Agro-ecology of Kashmir during Dogra State (1880-1950)

THESIS

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2019

Affectionately

Dedicated to

My Beloved Parents

CERTIFICATE

This is to certify that the thesis titled **Agro-ecology of Kashmir during Dogra State (1880-1950)** submitted by Mr. **Mohd Ashraf Wani** 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 thesis submitted to Babasaheb Bhimrao Ambedkar University Lucknow satisfies all the requirements as stipulated in the *Doctor of Philosophy (Ph.D.) regulations- 1999 as amended in 2008/2010/2013* and it is fit for submission and evaluation for the award of the degree of Doctor of Philosophy of the University.

Date: 12-07-2019

Supervisor

Head of the Department

DECLARATION

I hereby declare that the thesis titled **Agro-ecology of Kashmir during Dogra State (1880-1950)** submitted for the award of degree of **Doctor of Philosophy** is an authentic record of original research work carried out by me under the guidance and supervision of **Dr. V.M. Ravi Kumar,** Assistant Professor, Department of History, School for Ambedkar Studies, Babasaheb Bhimrao Ambedkar University (A Central University), Vidya Vihar, Rae Bareili Road, Lucknow-226025. This is also declare that the thesis is essentially free from all kinds of plagiarism. I further declare that this research work has not been 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 acknowledgments have been made whenever the findings of others have been cited.

Mohd Ashraf Wani

Place: Lucknow

Dated: 12-07-2019

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Mohd Ashraf Wani

CONTENTS

LIST OF ABBREVIATIONS

A.R	Report of Jammu and Kashmir State.
A.R.F.D	Annual Report of Forest Department Jammu and Kashmir State.
H.H.	His Highness
ICAR	Indian Council of Agricultural Research
J.K.S.A	Jammu and Kashmir State Archives
J.K.S.H	Jammu and Kashmir State Handbook
J.R	Jammu Repository
JK	Jammu and Kashmir
Kh.	Kharwar
K-T-S	Kwintal-Trakh-Ser
Md.	Mound
O.E.R	Old English Records
Pol.	Political Department
Rs-a-p	Rupees- Anna-Paisa
S.R	Srinagar Repository
Sr.	Seer
Tr.	Translation
Trk.	Trakh

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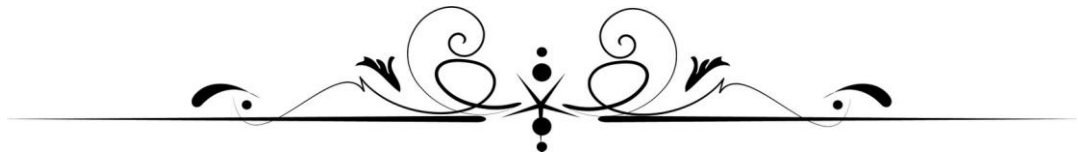
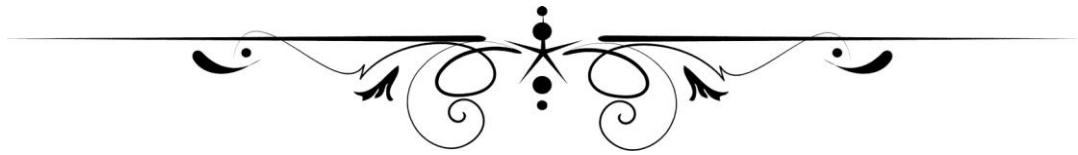


Chapter 1
Introduction



Chapter 1

Introduction

Environmental history is an inter-disciplinary study of human interactions with the natural world over time. It understands how nature enables and sets limits for human actions; how people modify ecosystems they inhabit; and how different cultural conceptions of non-human world profoundly shape beliefs, values, economies, politics and cultures.[1] The significance of environmental history to humankind can't be ignored. During the initial stages, the study of environmental history appeared to stir consciousness among the public about the environmental crisis which were identified by the scientists working in various branches of ecology and environmental science. Richard Grove is also of the same view that colonial powers sent out the scientists who noticed the environmental changes in India as well as in South Africa.[2] These scientists provided some kind of impetus that the environmental alterations have been caused by the humans around the world and most of these changes led to the degradation. However, it is increasingly being acknowledged now that the recent environmental crisis calls for a new and independent role of the historians to develop a new paradigm for the future including studies of the interactions and activities of man and the environment; the significant role of man as both the maker and the unmaker of nature.[3]

During past few decades the writings on environmental history have been increased to a great extent. The origin of environmental history was resonated with Rachel Carson's (1962) *Silent Spring*, the first Earth day (1970) and the wilderness movement of that period.[4] When the profligate use of natural resources and other environmental issues began to show their adverse global impact, the need was felt to have a better understanding and in turn received a western academic response.[5]In 1960s and 70s the world witnessed the coalescence of popular environmentalism as a culture and political force. In United States it brought together the scholars of United States history both

[1] Wastson, F. (2003). Environmental History. *The Scottish Historical Review, 82*(214), 285-294.
[2] Richard H. Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600–1860* (Cambridge, Eng., 1995).
[3] D. Arnold, & R. Guha, (eds.).*Nature, Culture and Imperialism: Essays on the environmental History of South Asia,* p.3.
[4] Carruthers, J. (2013). *Environmental History For An Emerging World,* p.16
[5] Ibid,p.16

intellectually and institutionally to launch environmental history as a self-conscious subject. These scholars did a remarkable job and produced some swayful works and attracted the international attention. Among these scholars were the Worster and Crown who achieved a great success and became the influential figures in environmental history of United States and also inspired the attention of their fellow historians towards the subject.

In Europe, the Annals school (a group French historians who published in the journal Annals) examined environmental changes in Europe, such as forest clearing and wetland drainage in response to population fluctuation.[6] In Germany, specific awareness was created by the damage done to forests by the industrial pollution which had its terminology called Waldsterben (the dying of forests).[7] We see that public opinion on changing environment has deeply influenced the academic debate in many regions like Europe, America, South Asia and more especially in India.

The most prominent target of environmental historians of India is to document Himalayas and dynamics of well-known Chipko Movement. Currently, the environmental history is also receiving much focus and attention in South and South-East Asia and Africa. According to David Arnold and R. C. Guha, who are also the pioneers of ecological history in India have portrayed that environmental history is by and large under developed in India as well as in South Asia.[8] During the past few decades we have noticed that environmental history in India is receiving much attention at the hands of scholars and in turn its impact has increased much more due to the dearth of resources which has affected both social and political system. Environmental history in India initially was inspired by radical critique of government and development that was building up amid the Sarvodaya movement and other anticentral government sentiments of the early 1970s.[9] There were some other issues which had led to the rise of environmentalism and ecological history in India. These are the *Kerela Sastra Sahitra* for its compaign to save silent valley, campaign against *eucalyptus*

[6] S. Krech, J.R. McNeill, C. Merchant, *Encyclopedia of World environmental history, Vol.1 A-E*, p.XI.
[7] Mann, M. (2014, April). Environmental History and Historiography on South Asia. Humboldt-Universität zu Berlin, Philosophische Fakultät III, Institut für Asien-und Afrikawissenschaften, Seminar für Südasien-Studien.p.325.
[8] D. Arnold, & R. Guha, (eds.) op.cit, p.3-4.
[9] Agrawal, A., & Sivaramakrishnan, K. (Eds.). (2001). *Social nature: Resources, representations, and rule in India*. Oxford University Press.p.10

plantations in Karnatka and the *Miti Bchao Andholan* in Madhya Pradesh.[10] However the focus was more on Chipko as it was the movement which had inspired the Ram Chandra Guha's pioneering work, *The Unquiet Woods*. Also the impact of Guha's work can be found in the works of almost all the environmental scholars. Subsequently Guha's model of environmental history of India proposes that in the beginning the relationship of man with the forests was represented as the tribal phase of history. But with the advent of settled cultivation stage a phase of exploitation started which resulted in the depletion of rich forest wealth, which in turn affected the ecology. With the establishment of British rule in India, the resources of the country were being drained out to England. The British noticed the conservation and scientific values of the forests but their motive was exploitation of the forests and earn more and more from forest resources. The British colonial rule was the turning point in the ecological history of India. The technological advancement had started the exploitation of green gold of the nation.

The agrarian history of British India focused on social relations around land and conflicts over the distribution of its produce, but neglected the ecological context of agriculture for example forest, grazing land and irrigation. The British Government took some steps to regulate and conserve forests and the wildlife. Some steps were taken by the colonial rulers for the conservation of forests like development schemes were initiated in most of the states in India in addition to regular working plan prescriptions. All these steps were, however, linked with their agricultural and industrial priorities. Thus, indirectly, it laid the foundation of forest conservancy.

Similar, condition prevailed in the Jammu and Kashmir state as far as its ecology was concerned under the Dogra rulers (1885-1947). The state of Jammu and Kashmir was surrounded by rich biodiversity and ecological niches which supported large species of plants and supporting a rich and vibrant variety of human culture. The State was known for its pleasant and attractive waterfalls, meadows, mountains, undulating slopes. In other words we can say that the state had great diversity of environmental regimes. Jammu and Kashmir is basically agricultural based economy. Agriculture is the mainstay of the people as it provides employment directly or indirectly to about 70% of total state population. So is the horticulture which has emerged as most vibrant sector

[10] Chattopadhyaya, D. P., & Ray, B. *Different Types of History: Project of History of Science, Philosophy and Culture in Indian Civilization, Volume XIV Part 4*. Pearson Education India.p.149

for the state economy. About 95% of apple and 90% of walnut production in India comes from Jammu and Kashmir. The forests of the state also form an important source of income for the Government.

Agriculture was the backbone of Kashmir's economy during the Dogra period as well. The Valley came under the Dogra rule by signing the Treaty of Amritsar in 1846 between Raja Gulab Singh of Jammu, the first Dogra ruler and the British, in which the former had to pay seventy lakh of rupees towards the British. The Dogra rulers exposed the princely state's fealty to the British in one way or the other. Although the more direct intervention in the political administration started in 1885, after which establishment of British Residency and State Council began to run the affairs of Jammu and Kashmir in 1889. It was only with establishment of British Residency and the pressures exerted by the sympathizers of Kashmiris outside the State, a new era of reforms dawned in the state. Besides with the appointment of the land settlement officers Wingate and Walter Lawrence, who did a commendable work to restructure the agrarian system for both the state and peasantry which ushered a new era in the history of Kashmir.[11]Thus alongside with introducing reforms in agrarian system and other branches of administration, new technology was introduced in almost all sectors to boost agriculture, industry, trade, commerce and tourism. In order to modernize the State, steps were also taken to institutionalize the process by opening different departments, on western lines.

This colonial intervention had a propounded impact on the princely state of Jammu and Kashmir. Due to the absence of vibrant forces like those which had been in operation in British India (Railways, markets) the nature of agricultural production in Kashmir continued as earlier, with the cropping pattern being predominated by food cereals, however, the economy of the state was not a stagnant or closed economy. Some concrete steps were taken by the Government to help the agriculturalists in their pursuit. It established the Department of Agriculture in 1902,[12] which helped the farmers by introducing the scientific implements and better seeds and manures, and also by awakening a new interest in agriculture. In 1906, the Agricultural Department established Pratap Model Farm Shalmar Garden in Srinagar covering an area of 100

[11] Ibid.
[12] Kapur, M. L. (1992). *Social and economic history of Jammu and Kashmir State, 1885-1925 AD*. South Asia Books.p.235

acres of land, in order to popularize the use of better seeds and agricultural appliances and also to introduce improvements in the mode of cultivation.[13] At the Farm experiments were conducted with several varieties of seeds imported from India and foreign countries like America, England, Italy and Russia and after these experiments, the results were recommended to the cultivators for adoption. Experiments were also carried out with good results in different system of rotation and manuring. In 1919-20, the State Government constituted Agricultural Developmental Board for effecting further in the agricultural produce of the land.[14]

The history of the Kashmir Forest Department as an organised and scientific body dates back to the year 1891, when Mr. J. C. McDonnell lent officer from the Indian Forest Service, joined the State as its first Conservator of Forests.[15] Horticulture in the state has started in organised form in around 1865 when the State Government engaged a Frenchman, Monis Ermns ex-head gardener of the Public Parks in Paris for making Wines on a large scale in Kashmir. Ermns brought himself a number of fruit plants which he believed to thrive in Kashmir and also some farm implements to start an experimental agricultural farm.[16] For improving the indigenous fruits of Kashmir and introducing European varieties, credit goes entirely to French experts. All the European travellers of Kashmir from Bernier to Vigne were of aware of the fact that there is a possibility of turning Kashmir into an orchard. The separate Department of Horticulture was established in 1902.[17]

The modernization process started under Maharaja Pratap Singh and Maharaja Hari Singh had resulted in changes may be social, economic and ecological fields. This effect was evident in the field of forestry. Several trees were cut down to laid down roads, railway lines, irrigation canals and several forest areas were given to some department for infrastructure developments as it is evident from several primary records. Deforestation had resulted in three major ecological effects in the region i.e. loss of habitat, fragmentation of habitat and cascading loss of biodiversity in the marginal zone between forested and deforested areas. Moreover, the frequent forest fires created niches for various new species in the landscape. The modernization during

[13] Ibid.
[14] Annual Report.1919-20 p.27
[15] Wright, H. L. (1931). The forests of Kashmir. Empire Forestry Journal, 10(2), p.182
[16] Bamzai, P. N. K. (1987). Socio-economic history of Kashmir, 1846-1925. Metropolitan Book Co.p.179
[17] Op.cit.p.237

this period was carried with little concern for the ecological balance. Cutting of deodar, fir, pine etc. for timber clearly led to erosion especially on slopes. Deforestation led varied species of animals and insects that use and thrive on these forests, homeless. The barren land left by deforestation caused several ecological problems like flood, soil erosion etc. Removal of fuel wood and timber in excess robed the Kashmir region and made it more vulnerable to accelerated environment degradation.

Environmental History of India is now a well-established academic branch of History. Ecological histories of different regions of India were documented by historians. But Kashmir region did not receive adequate attention of environmental historians. This study is significant for not only its explorative nature but also its possible potential contribution for understanding the regional dimension of British colonial rule and its impact upon princely states of India. This study attempts to explore and document how agro ecological system of Kashmir were brought under techno-managerial strategies of the Dogra state aided by the British colonial rule, its impact upon physical ecology and impact it has generated on socio-economic conditions of Kashmir. In this work an attempt has been made to explore how the human action that affected nearly entire ecology of Kashmir region in the period under study. This study attempts to analyse the interaction between human and natural worlds around him and the subsequent human responses to environmental influences in this area.

Generally it is proposed by the environmentalists that human responded often to the rich ecology around him by altering their landscapes. As the population was increasing in the period under study, it was difficult to behold the environment untouched. Thus, humans started modifications in the ecology for own benefits which led to disturbance. This study will also help to identify the practices and policies of the State Government in Dogra period in order to achieve the sustainability of agriculture and other natural resources in the state. The present study will give a concise account of the general land use, cropping pattern, scientific techniques of horticulture and the agricultural operations being carried out during that period in the different agro-ecological regions of the Kashmir. In this work an attempt has been made to capture the human action that affected nearly all ecology of Kashmir region in the period under study. The study, we hope provide an information and inspiration for other scholars who are interested on the same field. By all means this study has a potential for more penetrating understanding on impact of British colonial rule on Indian society.

Review of Literature

The academic studies available on the Dogra period are enormous and have been written from different perspectives. However, no work has been conducted exclusively from an ecological point of view. The present study attempts to explore the agro-ecology of the region with focus on forestry, horticulture and geo-ecological conditions in order to have a fuller understanding of the environmental history of Kashmir which until now is not being explored by the environmental historians. Some of the significant works which are somehow related to the theme are reviewed under the two headings.

Theoretical Literature review

Arun Bandopadhyay (2010) in his article *"Colonial Legacy of Forest Policy in India"* has discussed about the colonial forest policies in India in three distinct phases, one from 1796-1850, second from 1850s to the 1880s, and the third from 1894-1947. The author has highlighted the role of Brandis in framing the forest policies in India. The author also highlighted that the infrastructure developed during colonial period proved inadequate during post-independence period. The paper mentions about the conditions of forests in post-colonial period in Madras and Bengal and the measures taken by the respective governments in checking the wanton destruction of trees. The author points out that scientific forestry and people's participation in forests are the two aspects of colonial forest policies which continued in the post-colonial period as well.

Deepak Kumar (1997) in his book *"Science and the Raj"* has focussed on the development of colonial science in British India. It analyses the relationship between techno-scientific imperatives and colonial requirements by looking at the close link between science and the raj. The early exploratory activities, scientific research works, problems in science administration and Indian responses to these issues had also been mentioned. The author has also examined the role of technology and science in the history of imperialism and considers pre-colonial science in India.

Gadgil and Guha (1993) in their book "*This Fissured Land: An Ecological history of Indi"*[18] had analyzed various forms of social conflict between different groups of

[18] Gadgil, M., & Guha, R. (1993). *This fissured land: an ecological history of India*. Univ of california Press.

resource users. This book highlights the interdependence of ecological and social changes that came in the wake of colonial rule and also shows the socio-ecological consequences of European colonialism in India. This book also sheds light on socio-ecological history of forests in India and focuses on the ecological encounter between Britain and India. The authors had pointed out that the most tangible outcome of colonialism was its global control of resources and the forest management was the most significant element in taking over of natural resources.

Gosh and Rita (2003) in their book *Social Forestry and Forest Management* mentioned that during the period from 1900 to 1925 there was a good progress in the different fields of forestry. This book is the best source to understand the urgent need to promote a new paradigm on social forestry and rural development based on integration and application of principles of ecologically sustainability, social equity and economic viability.

Guha and Gadgil (1989) in their article *"State Forestry and Social Conflict in British India"* has pointed out that the general policy of the forest management was framed only after the construction of railway network in India. The main thrust of the paper is on reactions of village communities and other tribal people against the regulations of traditionally exercised rights. The colonial government established its control over the large woodlands which earlier were under the hands of local communities, then intervened in their day to day life to a great extent. Authors also pointed out that the colonial forestry also changed the composition of Indian forests by applying silvicultural techniques, turning the mixed forests into single species forest for their personal motive. The paper has also focused on the genesis of these conflicts, their geographical spread and different causes of their origin in different locations. It also points out that the forest management practices also contributed in declining the different artisanal industries by restricting their source of raw material.

In his book *Forests and Ecological history of Assam*, **Arup Jyoti Saikia (2011),** has highlighted some changes which took place from colonial to post-colonial period with respect to Assam's forest management . The author has pointed out that it was only under the colonial rule that alarming growth in commercial exploitation was noticed. The colonial regime was unable to stop the growing pressure from local and immigrating peasants despite demarcating the forests on the model of Indian Forest Act

1878 and this was so because the land titles were not being granted to them in both periods. The last chapter of the book sheds its light on the game hunting and which the author considers was as a matter of ruling elite. The hunting by rulers was merely for a game while as for the indigenous people it was meant for their sustenance.

Irfan Habib (2010), in his book *Man and Environment: The Ecological History of India* has tried his best to develop understanding among the readers about the different aspects of environmental and ecological history of South-Asia. The book focuses much on the Neolithic Revolution as it is the time when the visible change was caused by the interaction between man and environment for the first time. Keeping in view the forestry and forest management, the book does not have pointed out the continuities from pre-colonial period to post-colonial period and neither has it explained the colonial legacy.

John MacNeill *et.al* (2010) in their volume *Environmental History: As if Nature Existed*, have discussed a variety of articles related to environmental history in broader perpective and not related to any particular period or a subject. The whole content in the book is discussed in three parts-global studies, macro-regional studies and micro-regional studies. Under macro-regional studies, a comparative study related to environmental changes like the colonial impact and assault on tropical forests in Brazil, China and South-Asia. In the micro-regional studies an attempt has been made to highlight the impact of globalization on the eastern India tribal territories. The book discusses a special attention mostly by the scholars of environmental history as it opens the new ways by explaining the environmental history both in national and international perspective.

Mahesh Rangarajan (1999) in his book *"Fencing the Forests"* challenges the views of imperial historians who gave credit to scientific forestry for the conservation of forests. The author argues that their only motive was to generate revenue and fulfil the strategic needs of the empire. The author very clearly explained the attitude of people towards forests in pre-colonial India. Moreover he sheds light on the changes brought out by colonial rulers in the forest management. The Forest Department provided a unified focus at an all India level for a major revolution in styles of land management.

NeenaAmberi Rao (2008) in her book *Forest Ecology in India: Colonial Maharashtra 1850-1950* has successfully attempted a longue-duree environmental

history of Marathi speaking region of British Empire's Bombay Presidency. Tracking the transition from pre-colonial to colonial period, this study shows that the transformation during the late nineteenth century not only exposed the British imperialism, but also triggered massive population protest that eventually led to the demise of British Empire. The book however does not made a mention of the opposition between destruction and conservation while taking in view the long term ecological impacts of colonial rule.

R.C Guha (2000) in his book *The Unquiet Woods* have tried to bring ecological dimensions to the study of agrarian history and peasant resistance. He has mentioned that the landmark in the history of Indian forestry is undoubtly the building of the railway network. The large scale destruction of accessible forests in the early years of railway expansion led to the hasty creation of a forest department in 1864.

Ravi Rajan (2006) in his book *"Forestry and Imperial Eco-Development 1800-1950"* has pointed out that colonial masters viewed the forests of India as their timber mines and source of other minor products. He has mentioned that it were the colonial doctors and botanists who started the process of systematic forest management through the support of the government. The acute shortage of timber during the First World War led the foresters to be serious and the author gives credit to the Empire Forestry Conferences which served as informal coordinating agency and a massive institution framework for the management of colonial forests was built. This book stresses more on ideologies of colonial forestry and the impact of colonial forest policy.

Richard Tucker (2012) has compiled an extra volume of his scholarly articles under the title *A Forest History of India* and without any doubt Tucker has been one of the pioneers of forest history of South-Asia. He has mostly touched the colonial and imperial forest management under the British colonial rule in South Asia. His other areas of interest have been the wildlife reserves and the non-timber products mostly in the western Himalayas.

S.Abdul Thaha (2009) in his book on *Forest Policy and Ecological change* has pointed out that the forest management in the Hyderabad state until 1951 has begun only in the second half of the 19th century and so was the case with the irrigation schemes. The book augments further the established environmental narrative which stresses mostly on

the deforestation, arable land expansion, natural and man-made upheavals which had showed their impact during colonial rule in India and also in the Princely State of Hyderabad.

Srabani Sen (2010) in the article *"Scientific enquiry in agriculture in Colonial India"* has explained in a best way the historical evolution of Agricultural research and institutions in colonial India. The writer has mentioned the role of some agricultural chemists in the improvement of Indian agriculture by scientific means and has given a description of some crops like sugarcane, rice and wheat on which a number of experiments were conducted from time to time to increase their productivity and identify the best soils for their cultivation. The author points due to series of famines during the nineteenth century which felt the need of scientific enquiry in the field of agriculture.

The book *Himalayan Degradation* of **Dhirendra Datt Dangwal (2009)** is also an important contribution with respect to the environmental history of South Asia. In this work the stress has been laid on the continuities and changes that took place between the pre-colonial, the colonial and the post-colonial regimes. The author argues that the policies which were being adopted for scientific forest management in both the colonial and post-colonial period were meant more for the extraction of forest products and the restrictions on the grazing by the cattle.

Literature review on the history of Kashmir

Bamzai's (1994) book *"Cultural and Political history of Kashmir, vol.3"* has mentioned some achievements of Maharaja Pratap Singh. He praises former for his contribution in modernizing the Kashmir. But has focussed only on the certain aspects like land settlement and its features, development of roads, communication and flood protection measures. The author sheds light on the horticulture of Kashmir also how the indigenous fruits were improved and the European varieties were introduced in Kashmir. According to the author, Mr. Ermens, formerly head gardener of public works in Paris was called in along with number of fruit plants for experimental purposes.[19] It was realised that there is a much scope of European fruits in Kashmir. But the author

[19] Bamzai, p. 179

totally neglected the forest department which was developed on modern lines in Kashmir.

Bamzai's (1997) book *"Socio-economic history of Kashmir (1846-1925)"* is useful work to know about the social and economic history of Kashmir since from the beginning of Dogra rule up to the end of the reign of Maharaja Pratap Singh. In one of its chapter, the author has given a detailed description of the various food crops grown in the Valley and has focused on the method of their cultivation. He has also mentioned some different kinds of fruits and has focussed on the introduction of European varieties. The author has given credit to some of the French men who thorough investigation to check out which kind of fruit would thrive in Kashmir. The author only made a mention of some of the trees, minor forest produce and their use and economic value. He has not deal with the introduction of scientific forestry during the period. **Chitralekha Zutshi (2003)** in her unique work *"Languages of Belonging"* in the second and third chapter has highlighted on the transformations in Kashmir's political economy in the late nineteenth and early twentieth century and their impact on public discourse of the period. It also explores the nature and impact of colonial intervention on class formation in Kashmir valley. The author mentioned about the agricultural condition and has also mentioned about the trade and commerce, shawl industry, silk industry and education.

Fida Hassnain (1974) in his book *"British Policy towards Kashmir 1846-1946"* has mainly focussed on the British intervention in political history of Kashmir. Although the author has pointed out the impact of British Policy on Kashmir but has touched only some political aspects and the administrative measures. It does not mention about the impact of these policies on natural resources of Kashmir and how the British exploited these resources and how their policies were instrumental in the initiation of scientific forestry in Kashmir.

Jamshed et al (2013) in their article *"Shaping of peasant economy: Classification of land and agricultural technology in Kashmir during Dogra's 1885-1925"* had given the description of various major and minor soil types in Kashmir and also the classification of land based on its quality and geographical location. The authors have mentioned that agricultural technology was ordinary and primitive and the agriculture was practised on

traditional lines. The implements used were also primitive. The authors does not mention the government policies towards natural resource management.

Kawoosa (2001) in the first chapter of his book "*Forests of Kashmir: A vision for the future*" has thrown a light on the genesis of national forest policy in India. He has given a detailed account of features as well as limitations of Forest Policy of 1894, Royal commission on Agriculture 1928. The author has given a general history of forests in Jammu and Kashmir. He mentions that first step towards protection of forests in the state was taken up in 1857-58 AD, when a forest section called "Mahal Nawara" was created in the department of revenue of the state and in 1883 a preliminary regulation called "Ain-e-Janglat" was introduced where by collection of government share in kind was done for the produce removed from the forests. The author has also thrown light on how the forest areas were demarcated, how the forest management was put on scientific lines and how the working plans were drawn up for the improvement of forest areas.

M.L.Kapoor's (1995) book *"Social and economic history of Jammu and Kashmir State"* is a useful study on social and economic conditions of Kashmir during the Dogra period. The author has discussed the various aspects of social life of the people during the period. The author had given a detailed description of the economic history which deals with agriculture, horticulture, irrigation and forests. He has given a general overview of these aspects and has focussed on the various developmental initiatives taken by the government in order to develop the economy of the state. The author has shown the seriousness of the government in developing the horticulture sector by introducing some European varieties, which in turn had occupied a special position in the economy of the state. The way in which the scientific forestry was started has also been pointed out. However the intention of the author was to show the development initiatives of the government for accelerating the economy of the state.

P.N.K. Bamzai (1994) in his book *"Cultural and Political History of Kashmir Vol.3"* has mentioned some of the achievements of the Maharaja Pratap Singh. He praises the former for his contribution in modernizing in Kashmir but has focussed only on the certain aspects like land settlement and its features, development of roads, communication, and flood protection measures. The author sheds light on the horticulture of Kashmir also, how the indigenous fruits were improved and how the

European varieties were introduced in Kashmir. He mentions that Mr. Ermns, formerly head gardener of public works in Paris was called in along with number of fruit plants for experimental purpose. It was realised that there is a much scope of European fruits in Kashmir. But the author has neglected the Forest Department of Kashmir which also was developed on modern lines. The experiments carried out for the promotion of agriculture were also not covered by the author.

Parvez Ahmad's (2007) book "*Economy and Society of Kashmir: A study in change and continuity (1885-1925)*" focuses attention on the developments witnessed during the period from 1885-1925 in irrigation, seeds, crops, system of production. And also the agricultural implements, sources and methods of soil preparation, irrigation and certain other questions have been brought to light. In this work author has given the detailed classification of land and how the land settlement issues were resolved by the British. He further mentions that in 1902 the government in order to develop the horticulture of Kashmir included operations such as establishment of nurseries, plantation of mulberry trees, and cultivation of fruits in general. He goes on to say that forests were the important source of revenue to the state at that time. It was only with the proper regulation of the forests that the state raised handsome revenue from the Kashmir Valley.

R.L. Hangloo (1995) on his book *"Agrarian System of Kashmir"* mentioned about the agricultural production of Kashmir, the nature of cropping pattern and the technology used, the methods of assessment and collection, the magnitude of land revenue demand, the revenue machinery its nature and functioning. The author did not give importance to the ecological history of the region. Although some focus has been paid on natural resources of the region but not from an ecological point of view.

Shabir and Good Gill (2016) in their article *"Impact of Colonial intervention in Kashmir-An attempt for reforms (1885-1925)"* had pointed out the impact of colonial intervention in Jammu and Kashmir and also the changes and reforms brought about by the government in different departments of the state like education, public works, judiciary, horticulture, sericulture. The authors however paid scant attention towards the forest department which was created in 1894 on scientific lines. Besides this, they don't made any mention of the techniques of modernity in the department of agriculture and horticulture.

Suri's (2011) work *"Dogra rulers of Jammu and Kashmir"* sheds its light mostly on the political history of the state right from Maharaja Gulab Singh up to the last Dogra ruler Maharajah Hari Singh. However the author has made a mention on series of reforms being carried out during the reign of Maharaja Pratap Singh. Horticulture and agriculture departments in which a number of reforms were being carried out during the period received inadequate attention by the author. The way in which the horticulture and scientific forestry developed in the state is not mentioned.

W.R Lawrence's (1895) book "*The Valley of Kashmir"* is based on primary data collected by the author himself during the course of his survey pertaining to the land settlement of Kashmir. The author lived amidst the people both of rural and urban areas and thus had an ample opportunity of watching their life from closest quarters. No work on contemporary Kashmir can be undertaken without a reference to Lawrence's *The Valley of Kashmir*. The author has given a detailed account of the land settlement operations in Kashmir because he himself was appointed as land settlement officer in 1889. This book contains separate chapters on flora, fauna, land settlement, agriculture and cultivation of Kashmir during the Dogra period.

Wright (1931) in his paper *"The forests of Kashmir"* has given a very detailed description of Kashmir forests and had classified them according to geographical location and varieties. He has mentioned some important varieties of trees grown across the forests of the state. Various methods and techniques applied for artificial and natural regeneration of Kashmir forests are also highlighted in this paper. The most important point mentioned in this paper is about the description of working plans being carried out and also the efforts of the government to bring the forests of the state on sound and scientific lines. The author has called the forests of Kashmir as a valuable property, as it had focussed on some important minor products which had generated great revenue to the state government.

From the above literature it is ostensible that the environmental history and apparently scant attention has been paid on the princely states. Certain regions have been neglected by the environmental historians like Kashmir and to some extent North-east part. However some environmental issues have been addressed by the scholars in the north-eastern region. But it is only the Kashmir which is if not totally but substantially neglected by the environmental historians. No serious attempt has been made to qualify

the relationship between environmental factors and agricultural land use. The literature reviewed above on the period of our study has focussed mostly on the social and economic history and that too mostly up to the period of 1925. This research work is the modest attempt to address the issues related to the title and will be a unique work with regard to the environmental history of Kashmir.

OBJECTIVES OF THE STUDY

- To understand the process of modernisation with particular reference to land management in modern Kashmir.
- To explore the impact of modernity and its impact upon natural resources of Kashmir.
- To explore emergence of horticulture and plantation based crops in modern Kashmir.
- To explore scientific, ecological dimensions of plantation economy in Kashmir.
- To document social background and dynamics of plantation system in Kashmir.
- To analyse the process of Kashmir and plantation economy becoming part of colonial economic process.
- To assess impact of plantation on socio-economic status of Kashmir in independent period.
- To assess the public policies related to natural resource management in Kashmir.
- To understand the ecological nature of agriculture in Dogra period.
- To explore the emergence of modern forestry in Kashmir.

HYPOTHESES

- Kashmir was brought under colonial economic process, if not directly but indirectly.
- This trend is visible in the technologies of territorial management particularly agro-ecological system of Kashmir.
- The people of Kashmir engaged with changes that are guided by indirect colonial rule.
- The natural resource base of Kashmir was brought under resource hungry colonial process.

- The landscape of Kashmir has been transformed for optimum utilization of its productivity.

Methodology

The present study is based on the source material comprising of published and unpublished material. Among the primary sources which include the archival material from the Jammu and Kashmir State Archives (Srinagar and Jammu) and the National Archives of India (New Delhi). Part of the material consists of non-official works like travelogues and diaries. Then there are a number of reports and gazetteers useful on modern history of Kashmir. Much of the statistical data is drawn from the Annual Administrative Reports of various Departments like Forests, Roads and Buildings, Finance, public Works, Industry and Commerce of the Jammu and Kashmir State and Census Reports as well, which is useful to have a clear vision of the position as it existed then in Kashmir. The Jammu and Kashmir Government records accessible in the Jammu repository and the Srinagar repository of the Jammu and Kashmir State Archives have been used in this study extensively. The records which explored in the present study are: official documents, reports, memoranda, and press cuttings from the records of the Political Department, General Department, Education Department, Vernacular Department, Old English Records and Publicity Department. Moreover, some of the rare books and manuscripts available in the Government of Jammu and Kashmir Research and Publication Department Srinagar pertaining to our period of study are also used with an adequate scrutiny to eliminate all possible errors and generalizations. Besides this, to minimize the limitations of the official documents and reports non-conventional sources have been used. In the present study, a thorough investigation of census reports, official documents, private diaries, newspapers, and pamphlets has also been made to build this historical mansion on the sound foundation of facts, with the objective of shedding new light on the past, which involves both the addition of new explored facts and the (re)interpretation of the known facts. . The secondary data has also been used which is available in the form of books, magazines, journals, periodicals and websites.

Conceptual Framework

The princely states or the native states were representing a very peculiar political system developed in India through divergent ways. Keeping the size of these states in

consideration, they were in no way negligible as they comprised about two-fifth of the area and one-third of the population of the erstwhile Indian Empire excluding Burma. Many of these states were considerable countries in their own right, as Kashmir with an area of 84,000 square miles was bigger than France. Each of the State was having its own regional history and cultural diversity along with interactions with the expanding British Empire. However when the British began to start the treaty system, the changes based on the western ideas were introduced with regard to the ownership of the land and collection of revenue. Moreover the essential elements of British paramountcy which included the appointment of resident at the princely courts, the regulation of successions and control over the foreign affairs of the state were being laid out.[20] The colonial laws, rules and regulations were adapted to the princely states. The treaty of such kind was popularly known as Treaty of Amritsar signed on 16 March 1846 between the Maharaja Gulab Singh, the first Dogra ruler and the British which ultimately led to the creation of the princely state of Jammu and Kashmir. The British paramountcy was then recognised by the Dogra rulers and in turn agreed to pay tributes to them.[21] Hence the colonial intervention in Kashmir was mediated through Dogra rulers and there were certain colonial policies being resisted by the Dogra Maharaja's while some other policies were emulated which suited to their interest.[22]

The British hand in state administration got much stronger only when Officer on Special Duty appointed in 1852 got changed in to Resident in 1885. The British were now able to intervene in the affairs of princely state with the twin objectives-protecting their empire from external aggression and alleviating the misery of Kashmiri's by reforming the administration. The British had started some policies regarding occupancy rights and the methods of revenue collection and calculation were systematized along with new areas brought under cultivation. Indeed the colonial rulers brought tremendous pressure on the Dogra rulers to deploy colonial political rationality that aimed to systematize, stabilize and regularize power relations in the society. The British promulgated and deployed a number of acts and regulations in order to check the long established administrative practices and to establish new rules of administration on the lines of Western European State. These new policies of

[20] Copland, I. (2002). *The princes of India in the endgame of empire, 1917-1947* (Vol. 2). Cambridge University Press.,p.15

[21] Teng, M. K., Bhatt, R. K. K., & Kaul, S. (1976). *Constitutional History and Documents*. New Delhi.p.16

[22] Zutshi, C. (2003). *Languages of belonging: Islam, regional identity, and the making of Kashmir*. Orient Blackswan.p.58.

governance on general administration, land, forests and education were brought into force. However, these regulations were not confined to British India but also extended to the princely states.

The situation was extremely transformed in the princely states by the establishment of colonial rule. The new ideas and concepts regarding the property and rights of land use were being imposed. Regarding the pastures and forests, the traditional privileges by the village communities were being probed by the colonial authorities. The regulations related to the forest and land revenue marginalized the pastoralists and shifted the balance towards agriculture. However, there are very few studies at the regional level which will shed their light on ecological impact of British colonial rule and can provide a detailed provincial analysis of man and environment relation in colonial India. The existing scholarships largely have not analysed the process and patterns of environmental degradation at the regional level and its implications on the level of empire. So, there is a need to bring regionally specific patterns of environmental history in order to highlight how regional patterns shape the colonial state's environmental interaction at the all India level. Encompassed by rich biodiversity and rich ecological niches which support large species of plants, the state of Jammu and Kashmir had a great diversity of environmental regimes. Unfortunately the region remained out of the focus of environmental scholars and historians of the present times.

Chapterization

The whole study is divided into five chapters with a conclusion in the end. The first chapter starts with the historiography of environmental history across the world and gives a general overview of the concept. It highlights the contributions of eminent environmental historians with regarding to their scholarly observation in various parts of the world. The chapter also mentions the works of scholars in south and south-east Asia and the way in which the environmental history emerged in India and became a much needed subject, and how it received the focus and attention of the environmental historians is also mentioned in this part. Besides this, the chapter also contains, statement of the problem, methodology, hypothesis, objectives and review of literature regarding the present study.

The second chapter starts with giving the details about the geographical location and extent of the Kashmir following the physiographic details which mentions about the

various peaks and mountain ranges surrounding the Kashmir. The Kashmir has a long history of drainage system in India, the river Jhelum with its principal river and the tributaries joining it at various points have been mentioned out. Further the detail has been given on the climate, demographic profile, soils, lakes, margs and the vegetation of the area of our study in this chapter.

The third chapter mostly deals with the horticultural operation in Kashmir during the period of our study and starts with the short overview of the fruit culture in India during the various periods. Providing the information about the various kinds of fruits grown in Kashmir, the chapter also throws light on the evolution of scientific horticulture in Kashmir which includes the practices of tree distribution, planting, nursery and entomological work. In the viticulture part, detail has been provided about the planting and production of wine in Kashmir along with the distillery work practised in the period of our study. Besides this, the chapter also throws light on the hop cultivation in Kashmir and about the various state gardens which were under the control of the government planted by fruit and arboriculture trees. In the end of the chapter, detail has been provided about the introduction of scientific practices in the agricultural operations in Kashmir along with the agricultural training being imparted during the period.

