but a strong army of trained men were required to work the forests. By the close of the century the Staff was neatly classified into three levels with different functions on their nomenclatures. This division of staff was the bedrock of scientific forestry in the British Empire, as through these ranks, men of Intellect rose and created a contrasting narrative of Environmental History. Through understanding the History of Ranger School we can trace back the roots of Forestry Education in India. It brings out the new perspectives which remained uncovered in the previously conducted historical works.

4.3 CONCLUSION

In the current context it is no rare occurrence that mass cutting of Forests by Government for infrastructural purposes is taking shape. The relationship between Climate Change and deforestation is now widely exposed and in the digital era this relationship gets more attention than ever.[282] The intricate balance between development and forest protection had been a topic of serious discussions in the late 20th century. We simply place the roots of forest departmental working principles in

[281] Stebbing, Edward, Percy. *The Forests of India*. Vol. II, Jane Lane, London, 1922, pp. 507.

[282] Soutick,Biswas. "'Hanging' Glacier broke off to trigger India Flood," *British Broadcasting Corporation*, February 10, 2021, https://www.bbc.com/news/world-asia-india-56007448.

the British era. In this framework the position of Ranger School provides an insight into the current function of the Forest Department. The Imperial Forest School reshapes our analysis and brings out the multi faceted picture of complexity at play. The previous studies on Scientific Forestry and its Origin by Richard Groove and Ravi Rajan fail to unearth the history of Ranger School.

The school was opened in British India in 1878, the time when the forest department had just begun to reach the roots of deep dark Jungles. In this context the need of the hour was to create a forest department which could provide a regular source of timber along with the best management plan for its regeneration. Scientific Forestry borrowed from the German and French Forestry was the Department's best shot. Under the pioneers like Dietrich Brandis, Berthold Ribbentrop, William Schilich, Major Bailey, J.S. Gample, etc., the department found its right direction. The school was an important wing of the Forest Department for changing the Face of Indian Forestry. The school created a professional Ranger and Forester class and also housed the Working Class Branch, Indian Forester Journal Head Office and Forest Survey of India. Having strong ties to major departmental branches, the school exceeded the expectations in just a few years. The school ran from 1878-1906 as the Ranger School, which got promoted to Imperial Forest Research Institute and College in 1906.

In the time frame between 1878- 1906 the school regularly created Executive Staff for the Department. It is observed that in this time period the Forestry tenets were primarily focused on managing the forests and creating sustained supply for future use. In 1873, Dietrich Brandis stated that, "the necessity of extensive plantations, and of careful management both of the scanty woods on dry ground, and of more productive forests along the banks of the rivers. These are the future requirements of

India in consideration of public measures of his nature. For, after all, if it were not for the benefit of the people of India, there would be no reasonable ground for undertaking the arduous task of preserving and improving its forests".[283]

We locate that the focus on Minor Forest Product and Non Timber goods was made in the later stages. In fact an interesting work by Richard Tucker on the Minor Products found in the Western Himalayas discusses the mutual coexistence of Hill State kings and Colonial Government in matters of Non timber Product sale.[284] The extreme shift in economic standing of the forest department was reflective of the changes in the political front, especially the First World War.

Another important observation in the current context is the changed ecological composition of the hills. The debate on the *Banj* Oak versus *Chir* Pine is a very crucial angle to understand the components of agro- ecology, climatology and Himalayan pedology. Both the species of trees are compatible with the Himalayan soil and climate, but have very different impacts. *Chir* Pine gained vast popularity after the First World War, when the Pine was found out to be extremely valuable for Resin Production and Railway Infrastructure (sleepers).[285] Another factor which contributed was the ease in *Chir* germination and its rapid growth. The ease in germination process was unnerving for the surrounding communities and Regional ecology. Having needle-like leaves, the pine was highly unsuitable for grazing purposes. The leaves still cause a massive destruction to the forests, as its leaves do not facilitate grass growth and are highly flammable. The large number of recent

[283]Brandis, *Forestry in India*, Op.cit., pp.30.

[284] Tucker, Richrad. "Timber Conservancy, Desiccationism and Scientific Forestry: The Dangs 1840's-1920's."
Nature and Orient, Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal, (eds), Oxford University Press, pp. 459- 483.

[285] Guha, "Scientific Forestry in Uttarakhand", Op.cit., pp. 1941.

articles and publications in this direction are testimonies enough to bring out the long term consequences of Creating Mono- Cultural Forests in Hills.[286]

Having understood the environmental problems in contemporary context the question remains what role the school played in the larger picture of environmental concerns. Formulating an argument on the lines of Ajay Skaria's standpoint, the deeper analysis on the Trajectory of Forest School which stretches form 1878- 1906, shares a glimpse of the Impact of School in creating a base for Scientific Forestry. Skaria while illustrating the Dang history on Forest use brings out the evolving nature of desiccationist discourse under the demand for revenue generation.[287] Similarly through our historical analysis of the School we find that the school was a major contributor in transferring Continental Forestry in India, but also that the Institute's Position as Ranger School was an inevitable phenomenon. In the Nineteenth Century the prime focus of the Institution was to introduce Professional Forestry and keep away from aggressive Commercialization. It was in the twentieth century (1906) that the Institute invited changes in its management and curriculum. The prime motive for the upgrading of the school to a research facility was precisely to aggravate the commercial results of Forestry. The new domain of research was invited into the fold to explore more commercial options in the Forests of India. The Creation of Minor Forest Products Branch, Chemistry Division and making of new post of Forest Economist in the F.R.I. were the steps taken by the Forest Department in the new

[286] Himani Nautiyal, et al. "The Banj Oak Quercus Leucotrichophora As a Potential Mitigating Factor for Human-langur Interactions In the Garhwal Himalayas, India: People's Perceptions and Ecological Importance." *Global ecology and conservation*, v. 22 ,. pp. e00985. doi: 10.1016/j.gecco.2020.e00985.
[287] Skaria, "Timber Conservancy..", Op. cit., pp. 597.

direction of Commercialization.[288] It is in this light of process in History that we need to examine the agenda of the Institution.

The major studies surrounding the regional history have rarely presented a monograph on Imperial Forest School .We should also understand that the school was not a singular entity as it worked directly under the Forest department. The school had an impact on the forest department and the department vice versa impacted the working of the school. The mutual impact was coincided by political events which again created ripples in the history of the institution. The Forest Research Institute or the successor institution was highly impacted due to the First and Second World War. The scope of the study limits us to discuss the Forest Research Institution's contribution in shaping Scientific Forestry in the Twentieth Century.

What we need to examine is that the School in its own time period had to observe certain trends of internal discord, extreme revenue targets and adoption of extreme commercialized forestry germinating in its system. We cannot ignore the fact that Dehra School was the first school of the British Empire and Indian Forests had a permanent school, even before England got itself a proper school. As the apostle of scientific forestry the school created history and its historical trajectory showcases the various contemporary intellectual factors at play.

[288]Forest Research Institute and Colleges, Ministry of Food and Agriculture, Government of India, 1954, National Forest Library and Information Centre, Dehra Dun, Uttarakhand.

Bibliography

Bibliography

- Agarawal, Arun. *Environmentality: Technologies of Government and Making of Subjects.* Duke University Press, Durham, 2005.
- Alteration of the Forest School Rules. *The Indian Forester*. No. 12, Vol. XXI, December 1895.
- Arnold, David. & Guha, Ramchandra. (eds.). *Nature, Culture, Imperialism: Essays on the Environmental History Of South Asia*, , Oxford University Press, Delhi, 1995.
- Bandyopadhyay, Jayanta, and Vandana Shiva. "Political Economy of Ecology Movements." *Economic and Political Weekly*, vol. 23, no. 24, 1988, pp. 1223–32, http://www.jstor.org/stable/4378609.
- Barton, Gregory. "Keepers of the Jungle: Environmental Management in British India, 1855-1900." *The Historian* 62, no. 3 (2000): 557-74.
- Barton, Gregory. A. *Empire Forestry and Origin of Environmentalism*. Cambridge University Press, Cambridge, 2002.
- Bhattacharya, Neeladri . "Pastoralists in a Colonial World." *Nature, Culture, Imperialism: Essays on the Environmental History of South Asia*, Arnold, David. & Guha, Ramchandra. (eds), Oxford University Press, Delhi, 1995, pp.49- 85.
- Brandis, Dietrich. *Forestry in India: Origins & Early Developments*. Natraj Publications, Dehra Dun, 1994.
- Brandis Prize Fund. *The Indian Forester.* Vol. XVI, 1890.
- Cecil Bagshawe, Deputy Conservator of Forests, Jaunsar Division, to G. Greig, Conservator of Forests, N.W. Provinces, 20 August 1878, in ' Forest

Officers Appointed in England and in India', *The Indian Forester*, Vol.4,1878-79, pp.154-61.

- Chakrabarti, Ranjan. (eds.) *Critical Themes in Environmental History of India*. SAGE Publications, India, 2020.
- Changes in the System of Admission of Candidates to the Forest School. *The Indian Forester*. No.2, Vol. VII, October 1881.
- Dangwal, Dhirendra Datt. *Colonial Forestry and Agrarian Transformation in the U.P. Hills, 1815- 1947: An Ecological History of the Central Himalayas.*1996, Unpublished PHd Thesis , Centre for Historical Studies, Jawahar Lal Nehru Univeristy, New Delhi. pp. 22.
- Dangwal, Dhirendra, Dutt. "Forests, farms and peasants: Agrarian economy and ecological change in the U.P. hills 1815-1947." *Studies in History*, Vol. 14, No, 2, July- December, pp.349-371.
- DEHRA DUN FOREST SCHOOL. *The Indian Forester*. No. 1, Vol. XI, January 1885.
- DEHRA DUN FOREST SCHOOL. *The Indian Forester*. No. 1, Vol. XII, 1886.
- Drayton,Richard. *Nature's Government: Science Imperial Britain, and the "Improvement" of the world*. Orient Longman, New Delhi, 2005.
- EXTRACTS FROM OFFICIAL PAPERS, A Forest Training School In Madras. *The Indian Forester*. No. 5, Vol. XXXI, May 1905.
- EXTRACTS FROM OFFICIAL PAPERS. CREATION OF IMPERIAL FOREST RESEARCH INSTITUTE AND COLLEGE AT DEHRA DUN. Circular No. 11- 166 2-F. GOVERNMENT OF INDIA, DEPARTMENT OF REVENUE AND AGRICULTURE, FORESTS, Simla the 5th June 1906. *The Indian Forester*. No. 6, Vol. XXXII, June 1906.

- EXTRACTS FROM OFFICIAL PEPERS. REVISED RULES FOR THE TRAINING OF CANDIDTES FOR THE PROVIINCIAL AND SUBORDINATE FOREST SERVICES. Circular No. 28 F/166 4 , GOVERNMNET OF INDIA, DEPARTMENT OF REVENUE AND AGRICULTURE, FORESTS, Simla the 9th October 1906. *The Indian Forester*. No. 11, Vol. XXXII, November 1906.
- EXTRACTS NOTES & QUERIES. The Prize Day at the Indian Forest School, Dehra Dun. *The Indian Forester*. No. 6, Vol. XXVIII, June 1902.
- Forest Research Institute and Colleges, Ministry of Food and Agriculture, Government of India, 1954, National Forest Library and Information Centre, Dehra Dun, Uttarakhand.
- Forestry Tuition At Oxford And Dehra Dun. *The Indian Forester*. No. 4, Vol. XXXII, April 1906.
- Gadgil, Madhav, Guha Ramchandra. *The Fissure Land: An Ecological History of India.* University of California Press, Berkeley, 1993.
- Gadgil, Madhav &,Vartak, V.,D. "Sacred groves of India- a plea for continued conservation.*"* *Journal of the Bombay Natural History Society*, No. 72 (2), pp. 314-320.
- Grove, Richard, H. *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Envirinmnetalism, 1600-1860*. Cambridge University Press, Indian Reprint, Foundations Books, Delhi, 1995.
- Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal (eds)*Nature and Orient*, Oxford University Press, New Delhi, 2000.
- Guha, Ramachandra. "Forestry in British and Post-British India: A Historical Analysis." *Economic and Political Weekly*, vol. 18, no. 44, 1983, pp. 1882–96, http://www.jstor.org/stable/4372653

- Guha, Ramachandra. "Forestry in British and Post-British India: A Historical Analysis." *Economic and Political Weekly*, vol. 18, no. 45/46, 1983, pp. 1940–47, http://www.jstor.org/stable/4372677.
- Guha, Ramachandra. "Scientific Forestry and Social Change in Uttarakhand." *Economic and Political Weekly*, vol. 20, no. 45/47, 1985, pp. 1939–52, http://www.jstor.org/stable/4375015
- Guha, Ramchandra. *The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya.* Oxford University Press, Delhi, 1989.
- Guha, Ramachandra. "An Early Environmental Debate: The Making of the 1878 Forest Act." The Indian Economic & Social History Review, vol. 27, no. 1, Mar. 1990, pp. 65–84, doi:10.1177/001946469002700103.
- Guha, Ramachandra. *Environmentalism: A Global History*. Penguin Books Limited, India, 2014.
- Guha, Sumit. *Environment and Ethnicity in India 1200-1991*. Cambridge University Press, Cambridge, 2006.
- Himani Nautiyal, et al. "The Banj Oak Quercus Leucotrichophora As a Potential Mitigating Factor for Human-langur Interactions In the Garhwal Himalayas, India: People's Perceptions and Ecological Importance." *Global ecology and conservation*, v. 22 ,. pp. e00985. doi: 10.1016/j.gecco.2020.e00985.
- Huddleston to Lushington, no 25, 6-8-1844, Revenue Letters Issued, vol.10, Post Mutiny Records, Collection Pauri, Regional Archives Dehradun.
- Imperial Forest Report 1892-93. *The Indian Forester.* No. 10, Vol. XX, October 1894.
- IMPERIAL FOREST SCHOOL, DEHRA DUN. *The Indian Forester* .No. 4, Vol. XIV, 1888.

- IMPERIAL FOREST SCHOOL, DEHRA DUN, THE ANNUAL PRIZE DAY. PIONEER. *The Indian Forester*. No. 4, Vol. XIX, April1893.
- Imperial Forest School Dehra Dun, The Annual Prize Day, PIONEER. *The Indian Forester*. No. 4, Vol.XIX, 1893.
- Imperial Forest School, Dehra, THE PRIZE DAY. *The Indian Forester*. No. 4, Vol. XX, April 1894.
- Imperial Forest School Dehra Dun, Prize Day. *The Indian Forester*. No. 6, Vol. XXVII, June 1901.
- Jodha, N. S. "Common Property Resources and Rural Poor in Dry Regions of India." *Economic and Political Weekly*, vol. 21, no. 27, 1986, pp. 1169–81. *JSTOR*, http://www.jstor.org/stable/4375858.
- Kanjilal, Upendra Nath, *Forest Flora of the Siwalik and Jaunsar Forest Divisions of the United Provinces of Agra and Oudh*, Superintendent Government Printing, Calcutta, 1911.
- Krishna, Nanditha. "Ancient Forests and Sacred Grooves." *Critical Themes in Environmental History of India*, Chakrabarti, Ranjan (eds.), Sage Publications, New Delhi, 2020.
- Memorandum of Conditions for the admission and training of Students at the Forest School, Dehradun, dated the 3rd June, 1884. *The Indian Forester*. No. 1, Vol. XI, January 1885.
- Murali, Atluri. "Whose trees? Forest Practices and Local Communities in Andhra, 1600- 1922*." *Nature, Culture, Imperialism: Essays on the Environmental History Of South Asia*, Arnold, David. & Guha, Ramchandra. (eds), Oxford University Press, Delhi, 1995,pp.86-122.
- Nanda, Neeru. *Forests for Whom? Destruction and Restoration in U.P. Himalayas.* HAR ANAND PUBLICATIONS, New Delhi, 2001.