The fourth chapter of the study deals with the complete history of the forests of the state, with a brief historical background of pre-colonial Kashmir and pays due attention on it right from 1890, when scientific forestry was introduced in the state. The chapter describes the various scientific practices being applied to the forest of Kashmir along with the lines of Indian forests. The first and foremost practice was the demarcation of the state forest, followed by the working plans, silviculture practices and exploitation as they give us a clear picture about the progress and development of Kashmir forests since 1890. Moreover, the problems like grazing and forest fires, faced by the Forest Department on bringing the forests on scientific lines are also discussed in this chapter. The way forest training and education given to the forest personnel for maintaining the state forests is also discussed in this chapter.

The fifth chapter contains the two parts; in the part one, economic aspect of the forest of the state has been pointed out and elaborated under major and minor forest produce. The major forest produce which includes the sleepers, timber and firewood and the way

these contributed to the economy of the state is well articulated in this chapter. Besides this, various minor forest products found in the state has been listed out and the economy generated from these products right from the introduction of scientific forestry has been given in detail. Various industries which are based on the forests had also been discussed in the chapter. The second part of the chapter deals with the socio-cultural impact of the forests of the state. It includes the various policies which were employed by the Government for the maintenance of the forests and the reaction of the people towards it. The chapter also mentions the grazing rules framed by the Government and the forest offences which took place during the period of our study are also mentioned in it.

Chapter 2
Geo-Ecological Conditions of Kashmir

Chapter 2

Geo-Ecological Conditions of Kashmir

"Agar Firdoos Barooy-e-Zameen ast, Hamin astoo Hamin astoo Hamin ast"

(If there is paradise on Earth, It is here, It is here, It is here)

(Mughal Emperor, Jahangir)

Kashmir Valley has rightly been called as the "Paradise on Earth" and "Switzerland of Asia". Bernier, the first European traveller to enter Kashmir, wrote in 1665 that "In truth, the kingdom surpasses in beauty all that my warmest imagination had anticipated"[1]

Kashmir is well known for its magnificence and natural beauty across the world. Its snow-clad mountains, picturesque spots, attractive valleys, rivers with ice-cold water, lush green pastures and margs, dense forest cover with diversified vegetation, numerous lakes and springs make it more beautiful and good looking. Kashmir is widely known for its agricultural products, fruits, vegetables, medicinal herbs, saffron, minerals, shawls, embroidery work, woollen carpets etc. Kashmir Valley, a separate geographical entity, is one of the three Meso regions (Jammu, Kashmir and Ladakh) of the state of Jammu & Kashmir which are separated by the Himalayan mountain ranges from one another. These divisions have been referred to as a three-storey building in the middle of which lies Kashmir Valley having half closed ecosystem. These unique geo-climatic conditions given, raise to distinctive socio-economic and cultural system of Kashmir.

2.1 Location and Extent

The region of Jammu and Kashmir consists of varied geography comprising of the territories of Jammu, Kashmir, Ladakh, Gilgit and lies on the northern fringes of Indian sub-continent. The area of this largest princely state in British India was 222, 797 sq.kms.[2] The Kashmir Valley also popularly called as 'Switzerland of Asia' is an important province in the state of Jammu and Kashmir accommodating much of its population. It extends from 32°-20′ to 34°-54′ North latitudes and 73°-55′ to 75°-35′

[1] Younghusband, F. E., & Francis Younghusband, S. (1996). *Kashmir*. Asian Educational Services.
[2] Raina, A. N. (2002). *Geography of Jammu & Kashmir State*. Radha Krishan Anand & Co., Pacca Danga, Jammu.p.9

East longitudes and comprises an area of 15,948 square kilometres. The average height above the sea level is 5600 feet.[3] It is about 84 miles in length and 20-25 miles in breadth.[4]From a strategic point of view, the valley of Kashmir seems to occupy a position of the very highest importance with reference to the safety of British India.[5] Its borders touch with China, Russia-Turkistan (Afghanistan) in the north, Tibet in the east, the states of Punjab and north western provinces of India in the south and the west respectively. The valley includes all the lands lying within the water divide formed by Pir Panjals, North Kashmir and the Great Himalayan range which girdle the great synclinal trough occupied by the Jhelum River. The mythological, religious, historical, geological and other observations attempt to prove that Kashmir valley has a fluvial origin. In the geological past, the Valley of Kashmir was a vast lake 'Satisar' with only crests lines visible.[6] Due to the tectonic processes, the Satisar Lake got drained out to form the present Valley of Kashmir.[7] The name Kashmir also implies "land desiccated from water" because in Sanskrit *Ka* means water and *Shimira* means to desiccate.

2.2 Physiography

The Valley of Kashmir is surrounded by famous mountains which act as a natural defence and divides it into many natural divisions. There is no parallel to it in the whole Himalayas as for as its position and morphology is concerned. The Pir Panjal range which separate the Kashmir Valley from the outer Himalayas is about 290 kilometres long and 50 kilometres in breadth running from Muzaffarabad to Kishtiwar on Chenab. The central portion having a length of 130 kilometres is the highest part with peak rising from 4300-4600 miles. The range is trans versed by two well-known passes- the Pir Panjal (3494m) and Banihal (2832m).[8] This range is also crossed through Jawahar Tunnel to enter into valley of Kashmir at an elevation of 2194.56m. There are three chief divisions of this range which run almost parallel to each other. Towards south are the outer hills on which Jammu city is located. On the north, the second range is lofty and majestic with snow covered peaks like the Tarakuti (4,732m), the Kazinag

[3] Jalali, J.L.K,*Handbook for visitors to Kashmir*,p.1
[4] Lawrence, W. (1909). *Imperial Gazetteer of India: Jammu and Kashmir*. Calcutta, Superintendent Government Printing.p.4
[5] Bates, C. E. (1873). A Gazetteer of Kashmir and the Adjascent Districts of Kishtwar etc.p.1
[6]Kumar, Ravi. (1989), *Land Use of Kashmir Valley: An Agro-Ecological Analysis* (Unpublished Doctoral Thesis), Jawaharlal Nehru University, New Delhi.
[7] Ibid.
[8] Ahmad, P. (2007). *Economy and Society of Kashmir: A Study in Change and Continuity, 1885-1925*. Oriental Publishing House.p.3

(4,731m), the Afarwat (4,420m). The famous rivers like the Vishav, the Dudhganga, the Sukhnag etc. have their source in this range. In between the north and the south ranges of the Pir Panjal, there is another middle range with peaks of the Amarnath (5,543m), the Harmukh (5,148m) etc. The famous rivers like the Arapati, the Liddar, the Sindh, the Pohru etc. have origin from these ranges. The Pir Panjal range encircles the Valley from south and south west. Towards the north and north east of the state lies the Karakoram (8615.16m) and the Kyunlun ranges which separates it from Russian Turkistan and Tibet. In the Hindukush range in the North West continues towards the Karokoram range, where the K2 peak, the second highest peak of the world is situated.[9] Two lofty peaks of the Gashobram (8,570m) and the Masharbam also lie there.[10] The Zanaskar range separates the Indus Valley from the Valley of Kashmir. The Ladakh region terminates at the Zojila pass (3529m) from where begins the valley of Kashmir. The Nunkun range 7055.1m above the sea level lies between Ladakh and Kashmir border. The Nanga Parbat range which is about 8107.68m above the sea level spreads in Gilgit and is utterly devoid of any vegetation. Toshamaidan (4270m) and Kazinag mountains lie in the inner Himalayas.

2.3 Drainage system

The Kashmir region has numerous and complex system of rivers, streams which are either formed temporarily during the rainy season or having permanent source in glaciers, lakes or natural springs. The accumulated snow in the higher reaches melts during the onset of spring season and ensures a regular supply to these streams and rivulets. The lower the amount of snow on the mountains, lower remains the flow of streams which in turn have a direct impact on the agriculture of the region.

The Jhelum river is the principal river of Kashmir known to the Kashmiris as veth, Vitasta in Sanskrit, Hydapses by Greeks runs from east to west through the valley.[11] It has source at Verinag, runs through Islamabad and Srinagar into the Wullar Lake and beyond. In Khanabal it receives the waters of Arapat, Sandran and Breng which are its tributaries. It receives the united waters of Veshav and Rambiara at Bijbehara. At Srinagar it receives the waters from Dudh Ganga stream. Below Srinagar, it is joined by

[9] Raina, A. N. (2002). Geography of Jammu & Kashmir State. *Radha Krishan Anand & Co., Pacca Danga, Jammu*. p 4-5
[10] Ibid.
[11] Bates, C. E. (1873). Gazetteer of Kashmir p.216

the Sind, the largest of all tributaries at village Shadipur. The whole length of Jhelum from its source to Baramulla is 150miles.[12] This river was much used for navigation as the goods which come from Jammu over Banihal pass were taken by the coolis, ponies and bullock carts to the Khanabal from where taken to Srinagar by boats.[13] The main right hand side tributaries of the Jhelum in Kashmir valley are Sandran, Liddar, Sind, Madhumati, Pohru while the left hand side tributaries are Sukhnag, Shaliganga, Dudhganga, Romshi, Vishav etc.

Sandran: This river is one of the source of Jhelum, rises on the mountains in the neighbourhood of the Nand Marg pass[14]. It flows in a north-westerly direction through the Shahabad Valley and joins the waters of Breng and Arapath river at the village Harnag.

Breng river: It is also one among the several head waters of the Jhelum and took its rise at the foot of Brari Bal[15] (14300ft). It also receives the waters of Kokernag spring and Ararpth river of Kuthar. It joins the Jhelum between the Shahabad pargana and Islamabad.

Liddar: It is another tributary of Jhelum having a length of 73 kilometres. Having its origin from Kolahoi Glacier (4653 mts) and flows through Lidderwat and joins the river . This river has crystal blue water and is best suited for rafting.

Sind river: A deep and a rushing stream[16] and largest tributary of river Jhelum is formed by two streams which unite at Baltal towards the eastern extremity of the Sindh Valley.[17] The united waters form an impetuous torrent, which flows over a rocky bed in a westerly direction through the Sind Valley, and down which large quantities of timber from the adjacent forests are floated to Ganderbal. It receives the waters of numerous tributaries from the adjoining mountains and while reaching the Kashmir Valley bends towards the south-west and empties itself into Jhelum at Shadipur.[18]

[12] Ibid.p 216
[13] Fredric, D. (1971). The Jammoo And Kashmir Territories, London, 1875. *Reprinted in India by Oriental Publishers, Delhi*.p.164
[14] A pass which crosses the Pansal range at the south east extremity of the Shahabad Valley.
[15] Mountain pass which stood at the extreme south east point of the Valley.
[16] Neve, E. F. (1914). *Beyond the Pir Panjal, Etc.(Popular Edition.)*. Church Missionary Society.p.130
[17] Gazetteer of Kashmir,p.345
[18] Bates, C. E. (1873). op. cit,.p.345

Veshav River: This river rises in the Konsa Nag[19] and is one of the source of the Jhelum. The river at fist flows in a northerly direction and is joined by the Chitti Nadi near kangwattan. Then after a few miles it flows in the direction of Budil Pas where it is situated the cataract of Arabal. After leaving Arabal, the river joins the Rembiara at the village of Nowana and the united waters then find their way into Jhelum through the Sadarinaji Nala.[20]

Arpat River: This is also one of the tributary of Jhelum and takes its rise in Hairbal ki Gali[21] and flows down through the Kuthar pargana and joins the Jhelum near Islamabad.[22]

Dudh Ganga River: This river takes its rise on the eastern slopes of Panjal range, known at its course as the Sang-i-safed stream, flows down in a north easterly direction, debouching on to the plain a few miles north of the Chrar.[23] Then it passes through the suburbs of Batamalo and and Chattabal and joins the Jhelum below Safa Kadal in Srinagar. Dr. Elmslie calls this river the Chatsakol, or "the white stream", due to its rise near the white stone called Chats Kanyi.[24]

Pohru River: This river is formed by the junction of the kamil with the Lolab stream near the village of Mogulpur, from whence it flows in a southerly direction. It is 75 yards wide at its mouth and varies in depth according to season[25]. There are several villages and groves along the banks of the river and scenery looks very pretty.[26]

2.4 Climatic Conditions

The Kashmir region is situated in the sub-tropical climatic zone, however, it is cold due to its high altitude. Changes in temperature are frequent and sudden and weather varies between two extremes of temperature. Due to its peculiarities in the variation of temperature, Kashmir is classed into a separate climatic region as compared to other

[19] A mountain lake lying between the basaltic peaks of Panjal range at the south west extremity of the Valley of Kashmir.
[20] Bates, C. E. (1873). op. cit,.p.396
[21] A pass lying over the mountain range between the northern extremity of the Kuthar pargana and the Maru Wardwan Valley.
[22] Bates, C. E. (1873).p.126
[23] Ibid, p.184.
[24] Ibid.
[25] Ibid, p.31o
[26] Ibid.

regions of the state.[27]During the month of March, April and May one can witness a little bit cold and a showery spring. Although this season is wet but it is pleasant as the fresh green tints of the trees and the mountain sides being refreshing to the eye. From the month of June up to September the climate is mild, salubrious and invigorating. A number of retired Indian officers and Civil servants who cannot return to England were seen in Kashmir in spite of the restrictions imposed by the native Government. A new factor in the geographic development of Kashmir entered when it exercised the attraction by its climate and scenery upon the British journers during their rule in India.[28] July and August are the hottest months having high humidity but not oppressive. The autumn is dry and healthy. The lakes and water ways which are in many areas of Kashmir Valley make the atmosphere of surrounding areas damp and oppressive. Winters are very cold and severe. Winter season starts from November up to February. The first snowfall restores the cleanliness of the air. On mountains the first snowfall occurs in the month of November but the heavy snowfall begins about in the middle of December. The coldest months are December and January where the temperature goes below the freezing point. In some respects the climate of Kashmir is compared to the north eastern part of United States.

2.5 Soils and their classification

Kashmir Valley lies in the temperate zone with an alluvial soil rich in nitrogen and organic matter. This soil is of great fertility and every year it is renewed by the rich silt from the mountain strips.[29] It is divided into two classes the new alluvial soil found in the bays and deltas of mountain rivers and the old alluvial soil on the banks of river Jhelum up to the Karewa.[30] Traditionally, the Kashmiris recognize four types of soils which require special treatment during rice cultivation. These are *Grutu, Bahil, Sekil* and *Dazanlad.*[31]

Grutu: This type of soil is rich in clay and moisture owing its origin to the floods in the valley of Kashmir. It holds water in the days of scanty rainfall and is considered safest for rice cultivation.

[27] Raina, A. N. op.cit.p, 49.
[28] Huntington, E. (1906). The vale of Kashmir. *Bulletin of the American Geographical Society*, *38*(11), 657-682. P.664
[29] Younghusband, F. E., & Francis Younghusband, S. (1996). *Kashmir*. Asian Educational Services.p.204
[30] Lawrence, W. R. (1895). *The valley of Kashmir*. Asian Educational Services.p.319
[31] Ibid.

Bahi: It is the best kind of soil so far as its natural strength is concerned. One must be very cautious while applying manures as the optimum use will make the plant run to leaf.

Sekil: It is a light loam with sandy soil and when properly irrigated will give a better crop.

Dazanlad: This type of soil is chiefly found in the low lying areas near the swamps. It is very hot and does not require irrigation for a long time. The peculiar feature of this soil is that irrigation water turns red in colour.

In addition to the above mentioned soil types there are other minor soil types which are as follows:

Karewa Land: Karewas of Kashmir are the remarkable aspect of its physiography. These soils have a peculiar feature in the valley of Kashmir. These are plateaus of alluvial or lacustrine material. They are spread from Shopian to Baramulla a distance of about 120 km on the south west side of the Valley. The soils are loam and loamy clay towards south west and brown sand with hardness increasing in depth towards south east.

Kharzamin: This type of soil is saline in nature. It does not hold water and is unfit for cultivation.

Surzamin: This type of soil is highly manured and best suited for vegetable cultivation. It is best soil in fertility and is found in the vicinity of Srinagar and Tral.

Lamb Land: Generally the springs were found in this land and are not fit for any cultivation.

Zabil Zamin: This land comes into existence after being injured by percolation from irrigated fields.

Nambal Land or Swamps: It extends from Shadipur to Sopore and around Wullar Lake. It is mostly water logged and is not fit for rice cultivation.

2.6 Demographic Profile

Kashmir has been inhabited by human beings since the dawn of civilization. It was one of the most thinly populated areas in India. The population of the Valley in 1835 was 200,000 and in 1868 a census of the population of Srinagar was taken, whose accuracy

was doubted gave a figure of 112,715 persons among which 24,945 were Hindus and 87,770 were Muhammadans.[32]Another census of Kashmir province including Muzaffarabad and Frontier districts was taken in 1873 according to which the total population of Kashmir was 491,846[33] but 67,400 persons from the city and 174,220 persons from the villages were taken away by the devastating famine of 1877-79.[34] However the proper and accurate census of the state was taken in 1891. Since then regular censuses were taken at the end of each decade. The following tables show the province wise population and variation right from 1890:

Table 1.1 Province Wise population of the State

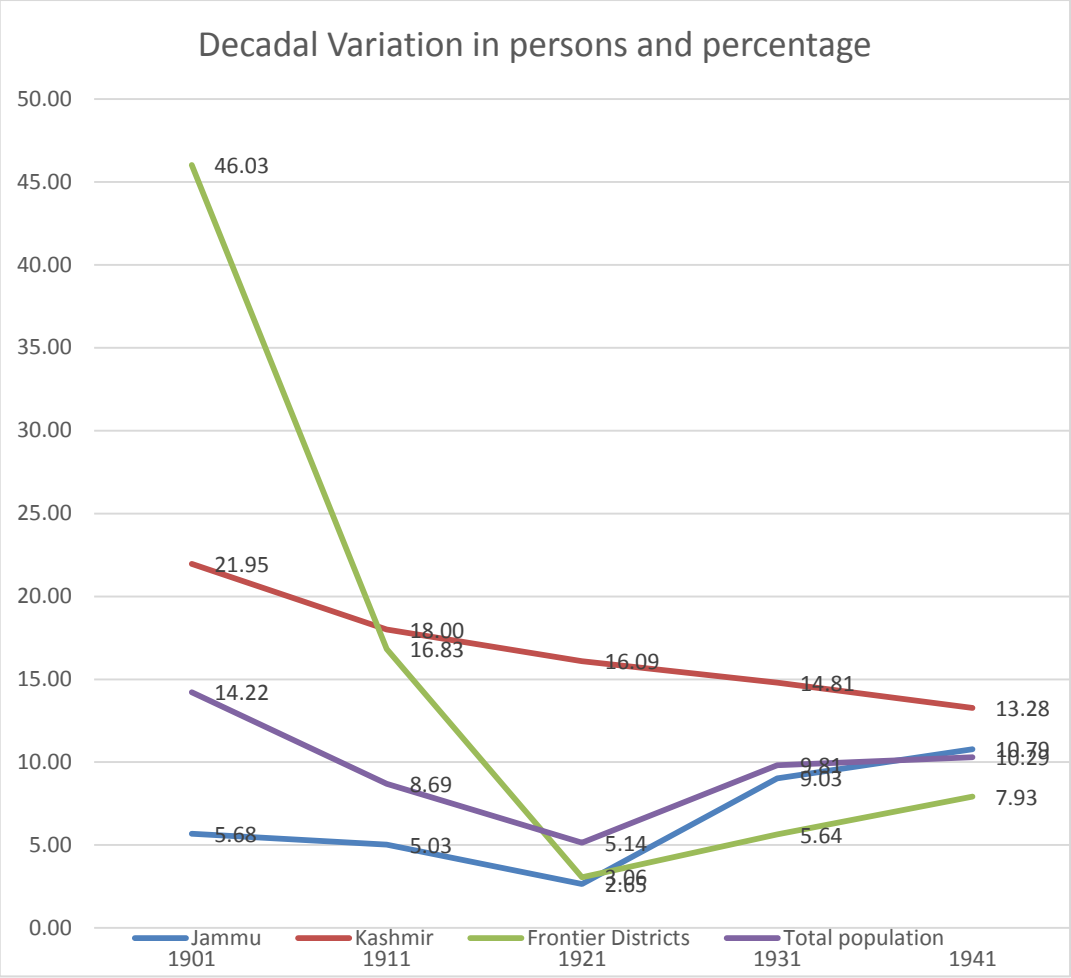
Province	1891	1901	1911	1921	1931	1941
Jammu	1,439,543	1,521,307	1,597,865	1,640,257	1788441	1981433
Kashmir	9,49,041	1,157,394	1,295,201	1,407,086	1,56,9218	1728705
Frontier Districts	1,55,368	2,26,877	2,65,060	2,73,173	288584	311478
Total population	2,543,952	2,905,578	3,158,126	3,320,516	3646243	4021616

Table 1.2 Decadal variations both in person and percentage

	1891-1901	1901-1911	1911-1921	1921-1931	1931-1941
Jammu	81,764 5.67%	76,558 5.03%	42,392 2.65%	1,48,184 9.03%	1,92,992 10.79%
Kashmir	2,08,353 21.95%	1,37,807 18.00%	1,11,885 16.08%	1,62,132 14.80%	1,59,487 13.27%
Frontier Districts	71,509 46.02%	38,183 16.82%	8,113 3.06%	15,411 5.64%	22,894 7.93%
Total Variation	3,61,626 14.21%	2,52,548 8.69%	1,62,390 5.14%	3,25,727 9.80%	3,75,373 10.29%

[32] Lawrence,op.cit p.223
[33] Ibid,p.24
[34] *Gazetteer of Kashmir and Ladakh*,p.24

Figure 2.1 Decadal Variation in Jammu and Kashmir from 1891-1941



The above table shows that there was a there was an increase of 779,664 persons in Kashmir from 1891-1941. There are so many factors which contributed for the increase in population of Kashmir like salubrious climate, rich and valuable forests, fertility of the soil, development in horticulture and also blessed with streams, navigable rivers and productive lakes. Moreover the birth rate among the Muslims was very high and Lawrence refers the observations of Montgomery who has pointed out that every woman has at an average ten to fourteen children.

2.6.1 Migration pattern

Social and economic profile of any region gets affected due to the movement of people from one place to another. The migration of the people of Valley was mostly due to its geo-physical features. Migration in the state was of five different kinds as mentioned in the Census Report of 1931, which are mentioned below:

i. **Casual:** The minor movement of people to the adjacent villages, towns, districts or provinces.

ii. **Temporary:** It includes the movement of people for the business and pilgrimage purposes and temporary demand for labour when new roads or railways are under construction.

iii. **Periodic:** The annual migration of people to different places at harvest time and also the seasonal migration of pastoral nomads.

iv. **Semi-permanent:** When the natives of one place reside and earn their living in another but retain their connections with their own homes, where they leave their families and to which they return in their old age and at more or less regular intervals in the mean-time.[35]

v. **Permanent:** It is when overcrowding drives people away or the superior attractions of some other locality induce people to settle there.[36]

The inhabitants of Punjab, North Western Frontier Provinces, Afghanistan and foreign countries were found in Kashmir province, mostly settled semi- permanently or permanently to carry out their trade, missionary work or employ of a state.[37] The casual migration to Kashmir was seen high in summer months from India and outside countries. The emigration was growing strong during winter in Kashmir when local people mostly the zamindars emigrate to Punjab and other provinces of British India to escape from the hard winter and also to supplement their work by labour.[38]

2.7 Valleys of Kashmir region

Kashmir, a celebrated Valley is perched securely among the Himalayas is approximately 84 miles in length and 20-25 miles in breadth. Inside this Valley we come across with several other beautiful valleys each of which is having its peculiar features. These valleys are mentioned below:

Bangus Valley: This Valley lies at an elevation of 10,000ft in the northern part of district Kupwara. It has its exclusive ecological combination like grasslands and flora at lower altitudes and coniferous forests. There is also a very wide range of flowers and medicinal plants in the slopes and meadows of side plateaus. It was widely utilised by

[35] Census of India, 1911. Vol.XX, Part II,P.74
[36] Census of India, 1931. Vol.XXIV, Part I,p.95
[37] Ibid, p.98
[38] Ibid.

the Gujjars for its excellent grasses which constitute one of the important livelihood options.

Breng Valley: The Valley is located in the Anantnag district of the state and it has got its name after the rivulet Brengi.[39] The valley spreads over 40 kilometres on both side of the Brengi and it connects Kashmir valley with the Jammu division via Sinthon top. This valley has been praised by a famous saint Sheikh Noor-ud-Din Wali(R.A) by his epithet "*Breng Gov Sonsun Preng"* means *Breng as a Golden Crown.*

Guraiz Valley: It lies in the north of Kashmir at an elevation of 7800 feet above the sea level on the banks of river Kishenganga.[40] The valley is enclosed by high peaks and glaciated mountains. The varied landscape, distinctive environment, climate, changing habitat and peculiar physical features of the valley are directly related to its splendid pastures, unparalleled beauty and above all rich bio diversity. One of the most beautiful scenes in the whole Kashmir is grove of huge poplars through which the traveller enters the Guraiz Valley.[41] It also contains rich dense coniferous and broad leaved forests. Besides this it is also a home to willows, a few crab apples, pears and walnut trees but the fruit is not of a good quality.[42] Due to its rigorous climate rice will not ripen in the valley.[43]

Liddar Valley: This valley lies in the south-east end of Kashmir Valley in a northerly direction from Islamabad (Anantnag) to Pahalgam covering an area of about 22 miles.[44]This valley is also gives a passage to Liddar river,one of the tributary of Jhelum. Above the Phalgam the valley bifurcated into two branches, one leading to Aru through which one can pass into Sindh valley and the other to Shish Nag and to the famous cave of Amaranth.[45]The valley is bounded by mountains having the beautiful woods and fine grassy uplands utilized by the Gujjars for their livestock.

Lolab Valley: The Lolab Valley, a miniature of Kashmir[46] lies at the western end of the Vale of Kashmir and on the northeast side of Kashmir province. The Valley is oval in

[39] One of the tributary of river Jhelum.
[40] Drew, F. (1877). *The Northern Barrier of India: A Popular Account of the Jummoo and Kashmir Territories*. London: E. Stanford. p.146.
[41] Lawrence.p.16.
[42]Bates, C. E. (1873). A Gazetteer of Kashmir and the Adjacent Districts of Kishtawar, p.199
[43]ibid
[44] Ibid,p.657
[45] Younghusband, op. cit.,p.113.
[46] Jalali. op. cit.,p.58

shape and is traversed by a considerable stream called Lahwal, intersected in all directions by numerous streams flowing down from surrounding hills.[47] The hills are entirely clothed with thick forests of deodar and pine trees. In the bottom of the valley are the beautiful stretches of soft green turf and also the groves of chinar, walnut, aple, cherry, alucha and peach trees. Younghusband compares Lolab valley with a series of English woodland glades, with additional beauty of snow peaks in the background.[48]

Wardwen Valley: The Wardwon, commonly known as Maru Wardwon Valley, is a luxuriant pasturage situated on the east of Kashmir.[49] It is a long and narrow defile of about fifty miles running north to south whose sides are very steep covered with fir trees. It is drained by the Wardwon river which rises from the snout of the Bhotkol glacier and joins the Chenab River. The upper poryion of the valley is called Wardwan, and the lower Maru.[50] The top of the Valley is flat with a streamlet flowing from the mountain side.[51]

Sindh Valley: The long and a narrow valley opening into the north side of Kashmir Valley is one of the most attractive and charming valley of Kashmir. According to Younghusband, "the most bold and striking of the side valleys is undoubtly the Sindh valley".[52] Sonamarg and Ganderbal are its two limits and beyond that is the province of Ladakh across the Zojila Pass. The famous Central Asian trade route passes through this Valley. The Valley is surrounded by lofty mountains usually covered with snow and precipitous sides are covered with large forests of pine. The climate is salubrious and has a number of camping grounds used by the visitors[53] to pass their best part of the season.

2.8 Margs of Kashmir region

The mountain downs, alpine or sub-alpine meadows in the inner Vale of Kashmir or simply open grasslands are locally known as margs in Kashmir. These are on the tops of the range of hills immediately below the Pir Panjal and also upon the northern slopes of

[47] Gazetteer of Kashmir and Ladakh,p.572
[48] Younghusband, op. cit. ,p.111
[49] Koul, S. C. (1971). *Beautiful valleys of Kashmir and Ladakh*. L. Koul.p.70
[50] Bates, C. E, op. cit.,p273
[51] Koul, S. C. op. cit.,p.71.
[52] Younghusband, op. cit.,p.108
[53] Mohand Marg, lying in this Valley was the abode of Sir Aurel Stein where he wrote out his researches and travels far away from the humdrum of life.

those mountains which enclose the north eastern side of the valley.[54] These margs are very charming and attract the tourists from all over the world. On account of their beauty, these margs were compared with the Alps of Switzerland. The green turf of these margs also provides sustenance to a large number of ponies, cattle, sheep and goats during the summer months. Some of the famous margs are as follows:

Gulmarg: Gulmarg lying at an elevation of 3000 feet above the sea level is situated on the slopes of Panjal range on the southwest side of the Valley of Kashmir.[55] It is one of the loveliest margs in Kashmir. The marg, shaped somewhat like figure 8 [56] is almost three miles long and one mile in width enclosed by the mountains which are crowned by thick forests of lofty pine trees that shut out all beyond and make the spot a most secluded one.[57] It is also covered with flowers and soft green turf, surrounded by forests of silver fir interspersed with spruce, blue pine, maple and a few horse chestnuts.[58] Originally it was a meadow used for grazing cattle, sheep and ponies and later on became the famous resort of Europeans. Every year it was visited by six or seven hundred Europeans for enjoying the summers here. It is a great holiday resort with the Gulmarg club as the hub of universe and meeting place of the lost friends, besides having a world famous golf course.

Khelanmarg: It is a small meadow about 100 feet above Gulmarg.[59] It covers an area of a mile in length and 400 yards in breadth and is well carpeted by an abundance of plant life and colourful flowers. A pony track straggles up under shady spruce, fir and apple trees and it will take the visitor about forty minutes to reach the end of the marg. The marg was the retreat of the galwans or horse keepers who tended their herds of cattle upon these mountain downs.[60]

Sonamarg: Also known as "The Golden Meadow" is a narrow grassy flat about 8650 feet above the sea level located in the Sind Valley about 58 miles northeast of Srinagar.[61] It is triangular in shape, encompassed by lofty mountains usually robed in

[54] Bates, C. E,p.9
[55] Ibid.,p.95
[56] Ibid.
[57] Drew, F.op. cit.,p.116
[58] Younghusband, pp.101-102.
[59] *Gazetteer of Kashmir and Ladakh p.497*
[60] Gazetteer of Kashmir and Ladakh p.497
[61] Younghusband,p. 108.

the snow.[62]The dells are covered with a long thick grass and numerous wild flowers, while the slopes of the hillocks have a growth of silver fir and other bright green trees beautifully intermingled.[63]

Tosha Maidan: It is a grassy valley lying on the east side of the Panjal range and served as the most direct path between Srinagar and Poonch with the name of Tosha maidan pass.[64] It is almost a plain, for the hills on all sides slope gently down to it, and the numerous streams which water it are divided by undulating ridges covered with luxuriant grass and wild flowers.[65] This meadow and velvety slopes, many miles in extent, were widely utilised by the shepherds for gazing.[66]

2.9 Lakes

Kashmir is known to the whole world for its fresh water lakes and mountain tarns. It is the only region in the sub-continent having lakes of various sizes and depths lying against the charming mountain backgrounds. Of the lakes, the Wular, the Dal and the Mansbal are the most important and beautiful.

Dal Lake: It is one of the chief attractions of the neighbourhood of Srinagar and one of the most beautiful spots in the world. It extends from 5 to 6 miles from east to west at its broadest point. The area of the lake as estimated by W.R. Lawrence in 1889 was 9.9846square miles, out of which 1890 acres consist of demb or fixed cultivation and the net area under water and floating gardens was 7.0346 square miles.[67] It is connected with Jhelum by a canal called the Tsunt-kul (Apple canal). It receives the waters of various streams and springs. On the three sides a mountain amphitheatre backs it, whose summit is from 3000 to 4000 feet above the sea level.[68] Below the mountain and at the edge of the lake are famous Mughal gardens Nishat and Shalimar. According to Lawrence the water of the Dal was so clear and soft as it was used by the people for

[62] Bates, C. E,p. 350.
[63] Drew, F.op. cit., p.121.
[64] Koul, S. C. op. cit.,23; The great Chinese traveller Hiuen Tsiang visited Pooch by this route in 633 A.D.
[65] Bates, C. E,p. 388.
[66] Koul, S. C. op. cit.,23 ; Lawrence, op. cit.,p.361.
[67] Lawrence, op. cit.,p.20.
[68] Drew, F. op.cit., p.141.

washing shawls.[69] The Naseem Bagh situated on the west shore of the lae is a garden of delicious breeze, once been planted with 1200 Chinar trees.[70]

Wular Lake: It is situated towards the north end of the Valley of Kashmir at a distance of 21 miles northwest of Srinagar. It is one of the largest lakes in India about twelve and a half miles by five miles in extent, with a breadth of 30 miles and depth of about 14-16 feet.[71] It is surrounded by the lofty mountains which tower over north and northeast of the Valley. The outline of the lake is very regular and its general appearance is picturesque and pleasing.[72] The water is clear and in the centre of the lake it is of deep green colour. The lotus and *Singhara* (water-chestnuts) are found in great abundance in the lake.[73]

Manasbal Lake: The Lake is situated about 12 miles northwest of Srinagar in the same direction as of Wular Lake. The lake is of two or three miles long and a mile in width.[74]It is oval in shape and is deepest of all the lakes in Kashmir. This deep, fresh and clear lake is set like a jewel among the mountains, with clumps and avenues of these same red and purple foliaged trees upon its edge, and reflecting in its surfaces the white snowy range of the distant Pir Panjal.[75] Near the edge of the water is the small village of Manasbal and on the south there is a low range of hills extending from the lofty mountains. On the northeast, the conical peak called Aha-Tung is 6,290 feet high and is visible from many distant parts of the Valley.[76]

Anchar Lake: The Lake lies to the north west of Srinagar and is connected with the Dal Lake through a channel called Nalah Mar. According to Walter Lawrence; it was 3.5 miles in length, 2.15 miles in breadth and covered an area of 7.5465 square miles.[77] The lake was of great economic importance, as it yielded a famous lake product in the form of a vegetable called 'Nadru' (lotus root) in large quantities consumed by the native

[69] Lawrence, p.21
[70] Jalali, J.L.K.,p.46
[71]Lawrence, op. cit.p.20; Frederic, D. (1971). *Jammu and Kashmir Territories-A Geographical Account*.pp 166-67.
[72] Bates, C. E,p. 403
[73] Ibid, 402 ; Lawrence,p.354
[74] Frederic, D. (1971). Op. cit., p.167
[75] Younghusband,p. 37
[76] Gazetteer of Kashmir and Ladakh p.584
[77] Lawrence, op. cit.p.20

people. It was also a good place for duck and snipe-shooting in winter months and lotus and lilies were found here in profusion during the month of August.[78]

2.10 Mountain Lakes

Besides these lakes which receive their waters from the snow caped mountains, there are other lakes know as mountain tarns or mountain lakes. Most of them are formed due to the glacial action. Among the mountain lakes, Konsar Nag, Shish Nag, Gangabal Nag and Sarbal Nag are the most important.

i. Gangabal Lake: It is a lake situated on the Harmukh mountain slopes and lies at an elevation of 1200 feet. It is about one and a half miles in its length and 200 or 300 yards in breadth.[79] The lake is about 35 miles from north of Srinagar and can be reached by a path from Wangat. It is very famous and sacred to the Hindus, where they consighn the ashes of the dead.[80]

ii. Kaunsar Nag: This mountain lake lies between the basaltic peaks of the Panjal range at the south west extremity of the valley of Kashmir.

2.10 Vegetation

Due to the varied climatic and altitudinal conditions, the natural vegetation of Kashmir is also rich and varied. It ranges from the lush green alpine pastures to evergreen conifers on the gentle slopes of higher altitudes and deciduous vegetation with numerous types of fruit trees on the valley floor. Vegetation in the Kashmir is divided into two main ecological zones; the Valley zone and the mountain zone.[81] The main valley between 1500-2300 metres altitude constitutes the valley zone and the vegetation of this zone includes agro-ecosystem vegetation, aquatic and wetland vegetation. The mountain zone extends from 1600 metres up to the highest peak in the region and it includes the forest and meadowland vegetation. In the Kashmir province, forests occupy 58.4 per cent of the total area and in the Baramula and Anantnag district this percentage is about 70 per cent and 60 per cent respectively. The Jhelum Forest Division which stretches from Gulmarg to Lolab Valley constitutes the species of cedar, fir and spruce. Panjal range which extends over an area of 1400 sq. km has different

[78] *A Hand Book of Jammu and Kashmir State,* p.8
[79] *Gazetteer of Kashmir and Ladkah*,p.322.
[80] Jalali,op.cit., p.5
[81] M., DAR, G., & KHUROO, A. (2013). *Floristic diversity in the Kashmir Himalaya: progress, problems and prospects. Sains Malaysiana*, *42*(10), p.1379.

vegetation from the valley of Kashmir. The dominant flora of this range constitutes Pine, Deodar, Silver fir, Spruce and the lower slopes are found with nutritive grass and sub-Alpine herbs.[82] These Alpine meadows have a great economic importance as they are utilised by the Gujjars and Bakerwals for grazing their livestock during summer and autumn months.

2.11 Sport-Hunting

Hunting was recognised and practised as a popular sport by the adventure loving people of the ruling community during British rule in India. Colonial hunting which emerged in the late 19th century reflects the changing nature of the Colonial state and also a new imperial ideology of dominance. The importance given to the hunting and to the notion of fair play while hunting reflects the moral and physical superiority of British rulers. During British rule, hunting was considered to be a popular sport by the adventure loving members of the ruling community. It not only provided an opportunity to test one's marksmanship and sporting expertise but also demonstrated the control and mastery of the ruling community over the natural and human resources of Colonial India. Hunting expeditions were there for viceroys, governors and high officials. Almost all the magistrates, revenue collectors and other officials played a very important and active role in field sports.[83] Hunting for sport was integral not only to the lifestyle of officials but also to the self-image as men who believed in fair play.[84] The British officials often considered themselves as brave enough to face large and hostile beasts. Sport was a term used to describe certain specific kinds of hunting. These were identified on the basis of variety of circumstances, including the purpose, the techniques and the identity of the hunter. Sport was said to maintain the physical fitness of the hunter and develop qualities of leadership.[85]

The hunting reinforced the sense of superiority to British civil and military officials over Indians. Besides this hunting by British sportsmen became another indirect way to dominate their culture over the natives which also was the victory of European culture over nature. The British after establishing their indirect control over Kashmir, began to make Kashmir a sporting ground for own game hunters. With the advent of the spring

[82] Raina, A. N. op. cit,.p, 70
[83] Temple, R. (1882). *Men and events of my time in India*. London: J. Murray.
[84]Rangarajan, M. (1998). *The Raj and the natural world: The war against'dangerous beasts' in colonial India. Studies in history*, *14*(2), 265-299.
[85] Webber, T. W. (1902). *The Forests of Upper India and their inhabitants*. E. Arnold, pp.317-18.

season, a large number of sportsmen started their journey towards the country of Kashmir. By the turn of twentieth century, the princely state had become a paradise of big game hunters of British Raj. With the advent of spring season, large numbers of enthusiastic British sportsmen start entering into the happy Valley of Kashmir. Since Kashmir had a climate akin to England, it attracted Europeans in fair numbers; both tourists and adventurers thus became the favourable destination for hunting. They came to the region for shooting and stayed for a period of 2-5 months at a time, in Kashmir Valley during the initial years and later on in the early twentieth century they were travelling to the highlands of Baltistan, Gilgit, Ladakh and Hunza. Srinagar was the starting point where from all the arrangements were made for these sportsmen for hunting purpose. The British sportsmen were accompanied by a local Shikari- one who had been a professional hunter, for their shooting trip who would help them in providing the local knowledge and guide all the way. The whole hunting party consisted of a single officer, accompanied by a cook, a second shikari and somewhere between 20-30 porters.[86] The British sportsmen were very careful while planning their trips for shooting. They were staying in the tents placed on the most favourable ground and away from the sleeping places of porters.

2.11.1 Game Laws

It was only in the late 19th century that the Kashmir Game Preservation Department was set up and before that there were no game laws prevalent in the region. The sportsmen were shooting a large number of wild game and some of them were shooting as many as 30 trophies in one season.[87] The decrease in the game of Kashmir in 1890 forced the state to re-introduce the rules for the preservation of Bara sing, Ibex and Musk deer which had fallen into abeyance after the death of Mahraja Ranbir Singh.[88] The Kashmir Game Preservation Department was created in 1901 to preserve the wild animals and birds for royal recreation and sport, framed and placed under the charge of a British Officer, sportsmen Major Wigram.[89] He conducted extensive tours of the state and established a number of sanctuaries and reserves. There were certain places preserved

[86] Hussain, S. (2010). *Sports-hunting, fairness and colonial identity: Collaboration and subversion in the north-western frontier region of the British Indian Empire.* Conservation and Society, 8(2), 112.
[87] Darrah, H. Z. (1898). *Sport in the Highlands of Kashmir: Being a Narrative of an Eight Months' Trip in Baltistan and Ladakh, and a Lady's Experiences in the Latter Country: Together with Hints for the Guidance of Sportsmen. R. Ward, limited*.,p.2
[88] Lawrence, W. R. (1895). *The valley of Kashmir.* Asian Educational Services.p.111
[89] File No. 109/K-81 of 1901,OER, JKSA, JR.

mainly for the Maharaja's own use and for his guests and general public was not allowed to shoot in that area.[90] The *rakhs* and *shikarghars* during the period 1885-1947, were preserved for Game for Royal use, where Maharaja at times would be accompanied by his foreign guests and dignitaries. The main aim of the Department was to lower down the pressure of hunting by introducing some rules which would be followed during the shoot. The hunting of the colonial officers and sports hunters was limited up to some extent while the hunting by native hunters was considered to be illegal or out of their reach. Each shikari had to be registered with the Kashmir Game Preservation Department. But despite these game laws, the population of the local Markhors continued to diminish in the first decade of twentieth century. There was no scientific management of the wildlife and the reckless shooting of wildlife can be gauged from the fact that the shikari is reported to have killed on an average 4000 birds each year between 1907 and 1919.[91]This has forced the Kashmir Game Preservation Department to revise its game laws and put a complete ban on Markhor shooting mainly in the Gilgit and Skardu which were having biggest population of Markhors. The Game Law Notification of 1913-14 stated that "killing of Markhor is prohibited in all nallahs flowing in to Indus above Rondu in Baltistan. Koenigsmarek mentions some of the elements of revised game laws:

"Each aspirant receives a clearly defined district, and may only shoot a certain number of heads of the game. For every sixty rupees one is entitled to shoot two Markhors, two black bears and one Red Bear."[92]

The number of head of various kind of game which sportsmen may shoot is laid down and also the number of sportsmen permitted to visit each locality in the year is fixed.[93] The allotment of places among the numerous applicants was also determined.

2.11.2 Game Animals and Shooting Routes

While shooting in Kashmir one has to determine what kind of animal a hunter is going to shoot and accordingly will reach near to his habitat. There was the choice for the sportsmen to use four different tracts of the country. The first lie in the vicinity of

[90] File No. 155/P-105 of 1910, ,OER, JKSA, JR
[91] Jamwal, J.S,(1980), *Wildlife through Ages in J and K State*, Proceedings of State Forestry Conference, J&K State,pp 120-24.
[92] Königsmarck, H. (1910). *The Markhor, Sport in Cashmere*. Paul,pp.94-95.
[93] *Younghusband, F. E., & Francis Younghusband, S. (1996). Kashmir. Asian Educational Services., p.119.*

Kashmir Valley, where there lie the Wardwan nullahs, Sindh Valley, Wular lake country all of which were holding a game. There were plenty of black bears, ibex in the Wardwan nullahs. There were Red bear in Tilel as well but mostly they were found in Kishtiwar. Kashmir Stag or bara sing continue year after year to march from west to east during September and October and their line runs within a few marches of Srinagar all the way, from Tragbal Pas on the Gilgit road, up Sind valley and across the Wardwan.[94] The second tract lie east up in the Sindh Valley in to the Ladakh. The game animals found here are Ovis ammon and Tibetan antelope along with a chance of sharpu, burhel.[95] The third one lie north to the Baltistan with Ibex as the object of pursuit or to Astor and Gilgit after Markhor. And the fourth one lies the difficult country of Chilas on the west of Gilgit road. Among the games mentioned in the licences, the following are the most important animals, any one of which may be the object of a shooting expedition.

1. Red and Black Bear *(Ursus arctos and Ursus torquatus)*
2. Ovis Ammon.
3. Markhor *(Capra falconeri).*
4. Ibex *(C. Sibirica).*
5. Kashmir Stag or Bara Singh *(Cervus Duvauceli).*

Black bears are found in all the nullahs running up in to the mountains from the Valley, from Baramulla to Islamabad (Anantnag). During the fruit season the black bear is very obnoxious to the villagers residing near the hills, and its ravages in the gardens and corn fields are often very considerable.[96] Tilail was the good nullah for red bear and were also found in Gagai, west of Kazalwan, on the Gilgit road and the Pulwar nullah, due east of Traghbal choki. The best time of the year for the red bear is in March, April and May when they still got long winter coats and when they are to be found on any grassy slopes below the snow. The Bara sing or hangul is found in Lolab, Lar, the Sind valley, Gurais, Tilail, Dachinpara, Wardwan and throughout the Panjal range. The Markhor is a species of gigantic goat is migratory and is found all over the Pir Panjal range beyond

[94] Aflalo, F. G. (Ed.). (1904*). The sportsman's book for India. H. Marshall & Son,p.141*
[95] Ibid.
[96] Bates, C.E (1980), *A gazeteer of Kashmír and the adjacent districts of Kishtwar, Badrawár, Jamu, Naoshera, Punch, and the valley of the Kishen Ganga. Light & Life Publishers, p.26.*

the Baramulla Pass and up on the mountains between the Jhelum and Kishenganga rivers, including Gurais and Tilail.[97]

2.11.3 Colonial Masculinity: British sportsmen and Indigenous Shikari

The practise of indigenous hunters which were in competition with the British sportsmen were highly criticised mostly on the grounds of fairness that these indigenous hunters does not follow a fair hunting code which is followed by sportsmen. Such an insulting remarks on indigenous hunting practices were popular although the British sportsmen were aware about this fact that hunting for sport for them was not their main motive. As already mentioned above that when the game laws were introduced, hunting was considered illegal for indigenous society. There was a law regarding the purchase of license for hunting and the license fee for indigenous hunters was so high that it was well out of their reach. Hunting for Englishmen was merely a sport while for local shikari it was subsistence. In the indigenous hunting practices, the fairness in hunting does not exist at especially when we conceive hunting as a sport. They were not restraining the self and hunted opportunistically round the year especially during the summer months when they were on the high pastures for herding their livestock. However this does not mean that the concept of fair hunting and importance of trophies was not present in the indigenous hunting practices. For them the fairness and importance of trophies was set within a different set of beliefs about nature and relationship between nature and society. If we talk of the indigenous belief system, the competitive and adversarial mode in hunting did not acquire either between nature and society or between two individuals as seen in sport hunting. In sport hunting the main aim was to win over nature through fair and healthy competition while in indigenous hunting practices the only aim was to win subsistence from nature through the process of fair exchange. These two different concepts regarding hunting reflect two different types of relationship between nature and society and hence two different types of moral ecologies. While hunting, the indigenous hunter does not ask for the best hunt, rather he wants weakest, lamest and even blind. While on the other hand sportsman was looking for what he deserved which was determined by his own abilities rather than the agency of nature in indigenous hunting case.

[97] Ibid.

For claiming the superior self-identity, hunting became a popular means for the British during the late 19th century and early 20th century. The fair hunting codes that were applied by the British in colonial India proved of a little success in making hunting a fair sport in reality. At the end of first quarter of 20th century, the population of many game animals had suffered considerably mostly due to the brutal onslaught at the hands of British sportsmen. The game laws which were introduced in order to regulate the hunting practices of both the British sportsmen and indigenous hunters did not contribute to the recovery of local wildlife population. It was only due to the different governance that some game animals were recovered and were treated as protected species within their habitats. Thus the fair hunting codes applied by the colonial hunters were only having an unfair impact on the local society. No doubt hunting remained a chief attraction of Kashmir during Dogra rule but colonial sportsmen always considered it their own game and continued to remain dominant over the indigenous shikari's with whose guidance and support they were able to shoot effectively in Kashmir.

Chapter 3
Agro- Ecology of Kashmir

Chapter 3

Agro-Ecology of Kashmir

Agro-ecology means a study on the relationship between the state communities and micro level ecosystems consisted of forests, soil, agriculture, aquatic systems and other forms of bio and ecospheres. It implies the application of ecological approach to the study, development and the management of sustainable agro –ecosystem. It encompasses the relationship between agricultural production system and ecological processes. Generally we can say that it deals with various topics and questions related to agriculture. The concept of agro-ecology came into existence in 1930s and remained in its preliminary phase of development until 1960s. The concept grew stronger and expanded further in 1990s and then it became consolidated and institutionalised. It was in this period the term was more particularly used to describe a movement in USA and Latin America to depict a new approach of considering agriculture and its connection to society and its position within it.

The research in the field of agriculture from the last decade focussed mainly on the maximization of production as compared to the optimum usage of agro-ecosystem. Now-a-days both the objectives are taken in consideration for increasing the agricultural productivity by not misbalancing the ecological set up for agricultural activities. This creates a balance between the agricultural development and agro-ecological systems, thereby provides a sustainable basis for agricultural activity.

Different varieties of fruits have been the part of man's food from the ancient past. If we have a look on the Vedic literature, religious books and testaments, date-palm is the earliest fruit grown by man and finds its record as early as 7000 B.C. Various other fruits which are mentioned in ancient literature are pomegranate, fig, olive, grapes etc. Horticulture in India has been a vital profession in the pre-Buddhist period. The Mughal emperor Babur has also cited in his accounts the existence of some citrus fruits in the early 16th century as the orcharding was one of the interests of the Mughal rulers. The Portuguese had led to the introduction of pineapple and papaya in India.[1] During 19th

[1] Bajpai, P. N., Shukla, H. S., & Chaturvedi, O. P. (1985). History importance and scope of tropical and subtropical fruits in India. *Fruits of India: tropical and subtropical/edited [by] TK Bose*.p.1.

century, Europeans introduced several fruits and had contributed in establishing commercial orchards in India. In the 16th century during the first European contacts, India was lacking sophisticated and scientific plant culture. The European botanists learned very well not only about the plants but also developed a keen interest in how and where these plants will show better results, thereby play the role of early environmentalist.[2] Fruit culture in India began to start and develop faster during British rule due to the improvement in irrigation, transport and other facilities.

Horticulture is one of the farming systems practiced in the Himalayan zone and occupies a pivotal place in the economic process. It is well known fact that the Himalayan region had a varied climatic zones which are well suitable for growing temperate, sub-tropical and tropical fruits. In the elevation of 1000-3000 metres above the sea level are grown the fruits mostly the temperate ones like apple, pear, peach, plum, apricot, cherry, walnut, hazelnut.

The establishment of Indian Council of Agriculture Research in 1929, led to the organised work in the development of orcharding in India and prior to its establishment, development of horticulture was the responsibility of states only. During 1929 to 1954 numerous research stations were established in different states with the help of ICAR.[3]

The salubrious climate and the peculiar topographical conditions of Kashmir are ideal for horticulture development. The Kashmir region is known for its beauty, variety and lusciousness of her fruits which finds a ready welcome in the most fastidious markets of India. The wiser farmers prefer horticulture to agriculture as the former is much more remunerative and once the orchard comes into bearing, and it involves comparatively little outlay and labour for maintenance. From the ancient past, Kashmir witnessed the cultivation of fruits. Kalhana in his introduction to *Rajatarngni* when referring to the famous Kashmir Valley says: "It is a country where sun the shines mildly being the place created by Kashayapa as if for his glory. High temples, the saffron, iced water and grapes (which are rare even in heaven), are rare here. He has also mentioned that grapes were grown in abundance in Kashmir besides other fruits like apples, which he also referred in it.[4] The famous traveller Alberuni in his account has mentioned about the

[2] Grove, R. H. (1997). *Ecology, climate and empire: Colonialism and global environmental history, 1400-1940*. Harry Ransom Humanities Research Center.
[3] Ibid.
[4] Stein, M. A. (2007). Kalhana's Rajatarngni, Vol I. London, p.42.

numerous fruits existed in Kashmir.[5] In *Tarikh-i-Rashidi*, Mirza Haider Dughlat has mentioned that fruits in Kashmir were so abundant that it was rarely brought and sold. The situation was like that the holder of the garden and the man without a garden was almost the alike. The gardens were open and nobody was objected to take away the fruit.[6] Baron Won Hugel, who had travelled Kashmir in thirties of 19th century, had considered the fruits of Kashmir far superior than of other countries in excellence as well as in abundance.[7] Walter Lawrence had called Kashmir the country of fruits and horticulture facilities of no other country are of such degree as the indigenous apples, pear, vine, mulberry, walnut, hazel, cherry, peach, apricot and various other fruits can be obtained easily in most parts of the Valley.[8] The production of fruits in Kashmir was so abundant that during Dogra period considerable proportion of fruits was seen on the ground either eaten by the cattle or spoiled on the ground.[9] The major hindrance to this industry during the early years of Dogra rule was the lack of proper means of transport and communication which affected the economy of the people as large quantity of frits rotted in the orchards. The people were carrying the fruit boxes on their back over the rough and steep mountain passes across the mountains to the plains in the south for sale.[10] But the whole process was quite difficult and a large proportion was left at home.

Horticulture in Kashmir was also significant from the economic point of view as well. A large number of population was associated with this sector. Besides being an item of food, it was also important so far internal and external trade of Kashmir was concerned. During the period of our study various varieties of fruits were grown in Kashmir. A list of thirty two kinds of fruits including the wild ones is mentioned by Hassan Khiuhami, who was the contemporary of the first three Dogra rulers.[11]

Apple *(Tsunt)*: Apple now-a-days is the most popular fruit in Kashmir. It was grown widely during the Dogra period. As far as the area under its cover and the people associated with it, apple finds its place among the leading fruits of the Valley. Among

[5] Bamzai, P. N. K. (1987*). Socio-economic history of Kashmir, 1846-1925*. Metropolitan Book Co,p.146.
[6] Dughlat, M. H. (1895). *Tarikh-i-Rashidi*, tr. N. Elias and E. Denison Ross, London,p.425.
[7] Charles Ellision Bates (1992), *Gazetteer of Kashmir and Ladakh*, Manas Publivations, Delhi,p.45.
[8] Lawrence, W. R. (2005). *The valley of Kashmir*. Asian Educational Services.p.348.
[9] Knight, E. F. (1993). *Where Three Empires Meet: A Narrative of Recent Travel in Kashmir, Western Tibet, Gilgit, and the Adjoining Countries*. Asian Educational Services.p.19.
[10] Younghusband, F. E., & Francis Younghusband, S. (1996). *Kashmir*. Asian Educational Services,p.177.
[11] Khuihami, Hassan (1998). *Tarikh-i-Hasan, Vol.I,Translated into Urdu by Dr. Shamsu-ud-Din Ahmad, City Book Centre, Srinagar,pp.247-49.*

the various varieties of apple grown in Kashmir, *amri* was the most popular one and was found in the Shopian pargana.[12] It was very delicious in taste and its yield was higher than other varieties produced in Kashmir. For its sweetness and handsome appearance, this was exported in large quantities to other parts of the country.[13] After *amri,* the next in place was *Khuddu sari* apple which is said to have been introduced from Kabul. Another variety was *trel* which was smaller in size and was mostly grown in and around Sopore. Trel was also of three varieties i.e. *Nabadi, Jambsi* and *Sil trel.*[14] The *Nabadi* was yellow, second red and the third one was deep red in colour. Among all the varieties of apples present in Kashmir, the local inhabitants gave preference to the dud amri because of its sweetness and finest flavour among amri varieties. Apple was an important item of trade and was exported to Punjab due to its market there. The ponies in the autumn season were being heavily laden with apple boxes and other fruits to transport it to other parts of India.[15]

Pear *(Tung):* Pear was also an important fruit during the Dogra period which had come to Kashmir from Central Asia.[16] There were also the tree varieties of pear found in Kashmir i.e. *Nakh, Farash* and *Khar tang*. The important one was the *Nakh* due to its large size and juicy in nature. Later on the pears from France were introduced in Kashmir during the period of Ranbir Singh.[17] Dr. Elmslie has mentioned that *tanj* a species of pear having thick skin was also grown in Kashmir which was having its varieties like *tsok tanj, moder tanj, khar tanj* and *sira tanj*.[18] Like apples, pears were also grown in wild varieties and later production was enhanced with the grafting.

Grapes *(Dach):* Grapes were found in Kashmir from the ancient time. Kalhana had mentioned about their cultivation in *Rajatarngni* as well. During the time of Mughal as well, grapes were plentiful and also the wild wines were often seen.[19] Moorcroft has mentioned that there were ten to twenty varieties of grapes found in Kashmir.[20] The cultivation of grapes flourished in Maharaja Ranbir Singh's period who gave an

[12] Naik, S.A, (2014), Economy of Kashmir Under the Dogras (Unpublished Doctoral Thesis), University of Aligarh, Aligarh,p.60.
[13] Lawrence, op.cit.,p.349
[14] Ibid. See also Younghusband, op.cit.,p.247.
[15] Ibid, p.350
[16] Naik,op.cit.,p.61.
[17] Lawrence,op.cit.,p.351.
[18] Bates, op.cit.,p.49. Dr. Elmslie was on a medical mission in Kashmir in 1865-69.
[19] Younghusband, op.cit.,p.198.
[20] Moorcroft, W., & Trebeck, G. (1841). *Travels in the Himalayan Provinces of Hindustan and the Panjab: In Ladakh and Kashmir; in Peshawar, Kabul, Kunduz, and Bokhara (Vol. 2).* J. Murray,p.150.

impetus to this fruit as he brought some cuttings from France which were later planted in Chashma Shahi garden on an area of 1500 acres of land.

Quince *(Bumtsunt)*: This fruit was also grown in the Valley of Kashmir. It was of two varieties i.e. *mudur bumtsunt* (sweet quince) and *tsok bumtsnut* (sour quince), both were generally popular in Kashmir.[21] Besides being an important food item, it was significant economically as well as its seeds were exported to Punjab where it had great demand. It was found around the Dal lake and everywhere in the apple orchards of the Valley.[22]

Cherry *(Gilas):* Cherries were found everywhere in the Valley of Kashmir. Sweet, sour and bitter are the three varieties found in Kashmir. There is no need to add manure or water as they grew wild.[23]

Hops: Hops in Kashmir were also introduced during the reign of Mahraja Ranbir Singh. It was a state monopoly and was mainly found in the vicinity of Dubgam Sopore near river Jhelum.[24] Because of its superior quality, even the breweries owners yearned to get land in Kashmir for its cultivation.[25] The government also collected income tax from this fruit.[26] It was used for making the beer and transported to Muree and other breweries in India.[27]

Walnut *(Doon):* The tree is indigenous to the country and is known in the Kashmir by the name of *doon.* The varieties of walnut found during the period of our study are *kagzi*, *burzul* and *vont doon.* Kagzi is esily breakable and had excellent kernel. So far as the hardness is concerned, burzul stands between the other two categories.[28] The vont doon due to its hard cover is less valuable as its kernel comes out in pieces.[29] A mature tree can yield about four to six thousand nuts annually and some trees can even exceed the limit.[30] Walnut is especially used as the food item during winter season as it keeps the body warm. Moreover oil was also extracted from it which was mostly utilised by

[21] Hassan, op.cit., vol.I,p.248.
[22] Lawrence, op.cit.,p.351.
[23] Khuihami, Haasan (1957), *Tariekh-i-Hassan*, Vol.II, Urdu tr. M. Ibrahim, Srinagar,p.248.
[24] Younghusband, op.cit.,p.203.
[25] Wakefield, W. (1879). *The Happy Valley: Sketches of Kashmir & the Kashmiris*. London: S. Low, Marston, Searle, & Rivington,p.139.
[26] Bates,op.cit., p.62.
[27] Wakefield,op.cit.,139. See also Ernest, N. F, (1912), Beyond the Pir Panjal: Life Among the Mountains and Valleys of Kashmir,p.61.
[28] Lawrence, op.cit.,p.62
[29] Younghusband, op.cit.,pp.170-71. See also Bates,op.cit.,p.46.
[30] Ibid.

the native people. Annually, the walnut kernel of about12,000 ass loads were appropriated to oil press in Kashmir.[31] The wood of the walnut was used for making furniture and gunstocks and the hard shell of the walnut fruit was used by the natives as fuel. The bark of the tree was used for cleaning the teeth.

Almond (Badam): Next to walnut, almond was another significant dry fruit grown during Dogra period.[32] Like walnut, oil was extracted from it and besides this was an item of trade. Its kernel was used for many purposes like khawa(Kashmiri tea), sweets and dishes.[33] Almonds are of two kinds i.e. sweet and bitter and the former is worth double than later.

Besides the above mentioned fruits, many other fruits were also grown in Kashmir like fig, pistachio-nut, filbert nut, pomegranate, barberries, currant, mulberry, and apricot. We can say that horticulture was an important sector of economy during the Dogra period.

3.1 Background

The shawl industry in Kashmir was well flourished and was having its market globally since establishment. The French firms in Paris began sending their agents for the purpose of shawls right from the year 1856. Among these agents one was the Mons Dauvergne who was on his duty in Kashmir for seventeen years from 1865-82.[34] During his stay he found a large quantity of grape wines growing in wild conditions in the Valley and an idea came up to his mind to prepare a wine for his own consumption. The success of this experiment reached up to the ears of Maharaja Ranbir Singh who was then the ruler of Jammu and Kashmir State and fortunately he allowed the Mons. Dauvergne to proceed further on behalf of the state. Dauvergne while giving explanations to His Highness said that the satisfactory results could only be achieved when the accredited varieties of vine were imported from Europe and an expert in the art of making wines were also engaged.[35] The Maharaja favoured his views and Dauvergne sought, through the agency of School of Horticulture at Versailles, the help

[31] Ibid,p.47.
[32] Ernest, N. F,op.cit.,p.18. See also Younghusband,op.cit.,p.71.
[33] Hassan,op.cit., vol.I,p.985.
[34] A.M.Peychaud in S.Playne,p.747.
[35] Ibid.

of Mons. Ermens.[36] While on his first tour he made a detailed investigation of soil, climate, rainfall and other conditions prevailing in the State. After submitting his report he was sent back to France to bring wine cuttings and machinery for making the wine. Being a gardener by profession he brought along with him the large number of young fruit trees which he believed can better survive in Kashmir along with the large quantity of implements required for wine manufacturing.[37] The vine cuttings and fruit trees were planted in Chashmashahi garden near Srinagar in 1875.[38] In 1880, he obtained the service of two experts, one to take charge of the vineyards and the other to undertake the manufacturing process. Ultimately these positions were held by Mons. L. Bouley and A. M. Peychaud. The manufacturing of the wine on large scale was met with a little success but at the same time they succeeded in providing good fruits of European types in Kashmir.[39] Here both the experts found large quantities of wild fruit trees such as apple, pears, apricots, peaches and plums in Kashmir forests. About 2000 of these trees were collected and grafted upon them the varieties of French trees as earlier stated by Mons. Ermens. Bouley however left the state in 1887 due to his illness and Peychaud alone continued the service with the help of Sirdar Roop Singh, the then Governor of Kashmir. They both collected the 25000 wild fruit stocks during the winters of 1886-87 and was the beginning of nursery in the state.[40] Grafted trees were then distributed to State gardens and Government officials and positive response were being received of their fruit bearing capabilities.[41]

3.2 Planning the Orchards (Departmental Operations)

A.M. Peychaud who left the state in 1892, once again came back to the Valley after a gap of five years in 1897, on the call of then Settlement commissioner J.L. Kaye. On his arrival he was much lamented not to see appearance of a nursery for young trees. He at once began to start the work of reconstruction and held an interview with Sir Louis Dane, the British resident in Kashmir in 1901 and later on with the approval of the State Government; a separate Horticulture Department was established in 1902.[42] Until 1902, horticulture operations in the state were carried out on a small scale, as a branch of

[36] File No.I/V-21/1916 of 1906(JK political Department). Mons. Ermens was formerly the head gardener of public parks in Paris and had returned from Egypt, where he had been laying out gardens for Khediv.
[37] Ibid.
[38] S.Playne, op.cit. p.747.
[39] Ibid. P.749.
[40] Annual Report, 1889-90,p.5. See also Annual Report, 1890-91,p.65.
[41] Annual Report, 1891-92,p.48, See also Annual report, 1894-95, p.31.
[42] Annual Report, 1901-04,p. XIII.

viticulture under the management of State Distillery and Vineyards. The government was much curious to extend these operations so as to make them one of the faithful sources of income to the State. In order to attain this objective, the government sanctioned a scheme in their Resolution dated 26th May 1902, under which a separate Department of Horticulture, quite independent of viticulture was brought into existence and was placed under the charge of Mr A.M Peychaud as its Director.[43]

Institutionalisation of Horticulture Department- The Department started its work with the establishment of four nurseries- Theed Bagh, Panjgam, Verinag and Naupura and the fresh varieties of fruits from the Europe were procured and planted in the nurseries. The trees from the nurseries were then distributed among Zamindars with a view of encouraging them to take deeper interest in cultivation.[44] The collection of fruits now comprised 398 different varieties, namely peach 42 kinds, plums 20, apples 148, pears 82, cider apples 12, cherries 16, apricots 32, filberts 10, Spanish chestnuts 12, table grapes 12 and wine grapes 12.[45]

3.2.1 Distribution of Fruit Trees

Before 1896, the young trees grafted in the state nurseries were supplied free of cost to the applicants residing in the state in order to encourage them for better classes of fruits. Due to the considerable demand, the Settlement Commissioner proposed a charge of 2 annas per tree which was later on sanctioned.[46] However in 1903, the government divided the varieties of fruit trees into two classes-

I- Peaches, apricots, almonds, walnut, vines, chinars.

II-Apples, pears, plums, cherries, chestnuts and all other species.

The Government proposed that for all the trees falling under class I, the rate of 2 annas per tree should be maintained while the trees of class II should be charged 4 annas per tree and should be applicable to the inhabitants of the state only and the same should be doubled if the applicant is foreigner and not the resident of the state.[47] In 1897, the issue of young grafted trees was small as of now free issue of trees was stopped and the

[43] *Triennial Administration Report of the Jammu and Kashmir State*, 1902-04,p.281.
[44] Annual Report, 1901-04,p. XIII
[45] S.Playne, op.cit.
[46] File No. 238/H-149 of 1907 OER.
[47] Ibid.

people generally did not understood it and as result several applicants withdrew their applications.[48] The following table will give the year wise details of trees distributed from the various nurseries maintained by the government.

Table 3.1 Distribution of Fruit Trees

Year	Number of Trees
1902-03	560
1903-04	14,695
1905-06	57,171
1906-07	60,749
1907-08	71,429
1908-09	72,617
1909-10	96,051
1910-11	81,218
1911-12	78,944
1912-13	49,382
1913-14	57,361
1914-15	58,783
1915-16	87,247
1916-17	13,290
1917-18	67,856
1918-19	53,524
1919-20	91,934
1920-21	51,282
1921-22	77,363
1922-23	39,891
1923-24	64,448

Source: Compiled from Annual Administrative Reports of Jammu and Kashmir State for the concerned years.

The above table provides the year wise details of the various kinds of young grafted fruit trees which were distributed among the Zamindars, non-Zamindars and state officials. Mostly the fruit trees among the zamindars were distributed free of charge and

[48] Annual Report, 1896-97, p.135.

the order was passed by the government that no prices will be charged from bonafide agriculturists while the cash payment was being received from the State Departments who were given the fruit trees for the improvement of various public gardens. The mode of payment was by book credit from the State Departments and cash on delivery in case of private individuals.[49] In order to obtain some idea as to the proportion of trees issued which survive, arrangements were made for the inspection of trees issued during the year 1912 and it was found that about two-thirds were found to be successfully planted.[50] The total number of fruit trees issued by the government from 1936-37 to 1938-39 was 484,000 trees.[51] During 1939-1940, a uniform method of distribution of plants at one anna per plant was adopted in both the provinces of the state.[52] The total number of plants issued during the year was 1, 34,359 of which 1, 26,980 were issued from nurseries in Kashmir Province and 7,379 from nurseries in Jammu Province. The number issued from Kashmir nurseries also include 2,455 plants which were exported outside state territories.[53] The varieties of fruit plants in order of demand were apples, almonds and cherries, for which the heavy demand exists in Kashmir province. Among the apples, the local *amri* has again started to be in greater demand, because the *amri* apples fetch better prices in the foreign markets than the European varieties and the Kashmiri *amri* as a variety has no competition so far.[54] During the year 1943-44, the total number of young grafted fruit plants distributed from the departmental nurseries was 1,63,964 at the flat rate of one anna per plant against 1,97,124 plants distributed during the previous year.[55] During 1944-45, the number of grafted trees for distribution went up to 1,37,562 plants with the same flat rate of one anna per plant and in addition to that private nursery men in Kashmir distributed about 30,000 plants besides about 50,000 almond seedlings.[56]

[49] *Annual Reports of the Horticulture and Vineyards Department, Kashmir*, 1914,p.3.
[50] Annual Report, 1913-14, pp.52-53.
[51] Annual Report, 1937-38, p.64.
[52] Annual Report, 1939-40, p. 93.
[53] Ibid.
[54] Annual Report, 1938-39, p. 121.
[55] Annual Report, 1943-44, p. 50.
[56] Annual Report,1944-45,p. 47

Table 3.2 Category wise plant distribution from Jammu and Kashmir Nurseries in 1942.

	From Kashmir Nurseries		From Jammu Nurseries	
Name of Variety	**Public Sale**	**Plantation in Departmental Gardens**	**Public Sale**	**Plantation in Departmental Gardens**
Apple	65,479	2256	1815	---
Pears	3875	27,968	595	---
Cherries	27,968	410	307	8
Plums	14,871	485	123	---
Apricot	8,293	217	17	---
Peaches	8,515	2017	344	43
Almonds	25,860	4,150	829	---
Walnuts	4500	12	315	---
Locust	3	---	---	42
chestnuts	868	---	---	---
Quince	16	---	---	---
Amlok	33	---	---	---
Pistachio	193	2	---	---
Fig	3	---	---	---
Pomegranates	107	---	161	---
Grapes	222	---	1	---
Horse Chestnut	---	150	---	---
Chinars	313	---	5	---
Bran	---	50	---	---
Poplars	184	150	---	---
Cypress	6	---	---	---
Deodar	6	---	---	---
Oak	10	---	---	---
Ornamental and flower plants	249	---	4368	---
Citrus plants	---	---	207	251
Total	**1,61,574**	**8,272**	**9,087**	**344**
Grand Total = 1,79,277				

Source: File No. PR/M-115A of 1942, Publicity Department, JKSA (J.R).

The above table clearly gives detailed description and actual number of the various kinds of fruit and other trees distributed among the zamindars or planted in the Departmental gardens in both the provinces of Kashmir as well as Jammu. The figures are of the year 1942, however the number of distribution along with the categories varies in each year. The general check of the fruit plants issued was made in all tehsils in order to find out the proportion of trees given away by the Department. In order to have continued check and advice the people for proper plantation, a post of Travelling Inspector was created in the year 1914.[57] The Department also sends peripatetic parties of gardeners to the villages to demonstrate to the zamindars the operations connected with orchard laying.

Table 3.3 Statement showing Tehsil wise distribution during 1942

Name of Tehsil	**Plants issued from Kashmir nurseries**	**Planted in Govt. Gardens in Kashmir**	**Plants issued from Jammu nurseries**	**Planted in Govt. Gardens in Jammu**
Tehsil Khas	8,6015	---	---	---
Pulwama	3,461	---	---	---
Handwara	19,373	---	---	---
Budgam	2644	---	---	---
Anantnag	12,742	---	---	---
Awantipoorah	5,074	---	---	---
Kulgam	10,689	---	---	---
Baramulla	16,635	---	---	---
Muzaffarabad	50	---	---	---
Uri	100	---	---	---
Udhampur	---	---	2,044	---
Ramban	---	---	604	---
Chenani Jagir	---	---	108	---
Ramnagar	---	---	345	---
Bhadarwah	---	---	796	---
Reyasi	---	---	246	---

[57] *Report on the Horticulture Department Kashmir*, 1913-14, p.3.

Kishtwar	---	---	99	---
Jammu	---	---	3,463	---
Akhnoor	---	---	295	---
Bimber	---	---	114	---
Ranbirsinghpura	---	---	491	---
Basoli	---	---	15	---
Jasmin Gadh	---	---	33	---
Sambha	---	---	211	---
Kathua	---	---	177	---
Mirpore	---	---	16	---
Export	4,791	---	30	---
Govt. gardens		8,272	---	344
Total	**1,61,574**	**8,272**	**9,087**	**344**
Grand Total= 1,79,277				

Source: File No. PR/M-115A of 1942, Publicity Department, JKSA (J.R)

3.2.2 Nursery Work

In order to facilitate the distribution of trees, several nurseries have been established at scattered places such as Theed Bagh, Panjgam, Verinag and Naupura. In a very first attempt, seeds weighing about sixteen maunds and twenty seers and 2800 walnuts were sown and 355,350 cuttings of different varieties were planted. The over-all figure of trees grafted was 25,000. Several kinds of fruits and flower trees were imported from Europe for extension of fruit cultivation in the Valley and experimental purposes.[58] The results of the Verinag nursery were unsatisfactory due to the unsuitability of the soil.

[58] *Triennial Administration Report of the Jammu and Kashmir State*, 1902-04,p.282.

Table 3.4 Nursery Work across the State Nurseries

Year	Quantity of Seeds sown for rearing fruits	Number of wild and indigenous plants raised	Number of trees grafted
1902-03	16 mounds, 20 Seers 2800 walnuts*	3,55,350	25,000
1903-04	8 mounds 36 seers 35,100 walnuts*	191,300	21,527
1910-11	--------	1,81,495	94,298
1911-12	8 mounds,1 seer	1,82,870	1,03,526
1912-13	1 maunds, 28 seer 16,550 walnuts*	2,09,100	1,10,600
1913-14	8 maunds 6 seers 26,300 Walnuts*	2,51,100	88,620
1914-15	1/3 of 8 mounds 6 seers	1,60,666	-------

Source: Compiled from Annual Administrative Reports of Jammu and Kashmir State for the concerned years (∗It also includes the horse and Spanish chestnut and English oak)

The above table clearly reflects the efforts of the government and more particularly of the Horticulture Department for developing this sector in the state on scientific lines. The nursery work started with the establishment of four nurseries in 1902 but later the work was limited to only three due to unsuitability of the soil of the fourth one. During 1911-12, the number of nurseries was increased from 3 to 5 and the Theed and Chashmashahi fruit orchards were transferred to the Horticulture Department in the same year.[59] The Naupura nursery was further enlarged by an addition of about 26 acres in 1912-13.[60] The practice of grafting the indigenous plants in villages and explaining to the people the bright future of this knowledge was adopted advantageously and the grafting hands were also led to the leading persons when requested for them free of charge on both seasons.[61] The people were now taking ken interest in this enterprise by cultivating the indigenous trees and getting them grafted either by themselves or by the nurserymen without any apprehensive impression. On the suggestion of Mr. Lovegrove, the Conservator of Forests, 21 walnut trees were grafted as an experimental measure in

[59] Annual Report, 1911-12, p.36.
[60] Annual Report, 1912-13, p.42.
[61] *Report on the Horticulture Department Kashmir*, 1913-14, p.3.

the Naupura nursery. As the walnut trees are generally reproduced from seeds but the Lovegrove observed that grafted trees produce fruit earlier and in large quantities than the non-grafted plants, as the same rule of nature applies to this plant as to the other fruits. [62] The wood of the grafted tree will not be as good and valuable as the wood of the same variety if not grafted. For the further development of the horticulture in the state, a committee was held and it was decided to make over horticulture work in Southern Tehsils to the Director of Agriculture and to utilize the Demonstration Orchards most of the numerous state *baghs* scattered in the Northern Tehsils and to start some additional nurseries in the parts of the Valley where need for such establishment is pronounced.[63] From 1915, under the new arrangement the Director of Agriculture in his horticultural work will be subordinate to the Provincial Governor and future Reports of the Horticulture Department will therefore relate to the Central and Northern Tehsils only.[64] The nursery work of the Department was further enhanced due to the large scale demand of the fruit trees and the number of the nurseries in the Kashmir Valley went up to 13 during 1934-34.[65] However the horticulture activities in the Jammu Province have stated quite late than in Kashmir and was firstly confined to the sub-tropical fruit plants for distribution among Zamindars. The number of trees distributed from Udey Wala nursery near Jammu was 1,196 in the year 1934-35 and 1,384 in 1935-36.[66] A small nursery for deciduous fruits has lately come into existence at Batote. Besides these nurseries, a number of Government orchards are maintained in which also the experiments in plantation, grafting etc. are conducted besides the production of fruit for sale. The number of these was 42 in 1934-35 and 37 in 1935-36.[67] It was from these nurseries the grafted plants were exported to British India, as 6,486 plants were exported during the year 1937-38 and the plants from Kashmir nurseries were also sent to deciduous fruit growing tracts in Jammu.[68]

The Nasim Bagh area near Srinagar was entirely reserved for the propagation of Arboriculture trees, particularly Chinars (plane trees) and poplars while the nursery at Kaloosa Bandipur was for almonds and Raipur nursery Srinagar for grapes.[69] Special

[62] Ibid.
[63] Annual Report, 1913-14, p.51.
[64] Ibid.
[65] Annual Report, 1934-35, p.19.
[66] Ibid.
[67] Ibid.
[68] Annual Report, 1937-38,p.64.
[69] Ibid.

ornamental plants were also raised at Nishat, Shalamar, Pratap Model Farm and Lalmandi Hot House.[70] Besides the nurseries established by the Department of Horticulture, the fruit nurseries were also being established by the big landlords of the Kashmir Province on commercial basis and were frequently visited by the concerned District Staff of the Department. Several private nurserymen in the Kashmir Province for the first time started the distribution of almond seedlings during 1938-39 and over 50,00 of such seedlings were sold by the nurserymen to the local zamindars.[71] A private nursery was also registered during 1940-41 in Srinagar Tehsil in which 20,000 grafts were available for distribution.[72]

3.2.3 Entomology (Spraying and Fumigation)

The state had gradually attempted to create legal, administrative policy apparently for the development of horticulture. San Jose Scale pest had been a very great concern to the Government, so to check its growth and to control it as far as possible that a Crop and Plant Act was promulgated in 1934.[73] The Act was to put a check on export and import of plant material from and into the notified areas, and makes preventive and remedial measures compulsory. The Act was operative in whole valley and Tehsils of Uri and Muzaffarabad. In 1935-36, Kud, Chenani, Batote and Banihal were also brought under its operation. Simultaneously the Department continued to devote its attention to other pests like the Woolly Aphis, the Fire Blight, Downy and Powdery Mildew of vine grape, grain store pests, the Rye disease of paddy in the fields as well as in the laboratory.[74] Trained technical labour, machinery are provided to the orchardists for spraying their fruit trees against San Jose Scale throughout the spraying season and the department spends about Rs 7500 annually on this account.[75]The spraying done at the cost of private orchardists was larger in volume as compared to the spraying work done by the Department in Government orchards. During the year 1939-40, 57,274 fruit trees , 3,23,592 nursery plants and 4,440 roses and other ornamental plants were sprayed in Government orchards while as in private orchards, 3,83,712 fruit trees and 14,210 other plants were sprayed at the cost of owners. As many as 19,089 gallons of diesel oil and 12, 241 pounds of fish oil soap were used in Government gardens and

[70] Annual Report, 1938-39, p.121.
[71] Ibid.
[72] Annual Report 1940-41, p.85.
[73] *Report on Administration of Jammu and Kashmir State*, 1933-35, p.20
[74] Ibid.
[75] File No. 13/Agr of 1937, JK Pol. JKSA, J.R.