- Negi, S.S. *History of Forestry*, Vol. 1.,Bishendra Singh Mahendra Pal Singh, Dehra Dun, 2013.
- N.W. PROVINCES AND OUDH. SCHOOL CIRCLE. ANNUAL PROGRESS REPORT OF FOREST ADMINISTRATION FOR THE YEAR 1881-82. BY MAJOR F. BAILEY, R.E.CONSERVATOR OF FORESTS. Forest Department Library, Lucknow, Uttar Pradesh.
- N.W. PROVINCES AND OUDH. SCHOOL CIRCLE. ANNUAL PROGRESS REPORT OF FOREST ADMINISTRATION FOR THE YEAR 1882-83. BY MAJOR F. BAILEY, R.E.CONSERVATOR OF FORESTS. Forest Department Library, Lucknow, Uttar Pradesh.
- N.W. PROVINCES AND OUDH. SCHOOL CIRCLE. ANNUAL PROGRESS REPORT OF FOREST ADMINISTRATION FOR THE YEAR 1884- 85. BY W.R. FISHER, B.A., CONSERVATOR OF FORESTS, SCHOOL CIRCLE. Forest Department Library, Lucknow, Uttar Pradesh.
- OFFICIAL PAPERS, Joint Report On the First Theoretical Instruction at the Central Forest School, Dehra Dun, By D. Brandis, Inspector General of Forests, and Major F. Baily, R.E. Director of The Forest School,- Dated Dehra Dun, the 3rd October 1881. *The Indian Forester*. No. 4, Vol. VII, April 1882.
- OFFICIAL PAPERS & INTELLIGENCE. The Dehra Dun Distribution of Prizes & Certificates. *The Indian Forester.* No. 5, Vol. XVIII, May1892.
- OFFICIAL PAPERS & INTELLIGENCE. A Vernacular Forest School For Burma. *The Indian Forester*.No.7, Vol. XXV, July 1899.
- OFFICIAL PAPERS & INTELLIGENCE. The Campbell- Walker Prize for Forestry at the Dehra Dun Forest School. *The Indian Forester.* No. 2, Vol. XX, February 1894.

- ORDERS OF GOVERNMENT. NO.978A. OF 1880. RESOLUTION. REVENUE (FORESTS) DEPARTMENT. Dated Naini Tal, the 19th October, 1880. Forest Department Library, Lucknow, Uttar Pradesh.
- Pouchepadass, Jacques. "Colonialism and Environment in India: Comparative Perspective." *Economic and Political Weekly* 30, no. 33 (1995): 2059-067.
- Prize Day At the Imperial Forest School, Dehra Dun. *The Indian Forester*. No. 4, Vol. XXIII, April 1897.
- Rajan. S. Ravi. "Imperial Environmentalism or Environmental Imperialism?: European Forestry, Colonial Foresters, and the Agendas of Forest Management in British India 1800–1900." Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal (eds) Oxford University Press, New Delhi, 2000.
- Rajan, Ravi, S. *Modernising Nature: Forestry and Imperial Eco-Development 1800-1950*. Orient Longman, New Delhi, 2006.
- Rangarajan, Mahesh. *Fencing of Forests: Conservation and Ecological Change in Central Provinces, 1860- 1914*. Oxford University Press, Delhi, 1996.
- Rangarajan, Mahesh. "Production, Desiccation and Forest Management in the Central Provinces 1850- 1930." *Nature in Orient*, Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal (eds), Oxford University Press, New Delhi, 2000. pp. 596- 635.
- Rangarajan, Mahesh. "Polity, Ecology and Landscape: New Writings on South Asia's Past." *Studies in History*, vol. 18, no. 1, Feb. 2002, pp. 135–147, doi: 10.1177/025764300201800107.
- Ravi, Kumar.V.M. "Colonialism and Forest Policy in South India, 1800-1900." *Global Environment: A Journal of History and Natural Science and Social Science*, No. 5, 2010.

- Rawat, Ajay, S. *Political History of Uttarakhand: Stone Age to 1949,* Ankit Prakashan, Haldwani, 2021.
- Recruits for the Forest Department. *The Indian Forester.* No. 1, Vol. XX, January 1894.
- Recruits for the Forest Department II. *The Indian Forester.* No. 3, Vol. XX, March 1894.
- Report of the Board of Control of the Forest School Dehra Dun. *The Indian Forester***.** 1892.
- REPORT OF THE VALUATION SURVEYS IN THE NORTH WESTERN PROVINCES AND OUDH FOR THE YEAR 1879-1880.of the Valuation Surveys in the North Western Provinces And Oudh. Forest Department Library, Lucknow, Uttar Pradesh.
- Review of Forest Administration during 1878-79 by Dr. Brandis, Inspector General of Forests. Budget Estimates of the Forest Department for 1880-81.*The Indian Forester*. No.1, Vol.VII, July 1881.
- Ribbentrop, Berthold. *Forestry in British India*. Office of the Superintendent Of Government Printing, India, 1900.
- Robert A. Hutchison. *The Raja of Harsil: The Legend of Frederick "Pahadi Wilson",* Roli Books, Delhi, 2010.
- Saldahna, Indrani. "Colonialism and Professionalism: A German Forester in India." *Economic and Political Weekly*, Vol. 31, No. 21, May 25 1996, pp.1265- 1273.
- Sangwan, Satpal. "From Gentlemen Amateurs to Professionals: Reassessing the Natural Science Tradition in Colonial India 1780- 1840." Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal (eds)*Nature and Orient*, Oxford University Press, pp.,210- 236.

- Sangwan, Satpal. "Making of a popular debate: The Indian Forester and the emerging agenda of state forestry in India, 1875- 1904". *The Indian Economic and Social History Review*, No. 2, Vol. 36, Sage, New Delhi, 1999, pp. 187-237.
- Schlich, William. *A manual of Forestry: Forest Policy in the British Empire*,vol 1, Bradbury Agnew, London, 1922.
- SCHOOL CIRCLE. N.W. PROVINCES AND OUDH. ANNUAL PROGRESS REPORT OF FOREST ADMINISTRATION FOR THE YEAR ENDING 31ST MARCH 1879. BY CAPTAIN F.BAILEY, R.E., CONSERVATOR OF FOREST SCHOOL CIRCLE. DATED DEHRA DUN 15 JULY 1879. Forest Department Library, Lucknow, Uttar Pradesh.
- SCHOOL CIRCLE. N.W. PROVINCES AND OUDH. ANNUAL PROGRESS REPORT OF FOREST ADMINISTRATION FOR THE YEAR 1879-80. BY CAPTAIN F. BAILY, R.E. CONSERVATOR OF FORESTS, SCHOOL, CIRCLE, Forest Department Library, Lucknow, Uttar Pradesh.
- SCHOOL CIRCLE. N.W. PROVINCES AND OUDH. ANNUAL PROGRESS REPORT OF FOREST ADMINISTRATION FOR THE YEAR 1880-81. BY MAJOR F. BAILEY, R.E., CONSERVATOR OF FORESTS. Forest Department Library, Lucknow, Uttar Pradesh.
- Skaria, Ajay. *Hybrid Histories: Forests, Frontiers and Wildness in Western India*. Oxford University Press, New Delhi, 1999.
- Skaria, Ajay. "Timber Conservancy, Desiccationism and Scientific Forestry: The Dangs 1840's – 1920's." *Nature and Orient*, Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal (eds) Oxford University Press, New Delhi, 2000, pp. 597- 635.

- Sivaramakrishnan, Kalyanakrishnan. *Modern Forests: Statemaking and Environmental change in Colonial Eastern India*. Stanford University Press, California, 1999.
- Sivaramkrishnan, Kalyanakrishnana. "Forests in the Environmental History of Modern India." *The Journal of Peasant Studies*, 36:2, 299-324, 2009.
- Shiva,Vandana, & Mies, Maria. *Ecofeminism*. Bloomsbury Academic, United Kingdom, 2014.
- Soutick, Biswas. "'Hanging' Glacier broke off to trigger India Flood," *British Broadcasting Corporation*, February 10, 2021, https://www.bbc.com/news/world-asia-india-56007448.
- Stebbing, Edward, Percy. *The Forests of India*. Vol.1, Jane Lane, London, 1921.
- Stebbing, Edward, Percy. *The Forests of India*. Vol.2, Jane Lane, London, 1922
- Stebbing, Edward, Percy. *The Forests of India*. Vol.3, Jane Lane, London, 1926.
- Stebbing, Edward, Percy. *The Forests of India*. Vol.4, Champion, H.G.,(eds.), Oxford University Press, Oxford, 1962.
- The Budget Estimate of the Forest Department for 1878-79. *The Indian Forester.* Vol. IV, July 1878.
- THE FOREST CONFERENCE AT DEHRA DUN. *The Indian Forester.* No. 12, Vol. XII, December 1886.
- The Forest School at Dehra Doon. *The Indian Forester*. No. 1, Vol. IV, July 1878.
- The Forest School at Dehra Dun. *The Indian Forester.* No.2, Vol. VII, October 1881.

- The Forest School at Dehra Dun. *The Indian Forester*. No. 10, Vol. XII, October 1886.
- The Indian Forest Survey and Forest School. *The Indian Forester*. No. 12, Vol. XI, 1885.
- THE SCHOOL OF FORESTRY AT DEHRA DOON, INDIA. *NATURE*. Vol. XXXIX., November 1888- April 1889.
- The Teaching of Forestry at the Central Forest School, Dehra Dun. *The Indian Forester*. No. 3, Vol. VIII, October 1882.
- The Training of Forest Officers. *The Indian Forester*. No. 3, Vol. XXX, March 1904.
- TO OUR READERS. *The Indian Forester*. No. 2, Vol. VIII, October 1882.
- TRAINING OF CEYLON FOREST OFFICERS. *The Indian Forester*. No. 7, Vol. XIV, July 1888.
- Tucker, Richard P. "The Forests of the Western Himalayas: The Legacy of British Colonial Administration." *Journal of Forest History*, vol. 26, no. 3, 1982, pp. 112–23. *JSTOR*, https://doi.org/10.2307/4004579. pp. 117.
- Tucker, Richard, P. "Timber Conservancy, Desiccationism and Scientific Forestry: The Dangs 1840's- 1920's." *Nature and Orient*, Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal, (eds), Oxford University Press, pp. 459- 483.
- Tucker, Richard, P. *A Forest History of India.* Sage Publications, Delhi, 2011.
- Troup, Robert, Scott. *Colonial Forest Administration*. Oxford University Press, Oxford, 1940.
- Walton, H.G., *The Gazeteer of Dehra Dun*, Natraj Publication (reprint), Dehra Dun, 2016.

- Winters, Robert K. "Forestry Beginnings in India." *Journal of Forest History*, vol. 19, no. 2, 1975, pp. 83–90. *JSTOR*, https://doi.org/10.2307/3983237.
- VI EXTRACTS, NOTES, AND QUERIES. Prize Day at the Imperial Forest School, Dehra Dun, The Pioneer. *The Indian Forester*. No. 8, Vol. XXIX, August 1903.
- VII- EXTRACTS, NOTES, AND QUERIES. The Imperial Forest School. PRIZE DAY AT DEHRA DUN. *The Indian Forester*. No. 4, Vo. XXI, April 1895.
- 1. Separation of Forest School from the Circle. ANNUAL PROGRESS REPORT OF FOREST ADMINISTRATION FOR THE YEAR 1884-85 N.W. PROVINCES AND OUDH. SCHOOL CIRCLE. BY MR. W.R. Fisher, B.A., Officiating Conservator of Forests, School Circle. Forest Department Library, Lucknow, Uttar Pradesh.

Appendix-I

The New Dehra Dun Forest School Rules.

Section I.—Constitution and Studies.

1. The School is under the administrative control of the Inspector General of Forests, who is assisted by a Board consisting of—

1. The Inspector General of Forests, *President* ;
2. The Director of Public Instruction, North-Western Provinces and Oudh ;
3. The Director of the School ;
4. One Conservator from each province (not more than three serving in any given year) ;

with, as *Secretary*, the Assistant Inspector General of Forests.

2. The Superior Staff of the School consists of—

1. The Director,
2. The Deputy-Director,
3. & 4. Two Instructors,
5. The Vernacular Instructor,

} assisted by the Forest Officers of the School Circle, North Western Provinces.

The Conservator of Forests, School Circle, North-Western Provinces, will ordinarily be Director of the School. The Deputy-Director and two Instructors are officers of the Indian Forest Service on the Imperial List. The Vernacular Instructor is an officer of the Provincial Forest Service, also on the Imperial List.

3. The Director of the School is charged with (1) the general administration of the institution, including the regulation of the course of study under the arrangements prescribed by the Board of Control, subject to the sanction of the Government of India ; (2) the supervision of the School buildings, quarters and garden ; (3) the control of the accounts, and the conduct of correspondence.

4. *Courses.*—There are two courses ; one in English, the other in the Hindustani language. Each course lasts 21 months. The English course is that followed by the "Upper Class ;" the Hindustani course that followed by the "Lower Class." The first year's students are called "Juniors" ; the second year's students, "Seniors." In the English course students are prepared for the certificate in Forestry by the "Higher Standard" ; in the Hindustani course, for that by the "Lower Standard."

The subjects taught in these courses are the following, described in the School syllabuses :—

1. Forestry, including Sylviculture, Utilisation and Forest Working-Plans ; both theoretical and practical.
2. Mathematics—Elementary Arithmetic, Algebra, Trigonometry, and Mechanics ; in their application to forest questions.
3. Physical Science, including Chemistry, Physics, Physiography, Geology, Mineralogy and Soils.
4. Botany, both theoretical and practical ; including the collection and preservation of plants.
5. Zoology—the classification of animals and the study of useful and dangerous species, especially of insects, including the collection and preservation of specimens.
6. Drawing, Surveying and Estimating ; as required for forest officers.
7. Forest Engineering. theoretical and practical.
8. Forest Law, the elements of Criminal Law, and departmental organisation.
9. Forest Accounts and Procedure.

5. *Terms.*—The terms of study are as follows :—

1st year—
- Rains term—July 1st to October 31st, in Dehra Dun.
- Winter term—November 1st to December 22nd, in camp.
- Vacation—December 23rd to January 5th.
- Spring term January 6th to March 31st, in camp.
- Hill tour term—April 1st to May 31st, in camp.
- Vacation—June 1st to 30th.

2nd year—
- Rains terms—July 1st to October 31st, in Dehra Dun.
- Winter term—November 1st to December 22nd, in camp.
- Vacation—December 23rd to January 5th.
- Spring term—January 6th to February 15th, in camp.
- Examinations, including survey test—February 16th to March 31st.

6. *Examinations.* —The School Examinations are :—

1. Monthly, to test progress and application.
2. Final.

The *Monthly Examinations* are usually held on the last two working days of each month, as the Director may order. The marks obtained at these examinations are counted for one-fourth of the aggregate at the Final.

The *Final Examinations* are held in March of the second year and the marks then obtained count for three-fonrths of the aggregate.

7. *Certificates.*—There are two certificates obtainable in each class, after the final examinations: a "pass" certificate and a "honours" certificate. The former is granted to students who obtain over 50 per cent. of the aggregate marks allotted to all subjects, provided this includes 50 per cent. of the marks allowed for each of the subjects of Forestry, Botany, Surveying, and Engineering. The latter is granted to students who obtain over 75 per cent. of the aggregate marks allotted to all subjects, including over 50 per cent. in each individual subject. These certificates are only granted on the orders of the Board of Control, who have authority to exercise their discretion in doubtful cases.

8. *Prizes.*—The School medals are awarded by order of the Board of Control, but only if "honour" marks (75 per cent.) have been obtained. Other prizes, whether given by Government or other donors, are also awarded by the Board of Control.

9. Should any student of the three categories enumerated in Rule 11, be unable (*a*) to appear at the final examinations, or, having appeared, (*b*) fail to pass those examinations, he will not be permitted to appear at any subsequent final examination, unless he follows a second time the whole course of instruction at the School, or, at the discretion of the Director, the second year's course.

SECTION II.—ADMISSION RULES.

10. The total number of students of each class who can be admitted into the School each year will be limited to such number as the Board of Control may decide, from time to time, can be accommodated in the School. The number of studentships to be allotted each year to the respective Provinces, as well as the number of nominations to be made by the Director, will, with due regard to the total prescribed by the Board of Control, be decided by the Director of the School before the 1st January, after consultation with the Provincial authorities as to their requirements and communicated to the Local Governments concerned.

A.—Upper Class.

11. There are three categories of Students in the Upper Class—

(1) Private Students.
(2) Students already in the Government service.
(3) Students deputed by Native States.

12 *Private Students* comprise all those students who are at present without appointments in any Forest Service, and whose object it is, by becoming possessors of Forest School certificates, to obtain employment, either in the Forest Service of the Government of India, or in that of a Native State or some other owner of forest property.