7,829 gallons of diesel oil and 5,219 pounds of fish oil soap were used in private gardens.[76] Fumigation of plants was done with sodium cyanide and sulphuric acid on the occasion of plant distribution.[77] The Research section of the San Jose Scale and Woolly Aphis, financed by the Imperial Council of Agricultural Research was also started during the year 1939.[78] Picture demonstrations which were depicting the improved method of cultivation, harvesting and protection against the insects, pests and plant diseases of almost all the important agriculture and horticulture produce and also the working of improved implements were given to all the cultivators, usually on the occasion of village fair and on fixed season in the districts.[79]

3.3 Viticulture

As already mentioned, wine cuttings were first of all planted in Chashmashahi garden in 1875. It was after five years in 1880, that the wine cuttings began bearing grapes. Mons. Ermens made the first wine anyhow, but being ignorant of the art of making wine, he requested the state to allow him to engage the service of two specialists; one to attend and extend the vineyards and the other for the supervision of the wine manufacturing and distillery.[80] The two experts as earlier mentioned also were the Mons. L. Bouley and A. M. Peychaud, as the former held the charge of Vineyards and the later held the charge of manufacture of wine and distillery. After the departure of Bouley in 1887, Peychaud himself held the charge of vineyards and got the English varieties of grapes from Saharanpur Botanical Garden and grafted the vineyards here in the Valley in 1889.[81] Walter Lawrence after joining in the Settlement Department in Kashmir, gave a further push to the fruit cultivation by taking the trained men from the Peychaud and sending them round the villages, grafted as many trees as they could find suitable, but whether the villagers were doubtful about the quality of the fruit or its picture or were afraid of taxes, they opposed themselves to their trees being grafted afterwards, so the enterprise turned up a failure and was discontinued. Peychaud while coming back in 1897, have seen that the Phylloxera having destroyed the vines, large proportion of the vineyards have been rooted out in the Theed Bagh, Chashmashahi and Shirazi Bagh.[82]

[76] Annual Report, 1939-40, p. 94.
[77] Ibid.
[78] Annual Report, 1938-39, p.124.
[79] File No. 13-AGR of 1937, JK Political Department.
[80] File No. I/V-21 of 1916, Revenue Record, JKSAJR.
[81] Ibid.
[82] Ibid.

However the Theed Bagh and Chashmashahi fruit orchards were transferred to the Horticulture Department and the viticulture operations were confined in the Shirazi Bagh.

3.3.1 Production and Plantation

There were two types of grapes produced in the State vineyards that are black and white, which were supplied to the wine manufactory at Gupkar near Srinagar. The figures of the year 1900-01 shows that the total quantity of grapes produced during the year were 105 *kharwar* and 10 traks.[83] In 1901-02 it was 139 kharwar and 9 traks, 190 kharwar and 12 traks during 1902-03 and 202 kharwar and 10 traks in the year 1903-04.[84] The production of both the kind s of grapes went up to the 415 kharwars and 386 kharwars in the year 1911-12 and 1912-13 respectively.[85] The quantity of grapes required for making one hundred bottles of wine, was on an average of one *kharwar*, seven *traks* and three and a half *seers*.[86] The total number of wines planted and grafted in the nurseries was 24,100(viz., 14,546 of black and 9,554 of white varieties) during the year 1903-04, and 700 were planted in 1911 and 800 in 1912. Plantation of wines continued in the year 1912-13 as well and during this period 3000 vines were planted in the Shirazi Bagh.[87]

Table 3.5 Wine Plantations

Year	Plantation (Vines)
1906	5,500
1907	1,300
1908	5,000
1909	750
1910	500
1911	700
1912	800
1913	3000

Source: Annual Report of the Horticulture and Vineyard Department, 1914

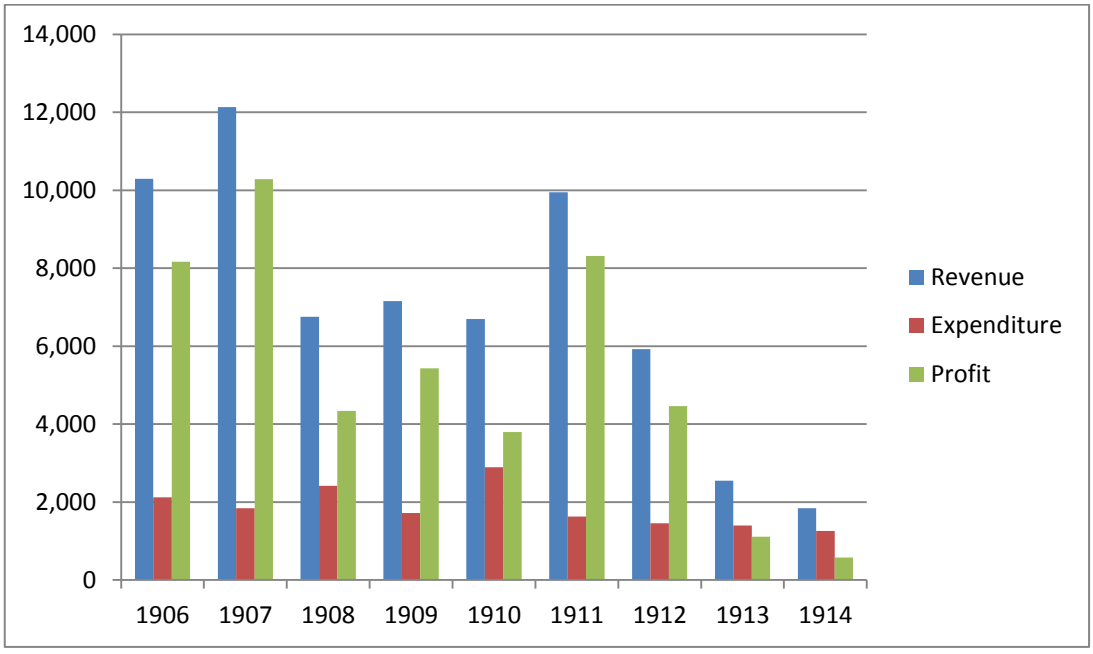
[83] 1 trakh= 5kg, 16 Traks= 1 Kharwar
[84] *Triennial Administration Report of the Jammu and Kashmir State, 1902-04.*
[85] Annaul Report, 1911-12 and 1912-13, p. 34 and 41.
[86] *Report on the wine manufacturing Srinagar, 1905-06,* File No.63/A-44,OER, JKSA(J.R).
[87] Annaul Report, 1912-13,p.41.

Table 3.6 Statistics of State Vineyards from 1906-1914

Year	Revenue	Expenditure	Profit
1906	10,292	2,124	8,168
1907	12130	1846	10,284
1908	6,756	2,415	4,341
1909	7,155	1724	5,431
1910	6,693	2,895	3,798
1911	9,946	1,631	8,315
1912	5,924	1,460	4,464
1913	2,547	1,403	1,114
1914	1,841	1,261	580

Source: Annual Report of the Horticulture and Vineyard Department, 1914

Figure 3.1 **Statistics of State Vineyards from 1906-1914**



The above table and figure mentions the progress of the state vineyards as it gives the clear picture of the revenue, expenditure and profit of the nine years right from 1906 to 1914. Noticing the heavy fall in the income of grapes, it was proposed in the year 1913-14, the immediate destruction of the wines to make a room for almonds or fruit trees. The Maharaja did not agreed the proposal regarding the destruction of the wines which were useless except for wine making, the grapes sold during 1913 were not suitable and

the income they yield this way cannot cover the expenditure on them.[88] However the whole vineyards were interplanted with over 1000 fruit trees as a preliminary measure towards the new arrangement which, it is hoped to come in the next year.[89] It was in the year 1915, that the decision regarding the final abolition of the vineyards was taken up and the Shirazi Bagh was henceforth absorbed in the Horticulture Department. Accordingly the report of the Horticulture Department will henceforth relate only to the gardens in the central and northern tehsils including the Shirazi Bagh and the work of Director of Agriculture with regard to horticulture in the three southern tehsils being separately noticed in the report of his own department.[90]

3.3.2 Gupkar Distillery

The Gupkar Distillery consists of two branches- the distillery and wine manufactory. The latter is more important as wine making was the original aim and it is the Kashmir wines which it is supposed will be a source of profit to the State. Of the wines branch the Red and the White wines are the chief products. The industry was started in conformity with the special desire of the Maharaja Ranbir Sigh in 1878 at Gupkar near Srinagar, commencing with the vineyards only and it was not till four or five years later, that the first wine was made and distillery started.[91] The industry had met with a failure in producing liquors which might be supposed to be equal in quality to the European varieties in British Indian markets and might stand in competition with them. In the beginning it was assumed with much tenacity that the French wines would find the Kashmir soil and climate eminently favourable and their grapes would produce vines as superior as those of France but from the view point of yield and the quality of wine produced, this assumption was rudely shaken.[92] At first it was thought that the Kashmir liquors had not created a demand abroad because they had not been properly advertised but the opinions subsequently expressed on some examples by the leading wine merchants of India have made it clear that while on one hand they are very costly and on the other hand they have not any probable chance of finding favour on account of the many defects they have. At the very outset, it was not established as a commercial enterprise on an economical scheme but to meet the wish of the Maharaja

[88] Letter No. 2980, H.H.4 of 1914 from Settlement Commissioner J&K State to Revenue Minister J&K State.
[89] Annual Report, 1913-14, p.53.
[90] Annual report, 1915, pp. 49-50.
[91] Ibid.
[92] File No. 35/P-82 of 1909, OER,JKSA(J.R)

and to win a better name and reputation throughout India.[93] Later it aimed to improve the sources of the people by spending thousands of rupees for fruits and wagon wholly within the state laying the foundation stone of the distillery building with his own hands.

Enormous amount of money was spent for importing fruit trees of various varieties, agriculture farm machines, sowing machines, seeds, buildings, on the maintenance of a series of viticulture experts imported from France and Italy, tools and other implements and also procuring lands and making gardens which is the main cause of the industry having been overburdened.[94] Each year the reasonable financial assistance has been cheerfully granted by the state in spite of very disappointing results and it is fair to say that if wine making in Kashmir is not a success, the state cannot be blamed for this result. It was later recommended to make wine making a small part of Mr Peychauds's work and arrangements were made for this officer to devote the main portion of his time to the development of Horticulture in Kashmir.[95]

In 1901, the samples of red and white wine to several leading wine merchants in India but the reports were very unfavourable. The only demand seems to be due to the European visitors to the valley and the sales every year are not considerable. If the wines of the valley were really satisfactory, there can be no doubt that the large number of well to do visitors every year would have unconsciously advertised them in India and that a demand would have sprung up in consequence. So, it is clear that the cultivation of grapes and manufacture of wine has proved a failure in Kashmir. Hence it was necessary to close the distillery and vineyard in order to prevent the losses that are bound to incur in the future if the undertaking is to be continued. It was much desirable that the more attention should be paid to fruit growing in Kashmir so as to develop the fruit trade with India and improve the quality of the produce exported. A. Howard, the Imperial Economic Botanist in his note on Gupkar Distillery on 15th September 1910 has suggested that Superintendent of the wine manufactory should give his whole time to fruit and that a modern fruit experiment station under expert supervision should be

[93] Ibid
[94] Census 1901, Kashmir, p.11.
[95] File No. 35/P-82 of 1909, OER,JKSA(J.R)

started in the valley for the purpose of showing the people how fruit growing should be most profitably conducted.[96]

3.4 Hop Gardens

Hops are usually the flowers of the hop plant *Humulus lapulus.* They are basically used as a stability and flavouring agent in the beer, besides used for various purposes in beverages and herbal medicine. The commercial production of hops requires a particular environment and usually the hops are grown in most of the continental United States and Canada. The hops are planted at a gap of about 7-8 feet apart and being a climbing plant requires a support for its growth. Hops were also introduced during the reign of Maharaja Ranbir Singh in the 19th regnal year (1876) and actually introduce into Kashmir and Ladakh by Major Montgomery of the Trigonometry Survey merely just as an experiment whether they would grow.[97] The only hop garden in Kashmir was at Dubgam near Sopore which was 119 acres in extent and 58 acres of land were also devoted for its cultivation in Barzulla.[98] The hops of Kashmir were of decent quality and the brewery owners were very keen to acquire the land in Kashmir.[99] The garden at Dubgam was managed under the direct control of Settlement Commissioner and Niaz Ali Khan as its Inspector. The total yield of the hops during the year 1896-97 was 24,729 lbs. among which the Commissariat Department of the Government of India purchased 4,522 lbs. and the rest was sold to the Murree Brewery Company.[100] The total income amounted to Rs. 19,813-7-9 and the expenditure to Rs. 5, 408-3-6.[101]The prices obtained by the sale of the hops were the same as those of the previous two years. It was a source of income for the state government as tax was collected from this fruit.[102] Before the hope press was ordered from England, the old method of pressing and packing by human agency had to be employed. While despatching the hopes, they were packed in gunny bags and often being caught in a heavy rain on the Jhelum valley road. The complaints were received from the Commissary General of the Western Circle that the hops are losing strength and flavour by packing them in gunny bags and proposed the hermetically closed tins. However it was impossible to give immediate

[96] Ibid.
[97] Lawrence, op.cit, p.52. These plants existed in Srinagar and Leh in 1872.
[98] Annual Report, 1889-90,pp.55-56. See also Younghusband,op.cit. p.203.
[99] Wakefield, op.cit, p.139.
[100]Ibid.. See also E. F. Neve, *Beyond Pir Panjal, p.* 61
[101] Annual Report, 1896-97, p.134.
[102] Gazetteer of Kashmir and Ladakh,p.62

effect to it as the act of tinning was scarcely known in Kashmir.[103] The State Council as supplementary precaution has purchased tarpaulins with which to cover the carts carrying the hops. As the hops were in excellent condition and reflects great credit but the difficulty faced in was regarding the procuring of suitable hop poles. In the old days when the forest conservancy was hardly known, the young deodar trees were felled down and used as hop-poles and none could be better than those. Now the wanton cutting of these trees were restricted and these hop-poles were replaced by the pohu poles which hardly were found of suitable length.[104] Almost 900 rupees were spent annually on hop poles

Table 3.7 Statistics of Dubgam Hop Garden

Year	Produce (lbs.)	Receipts Rs- a-p	Expenditure Rs- a-p	Profit Rs- a-p
1902	18,044	9,327	5,667	3,660
1903	17,124	13,871	5,691	8,180
1904	---	13,888	6,765	7,313
1911-12	18,892	14,565	8,813	5,752
1912-13	32,279	27,125-13-6	10,821-13-8	16,303-15-10
1913-14	21,038	18,094-13-6	9,429-12-7	8,665
1914-15	31,121	26,425-8-3	9,615-3-0	16,811
1915-16	5,515	5,537-11-6	9,163-9-0	-3,625-13-6 **(Loss)**
1916-17	27,570	25,229-8-6	10,516-4-11	14,713-3-7
1920-21	21,938	25,659	12,395	13,264
1921-22	5,508	8,655	8,211	444
1922-23	16,424	20,280	13,349	6,931

Source: Compiled from Annual Administrative Reports for the concerned years.

The above table gives us the details about the working of the Hop Garden at Dubgam and showing the good financial results with few exceptions like from 1916-20, the results were unsatisfactory. This was mainly due to the unfavourable climatic

[103] Ibid.
[104] Ibid.

conditions during these years like severe drought and excessive heat in the summer months which have considerably lowered the water level in the neighbourhood. However during the year 1913, a very high price was obtained due to the shortage of hops all over the world and it was in the same year *kiln-drying*, a very delicate operation was used as kiln dried hops found a ready market and seemed to be preferred by buyers to the sun dried product.[105] The garden was under the general supervision of the Settlement Commissioner, managed by A.M. Peychaud up to his retirement from state service in 1926 and Inspector, Niaz Ali. However Niaz Ali was retired towards the end of 1913 after being in service for 23 years and was replaced by Mohammad Afzal. In order to extend the cultivation of hops in Kashmir, a proposal was submitted in August 1908 for obtaining the service of Mr. A. Howard for three months to advice on the cultivation of hop area. In 1910, the Government of India agreed to send Mr. A. Howard, Imperial Economic Botanist, Pusa to Kashmir State for a period of two months to advice the State Government as to what steps they should take to improve the hop cultivation in the Valley.[106] After he submitted the valuable report, steps were taken to carry out some of the suggestions made by him in order to improve the cultivation.

3.5 State Gardens

Kashmir is widely known for its beauty all over the globe due to its lush green valleys, snow caped mountains and rushing streams. Besides these peculiar features which add to the beauty of Kashmir are the State Gardens widely distributed all over the state. During the period of our study there were number of gardens well maintained by the government. During 1913-14, the number of the State gardens under the management of the Agriculture Department was sixty nine including two nurseries and six pleasure gardens.[107] There were also eight Palace Gardens and a Chashmashahi Guest House garden which were maintained by the Private Department of His Highness and were further transferred to the Agriculture Department from 1926 onwards.[108]

The Government was very much concerned about the restoration of these gardens by way of walling, levelling, turfing and laying out new flower beds especially in the Mughal gardens, Nishat and Shalimar. Old, dried and dead trees were removed and

[105] Annual Report, 1911-12,p.37.
[106] File No. 98 of 1908, OER, JKSA (J.R)
[107] Annual Report, 1913-14,p.40.
[108] File No. 4 of 1927 OER, JKSA (J.R), Annual Administration Report State Gardens In Kashmir, 1926.

young and shapely *chinars* were planted on suitable spots in both Nishat and Shalimar. All the Mughal gardens namely Nishat, Shalimar, Chashmashahi, Achabal and Verinag were well maintained by the Agriculture Department as pleasure gardens. Besides providing the scenic beauty, these gardens were also the source of revenue to the state as large proportion of fruit trees were planted as earlier mentioned in these gardens and were showing the better results. The total receipts of the State gardens increased from Rs. 21,224-4-3 in 1912-13 to 29,817-13-6 in 1913-14 and the actual expenditure for the garden maintenance was Rs. 7, 396-11-5.[109] The income from the state gardens further went up to Rs. 33,692-6-8 in the year 1926.[110]

Along with the fruit trees, ornamental plants and bushes were issued from different nurseries for plantation in State gardens scattered at various places. During 1915, ten gardens in the northern tehsils of the Valley were transferred to the Department of Horticulture in order to give boost to the fruit culture in Kashmir. The total number of gardens under the Director of Agriculture went up to fifty four including the two nurseries and seven pleasure gardens besides the two new nurseries one for flowers and the other for *chinar* was started.[111] The Naseem Bagh nursery in Srinagar was meant for Arboriculture and large numbers of arboriculture trees were issued from here to be planted at various places. About 272 *chinars* and 730 Kabuli poplars were issued from this nursery and were planted on the river banks in Srinagar, in the Narain Bagh Ganderbal, Shalteng and Munshi Bagh Camping Grounds and His Highness's Rest House Grounds at Rampur.[112] Also the one thousand young almond plants were obtained from the Horticulture Department and planted in the Hari-Parbat gardens to fill up the gaps in the year 1915.[113] In Srinagar, the Agriculture Department maintains the exhibition grounds and the Lalmandi Park as public parks and the lawns attached to the Secretariat and the Governor's office. These parks were improved and attracted a large number of visitors. Technical education was as usual given in the maintenance of the Guest House gardens and the polo-grounds at Satwari Jammu and Srinagar and the municipal parks in both the cities.[114] The Department also maintains the flower nurseries at various places to produce seeds, seedlings, cuttings, shrubs and bulbs of

[109] Ibid.
[110] File No. 4 of 1927 OER, JKSA (J.R), Annual Administration Report State Gardens In Kashmir, 1926.
[111] Annual Report, 1915, p.40.
[112] File No.33/ A of 1907, OER, JKSA (J.R).
[113] Ibid, p.41.
[114] Annual Report, 1939-40, pp.93-94.

flowering and other ornamental plants to meet the departmental and public needs. One central floriculture nursery has been started at Lalmandi, where large scale collections of annual, biennials, perennials, shrubs and creepers are being made for seed production purposes. Owing to the European war, the Department received increased demands for bulbs and seeds from British India.[115] Collection of wild flower seeds and plants from various altitudes were put to cultivation and were giving better results. The Government did a commendable job in bringing the state gardens under fruit culture and was also serious to bring more land under plant cultivation. In 1908, a letter was sent to the Revenue Minister for acquisition of land plot for the purpose of making a park, to be styled later as Pratap Park. There was no natural spring or water course nor any building or any building existing in the said land. In 1910, the order was passed out and whole of that strip of land, lying between the two parallel roads[116] was allotted for the purpose of this park.[117] Soon the Director of Agriculture and Horticulture were asked to plant the flower and fruit trees in the garden. But the entire land was having poplar trees on both sides, so the fruit and flower plants can't survive under the shady areas. A.M Peychaud, the Director of Horticulture then suggested for planting the green shady trees of Acacia and *Chinars.*[118] The garden is still well maintained even today; best located in the city centre Lal Chowk area of Srinagar and is well used by the people as a resting place particularly in the summer months.

3.6 Scientific Agriculture

India being an agricultural country has a long history of practising the agriculture and the various practices related to it even before the advent of British rule in India. However the farmers were not much conscious about the different kinds of scientific guidelines or parameters required for the improvement and production of crops. The farmers although were well aware about the temperature variations, moisture and dryness in climate that helped in the cultivation of wheat, barley and rice throughout the year. It is also evident from the various ancient texts that the Indian farmers were acquainted with the soil composition and nature which helped in cultivating specific crops of economic importance. The East India Company after holding its sway in several parts of India took a very deep interest in agricultural produces and practices of

[115] Ibid. About 93 ounces of flower seeds were exported during the year 1937-38.
[116] Today the two roads are known by the name of Residency Road and M.A Road.
[117] File No. 37/ B-58 of 1908, OER, JKSA (J.R).
[118] Ibid.

Indian cultivation. They realised in India that the experiments of other nations could easily be applied on Indian agricultural system and took deep interest in improving the cultivation of several crops. The establishment of several botanical gardens in India led to the introduction of several important and valued plant species in India from many parts of the world, after exploring the diversity of soil and climate. The famines during the 19th century in India devastated heavily the agricultural production in India which felt the need of scientific enquiry in the field of agriculture at the hands of British.

It was in the year 1905; an Imperial Agricultural Research Institute was established at Pusa in Bihar, especially to improve the quality of the crops.[119] The work of the Institute proved to be a great success as it was able to produce some improved and very good quality of wheat. All was possible due to the efforts of an Imperial Economic Botanist, Sir Albert Howard and his team who were there in the Institute. Later on such kind of institutions which were called Research Stations or Experimental Farms were established by the colonial masters at different locations in India for the growth of agriculture. Regarding the crop improvement in India, the research programmes which were run for it, were deeply motivated by the researches done on plants and soils in Europe.[120]

Throughout the entire sub-continent, Kashmir has distinctive geographical features. Due to its alluvial origin and fertile soil, warm and moist temperature and plentiful water resources, the majority of the populace depended on agriculture both as a source of income as well as food. During the second half of 19th century more than 75 % of the people in Kashmir province were highly depended on agriculture.[121] At the census of 1921, the total population of Kashmir numbered 3, 320,518 and 82 % of these people were agriculturalists or dependent on agriculture.[122] The people also opted for agriculture due to the non-availability of transport and communication in the Kashmir. In the entire economy of Kashmir, agriculture attained the important position and has been the predominant sector. Due to the limited sources available in other fields, agriculture also provided employment to the large group of population in the state.

[119] Sen, S. (2010). 05. SCIENTIFIC ENQUIRY IN AGRICULTURE IN COLONIAL INDIA: A HISTORICAL PERSPECTIVE, *Indian Journal of History of Science*, 45.2, pp. 199-239.
[120] Ibid.
[121] *Sri Ganganath Report on Administration of Jammu and Kashmir State*, 1944, p.73
[122] *Jammu and Kashmir State Handbook, 1924*,p.21

Keeping in view the agriculture in Kashmir, there are lot of scholarly works which have well documented the agriculture process in Kashmir which include the soil types, cropping pattern, agricultural technology. The focus here is to point out the Government efforts to improve and augment the cultivation in the state by applying the scientific principles and techniques. Like in other parts of India, the farmers here in Kashmir were oblivious of the scientific parameters and techniques by which the agricultural production could be augmented. During the period of our study some concrete steps were taken by the Government to help the agriculturalists in their pursuit. A regular Department of Agriculture was created in 1902, which tried to promote the interests of the farmers by providing them better seed and manures including the scientific implements thereby ameliorating their pathetic condition of the ages.[123] The Imperial Agricultural Research Institute at Pusa inspired the Department of Agriculture and an experimental farm was established in Srinagar known by the name of Pratap Model Farm and was inaugurated by Lord Minto in the autumn of 1906.[124] The farm was spread over 100 acres of land and the experiments were conducted on the farm with different varieties of wheat, barely, groundnuts, maize, paddy, hops and various other cereals and leguminous crops, and the results were promising in almost all cases.[125] During 1911-12, beans, maize, groundnuts and barely especially gave very satisfactory results, and specimens of the crops raised in the farm have received appreciation from different quarters in India.[126]

Here the experiments were also carried with good results in different systems of rotation and manuring. Several varieties of seeds were being imported from India and foreign countries like Canada, America, England, Italy and Russia and it was only after the successful experiment of these crops, the results were being recommended to the cultivators for adoption.[127] The samples of maize were brought from Canada and its result in the farm has mesmerised the cultivators across the Valley. The improved agricultural implements and machines which include the English plough, rollers, shovel and chaff-cutters were purchased and were doing very useful work on the farm and their uses were demonstrated in the neighbouring cultivators.[128] In order to develop the

[123] *Triennial Administration Report of the Jammu and Kashmir State*, 1902-04, p.xiii.
[124] File No.83/H-68, OER, JKSA (J.R) File No.8/R.A, of 1921, Jk.Pol.,JKSA (J.R).
[125] Annual Report, 1911-12, p.30.
[126] Ibid.
[127] Younghusband, op.cit, p.204.
[128] Annual Report, 1915-16,p.40.

interest among the cultivators, yearly agricultural and vegetable shows were held at the Pratap Model Farm and various other districts in which the samples of all the products from the experimental farm were exhibited.[129] Zaildars and Zamindars and several other persons including the state officials brought specimens of the produce obtained by them from the seed distributed from the farm. The prizes were awarded to encourage the people to take greater interest in the cultivation of improved varieties. The use of agricultural machinery and implements was also demonstrates at these shows.[130] The Department of Agriculture has further started the Lantern slide and movie picture demonstration depicting improved method of cultivation, harvesting and protection against insects, pests and plant diseases of all most all the important agriculture and horticulture produce and working of improved implements.[131] The demonstrations were usually given on the occasions of village fairs and on the fixed seasons in the district.

3.6.1 Distribution of Seeds from Experimental Farm

Zamindars from the different tehsils of the valley were applying for the supply of improved seeds of wheat, maize, paddy and vegetables produced on the Pratap Model Farm. However the following conditions were being laid down by the Government regarding the distribution of the seed:[132]

a. The seeds which have proved success on the Farm may be distributed among the selected and reliable Zaildars as well as to the more interested chakdars, officilas and others, subject to the condition that; the quantity of seeds taken from the Agriculture Department is returned, the grain returned must be invariably by the produce of the grain advanced to them and in default of fulfilling the conditions the price of the improved grain may be recovered.
b. With a view to encourage the zamindars and to create and stimulate interest for growing improved seeds, it is necessary that nothing more than the exact quantity of the advanced seed is taken back for the first one or two years, but when a demand has been created it will of course be necessary to alter this.
c. In order to achieve the object in view it is quite essential that a sufficient quantity is always available at the time of distribution and that encouragement and

[129] Annual Report, 1911-12,p.31
[130] Annual Report, 1911-12,p.31.
[131] File No. 13/Agr of 1937, JK Pol. JKSA, J.R.
[132] File No. 258 of 1909, OER, JKSA, J.R.

facilities must also be given to the zamindars and others interested for the purchase of good seeds.

Seed agencies have been established at different centres where the improved seeds of all varieties are stocked for sale among zamindars on prices fixed by the department. Besides, a list of enterprising zamindars has been prepared by the Department. The zamindars are provided with improved seeds to grow in their own fields under departmental supervision. The crop so produced is examined and if found suitable is distributed among neighbouring zamindars as improved seeds.[133]

Table 3.8 Kharif Seeds of Pratap Model Farm distributed among the cultivators across the Valley in 1911.

S.No	Name of Tehsil	Name of Seed	Quantity supplied for the whole Tehsil			Quantity supplied to each cultivator			Remarks
			Md.	Sr.	Ch.	Md.	Sr.	Ch.	
1	Anantnag	Maize	2	20	-	-	2	-	Per Kanal
		Paddy	6	10	-	-	5	-	-do-
		Moong	-	12	8	-	1	-	-do-
		Beans	-	3	-	-	1/2	-	¼ Kanal
2	Kulgam	Maize	2	20	-	-	2	-	Per Kanal
		Paddy	6	10	-	-	5	-	-do-
		Moong	-	12	8	-	1	-	-do-
		Beans	-	3	-	-	1/2	-	¼ Kanal
3	Wantipura	Maize	2	20	-	-	2	-	Per Kanal
		Paddy	6	10	-	-	5	-	-do-
		Moong	-	12	8	-	1	-	-do-
		Beans	-	3	-	-	1/2	-	¼ Kanal
4	Khas	Maize	2	-	-	-	2	-	Per Kanal
		Paddy	1	50	-	-	5	-	-do-

[133] File No. 13/Agr of 1937, JK Pol. JKSA, J.R.

		Groundnut	1	-	-	-	1	-	-do-
5	Sri Pratpsinghpura	Maize	2	-	-	-	2	-	Per Kanal
		Paddy	5	-	-	-	5	-	-do-
		Beans	-	2	-	-	1/2	-	Per ¼ kanal
6	Baramulla	Maize	2	-	-	-	2	-	Per Kanal
		Paddy	2	20	-	-	5	-	-do-
		Groundnut	1	-	-	-	1	-	-do-
7	Uttarmachipura	Maize	2	-	-	-	2	-	Per Kanal
		Paddy	2	20	-	-	5	-	-do-
		Groundnut	1	-	-	-	1	-	-do-

Source: File No. 258 of 1909, OER, JKSA,JR.

3.6.2 Agriculture Education

From 1909, it was decided that the students of the Normal school will go for agricultural training and had to devote one year to agricultural and one year to horticultural study.[134] Every year the number of students should be divided into two halves and the Inspector should decide which batch should go to the agriculture and which to the horticulture first. For the students other than the Normal schools, it will be left optional with them whether they take up agriculture o horticulture training first.[135] In the Educational Conference of 1915, held at Srinagar, the Director of Agriculture was requested to prepare a course of instruction for introducing agricultural education in the primary and middle schools f Kashmir.[136] The matter was later discussed with the Mr. H. Sharp, Educational Commissioner to the Government of India, who at the request of the Government of Kashmir visited here in the spring of 1916 to examine the educational system of Kashmir. As the result of discussion, the following proposals were agreed to as a tentative measure:[137]

a) That arrangement should be made for the practical training of teachers required to teach the subject at the State Normal School, by an officer of the Agricultural Department attached to the school for that purpose.

[134] File No. 1/P-115 of 1909, OER, JKSA,J.R
[135] Ibid.
[136] Annual Report, 1916-17,p.37.
[137] Ibid.

b) That the experiment should first be made at some selected schools- such as may be provided with necessary facilities in the way of qualified teachers, school gardens and requisite appliances.

The students were also taking training at the Pratap Model Farm Kashmir and Gol Samandar farm Jammu on a monthly stipend of Rs. 8 per student and free lodging. To supplement the practical side of propaganda, practical training in agriculture and general farming including horticulture, entomology, veterinary, livestock, poultry culture and apiculture and other allied subjects was given to the educated sons of zamindars at both of these farms.[138] During 1939-40, eleven students finished the one year's course at Srinagar and seven students at Jammu.[139] The students trained from the Kashmir centre were absorbed either by the Agriculture Department itself or by the Education Department and some were employed by the private growers while some others were taking up seed farming as an independent concern.[140]

The introduction of the scientific knowledge by the Dogra rulers through the hands of British in the horticulture and agricultural field definitely helped the state in general and indigenous people in particular. Although different varieties of fruits were prevalent in the Valley but in wild form which could not find a ready market in other parts of India. The fruits and other agricultural products grown from the improved varieties brought from France, America, Canada and other foreign countries attracted the local population and aroused their interest. This has ameliorated the much pathetic condition of indigenous people who by now were able to produce in large quantities.

[138] Annual Report, 1939-40,p.92.
[139] Ibid.
[140] Annual Report, 1941-43,p.89.

Chapter 4
State Policy and Development of Forest Conservation

Chapter 4

State Policy and Development of Forest Conservation

4.1 Early history and background

From the very beginning, the forests have played a very dominant role in the social as well as in the economic life of the people. Forests in India have always been rendered with respect by the rural masses in their day to day life as well as in festivals, religious rituals etc. Forests are not only important for the well-being of its country people but also for the entire mankind. In the religious scriptures like Veda and Upanishads, the importance of forests has been described very clearly. During the reign of Ashoka, the trees were planted along the roads for the relief to the passers-by. The Mughal rulers initiated some conservation measures for improvement of forests in India. It was Jahangir who had brought *Chinar* tree to the Kashmir. But during the reign of Sher Shah Suri trees were planted along the road sides for the relief of people.

The forest dwellers during the pre-colonial period whose economic condition was uncertain were largely dependent on the forests. They in their vicinity had made an unlimited use of forest resources but at the same time enjoyed the sustainable relationship with the forests. Although there were some restraints on the use of trees in some particular areas as sacred groves, which were controlled and protected by the villagers. With the advent of British the shape of the Indian forests was completely changed and their presence in India marked a watershed in the forest history of India. Initially the forests were cleared to increase the land under cultivation to generate more and more revenue as it was much easier way than to administer the forests. Later they exploited the Indian forests for economic needs. Around 1860, Britain was in top order in matter of deforestation as it was in need of timber for ship building, iron smelting and farming.[1] While their Oak forests were vanishing in England, a permanent supply of durable timber was required for Royal Navy, as the safety of the empire depended on its wooden walls.[2]

[1] Gadgil, M., & Guha, R. (1993). *This fissured land: an ecological history of India*. Univ of California Press.p.118

[2] Stebbing, E. P. (1922). *The Forests Of India Vol. 1*. John Lane The Bodley Head, London.p.63

Secondly the introduction of Indian Railway network was turning point in the history of Indian forestry. For a one mile of broad-gauge rail track almost 1800 to 2000 sleepers were required. To meet the growing demands of railway sleepers, wanton destruction of forests was carried out during the early years. The wood for railway sleepers, ordinance factories, barracks, ship building, dockyards etc. had led to the mounting pressure on the Indian forests which led to an acute shortage of timber. This had prompted the British for scientific conservation and management of forests to facilitate the sustained availability of timber. The increased demand of the wood proved to be a precursor for the genesis of the Forest Department in India in 1864 and this was all possible with the help of German experts, as being the leading European nation in forest management. It also became quite apparent to the colonial authorities that Indian forests were not inexhaustible and considered it to be the subject of administrative importance. The need of the hour after its establishment was to curtail the previously unrestricted access of rural communities through proper legislation.[3] The Forest Act of 1865 was passed which gave the British easy hand to acquire those forest areas which were allocated for the supply of railway sleepers. After thirteen years this act was replaced by another more stringent Indian Forest Act of 1878 and was considered to be the first proper Act which dealt with the forest conservancy. This act was specially planned to enable firm control over the forest resources and was noticeably annexationist in nature. However this act received a sharp criticism from fewer sections of the society by labelling to be an act against the customary use of forests by the forest dependent communities but the objections were swiftly overruled. Under this act, forest area was divided into three types- Reserved, Protected and Village forests. The first category was of much commercial importance and was open to sustained exploitation. Protected forests were also under the control of State but in this category some concessions were given but closed at times for fuel wood and grazing whenever the colonial masters seem it necessary to do so. Rules regarding village forests, according to Guha and Gadgil were not exercised by the colonial government over most parts of India.[4] As all the forests of the country were not similar so this kind of act was not applicable to all the forests. The act was further amended in 1927 and the first Forest Policy was formulated in 1894which constituted the basic policy documents on which the governmental

[3] Gadgil, M., & Guha, R. (1993). *This fissured land: an ecological history of India*. Univ of California Press.p.122
[4] Ibid,p.124

approaches to forests in India were based. These were the techno-managerial strategies adopted by the British to establish their sway over the Indian forests.

The state of Jammu and Kashmir had its vast and rich green wealth which consists of the important species of Deodar, Blue pine, Spruce etc. which had bewitched the travellers all over the world. The people of the state also showed a great love and respect to trees and nature conservation. The famous aphorism "*Ann Poshi Teli Yeli Wann Poshi"* of the famous Sufi saint of Kashmir Sheikh Noor-Ud-Din Wali is a testimony to the fact which proves the ecological consciousness of the people of Kashmir 500 years ago. Cutting of a tree was considered to be a great sin. Presence of sacred groves near temples, mosques and shrines admit that people were having great respect for trees. The people the state were living in harmony with the nature, but with the passage of time and mounting pressure of population in the 19th century, it became cumbersome to behold the environment untouched. Increasing demands led to the modifications in the ecology which in turn led to the disturbance. At the same time, the state was also not much concerned about the maintenance of forests. There was a reckless cutting of trees and were left to rot. The felling of trees was done by the contractors not being under the control of government and were free to fell according to their needs and wishes. Forest work was only limited to the timber extraction as there were no demarcated forest areas, neither working plans nor definite forest laws. However in 1847-48, a separate section in the revenue administration called *Mahal Navara* was created to stop the reckless felling of trees and to look after the forests. Under this section it was mentioned that zamindars could fell the trees but only for their bonafide need of timber and firewood. While as the contractors had to share the outturn half and half between the state and themselves.[5] In 1883-84, rules known as '*Ain Janglat'* were framed out for the management of forests and is considered to be the initial step towards forest management in Kashmir.[6] However, the main motive behind these steps taken out by the government was not the conservation but to augment the revenue of the state.

4.2 Beginning of Modern Forestry

As mentioned earlier, during their initial years of rule, British were responsible for the large scale felling of trees. Originally they came to India with the mission of trade but

[5] *Proceedings of the State Forestry Conference, Jammu and Kashmir State* 1970,p.2
[6] Ibid.

eventually changed their game plan and began to exploit the natural resources present over here. So it was inevitable for them to initiate the process for the implementation of scientific management practices. In 1860's, the German model of scientific and organised forestry was implemented and this was all possible with help of Dietrich Brandis (1824-1907), a German Forester who was appointed as Inspector General of Forests. He focussed on to recast the Indian forests on European lines and is considered to be the father of Indian forestry.[7]

The forest departments with similar scientific management practices were created in various provinces during the early sixties of 19th century. However the department of such kind was not in existence in Kashmir till 1890. The forest work was carried out in a haphazard manner and as earlier mentioned work was confined only to the timber extraction. The appointment of a British resident had a significant impact upon the process of management of forests of Jammu and Kashmir. The resource requirement particularly the deodar wood for railway sleepers, ship building and armoury for the colonists which they extensively used as a bulwark, for enhancement of their commercial and expansionist benefits. Fortunately, the British found the rulers of the time more than willing partners and the state government wasted no time in requisitioning the services of trained European officers both English and the German to manage the state forest resources on sound and systematic way. The beginning was made in 1891, when the service of a British Forest Officer called J.C. MacDonnell was obtained who had joined the state as first conservator of forests.

4.3 Principal Forest types and zones

The abundance of rich forests was a peculiar feature of the geo-physical formation of Kashmir. Very few countries in the world are so gifted by the nature as Kashmir.[8] Being in the western end of Himalayan Mountains it is the abode of best natural conifers in the world. The forests of the state have a much diversity in varieties as well as species which ranges from lush greens Margs (Alpine pastures) to evergreen conifers on the slopes of middle and Greater Himalayas and from scrub jungles of the foot hills to the deciduous forests of the Siwaliks and Pir Panjal range. In the Jammu Province we have small areas of sub-tropical Bamboo jungle and behind this are lying the scrub

[7] Rajan, S. R. (2006). *Modernizing nature: forestry and imperial eco-development 1800-1950*. Oxford University Press on Demand, p.82.
[8] Sinha, S. (2017). *Kashmir The Playground Of Asia*,p.98

jungle of outer foot hills along with mixed broad leaved forests. The predominant species is Chir pine extending from 2500 feet up to 4500 feet. Then comes the Deodar and in Kashmir province we have Kairu or Blue Pine extending up to 8000 feet. The Fir forests are found up to 1200 feet and above all are found the Birch and scrubby Juniper.[9] Evergreen Oaks of various species are found in different conifer zones of Jammu province and in the Kishenganga Valley of Kashmir province. Considerable quantity of Walnut, Ash, Maple and Horse- Chestnut are found in the Deodar and Fir zones of Kashmir province. Albeit there is not any sharp line of demarcation between these various zones but on the whole these various zones are distinctly recognised.

I. **Deodar or Himalayan Cedar *(Cedras Deodara):*** It is the most important and valuable of Kashmir conifers as its timber has been prized from time immemorial for its strength and durability.[10] The wood was primarily used for railway sleepers and is also in great demand for house building, bridges, and piles and in Kashmir where thousands of people live in boats – the hull of every boat is made of deodar.[11] It is found at an elevation of 4000 to 10000 feet but is most common between 6000 to 8000 feet.[12] The old tree is found to be over 25 feet in girth and 20 feet high and few trees have been measured over 30 feet in girth.[13] Due to the large demand of railway sleepers' northern Indian railways the whole of Kashmir out turn was sent down in the shape of sleepers.[14]

II. **Blue Pine or Kairu *(Pinus Excelsa)*:** This is the large evergreen tree found at the elevation of 6000 feet to 10,000 feet. It extends both below the deodar zone and upward in to the Fir zone. It does not grow as big as Deodar, but trees over 15 feet in girth and 150 feet in height are not uncommon.[15] The wood is extensively used for house building, doors, windows and furniture and is good substitute for deodar and railway sleepers in places free from noxious insects.[16]

[9] Jammu and Kashmir State Handbook (JKSHB), 1924, p.16.
[10] *Jammu and Kashmir State Handbook*, 1924, p.16. Lawrence, W. R. (1895). *The valley of Kashmir*. Asian Educational Services.pp.78-79.
[11] *Jammu and Kashmir State Handbook*, 1924, p.17. and Also see, Playne, S. (1917). The Bombay Presidency, the United Provinces, the Punjab, etc. *Their History, People, Commerce and Natural Resources*,p.745
[12] Ibid.
[13] JKSH,P.17
[14] S.Playne (1917),op.cit.
[15] JKSH, P.17.
[16] S.Playne (1917),op.cit.p.746

III. **Silver Fir and Spruce (*Abies Pindrow and Pica Morinda):*** Both the species are found in Kashmir at an elevation of 7000 feet to 11000 feet. As the trees are grown at large distance from the streams and rivers, the extraction of loss and scantling becomes an expensive operation. In temperate conditions the wood is suitable for door and window frames, ceilings and is generally used for roof shingles, crates and boxes.

IV. **Chir Pine *(Pinus Longifolia):*** The tree supplies a timber of comparatively poor quality but the tree was having a great future as a resin produce.[17] The resin of this tree was sent to the Punjab resin factory at Jallu near Lahore.

V. **Hard Woods:** Among the broad leaved species, the following trees are the most interesting- Walnut, Ash, Birch, Maple, Oaks, Horse-Chestnut etc. There is a considerable quantities of these trees being used commercially as well as a timber by the inhabitants themselves. Here is the brief description of some hard wood trees:

a) **Walnut *(Juglenus Regia):*** It is also the valuable of the Kashmir woods found almost in every village at an elevation of 5500 feet to 7500 feet.[18] This is largely a deciduous tree with broad greyish-white sap wood and heart-wood, brown in colour but with darker streaks, frequently beautifully mottled.[19] The wood is primarily used for interior fittings of house boats, spinning wheels, handlooms, plough and rifle stocks.

b) **Horse-Chestnut *(Esculus Indica)*:** It is found from 4000 to 10000 feet. It is primarily used for decks and interiors of cabins in houseboats, furniture, cart shafts and co-operating and ocassionally for carved tables and fancy boxes.

c) **Silver Birch *(Betula Utilis):*** It flourishes at heights between 10,000 to 14,000 feetthe highest level of tree vegetation. The bark of the tree is in great demand for the roofing of houses.

d) **Oak :** There are many species of oak in Kashmir but the most common are Kharshu or brown oak (*Quercus semicarpifolia*) found between 8000 to 12000 feet, holly oak (Quercus Ilex) ranging from 3000 to 8000 feet and moru

[17] JKSHB, P.19.
[18] . Lawrence, W. R. (1895). Op.cit. p.80.
[19] S.Playne (1917),op.cit.p.745

oak (Quercus Dilatata) between 7000 to 9000 feet. All thethree are used for buildings, agricultural implements, bedsteads and handles of tools.[20]

e) **Ash *(Fraxinus Floribunda)*:** The tree is very scarce and the extraction being extremely difficult, it is in consequence but little used. It grows at heights between 4000 to 10000 feet. Boatmen esteemed the wood as it was used by them for paddles.[21]

f) **Chinar *(Platanus Orientalis):*** This is the large deciduous tree found most plentiful in Kashmir Valley. Its wood is of yellowish or pin-white colour. It is largely used in the manufacture of household furniture, trays and other similar articles. The tree is introduced by the Mughals in to the Kashmir. The wood and charcoal of Chinar are considered to be the best fuel in Kashmir.

g) **Mulberry *(Morus Alba):*** The tree grows at an elevation up to 11,000 feet in considerable quantities. The wood is primarily used for buildings, furniture, boats, agricultural implements, doors of the shrines.[22]

h) **Poplar (populous Alba):** The tree is met with at altitudes between 5,000 and 7,500 feet. The wood is of poor quality and is mostly used by the poor people who can't afford the good varieties. There were several areas of popular near Srinagar, Islamabad, Baramula, at intervals along the valley of Indus, in several parts of Nubra, south side of the Shyok and Chorbat in Baltistan. In Ladakh it was used for roofing. Its twigs were used for tooth brushes.[23]

i) **Yew or Posthal *(Taxus Baccata):*** It grows at heights between 6000 to 11,000 feet. It is chiefly used for furniture and cabinet work, plough and solid wheels of trucks. However it was not considered fit for house building.[24]

The description of the forests of Kashmir would be incomplete without making mention of the minor forest products which had played a very essential role in the working of the department much more so than in most part of India.[25] They were used for various purposes such as medicine, fibre, drugs, dyes, resins etc. the commercial value of these minor forest products was recognised to a very great extent with the Btritish influence

[20] Ibid, p.746
[21] Lawrence, W. R. (1895). Op.cit.
[22] Ibid.
[23] Soofi, G.R, 'Poplar Cultivation in Kashmir Valley', *Proceedings of State Forestry Conference*, J&k State, pp. 32-34
[24] Lawrence, W. R. (1895). Op.cit.
25 Wright, H. L. (1931). The forests of Kashmir. Empire Forestry Journal, 10(2), 182-189.

in Indian sub-continent. The extraction of timber became a profitable enterprise along with the timber extraction. The other parts of the country were dependent on the Kashmir forests, as large quantities of medicinal herbs were exported to these areas.[26]

For the administrative purposes the forests of Jammu and Kashmir were divided in to following divisions:

i. Kashmir
ii. Kamraj
iii. Muzaffarabad
iv. Jhelam
v. Chenab River
vi. Udhampur
vii. Jasrota
viii. Bhinbar
ix. Ramnagar

4.4 Demarcation of Forests

In the pre- colonial Kashmir, the working plans were nowhere in existence, neither there were and definite forest laws nor demarcated forest areas. It was only after 1891, that the state Forest Department began to start working on scientific ways. Mr. J. C. Macdonell, an officer of the Indian Forest Department, joined the state as the first Conservator of Forests after the requisition made by the state government.[27] His main focus was on demarcation, organization of forest beats and ranges and similar other measures of conservation. The demarcation of the state forests started in 1891, but the survey was not taken in hand as there was the dearth of trained officers. The work was then left to Conservator of forests, while on tours to fix the position of forests on maps, by the physical features and thus from this, the areas of such forest as seen by conservator were approximately obtained.[28] Due to the absence of trained forest officials in the forest demarcation work, the conservator had to himself add to the list of forests and areas until the trained officers were available for this work. Thus up to 1891-92, the demarcated and un-demarcated areas of deodar forests comprised 109,060

26 Koul S.N. Forest Products of Jammu and Kashmir, pp 52-57
27 Kapur, M. L. (1992). *Social and economic history of Jammu and Kashmir State*, 1885-1925 AD. South Asia Books. p. 255.
28 Annual Report Forest Department (ARFD) 1891-92, p. 33

acres in Kashmir province.[29] But this was only an approximation as there were some other mixed forests in which deodar trees were found with the blue pine and other trees.[30]

The state policy during the period of demarcation was purely meant for protection of existing forest. Later on, in 1894, the approach to colonial forestry was strengthened by Government of India through the hands of Dr. Voelkar, a German agriculturalist. He laid great emphasis on the good forest cover so as to avoid any kind of environmental degradation which can also led to an impact on agricultural output.[31] The legislation generated from this advice became known as Voelkar Resolution issued on 19th October 1894 and followed the designations for the forests viz, 1. Reserved, 2.Protected, 3. Village and private. The forest policy proposed by Voelker served as a model for the forest policy in the state of Jammu and Kashmir in the same way like in other parts of India. This was all due to the policy of Subordinate Union under the British crown; the British Resident in the state of Jammu and Kashmir exposed it to the fealty of British. The state forest policy though not directly affected by the colonial policy was none the less affected in a manner that was indirectly linked to support the colonial need, which was the commercial exploitation of forests. While the colonised people looked up on the forest as their own, the monopolistic interests of the colonisers sought to close them off.

Although there was some resistance by the villagers while demarcating the forests but during the demarcation work in 1897-98, there was little or no opposition besides being a prosperous year.[32] During 1898-99, there was some opposition in the demarcation from the villagers' side in the Uri tehsil and in the Kishenganga valley. This was due to the fact that nomadic tribesmen called Kaghanis, who come from Hazara narrated to the people the terrible tales of restrictions consequent upon a demarcation in the Hazara area. The area which was under demarcation during 1898-99 contained 320,533 acres of deodar species found mixed with other species and under the same demarcation plan, the area of 217,879 acres have broad- leaved species. The inferior pines that is blue pine, silver and spruce fir represents 495,808 acres while the chil is estimated to cover 209,417 acres, and 16,640 have grass and bamboos, In square miles the figures are

[29] Ibid.
[30] ARFD, 1893-94, p. 2
[31] Sagreiya, K. P. (1967). *Forests and forestry*. National Book Trust; New Delhi. pp. 10-12
[32] ARFD, 1897-98, p. 1.

1,969 against 1,885 last year, a rise of 84 square miles.[33] During this year, 4,298 acres has been added to the last years demarcated area of Kamraj Division at the close of the year was 101,028 and this has been raised to 124,047 acres, the addition being in the Sopore tehsil and consisting forests composed almost entirely of broad leaved species (6,317 acres) and inferior pines (14,931 acres).[34] The partially demarcated areas remain unaltered at 70,706 acres and the un-demarcated show a slight rise, after transfers to completed and new additions from 72,815 acres to 75,633 acres. The total area of the three classes stands at 270,386 acres, with an increase of 25,837 over the total area. In the Kashmir Forest Division the area of the forests completely demarcated from 188,380 acres to 260,177 acres, consequently the partially demarcated have fallen from 96,630 acres to 57,345. There was no change in the un-demarcated forests; there are huge blocks of inferior pines situated in an out of the way place near Shupyon. Taking Kashmir and Kamraj Division as a whole, the total estimated area of the Kashmir Valley is 609,908 acres, of which 99,305 acres contain deodar.[35] In the Kamraj Division area of un-demarcated forests has been increased by the addition of certain large plots of inferior pine forests in Khuihama[36]. However to counterbalance these a large area has been transferred to completed forest, so that the net increase is nearly 2,818 acres, the total of now being 75,633 acres. In the Lolab Valley the work of thoroughly revising the boundaries has been put in hand and by degrees all the former small temporary pillars are being replaced by larger and more permanent ports of deodar on which numbers are cut and a large and well-built cairn created.[37]

In 1905, Eardly Wilmont, the Inspector General of Forests, Government of India, received the permission of the Government of India to visit and make an inspection of the forests of the Kashmir State in the autumn of 1905. In his tour of inspection Wilmont has pointed out the much deteriorated condition of the state forests and had suggested the following measures to improve their condition:

a) The areas to be reserved should be permanently demarcated.
b) The unregulated felling and lopping should be restricted by making a settlement of the rights of consumers especially the grazers.

[33] ARFD,1898-99, p.2.
[34] Ibid.
[35] ARFD, 1899-1900, P.1.
[36] Khuihama is a forest range in district Bandipur.
[37] ARFD, 1899-1900, P.2.

c) Proper working plans for the forests should be drawn.

d) The establishment of the Forest Department should be considerably increased.[38]

The task of improvement on conditions of the forests for which Mr. J.C MacDonnel had given the blue print was arduous. However, in spite of several odds, most of the preliminary work was accomplished. The forests were divided into territorial charges. In 1905, recourse was taken to move correct measurement of areas on survey.[39]However a lot of time during the period was spent in the examination of boundaries and the work of demarcation got further delayed because of the inaccuracy of the forest maps, which necessitated a fresh survey of the boundaries. By 1911, more accurate calculations were resorted to and the demarcation work taken up in forest division in conjunction with the Land Settlement Department.[40] The Forest Reorganisation Scheme was sanctioned during1916-17 by the Durbar and number of forest divisions was increased by the formation of seven new divisions. All the forest divisions were grouped into Forest Circles, each in charge of an officer holding an intermediate position between that of the Conservator and the Divisional Forest officer designated as Assistant Conservator. The circle of conservancy was named the Jammu Circle and Kashmir Circle, each covering the province of the same name.[41] The progress of demarcation of forests was rather comparatively slow in Kashmir Circle because the settlement officer along with other staff was busy in the measurement and other survey work of agricultural land in Kashmir. At the end of 1920, due to the progress of demarcation operations, the total area on records of the Forest Department was 9714 square miles. During 1920-21, demarcation parties were at work in various forest divisions of Kashmir circle. They were in conjunction with settlement department and took up the task of demarcation. The following table shows the details about the number of forests demarcated in various forest divisions of Kashmir Circle along with the total demarcated area in each division.

[38] Kapoor..pp 260-66
[39] ARFD, 1905-06, pp.62-63.
[40] ARFD, 1911-12, P. 37.
[41] ARFD, 1917-18, P.2.

Table 4.1 Forests demarcated in various forest divisions of Kashmir Circle

Division	Number of Forests Demarcated or Revised	Area (Acres)
Kamraj	72	552,738
Kashmir	27	82,625
Sindh	22	26,890
Panjal	42	50,038
Shupyon	4	245
Bhilawar	37	12,532
Riasi	20	18,402

Source: Annual Report Forest Department Jammu and Kashmir state, 1920-21

The progress of demarcation was not good during 1923 as large number of men, both in the Settlement and Forest Departments were employed on temporary establishment and they were loath to see the work finished, when their employment would come to an end. The position was therefore examined in September 1923 by a committee consisting of the Revenue Member, Settlement Commissioner and the Conservator, and it was decided to call halt and to finish the work in hand by the close of the year.[42]

By 1930, the area under the forest was increased considerably as more and more area was being demarcated. Working plans have been prepared or nearly completed for all the commercial forests in Kashmir Circle and for all but two areas in the Jammu Circle both of which are of comparatively little importance. During 1934-35, there has been some alteration in the total area of forests which is partly due to change in boundary lines of certain forests of the Kashmir and Keran Divisions and partly to the transfer of an area of 28, 308 acres to the *Shikarkhana* Department from the Tral range.[43] A very heavy snowfall, which occurred in the later part of the winter during 1935-36, took a great toll of forest in Kashmir, as thousands of trees were damaged. There occurred an alteration in the total area of forest in 1935-36, owing partly to the checking of areas and partly to the transfer of over six thousand acres of Overa-Rakh, from the *Shikarkhana* to the Forest Department.[44]

[42] ARFD, 1924, P.7.
[43] ARFD, 1934-35. P.5.
[44] ARFD, 1935-36. P.7.

The following table shows the demarcated, partially demarcated, un-demarcated and total demarcated area of various Forest Divisions in the Kashmir Circle towards the end of third decade of twentieth century.

Table 4.2 Demarcated, partially demarcated, un-demarcated area of various Forest Divisions in the Kashmir Circle

Division	**Demarcated (Acres)**	**Partially Demarcated (Acres)**	**Un-demarcated (Acres)**	**Total (Acres)**
Kamraj	1,50,758	------	------	1,50,758
Langet	2,07,102	------	------	2,07,102
Sindh	11,61,510	10,181	2,286	11,73,977
Panjal	2,88,944	------	------	2,88,944
Kashmir	6,61,335	------	------	6,61,335
Jhelum	3,03,047	-------	------	3,03,047
Muzaffarabad	2,87,359	340	------	2,87,699
Keran	6,02,406	------	------	6,02,406
Total	**37,22,461**	**10,521**	**2,286**	**37,35,268**

Source: Report of the Forest Enquiry Committee Jammu and Kashmir, 1939.

In the year 1947, the total demarcated area of Kashmir Circle stood at 3,770.62 square miles while as 3.7 square miles remains un-demarcated and 16.60 square miles partially demarcated.[45]

4.5 Working Plans

Working plan is a written scheme of management for a forest area aiming at continuity of policy and conveying out the wishes of the owner. Accordingly neither the continuity of policy nor controlling the treatment can be assured if permutations and combination of the area is done at each formation or the revision of the plan. The basic consideration, therefore, for the preparation of the plan is the ownership of the property. The state being the owner of the forests, this question resolves itself as we are at any rate concerned with the preparation of plans for the State forests. But it is too clear to

[45] Annual Report ,1950, p.11

seed any description that a single plan could not be framed for the entire property of forests in the state.[46]

The demarcation of State forests was done so that the management plans or working plans could be prepared. The forest management had gone a radical change due to the constraints created by enormous increase in demand of forest produce from the native population. There was not much control exercised on the felling of trees and the contractors were allowed to fell wherever they get benefitted. This has resulted into the exploitation of the easily assessable deodar forests. The forests were then brought under the working plans that regulated the yearly extraction and prescribed appropriate scientific practices to enable adequate reproduction of other species. Proper working plans on the accepted lines of management started to be made after ten years from the beginning of scientific forest management in the state and the first working plan was made for the forest of Baderwah Jagir in 1902.[47]As all the forests of the state were under the full control of the state, therefore the primary concern was the preparation of working plans for all the state forests. The working plans for Lolab and Boniyar forests were made in order to meet the demand of timber for flume line construction of Mohra Electric Station; for accessible forests in Lidder and Sindh Valleys and Tawi Valleys to meet the demand of timber of towns and cities of Srinagar, Jammu and Udhampur respectively.[48] The system of management has been by and large conversion system for Deodar and Kail forests and selection system for Fir and difficult Deodar forests. Chir has been worked under uniform system and Willows and Bamboos on clear cutting system. These systems underwent various modifications in order to suit the local conditions.[49] For the intensive measures of protection, a big forest division was further divided into two or more divisions on administrative grounds and on subsequent revisions the plans would be formed for new smaller divisions. Thus the working plans for Kashmir Division could be revised into separate plans for Pir Panjal and present Kashmir Division or for Kishtiwar Division into the plans for Kishtiwar and Ramban Division.[50] An extra Assistant Conservator, Syed Mehdi Hassan, from United Provinces, lent by the Government of India at the beginning of 1903 commenced work on the enumeration of deodar and pine and the description of forest areas in the upper

[46] *Proceedings of State Forestry Conference Jammu and Kashmir State*,1970, p.2
[47] File No. 116 of 1902, Old English Record, State Archives Jammu.
[48] *Proceedings of State Forestry Conference Jammu and Kashmir State*,1970, p.2
[49] Ibid.
[50] Ibid.

forest areas of the Udhampur Division comprised in Chenab, Wardwan and Udil valleys.[51] He started work in the Kashmir Circle on the same lines. In Kashmir Division the enumeration of Silver-Fir was commended in the Boniyar Forests near Bandipur. However it could not be completed owing to the unusual onset of winter.[52] In Kashmir and Kamraj Divisions, where the supply of firewood was of significant importance, a rough examination was made of the broad leafed forests which could be utilised under systematic management for the requirement of Srinagar and a tentative scheme was drawn up and submitted for the sanction of the state council. In 1903-04, Syed Mehdi Hassan laid a foundation for the compilation of working plans.

Eardly Wilmont in his tour of inspection to the state forests predicts that if the forests of the state are treated properly they will surely yield a very much large revenue than at present while the forest capital will be largely increased and form a very valuable asset in the wealth of the country.[53] He further adds that the working plan now to be compiled should be officially acknowledged as comprising prescriptions for treatment, unalterable on the impulse of the movement and they should be, when convenient, submitted for criticism of the highest authority available[54]. In 1908, the rules for preparation of working plans were made by the forest department. By 1911-12, there were significant plans for the different forests. Of the total forest area, nearly 40 per cent was under working plans. Protection of forests especially Deodar seems to have been high on the agenda of the State Government. It is evident from the order passed by the Maharaja Pratap Singh in 1911-12, which is as under:

a) All the Deoadar forests were closed to the goats belonging to nomads, when on march.
b) Special rules for grazing on such forests covered by the working plans were sanctioned.[55]

These regulations were thus instrumental in checking the evils of overgrazing which was inimical to natural reproduction. In 1913, Forest Regulations (1970) of the state were promulgated which are as under:

[51] ARFD, 1904-05, p.3.
[52] Ibid, p.56.
[53] Wilmont Eardley, 1905, *Notes on a Tour in the Forests of Jammu and Kashmir*, 1905, p.5
[54] Ibid.
[55] File No- 110/H-30, 1912, Old English Records.

a) Scientific method for removal of trees from forests.
b) Improvement of forest areas through the silvicultural practices.
c) Conferred certain protective powers to the Forest Officers.[56]

Thus the act consolidated the previous enactments, regulating procedures of the forest management. The working plans were prepared for the more valuable forests of Kamraj, Lolab, Kishenganga and Kishtwar. However, by 1916-17, the shortage of staff was proving to be an impediment in preparation of new working plans. Provisions of the existing working plans were generally carried out.

Since 1905, the work has been energetically pushed on and a very commendable progress has been made. Till 1912, the area of 1,856 square miles has been brought under working plans which is equal to 41 per cent of the total demarcated area.[57] The whole of Kashmir forests were practically brought under working plans with Deodar being only marketable species.[58] In 1912, there were eight plans in force which naturally differ in character according to the tracts with which they deal those for the most important and valuable bearing tracts, viz., Kishtwar, Kamraj and Kishenganga Valley are full and complete plans based on enumerations of all the Deodar over 3 feet in girth. Moreover all the Pine trees over 3 feet in girth have been enumerated in Kamraj and Kishenganga. These plans are characterised by thoroughness and good scientific knowledge of the requirements of the crop, following which selection and improvement felling's by area, with a fixed number of trees to be cut are prescribed. Other plans such as that for the Singh Valley where the produce is not so much valuable and supplies fuel to Srinagar and other large towns , are of a simple kind, are based on area and the principle felling's prescribed are to be carried out under the system of coppice with standards which is best calculated to meet the demand.[59] The existing plans are defective in the sense that there was no distinction been made in the enumeration between sound and unsound trees, and it is certain that many trees which will yield nothing, whether from unsoundness or from inaccessibility, have been included. Byrant had given the following suggestions regarding the working plans after he completed the tour of inspection in Kashmir forests.

[56] Souvenir (1983-84), *Centenary of Forest Management in Jammu and Kashmir State*, p.27.
[57] Wilmont Eardley, 1905, *Notes on a Tour in the Forests of Jammu and Kashmir*, 1905, p.4
[58] Wright, H. L. (1931). The forests of Kashmir. Empire Forestry Journal, 10(2), 182-189.
[59] Byrant (1912),opcit.,p.4

a) More attention should be paid in the improvement felling's in Deodar forests to the removal of the old malformed trees left as useless in former felling's.
b) The felling's should be carried out as sylviculturally desirable and the trees which ought to be removed should be cut without any limit as to number.
c) In the Hamal Rajwar forests of the Kamraj Division, it is intended to introduce the Regular Method.[60]

In 1920, Sir George Hart also visited the Kashmir Forest and found that the case of natural regeneration is not good where the conditions are more or less unfavourable and no artificial assistance has been given, but where conditions are favourable it is generally excellent.[61] The Blue Pine spread rapidly over large areas in all parts of Kashmir Valley and it is due to the protection measures introduced by the Mr MacDonnell that the regeneration of both the species is doing very well indeed.[62] During 1919-20, three new working plans were under preparation, one for the forests in the Kashmir Division, the second one for the Uri range in Panjal Division and the third for the Chir Pine forests or the Sensa Range in Mirpur Division.[63] By 1922-23, out of total area of nine thousand four hundred fifteen square miles of State forest; only three thousand six hundred twenty two square miles was under the sanctioned working plans that also included two thousand seven hundred twenty square miles of forests in Kishenganga, Kishtwar and Kamraj Divisions.[64] Between 1916 and 1923, very little was done with respect to working plans. The forest establishment bearing a few exceptions depicted little attitude or keenness for this aspect of their work and it was soon realised that little progress could be expected unless outside officers were specially employed for the purpose.[65] Towards the end of 1922-23, the State Council was asked to sanction the employment of three lent officers from British India. In sanctioning this proposal the council drew attention to the importance of good working plans and to the far greater importance of developing as rapidly as possible the forest resources of the state which were one of its main revenue assets.[66] As the demand for the working of the forests arose, preparation of other plans followed to meet the

[60] Ibid, p.5
[61] Hart George (1920), *Note on a Tour of Inspection in some of the Forests of Kashmir State,* p.12
[62] Ibid.
[63] ARFD, 1919-20, p.36.
[64] ARFD, 1922-23, p. 2.
[65] Ibid.
[66] Ibid, p.27.

demand of timber in various towns and cities of the state. Selection or improvement felling were prescribed in these earlier plans. The unit for preparation of plans or schemes was just ownership of land or the accessibility to well stocked forests. Thus working plans were prepared mainly for administrative and legal conveniences.

The selective felling of trees over large areas, before the beginning of scientific forestry in the state caused gaps that got filled up by regeneration. Working plans on accepted lines of management started to be prepared around the first decade of the 20th century. Under the selection system a limited number of trees over a particular girth were removed. Improvement felling was not at all carried out. No other silvicultural treatment was given to the crop. This type of treatment continued till 1920's when the application of Shelter Wood Compartment System or Uniform System of Management under Indian condition was being much talked about.[67] A special working plan circle was created in 1923 and all the commercial forests of the state have been re-examined during the last eight years and revised plans were prepared for their management.[68]During the initial days of the Forest Department the forests of the state were exploited by departmental agency, which was later replaced by giving the standing trees for sale to contractors. With implementing the modern system of working along with the silvicultural works put a heavy demand of timber and energy of the Divisional Forest Officer that he gets very less time to supervise the timber operations on a large scale.[69] Thus during the period up to 1924-25, the forest in Jammu and Kashmir relied exclusively on the traditional sustained selection method to meet the growing commercial demand. Two new Working Plan Divisions, one for Keran and the other for Kishtwar were opened in 1925-26 in addition to the three divisions already in existence.[70] One lakh fifty nine thousand and one acres were operated by the close of the year and plans for two lakh five thousand one hundred seventy seven acres were under preparation. Towards the end of 1927, new plans on up to date lines had been prepared for all the important Deodar forests of the state. The work on the species of Kail and Fir in Kashmir Circle was started in 1927-28, the four divisions, viz., Udhampur, Keran, Muzaffarabad and Ramban were closed down on compilation of their work and were replaced by four new divisions namely Kashmir, Jhelum Valley,

[67] Wright, op.cit, p.186
[68] Ibid.
[69] Ibid, pp187-88.
[70] Annual Report, 1941-43, p.1

Sindh and Gurez were opened.[71] During 1926-27, there was a little change in the method and agency of working in the forests. An exception was the Kamraj Division, where from the beginning of 1926-27 (in ranges other than Lolab), Selection and Improvement felling gave place to concentrated Regeneration felling.[72] The period of 20's and early 30's was the period of management of forests under proper silvicultural systems. The forests of Kullu and Chakrata which worked under Trevor and Howard's Plans; was an inspiration for Sher Singh (1924-25) and Deens (1926) as they introduced the change in management practices, by advocating the working of forests under Shelter-Wood Compartment System.[73]The accessible areas of Deodar and Kail forests were brought under this working system.

The motive of their management was to convert all the irregular forest into uniform normal forests in the very first rotation and the rotation of one hundred twenty years and a regeneration period of twenty four years were fixed.[74] By the end of 1930, the position with regard to working plans was eminently satisfactory, as regular plans had been completed for all the commercial forests in both Jammu and Kashmir Circles.[75] By 1934, all the commercial forests of any importance have been brought under regular working plans on modern lines. Working plans have been made for some less important forests of which there is no great possibility of being worked for timber in the immediate future. The future work will now largely consist in the revision of working plans already drawn up and mostly under operation.[76] The more accessible conifer forests and those on very easy ground, particularly in Kashmir Valley continue to be worked under conversion to uniform under the Shelter-wood system. Some of the important Deodar forests of the Kishenganga and Chenab Valleys have always been worked under the more conservative selection system. Under the system of conversion from irregular to regular forests, too much rigidity is avoided.[77] This system of irregular Shelter-Wood at the present stage of conversion is considered highly desirable particularly with the conditions prevalent in the state. The policy is not to aim at the

[71] Singh Sohan, 1970, 'A note on Forest Management in Jammu and Kashmir State, *Proceedings of State Forestry Conference, J and K State*, p.41.
[72] Annual Report, 1926-27, p.40.
[73] Pandita, P.N, (1984), 'J and K Forests and their Management', *Proceedings of the State Forestry Conference, j and K State, p.24.*
[74] Ibid.
[75] ARFD, 1930, p.5.
[76] ARFD, 1939-40, p.11.
[77] Ibid.

theoretical rigid uniformity, but to aim at crops more regular than at present; so that even if, with advancing knowledge in Indian forestry, need be felt for reversion to selection system, in areas comparatively more difficult, it may be feasible without serious upsetting of management. Considering the general conditions of the market which caters mostly for large sized timber the marketing rules even in the selection worked forests have been made quite liberal and so modified as to avoid cutting out of immature stock. This naturally quite fits in with general tendency of reduction in yield.[78]

We have seen that up to 1940 or mostly in previous decade (1930-40), partial enumeration of stock was carried out and naturally the best stock areas were selected for the purpose. Subsequent experiences showed that the yield arrived at on these figures were higher than the forests were capable of giving. In the revised plans, yields are based on complete enumeration of the growing stock as far as Deodar, Kail and Chir forests are concerned. In Fir forests, partial enumerations are being carried out but selected areas are of a mere representative character and the yields are calculated on conservator lines. In the more accessible Conifer forests and those on easy ground particularly in Kashmir Valley, conversion to uniform system is being continued. The conservative fellings carried out under the old selection felling system have resulted in profuse regeneration wherever edaphic conditions were favourable.[79] In conversation from irregular to uniform forest, full advantage is being taken of their regeneration and areas full of advance growth with scattered over-wood are being allotted for working. The idea of felling immature trees for purposes of uniformity as existed in the previous decade (1930-40), has gone a considerable change. The general policy in the present decade (1940-50) beginning with the revised plan for the Lolab forests has been that of minimising as much sacrifice of immature trees as is possible by retention of pole crop up to 18 inch or even more in diameter. This policy has resulted in stabilizing and improvement of market as export of inferior quality immature timber has almost been stopped.

[78] Ibid, p.12.
[79] ARFD, 1940-41, p. 9.

4.6 Silvicultural Practices

During the first phase of scientific forestry, i.e., from 1891-1925, much emphasis was laid rightly on large scale completion of mapping, demarcation, fire conservancy and subsequent exploitation of calculated yield. In the post 1925 period, principles of sound scientific management of forests for continuous production of goods and services was emphasised by laying stress on silvicultural practices. Silviculture is the art and science of cultivating forest crops, consisting of regeneration which includes renewal of forest crop and removal of old crops, by natural or artificial means.[80] Attempts at regeneration under scientific principles commenced for the first time in Northern India, in Punjab when commercial exploitation was started in 1915-6. Small scale experiments to ascertain the conditions under which regeneration succeed, were carried out and certain tentative results were derived. On account of a great slump in the market till early 1920's, no further research was made to a great extent until 1930's, when the subject was again taken up for study. Although the silvicultural practices had been a topic of discussion at various provincial and All Indian Silvicultural conferences. However, no large scale systematic experiments were carried out for desired results. The beginning of silvicultural conference was in 1918, which was held at Dehradun.[81]

With the introduction of new techniques of exploitation of forests such as, Selection, Uniform, Shelter-wood Compartment and later concentrated felling's, the concept of production of seed of required quality as means for plantation, gained ascendance in the late 1920's. With the general acceptance of plantation as a better alternative, seed selection of choice species was the most prevalent silviculture treatment in Jammu and Kashmir in this period.[82] There were two types of silvicultural practices prevalent in the Kashmir Forests; one was the natural regeneration and the other artificial reproduction. Natural regeneration considerably varies in different localities. Taking in to account the progress report of forest administration of 1922-23, it is mentioned that the natural regeneration of Deodar is excellent with certain exceptions. In all but unsuitable localities reproduction of Deodar appears to come in so that there would appear to be no difficulty in regenerating these forests under Shelter-wood system.[83] Reproduction of

[80] Sagreiya, K. P. (1967). *Forests and forestry*. National Book Trust; New Delhi.pp.143-44.
[81] Souvenir (1983-84), op.cit, p.20.
[82] Salaria, S. A (1984), Basic Concept of Forest Seed Orchard, *Proceedings of State Forest Conference, J&K State*, pp. 44-47.
[83] ARFD, 1922-23, p. 6.