(i) Candidates for admission to the Forest School as private students must not be less than 18 or more than 25 years of age, and their applications must be sent to a Conservator of Forests* through a Divisional Forest Officer of rank not below that of an Assistant Conservator of the 1st grade, or through a Collector or other district officer. Neither the Conservator, the Divisional Forest Officer, nor the Collector need belong to the forest circle or province in which the candidate seeks employment; but Divisional Forest Officers and Collectors may not forward to Conservators applications unsupported by the five certificates enumerated below, namely :—

*Conservator of Forests, Bengal Circle, at Darjeeling.
Conservator of Forests, Assam Circle, at Shillong.
Conservators of Forests, North-Western Provinces and Oudh—
School Circle, at Dehra Dun.
Central Circle, at Naini Tal.
Oudh Circle, at Naini Tal.
Conservators of Forests, Central Provinces—
Southern Circle, at Nagpur.
Northern Circle, at Jabalpur.
Conservator of Forests, Berar Circle, at Amraoti.
Conservator of Forests, Punjab Circle, at Lahore.
Conservators of Forests, Upper Burma—
Eastern Circle, at Mandalay.
Western Circle, at Mandalay.
Conservators of Forests, Lower Burma—
Pegu Circle, at Rangoon.
Tenasserim Circle, at Moulmein.
Conservators of Forests, Madras Presidency—
Northern Circle, at Bezvada.
Central Circle, at Madras.
Southern Circle, at Coimbatore.

(a) A certificate that the candidate is a "Native of India," within the meaning assigned to those words by section 6 of 33 Vict., Cap. 3. †

(b) A certificate of age.

(c) A health certificate, in the form prescribed by article 61 of the Civil Service Regulations, signed by the Civil Surgeon of the district in which the said Divisional Forest Officer's or Collector's duties lie, and testifying to the candidate's sound constitution, good vision and hearing, general physical fitness for a rough out-door life in the Forest Department.

(d) A certificate of respectability and good moral character from two two or more persons whose social or official position can be accepted as a guarantee of reliableness.

(e) A certificate from an officer of the Educational Department, of a rank not less than that of a Deputy-Inspector of Schools or the Head-master of a High School under public management, to the effect that the candidate's education appears sufficiently good to give hopes of his being able to pass the entrance examination.

† 'Native of India' means any person born and domiciled within the dominions of Her Majesty in India, or within the territories of Indian Princes tributary to or in alliance with Her Majesty, of parents habitually resident in India, and not established there for temporary purposes only. (Article 45, Civil Service Regulations.)

The last three certificates must bear date not further back than the 1st October of the year preceding that in which the candidate proposes to present himself at the entrance examination.

If any person, giving certificates as above under (*c*), (*d*) and (*e*), is in a position to mention anything more to the credit of the candidate than the certificates actually call for, he may do so.

(ii) Upon the receipt by the Conservator of any application in respect to which the preceding conditions shall have been observed, that officer may either accept or reject the application, without assigning any reason for so doing ; or he may require the candidate to produce other or better certificates in person before him.

(iii) Conservators may, at their option, test the fitness of a candidate who desires to enter the service of Government by practical work in the forests.

(iv) Those candidates who have been approved by the Conservator will be permitted, under his recommendation, to appear at the next entrance examination for the Forest School held in his circle.

(v) The *Entrance Examination* is held early in March each year, on such date as may be fixed by the Director, both at the Imperial Forest School and at such centres as may be fixed from time to time by Local Governments, and under such officers, Educational, Revenue, Forest or other, as may be appointed : provided that the date shall be communicated by the Director to Local Governments and Conservators on or before 1st January. The subjects of Examination are :—

		Minima pass marks.
1. English	Conversation ...	50 per cent.
	Composition ...	33 „
2. Arithmetic ...	...	40 „
3. Algebra, up to and including quadratic equations ...	...	40 „
4. Elements of Euclid, Books I to IV and Book VI ...	...	25 „
5. Mensuration—lengths, areas and volumes, with examples		25 „

The examination papers on the above subjects will be forwarded by the Director, in sealed covers, to such officials as the Local Governments may direct, in the month preceding the examination.

(vi) A Local Government may lay down rules under which the number of candidates allotted, under Rule 10, to the Province for admission into the School, shall be selected from the number of passed candidates

In such rules due regard must be had to the place taken in the examination, but the Local Government shall not be debarred from preferring, for good and sufficient reasons, a passed candidate who may have taken a lower place in the list to one higher on the list ; provided that the Director may, after inspection of the papers of the selected candidates, place before the Local Government an objection to the admisson of any of such candidates on the ground that he is below the required standard.

(vii) The Local Government may, if it thinks fit, exempt from the entrance examination any candidate who is a Bachelor of Arts, or who has obtained a degree or diploma of about the same standard, at any University in India or in the United Kingdom or in a British Colony, or at any educational institution to which the Government of India may extend the privilege : provided that such degree or diploma shall not give such candidate a preferential claim over any candidates who have passed the entrance examination and who may appear more eligible for the Forest Service.

(viii) Prior to the admission of a student, his parents or guardians must satisfy the Director that they are willing and able to defray the expenses of the student at the School. These expenses are estimated to be not less than Rs. 735 for each student living in native fashion, and Rs. 945 in the case of those living in European fashion (*vide* Rule 21). Of these sums, parents of guardians must deposit with the Director before the course commences, a sum of Rs. 126 in the case of native students and Rs. 168 in the case of European students, to meet the initial cost of uniform, books, instruments, stationery and camp-equipage (*vide* Rule 18), and, in addition, Rs. 50 as caution-money.

(ix) Local Governments may, on the recommendation of a Conservator or of the Director, and in exceptional cases, allow selected private students who have passed the entrance examination, a monthly stipend not exceeding Rs. 50, to assist them through the School course ; provided that such selected private students previously execute an agreement binding themselves to serve the Local Government concerned (in the event of their obtaining the School certificate) for a period of not less than five years (*vide* Rule 17). Such monthly stipend may, in case of misconduct or unsatisfactory progress at the School, be reduced or altogether withdrawn at the discretion of the Director.

(x) The names of those private students who succeed in obtaining the School certificate will be entered by the Director in a register to be kept for that purpose, and the Conservators of those circles, in which the non-stipendiary private students may severally desire or be willing to serve, will be addressed by him with the view of obtaining appointments for such students. The Conservators concerned will, for this purpose, be furnished with the original certificates already referred to in clause (i) of this rule, the School certificates, and such other useful information, more especially regarding the physical qualifications of the students, as the Director may be in a position to furnish.

(xi) A list of private students, who may not succed in obtaing appointments, will be forwarded by the Director to the Inspector General of Forests, who will circulate the list amongst Durbars, Conservators, and other persons likely to be in need of the services of trained forest officials.

(xii) The appointment to the service of Government of passed private students depends on the existence of vacancies in the various circles, and even a stipendiary student has no claim to such appointment.

13. *Candidates in the Government Service*, who may be deputed to the School, will ordinarily be either—

(*a*) members of the Provincial Service (Forest Rangers) who desire to qualify themselves for further promotion in their own or to a higher class ; or

(*b*) members of the Subordinate Service (Foresters and other subordinate officials) similarly desirous of qualifying for promotion.

(i) Forest Rangers may be deputed by Local Governments, provided the candidates are certified, by the Conservator under whom they are serving, to possess sufficient knowledge of English and general education and ability to enable them to profit by the course. Such officers may be above 25 years of age, and need not pass the entrance examination. While at the School they will draw the pay of their grade, and the travelling allowances to which they may be entitled under the Civil Service Regulations.

(ii) Officers of the Subordinate Service may be deputed by Local Governments, provided that—

(*a*) they have been in that service for not less than three years ;

(*b*) they have passed the School entrance examination ;

(*c*) they are under 25 years of age ;

(*d*) they have executed the formal agreement referred to in Rule 17.

Such officers will, while at the School, draw the pay and travelling allowances of their grade in the service ; provided that the total amount sanctioned to meet the cost of their training, inclusive of travelling expenses, shall not be less than Rs. 735 in the case of students living in the native style, and Rs. 945 in the case of students living in European fashion (*vide* Rule 21).

14. *Students deputed by Native States* may be admitted on the request of the State concerned ; provided that—

(*a*) they have passed the entrance examination of the School ;

(*b*) they have produced the certificates required for admission, specified in Rule 12 (i).

The Durbars of Native States sending students to the School shall, before the beginning of each term, or of each year if preferred, deposit with the Director a sum sufficient to meet the expenses of the Students. This sum, for the whole course, must not be less than Rs. 735 for students living in Native fashion and Rs. 945 for those living in European fashion (*vide* Rule 21).

B.—Lower Class.

15. There are also three categories of Students in the Lower Class—

(*a*) Private students.

(*b*) Students in Government service.

(*c*) Students deputed by Native States.

The rules for admission to the Lower Class are the same as those detailed in Rules 12, 13, and 14 for admission to the Upper Class, with the following exceptions :—

(i) Instead of the Entrance Examination, the candidate must furnish a certificate of having passed the Middle Class Examination in the North-Western Provinces and Oudh, or an equivalent standard in another Province as well as a certificate that he possesses a competent knowledge of Hindustani.

(ii) The cost of training will not be less than Rs. 588 (*vide* Rule 21) for the whole course of 21 months.

(iii) The required deposit will be Rs. 84, and the caution-money Rs. 25.

C.—General.

16. No student of European or Eurasian extraction, not already in the permanent employment of Government or of a Native State, shall be be admitted into the Forest School if he is married, nor shall any such student, whether in the permanent employment of Government or of a Native State or not, marry whilst at the School or until he has joined a permanent appointment. A breach of this rule will render the student liable to dismissal from the School, or to forfeiture of any appointment in the Forest Service which may have been promised to him, or to which he may otherwise have a claim.

17. *Agreement and Security Bond.*—Officers of the Subordinate Service, deputed to the School by Local Governments under Rules 13 (ii) and 15, shall execute a formal agreement—the sureties for the fulfillment of which should be men of position and means—to continue in the Forest Service of the Local Government concerned for a period of not less than five years after passing out of the Forest School and on such rates of pay as may be in accordance with the existing organisation of the Department. A breach of this condition will render the defaulter and his sureties liable for the refund of the entire cost of the student's education at the School. The agreement and security bond shall be in the appended forms, and must be executed before the student is admitted to the School. The agreement will be signed by the student and, if he is a minor, by his father or guardian also; the bond by the student and two sureties. The amount of security to be taken will be—

	Rs.
For a Lower Class student	600
„ an Upper Class Student { Native	750
{ European ...	1,000

The agreement and security bond need not be stamped.

The same rule shall be apply to private students who may be granted stipends under Rule 12 (ix), subject, however, to the proviso of Rule 12 (xii). Should any such student not be appointed to the Forest Service of Government at the end of of his School Course, his agreement and security-bond will be returned to him.

18. *Uniform, book and camp allowances.*—The Director is authorised to make deductions from the pay of Forest Ranger students under Rule 13 (i), or of students of the Subordinate Service under Rule 13 (ii) and 15, or from the stipends of private students under Rules 12, (ix) and 15, to the following amounts :—

		Rs.		Rs.	
Lower Class Students ...		4	monthly, or ...	84	in all
Upper Class Students	{ Native	6	„ ...	126	„
	{ European	8	„ ...	168	„

in order to meet the following items of initial expenditure, *viz* :—

	Upper Class.		Lower Class
	Native.	European.	
	Rs.	Rs.	Rs.
Uniform and equipment	20	50	20
Books and instruments	60	60	24
Camp outfit	46	58	40
	126	168	84

The Director will charge off in his accounts such portions of the above as may be necessary from time to time to meet expenditure on the items mentioned, until the whole of the amounts are exhausted, after which the student will be required to pay in cash for articles supplied.

19. *Travelling allowances of private students in receipt of stipends.*—Students holding stipends from Local Governments under Rule 12 (ix) are not entitled to travelling allowance; but, as the tours entail greater expenditure in some months than in others, the Director is authorised to make a further monthly deduction from the stipends, of Rs. 5 from Upper Class Native students and Rs. 7 from Upper Class European students, and to disburse the amounts in the following manner :—

	Native Students.	European Students.
	Rs.	Rs.
Monthly travelling allowances { Novr.-May, 1st year / Novr.-Mar. 2nd ,, }	4	8
Or for 12 months ...	48	96
Special additional allowance for Hill tour	22	16
,, ,, ,, for Punjab ,,	35	35
TOTAL ...	105	147

20. Should the Conservator of a Circle from which any Government student of the Subordinate Service is deputed to the School, under Rule 13 (ii), prefer it, he can, subject to the orders of his Government, authorise the Director to pay travelling allowance to such student at the rates given in Rule 19, instead of at the rates allowed by the Civil Service Regulations. And in the case of Lower Class Government students, deputed to the School under Rule 15, he may similarly authorise the payment of travelling allowance at the following rates, instead of the rates permissible under the Civil Service Regulations :—

	Rs.
Monthly travelling allowance at Rs. 4.	48
Special hill tour allowance	16
,, Punjab tour allowance	20
Total ...	84

which rates are equivalent to a permanent travelling allowance of Rs. 4 per month for the whole course.

21. *Estimated expense of training.*—It has been calculated that, in addition to the amounts specified in Rule 18 for cost of uniform, books, &c., and camp-equipment, and in Rules 19 and 20

for travelling, the minimum monthly subsistence money for students comes to Rs. 20, 24, and 30, respectively; so that the minimum pay and travelling allowances of Government students under Rule 13 (ii), and the minimum stipends for stipendiary students under Rule 12 (ix), should not be less than Rs. 35 and Rs. 45, respectively, nor should the minimum pay and travelling allowances of Lower Class students (Rule 15) be less than Rs. 28. Thus, the minimum cost of training will be as follows :—

	Lower Class.	Upper Class.	
		Native.	European.
	Rs.	Rs.	Rs.
Subsistence money	20	24	30
Uniform, books, and camp outfits ...	4	6	8
Travelling allowance	4	5	7
Total per mensem ...	28	35	45
Or for the 21 months of course ...	588	735	945

The same amounts should be taken as minima in calculating the allowances to be deposited on account of students from Native States under Rules 14 and 15, or provided by parents and guardians for the cost of training of private students.

Section III.—Disciplinary Rules.

22. *Quarters.*—The Director will allot to students, on their arrival in Dehra, such quarters as may be available in the School buildings or in the houses rented by him for students' accommodation. The School quarters are tenable during the whole period of the students' course, and the rent is Rs. 2 monthly for each student, or Rs. 4 for each room. Students for whom there is no accommodation in quarters or in houses rented by the Director, or who may prefer it, can, with the permission of the Director, reside in the town in lodgings selected by themselves; but in that case the Director will accept no responsibility for the rent.

All students, living in quarters or in the rented houses, are expected to abide by such orders as the Director may issue from time to time for the purpose of ensuring cleanliness and sanitation.

No dogs are allowed in quarters, nor may dogs or horses be brought inside the School grounds.

Breakages of furniture, etc., in the quarters or School buildings must be paid for by the students. Students are responsible for the acts of their servants.

23. *Uniform.*—All students must wear the School uniform which consists of a suit of khaki drill with white-metal buttons, and a grey turban of prescribed pattern, for the hot weather, and of khaki serge with similar buttons for the cold weather and camp. Those students who become members of the Dehra Dun Mounted Rifles are, however, permitted to wear the undress uniform of the corps, which also consists of a suit of khaki drill, of pattern similar to that of the School. Students who are Volunteers will wear, as head-dress, a brown shikar hat while at the School, and the regular corps helmet when on parade. Native students may dispense with turbans, or wear other head-dress, only with the Director's special permission. Uniform must always be worn inside the School building. It must also be worn in the School grounds up to 5 P. M.

24. *Uniform and Camp Equipment.*—The uniform of members of the Dehra Dun Mounted Rifles may be obtained through the corps staff; that of other students through the Storekeeper of the School, on the Director's order. As camp equipment each student requires—

(1) A small tent, not larger than 10 feet × 8 feet.
(2) A camp bed.
(3) A small camp table.
(4) A camp chair or "morah."

These articles are made at the School and issued at cost price to students.