Kail had spread rapidly and it seemed that there is little doubt that this species will eventually colonise many of the warmer slopes hitherto devoid of tree growth. The Haran Willow Plantation near Srinagar was working under regular coppice fellings and under the artificial reproduction, total area under willow plantation was increased by 17 acres to 35, 00 acres.[84] The year of 1927 was a poor seed year, especially for Deodar which produced practically no seed.[85] In the Haran willow plantation the coupe of the year reproduced well, though the growth of the coppice shoots was retarded by an attack of a defoliating caterpillar. Grazing by the nomadic goats, clear cutting of all herbarious growth for winter fodder by the local villagers make it almost impossible for any seedling to establish itself. Hence the artificial regeneration was done in those areas. Under the old selection system of working, little or nothing was ever done after felling to bring the forests into suitable condition for regeneration. With more intense methods of working, subsidiary operations became of utmost importance and considerable attention will have to be paid to this side of this work. During 1925, a start was made in the area in which seeding fellings had been completed in the Lolab, and 280 acres of Chandigam forests were cleared of all brushwood, which with the felling, refuse was collected in to heaps and the burnt patches being subsequently sown with the Deodar.[86] Under the Lolab working plans, 1,548 acres were marked in thinning's and cutting was in progress at the close of the year 1925. In the Sindh divisional headquarters nursery at Chattarnar, the divisional officer had raised a good stock of exotics such as the English Oak, the American ash, the cricket bat willow and the American walnut.[87] 1925-26, was a poor seed year for Deodar and Kail, except in the Chenab forests. In Kashmir Circle, none of the areas in which a seeding felling had been made produced a fraction of the seed required to restock the areas felled over. The uncertainty of Deodar seed years makes it impossible to rely on natural regeneration in areas worked under concentrated regeneration fellings and as these areas are extended, arrangements will have to be made for seed to be collected wherever it occurs, for use in places where it is most wanted.[88]

In the Lolab 100 acres of Chandigam forests were taken in hand and after the villagers had been allowed to remove all the refuse and brushwood required for fuel, the

[84] Ibid, p.7.
[85] ARFD, 1925, P. 17.
[86] Ibid, p, 18.
[87] Ibid, p, 19.
[88] ARFD, 1925-26, p.17.

remainder was collected in to heaps and burnt. These burnt patches were subsequently sown broadcast with Deodar just before snowfall, and at the close of the year germination appeared very promising. In the Haran plantation about 30,000 cuttings were planted. 3,738 acres were marked for thinning in Lolab working plan. Thinning was also executed in various compartments of Kashmir Division which yielded 76,236 cubic feet of marketable willow firewood covering an area of 161 acres and near the Wullar Lake an area of 2000 acres was planted with over 700,000 willow cuttings.[89] The Sindh Division Kuth nursery was extended by 200 acres of plantings. Large plantations were also stared in Keran and Sharda ranges of Keran Division. In Jammu Circle the Kuth plantation at Sinthan was added to by three and a half acres and existing nurseries were further extended in Ramban division.[90] Atropa Belladonna and the English Foxglove were successfully raised from seed by the Divisional Forest Officer Jhelum Valley Division in the nurseries at Tangmarg and Baramula. The year 1928 was good seed year for Deodar, practically throughout the state, in the following spring there was a profuse crop of Deodar seedlings almost everywhere in Deodar forests. The year was also good for Blue Pine in most forest of the state. Of the conifers in the state, Blue Pine has the strongest regeneration and is usually quite satisfactory throughout.[91]

With the increased application of concentrated and regenerated fellings, there was a large increase under the amount of work to be done under this head. Five and a half lakh of willow cuttings were planted in the swamp areas bordering the outlet of the Wular Lake. The Haran plantation was also extended by planting up part of the newly acquired swamp area to the South, approximately three lakh of cuttings being planted in this plantation.[92] The Kuth nurseries at Gosai in Gurez, at Sat-sar Arang in Reasi, and at Sinthan and Neil; both in Ramban were all maintained and extended as far as possible. About 2,000 plants of local Olive were grafted with shoots of European species in the experimental olive garden near Grahi. About 60 per cent of grafting became successful and the olives from the garden were sent to the industrial chemist at Srinagar and it was found that the locally produced fruit compares with the European olives both from the point of view of the oil extraction and of pickling.[93] The state Forest Department was much conscious of the fact that artificial regeneration of forest is necessary because

[89] Ibid, p.18.
[90] Ibid, p.19
[91] ARFD, 1928, p.11.
[92] Ibid, p.13.
[93] Ibid.

natural reproduction or regeneration could not keep pace with exploitation and damage. Specific details about actual progress of regeneration in forests being worked under concentrated regeneration felling were very difficult to obtain. The main reason was that the areas selected for major felling under working plans were already stopped with regeneration. The time taken in the establishment of new crop was an element of great uncertainty in the forest management and this delay was meant by retarding the rate of main felling. It was not definitely known, how long it would take to create regeneration, where and when it was required or the time the un-established regeneration would require to attain maturity.[94] In order to overcome the uncertainty in regeneration, the rate of felling which was maintained for the ten years as prescribed in the working plans; it was later extended for the succeeding ten years. The regeneration work was further made intensive after 1925 which mainly consists of hoeing, burning of slash and eradication of weeds, cutting back of useless species and fencing. During the years when the seed had failed, the ash beds and hoard up patches meant for reception of seed were usurped by rank growth. The useful manure of ashes was all consumed; fine tilt of soil lost and these areas were cleared and ploughed once more. It was felt that if actual burnings were put off until the approach of a good seed year, the accumulated work would become too heavy to be gone through in one season. Hence the only solution appeared to be artificial sowing during lean years and extension of clearances in the year of heavy seed fall.[95] Under the cultural operations, thinning was the most important silvicultural measure and was carried out in properly organised sequence under the working plan in force.[96]

The afforestation of Shankaracharya Hills *(Takhta-i-Suleman)* in Srinagar was taken up artificially with Deodar. Regeneration work was also done in Langet, Pir Panjal and Ramban Divisions in 1932-33.[97] During 1934, to restock the obstinate areas where regeneration falling had been carried out and natural regeneration had failed to come up, a considerable amount of sowing and planting was carried out in most of the divisions. In Langate Division alone, about two lakh of seedlings were transplanted. In Haran and Ningli plantations about twelve lakh of Willow cutting were planted up in

[94] ARFD, 1929-30, p.12.
[95] Ibid, p.13.
[96] ARFD, 1929-30, p.12.
[97] Firdaus A. A (1944), Afforestation of Shankaracharya Hills, *Indian Forester, Vol. 70*, p. 83.

areas worked over.[98] By 1937-38, natural regeneration was far below expectations. Artificial regeneration by sowing and planting of Deodars on in extensive scale had to be resorted to in all important divisions of the state, so that regeneration in felled over areas as a whole, may not lay in arrears.

An important feature during 1930's in the forest history of Kashmir was stress on silvicultural research. More and more samples and experimental plots were laid down for studying behaviour of acclimatization of exotic species and conditions for natural regeneration of Deodar in Kashmir. The third revision of the major plans after the introduction of Uniform System in Kashmir started with the Lolab plan in 1941 and was completed the same year. Other plans revised were those of Gurez, Lingli and Baderwah. A plan for Fir forests of the Chenab Valley was also prepared.[99] The main operations for aiding or inducing natural regeneration were collection and burning of felling debris, cutting back or eradication of useless species and fencing. Every year as more areas were felled under the regeneration felling, an increasingly large area was gone under over these operations. Efforts were made to obtain maximum results with minimum cost. The villagers were allowed and encouraged to remove freely as much of the felling debris as they could.

4.7 Communication and forest policy

The forest Department after its establishment did a remarkable job by constantly building and repairing a number of roads and pathways with the twin object of:

a) To facilitate inspection and,
b) To facilitate the transportation of produce, this besides serving the need of the department immensely, facilitated the movement of travellers, traders and goods in remote and far flung areas of the state.

The districts of Kamraj and Udhampur gained immensely from this communication network.[100] The Forest Department started its work of building the roads in 1898-99 and initially the five roads were built with the total length of sixteen miles being suitable for riding and transporting goods on animal backs. In 1899-1900, about thirty one miles of

[98] *Progress Report on Forest Administration*, 1934, p.5.
[99] Khan, H. (1940), *A Revised Working Plan for the Forests in the Lolab Range of the Kamraj Forest Division*, Forest Department, pp. 10-40
[100] Kapoor, M.L,op.cit, p.260.

good paths and one hundred and thirty two stout wooden bridges of small size were being made. The Forest Department claimed in 1904 that roads made by it in Udhampur district proved of great use to the public, as they opened up the various villages where previously no roads existed along which it was possible to ride, and where the main tracks were dangerous in places even for foot travellers.[101] During 1901-02, four roads measuring a total length of about 17 miles, with about 29 bridges were constructed in the Lolab Valley of Kashmir and in the same year were constructed a foot path in Doda and bridle path in Udil.[102] In the following years, the Forest Department made a further progress and constructed a number of new roads and paths. During the period from 1907-08 to 1912, on an average 171 miles of new roads and inspection paths were annually made.[103] The year 1912-13, broke down all the records of road construction as the year witnessed the 274 miles of new forest paths.[104] Thereafter the rate of road connectivity declined rapidly and the length of roads and paths went down from 258 miles in 1913-14[105] to 111 miles in 1923-24.[106] The next year however the mileage came to 189[107] and it attained the record figure of 282 miles in 1925-26.[108] The Forest Department in addition to construction of roads also laid down one and a half mile of tramway in the Lolab Valley for carrying out the timber from the Sogam forests to the nearby floating stream.[109] The construction of well aligned roads through the forests was of great importance and much work remained to be done. There was considerable room for improvement in general quality of the work which had been executed especially with regard to the alignments. It was uneconomical to construct roads with steep gradients owing to the subsequent high cost of maintenance. The lower the gradient the less the cost of upkeep. Therefore, the need was felt by the forest department to construct shorter lengths of well aligned roads at a higher average cost per mile than to construct long lengths of badly aligned roads at the same total expenditure.[110] In 1930, 242 miles of new roads were constructed at a cost of rupees 29770. In the Keran Division, six Cantilever bridges were constructed on the

[101] Annual Report, 1904-05, pp. 56-57.
[102] Ibid.
[103] Kapoor, M.L,op.cit, p.262.
[104] Annual Report, 1912-13, p. 46.
[105] Annual Report, 1913-14, p.56.
[106] Annual Report, 1923-24, p.39.
[107] Annual Report, 1924-25, p.25.
[108] Annual Report, 1925-26, p.43.
[109] Annual Report, 1908-09, p.4.
[110] ARFD, 1915-16, p. 4.

Kishenganga River and one bridge was also constructed at Shalura in Kamraj Division. In the same year, repairing work was also done on 1524 miles of old roads. The Safapura road in the Sindh Forest Division was also improved in to a fair weather road during this year. Besides roads, inspection paths had also been constructed for facilitating inspections.[111]

During 1925-26, two hundred eighty eight miles of new roads were constructed besides also some bridges. During the first half of 1927-28, five hundred twenty nine miles of existing roads were repaired. The total new construction being twenty three miles of roads and one bridge at a cost of rupees nine thousand five hundred thirty eight. With a view to further improve communications, five roads in Kamraj Division and two main roads in Kishtwar Division were taken from the Revenue Department; while in Kishenganga Valley the reconstruction and maintenance of bridges was undertaken.[112] The Lolab tramway continued to give excellent service and carried six lakh fifty eight thousand eight hundred thirty five cubic feet of timber. The working of Harwan Gali rope way was put on economic basis in 1926-27 and carried nineteen thousand cubic feet of timber during this period. The total expenditure incurred on buildings such as Rest House, Inspection Huts, Divisional offices, Clerks quarters and Range quarters amounted to rupees eight thousand one hundred seventy three. The total length of new roads constructed by the Forest Department was 191 miles in 1927-28[113], 181 miles in 1928-29 and 245 miles in 1929-30.[114]

The most important bridges that were constructed during this period were a bridge in Gurez and six cantilever bridges on the Kishenganga River, besides one suspension bridge at Salkhlla. Forest roads that had been damaged in the floods of 1928 and 1929 were also repaired. In 1930-31, several roads were transferred to the Forest Department from the Revenue and Public Works Department. The length of new roads constructed during 1930-31 was 217 miles in 1931-32, it was twenty six and a half mile and 1932-33, it was 21 miles.[115] Thirty seven miles of new roads were added during 1933-34 and sixteen miles of roads with one bridge were constructed in 1934-35. Repairing of one thousand eight hundred seventy four miles and one thousand five hundred seventy six

[111] ARFD, 1930, p. 20.
[112] Annual Report, 1926-27, p.38
[113] Annual Report, 1927-28, p.15.
[114] ARFD, 1930, p.20.
[115] Annual Report, 1930-31, p.18.

miles of old roads was carried out during these two years.[116] During 1935-36, 16 miles of new roads, one bridge and eight culverts were constructed in Kashmir, Muzaffarabad and Jhelum Valley Divisions of Kashmir Circle. The above also includes a motor road about five and a half miles in length called Ahlan- Waylu road with bridges and culverts situated in Kashmir Forest Division and the road is important from the trout fishing point of view.[117] Besides constructing new roads and bridges, about 1,874 miles of roads and bridges were repaired accordingly.[118] During 1936-37, one thousand nine hundred fifty one miles of roads were repaired at a cost of Rs. 48,224. The Marwa Wardwan Valley has been opened to pony traffic and Padder has been connected with Baderwah.[119] The construction of new roads and buildings was halted in the year 1947 as no funds were allotted in the budget for the purpose.[120] A good amount of revenue was generated by the Forest Department post 1925, which was spent on the construction of new roads and bridges, repairing old ones, building huts for forest officials and tourists in the important tourist destinations.

These communication works which were taken in hand by the Forest Department after being brought on scientific lines served the department both in conservation and exploitation of forest resources. As the forests of Kashmir were located at high altitudes and it was cumbersome for the forest officials to go out for a regular inspection. The need was felt to have better road connectivity and simultaneously constructing culverts and bridges on a way to the forests making easy for the people as well as ponies that were being used to carry the timber. This was all done to improve accessibility to remote and far flung forest areas, thus facilitating the movement of men and material for better exploitation of the forest resources.

4.8 Grazing and Forest Conservation

One of the great dangers regarding the maintenance and regeneration of the forest has been unrestricted grazing, lopping and browsing. Not only have the animals who browsed down every young tree that come across but the herdsmen also lopped and hacked all the trees which their animals were unable to reach. Moreover the herdsmen

[116] Annual Report, 1933-34, 1934-35, p. 21.
[117] ARFD, 1935-36, p.19.
[118] Ibid.
[119] Annual Report, 1936-37,pp. 20-21
[120]ARFD, 1947, p. 22.

usually put the forests on fire so as to obtain better crops of grass for their cattle.[121] The grazing which has done a heavy damage to the state forests was called by Bryant as "an absolute pest". The grazing is of three kinds- firstly by the cattle, sheep and goat belonging to the indigenous population. Secondly the cattle belonging to the Gujjars consisting mainly of buffaloes. Thirdly the sheep and goats owned by nomad professional graziers known as "Bakerwals".[122] As regards the first class, the people own the large herds of cattle including buffaloes, cows and ponies, as well as great numbers of sheep and goats. They graze in the forests for almost seven months in a year and stay in the grazing camps, consequently damage the young growth by the animal browsing and to trees by lopping by the herdsmen.[123] The Gujjars coming originally from Jammu, Hazara and Poonch have now settled in the villages in the remote places where good arable land is scarce. They own large herds of buffaloes and carry on extensive and profitable trade in breeding buffaloes and other dairy products. No limit was fixed to the number of animals they may keep. The third class of grazing being the most destructive one, was by the Bakerwals who were professional sheep and goat breeders coming originally from Kaghan, Hazara, Poonch, Chamba or the Punjab. Here they find the wide range of unrestricted grazing grounds in the forests and high uplands of Kashmir, than in their own or any other country. This unrestricted grazing and browsing damage the forests and using up the fodder to which the natives of the place have the prior right.[124] The Conservator of Forests as early as 1903-04 laid much emphasis on the protection of forests from the injury done by grazing and browsing animals.[125] It was observed that in the lower forests of the Kashmir Valley, the reproduction of the broad leaf species on which the continuous supply of firewood for the city of Srinagar depended was checked and the very existence of the forests was endangered. In the forest of the medium and high elevations from which the main supplies of timber for export and use in the state were obtained, the regeneration of all species was everywhere hampered.

The State Forest Department of Kashmir realised the importance of tackling these problems. The protection of young growth from grazing and browsing animals was a

[121] Shah, M.H, (1991), " Degradation of Environment, Forests and Pastures in Jammu and Kashmir State as a result of Grazing by Migratory Cattle", *J&K State Forester*, J&K Government, pp. 7-11.
[122] Bryant, op.cit, p.3
[123] Ibid.
[124] Ibid.
[125] File No-25/F.D, (1904), Note by A. W. Blunt, Old English Records 1868-1921.

most necessary step in proper forest management, the ideal condition being complete exclusion of all animals from all forests. [126] There were no restrictions to the number of cattle, sheep and goats which may be grazed and the first notable step in this regard was taken in 1909 in which the government sanction the closure of one-fifth of the area of any forest for the purpose of reproduction. The second step in this regard was taken in 1912, under which the government prohibited the grazing of goat in any deodar forest.[127] During 1913-14, the government sanctioned the promulgation of Forest Regulation 1970 which was drawn up on the lines of Indian Forest Act of 1878. This act consolidated the previous enactments, regulations, procedures and gives certain protective powers to Forest Officers. The Forest Department closed the forest areas which were lying above 8000 feet for protecting the important plant species including the kuth. The goats and sheep were completely excluded from this area while the buffaloes, cows, ponies belonging to the villagers who were sharing the borders with concerned forests were permitted to graze up to a maximum of one cow, bullock or pony two each acres of closed area.[128]

The damage caused by the Bakerwal goats was very serious to the growth of forests. The proposal which was made earlier to levy an increasing tax on these goats were sanctioned by the government, under which the foreign goats were prohibited from entering the state and the Bakerwal goats, which reside in the state and migrate from one province to the other, will be taxed at a rate which increases by three annas annually.[129] In 1925, nomadic goat grazing continued to do a great deal of damage, particularly in the high level birch forests.[130] Until 1925, the maximum closure permissible at one time continued to be one-fifth of any individual forest but afterwards it has been altered to one half of any forest subject to not more than one quarter of the total area of the forests in any one range being closed at a time. In spite of that the herds of nomadic goats continued to do much harm. As the protection from the cattle or grazing was under the Revenue Department, so it was impossible for the Forest Department to exercise any form of effective control.[131] During 1930-31, the forest area of 236.88 square miles or 2.38 per cent of the total area were closed to grazing during

[126] Annual Report, 1903-04.
[127] Bryant op.cit. P.2. See also ARFD, 1911-12, p.12.
[128] Chief Minister's No. 6417 dated 27th November, 1914, His Highness Records, JKSA(J.R).
[129] ARFD, 1919-20, P.7.
[130] ARFD, 1924, p.18.
[131] ARFD, 1925, pp23-24.

the year.[132] At the end of the year 1933-34, the total demarcated forest area was 9951.25 square miles and out of which only 224.09 square miles were closed to grazing which is 2.25 per cent of the total area.[133]

Pt. Shridhar, Deputy Conservator of forests, took over the charge of Grazing Regulation and Improvement Branch in 1943 and remained in charge of the branch throughout the year. The object of opening this branch was to survey with an idea of obtaining figures for incidence of grazing and to improve the existing pasture lands by rotational closures. The eradication of injurious and poisonous grasses and to provide improved grazing facilities to goats, sheep and cattle in the state was second objective for opening this branch. With these objects in view, the pasture land so the Anantnag and Reasi districts were being examined.[134] Keeping in view the regeneration and conservancy of forest growth, an area of 583 square miles remained close to grazing. This amounts to 5.6 per cent of the total area of the forests or 22.5 per cent of the area which the forest department is entitled to close at a time. Closure watchers are usually detailed to guard against indiscriminate grazing and cattle pounds are maintained to ensure better success. Various facilities including the grass cutting is however being provided by the department to the villagers but in spite of that they are giving very little co-operation in the detention and prevention of forest offences.[135]

[132] ARFD, 1930-31, P.18
[133] ARFD, 1933-34, pp. 20-21.
[134] ARFD, 1942-43, p.21.
[135] ARFD, 1947, p.21.

Table 4.3 Result of operations under one-fifth closure rules.

Division	Area of Deodar Forest closed to nomadic grazing	Area in square miles closed to grazing				Area in sq. miles open to all animals	Total area of demarcated forest in sq. miles
		All animals	Animals not belonging to adjacent Villages	Animals belonging to adjacent villages	Total		
Kashmir	43.13	---	---	---	---	---	660.97
Kamraj	308.04	5.12	---	---	5.12	836.98	842.10
Muzaffarabad	129.80	---	---	---	---	---	807.10
Panjal	159.87	---	---	---	---	---	324.95
Chenab	---	---	---	---	---	---	92.26
Kishtwar	601.87	1.54	---	1.20	2.74	647.84	650.58
Reasi	57.57	---	---	---	---	---	548.20
Ramnagar	---	---	---	---	---	---	288.45
Mirpur	---	---	---	---	---	---	538.49
Jasrota	---	---	---	---	---	---	223.09

Source: Annual Report Forest Department, 1913-14

The above table gives details/results of the one-fifth closure rule which was applied in almost all the Forest Divisions of the State. It clearly shows the importance of the deodar species as most of the area under it was closed for the grazing by strictly following this rule.

4.9 Exploitation of Forest Resources

The exploitation of the state forests was regulated under the working plans prescribing selection and improvement felling. There was a reckless felling of trees before the beginning of scientific forestry in Kashmir and no definite knowledge of the future capabilities of forests was obtained. It was not possible to allow working by the

purchasers except on most limited scale.[136] There were three distinct agencies for the exploitation of forest produce-

a) The Departmental Agency
b) The Contractual and Purchasers Agency through which the major part of the exploitation was carried out.
c) Free grants of timber and fuel and their sale at concession rates to the villagers.[137]

The Departmental Agency continued to work as a principal agency from the beginning of 20th century as it was in 1880's. Of the total quantity of major produce removed in 1905, only 12.51 % was removed by departmental agency. This owed principally to the very large quantity of fuel taken by purchasers and free grantees. In so far as timber was concerned, 44.82 % was taken out by state agency. In addition to ordinary working, a very heavy extra ordinary demand was made during the year for deodar and blue pine timber for the construction of the flume for the Electric Power Installation, which was undertaken by the State at Rampur on the Jhelum River.[138] The demand was for some six lakh cubic feet of sawn timber for the flume, two lakh eighty four thousand cubic feet of poles for the transmission lines and some seventy five thousand cubic feet in logs for the dredging fleet which was to be built on river Jhelum. The number of trees felled during 1911-12 under the Selection System was twenty one thousand eight hundred eighty one while as an area of three thousand five hundred fifty three square miles of forest land was dealt with under the improvement system. In addition as many as eleven thousand six hundred three deodar, kail, Chir, Budhi trees were exploited under unregulated felling. The exploitation figures for 1911-12, reveal that exclusive of free grants, the total out-turn exploited by the Departmental Agency was 25.44 per cent and it can be considered to be a correct proportion, to keep in touch with the market and to prevent monopolies. The percentage of timber extracted by the contractual and purchasers agency was 74.6 per cent exclusive of free grants and being the major part of exploitation. With regard to the free grants of timber and fuel and their sale at concession rates to the villagers, about 5, 64,861 cubic feet of timber was sold at

[136] ARFD, 1905, p.67.
[137] Anon, (1966), Forests, J&K Information Department, pp. 14-20.
[138] Annual Report, 1905, p.7.

privileged rates and 6, 36,774 cubic feet of timber were given as free grants.[139] In the year 1919-20, the methods of exploitation continued to be Selection system, Coppice System, Improvement fellings and unregulated fellings. The most extensive departmental timber operations were carried out in the Lolab forests of the Kamraj Division, but the output remained only 15,46,305 cubic feet representing 18.2 % of the total quantity extracted by all agencies. The reason for low output was due to the labour difficulties.[140] Sir Petter Clutterbuck, the then Inspector General of Forests visited Kashmir at the request of state government. The forests were re-organised on the lines of felling system prevalent in British India.[141] The selection system was then replaced by the system of concentrated felling in the coniferous forests in the latter half of the second decade of 20th century.[142] The exploitation data reveals that in the period up to the first decade of 20th century most of the forests in the state were worked by Departmental Agency. By and by, this system gave place to the purchasers or contractors with whom the contract for the sale of timber was entered into on the monopoly cum royalty basis.[143] The new system envisaged the purchasers to pay a lump sum for the right to work and royalty on the out-turn. The purchasers agency worked on the old Indian Selection System. But it raised the cost of extraction much higher and covered so much area that the young growth could not be properly protected from the destructive grazing without undue expense or doing injustice to those people who had to find sufficient grazing for their herds.[144]

In the second decade of 20th century, the old selection system was given up and the main forest blocks were began to be sold on three to five years lease. This system worked well and was of great advantage to the Forest Department. The lessees paid for all the trees and the endeavours of the lessees was to clear the forests of every stick of marketable timber, as earlier they were clearing only the best quality.[145] The trees were cut wherever they fell by the handsaw and carried out to the nearest floating stream. The Kairu and Deodar forests, are on the whole, are well served by the stream in which sleepers and beams can be floated. For the extraction of logs, scantlings and fuel, tram

[139] Annual Report, 1911-12, p.40.
[140] Annual Report, 1919-20, pp. 37-38
[141] File No. 84/R-F-67,1923, Political Department.
[142] Fotedar, A.N (1970), Forestry in Jammu and Kashmir: A brief critical review, *Proceedings of State Forestry Conference*, pp. 104-09.
[143] Wright, H. L. (1931). Op.cit, p.187.
[144] Annual Report, 1911-12, p.40.
[145] Hart George (1920), op.cit. p.10. See Also Annual Report,1916-17,p.23.

way was utilised and were carried to the nearest floating stream. Most of the Deodar forests were inaccessible by road as they are found on very steep or precipitous slopes, most of the sleepers were carried out by coolies down to the nearest stream and the beams are often dragged a couple of miles along the dry slide. In some cases sleepers have been brought out on an aerial wire rope. Horse-sleights, tram lines and even a small caterpillar tractor were employed to drag logs along the ground but the local block is not strong enough to be really satisfactory at this work.[146] The timber arrived at the floating stream will have to wait till the snow starts melting and rains in the spring will raise the level of streams sufficiently and so the floating proceeds through spring summer months. At the end of spring season the cultivators in the Kashmir require abundant water supply for irrigating their rice fields, so the floating contractors have to finish their work before it, otherwise logs and scantlings will remain in the streams till the following year. The floating in the higher streams is serious affair, but when it comes the case of scantling, it was simplified by introducing a system known as Telescopic floating.[147] When arrived at the main rivers- the Kishenganga, Jhelum, Chenab or Ravi, floating is simple enough down to the point at which they debouch from the hills in to the plains of Punjab. The timber at that point is collected, made up in to rafts and rafted down to the main Punjab timber depots at Jhelum, Wazirabad and Lahore.[148]

4.10 Forest Education, Training and Research

The Forest Department is only department among the few government departments in the state where the training is offered in a systematic way to the officials before they went to the field for job. The forests of the state were the major revenue generating source, so it was imperative to impart training to the officials as the department has started its working on scientific lines. The first step in this regard was taken in 1905, when the members of the superior establishment were deputed for training at Dehradun Imperial College.[149] In 1911-12, the department felt a shortage of trained officials and the charge of some important ranges was given over to the Foresters.[150] The candidates

[146] Ibid,p.11, See Also J.K.S.H.B,1924,P.18.
[147] J.K.S.H,1924,P.18. Telescopic floating means to float scantling through very rocky streams with a minimum of water by confining that water to a roughly made wooden channel at the more difficult places.
[148] Ibid.
[149] Annual Report,1905, p.72.
[150] Annual Report, 1911-12, p.41.

were being sent from time to time to the Imperial College at Dehradun for training purposes. For the Rangers course, M. Ataullah Khan came back with an Honours certificate and was the first official of the state to win this distinction. At the state level, training was also given to the forestry staff at Chattarnar. The institution was called as Kashmir Forest Training School and was established in 1911. The arrangements to inaugurate the training class in the state were made from the beginning of 1915, when an experimental class of two Foresters and nine Forest Guards was opened for one month in the Kamraj Division with a view to ascertain the requirements of the future class.[151] In 1916-17, twelve students all of whom were either foresters or forest guards, obtained training from this institute.[152] A course of instruction for the training of Foresters and Forest Guards was carried out during 1917-18 at Chattarnar. Candidates for appointment to the grade of Forest Ranger were deputed to undergo the Rangers course of training at Dehradun Imperial Forest College.[153] The state administration was keen enough to keep themselves abreast of the latest developments going on in the British India and the world in the field of forest management and its related issues. The state administration gave sanction to the payment of thirty pounds to secure life membership of the Empire Forestry Association for the state ruler. This association had its membership consisting of the administrators of the British provinces and rulers of princely states.[154] The steps which the state government took and the efforts which the forest department made in getting the personnel of the forest department trained in the best forestry practices shows that the state government had made training a corner stone of its Forest Policy. The deputation of one of the State Forestry Officers to America for training depicts a far sighted policy of the state government for management of the forests along modern and scientific lines. Similarly requisitioning of experts from government of India is also pointer in the direction of the frame-work which the state government had envisaged for qualitative management of its forest wealth.

The process of getting local foresters trained outside continued and as many as five new candidates were selected and sent to Dehradun for training in the Forest Rangers course during 1930-32. About the research division of the Forest Department very few people realised the importance of this branch of forestry in 1930's. This branch of forestry was

[151] Annual Report, 1913-14, p.60.
[152] Annual Report, 1916-17, p.51.
[153] Annual Report, 1917-18, p.29.
[154] File no. 84/R.F-50 of 1922, Political Department Records.

in fact the basis of correct forest management as the calculation of rotation and yield depended entirely upon the data collected which was ultimately of great help both to the forest department and to the exploiter. Forest research in the state was started on systematic lines during 1928, when a separate Research Division with headquarters at Srinagar was created. In the initial stages, the Division laid out some sample plots of deodar, Kail and fir, studied various problems of forestry and did pioneering work with regard to the introduction of new exotic species.[155] During 1934, two exotic drug seeds were tried in the nursery of Baramulla.

Afforestation of Shankaracharya- a barren hillock was started by the division in 1936. Experiments on it were continued and definite improvement was maintained. Deodar was successfully planted in suitable places while robinia, almond, apricot and walnut did well. Chir pine was tried on experimental scale as it was felt that it could solve the problem of clothing some of the bare hill sides. Afforestation of Sumbal and Bahu Rakhs in Jammu Circle received considerable attention during the year.[156] Trials of Poplar and Pines were taken up, plantations established, medicinal plants raised, seed production areas laid out and preservation plots established. The Silviculture Research Division maintained a number of sample plots where measurements were carried out for conifers and less important broad leaved species, such as Deodar, Kail in Jhelum Valley and Langate Division. In 1937-38, a sample plot of thirty five acres was demarcated in the fir forests of Gurez Valley for studying the progress of regeneration of fir.[157]

During 1941, fourteen students and during 1942, thirteen students passed from the Chattarnar Forest School. Silver medals were awarded to the best students for forestry and silviculture. Two government stipendiary's returned from Forest Institute at Dehradun. After completing their training in the Superior Forest Services, one of them won the Currie Scholarship of thirty pounds, being the second price. The entire government stipendiary's who were under training in the rangers class at the institute were declared successful in the 1941-43 session. They were appointed as Forest

[155] Souvenier,(1984), op.cit., p.25
[156] Annual Report, 1935-36, p.25.
[157] Hafizullah Mir, Some aspects of Fir regeneration in J&K State, *Proceeding of State Forestry Conference J&K State 1970, pp*. 94-99.

Rangers. Thirteen more stipendiaries were deputed for training at the institute, three for the superior forest service and ten for the ranger's course.[158]

4.11 Forest Fires

Grazing, lopping and incendiarism are considered to be the enemies of forests. The forests of the state have suffered a great damage due to the forest fires. Most occurrences of forest fires and largest area burnt were in the comparatively dry forests and and hot climate of Jammu province. The danger of the forest fire was not so much and was easily controlled and extinguished in Kashmir province.[159] However the detentions and convictions were not successful. Owing party to the weakness of staff and the consequent difficulty of prompt enquiry and partly to the inability of the magistrate to convict without more evidence that could sometimes be produced in the forest cases, especially those connected with fire. There was also very little reason to doubt that in majority of the cases, forests were fired with deliberate intention of obtaining better crop of grass for the cattle.[160]Even in 1903-04, there was no special system of protection attempted and in Bhimber alone small extra staffs of fire watchers were deployed.[161] During the same year ninety seven cases of injury to the forest through fires, this resulted in the burning of three thousand four hundred ninety one acres of forests in Jammu province.[162] In 1905, the Conservator of Forests realised that it was difficult to prevent such fires as the department had no control over the grazing, while the areas in charge of beat guards were too large and difficult for effective patrol.[163] The instructions were issued by the Conservator to all the forest officers drawing their attention to the procedure laid down in judicial circular No's 105 and 106 dated 17 September 1892 for punishing the *Lamberdars* and *Chowkidars* who neglected or declined to render proper assistance in extinguishing forest fires.[164] During 1905, there were one hundred twenty five forest fires, the total area being burnt three thousand five hundred twenty four acres or an average of 28 acres in each case.[165] The year 1915-16 was the disastrous one with regard to the forest fires. The fire commenced

[158] File No. GL/ 50 of 1927, Political Department.
[159] Kawoosa, M. A(2001). *Forests of Kashmir: A Vision for Future*, Natraj Publishers, Dehradun. pp. 35-41.
[160] Raina, A.N, Forest and Ecology: Damage in J&K, pp 80-92
[161] Annual Report, 1903-04, p.58.
[162] Ibid.
[163] Ibid.
[164] File No.55/RK-133,1905, Order Copy of the Judicial Circulars, OER (1868-1921).
[165] ARFD, 1906-07, p.10.

in the early part of the year in the Chir pine forests of the Jammu province and spread from one division to another throughout the state. The total area burnt in the state was two lakh fourteen thousand and two hundred acres with the total number of cases of outbreak of fire being eight hundred twenty seven as compared with eighty eight cases and two thousand and sixty acres burnt in 1914-15.[166] In the Chir pine forests although the older trees which were immune against fire had escaped, great destruction of young growth had taken place. In the blue pine forests, large trees were also destroyed by the fire along with the young ones.[167] 1915-16 was exceedingly a dry year and the Chir pine and blue pine forest were in consequence in a very inflammable condition. The fires were however not confined to these forests but a large number of fires occurred in such forest which otherwise were very difficult to burn even in the driest seasons. In these forests numerous small patches, often only a few square yards in extent were burnt, indicating very clearly deliberate attempts to burn the forests but without success, owing to their non-inflammable character, the fires, with very few exceptions were due to the deliberate acts of incendiarism.[168]

However it was not possible to state definitely the cause of this wave of incendiarism which spread throughout the state. Some divisional forest officers maintained that the object of the fires was to increase the supply of dead timber in the forest, the removal of which had been permitted under Kashmir and Jammu notices and advocated as a remedy the cancellation of the clause which permitted the removal of dead timber. The explanation could account for the fires in some locality but even if the explanation was correct the proposal to cancel the clause permitting the removal of dead timber was not a sound policy. The proper remedy was to amend the clause with regard to forest fires in such a way that it would not be worthwhile to burn the forest for the sake of increasing the dead timber. In Kashmir province the areas which chiefly suffered from fires were the hot southern slopes on which blue pine was rapidly expanding. It was felt that the reason for burning these areas was to prevent the hill sides in becoming covered with tree growth which would result in curtailing the supply of grass for grazing purpose. Many other explanations were offered all of which were however only conjectures as the persons who actually set fire to the forests were unknown. The only reason which could justify in any way the firing of the forest was in connection with

[166] ARFD.1915-16, P.39
[167] Ibid, p.8.
[168] Ibid.

grazing.[169] If for instance forests were encroaching on grazing lands, such as in the case in Kashmir province where the blue pine was rapidly covering the bare hill sides, there could be an incentive to destroy the forest growth. Similarly, where the ground was covered with the thick layer of pine needles which prevented the growth of grass there could also be an incentive to fire the forest to destroy the pine needles. Whether these incentives for firing the forest existed or not could only be ascertained by careful investigation into the grazing conditions by each locality where fires had occurred. If such incentives existed it could be considered what could be done to remove them.

In case of Chir pine forests it was probable that the working of the forest under the system of Concentrated regeneration felling instead of the Selection system which would permit of periodical firing of the older coupes, not under regeneration, would remove any difficulties in connection with grazing and thereby leave no justifiable incentives for illicit firing of the forest. Periodical firing of the blue pine forest could not be provided for as in the case of Chir pine forest, as the former species, including trees of large size was readily killed by fires, whereas the latter species after attaining a certain size was immune against fire owing to the presence of very thick bark. Apart from the removal of any incentives which could possibly exist for burning the forest the introduction of drastic punitive measures was essential. The existing laws with regard to the forest fires were not satisfactory as a means of putting a stop to incendiarism. They provided adequately for the punishment of offenders actually caught committing incendiarism but unfortunately such offenders were rarely if ever caught, owing to the fact that acts of incendiarism were usually committed at night. Section 21 of the forest regulation also provided for the closure of the burnt areas to concession for a period of two years.[170] The concessions such as grazing, firewood etc. were ordinary necessity which the villagers could do without. The closure of forest to concession meant therefore that villagers must resort to other forest which would throw a greater strain on them or ignore the closure orders. In the latter case dishonest subordinates had an opportunity to connive with the villagers and cause them considerable trouble by making exorbitant illicit demands. The closure of forest to concession was not a practicable or sound measure. The only rational and sound way of dealing with the incendiarism was by means of communal punishment involving a finer on the whole

[169] Ibid.

[170] Souvenir,(1984), op.cit., pp. 9-10

village community which had concession in the burnt forest. The objection usually raised against this form of punishment was that it involved the punishment of innocent persons as well as guilty. This however could not be helped. The same objection could be raised against the closure of forests to concession.[171] In 1915-16, recommendation for the introduction of the communal punishment for incendiarism in the forest was submitted for the consideration of the government. The revision of the section 7 of the Forest Regulation, involving the omission of the words "demanding his aid" with regard to the obligation to render assistance in extinguishing fire was also consideration of the government.[172] No disastrous fire was reported in 1917-18 and the total area burnt was six hundred and seven acres.[173] However during 1921-22, there occurred six hundred twenty six fires burning a colossal two lakh fifteen thousand seven hundred eighty five acres as compared with the three ninety seven fires burning a fifty five thousand seven hundred thirty acres in the previous year.[174]

The evolution of scientific forestry in the last decade of 19th century in Kashmir was a welcome step in the forest history of Kashmir. Although the state was having a very rich repository of natural vegetation but in the second half of 19th century, the increase in the population of the state led a very deep impact on its natural resources more particularly on the forests. The first and the foremost step taken with regard to the scientific forestry was demarcation with which the areas having more important species were reserved. The results of the scientific practices applied from the beginning of 20th century were quite clear as the forests of Kashmir which were providing only sustenance to the native people now became an important source of revenue to the State Government.

[171] Inayat-Ullah, Mir and B.L.Tikku (1964), 'A Preliminary Study of the Forest Typology of Jammu and Kashmir', *'Indian Forester', 90 (6),* pp. 332-47.
[172] Progress Report on the Forest Administration in the J&K State, 1915-16, p.9.
[173] Annual Report, 1917-18, p.27.
[174] ARFD,1921-22, P.6.