25. *Books and Instruments*—The list of books and instruments required by each student will be published by the Director from time to time. The articles must be purchased from the Director, who endeavours to obtain them of the best quality procurable, consistent with cheapness. No article will, however, be issued by the Storekeeper, except (*a*) on order of the Director, or (*b*) on cash payment.

Copies of the Forest Acts and Forest Code, as also surveying instruments and herbarium presses, are issued on loan, and students using them will be responsible for their safe-custody, and return.

26. *Leave.*—During the course of instruction, no student may leave Dehra without the written order of the Director. Nor may students, while in camp, leave the camp head-quarters without the written order of the Deputy-Director or the Instructor in charge. Subsidiary rules regarding leave will be made by the Director from time to time.

27. *Holidays.*—During the rains term, Saturday will usually be observed as a holiday or devoted to excursions. In camp, it will ordinarily be a half-holiday. Such of the usual gazetted holidays as are allowed will be notified as such from time to time.

28 *Punishments.*—Students are liable to the following punishments :—

(1) Reprimand by the teacher in class.

(2) Reprimand by the Director or the Deputy-Director at any time.

(3) Reprimand before a meeting, convened by the Director, of not less than three School officers, one of whom must be either the Director or the Deputy-Director. The proceedings of the meeting will be reported to the Conservator or the Native State deputing the student, or to his parents or guardians if he is a private student; and, if the meeting so decides, a note of them will be made on his final certificate.

(4) The Director, acting with the consensus of the meeting referred to under (3), has power to inflict, in addition, a fine to the extent of one-third of the salary or allowances of the student for a period not exceeding three months.

(5) The Director, acting with the consensus of a full meeting of the School officers presided over by himself, has power to dismiss any student for misconduct; and a student thus dismissed cannot be re-admitted to the School. The Director may remand any student who, in his opinion, is not sufficiently promising.

29. *Monthly Reports.*—A progress report on the work of each student will be issued monthly by the Director. It will record the number of marks obtained by the student at the last monthly examination, his application to his studies, and his conduct generally. It will be sent, for Government students or private students in receipt of stipends, to the Conservator of the Circle from which the student is deputed; for Native State students, to such person as the Durbar may direct; and for ordinary private students, to the parent or guardian concerned.

30. *Library.*—The books in the School Library are available for the use of students under such rules as the Director may make from time to time. Books of reference must be consulted in the library itself, and no books may be taken away except after application to the librarian and entry in a register.

31. *Museum.*—The Museum and Herbarium are also available for the use of students; but the objects in the museum may not be handled or removed without the express permission of the Director or the Deputy-Director. Permission to consult the herbarium may be obtained from the Director or the Deputy-Director, but the plants must be kept in their order as arranged, and no sheets removed or altered without permission.

32. *Athletic Sports.*—The gymnasium and the tennis-courts will be available for the use of students during all recreation hours on week-days. Cricket and football may be played on the old parade ground. Students are recommended to join the School Athletic Club, the subscription to which is Rs. 4 yearly, and half-rates for those who do not play all the games.

It is a fact that in forests of class (*b*), teak is better represented in areas subjected to fire than in protected forests, and that this is due to teak being more capable of withstanding, and to a certain extent of outgrowing, the effects of fire than any other tree. Nevertheless the effect of fires in forests of this class is most pernicious: for although we may obtain fewer teak seedlings in a fire-protected area, we know that these are healthier, grow faster and will yield better timber. We know also that by fire-protection we avoid constant injury to, and interference with, the development of the growing-stock while we prevent the steady deterioration of the soil.

Forests of class (*c*) are mainly important as cutch-producing areas and, as regards teak, are of no very great extent and are mainly confined to Upper Burma. The teak in them is chiefly produced in family groups, the formation of which can be encouraged and accomplished without the use of fires. The benefit conferred upon cutch-reproduction, by no other means than fire-protection, is a matter of common knowledge, and no further arguments are needed to prove the advisability of protection in forests of this character.

The majority of the officers consulted are then in favour of fire-protection, and the question may be summed up by saying that while protection in teak forests increases the fertility of the soil, and at any rate tends to increase the luxuriance and rate of growth of all classes of the growing-stock, and ensures an eventual yield of good and sound material, the constant occurrence of fire can only result in the gradual deterioration both of the soil and the growing-stock. Finally, it is possible to ensure the advantage gained in certain forests by the occurrence of fires, that is to say, the better representation of teak, by means of improvement fellings, but it is impossible to safeguard them from the damage caused by fires by any means other than fire-protection. (Review of Forest Administration in India in 1895-96, by B. Ribbentrop, C. I. E., Inspector-General of Forests).

Report of the Imperial Forest School, Dehra Dun, for 1896-97.

RESOLUTION OF THE GOVERNMENT OF INDIA.

During the twelve months ending the 30th June 1897, the Directorship of the School was held by Mr. J. S. Gamble, M. A., from 1st to 31st July 1896, and by Mr. J. W. Oliver from the 1st August until the close of the year. The post of Deputy Director was held by Mr. F. Gleadow throughout the year. Mr,

B. B. Osmaston officiated as Instructor until his departure on privilege leave, while Mr. A. F. Gradon resumed charge of his duties as Instructor on his return from furlough on the 27th November 1896. Instructor Mr. C. G. Rogers was granted two years' furlough with effect from the 5th February 1897, and Mr. B. B. Osmaston was, on return from privilege leave, posted to the School staff in his place. Babu Upendra Nath Kanjilal continued to hold the post of Vernacular Instructor.

The School staff was also assisted by the Director of the Botanical Department, Northern India, the Assistant Agricultural Chemist, the Deputy Superintendent of the Indian Museum, and the officers of the School Circle.

2. The number of students attending the School during the past four years is given below—

	Paid.	Private.	Total.
1893-94	73	33	106
1894-95	72	34	106
1895-96	54	29	83
1896-97	47	28	75

The number of students attending has thus again decreased during the year under review. Of the 75 students who attended during the year, 13 were already in Government service, 23 were stipendiary students, 28 attended at their own expense, and 11 were deputed by various Native States.

The very considerable increase in students of this last class is viewed with satisfaction, as tending to prove that the Rulers of Native States are gradually recognising the benefits that must arise from the appointment of properly trained men of the administration of their forest estates.

3. The table appended to paragraph 13 of the Report is interesting, as it shows how completely the number of students entering the School has in past years depended on the number of stipends granted by Government. It is, however, believed that when the prospects open to good men, under the recently sanctioned reorganization of the Provincial Service, come to be more generally known, a greater number of natives by race will be found willing to enter the School at their own expense. The decrease in the proportion of students of European extraction is not to be regretted; for though the pay of the Provincial Service ranges from Rs. 200 to Rs. 600 per mensem, the years which must necessarily be spent in the Ranger class, on a pay of from Rs. 50 to 150 per mensem, before the Provincial Service can be entered, render the service unsuitable for Europeans.

4. There were 35 students in the Senior Upper and Lower classes. Of these one obtained Honours, 23 the ordinary certificate by the Higher standard, 8 the Lower standard certificate, one, a lower class student, failed, one student died during the course, and one left the School before the examinations. These

results are compared in the following table with those of the examinations during the previous five years :—

Year.	Number of students attending final examination.			RESULTS OF THE FINAL EXAMINATION.								
				Honours.			Ordinary Certificate.			Failed.		
	Private.	Paid.	Total.	Private.	Paid.	Total.	Private.	Paid.	Total.	Private.	Paid.	Total.
						Upper Class.						
1892	3	22	25	...	..	...	2	18	20	1	4	5
1893	6	35	41	...	...	...	4	30	34	2	5	7
1894	13	35	48	...	3	3	12	24	36	1	8	9
1895	12	30	42	...	...	...	8	26	34	4	4	8
1896	9	28	37	...	..	...	7	22	29	2	6	8
1897	9	15	24	..	1	1	9	14	23	...	...	...
Total ...	52	165	217	...	4	4	42	134	176	10	27	37
						Lower Class.						
1892	..	6	6	...	...	...	...	6	6*	...	...	...
1893	2	2	4	...	...	..	2	2	4	...	...	...
1894	3	8	11	...	...	...	3	8	11*	...	...	...
1895	5	3	8	...	...	...	5	3	8	...	...	...
1896	6	2	8	...	...	...	3	2	5	3	...	3
1897	4	5	9	...	...	...	3	5	8	1	...	1
Total ...	20	26	46	...	...	...	16	26	42	4	...	4
GRAND TOTAL...	72	191	263	...	4	4	58	160	218	14	27	41

* Footnote.—These figures do not agree with those given in Appendix No. II to the Report, as the latter include failed upper class students who were granted lower class certificates.

The results of the year under review compare vere favourably with those of previous years, both as regards the percentage of failures and the average marks obtained. It is observed from the table given above that the percentage of failures among private students during the last six years is considerably higher than in the case of men sent to the School at Government expense, which appears to show that the stipendiary students are not less diligent in the prosecution of their studies than the men who enter the School at their own expense, and that due care has been taken in their selection.

5.—The entrance examination was held this year in January, instead of in March as in previous years. It is observed that 47 men presented themselves, of whom 26 qualified and 18 finally elected to join the School. One man was admitted who had passed the entrance examination in 1895, and two others under Rule 12 (vii); five men also joined the Lower class, thus bringing the total number who entered the School up to 26. This is a very considerable decrease on the average of 46 that joined during the five years 1892-1896 and the falling-off, though in all probability due to the small number of Government stipends offered, is much to be regretted.

6.—The question of the desirability, or otherwise, of making further rules for regulating the grant of stipends to students, which was referred to in paragraph 6 of the Government of India Review of the School Report for 1895—96, was fully discussed at the last meeting of the Board of Control in March 1897. It was resolved that the matter was gradually righting itself, that no present change in the rules was required, and that the question must be left to the discretion of Local Governments. This view of the case has since been accepted by the Government of India.

7.—It is observed that the physical capabilities of the students were satisfactory, but that their previous education, more especially as regards a knowledge of English on the part of the Native students, was insufficient to enable them to obtain the full benefit of the prescribed course of lectures. Both these questions were considered by the Board of Control, and upon their recommendation it has been suggested by the Government of India to the various Local Governments and Administrations that the standard of English at the entrance examination of the School should be raised, and that in future, candidates should, after passing the entrance examination, undergo a six months' course of practical training in the forests. It is hoped that orders on these two important questions will shortly be issued.

INDIAN FORESTER

APRIL, 1906.

FORESTRY TUITION AT OXFORD AND DEHRA DUN.

A study of the course of tuition laid down for the instruction of the probationers of the Imperial staff of the Forest Service at Oxford has suggested that a comparison of that course with the one given to the recruits for the Subordinate Executive Service at the Imperial Forest School, Dehra Dun, may prove of interest and, perchance, of use

THE IMPERIAL FOREST SERVICE.

We alluded recently to the fact that the entrance examination for those wishing to follow the Oxford course and obtain appointments in the Upper Controlling Staff of the Forest Service consisted of the subjects Mechanics and Physics, Chemistry, and Botany ; the standard being the low one of the Preliminary Examination in the Honour School of Natural Science at Oxford. Candidates must have previously passed Responsions at Oxford or some equivalent examination. A qualifying examination in German is also included.*

* *Vide* Delegacy for superintending the instruction of probationers for the Indian Forest Service and for granting Diplomas in Forestry. Oxford Clarendon Press (1905).

The course of study at Oxford extends over a period of three years, and the probationer for the Department must attend all the lectures and obtain the Diploma of Forestry within the period. This Diploma is, however, granted to all members of the University who have—

(1) Pursued the approved course extending over two years.

(2) Undergone a course of practical work.

(3) Satisfied the examiners in the prescribed examinations.

THE COURSE OF STUDY.

The following is the prescribed course of study :—

1st Year.—Mathematics, Chemistry of Soils and Organic Chemistry, Geology, Botany, Forestry (Sylviculture, and either Protection or Utilisation), Geometrical Drawing and Elementary Forest Engineering, German.

2nd Year.—German, Geology of India, Botany (Pathology, structure of timber and special systematic botany), Entomology, Forestry (forest management, administration, utilisation or protection), Forest Law, Surveying, Book-keeping in relation to Indian Forest Accounts.

We will consider these subjects briefly in detail :—

1. *Mathematics*—Up to and including Plane Trigonometry.

2. *Chemistry.*—(*a*) Soils—constituents, origin and formation, classification, properties. Physical and chemical analyses. Exhaustion and restoration of soils. (*b*) Organic determination of composition and molecular weight of organic bodies. Laws of isomerism. Method of formation and general reactions of various substances. Outlines of vegetable chemistry.

3. *Geology* (*1st year*).—Morphology and Physiology of the earth. Volcanoes, hot springs, earthquakes, mountain-building and dislocations. Development of earth. Scenery, structure and history of the British Isles. Fossils as a means of identification of strata. Economic application of geology. (*2nd year*).—A course on the geology of India will be given.

4. *Botany* (*1st year*).—Physiology. General Morphology and Anatomy of Fungi and Vascular plants. Classification. Candidates

should also attend the general course given by the Sherardian, Professor of Botany. (*2nd year*).—Pathology including diseases and injuries caused by fungi and other plants. Special botany of timber trees. Systematic botany of Indian trees, shrubs and other forest plants.

5. *Forestry* (*1st year*).—(*a*) Sylviculture—Foundations of sylviculture. Locality in relation to forest vegetation. Development of forest trees. Character and composition of woods. Sylvicultural systems. Formation and regeneration of woods (preliminary works, direct sowing, planting, natural regeneration). Tending of woods (pruning, thinning). Sylvicultural notes on forest trees. Practical work in forest garden, Bagley wood and other excursions. (*b*) Forest Protection—Protection against man. Boundaries. Forest offences and rights. Protection against animals and plants, atmospheric influences, and against water, avalanches, shifting sand. (*c*) Utilisation—Harvesting, conversion and disposal of wood and minor forest produce. Auxiliary Forest Industries (antiseptic treatment of timber, saw mills, wood carbonisation, extraction of oil of turpentine and resin, preparation of tannin and paper materials, &c. (*2nd year*).—Forest Management (Mensuration, valuation, foundation of forest working plans (working scheme), preparation of working plans). Administration (utility of forests, the state in relation to Forestry, Forestry in the British Empire).

The text-books are Schlich's Manual of Forestry.

6. *Geometrical Drawing.*—Construction of scales and reduction of areas ; use of instruments ; preparation of plans, &c.

7. *Forest Engineering.*—(Based principally on Indian practice.) Use, characteristics and manufacture of materials. Road construction, type designs of small bridges, culverts, bungalows. Timber slides, tramways, wire rope bridges, &c.

8. *German.*—A Public School course in this language.

Note.—French is omitted.

9. *Entomology.* Outlines of elementary Zoology. Hydra Lumbricus. Study of anatomy, &c., of an insect type.

Classification of insects, metamorphosis. Diseases and enemies, relationships. Other Arthropoda of importance.

Note.—The Vertebrata are left untouched.

10. *Forest Law.*—Indian Penal Code, Criminal Procedure Code, Evidence Act, Forest Law of India.

11. *Surveying*—Vernier and Sextant, Plotting and Computation of areas. Mapping, topographical details, conventional signs, colouring and finishing of plans. Prismatic compass, levels, theodolite, chain surveying, traversing, plane tabling. Abney's level.

12. *Forest Accounts.*—As required by the Forest Service.

THE PRACTICAL COURSE.

This course comprises nine months from the early part of October to the beginning of the following July. For seven months the students are placed with selected German Forest Officers, the remaining time being passed in visiting specially selected districts and forests. We shall allude later to this part of the course.

EXAMINATIONS

There will be two examinations (partly written and partly oral) for the Diploma.

The subjects of the first examination are—Botany, Geology, Entomology, and of the second Forestry, theoretical and practical, including sylviculture and protection, utilisation, management and administration. A candidate at the final examination must present certificates showing that he has attended approved courses of instruction in 2, 3, 4, 5, 6, 7, 9, 11; satisfy the Delegates that he possesses a sufficient knowledge of Mathematics and has passed examinations approved by them in Organic Chemistry and in Surveying.

Probationers for the Forest Service must also satisfy the Delegates that they have a sufficient knowledge of the Geology of India, Indian Forest Accounts and Forest Law. A candidate for the second examination must have passed the first one and present certificates showing that he has satisfactorily completed the prescribed course of Practical Instruction in Forestry.

The examination will be held about September 20th in each year.

THE SUBORDINATE EXECUTIVE SERVICE.

In an article in this Journal last month it was shown that the upper grades of the Subordinate Executive Service received their Forest education at the Imperial Forest School at Dehra Dun. The Subordinate Executive Service is the Service from whence the Provincial Service is recruited and the students at Dehra are candidates for the former Service only. Two courses are given at the School, one in English and the other in Hindustani. We shall only consider here the course followed by the Upper Class in English. It may be remarked, however, that the utility of the lower vernacular course is open to considerable doubt, since it can only be delivered in one vernacular and is consequently only available for natives of the northern parts of the Continent. In a country like India, where the languages vary with the races, this fact from the first depreciates the value of the course.

The English course lasts 23½ months and the students are prepared for a certificate in Forestry by the Higher Standard.

THE COURSE OF STUDY.

The following are the subjects taught in this course:—

Forestry (sylviculture, utilisation, forest working plans, both theoretical and practical), Mathematics (elementary), Physical Science (Chemistry, Physics, Physiography, Geology, Mineralogy and Soils), Botany (theoretical and practical), Zoology, Drawing, Surveying, Forest Engineering, Forest Law and Forest Accounts and Procedure.

Taking these subjects in detail we find that the lectures delivered by the Instructors and the standard required from the students at Dehra Dun compare not unfavourably with the present course prescribed for the Imperial probationers at Oxford. Considering the subjects in the order already given above—

1. *Mathematics.*—Is practically identical with that required for the Imperial Service

2. *Chemistry.*—A general course is first given, the lectures being accompanied by experiments conducted by the lecturer (who is a professional chemist). No practical work is done by the students themselves. This is followed by lectures on soils on the

lines of those delivered at Oxford. A course is also given in Elementary Physics.

3. *Geology.*—Physiography, &c., on the lines of the course given at Oxford. Particular attention is paid to Indian Geology and the distribution of the fauna and flora. Mineralogy is also dealt with.

4. *Botany.*—Morphology and Anatomy. Physiology. Wounds and diseases. Classification. Geographical Botany. Indian Trees Chief classes of Indian forests.

5. *Forestry.*—(*a*) Sylviculture. Constitution of Forest. Climate and Forest. Soil and effect on growth. Composition of forests. Economic constitution of forest. Sylvicultural systems. Working of forests. Protection against climate, animals and plants, fires, &c. Artificial crops. Direct sowing, planting; artificial forests. (*b*) Utilisation.—Properties of wood and their classification for sale. Wood industries. Tools, felling and conversion, disposal and sale of wood. Minor forest produce. Regulation of hunting, shooting and fishing. Mineral products. Minor Forest Industries (manufacture of charcoal, cutch, distillation of sandal wood oil, resin, and turpentine, impregnation of timber). (*c*) Working plans (general principles, field work required in connection with their preparation; preparation of plans for various forest systems, working plan report).

6. *Geometrical and Freehand Drawing.*—The course is practically identical with the one given to Imperial students. A course of estimating is also given.

7. *Forest Engineering.*—Much the same course as given to Home students, but probably a more practical one. Building materials. Building. Road-making. Bridges. Transport of timber. Construction of wells Water and river bank works. Demarcation.

8. *German.*—Not given.

9. *Forest Zoology.*—Elementary biology, systematic review of the animal kingdom with detailed descriptions of those groups of importance in Forestry. Anatomy of insects. Classification. Detailed accounts of families important in Indian Forestry. Life

histories of noxious and useful insects. Anatomy of Vertebrata. Classification. Noxious and useful animals in Indian forests. Damage done. Practical work.

10. *Forest Law.*—General Law. Forest Law of India. Criminal Law applied to protection of forests and their produce in transit. The Forest Service (Nature, appointment of officers, responsibilities, protection of officers by law; offences and legal powers of officers).

11. *Surveying.*—A theoretical and practical course is delivered on the lines of that at Oxford. The practical course is eminently satisfactory.

12. *Forest Accounts and Procedure.*—General Principles of Book-keeping. Cash accounts. Forest procedure and yield returns. General procedure.

THE PRACTICAL COURSE.

Before joining the School each probationer must undergo a course of some months' work in the forest under a Divisional Officer. The practical course at the School is of considerable length, about two-thirds of each year being spent in camp, *i.e.*, 1st year, from 15th April to 15th June in hill forests; 1st November to end of March in plain's forests; 2nd year, from 1st April to end of May on a lengthy tour in the hill forests again, and November 1st to end of February in the plain's forests in the United Provinces and Punjab. As we shall see this course compares very favourably with that given to the Imperial Officers, it being remembered that it is passed *under Indian conditions.*

EXAMINATIONS.

The examinations are of two kinds :—

(*a*) Monthly to test progress; (*b*) Final.

The monthly examinations are held on the last two working days of each month, the finals being held in March of the second year.

The certificates obtainable after the final examination are a "pass" and an "honours" certificate. The former is granted to

students who obtain over 50 per cent. of the aggregate marks allotted to all subjects (this must include 50 per cent. of marks given for each of the subjects Botany, Forestry, Surveying and Engineering). The honours certificate is given to students who obtain over 75 per cent. of the total marks, including over 50 per cent. in each individual subject. These certificates are only granted under the orders of the Board of Control.

GENERAL REMARKS.

The above brief résumé of the two standards will, we think, suggest to the minds of our readers that the course given at Dehra compares satisfactorily with that given at Oxford, our opinion being that the latter, or at any rate the theoretical portion of it, requires stiffening up very considerably. In some ways the Dehra course is perhaps superior to the Oxford one. Undoubtedly the greatest advantage possessed by the Indian forest subordinate is that he is trained in the country in which his future work is to be carried out, that he becomes acquainted in his practical course with forests of a similar nature to those in which he will have in future to work, and is thus the sooner able to apply the knowledge he has acquired in the lecture hall. For, instead of having his mind steeped in minute and precise, and perchance narrow and crystallised, methods of forestry, applicable and peculiar solely to highly civilised small States, he is from the first placed face to face with the larger areas and wider interests in which forest conservancy has to be practiced in India; he learns the difficulties which confront the Forest Officer in dealing with ignorant native races; he recognises that innumerable rights will have to be defined and treated with circumspection; and discovers the difficulties that exist in growing and extracting his timber, and in collecting and disposing of minor produce, &c., &c.

To the Home-trained probationer these aspects of Indian Forestry remain practically an unopened book, for without a knowledge of the present conditions of the country he must find it difficult to attach the proper relative importance to what may be detailed upon the subject in the lecture room and impossible to

apply his theoretical knowledge in the absence of local experience!

In other respects the courses greatly resemble one another In the Home course of tuition the student does not acquire a knowledge of Forest Zoology upon the lines most suitable for India, and he consequently arrives in the country ill-prepared to continue his studies there, while on the other hand much of the best work done under this head at present has been carried out by Dehra-trained Forest Officers.

SCIENTIFIC PAPERS.

ON SOME BAMBOOS IN MARTABAN SOUTH OF TOUNGOO BETWEEN THE SALWIN AND SITANG RIVERS.

BY SIR DIETRICH BRANDIS, K.C.I.E., F.R.S.

In April last Mr. F. B. Manson most kindly collected for me in the vicinity of Papun specimens of ten species of bamboo, five of which were in flower. They reached me in November, too late for "Indian Trees," but some notes regarding them will be found under Addenda of that work. While examining these specimens it occurred to me that an account of the bamboos in this part of Martaban might be useful to some of my younger friends in Burma. The Teak forests in this part of the country I visited repeatedly in my early Burma days, and in 1861 I prepared a map of the Teak localities in Tenasserim, which I would recommend for reference. It was published in the selections from the records of the Government of India (Foreign Department No. XXIX, Calcutta, 1861), and a reduced copy is appended to this paper.

The bamboos in the valley of the Yunzalin and on the hill between that river and the Salwin* were examined by me in March 1880, on my last tour of inspection in Burma, and notes regarding them will be found on pages 151—157 of my Report, entitled

* The spelling of the geographical names both in the Map and Memoir is that of the Author. We have not deemed it advisable to alter either.—Hon. Ed.

EXTRACTS FROM OFFICIAL PAPERS

CREATION OF AN IMPERIAL FOREST RESEARCH INSTITUTE AND COLLEGE AT DEHRA DUN

Circular No 11—166 2-*F*

GOVERNMENT OF INDIA

DEPARTMENT OF REVENUE AND AGRICULTURE

FORESTS

Simla the 5th June 1906

RESOLUTION

The Government of India have had under consideration the desirability of making better provision for scientific research in connection with Indian forests They cordially acknowledge that the work of the Forest Department has been characterised by marked and progressive development, which has resulted in an improved condition of the standing timber and in a satisfactory increase in the net revenue derived by the State from its forests, while due regard has been paid to the interests and needs of the population residing in their neighbourhood and to the requirements of the future The energies of the Department have, however, hitherto been largely confined to the practical management of the forests under its charge, and comparatively little attention has been directed to the work of research, which has been pursued with such beneficial results in other countries In order therefore to provide a staff of experts who will be in a position to devote a large proportion of their time to the prosecution of scientific research connected with forest produce, as well as to give the best available training to candidates for the Forest Services both of British India and of the Native States, they have, with the sanction of the Secretary of State, decided to raise the status of the existing

Imperial Forest School at Dehra Dun and to add to its staff The School will now be known as the Imperial Forest Research Institute and College, and the staff will include six officers of the Imperial Service, holding the following posts —

(*i*) An Imperial Sylviculturist, who will make sylviculture his special study.

(*ii*) An Imperial Superintendent of Forest Working-Plans who will collect and collate the statistics of the results of forest management throughout India, which are provided by the control forms annually submitted to the Government of India, so that the valuable information acquired in the different Provinces will be made available to the whole Department In addition to this he will assist the Inspector-General of Forests in the control at present exercised by the Government of India in the preparation of Working-Plans, performing in this matter the functions at present exercised by the Assistant Inspector General of Forests In order to render this assistance more effective, and to remove a serious defect in the present system he will visit forests in which Working Plans are being prepared and will record a note upon the local conditions of the forest for the information of the Inspector-General of Forests A copy of this note will also be sent through the Conservator to the Local Government for information, and for any action that they may care to take upon it.

(*iii*) An Imperial Forest Zoologist, whose chief duty will be to investigate the damage caused by insects and other pests and to suggest remedial measures

(*iv*) An Imperial Forest Botanist, who will study the botany of forest plants, the diseases of trees, and the distribution of species.

(*v*) An Imperial Forest Chemist, who will investigate the chemical properties of the soils and of the produce of forest

(*vi*) An Imperial Forest Economist, who will make a special study of the best methods of rendering forest produce of all kinds available at the smallest cost to consumers, and who will keep in touch with the commerce of India with the view of fostering and meeting the demand for forest products.

2. These officers, in addition to their research work, will each deliver a course of lectures on his special subject at the College, and take part in the training of the students ; but the educational work will be mainly carried on by the Assistant Instructors, who, besides their duties in the class-room, will be in personal charge of the students out of lecture-hours and during practical training in the forests. They will be four in number, and will usually be selected from the Provincial Forest Service.

3. One of the Imperial Officers, who will ordinarily be a Conservator of Forests, will, in addition to his other duties, hold the post of Principal. The members of the staff, who will be *seconded* on their respective lists, will draw the pay, substantive or officiating, to which they are entitled on those lists, together with the following local allowances :—

	Rs. Per mensem
The Principal	200
The other Imperial Officers ...	150
The Assistant Instructors	75

J. WILSON,
Secretary to the Government of India.

EXTRACTS FROM OFFICIAL PAPERS.

REVISED RULES FOR THE TRAINING OF CANDIDATES FOR THE PROVINCIAL AND SUBORDINATE FOREST SERVICES.

Circular No $\frac{31 \text{ F}}{16 \text{ A}}$

GOVERNMENT OF INDIA.

DEPARTMENT OF REVENUE AND AGRICULTURE

FORESTS

Simla, the 9th October 1906

RESOLUTION

In connection with the raising of the status of the Forest School at Dehra Dun to that of Imperial Forest Research Institute and College the Government of India have had under consideration the questions of the system of recruitment for the Provincial Forest Service and of the training both for that Service and for the Subordinate Executive Service After consulting Local Governments, they have arrived at the following conclusions, which are based upon the general principle that it is sufficient for them to prescribe maximum limits of expenditure and minimum limits of qualifications and training and to leave each Local Government within those limits to draw up rules for its own Forest Service

2 While the Government of India attach great importance to the efficient training of Deputy Rangers, Foresters and Guards, they consider that the training of these subordinate officials should now be left to Local Governments They have accordingly decided that the Vernacular class hitherto maintained at the Forest School, Dehra Dun, shall be abolished They trust that all Local Governments will make satisfactory arrangements for the training of the Subordinate Executive Service below the rank of Ranger, and will be glad if each Local Government will in due course inform them as to the system which it has adopted with this object.

3. In future the education to be given at the Imperial Forest College will be conducted entirely in English, and will be designed for the training of candidates for the post of Ranger and for the Provincial Service. The ordinary course will last for two years, its main object being to give such an education as will fit a candidate for appointment as Ranger. At the close of this period of two years an examination will be held, on the results of which three classes of certificate will be issued, known respectively as the Honours, Higher Standard and Lower Standard certificates. Candidates will be admitted to this course in accordance with the College rules.

4. In addition to the ordinary course of two years, arrangements will now be made at the Forest College to give a third year's training, both theoretical and practical, designed to fit the student for early appointment to the Provincial Forest Service. Ordinarily no student will be admitted to this third year course unless he has obtained the Higher Standard certificate at the close of the two years' course, and unless his Local Government or Native State desire that he should remain at the College for a third year. Should however a Local Government or Native State desire that any particular student should undergo only a selected portion of the College training, or that any selected Ranger should be given the third year's course, without having passed by the Higher Standard, or some years after he has so passed, the Principal may arrange to give him the required training, provided that he is satisfied that the student's qualifications are such as to enable him to benefit from the course of instruction desired, and that there is room for him at the College. He may also, on the same conditions, admit any private student who is prepared to defray his own expenses.

5. The Government of India are prepared in future to leave it to Local Governments to draw up their own rules regarding appointments to the post of Ranger, subject to the following conditions. The rules should provide for the appointment as Rangers of subordinate officials of long service and tried ability and probity, in order to encourage efficiency among the Deputy Rangers and

Foresters In such cases selection may be made by the Local Government without restrictions as to the special training the officers may have undergone or the educational certificates they may have obtained, but it may sometimes be advisable to require a selected subordinate to undergo a special course of training or to pass specified examinations before his permanent appointment to the class of Ranger Direct appointments to this class however should only be given to trained candidates who have obtained the Higher Standard certificate at the Forest College, and have satisfied such other conditions as the Local Government may think fit to impose It will in future be left to Local Governments to give what weight they choose to the Honours and Lower Standard certificates of the Forest College It will also be for them, subject to the rules of the College to draw up their own rules as to the selection of candidates to be admitted to the ordinary College course, and they may grant to such selected candidates, whether already in the service or not, a stipend not exceeding Rs 50 per mensem for the two years' course

6. The Government of India have learned from the reports submitted by Local Governments that there is a general feeling of dissatisfaction with the existing standard of qualifications of the members of the Provincial Service This inferiority of standard appears to be to some extent due to the present practice of appointing to the lowest grade of Extra-Assistant Conservator men who have served for a considerable period as Rangers, so that a candidate who looks forward to an appointment in the Provincial Service cannot expect to attain to it until he is somewhat advanced in years, and has poor prospects of reaching the higher grades of that Service The Government of India think it of great importance, in order to maintain a high standard of efficiency among the Ranger class, that officers of that class should remain eligible for promotion to the Provincial Service, and are accordingly pleased to rule that in future a Local Government may appoint to the lowest grade of Extra-Assistant Conservator any selected Ranger of long service and of tried ability and probity irrespective of the educational certificates he may hold, but subject to any

special training or examination which the Local Government may see fit to prescribe in each case. In order however to encourage men of good education and good social standing to enter the Provincial Service, they consider it desirable to introduce a system under which a Local Government may select candidates for direct appointment to that service; and in order that such specially selected candidates may acquire the higher qualifications necessary to fit them for the duties of the Provincial Service, they have, as already explained, resolved to arrange for a third year's course at the Forest College. Such candidates may be selected by the Local Government either before or after completion of the ordinary two years' curriculum, but before being allowed to takeup the third year's course, they must have obtained the Higher Standard certificate of the College; and before appointment to the Provincial Service they must have obtained a certificate from the Principal that they have satisfactorily completed the third year's training. Candidates who are specially selected by the Local Government for direct appointment to the Provincial Service may be granted a stipend not exceeding Rs. 100 per mensem during the course of the three years' training, or such portion of it as the Local Government may prescribe. When such a candidate has satisfactorily completed the third year's training at the College, he may be posted to the Forest Service either as a Ranger or as a probationary Extra-Assistant Conservator, but may not be permanently appointed to the Provincial Service until he has completed at least three years' satisfactory service. It will rest with the Local Government to decide whether the probationary period should be longer than three years, and how the candidate should be employed until he is given a permanent appointment in the Provincial Service; and until he can be absorbed in the permanent staff, he may be given such salary as the Local Government thinks proper, not exceeding Rs. 150 per mensem, for the first three years, or thereafter Rs. 200 per mensem. It will be for the Local Government to decide when such a candidate should be given a permanent appointment, and whether any proportion of vacancies in the Provincial Service should be guaranteed to candidates of this class. If any Local Government

considers it necessary to compensate the existing staff of Rangers for their diminished prospects of promotion owing to the introduction of this new class of selected candidates for direct appointments in the Provincial Service, the Government of India will be prepared to consider any definite proposals which it may desire to make with this object.