Chapter 5

Socio-Economic Dimension of Scientific Forestry in Kashmir

Chapter-5

Socio-Economic Dimension of Scientific Forestry in Kashmir

I-Economic Aspect

The major factor which contributed for the prosperity of the Kashmir Valley was the conservation of forests conducted on lines similar to those obtaining in the forest administration of British India with which they were brought into conformity in the year 1892.[1] The forests of the Kashmir provide one of the principal sources of revenue to the state. They were verily the green gold of Kashmir and constituted a major industry owing to the extent, distribution and growth personalities. They were the mainstay of the economy both to the people and the government. Next to agriculture, forests constituted the most important basis of the state economy. All the slopes facing north-wards were covered with dense forests, comprising Deodar, Fir, Blue Pine, Chir, arboriculture trees. Forest have always played a very important role and have fulfilled the needs of humans in the form of firewood, timber, fodder, medicinal plants, conservation besides providing shelter to various other organisms. Forests not only contribute to the economy by selling its major and minor products but also provide job opportunities for a large number of people. Forests of the state form both an important component of the local livelihood and also an important sector of Kashmir economy.

5.1 Major Forest Produce

Forests were not a major source of revenue to the state in pre- colonial Kashmir. However the people were highly depended on the forests for timber, fuel wood, fodder for their livestock and many more minor products among which some were mainly used for medicinal purpose. Among the various communities in Kashmir, Gujjars and Bakerwals were totally dependent on these forests, as rearing of sheep, goats and buffaloes were their only source of income. It was only with the introduction of scientific forestry in Kashmir that much revenue was realised from their source and since then it became an important component of the state economy. In the year 1893, the gross revenue of the Forest Department was Rs. 3, 92,533 and expenditure of Rs. 1, 88,001, giving a surplus of Rs. 2, 04,532. The total quantity of various classes of timber in logs sold during the year 1893 was 7, 27,261 cubic feet valuing Rs. 3, 69,664 against

[1] Bamzai, P. N. K. (1987). *Socio-economic history of Kashmir, 1846-1925*. Metropolitan Book Co., p.365

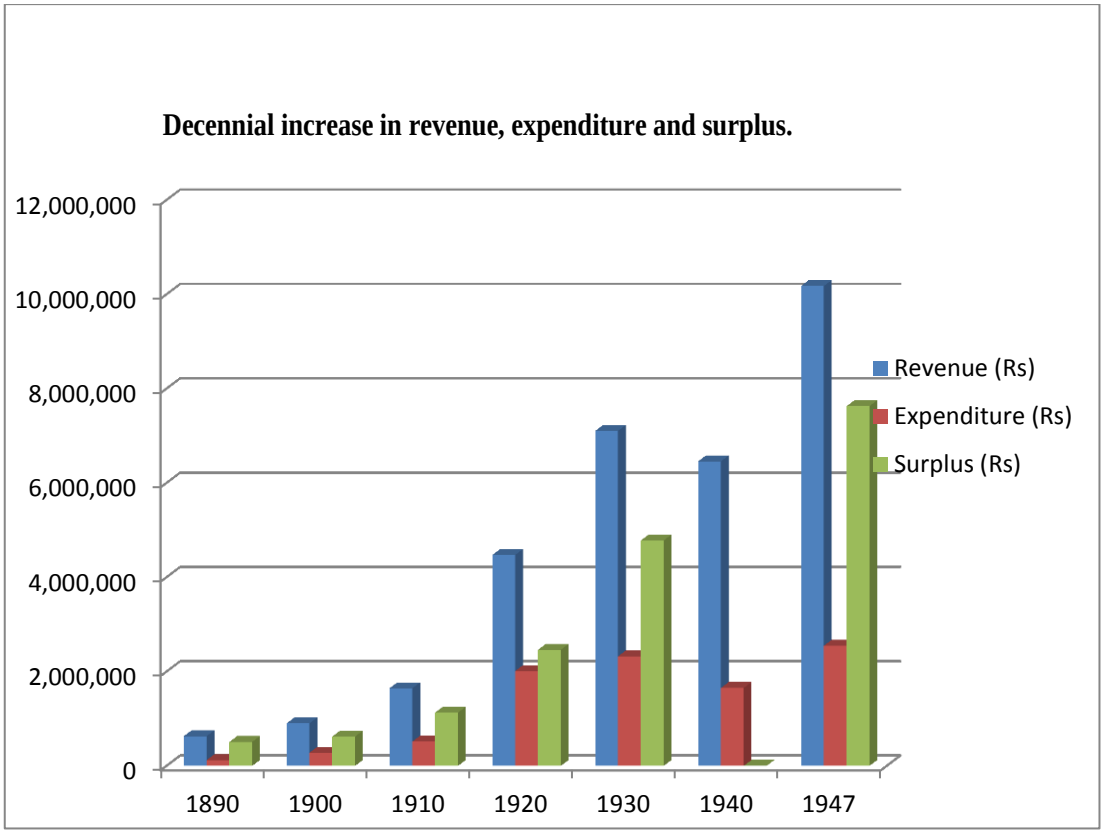
6, 79, 291 cubic feet valuing Rs. 3, 41,377 during the year 1892.[2] Financially the history of the State Forest Department since 1890 was one of unbroken progress. The following table gives the decennial increase in its revenue, expenditure and surplus.

Table 5.1- Decennial increase in revenue, expenditure and surplus.

Year	Revenue (Rs)	Expenditure (Rs)	Surplus (Rs)
1890	6,27,732	1,20,207	5,07,525
1900	8,99,893	2,78,054	6,21,839
1910	16,43,299	5,14,113	11,29,186
1920	44,71,164	20,10,232	24,60,932
1930	71,02,043	23,21,686	47,80,357
1940	64,55,703	16,52,419	48,03,28
1947	1,01,74,210	25,46,171	76,28,039

Source: Annual Progress Reports of the Forest Department for the concerned years

Figure 5.1 Decennial increases in revenue, expenditure and surplus



[2] Annual Report Forest Department (ARFD), 1893-94, p. 17.

The above table clearly shows the progress of the department since it was developed on modern lines. We notice a tremendous increase in the surplus as it was only Rs. 5, 07,525 in 1890 which had gone up to Rs. 76, 28,039 in 1947. In 1893, all the old stocks have been sold out and the Department was in a move to bring out new timber and generate a more revenue. The gross revenue for the year is Rs. 3, 92,533 and an expenditure of Rs. 1, 88,001 giving a surplus of Rs. 2, 04,532. The greatest receipts are in Muzaffarabad Division whose timber was sold at Jhelum. Next is Kashmir Division where there is most satisfactory increase from Rs. 48, 118 in 1892 and 72,653 in 1893 to Rs. 94,980 in the present year and this clearly shows that Department is getting the timber trade into its own hands.[3] The gross revenue for the year 1897-98 amounted to Rs.10, 96,548 against an expenditure of Rs. 4, 01,224 which leaves a surplus or net profit on the year's operation of Rs. 6, 95,324 which is Rs. 2, 69,332 in excess of the average surplus obtained during the past six years. Including the year 1898, the average surplus has been Rs.4, 64,468 in the last seven years and for this period the total profit has been Rs. 33, 51,280.[4] The surplus or profit on departmental timber operations is Rs. 31, 966 larger than in 1897. The results obtained in the Kashmir Province are very satisfactory and fro the past six years prior to 1892, the average gross revenue of what now forms the Kashmir and Kamraj Divisions amounted to Rs. 40, 474 per year. This also includes a number of leases which have since been transferred to Revenue Department as not being tree forest revenue amounting to Rs. 1, 24,277 while for the past seven years the average gross revenue per year without these leases has been Rs. 86,001.[5]

The effect of introducing sound methods of working is also reflected in the financial results, as will be seen from the following table:

Table 5.2 Financial results of the Forests

Sub-Period	Average Surplus (Rs)
1890-1892	3, 06,848
1893-1897	5, 68, 348
1898-1902	6, 57, 259
1903-1907	9, 64, 886
1908-1912	12, 36,839

Source: Progress Reports of the Forest Administration J&K State for the concerned years.

[3] ARFD, 1893-94, pp. 17-18.
[4] ARFD, 1897-98, p. 40.
[5] Ibid.

The gross revenue for the year 1901-02 amounted to Rs. 8, 99, 893 and the expenditure was Rs. 2, 78, 054.[6] The surplus or the profit on the whole working is Rs. 6, 21, 839 against Rs. 5, 88,157 or Rs. 33,682 more than in 1900-01. The ratio of expenditure incurred on the works of improvement of forests, formation and protection, thereof, to the gross revenue of the year has been 6.96 per cent against 5.64 per cent in the last year that is 1.32 per cent more.[7] In the same year the revenue given by the Kashmir Province which includes the Kashmir and Kamraj Divisions was of Rs. 1, 89,280 against an expenditure of Rs. 92,453 or a surplus of Rs. 96,827. The expenditure of the year includes Rs. 4, 736 spent on roads, building and demarcation etc. of forests while prior to 1892 not a farthing was expended on such works. Even leaving out the Jhelum timber, the surplus of the present year is four times as much as the gross revenue prior to 1892; the Forest Department has thus paid its way very handsomely in the Kashmir Province.[8] The financial results of the working of the Department during 1905 as compared to 1904 and with the average of proceeding five years were as under:

Table 5.3 Financial results of the Forest Department during 1904 and 1905

Year	Revenue (Rs)	Expenditure (Rs)	Surplus (Rs)
1905	9,79,147	3,68,131	6,11,016
1904	11,86,298	4,07,508	7,78,790
1900-04	9,69,429	3,34,874	6,34,555

The percentage of expenditures and net revenue on the gross revenue are therefore 37.6 per cent and 62.4 per cent respectively. In 1911-12, the gross revenue of the Forest Department was Rs. 16, 43,299 as against the receipts of Rs. 1, 82,879 during 1910-11. The receipts compared to 1910-11 depicted a decrease of one lakh and a half; however they were still above the average receipts between 1906-07 and 1910-11. During the year 1916-17, the forest revenuer rose by Rs. 5, 88,442 to Rs. 30, 62,786 and the expenditure by Rs. 13,112 to Rs. 7, 71,879.[9] Excluding the Kuth accounts the cash surplus of the year was over 67 per cent of the gross receipts. The percentage was about the same as the average of the past five years and slightly higher than in previous year.

[6] ARFD, 1901-02, p.28.
[7] Ibid.
[8] Ibid, p.29.
[9] ARFD, 1916-17, p. 18.

During 1918-19, the total revenue realised by the department including the receipts from the Kuth amounted to Rs. 3, 746,595 which was an increase of Rs. 3, 83, 473 over 1917-18.[10] Including the receipts from Kuth the total revenue realised by the Forest Department during 1919-20 amounted to Rs. 3, 690,291, thus there was a decrease of Rs. 55,304 as compared to 1918-19. The total revenue realised from the sales of timber and firewood extracted by the state agency during 1919-20and 1921-22 is as under:

Table 5.4 Revenue from the sales of timber and firewood

Year	Timber (Rs)	Firewood (Rs)
1919-20	9,85,852	1,25,519
1920-21	9,25,811	2,45,277
1921-22	11,45,378	2,76,779

In 1926-27, the Department broke all the previous records as the total surplus amount was increased to Rs. 42, 50,000 as compared to thirty six lakh surplus of financial year of 1925-26. The gross revenue for the year exceeds Rs. 70 lakh.[11] The receipts, expenditure and surplus of the Forest Department for the period 1927-28, 1928-29 and 1929-30 are as under:

Table 5.5 The receipts, expenditure and surplus of the Forest Department (1927-1930)

Year	Receipts (Rs)	Expenditure(Rs)	Surplus (Rs)
1927-28	77, 55,978	28, 70, 472	48, 85,506
1928-29	79, 44,724	23, 60, 377	55, 84,347
1929-30	71, 02,043	23, 21, 686	47, 80,357

The economic conditions of the above mentioned period were very unfavourable. The 'Great Depressions' in the thirties left its impression on the state economy as well. This in turn adversely affected the price of timber. The results of the working of the Forest Department during 1935-36 were more or less same as in 1934-35. The revenue generated was Rs. 42, 74,000, expenditure incurred was Rs. 12, 81,000 and the surplus

[10] ARFD, 1918-19, p.19
[11] ARFD, 1926-27, p.42.

depicted Rs. 29, 93,000. During 1942, the Forest Department generated receipts worth Rs. 83, 64,000 whereas the total expenditure amounted to Rs. 20, 80,000, thus resulting in a surplus of Rs. 63, 46,000.[12] The financial results of the second half of the year 1942 and the year 1943 are compared with that of the year 1941-42 in the following statement:

Table 5.6 Financial results of the Forest Department during 1941-43

Year	**Receipts (Rs)**	**Expenditure(Rs)**	**Surplus (Rs)**
1943	82, 45,976	19, 26,950	63, 19,026
1942 (second half)	31, 49,658	8, 28,598	23, 40,644
1941-42	64, 55,703	16, 52,419	48, 03,28

Considering the above statement, it is observed that the amount of surplus during 1943 has risen to Rs. 63, 19,026 as compared with Rs. 48, 03,284 of the year 1941-42 which comes to 31.55 % more. The increase in the receipts was mainly due to the much better results obtained in the last year in selling the felling coupes at far enhanced rates and also due to the increased quota of half-wrought by the Rifle Factory Ishapur and the demand of drugs.[13]

While comparing the Kashmir Forest Department with other provinces of British India, a remarkable progress has been shown by the department so far as its revenue and expenditure is concerned. The following table will show the percentage of net Revenue and percentage of Expenditure of the Kashmir Forest Department as compared with different provinces in British India.

[12] Annual Report, 1941-43, p.133.
[13] ARFD, 1942-43, p.39.

Table 5.7 Net Revenue and Percentage of Net Expenditure in different provinces of British India (1939)

Province	Net Revenue	Percentage of expenditure on gross Revenue
Kashmir	**36,25,213**	**26.10**
Bombay	20,50,473	56.91
United Provinces	16,70,207	62.32
Central Provinces	13,05,304	72.60
Madras	5,86,621	87.35
Assam	4,92,254	70.79
Bengal	3,99,873	78.22
Sindh	3,93,013	46.04
North Western Frontier Province	1,29,230	70.34
Bihar	71,951	87.26
Orissa	4,578	101.33
Punjab	1,43,542	106.39

Source: Report of Forest Enquiry Committee H.H Government, Jammu and Kashmir, 1939.

The above table clearly shows that the forest Department in Kashmir is earning the highest revenue from its forest as compared with all the provinces of British India, its percentage in expenditure in forest administration is less than half of the highest net revenue producing province of British India. It shows how valuable were the forests both to the public and to the Government.

5.1.1 Sleeper Sales

During 1893-94, the total number of sleepers extracted from the forests of Jhelum Forest Division was 71, 538 and reached to the various depots on Jhelum river. Among them about 19,500 sleepers at an all-round rate of Rs. 2-6-8 each were taken by the North Western Railway and 22, 868 sleepers were sold to traders at Rs. 2-0-11 each.[14] The sales of sleepers on the Jhelum from 1891 to 1898 are as under:

[14] ARFD, 1893-94, p.12.

Table 5.8 Sleeper Sales on the Jhelum (1891-98)

Year	Sleepers	Rate (Rs-a-p)
1891	2, 264	1-12-0
1892	26, 427	1-11-0
1893	26, 269	1-15-8
1894	42, 368	2-3-7
1895	24, 804	2-8-6
1896	101, 312	2-14-1
1897	153, 174	3-0-7
1898	162, 339	3-1-0

Source: Compiled from Annual Progress reports of Forest department, Jammu and Kashmir for relevant years.

The sorting of sleepers on arrivals at the depot is done by the depot establishment and all the broken and unserviceable sleepers were taken out before they are offered for inspection.[15] Sleeper sales on both the Jhelum and Chenab rivers came to 224, 484 sleepers sold for Rs. 670,056 against Rs. 202, 321 sold during the past year for Rs. 594, 280. The average for the year is Rs. 2-15-9 against Rs 2-14-7 before. The North Western Railway bought in all 216, 369 sleepers in the present year against 180, 786 in the previous year.[16]

5.2 Export of Timber

In 1911-12, the total estimated figure of export of timber removed from both the State and Jagir forests by the state Forest Department by private agencies of jagirdars and by the traders came to 32, 46,784 cubic feet of the value of Rs. 29, 75,716 against 24, 65,112 cubic feet of the value of Rs. 23, 75,833 during 1910-11.[17] The increase of 7, 80,673 cubic feet valuing Rs. 6, 04,833 was mainly caused by large removals by Messer's Spedding and Co. from the State and Jagir forests and to a small extent by other traders chiefly from Poonch Ilaka where total removals amounted to 5, 51,755 cubic feet against 4, 27,345 in 1910-11.[18] Removals from the state forests by the Departmental Agency fell short on the whole by one lakh eight thousand five hundred forty three cubic feet. The timber exported from the Baderwah Jagir forests amounted to

[15] ARFD, 1897-98, p.31.
[16] Ibid.
[17] Annual Report, 1911-12, p.69.
[18] Ibid.

Rs. 12, 95,254 cubic feet against 9, 98,332 cubic feet in 1910-11. The total export of timber from the state and its Jagir forests during 1916-17 amounted to 56, 917 cubic feet whose value was Rs. 47, 67,209 as compared with 40, 10,510 cubic feet of value of Rs. 37, 83,634 exported in 1915-16. The quantity of timber exported by traders from forests on which rafting fee was charged amounted to 17, 60,732 cubic feet against 22, 64,895 cubic feet during 1915-16.[19] The total export of timber during 1917-18 amounted to 52, 53,238 cubic feet worth Rs. 48, 58,408. The quantity of timber exported by traders on which rafting fee was charged amounted to 4, 95,644 cubic feet.[20] The total quantity of timber exported from the state and Jagir forests during the year 1921-22 was 39, 99,623 cubic feet, the cumulative of which was Rs. 70, 91,401 with the amount of Rs 3, 81,713 being collected as rafting fee.[21] During 1927-28, the total quantity of timber exported from the state, the Maharaja's private Domains and the Poonch Ilaqa amounted to 55, 25,185 cubic feet against an export of 67, 81,443 cubic feet of timber during 1925-26.[22]

The universal slump during 1930 had its repercussions on timber trade in Kashmir as in other parts in India:

a) There was no demand for accumulated surplus stock in sale depots.
b) The traders had to withhold their own production higher up at the launching ghats.
c) Decline in the prices of staple food and cotton hardly left any margin for purchase of timber by the public.
d) On account of very heavy shrinkage in its receipts, the railway had cut down its requirements to the rock bottom minimum. It reduced the price of sleepers from 6/8 to Rs. 4/12.
e) Rigorous of passing of sleepers by the railway became most oppressive.[23]

The result was that the prices of timber shrank considerably and disposals became very difficult. According to the terms of their agreements, the royalty contractors of the state had to supply three lakh fifty thousand deodar and twenty thousand fir sleepers annually to the Punjab Railways. All contractors were complaining that the railway

[19] Annual Report 1916-17, p.50.
[20] Annual Report, 1917-18, p.29.
[21] ARFD, 1921-22, Appendix VII, IX.
[22] Annual Report, 1926-27, p.42.
[23] ARFD, 1930, p.34.

administration had introduced very severe restrictions on passing of these sleepers, with the result that the percentage of rejections had increased very considerably. This attitude of the Railway Department had to a certain extent aggravated the stringency of depression in their timber market by precipating the drop in the prices of deodar sleepers.[24] However, as five year leases of all important forests had been disposed off in more favourable times, the department was asked to tide over the existing crisis without any appreciable loss in its revenue. The brunt of the depression had fallen on the royalty contractors. They had to incur heavy losses on account of deflated prices and large stocks of unsold timber that they could not dispose of in spite of their best efforts. All these adversities hit the timber trade so badly that the majority of the forest leases of Kashmir were reduced to the verse of bankruptcy.[25] Fir timber of all grades and deodar sleepers had suffered most in this slump. A feature of the depression was that it had not affected the state territory as adversely as the Punjab market. The result was that disposal of departmental timber in Kashmir and other places within the state territory had been fetching better prices than at Wazirabad and Jhelum. This was another reason why the department had been luckier than its traders.[26] At this critical stage the state government came to the rescue of its contractors and save them from collapse by granting a very handsome remission of more than 22 lakh of rupees in the royalties and also effected a reduction of 23 lakh cubic feet in the out turn of deodar, kail and chir. This auction very soon reflected itself by reviving the timber market to a very appreciable extent. The three years leases that had to be put to tender within a few months of the grant of remissions of royalties and reductions in out-turn brought forth favourable offers that would not otherwise have been possible. With the abolition of the departmental working, the royalty contractors of Kashmir Province took advantage of the comparatively stable conditions obtaining thereby trying to dispose of as such of their out turn in Kashmir as could be consumed.[27]

The total quantity of timber exported during the third decade of 20th century rose exponentially with one crore seven lakh seventy thousand cubic feet being exported in 1933-34 and one crore thirty seven lakh forty nine thousand cubic feet during 1934-

[24] Ibid, p.35.
[25] Ibid.
[26] Wazirabad and Punjab were biggest timber deposits where the mechanized hogging occurred in Pumjab and Jammu and Kashmir respectively.
[27] ARFD,1932, p.32.

35.[28] During this period the Forest Department made efforts to create market for large quantities of walnut, ash, maple and horse-chestnut. The question regarding the future requirement of walnut half wrought by the Ordinance Department of the Government of India was also considered by the State Government.[29] The timber market even in 1936 had not recovered from the depressions, therefore only the important forest areas were being worked under a restricted yield. Dudu, Billawar, Mirpur and such other distant forests as were likely to fetch comparatively less royalty were not worked at all inferior species like fir and spruce were worked only to the extent of meeting actual demands. Thinning continued to be suspended throughout the state except in the Lolab forests. The greatest problem before the forest department was the removal of malformed and unfit trees and carrying out cleanings in the young age classes in the areas worked over by the forest lessees. In the mountainous country where there was very little local demand for the timber, most of the trees of the above mentioned class had to be girdled. Elsewhere, a system of local sales was being evolved with the intention of relieving unemployment, minimizing forest damage by providing for timber requirement of the local population at cheap rates and training of local forest contractors. The total quantity of timber exported during 1935-36 from the State forests and Pooch Jagir was 1, 06, 45,000 cubic feet.[30] By 1938, in the Kashmir Circle, a beginning was made in the case of few leases calling for tenders on lump sum system as an alternative to royalty on measurement by standing volume. In all the cases, the lump sum offers were larger than those under the royalty system. One of the advantage of the lump sum sales was to get rid of unfit trees from the forest which otherwise could not be included in royalty leases.[31] The Punjab market for kail and fir timber, which remained steady throughout the year showed a tendency to rise at the close of the year. An important event of the year was the sanctioning of the state Resin and Turpentine factory at Jammu, under the management of Lala Kewal Krishan Nanda, Deputy Conservator of Forests. With the setting up of paper pulp factories on the rivers of Chenab and Jhelum, the major portion of the out turn of the species available from Kashmir forests was intended to be utilised. By 1938, walnut and maple half-wrought were dispatched to the rifle factory Ishapur. In addition to that Pohu *(Parrotia Jacquemontonia)* billets were dispatched to the Rifle

[28] Annual Report, 1933-34, 1934-35,p.23
[29] Ibid.
[30] ARFD, 1935-36, p.14.
[31] ARFD, 1937-38, p.20.

factory.[32] On account of the improved market conditions brought about by World War II, it was possible to sell coupes extensively but to maintain the existing yield after the termination of hostilities; the sales under all the plans in Kashmir were restricted. The lump sum system of sale was extended to the Baderwah forests. By the early 1940's, all the forest sales in state were arranged on lump sum system and record prices obtained.[33]

5.3 Minor Forest Produce

The forests of India produced a considerable amount of minor forest products and are highly contributing to the national economy. Among the 3000 plant species having non timber utility, only 126 species are being exploited commercially.[34] Minor forest products also known by the name of non-wood forest products or non-timber forest produce; contribute about 50 % of forest revenue and 70 % of income through export.[35] Fuel wood, fodder, medicinal herbs, fruits, game, dyes, gum, latex etc. are the products which have been classified as minor forest products. No description of Kashmir forests is complete without mentioning the minor forest products which have a vital role in the working of the department. The state with its varied geographical and ecological niches, is a great reservoir of endemic minor forest products of high aromatic and medicinal value. During the period of our study, minor forest products highly contributed in the state economy. The minor forest products of the state include valuable drugs, medicines and herbs which were used in day to day life.

i. **Kuth (*Saussurea Lapa*):**It is the most aromatic plant and grows extensively in Kashmir at an elevation of 8000-9000feet. It was chiefly used in China as it yields a perfume which was supposed to be used for incense in the Joss houses. In Kashmir it was used as a medicine in Cholera and also for preserving clothes against the damages of vermin. In 1914, Kuth Department was established directly under the control of Minister of Agriculture to collect process and export the Kuth roots to India. Kuth was an important source of revenue to the state as the revenue realised from this product has increased to Rs 1592300 in 1929 from Rs 906578 in 1924.

[32] Ibid.
[33] Annual Report, 1941-43,pp126-27.
[34] Sekar, C., Rai, R. V., & Ramasamy, C. (1996). Role of minor forest products in tribal economy of India: a case study. Journal of Tropical Forest Science, pp.280-288.
[35] Campbell, J. Y. (1992). Putting people's products first-Non-timber forest products and the challenge of managing forests to enhance local income. MFP News.[July-December, 2(3).

ii. **Artmesia:** Locally known as *Tethwan*, was found on the dry open hill slopes from 1600-2700 metres elevation in abundance in the Gurez area of Sindh Forest Division in Kashmir. It was chiefly used as a vermifuge and was also useful as cardiac stimulant.

iii. **Santonian:** It was the most costly drug found in Kashmir forests. Experiments to extract Santonian were made during the reign of Maharaja Pratap Singh. Its collection was made between July and August, at a time when its mother plant contained a fair percentage of Santonian. The State received Rs. 2.5 lakhs per annum revenue from this source.

iv. **Atropa Bellodana:** This was locally known as *Mait Brand* and was abundantly found in the fir forests of Kashmir valley in a wild form at an elevation of 6000-9000 feet. Atropa had ophthalmic uses and its roots were used as sedative and as an antidote in opium poisoning.[36]

v. **Berberis Aristata:** Locally known as *Kaodach* and *Rasuant* in Hindi was found commonly in the Valley and in Karnah. The extract of wood, root and bark was supposed to be useful in malaria fevers and was consumed in large quantities in the State.

vi. **Asafoetida:** It was locally known as Yeung and Hing and was found all over the state over 5500 feet elevation. It was used for many ailments such as stomach disorder, whooping cough and as a nerve stimulant. It was also used as flavouring agent in cooking.

vii. **Lac:** During the Dogra rule the existence of natural lac was noticed for the first time but it was not exploited on scientific lines due to lack of transport. But a proposal was made during the reign of Maharaja Pratap Singh for the deputation of forest officer of Central Provinces for acquiring training in lac culture.

Besides there were many other plants yielding medicinal drugs such as Valeriana (Musk-bala), Viola Serpens *(Banafsha), Kahazaban*, Inularacemosa (*Pokhermool*).

During 1899, the net revenue realised from the sale of minor forest produce was Rs 6,096 and in 1900 the same has been risen up to Rs. 6, 772.[37] The operations of minor forest produce from 1900-1910 were so trifling to be mentioned. In the Valley of

[36] *Forest Statistics*, 1974, p. 10.
[37] ARFD, 1899-1900, p.38.

Kashmir during 1910-11, the birch bark was sold on the monopoly with royalty system and rest of the minor forest produce was sold as usual at auction on round sums, the actual collection being mostly done for the buyers by the local villagers. The revenue collected from Banafsha[38] (wild violet) was more than Rs. 10,000 during the year. The other minor products which fetch small amount were anardana (pomegranate), rasauni (Berberies), deodar oil and chil bark. A Calcutta firm sent up an agent to collect rhizomes of Podophyllum Emodi, in the Gulmarg range of Kamraj and Uri range of Muzaffarabad Division and has collected 27 maunds on the nominal royalty of Rs.2 per mound.[39] Towards the end of the year 1912-13, arrangement has been made to transfer the forest control of Kuth to the Forest Department. The protection and extraction was to be controlled by the Forest Department while sales are to remain with the Revenue Department as before.[40]During the same year, only the extraction of crude resin in the Mirpur Division was done on small scale of which the out turn was 15 mounds and also the extraction of birch bark was undertaken in Kashmir Division.[41] Among the minor forest products, Kuth was of utmost importance. Its smuggling was done on large scale and the government was keen enough to take some administrative and practical measures to stop it.[42] Regarding the work of Kuth extraction and protection, a meeting was conducted in Srinagar in June 193, attended by Revenue Minister and was decided that the Kuth work could be done in a four year rotation, to arrange for closures, not to dig up plants less than 2′ high, to leave all the roots less than one and a half inch diameter in the ground, and to fill in the holes dug.[43] Later the work was started on these lines and additional work was given out to Divisional Forest Officers and Range officers.

The total sum realised for minor forest produce excluding Kuth extracted by the state agency was Rs. 17,598 during the year 1915-16, which was Rs. 2,565 in the previous year. This increase was mainly due to the considerable amount of *Podophyllum emodi* extracted in the Panjal and Kashmir Division and also due to the increased demand of *Atropa belladonna*.[44] The Kuth was extracted by the Departmental Agency and

[38] ARFD, 1910-11,p.11.
[39] Ibid.
[40] ARFD, 1912-13,p.11.
[41] Ibid.
[42] Most of the Kuth smuggling was done on the west, on the Hazara Khagan boundary.
[43] ARFD, 1913-14,p.14.
[44] ARFD, 1915-16,pp.13-14, *Podophyllum emodi* was extracted by Messers Smith, Stainstreet and Co., Calcutta with whom the state government entered in to a contract.

dispatched to the central godown at Baramulla, where it was stored for delivery to purchasers. The following table shows the quantity of Kuth extracted from each division during 1915-16:

Table 5.9 Quantity of Kuth extracted from the Various Divisions during 1915-16.

Division	**Name of Forest**	**Total quantity (K-T-S)**
Kamraj	Gurez, Sonmarg,Wangat	1,746-9-37
Kashmir	Nambal	109-0-2
Muzaffarabad	Machhol camp no.43, 53-57,58-62,71 &72	566-4-4/2
Panjal	Boniyar	99-12-3
Kishtwar	Atholis Marwah	455-2-0

Source: Annual Progress Report on Forest Administration in Jammu and Kashmir State, 1915-16.

The total revenue collected from its sale during the year 1915-16 amounts to Rs.3, 02,893-2-1 and when compared it with the last year it was Rs. 2, 65,613. In the same year another godown was also constructed for the temporary storage of Kuth at Kazalwan in the Kamraj Division at a cost of Rs. 650.[45] For the propagation of Kuth, considerable progress has ben made in almost all the Kuth producing divisions. Those employed with the extraction of Kuth were being directed to replant the upper portion of the root which is being cut at the time of collection, as it has been observed that this portion of the plant readily strikes out.[46] The following table will show the revenue realised from the numerous kinds of minor forest produce extracted by State Agency for different years.

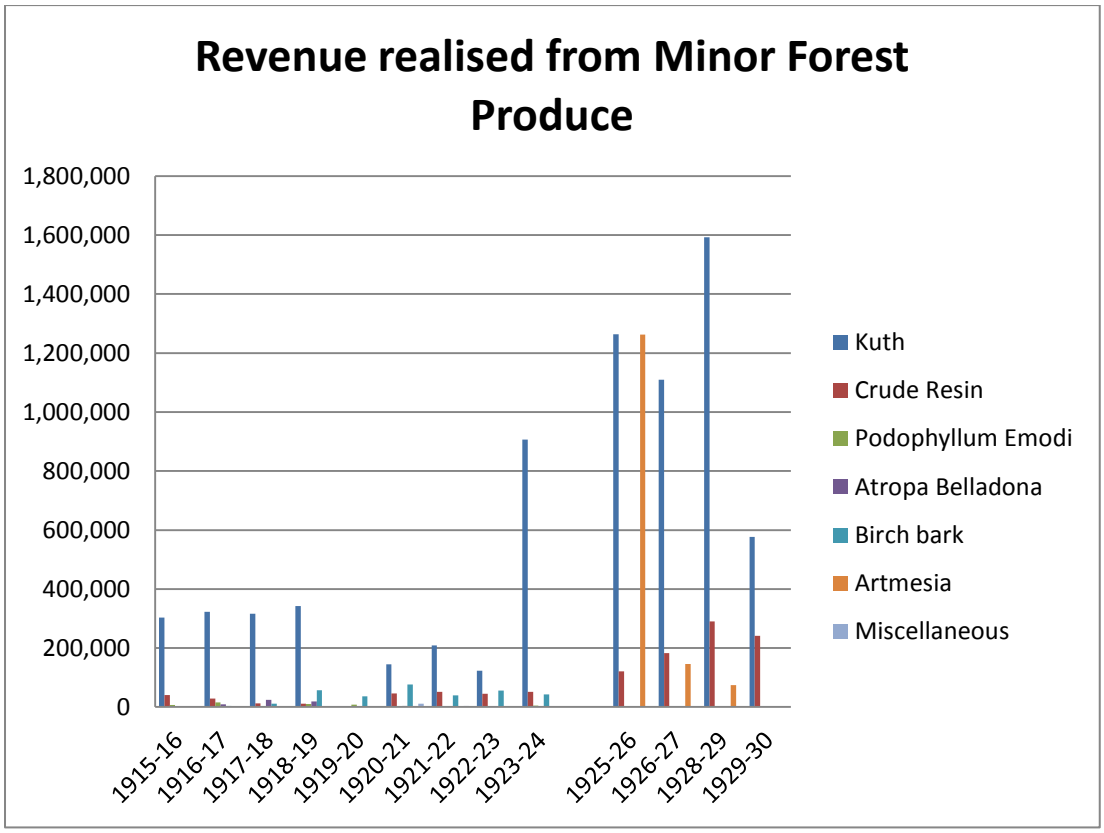
[45] Ibid.
[46] Ibid.

Table 5.10 Revenue realised from Minor Forest Produce

Year	Minor Forest Produce							Total
	Kuth	**Crude Resin**	**Podophyllum Emodi**	**Atropa Belladona**	**Birch bark**	**Artmesia**	**Miscellaneous**	
1915-16	3,02,893	41,183	7,356	2,127	2,575	---	---	3,56,134
1916-17	3,22,864	28,940	15,970	8,806	3,888	---	107	3,80,575
1917-18	3,16,441	11,987	501	24,920	11,512	---	128	3,65,489
1918-19	3,42,532	11,434	10,309	19,412	56,982	---	213	4,40,882
1919-20	2,756	---	8,260	1,276	36,440	---	292	43,512
1920-21	1,44,969	46,146	-----	3,339	76,296	---	11,597	282,347
1921-22	2,08,860	51,351	1,056	660	39,061	---	3755	3,04,742
1922-23	1,22,911	45,231	1,549	2,531	55,779	---	----	2,43,296
1923-24	9,06,578	51,870	4,939	2,134	42,345	----	------	10,00,794
1925-26	12,64,202	1,21,309	---	---	---	12,63,064	----	15,04,734
1926-27	11,09,634	1,82,324	----	----	----	1,45,770	---	15,40,600
1928-29	15,92,300	2,90,260				74,694	---	19,22,866
1929-30	5,77,233	2,41,239						8,82,194

Source: *Compiled from Annual Progress reports of Forest department, Jammu and Kashmir for relevant years*

Figure 5.2 Revenue realised from Minor Forest Produce



During 1936, the government sanctioned the appointment of a Forest Chemist for one year in the first place and accordingly one Dr. T.C Rajdhan was appointed after training in the Tropical School of Medicine, Calcutta. The necessary laboratory was set up at Baramulla for carrying out analytical work with regard to the propagation of medicinal herbs, among which the cultivation of Digitalis received attention in most of the hill divisions. It was all the more significant because it was reported that the amount of this drug produced in Kashmir was sufficient to meet the entire Indian market.[1] During 1934, the Board of Control for indigenous drugs held some sittings at Baramulla and formulated various proposals. The most important was regarding the appointment of chemist and the establishment of a chemical laboratory at Baramulla for analysing and standardizing drugs which were produced in Kashmir.[2]

5.4 Forest Based Industries

The state of Jammu and Kashmir has been bestowed by nature with rich and varied forest wealth. As we have seen the forest produce formed an important constituent of

[1] ARFD, 1936,p.14.
[2] Bakshi S.R, History of Economic Development in Kashmir, p.97

state economy. The raw material in the shape of forest produce was easily and abundantly available, so it was natural for both the people and the government to set up the forest based industries in order to further boost the economy. There were several small scale industries during the period of our study which were highly dependent on the forest produce, among which the main are discussed under:

a) **Wicker-Willow:** The industry of wicker-willow making is a gift of the French to the Kashmiri's, besides the brush-type of wicker willow plantation in Kashmir was also introduced by the experts from French.[3] The products made from the wicker work were wall-baskets, chairs, sofa sets, flower baskets, tiffin carriers. The raw material for such kind of art was a monopoly of State Forest Department. The '*Kangar'* a small earthenware bowl of quaint shape widely used during the winters, is also held in a frame of wicker work.[4] The baskets made were used for agricultural purposes, besides the '*Kiltas'* which were used for transporting apples and for other rough village work.[5] In 1916, the experiments were made in the Amar Technical Institute of Srinagar to grow the English and French willow so as to establish the regular wicker work industry in Kashmir.[6] The experiments proved successful and the articles at the Institute were made in elegant designs.[7]

b) **Boat Making:** Another important forest based industry of Kashmir was boat making and Kashmiri's have their own peculiar way of boat making.[8] The men intended to prepare a boat, would go to the deodar forest and select a larger tree of 100 feet high and from 3-4 feet in diameter. After felling it down, was split into two parts lengthwise in order to make two planks, by axing of all the wood on outside upto the required thickness of 3-4 inches or according to the size of the boat they were intending to build. The planks which were to form the two sides of the boat were then used to be left in the river or lake for two or three years to season. For flooring and finishing of the boat, another three or four trees were required. The builder having hauled his planks up the river selects a flat piece of

[3] Raina, A. N. (2002). Geography of Jammu & Kashmir State. Radha Krishan Anand and Co. Pacca d*anga* Road, Jammu, p.147.
[4] Lawrence, W. R. (2005). *The valley of Kashmir*. Asian Educational Services,p.250.
[5] Ibid, p.372, Superior Kiltas covered with leather, much familiar to the European travellers were made in the city.
[6] Jammu and Kashmir State Handbook,1924,p.56., Annual Report,1916-17,p.8.
[7] Kapoor, op.cit. p.298.
[8] Lawrence, op.cit., p.380.

ground on which to build and from which he can launch his boat without any danger of strain to the hull.[9]

c) Kashmir Willow Factory: With the efforts of J.C MacDonnell, first head of Jammu and Kashmir Forest Department and on the recommendations of Walter Lawrence, the willow plants were introduced in 1917. Initial plantation was done in Kitreteng and Shalbagh. It was almost after twenty years that English willow was introduced in the state and a willow factory was set up at Jammu.[10] After one the industry was shifted to Rajbagh Srinagar as the raw material for the factory was coming from Kashmir Valley. But once again the factory was shifted back to Miransahib Jammu on receiving the complaints of opening out of splice joint between the handle and blade. As the matter was referred to Forest Research Institute Dehradun, it was found that this was due to the temperature difference between the Valley and outside India.

d) Steaming Factory Baramulla: The factory was established in Baramulla in the year 1917-18 due to the large scale demand of rifle butts made of walnut wood. The demand was mainly from the Government Rifle Factory at Ichapur (West Bengal) which was manufacturer of rifle stocks.[11] During the year 1924, more than 10,000 sets of walnut half-wrought were sent to the Rifle Factory Ichapur and the net profit of the factory for six years from 1918-1924 amounts to Rs.40, 059. During initial years, the progress of the factory was not much satisfactory but since 1922, the factory has been organised on sound lines and earned a handsome profit for supplying the whole of the peace time requirements of the army in India for rifle fittings, a total of 22,400 sets per annum.[12] Major Lenfestey, the Superintendent of the Rifle Factory made a two month tour through the walnut producing areas in the Valley. Although he found the methods of working economically unsound but was much impressed by the high quality of Kashmir walnut wood.[13]

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[9] Biscoe, C. T. (1922). *Kashmir in sunlight and shade*. Seeley Service.pp. 169-70. The modern boats called houseboats were introduced towards the end of the eighties of the 19th century by an Englishman. They were used in increasing numbers by the European visitors to Kashmir.