7 In order to meet the peculiar circumstances of Burma, which already possesses a Forest School of its own, the Government of India are pleased to approve of the following modifications in the scheme described above in its application to that Province Pending the establishment of an English course at the Burma Forest School, Conservators may make direct appointments as probationary Rangers of natives of Burma with a knowledge of English on a pay of Rs 75 per mensem Men so appointed will be on probation for two years, during which time their removal or dismissal will rest with the Conservator After two years' approved service they may be confirmed in their appointment by the Local Government but will not be eligible for an appointment on more than Rs 100 per mensem until they have obtained a Higher Standard certificate in the English course at the Burma. Forest School or at the Forest College Candidates selected for direct appointment to the Burma Provincial Service, though they may undergo their first two years' training at the Burma Forest School, must complete the third year's course at the Imperial Forest College, and must thereafter remain on probation for at least three years, during which time they may be given such salary as the Local Government may prescribe, not exceeding Rs 175 per mensem for the first three years, or thereafter Rs 200 per mensem

8. The attention of Local Governments is invited to the changes which have been made in the Forest Department Code and in the rules of the Forest College, and they are desired to submit for the information of the Government of India any rules they may draw up to carry out the objects of this Resolution

J WILSON,
Secretary to the Government of India

Appendix-II

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INSTITUTIONAL HISTORY OF COLONIAL FORESTRY: A HISTORY OF FOREST SCHOOL

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ABSTRACT

The nature of Environmental History of India offers a wide range of fluidity to reveal the untouched narratives. The study primarily sheds light on the evolution of Scientific Forestry Education in India and touches on the domain of Institutional History. The paper is primarily divided into three sections. The first section discusses various fundamental works of Environmental History and examines the different environmental frameworks. The second section provides an insight into the trajectory of Ranger school and its significance in establishing the Forestry Education mechanism in Colonial India. The last section carefully provides a conclusion and aims to place the School in the Intellectual Framework of Scientific Forestry in India.

KEYWORDS: Environment, Education, Forestry, Ranger School, Desiccationism.

INTRODUCTION

The twentieth century in the global context marked a special meaning in terms of decolonisation, advent of post modernism and re-emergence of massive climatic and ecological consciousness;the new intellectual currents exposed the socio-economic forces at play. The world at the arrival of the second half of the century had witnessed massive human outrage and catastrophe, meanwhile the decolonisation of large territories posed new challenges to the new nations. Innovative questions based on the legitimacy of world systems were being asked, and academia was looking at deeper levels of solutions for societal problems. The academic shift in history writing, at this point, was an inevitable phenomenon; it is in this light that the Environmental History in India took its shape. It would be an inaccurate presumption to accept the paucity of any environmental history writing

being done before the 1970's; though the Environmental History as an academic discipline developed only after the 1970's. The arrival of this period marked wide creative fusions and in this light many disciplines were merging to provide accurate accounts of social reality. The social memory of different cultures and societies were being documented to provide answers to the missing links in knowledge. The Modern Environmental History which is relatively new in India attempts to narrate the various accounts on environmental theme, which are commonly related to Irrigation, Soil management, agro-ecology, forest management, ethno botany, eco feminism, etc. The lack of historical accounts on the environmental changes and its impact on the Human society were the reasons for the rise of Environmental History.

In the Hills of Uttarakhand when the Chipko movement began in 1973, it acted as the catalyst in the Indian History writing. The Chipko movement was the first ecological movement of India which gained the attention of a global audience for the display of ecological consciousness and non violent techniques of protest. The movement was a Jan Andolan (People's Movement), as it had local peasants including a large sum of women as active participants. The movement was a shout against the cutting of trees by private contractors in the fragile Himalayas. The people sung the chipko song[1] which spoke explicitly about the exploitative Forest laws. The people poured their voices to save their priceless hills and its ecology from the disasters of nature; it was not just an ecological movement but an expression of outrage against the misuse of forests and misuse of privilege. The movement successfully gained the attention of environmentalists, historians, sociologists and many known journalists. The most prominent question which emerged was about the forest policies and its implications both in retrospect and in current times. The roots of scientific forestry were being traced to unearth the flaws in the forest management system. The Historians of Modern Indian Historiography took upon themselves to uncover the history of Scientific Forestry in Colonial India, to disclose the motives of Colonial Government.

The path breaking work by Ramchandra Guha in 1980's laid the foundation of Modern environmental history in India.[2] His works opened the doors to many new questions which revolved around the nature and motives of Colonial Scientific Forestry. According to Guha the British government introduced Scientific Forestry and monopolized the forests to create a massive surplus for monetary gains and imperial expansion. The Imperial Government endorsed the restriction on forest use by indigenous people and destroyed the traditionally communal forest management practices, thus shattering the indigenous systems of ecological management. He also highlighted the Forest Law in both pre and post independent India and drew comparisons between the two periods; he declared them both to be identical and exploitative in nature.[3] The forests were not merely a source of resources, but a method to dictate or to rule the indigenous people by means of restrictive laws. Guha's work represented a model which showcased Marxist relationship of man with nature and British Forces acting as the agent, which alienated the man from its environment or his means of production. He traced the roots of ecological destruction in independent India to the commercialized forestry in the Colonial era.

Gradually many important works on new themes poured in. An important study by Jayanta Bandhyopadhyay and Vandana Shiva unveiled the emergence of ecological movements in relation to the advent of commercialized

[1]Shiva, Vandana, & Mies, Maria. *Ecofeminism*. Bloomsbury Academic, United Kingdom, 2014, pp.246.

[2] Guha, Ramachandra. "Scientific Forestry and Social Change in Uttarakhand." *Economic and Political Weekly*, vol. 20, no. 45/47, 1985, pp. 1939–52, http://www.jstor.org/stable/4375015. Guha, Ramachandra. "Forestry in British and Post-British India: A Historical Analysis." *Economic and Political Weekly*, vol. 18, no. 44, 1983, pp. 1882–96, http://www.jstor.org/stable/4372653. Guha, Ramchandra. *The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya.* Oxford University Press, Delhi, 1989.

[3] Guha, Ramachandra. "Forestry in British and Post-British India: A Historical Analysis." *Economic and Political Weekly*, vol. 18, no. 45/46, 1983, pp. 1940–47, http://www.jstor.org/stable/4372677.

economy in the modern era. The work highlights the presence of traditional ecological sense amongst various societies; it diligently covers the issue of economic class struggle in the urban- industrial society. The argument talks about the survival of microeconomics in the dominant market based economy and puts across the view that ecological movements are people's response for their survival and preservation of their life support systems.[4]
Vandana Shiva has been vastly vocal about the importance of indigenous agroecology and sustainable food systems. In her globally acknowledged work on Eco- feminism, she has thrown light on the role of women in regulating the traditional ecological systems. According to Shiva women are the custodian of biodiversity, they preserve traditional knowledge through practice, and this crucial role has been vastly ignored by 'progressive' market favoring economies.[5]
Similarly an enticing study by Neeladri Bhattacharya unearthed the implications of colonial rule on the pastoralists of the Northern region of the subcontinent. Bhattacharya's work introduced the various pastoral communities and their traditional sustenance patterns. His work shed light on the British intervention in the forests and grazing lands through stringent legal mechanisms and its deep impact on the survival of this fragile system. The colonial government's boost on the agrarian economy and land acquisition through strict bans, further affected the migration patterns. The neglect of colonial consideration to the pastoral life systems had various economic and social effects; the communities were even ridiculed for their demeanor and lifestyles.[6]
Another important study by Dhirendra Datt Dangwal highlighted the implications of scientific forestry in the U.P. Hills region. He has put forward the argument that the commercial forestry in the Hilly terrain introduced several changes in the ecological setup which in return drastically affected the hill agriculture.[7] Dangwal has underlined the increased demands on agricultural production by the British Government in the nineteenth and twentieth century and its further deteriorating condition due to the restriction on use of common lands for traditional use.[8] The restriction on use of common lands alienated the indigenous population from utilizing the lands for fuel, fodder and other crucial raw material, which majorly impacted the traditional agricultural pattern.
Similarly, Atluri Murali's study attempted to highlight the mutually coexisting system of agriculture, pastoralism and forest in the pre- colonial Andhra. Murali mentions the imbibed ecological sustenance in the traditional system of religion, culture and political regime which was disturbed under the colonial 'scientific' rule. He stressed on the various imperial methods of exclusion which created unrest amongst the regional masses. The restriction on the communal use of forests and imposition of heavy dues on the people ultimately gave rise to popular discontent in the form of peasant and tribal movements in 1920's.[9]
An important representation of traditional conservation forest systems were highlighted through the study of Sacred Groves in various parts of India. Sacred Grooves were those forests in India which were maintained through various religious and cultural institutions. Madhav Gadgil in 1975 wrote an article on the Sacred Grooves

[4] Bandyopadhyay, Jayanta, and Vandana Shiva. "Political Economy of Ecology Movements." *Economic and Political Weekly*, vol. 23, no. 24, 1988, pp. 1223–32, http://www.jstor.org/stable/4378609.
[5] Shiva, *Ecofeminism.* Op.cit., pp. 164.
[6] Bhattacharya, Neeladri . "Pastoralists in a Colonial World." *Nature, Culture, Imperialism: Essays on the Environmental History of South Asia*, Arnold, David. & Guha, Ramchandra. (eds), Oxford University Press, Delhi, 1995, pp.49- 85.
[7] Dangwal, Dhirendra, Dutt. "Forests, farms and peasants: Agrarian economy and ecological change in the U.P. hills 1815-1947." *Studies in History*, Vol. 14, No,2, July- December, pp.349-371.
[8] Ibid., pp.349-371.
[9] Murali, Atluri. "Whose trees? Forest Practices and Local Communities in Andhra, 1600- 1922*." *Nature, Culture, Imperialism: Essays on the Environmental History Of South Asia*, Arnold, David. & Guha, Ramchandra. (eds), Oxford University Press, Delhi, 1995,pp.86-122.

of Maharashtra region, he pointed out the prevalence of well conserved forest patches which exhibited climax vegetation, thus signaling the successful survival of these forests.[10] The author highlighted the importance of these crucial forest pockets as a repository of traditional medicines and herbs. According to Gadgil, these forests promoted preservation of biological diversity. These Sacred forests were closely tied to the surrounding communities who associated these forests with various Taboos and religious beliefs. Nanditha Krishnan has also worked on the importance of Sacred Groves in the conservation of various biological species and economic systems. She has judiciously illuminated the changing perception of forests in the various periods of time and space. Her study traces the existence of sacred groves in the ancient times, in the form of tapovana and brings to attention the latest figures on the existing grooves in various parts of India while also pointing out the presence of precious plant species in these regions.[11]

In retrospection we observe that based on the two decades of historical accounts on environmental history two models emerge in the Picture. The two models highlight narratives from different angles using various sources in different time periods. The historians of modern environmental history do not agree on the motivations and implications of the British Forest Policy. In Modern Indian History we have encountered two models which have tried to unearth the pattern of Colonial Action in the ecological context. The first model is the Guha- Gadgil model and another is Grove model, both models provide rigorous arguments from their suitable angles. Guha-Gadgil Model of environmental history supports the existence of a strong conservation and prudent ecological sense amongst the indigenous masses of the subcontinent and the destruction of pre- existing traditional conservation institutions by colonial governance. The model supports the view that the Colonial Scientific Actions and policy making was solely driven by commercial and materialistic interests. The advent of British Forces was seen as the Watershed moment by these historians.[12]

The second model was presented by Richard Grove in 1994 in his brilliant and challenging study, in which he made an ambitious attempt to provide a glimpse on the genesis of the scientific network in the early colonial expansion. Taking away the attention from the European center he focused on the emergence of Scientific Conservation attitudes or Concerns in the Islands in response to the aggravating environmental destruction and Biological Extinction.[13] Grove showcases the importance of peripheral scientists in shaping the scientific temperament in the metro pole regarding the evolution of colonial science and environmental context, which later was prudently utilized by the European authorities to promote their environmental agenda. He credits the initial scientific agents who used their position in the peripheral Islands to promote the desiccationist concerns to their respective governments. Drawing the examples of display of Scientific Prudence in St Helena and Mauritius he provided an excellent insight on the generation of Environmental Consciousness in the Periphery rather than the European Metropole.[14]

Historian Ravi Rajan in the monumental work on origin and evolution of Continental Scientific Forestry introduced new insight in the understanding of Colonial Forestry and its motivations. The scholar unearthed new resources to illuminate the character of Continental Forestry Education and attempted to take away the attention

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[10] Gadgil, Madhav &,Vartak, V.,D. "Sacred groves of India- a plea for continued conservation." *Journal of the Bombay Natural History Society*, No. 72 (2), pp. 314-320.

[11] Krishna, Nanditha. "Ancient Forests and Sacred Grooves." *Critical Themes in Environmental History of India*, Chakrabarti, Ranjan (eds), Sage Publications, New Delhi, 2020.

[12] Gadgil ,Madhav and Guha Ramchandra. *This fissured land: An Ecological History of India*. Oxford Publications, India, 1993.

[13] Grove, Richard, H. *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Envirinmnetalism, 1600-1860*. Cambridge University Press ,Indian Reprint, Foundations Books, Delhi, pp. 478

[14] Ibid., pp. 485.

from the generic debate on Colonial state motivations and provide a separate stature to Forestry Science in reshaping the State Attitudes. By primarily uncovering the roots of Continental Forestry in France and Germany, Rajan craftily reconnects the Scientific Forestry tradition infused by the British Government throughout its Empire.[15] The study creates an enticing account on the Science of Forestry as an independent entity transcending continental borders through the diffusion of scientific culture in the entire British Empire.

In an attempt to captivate the Globalized History of Forestry in the British Empire Gregory Allen Barton traces the origin of environmentalism as an intellectual layer in global context. He introduces the origin and expansion of professional forest machinery throughout the British Empire, which gradually by the 20th century almost covered the entire globe. Using official data to uncover the extent of Empire Forestry, Barton mapped out the forest history from introduction of Dalhouise's Charter to the post Second World War world. He places the origin of environmentalism in the strokes of British Imperialism which formulated a space for dexterous forest management.[16]

Meanwhile, Richard Drayton's work on Kew Garden is an enticing study in the domain of Institutional History. His work paints the history of the British Empire from a new angle of Nature, presumed as vastly abundant in 'precious elixir', and the role it plays in fetching the empire with a garden like Eden, both economically and aesthetically. The work starts by describing the origin of Botanical Garden tradition under the influence of religious desire for search of Eden or 'Paradise' for the improvement of mankind. Similarly, he places the Kew Garden at the center of his thesis and points out its major role in being the Empire's primary repository for Botanical resources and its function in justifying the Colonial Acquisition. By tracing the history of scientific men, Drayton provides an insight into the world of plant knowledge and Kew's vital position in shaping the Botanical network of the world.[17]

The Studies in historical writing further moved into unexplored domains of environmental questions. The post structural paradigm in history under the Foucauldain influence posed new insight to the environmental viewpoint. It helped to understand the multiplicity of various narratives in history. The primary focal point in these studies was to capture the various processes at play rather than viewing history as an event. Mahesh Rangarajan in his celebrated study on the Forest management in the Central province region provided an insight on various methods of restrictions imposed on the forest usage by the rural population. Rangarajan highlights the evolving political strategy of the forest service in the central province in relation to the goal of land acquisition, thus breaking away from the 'watershed moment' of environmental history.[18] There were variations in the power ownership in different topographical contexts, the distorted and diverse forest policies on fire protection were an example of existing parallel realities.[19]Sivramkrishnan's study on Forestry in Colonial Bengal draws attention to contextual governance in various regions, where the power dynamics were determined by an assortment of regional factors

[15] Rajan, Ravi, S. *Modernising Nature: Forestry and Imperial Eco- Development 1800-1950*. Orient Longman, New Delhi, 2006.
[16] Barton, Gregory. A. *Empire Forestry and Origin of Environmentalism*. Cambridge University Press, Cambridge, 2002.
[17]Drayton,Richard. *Nature's Government: Science Imperial Britain, and the "Improvement" of the world*. Orient Longman, New Delhi, 2005.
[18] Rangarajan, Mahesh. "Production, Desiccation and Forest Management in the Central Provinces 1850- 1930." *Nature in Orient*, Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal (eds), Oxford University Press, pp.596- 635.
[19] Rangarajan, Mahesh. "Polity, Ecology and Landscape: New Writings on South Asia's Past." *Studies in History*, vol. 18, no. 1, Feb. 2002, pp. 135–147, doi: 10.1177/025764300201800107.

at play, making the forest governance full of internal contradictions, additionally the co-management of forests and shifting land ownership was an interesting feature.[20]

The studies on colonial science have made major strides on global history, the center- periphery origin has been the focal point for debates in colonial science. Satpal Sangwan's critical study on colonial science takes away the attention from the geographical perspectives to cultural context of colonial science by throwing light on the scientific endeavors of scientists at the periphery. His argument supports the grant of equal stature to colonial science at the periphery, which was in matured stages an epitome of contextual environmental brilliance.[21] He shed light on the process of scientific development in the colony, which initially under the Baconian impact promoted exploration and collection of natural history specimens to the Linnaean phase which focused on classification of various species.[22] The work focuses on the process of professional knowledge assimilation by scientific minds at periphery in the nineteenth century context, which challenges the linear view on the motives of colonial science.

Sumit Guha in fresh insight through the ethnographic lens provided an interesting take on the Tribal 'characteristics' or 'patterns' defined in prior narratives. His work sheds light on the display of fluidity and engagement of forest tribes in the active political dynamics of their respective regions, throughout various temporal contexts. The fresh view on the social engagement of forest communities sustaining in symbiosis with the peasant groups breaks the outlook on 'tribal isolation', additionally he illuminates the shifting ecological practices of communities in differing times for economic turnover and survival. The geographical extent of Guha's study ambitiously uncovers the social and economic transitions showcased of various forest communities and their formation of Internal Hierarchies in a vast time period ranging from 1200- 1991.[23]

The study by Akay Skaria on the Dangs of Western India in the Colonial period generated an interpretation on Ethnocentrism. He has focused his perspective around the concept of Wilderness or being 'jungali' by identifying the political standings of Dang Community.[24] He questions the basic presumptions of mainstream narratives of Jungle Harmony present in Forest Tribes. In his work, Skaria aimed to bring out the crucial political role played by the Dangs in the Post- Mughal decline. He urges the readers to re-question the decline debate and understand the politics of state-making from the lens of Wilderness, which had its own methods of creating power supremacy in the different time and context. The study also examines the position of 'Tribe' in Colonial Context, which later paradoxically represented both exotic imagery and uncivilized savagery.

Another scholar of vigor, Arun Agarwal attempted to rewrite the history of Kumaon Hills through a new lens of curiosity. Taking way the attention from works of traditional ecological prudence and eco- feminist derivations, he presents new narrative on innate Ecological understanding of Communities. Using a wide range of sources and methodology he attempted to showcase the changing Political Ecology in the 20th Century and evolving response and consciousness of the communities and villages to the governing ethos, which often were determined by varying factors. His work is an important historical account under the postmodernist currents, which captures the

[20] Sivaramakrishnan, Kalyanakrishnan. *Modern Forests: Statemaking and Environmental change in Colonial Eastern India*. Stanford University Press, California, 1999.

[21] Sangwan, Satpal. "From Gentlemen Amateurs to Professionals: Reassessing the Natural Science Tradition in Colonial India 1780-1840." Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal (eds)*Nature and Orient*, Oxford University Press, pp.,210- 236.

[22] Ibid.,pp. 210- 236.

[23] Guha, Sumit. *Environment and Ethnicity in India 1200-1991*. Cambridge University Press, Cambridge, 2006.

[24] Skaria, Ajay. *Hybrid Histories: Forests, Frontiers and Wildness in Western India*. Oxford University Press, New Delhi, 1999.

shifting perceptions of the regional community under the decentralized governmental regime. In his analysis, the evolving perceptions held by people towards ecological consciousness get coined as 'Environmentality'.[25]

The various works on environmental history have recently mushroomed in a wide range of disciplines. The historical models presented in Modern Indian history gets divided, fused and even overlaps in certain studies. The Guha-Gadgil model favors the traditional ecological prudence in indigenous communities against the British Colonial Professional Forestry; meanwhile Grove model highlights the scientific conservationist ideologies presiding amongst Early East India Company Officials. Both the models have their shortcomings, for instance the former one overlooks the role of class distinction and caste based privileges in control of resources, while the latter one primarily utilizes the Colonial testimonies as sources to justify his claims and missed the evolution of desiccationist discourse.[26] Though both the models have their shortcomings, they still do remain classic interpretations. Other than these two popular models we have another important interpretation which views history as a process and not as a watershed. The new model invites environmental narratives from a vast number of academic disciplines; it gives space to new theories and fresh interpretations. Studies by Mahesh Rangarajan, Sumit Guha, Ajay Skaria, etcetera, are some examples which engage topics from wide new angles of History.

Situating Ranger School in the Intellectual Framework of Scientific Forestry

The massive amount of work in the Environmental History of India has touched on a vast number of insightful historical works, especially on the Modern period. We observe that the colossal literature has still left a serious lacuna in various strands of history. One such domain of massive importance is of Institutional History, which has not grabbed much attention. Institutional History holds the potential to bridge the gap in our understanding of Environmental History. The micro analysis of an institution can formulate our understanding about the gaps and overlaps happening in the environmental debate. The nature of Indian history serves a vast number of opportunities to reframe and revise the old narratives using fresh interdisciplinary methods.

After the creation of the Forest Department in India the Colonial Government under the guidance of Sir Dietrich Brandis planned to create a strong bureaucratic base. It was recommended that only a professionally trained staff member had the maximum intellect and patience to manage the Forests. Scientific Forestry was to be infused into the veins of the Empire and in this injection of valuable modern temperament, various Forestry institutions played a significant role. The initial period marked the introduction of European Forestry training for Controlling or Superior staff in Germany and France.[27] The scheme was fashioned out by Dietrich Brandis himself; it was precisely introduced to vigilantly launch Continental Forestry in India. Although the continental training for officers was a concrete step in launching Scientific Forest Management, it still was far from being adequate. The department needed a strong network of trained men for handling a wide range of works; it precisely needed Foresters at all official levels working on the same line of scientific principles.

After the inception of the Forest Department, a large number of efforts were drawn to introduce professional training for the executive staff. Vast schemes over time were introduced to formulate a permanent supply of trained Ranger groups, even the enticing venture of introducing theoretical training at Roorkee Engineering College failed tragically.[28] Primarily the failures occurred due to the absence of officially designated instructors and infrastructure. It is in this light that a separate Institution for Ranger Training was imagined. The first idea of

[25] Agarawal, Arun. *Environmentality: Technologies of Government and Making of Subjects.* Duke University Press, Durham, 2005.

[26] Skaria, Ajay. "Timber Conservancy, Desiccationism and Scientific Forestry: The Dangs 1840's – 1920's." *Nature and Orient*, Oxford University Press, New Delhi, 2000, pp. 597- 635.

[27] Brandis, Dietrich. *Forestry in India : Origins & Early Developments*. Natraj Publications, Dehra Dun, 1994, pp. 129.

[28] Ribbentrop, Berthold. *Forestry in British India*. Office of the Superintendent Of Government Printing, India, 1900, pp. 233.

Producing a Ranger School was pitched by Sir Richard Temple in 1873, which was meant for the Bengal region.[29] The Bengal Ranger School idea did not take root in the system, but it did inspire the department to contemplate a Ranger School. It was lastly under the vision of Sir Dietrich Brandis that a fine proposal was devised to introduce Forestry Education in India for the natives.

The Imperial Forest School was started in 1878 Dehra Dun, as the Central Forest School for the training of Rangers and Foresters in British India.[30] The Ranger Training was exclusively created to inculcate natives in the Forest Departmental working. The school was created to produce separate subordinate staff or executive staff for the department. Being the first school of the British Empire the challenges were numerous. This venture was an important opportunity for the natives to enter the British services and gain promotion to the ranks of Controlling Staff.

The Creation of school in the Dehra Dun region invited changes in the systematic management of the region. The Dehra Dun region under the North West Province of British India was demarcated into a separate circle, providing a perfect forest land for practical instruction.[31] The selection of Dehra Dun for the inception of this important institution was a thoughtfully crafted decision. The Forests around the Dun valley exhibited wide tree species ranging from sal, deodar, oak, pine and fir, which accurately matched the desirable composition.[32] Being closely associated with the Forest Institution, the circle of Dehra Dun became a beacon of Systematic Forestry.

The school was set up in the heart of the city with a beautiful campus showcasing lecture halls, Study Lab, Herbarium, Museum and a Hostel. By 1880 school received interested candidates for the training purpose and by the end of the year all were employed in forest Work.[33] The students were considered as the employees of the government and their practical service was reimbursed accordingly. The first theoretical instruction was inaugurated in July 1881 which was attended by two classes of attendees, first had ranger and forester group and second one had Forest Officers.[34]The courses were conducted in either English or Hindustani granting at last the certificate of either Ranger or a Forester. The enrolment in the School courses primarily granted candidates with an enticing opportunity to gain foothold in the governmental setup. The school was highly successful in creating the Ranger class of high intellect for the Provincial services.

In July 1881 the data revealed that British India had merely 97 Rangers in the Forest Department for the executive management of the entire subcontinent.[35] Therefore the Government strongly suggested that the department produce at least 600 trained Rangers in the next ten years.[36] The school was envisioned as the Jonah of Scientific Forestry to build a stringent structure of trained men for the upkeep of the Jungles. Concisely the burden of producing finely trained men was on the shoulders of the school.

The school each year received ambitious students, both private and sponsored. The growth of the school from being a provincial to an Imperial Institution in 1884 was a significant up-scaling event. The June 1884

[29] The Forest School at Dehra Dun. *The Indian Forester*. No. 2, Vol. VII, October 1881, pp. 15.
[30] Walton, H., G. *The Gazetteer of Dehradun,* Natraj Publishers, Dehra Dun, 2016, pp. 162.
[31] Walton, H., G., pp. 163.
[32]Stebbing, Edward, Percy. *The Forests of India*. Vol. II, Jane Lane, London, 1922, pp. 504.
[33] ORDERS OF GOVERNMENT, Resolution No. 978A. Of 1880, Revenue (Forest) Department, Dated Nainital, 19, October, 1880. Forest Department Library, Lucknow, Uttar Pradesh.
[34] OFFICIAL PAPERS. Joint Report on the first course of theoretical instruction at the Central Forest School, Dehra Dun, by D. Brandis, Inspector General of Forests, Major F. Baily, R.E., Director of the Forest School, dated Dehra Dun, the 3rd October 1881, *The Indian Forester*, No. 4, Vol. VII, April 1882.
[35] *The Indian Forester*, Oct. 1881, Op.cit., pp. 121.
[36] Ibid., pp. 121.

memorandum of the Government transferred the school to the center and granted an additional Imperial fund of 25,000 for the upkeep.[37] Due to the display of constant appraisal in the rules, the school evolved into an Exemplary Institution. In 1888, the Government of Ceylon instructed two of their officers to join Imperial Forest School for receiving the important training in Forestry.[38]

The Imperial Forest School was undoubtedly a successful organ of forestry in British India; the school not only created proficient men but also perfected professional forestry education in India. The Imperial Forest School was often compared to the contemporary schools of greater infrastructure. In 1897 Dietrich Brandis stated that, "One of the most important results of the Dehradun Forest School has been, that several native officers, who had received their professional training at the school, are now being employed on the preparation of working plans for important forests, and that their work compares favorably with the work of Englishmen educated on the continent of Europe or at Cooper's Hill College".[39] The school was set up with the motive to form an institution which in case of necessity could fill the shoes of Nancy or German schools.

The staff of the school consisted of men of great caliber having compassion for forestry; these men of vigor were the pillars on which the students climbed the bureaucratic ladders. The inclusion of a wide range of Forestry and allied sciences in the curriculum was indicative of the school's commitment towards generating a far-sighted Staff. James Sykes Gamble said in 1886 that, "The Forest School at Dehra is, with the staff that we had the pleasure of meeting in October last, quite able to instruct any men who may be sent to that institution, and it does seem a waste of power that this well manned and well furnished and well housed School should not be utilized to a far greater extent than it now is by the Government. It should, under well considered regulations, be thrown open to the public, and in that case I believe that the School will not only turn out an ample supply of good forest officers for India, but also other parts of the Empire. Australia, New Zealand, the Cape, Mauritius, Egypt even, are all in want of such men, and that Dehra School, with the pine and oak forests of the Himalayas on one side, and the varied forests of the plains on the other, is the place where the widest experience can with the greatest facility be brought to bear on practical forest training".[40]

The Pioneer figures associated with the School were the founding fathers of Forestry Education in India. To understand their motivations and their contributions we should examine the facts in their respective time and context. The Forest Department had since its birth dabbled between conservation of forests and regular revenue generation. With dual responsibility on shoulders, another issue which rested was of gaining similar stature to other government departments. The lower salaries than other governmental employees were another factor responsible for creating mental unrest amongst the Foresters. Mr. Fisher in 1885 mentioned in the Directorial report of the School that, " It is evident, however, that the main object of the Dehra Dun Forest School is to train Rangers, and it is hoped that, now that well educated young men are coming forward for these appointments, the proper status of Forest Rangers may be recognized by Civil Officers, and that they may be ranked, by the authority of the Government of India, in the same position, and be treated with the same consideration, as Inspectors of Police and other Public officers drawing similar pay to their own. This far from being the case at present, and the absence of such consideration is a substantial grievance and hinders our obtaining better men for

[37] 1. Separation of Forest School from the Circle. ANNUAL PROGRESS REPORT OF FOREST ADMINISTRATION FOR THE YEAR 1884-85 N.W. PROVINCES AND OUDH. SCHOOL CIRCLE. BY MR. W.R. Fisher, B.A., Officiating Conservator of Forests, School Circle. Forest Department Library, Lucknow, Uttar Pradesh.

[38] Training of Ceylon Forest Officers. *The Indian Forester*, No. 7, Vol. XIV, July1888, pp. 321.

[39] Brandis, Op.cit., pp. 156.

[40] The Forest Conference At Dehra Dun, James Sykes Gamble, *The Indian Forester*, No. 12, Vol. XII, December 1886.

the Forest Department, the steady improvement in the revenues of which depends principally on the exertions of the men in charge of the ranges".[41]Similarly in 1886, J.S. Gamble mentioned that the pay of Inspector General of Forests was lower than a District Collector.[42]

In retrospect the School favorably advocated the needs of Native Forestry Students. The Introduction of the Vernacular Course of Forestry in the 1884 Memorandum was one fine example of the school's flexibility. The vernacular class under the School's wing granted lower certificates to foresters. The course was started especially to train the Foresters who worked on the Forest Frontlines to defend the Empire's Forests from any destruction. Another glimpse of the school's flexibility can be captured in the provision of grant of lower certificate to rangers in case of failure in higher classes.[43] The departmental structure even provided further opportunities to gain timely promotions and stature over a certain period of time. These provisions or prospects were fashioned out by the scientific leaders engaged in the School's Board. In simple words the school was an expression of High Scientific temperament carried by the first generation foresters of the Subcontinent.

Another major branch associated with the Forest School was the journal named The Indian Forester. The journal was a standardized platform for the Foresters to discuss and initiate scientific conversations related to forestry and allied sciences. Satpal Sangwan credits the journal for being a baton of Scientific Forestry; he highlights that the journal was indeed the face of people's expression and due to its outreach it was prominent in shaping the Tenets Forest Department in India.[44] The journal was an important stage for crucial discussions on scientific and bureaucratic matters like the importance of forests in climate change, Local Proprietary Rights, Internal discord amongst Civil and forest administrators, importance of Botany in Forestry Education, etcetera. The lively debate remained ignited through the channel of the journal cautioned the government about the serious issues and thus in return helped to formulate its strategy.

The final promotion of status from being a school to a forestry college in 1906 and later in 1929 into Research Institute clearly states the obvious success the school had. The Research Institute or the Forest Research Institute still holds an important place in the Forestry Education in India. The impact of the school is invaluable in terms of Scientific Forestry Education. Its position is unmatched in the history of the subcontinent, as not only was it the first Forest School of the British Empire it also gave a successful model of a Forest school to the world. Following the example of Imperial Forest School other schools were also made on similar patterns. It was registered that by 1900 the school had granted 360 ranger's certificates and 112 vernacular certificates.[45] Mere reservation of forests was not the key to the success of the Forest Department, but a strong army of trained men were required to work the forests. By the close of the century the Staff was neatly classified into three levels with different functions on their nomenclatures. This division of staff was the bedrock of scientific forestry in the British Empire, as through these ranks, men of Intellect rose and created a contrasting narrative of Environmental History. Through understanding the History of Ranger School we can trace back the roots of Forestry Education in India. It brings out the new perspectives which remained uncovered in the previously conducted historical works.

Conclusion

[41] The Forest School at Dehra Dun. *The Indian Forester*, No. 10, Vol. XII, October 1886, pp. 449

[42] *The Indian Forester*, Dec 1886, Op.cit.

[43]Memorandum of Conditions for the admission and training of Students at the Forest School, Dehra Dun, dated the 3rd June, 1884, Dehra Dun Forest School. *The Indian Forester*, No. 1, Vol. XI, January1885, pp. 15

[44] Sangwan, Satpal. "Making of a popular debate: The Indian Forester and the emerging agenda of state forestry in India, 1875- 1904". *The Indian Economic and Social History Review*, No. 2,Vol. 36, Sage, New Delhi, 1999, pp. 187- 237.

[45] Stebbing, Edward, Percy. *The Forests of India*. Vol. II, Jane Lane, London, 1922, pp. 507.

In the current context it is no rare occurrence that mass cutting of Forests by Government for infrastructural purposes is taking shape. The relationship between Climate Change and deforestation is now widely exposed and in the digital era this relationship gets more attention than ever.[46] The intricate balance between development and forest protection had been a topic of serious discussions in the late 20th century. We simply place the roots of forest departmental working principles in the British era. In this framework the position of Ranger School provides an insight into the current function of the Forest Department. The Imperial Forest School reshapes our analysis and brings out the multi faceted picture of complexity at play. The previous studies on Scientific Forestry and its Origin by Richard Groove and Ravi Rajan fail to unearth the history of Ranger School.

The school was opened in British India in 1878, the time when the forest department had just begun to reach the roots of deep dark Jungles. In this context the need of the hour was to create a forest department which could provide a regular source of timber along with the best management plan for its regeneration. Scientific Forestry borrowed from the German and French Forestry was the Department's best shot. Under the pioneers like Dietrich Brandis, Berthold Ribbentrop, William Schilich, Major Bailey, J.S. Gample, etc., the department found its right direction. The school was an important wing of the Forest Department for changing the Face of Indian Forestry. The school created a professional Ranger and Forester class and also housed the Working Class Branch, Indian Forester Journal Head Office and Forest Survey of India. Having strong ties to major departmental branches, the school exceeded the expectations in just a few years. The school ran from 1878-1906 as the Ranger School, which got promoted to Imperial Forest Research Institute and College in 1906.

In the time frame between 1878- 1906 the school regularly created Executive Staff for the Department. It is observed that in this time period the Forestry tenets were primarily focused on managing the forests and creating sustained supply for future use. In 1873, Dietrich Brandis stated that, "the necessity of extensive plantations, and of careful management both of the scanty woods on dry ground, and of more productive forests along the banks of the rivers. These are the future requirements of India in consideration of public measures of his nature. For, after all, if it were not for the benefit of the people of India, there would be no reasonable ground for undertaking the arduous task of preserving and improving its forests".[47]

We locate that the focus on Minor Forest Product and Non Timber goods was made in the later stages. In fact an interesting work by Richard Tucker on the Minor Products found in the Western Himalayas discusses the mutual coexistence of Hill State kings and Colonial Government in matters of Non timber Product sale.[48] The extreme shift in economic standing of the forest department was reflective of the changes in the political front, especially the First World War.

Another important observation in the current context is the changed ecological composition of the hills. The debate on the Banj Oak versus Chir Pine is a very crucial angle to understand the components of agro- ecology, climatology and Himalayan pedology. Both the species of trees are compatible with the Himalayan soil and climate, but have very different impacts. Chir Pine gained vast popularity after the First World War, when the Pine was found out to be extremely valuable for Resin Production and Railway Infrastructure (sleepers).[49] Another factor which contributed was the ease in Chir germination and its rapid growth. The ease in germination

[46] Soutick,Biswas. "'Hanging' Glacier broke off to trigger India Flood," *British Broadcasting Corporation*, February 10, 2021, https://www.bbc.com/news/world-asia-india-56007448.

[47] Brandis, *Forestry in India*, Op.cit., pp.30.

[48] Tucker, Richrad. "Timber Conservancy, Desiccationism and Scientific Forestry: The Dangs 1840's- 1920's." *Nature and Orient*, Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal, (eds), Oxford University Press, pp. 459- 483.

[49] Guha, "Scientific Forestry in Uttarakhand", Op.cit., pp. 1941.

process was unnerving for the surrounding communities and Regional ecology. Having needle-like leaves, the pine was highly unsuitable for grazing purposes. The leaves still cause a massive destruction to the forests, as its leaves do not facilitate grass growth and are highly flammable. The large number of recent articles and publications in this direction are testimonies enough to bring out the long term consequences of Creating Mono-Cultural Forests in Hills.[50]

Having understood the environmental problems in contemporary context the question remains what role the school played in the larger picture of environmental concerns. Formulating an argument on the lines of Ajay Skaria's standpoint, the deeper analysis on the Trajectory of Forest School which stretches form 1878- 1906, shares a glimpse of the Impact of School in creating a base for Scientific Forestry. Skaria while illustrating the Dang history on Forest use brings out the evolving nature of desiccationist discourse under the demand for revenue generation.[51] Similarly through our historical analysis of the School we find that the school was a major contributor in transferring Continental Forestry in India, but also that the Institute's Position as Ranger School was an inevitable phenomenon. In the Nineteenth Century the prime focus of the Institution was to introduce Professional Forestry and keep away from aggressive Commercialization. It was in the twentieth century (1906) that the Institute invited changes in its management and curriculum. The prime motive for the upgrading of the school to a research facility was precisely to aggravate the commercial results of Forestry. The new domain of research was invited into the fold to explore more commercial options in the Forests of India. The Creation of Minor Forest Products Branch, Chemistry Division and making of new post of Forest Economist in the F.R.I. were the steps taken by the Forest Department in the new direction of Commercialization.[52] It is in this light of process in History that we need to examine the agenda of the Institution.

The major studies surrounding the regional history have rarely presented a monograph on Imperial Forest School .We should also understand that the school was not a singular entity as it worked directly under the Forest department. The school had an impact on the forest department and the department vice versa impacted the working of the school. The mutual impact was coincided by political events which again created ripples in the history of the institution. The Forest Research Institute or the successor institution was highly impacted due to the First and Second World War. The scope of the study limits us to discuss the Forest Research Institution's contribution in shaping Scientific Forestry in the Twentieth Century.

What we need to examine is that the School in its own time period had to observe certain trends of internal discord, extreme revenue targets and adoption of extreme commercialized forestry germinating in its system. We cannot ignore the fact that Dehra School was the first school of the British Empire and Indian Forests had a permanent school, even before England got itself a proper school. As the apostle of scientific forestry the school created history and its historical trajectory showcases the various contemporary intellectual factors at play.

Bibliography

1. Agarawal, Arun. Environmentality: Technologies of Government and Making of Subjects. Duke University Press, Durham, 2005.

[50] Himani Nautiyal, et al. "The Banj Oak Quercus Leucotrichophora As a Potential Mitigating Factor for Human-langur Interactions In the Garhwal Himalayas, India: People's Perceptions and Ecological Importance." *Global ecology and conservation*, v. 22 ,. pp. e00985. doi: 10.1016/j.gecco.2020.e00985.

[51] Skaria, "Timber Conservancy..", Op. cit., pp. 597.

[52] Forest Research Institute and Colleges, Ministry of Food and Agriculture, Government of India, 1954, National Forest Library and Information Centre, Dehra Dun, Uttarakhand.

2. Bandyopadhyay, Jayanta, and Vandana Shiva. "Political Economy of Ecology Movements." Economic and Political Weekly, vol. 23, no. 24, 1988, pp. 1223–32, http://www.jstor.org/stable/4378609.
3. Barton, Gregory. A. Empire Forestry and Origin of Environmentalism. Cambridge University Press, Cambridge, 2002.
4. Bhattacharya, Neeladri . "Pastoralists in a Colonial World." Nature, Culture, Imperialism: Essays on the Environmental History of South Asia, Arnold, David. & Guha, Ramchandra. (eds), Oxford University Press, Delhi, 1995.
5. Brandis, Dietrich. Forestry in India: Origins and Early Developments. Natraj Publications, Dehra Dun, 1994.
6. Dangwal, Dhirendra, Dutt. "Forests, farms and peasants: Agrarian economy and ecological change in the U.P. hills 1815-1947." Studies in History, Vol. 14, No,2, July- December.
7. Drayton,Richard. Nature's Government: Science Imperial Britain, and the "Improvement" of the world. Orient Longman, New Delhi, 2005.
8. Forest Research Institute and Colleges, Ministry of Food and Agriculture, Government of India, 1954, National Forest Library and Information Centre, Dehra Dun, Uttarakhand.
9. Gadgil, Madhav &,Vartak, V.,D. "Sacred groves of India- a plea for continued conservation." Journal of the Bombay Natural History Society, No. 72 (2), 1975.
10. Gadgil ,Madhav and Guha Ramchandra. This fissured land: An Ecological History of India. Oxford Publications, India, 1993.
11. Grove, Richard, H. Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Envirinmnetalism, 1600-1860. Cambridge University Press, Indian Reprint, Foundations Books, Delhi, 1995.
12. Guha, Ramachandra. "Forestry in British and Post-British India: A Historical Analysis." Economic and Political Weekly, vol. 18, no. 44, 1983, pp. 1882–96, http://www.jstor.org/stable/4372653.
13. Guha, Ramachandra. "Scientific Forestry and Social Change in Uttarakhand." Economic and Political Weekly, vol. 20, no. 45/47, 1985, pp. 1939–52, http://www.jstor.org/stable/4375015.
14. Guha, Ramchandra. The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya. Oxford University Press, Delhi, 1989.
15. Guha, Sumit. Environment and Ethnicity in India 1200-1991. Cambridge University Press, Cambridge, 2006.
16. Himani Nautiyal, et al. "The Banj Oak Quercus Leucotrichophora As a Potential Mitigating Factor for Human-langur Interactions In the Garhwal Himalayas, India: People's Perceptions and Ecological Importance." Global ecology and conservation, v. 22 ,. pp. e00985. doi: 10.1016/j.gecco.2020.e00985.
17. Krishna, Nanditha. "Ancient Forests and Sacred Grooves." Critical Themes in Environmental History of India, Chakrabarti, Ranjan (eds), Sage Publications, New Delhi, 2020.
18. Murali, Atluri. "Whose trees? Forest Practices and Local Communities in Andhra, 1600- 1922*." Nature, Culture, Imperialism: Essays on the Environmental History Of South Asia, Arnold, David. & Guha, Ramchandra. (eds), Oxford University Press, Delhi, 1995.
19. ORDERS OF GOVERNMENT, Resolution No. 978A. Of 1880, Revenue (Forest) Department, Dated Nainital, 19, October, 1880. Forest Department Library, Lucknow, Uttar Pradesh.
20. Rajan, Ravi, S. Modernising Nature: Forestry and Imperial Eco- Development 1800-1950. Orient Longman, New Delhi, 2006.

21. Rangarajan, Mahesh. "Production, Desiccation and Forest Management in the Central Provinces 1850- 1930." Nature in Orient, Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal (eds), Oxford University Press, New Delhi, 2000.
22. Rangarajan, Mahesh. "Polity, Ecology and Landscape: New Writings on South Asia's Past." Studies in History, vol. 18, no. 1, Feb. 2002, pp. 135–147, doi: 10.1177/025764300201800107.
23. Ribbentrop, Berthold. Forestry in British India. Office of the Superintendent Of Government Printing, India, 1900.
24. Sangwan, Satpal. "From Gentlemen Amateurs to Professionals: Reassessing the Natural Science Tradition in Colonial India 1780- 1840." Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal (eds)Nature and Orient, Oxford University Press, New Delhi, 2000.
25. Sangwan, Satpal. "Making of a popular debate: The Indian Forester and the emerging agenda of state forestry in India, 1875- 1904". The Indian Economic and Social History Review, No. 2,Vol. 36, Sage, New Delhi, 1999.
26. Separation of Forest School from the Circle. ANNUAL PROGRESS REPORT OF FOREST ADMINISTRATION FOR THE YEAR 1884-85 N.W. PROVINCES AND OUDH. SCHOOL CIRCLE. BY MR. W.R. Fisher, B.A., Officiating Conservator of Forests, School Circle. Forest Department Library, Lucknow, Uttar Pradesh.
27. Skaria, Ajay. "Timber Conservancy, Desiccationism and Scientific Forestry: The Dangs 1840's – 1920's." Nature and Orient, Oxford University Press, New Delhi, 2000.
28. Skaria, Ajay. Hybrid Histories: Forests, Frontiers and Wildness in Western India. Oxford University Press, New Delhi, 1999.
29. Shiva, Vandana, & Mies, Maria. Ecofeminism. Bloomsbury Academic, United Kingdom, 2014.
30. Sivaramakrishnan, Kalyanakrishnan. Modern Forests: Statemaking and Environmental change in Colonial Eastern India. Stanford University Press, California, 1999.
31. Soutick,Biswas. "'Hanging' Glacier broke off to trigger India Flood," British Broadcasting Corporation, February 10, 2021, https://www.bbc.com/news/world-asia-india-56007448.
32. Stebbing, Edward, Percy. The Forests of India. Vol. II, Jane Lane, London, 1922.
33. The Indian Forester. No. 2, Vol. VII, October 1881.
34. The Indian Forester, No. 4, Vol. VII, April 1882.
35. The Indian Forester, No. 1, Vol. XI, January1885.
36. The Indian Forester, No. 10, Vol. XII, October 1886.
37. The Indian Forester, No. 12, Vol. XII, December 1886.
38. The Indian Forester, No. 7, Vol. XIV, July1888.
39. Tucker, Richard. "Timber Conservancy, Desiccationism and Scientific Forestry: The Dangs 1840's-1920's."Nature and Orient, Grove, Richard, H., Damodaran, Vinita, & Sangwan, Satpal, (eds), Oxford University Press, New Delhi, 2000.
40. Walton, H., G. The Gazetteer of Dehradun, Natraj Publishers, Dehra Dun, 2016.

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CERTIFICATE

This is to certify that Mr./ Ms./ Dr. SHIVANGI MAINDOLA of BABASAHEB BHIMRAO AMBEDKAR UNIVERSITY, LKO has participated in the Two-Day National Seminar on **Cultural Kashi : Tradition and Modernity** and presented a paper titled SPIRITUAL TOURISM AT KASHI during 11-12 December, 2021 organised by the Department of History, Faculty of Social Sciences, Banaras Hindu University, Varanasi, U.P. (India).

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