[10] Agarwal, K.L, (1954), 'Tour Report on visit to Timber industries and Forests of Kashmir State, FRI and College, Dehradun.'

[11] Qazi, S. A. (2005). *Systematic geography of Jammu and Kashmir*. APH Publishing.p.116, Annual Report,1917-18,p.29.

[12] A Note on the Jammu and Kashmir State,1928,p.45.

[13] Ibid,p.33.

II-Social Impacts

From the beginning of human civilization forests have played a vital role in our life. There was a time when whole of the human civilization was living in forests and were dependent on it for survival. It is only due to the changing nature of human civilization that we at present are in this stage. Forest trees and common property resources are basic to tribal communities, directly benefit them like a foster mother, and fulfil their biological, cultural, religious and emotional needs.[14] Not only the forest dwelling tribal communities were dependent on forests but entire rural population, agriculture being the main source of income, was also dependent on it.[15] Forest Department and the formulation of its policies had an everlasting and far reaching impact on Indian society during colonial rule. The results were quite clear as the poor people lost their supplementary source of livelihood and it became very cumbersome for the cultivators to keep cattle which were their essential component of life, due to the restrictions imposed on grazing by the colonial authorities. The state control over the woodland was further extended to large tracts and throughout the sub-continent. It was now ostensible that the designs of colonial forestry were by and large commercial. Their operations were motivated more by the commercial and strategic utility of different species rather than by its social and environmental considerations.[16] This commercialization further intervened in the day to day life of forest dwellers and village community to a large extent. Further the exclusion of livestock by the Forest Department became a test of the rigid attitude of the department towards the older system of land use. The new policies had created acute problems for cattle owners.[17]

In the Kashmir region, the relationship of communities with the forests had also a deep impact on the ecology. In order to meet their basic needs, people were highly dependent on forest and its products. The nomadic tribes like Gaddi, Gujjars and Bakerwals being the permanent inhabitants of the forests had their impact on ecology. Their dependence on resources was institutionalised through a variety of social and cultural mechanism. The village communities had drawn a protective cover around the forests through

[14] Malik, B. B. (2004). *Social ecology of Forest resources.* Kalpaz Publication Delhi, p.5.
[15] Rao, Neena Ambre. (2008). *Forest Ecology in India. Colonial Maharashtra 1850-1950.* Cambridge University Press New Delhi, p.156.
[16] Guha, R., & Gadgil, M. (1989). State forestry and social conflict in British India. *Past & Present*, (123), 141-177.
[17] Rangarajan, M. (1999). *Fencing the forest: conservation and ecological change in India's central provinces 1860-1914.* Oxford University Press., p.68.

religion, folklore and tradition. The hills were often dedicated to the local dieties or pirs and the trees around it were treated with great respect and care. The plantation had become naturalised in and around the temples and shrines. The area under the sacred groves varied from few metres to several hundred acres and one can find the best standard of deodar in the sacred groves, as being free from any injury. Sacred spots were normally marked with cloth.[18] No villager would try to injure the grove any way and at the same time planting of grove was considered to be a work of great religious significance. In such forest areas not only did the forests have a tremendous influence in moulding religious and spiritual life; the inhabitants also exhibited a deep love of vegetation, often acting entirely from a sense of responsibility towards the future generations by planting species whose span of maturity exceeds a human life time.[19] Dietrich Brandis, the Inspector General of Forests wrote appreciatively of the extensive network of sacred groves in the sub-continent, which he termed the traditional form of forest preservation.[20]

5.5 Tribal people and Forests

Environmental movement has raised the awareness how human attitude to nature have been moulded the cultural and ecological traditions. There are various ethnic groups in the world and every ethnic group uses and misuses its natural resource base. Like in the state of Jammu and Kashmir Gujjar and Bakerwal is one of the largest tribe inhabiting in the mountainous and kandi areas of the state. Based on their occupation and settlements, the Gujjars are broadly classified into two categories. First category includes the cultivators who have sedantarized on the slopes and side valleys are permanent village dwellers and practice agriculture and the second one who practice transhumance. The latter category is further subdivided into Banihars and Dodhi Gujjars (milkmen) and Bakerwal Gujjars (who rear sheep and goat). Banihars or Dodhi Gujjars as the name suggests are the residents of forests (bans) rear the cattle and sell milk. They usually don't go beyond 60kms from their base due to the heavy cattle. Bakerwals as the name suggests means the Bakri wala (goat herder), who tend large herd of goat and sheep. They go from the lower altitude to higher altitudes and

[18] Mobbs, E. C. (1935). Life in a Himalayan Valley. *Indian Forester*, 61(12), p.1-8.
[19] Guha, R. (2000). *The unquiet woods: ecological change and peasant resistance in the Himalaya*. Univ of California Press.p.33.
[20]Gadgil, M., & Guha, R. (1993). *This fissured land: an ecological history of India*. Univ of California Press.p.28.

sometimes traverse a distance of more than three hundred kilometres in the high altitude terrain of the North-western Himalayas during their annual migration. The to and fro movement of the Gujjar and Bakerwal tribe along with their flock to utilize the various biotopes of different altitudes occurs between summer and winter pastures of the state. For the pastoral nomads of Jammu and Kashmir, for centuries, the distribution of *margs* (meadows) and the routes connecting them were of crucial importance. These margs and routes therefore constituted an interlocking system which was functionally and integrally incorporated in the socio-economic life of transhumant.[21] However, they were held responsible for lopping the forest trees, removing bark, grazing their livestock in the forest which in turn lead to trampling and damage to the natural regeneration. This has forced the State Government to put in place the customary restraints on such people, based on the lines of British model as applied in Indian forests and limit their access to such areas. On the other hand people who lived in or near the forests disliked the restraints and regulations inseparable from management and often did not see any justification for them. Those who lived far away from the forests were not interested in forestry as the attitude of the people toward forest management depended on the proximity to the forest they lived. As already mentioned in the previous chapter, the grazing is of three kinds- firstly, by the cattle, sheep and goats belonging to the indigenous population. Secondly, the cattle belonging to the Gujjars consisting mainly of buffaloes. Thirdly, the sheep and goats owned by nomad professional grazers known as Bakerwals. Excessive grazing had also been reported from Mohan Marg, Lar Marg and Kanyadalo[22] as these margs have been undergoing a grave damage for years past and their devastation and denudation has been proceeding rapidly. From 1894, these margs were used for grazing solely by the Gujjars of Andarwany.[23] It was seen that these margs are overrun by over 500 buffaloes and cows of which majority belongs to the outsiders and the available grazing on such grounds was insufficient for the Anderwany herds counted at over 200 heads.[24]

[21] Magray, M.B., 2003. *Tribal Geography of India Jammu and Kashmir*. Oberoi Book Service
[22] These are the narrow plateaus on the very top of the high spur which descends from Harmukh towards the mouth of Sindh Valley above the villages of Manygam and Watalar.
[23] File No.G-7/1919, State Department.
[24] Ibid.

Table 5.11 Grazing Rates for Jammu and Kashmir State.

Animal (Per head)	**Sanction scale for cultivators** **R -a -p**	**Sanction scale for cultivators (Excess)** **R -a -p**	**Outsiders owing no cultivation in the State** **R -a -p**
Buffaloes	0-8-0	0-12-0	1-8-0
Cows and oxen	Free	Free	0-4-0
Ponies	0-4-0	0-6-0	0-12-0
Goat	0-1-0	0-1-6	0-4-0
Sheep	0-1-0	0-1-6	0-3-0
Camel	------	1-8-0	3-0-0

Source: File No.R2/3-1901 (J&K Revenue Department)

5.6 Government Policies towards Resource use and conservancy

The State Government and the Forest Department were aware that the protection of the forests was a vast and complicated matter. All pervading factors like grazing, forest fires, illicit felling, lopping of trees, smuggling of fire-wood, timber and minor forest products were recognized as well known elements. It was understood in the early days of forest management itself, particularly in the first half of 20th century that without the active support and cooperation of people living in and around the forests the menace unleashed by such elements could not be tackled. Concession and free grants was one of the means adopted by the government to circumvent the problem. In 1893, under Free Grants of forest produce, the principal item taken from the forests of Kashmir was timber, this was done to allow the people to repair their houses damaged by the floods that occurred in July that year.[25] Free issue of extra firewood to Kashmir Imperial Service Troops serving in Frontier districts was also made.[26] In 1893-94, the government throw open the forests for two months so that the villagers whose houses had been destroyed or damaged might freely supply themselves with timber. However, the experiment was hardly successful from forest point of view, as the fallout was that the people took advantage out of it, allowing them to cut as much trees as they possible could. The irony was that the cutting did not remain confined only to those villages that

[25] ARFD, 1893-94,p.16.
[26] File No. 42 of 1896,OER.

had suffered from flood. In fact, a few, if any one of these villages brought out timber as they were situated at a distance from the forests. The people instead of going themselves to the forests to cut the trees for repair of their damaged houses purchased the same from those who actually had cut the trees.[27] There were villagers who lived near the forest but who sustained no damage in the floods. In fact from enquires made by conservator Mr. J. C. MacDonnell himself on spot, it was evident that the idea gained currency that any one might take what one liked and many new houses were built in villages far above the plains. Detailed enquiries conducted by the Forest Department revealed that 491 deodar and 2381 kail were taken out whole besides 82,043 pieces, which represented another 24,722 trees of kail, these were principally young trees and caused immense damage to the forests.[28] The grants made under the authority of the state government were of two kinds- one was the produce given at privileged rates and the second, produce given entirely free. During 1898-99, the total quantity given at the privileged rates in Jammu Province was 1, 23,539 cubic feet, whose value at the market rate was Rs. 13,402 but the amount realised for it was only Rs. 2, 315. Under grants entirely free in Kashmir Province, total removals under timber given entirely free during the year were 9, 87,454 cubic feet, the value of which at the market rate amounted to Rs. 1, 27,578.[29] A very pragmatic approach was adopted in 1890's where under it was decided to take out as little as possible from the forests until the forests had been settled and felling properly regulated on a system with an enumeration of stock on its basis. The idea was to stop all felling till the forest had been demarcated, surveyed and the stock counted and the forest settlement carried out. It was even contemplated if this would be possible since local demands had to be met then it was also considered whether there ought to be large felling for the speculative sales in the plains, however tempting the prospects of these might be. The policy of rights and privileges and free grants adopted by the state government in later part of 19th century and early 20th century depicted a concern on its part, for meeting the needs and requirements of the people. This was done keeping in view the social obligations which the state had for its masses. A thought was given to the plan, to supply for some time to come, these markets from the dead and fallen trees and the felling of a limited number of green trees, in locations, as would be indicated by the Conservator of Forests. The

[27] ARFD, 1893-94, p.16.
[28] Ibid.
[29] ARFD, 1898-99, pp.40-41.

establishment at that point of time was untrained and to have given this establishment a free hand in such important matters would have proved to be ruinous.[30] The emphasis therefore was laid on acquiring trained personnel and to acquaint them with their charges and ask them to make estimates and then alone to extend their operations. For a sustainable forest management to succeed, it was imperative that all the stakeholders were fully aware of their own impact on forests and forestry issues and were held accountable for their actions. Policies and measures were developed at the top and consultations with the people were not generally held. There was need to educate and inform the people and to make them aware about the impact of their activities. The role and rights of the people as stakeholders had to be understood and acknowledged by the state. The state government to an extent was conscious of its role and responsibility in so far as it concerned the forest based needs of the people. Free timber was provided to the people of Muzaffarabad for reconstruction of houses burnt as a measure of cash relief.[31]

Following concessions were granted for the bonafide domestic and agricultural use of Zamindars who held and cultivate lands as tenants:

a) Grazing and grass cutting- cattle and flocks.
b) Right of way- to cattle and other livestock through forest.
c) Grant of timber except Deodar for house building/repairs at concessional rates.
d) Timber for construction of Kothas away from main village, for grazing.
e) Free grants of timber for rebuilding/repair of houses destroyed by fire or other natural calamities.
f) Free timber for agricultural implements.
g) Firewood for village domestic use free to be collected from dry and fallen wood not fit as timber.
h) Torch wood to be cut free of charge, with axe from dry slumps.
i) Lopping of trees allowed but no branch thick than a man's wrist to be cut. The trees like deodar, kail, chir, kachhal, burj, walnut and shishum were not to be lopped except with the permission of Conservator.
j) All minor products could be collected free.
k) Thatching grass could be removed free of charge.

[30] ARFD, 1893-94, p.17.
[31] File No. 154H-61/1912, Jammu and Kashmir Chief Minister Letter No.6327, dated-28-11-1912.

l) Brushwood could be removed free of charge for fencing purposes except from the areas specifically set aside for fuel purposes by the conservator.[32]

Later timber was allowed for public use i.e., construction and repair of bridges, repair of dharmshalas, temples, mosques and shrines. All concessions were meant for the bonafide agricultural and domestic use of Zamindars. The Lambardar was held responsible in the event of timber granted at concession rates being sold or disposed off in a way not covered any rules and regulations. While granting concessions, the state government also ensured that the concession holders must also be bound by certain responsibilities. Those enjoying concessions had the following social responsibilities:

a) To render assistance in extinguishing fires in state forests as well as in its neighbourhood so as to prevent the extension of fire.
b) To assist in preventing offences against offenders.
c) To assist in arrest and tracing of offenders relating to state forests.

Failure to render such assistance was punishable with conviction of fine or imprisonment or both.[33]

Later on the recommendation of Forest Enquiry Committee, the government directed the marking of attendance of the Zamindars at the time of fire and a certificate of presence given to them. A list of absentees was to be also prepared. Maharaja Hari Singh at the time of his coronation on 25th of February 1926, announced ten boons out of which four related to forests, depicting the concern which the ruler had for masses and how he desired for masses and how he desired to help them by granting forest related concessions. These boons were:

a) All royal coniferous trees growing in areas assessed to land revenue could then forward, be cut down by the land holders concerned and could be made use of them free of charge, provided that the timber was not disposed by the sale.
b) Such timber in future could be removed by villagers concerned throughout the year, instead of during three months of the year only, as allowed till then.
c) In villages where there was at that time, no land entered as 'Shamlat deh' or village common land and where the village land in the vicinity of the village site

[32] Ibid.
[33] C.No-1087 of 1912, Private Records of His Highness Maharaja.

was then entered as Khalsa land or state owned, this land up to cent per cent area of cultivated land of the village, was therefore to be shown as 'Shamlat deh' and the villagers concerned were jointly to be granted the same rights therein, which they possessed in their own individual holdings.

d) In order to assist the villagers in providing buildings for use as primary schools, timber required for this purpose was in future to be granted from the State Forest Department free of charge.[34]

In addition to that following are some other Rights and Concessions granted by the Government to local inhabitants.[35]

(a) All forests standing on Government land throughout the territories of Jammu and Kashmir, are the property of His Highness, the Maharaja Bahadur. These forests are under the administration of the Forest Department, excepting these control and management of which has been authoritatively placed under some other department.

(b) All villages living within three miles of a demarcated forest have been allowed concession under Jammu and Kashmir Forest Notice, provided that the demarcated forest is not separated from the village by an unfordable stream at its winter level, and provided that the forest is capable of meeting the demand. Zamindars beyond that limit, but living within five miles of a demarcated forest get timber at half the standard rates. In addition to the above, they are allowed to remove free of charge, dead fallen timber excepting deodar over three feet in girth, provided there is no unfordable stream between the village and the forest. They are further entitled to remove, free of charge, the refuse of timber left by the felling contractor, after such a felling area is left off by the contractor and it has been opened to villagers for the removal of this refuse wood free of charge.

(c) All the concessions embodied in the Jammu and Kashmir notice are granted at the pleasure of His Highness the Maharaja Bahadur and may be withdrawn or be altered as he may deem expedient.

[34] c.pp.86-87.
[35] *Report of the Forest Enquiry Committee Jammu and Kashmir State*,1939,p.14.

5.7 Offences against Forest Law

Before the organization of the Forest Department, the Zamindars in the hilly areas have a free hand to cut and utilize whatever tree they liked. *Ain-i-Janglat* (Forest Regulation) which was first promulgated in 1884 was a very strict regulation practically giving nothing free to Zamindars and had to pay tax for everything. This *Ain-i-Janglat* appears to have remained practically dead as far as the freedom to utilize forest products of the villages situated away from the capital was concerned, because of the Rakhas or Forest Guards employed to look after the forests were *Dums*[36]paid by the villagers in kind.[37] However the organisation of Forest Department brought in conservancy and strict control and the Government replaced *Ain-i-Janglat* by Forest Regulation based on British Indian Forest Laws, and allowed concessions to Zamindars. This introduction of the Forest Department in the life of the Zamindars was looked upon naturally by the villagers as an interference with their freedom to cut, and utilize any tree and forest product they liked.[38] The Zamindars want their old freedom to go to the forest and get what they want without thinking of the future. In response, the forest subordinate did not allow, excepting what is allowable under rules, or if they allow anything against the rules, it is after they are paid in the way of bribes.[39]

The Forest Department was compelled to institute civil suits against people who resorted to illegal felling of trees. Though every endeavour was made to settle such disputes, out of court in an amicable way but when they refused to pay for trees cut without permission, or when they refused to vacate premises to which they had no legal right the Forest Department perforce had to take recourse to legal proceedings.[40] In so far as trial of persons, for felling of trees illegally, in the last decade of 19th century was concerned, an important case deserves mention. The case was against one Raja Zaman Khan of Ghaliana of Muzaffarabad Division. It was first intituted in 1895, but was dismissed on insufficient grounds, the matter was then sent to the High Court and order for retrieval was passed. The case was tried in Uri court and again dismissed on the grounds that the offence was committed prior to the passing of the Forest Regulation 1 of 1951. From this it appears that before 1895, there was absolutely no law to prevent anyone from cutting trees in the forest at any rate. Another important legal fact of the

[36] Dums of Kashmir are an important tribe of Kashmir who were acting as village watchmen besides being entrusted with duty of looking after the crops.
[37] *Report of the Forest Enquiry Committee Jammu and Kashmir State*,1939,p.15.
[38] Ibid.
[39] Ibid.
[40] ARFD,1897-98,p.1.

period was that formerly no penalty was enforced against villagers who sold timber granted to them free for agricultural purposes.[41] But during 1898-99, a law was passed under which such villagers cold be punished.[42] There was a sharp increase in the cases related to the forests right from the beginning of scientific forestry in the state and the offences were categorised as –injury to the forest by fire, unauthorized felling and grazing without permission. The following table will show the cases related to the violation of forest rules.

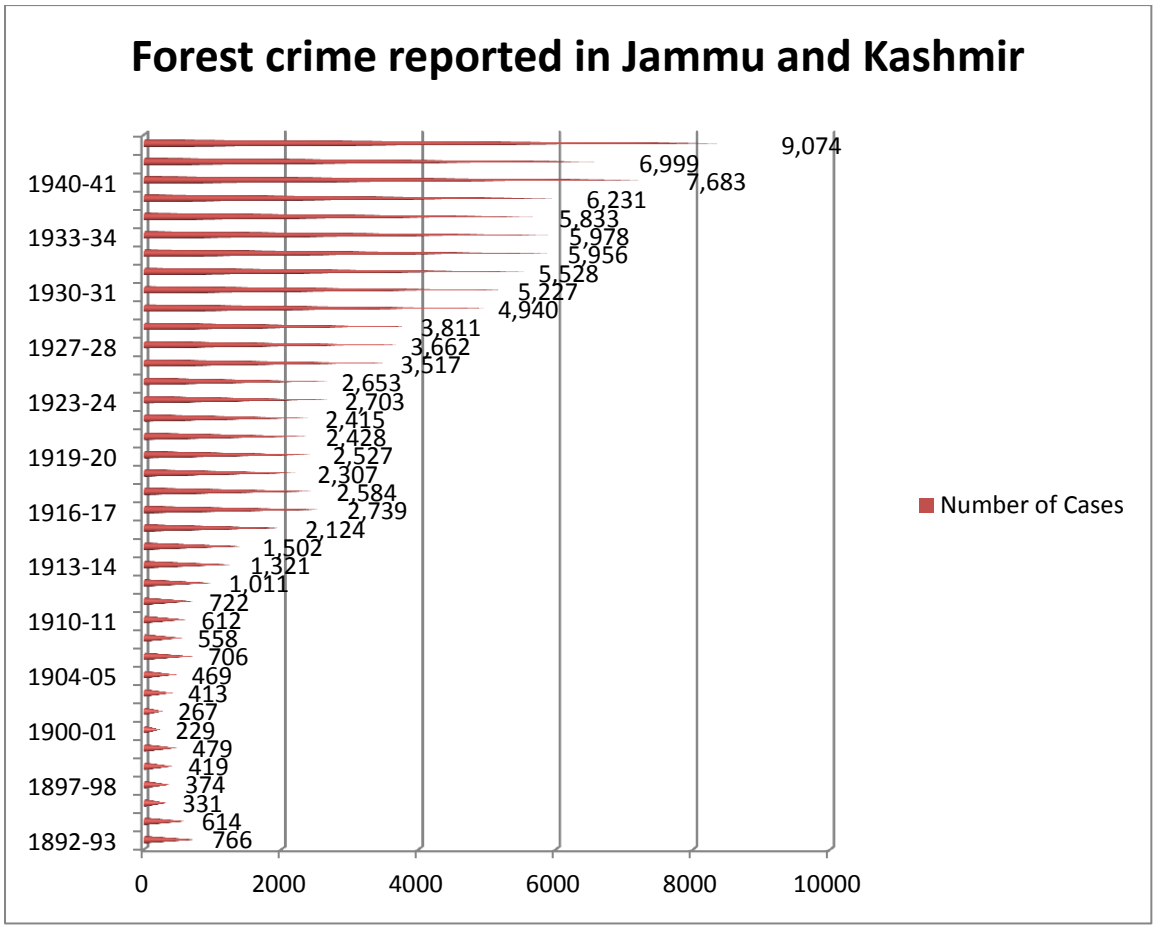
Table 5.12 Forest crime reported in Jammu and Kashmir.

Year	Number of Cases	Year	Number of cases
1892-93	766	1919-20	2,527
1893-94	614	1920-21	2,428
1896-97	331	1921-22	2,415
1897-98	374	1923-24	2,703
1898-99	419	1924-25	2,653
1899-1900	479	1925-26	3,517
1900-01	229	1927-28	3,662
1901-02	267	1928-29	3,811
1903-04	413	1929-30	4,940
1904-05	469	1930-31	5,227
1908-09	706	1931-32	5,528
1909-10	558	1932-33	5,956
1910-11	612	1933-34	5,978
1911-12	722	1934-35	5,833
1912-13	1,011	1935-36	6,231
1913-14	1,321	1940-41	7,683
1914-15	1,502	1941-42	6,999
1915-16	2,124	1947	9,074
1916-17	2,739		
1917-18	2,584		
1918-19	2,307		

Sources: Annual Administrative Reports of the Forest Department for the concerned years.

[41] Ibid.
[42] ARFD, 1898-99,p.10.

Figure 5.3 Forest Crimes reported in Jammu and Kashmir from 1892-1941



The above table shows the sharp increase in the forest offences in the state as only 766 case were reported during 1892-93 but has gone up to the mark of 9,074 in the year 1947. There is however little doubt that the number of cases was increasing every year and many new cases being detected which are never reported. It was mentioned that the forest offences can never be stopped unless and until the villagers are treated more generously than they are at present. However the concessions provided to the people under the forest notices are generous enough but many needles restrictions are imposed and the limited powers of the divisional officers often make it impossible for the people to obtain their full requirements at the time when they need them.[43] So long as the people have this difficulty in obtaining their requirements, forest offences are bound to occur, as there are certain products of the forests which the people must have. It was also mentioned in the annual report of the concerned department in 1924 that the people should be given free aces to forests rather than to impose restrictions, which do not

[43] ARFD, 1924, p.16.

benefit the forests but merely enrich the forest guards.[44] In Muzaffarabad Division, the only timber trees available to the people is deodar and although the people are not entitled to it by law but most of the houses are built of deodar. Obviously they must have it and it is far better that the department should arrange to supply it than they should obtain it from the forest guard.[45] Another cause for the increasing number of forest offences was due to the forest fires. Albeit, sometimes the forests were vulnerable to fire due to the inflammable condition mostly when the year passes exceedingly dry, but every year the cases were reported related to the deliberate acts of incendiarism, numerous different explanations were given related to this attempt, as some Divisional Forest Officers maintained that the object of the fire was to increase the supply of dead timber in the forests, the removal of which has been permitted by the Government. In Kashmir Province, the areas which chiefly suffered from the fires were the hot southern slopes on which blue pine is rapidly extending and it has been suggested that the reason for burning these areas is to prevent the hill sides becoming covered with tree growth, which would result in curtailing the supply of grass for grazing purposes.[46] Similarly when the ground is covered with a thick layer of pine needles which prevent the growth of grass, there may also be an incentive to fire the forests to destroy pine needles.[47]

The Forest Department was not happy due to the constant delays in disposing of the forest cases sent up for trial in the court. There were almost 424 pending cases from 1892-1898. Such delays place the Forest Department in most awkward position than the offenders, as it becomes nearly impossible to bring the charges home after so long a time, which not only gives bad name to the administration but increase the number of forest offences, as habitual offenders gain courage and disregard the department rules and regulations since they have little to fear.[48] This was also owing to the interruption which it caused in the routine work of the forest officials, who often had to travel considerable distances from their beats to attend the courts. In order to overcome this obstacle and to enable forest cases could be heard on the spot, it was considered necessary to invest the Divisional Officers with Magisterial powers.[49] However the proposal was not sanctioned by the Government on the grounds that such powers had

[44] Ibid.
[45] Ibid.
[46] ARFD, 1915-16, p.8.
[47] Ibid.
[48] ARFD, 1899-1900, p.11.
[49] ARFD, 1916-17, p.7.

not been considered necessary in Punjab. This was an error of judgement by the Government as no analogy could be drawn between the forestless terrain of Punjab and the verdant abundance of forest in Jammu and Kashmir.

5.8 Kuth Smuggling

Among the various minor products of the state which became a part of the economy of the state was Kuth. Kuth is essentially a forest product growing at an elevation of 8000 feet to 11,500 feet usually under the shades of birch and fir. It is found on most of the higher ranges in the Kashmir Province, in the side valleys of Chenab in Jammu and on the slopes of Pir Panjal both in Jammu and Poonch. The main kuth fields which are worked commercially lie in the Kishenganga Valley in Keran and Gurez, in the Sindh Valley on the slopes of Kazi Nag and in the Wardwan Valley of Kishtwar.[50] The product was chiefly exported to China where it was burnt as incense in pagodas. The root essential oil sausserine found in the root of the plant was used in perfumery. The root was also used in protecting woollens for its insect repelling properties as well as its special scent. It was considered better than moth balls, since it did not tarnish the good braid or embroidery on woollen garments. However it was its export to China that made it an extremely important commercial drug and made it necessary for the Government to enact a regulation to control its cultivation, extraction, sale and export.[51] It was in the year 1921, the Government enacted the Jammu and Kashmir State Kuth Act, 1921.[52] The Act provided for the conservation and protection of the kuth plant and its produce in Jammu and Kashmir State and to guard against illicit cultivation, extraction, possession and export thereof. Kuth was meant to include the root, stem, leaves, flowers and all other parts of the Kuth plant and all substances manufactured there from all preparations or admixtures containing Kuth or substances manufactured therefrom. All kuth within the State Territory was presumed to be the property of the state, unless title to it vested in any person under rules or permission granted by the government under the Act.[53] Accordingly no person without the authorization of the State Government could take part in the cultivation, extraction, possession, transport, export, sale and then manufacture of any substance or preparation containing kuth. The penalty for contravention of the provisions was imprisonment up to two years or with the fine to

[50] File No.145 of 1930,J&K Political Department.
[51] File No.251/F.R7 of 1937 *Note on the history of Kuth trade in Kashmir* (J&K Political Department).
[52] Chief Ministers Letter No. 1109, dated 4th May 1921, Private Records of His Highness.
[53] Ibid.

the extent of Rs.500 or both. The offences were also made non-bailable.[54] Thus the state exercised its authority in tackling the menace of kuth smugglers through the medium of Kuth Act which was a well thought out piece of legislation. The severe penalties proved out to be great deterrent in authorised kuth trade. It could be dubbed both a social as well as economic measure, on the one hand it minimised the social evil of smugglers and on the other prevented leakage of government revenue. In 1921, the State Government also issued a notification bringing Artemisia under the same protection as kuth. The North Western Frontier Provinces prohibited export of kuth through Hazara without a permit signed by the Deputy Commissioner and the Punjab Government also prohibited exports through the districts adjoining Kashmir without permission of the Chief Conservator of the Forests Punjab. In 921, a special Kuth Regulation No.1 of 1978(Samvat) was sanctioned by the Maharaja.[55]

The two main routes by which smuggling takes place are-(a) from the Valley of Kishenganga either direct or through tribal territory into Hazara, (b)from Wardwan Valley of Kishtwar through Zanaskar and as to Chamba or Lahaul or directly up to the Chenab Valley into the Pangi Illaqa of Chamba.[56] In 1925-26, 106 smugglers were captured, of whom 81 were subsequently convicted and about 50 mounds of stolen kuth were recovered.[57] In 1934-35, forty cases were apprehended and 127 smugglers were captured, out of these 26 were local people and 101 foreigners.[58] The special protective measures adopted by the state in addition to the ordinary local protective staff are the posting of a battalion of infantry to guard the passes leading from the Kishenganga Valley to Hazara and the posting of an armed police in Zanaskar.[59] With the cancellation of Punjab and Hazara Kuth Notification, kuth protection has become a very serious problem. In the Keran Division, as soon as the passes were open, organised attacks were commenced by well-armed trans-border raiders, who with the assistance and connivance of the local inhabitants were able to carry away large quantities of kuth.[60] The State Government made a request to the Punjab and North Western Frontier Governments to put an action, as the State Government incur heavy losses in forest revenue and considerable expenditure on military patrols for safe guarding their

[54] Kuth Act 1921, Constitution of J&K Acts,vol.5.
[55] ARFD, 1921-22,p.25.
[56] File No.145 of 1930,J&K Political Department.
[57] ARFD,1925,p.25.
[58] ARFD, 1934-35,p.20.
[59] File No.145 of 1930,J&K Political Department.
[60] ARFD, 1929-30,p.15.

frontiers.[61] It was well known that though Kangra and Chamba are officially recognised as kuth producing areas, but the only territory where the kuth is produced in commercially exploitable quantities is Kashmir. The kuth was exported through Calcutta firms and when being enquired about the receipts of the supply of the kuth, they stated that they purchased their supplies of kuth from the local market. While the firm admitted that they had made the shipment on behalf of an Amritsar firm.[62] It is obvious that it had been smuggled by the foreigners from the kuth producing areas in Kashmir. In March 1936, scheme for prevention of kuth smuggling was evolved and discussed in a conference attended by many provincial officers and Brigadier of Kashmir Province with the Chief Conservator of Forests as president. The conference recommended a set of measures according to which government sanction was obtained for appointment of additional staff comprising of kuth Foresters, kuth supervisors, kuth guards, kuth watchers etc. for a period of three years. This protective staff did a good work and effect was noteworthy in both the circles. The activities of the North Western Frontier government in dealing with the tribesmen adjacent to Kashmir checked kuth smuggling to a great extent.

5.9 Supply of Firewood

There was an abundant requirement of fuel wood in the state and all of it was obtained from natural forests. Almost 90 per cent of the rural population had to derive their sustenance of fire wood from their accessible natural forests. It was a common practice in the villages and towns, where men as well as women folk were seen carrying head loads of green and dry logs, tops, poles and sometimes cut logs of naturally growing conifer trees. In the Kashmir province particularly in Pir Panjal and other kandi belts, ponies were used to transport these firewood materials. During winter lot of charcoal manufacturing took place, which was also transported to towns and cities in thousands of mounds and was usually sourced from green top of the living conifers. In the early 1890's, the authorities of the State Forest Department were much conscious of the fact that there must be stoppage of wanton felling of the pines for fuel as they understood that the forests will not stand the drain. It had become evident that pine timber was not being used for fuel but sown up and sold for which the state was receiving a merely nominal price as firewood. The idea was to regulate the felling of broad leaved species

[61] File No.145 of 1930,J&K Political Department.
[62] Ibid.

by marking and areas set apart for each year, the rest being closed. It was expected that by resort to this mechanism a stop could be put to the illicit felling. But for this to be put in to practice, trained forest officers were necessary and the staff available could not accomplish the task.[63] Nothing illustrates the menace of illicit felling more than the example of Dubgam Hanjis,[64] which under the pretext of cutting firewood would fell deodar and made boat planks which they would then hide till they got a favourable opportunity of extracting.[65] Though the state was rich in forests, yet the supply of fuel for some of the larger towns especially Srinagar had always been a problem. Earlier extensive areas of firewood forests existed on low hills with an easy reach of Srinagar by boat. However because of the non-existence of forest conservancy these accessible areas were denuded of their forest growth, as a consequence inroads were made further and further afield to obtain the fuel supplies. The system prevalent during the early years of scientific forest management in Kashmir was to sell to a contractor or lessee the right to bring in wood from certain areas, or rather to sell the right to collect the forest royalty on wood coming into the city by certain routes.[66] The Forest Department was entitled to one-fourth of all the wood cut and brought for sale from the forests as a forest due. It was found difficult and costly to realise this due in kind. The royalty was therefore fixed at Rs. 12-8-0 per hundred kharwars and the system had been adopted of auctioning the right to collect the royalty to certain lessees in certain areas. These lessees generally cut most of the wood themselves, as the more wood is cut and brought in, the greater are their profits.[67] But the system did not worked well as at times the contractors joined forces to create an artificial scarcity and thereby raised the price of firewood to an exorbitant extent. The State Government therefore decided to maintain reserve stock of firewood for sale at fixed rates. The situation got relieved to a great extent by recourse to this measure but the problem persisted as the reserve stocks of firewood were not in proportion to the total demand.[68] The State Government therefore came to conclusion in 1918-19 that the only satisfactory means of overcoming the difficulty was for the state Forest Department to control the entire output of firewood

[63] Singh, Prem (1984),'Problem of Fuel wood Supplies in India with special reference to Jammu and Kashmir State' *Proceedings of State Forestry Conference, J&k State,*pp.9-10
[64] An important ethnic group in Kashmir, traditionally boatmen and dwellers of water.
[65] ARFD, 1893-94,p.14.
[66] File No. 5 of 1895, OER.
[67] Ibid.
[68] ARFD, 1916-17,p.22.

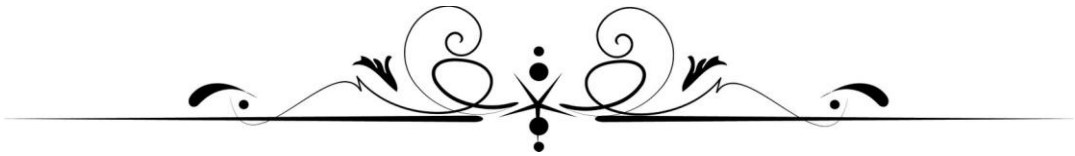
from the state forest.[69] Owing to the long distances from which the firewood had to be brought and difficulties of obtaining sufficient means of transport, the problem of ensuring an adequate supply of firewood for Srinagar was one of much trouble and anxiety to the Forest Department. The solution of this problem was to convert swampy areas in and around the Srinagar in to the willow plantation for which the Revenue Department had to handover such areas to the Forest Department. This step besides yielding substantial revenue, worked as great substitute for reliving the shortage of the firewood supply from the forests.

In 1919-20, the new policy was rolled out under which the firewood was cut in the forests which were located far away from Srinagar and then transported and stocked in depots set on the bank of river Jhelum by a Departmental Agency. The firewood was next sold in the wholesale quantity to contractors on the condition that they would transport it by boats to the depots in Srinagar and retail it at fixed rates under the supervision of the Forest Department officials. Reserve stocks of firewood were also kept at various points on the main river to meet an emergency.[70] The new policy of extraction and supply of firewood which on an average was seven lakh mounds per annum however was a vast and unprofitable undertaking for the department.[71] The artificial regeneration resorted to by the Forest Department had a positive socio-cultural impact on the people. The plantation of willow and popular which were extensively raised by the Forest Department became a permanent and cheap source of firewood as well as enabling the people to engage in activities which enabled them to generate income. With the growth of population, the demand for firewood increased accordingly. The total population of the state in 1931 including the dependent Jagirs and Illaqas went up to 3, 646,243 which was a percentage increase of 9.8 over the last census of 1921.[72] This had once agin led to the acute shortage of firewood, as the nearby forest where extraction was easy started dwindling. This created an unfavourable balance and consequently a problem and it was under such circumstances that the Firewood Organization in the Forest Department came into existence in 1934. The purpose behind creation of such an organization was to cater the firewood demands of public on reasonable rates. After its creation, the department was entrusted with the stupendous

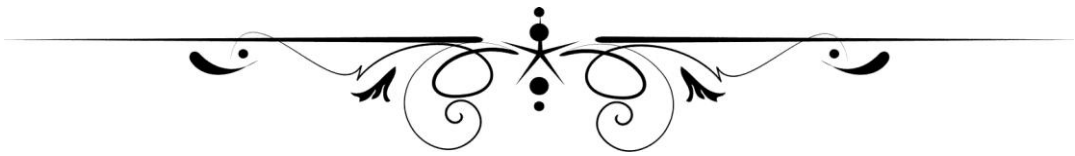
[69] ARFD, 1918-19,p.23.
[70] ARFD, 1919-20,p.11.
[71] ARFD, 1920-21,p.12.
[72] Census of India (1931), Volume.XXIV, Jammu and Kashmir State,Part-I,pp. 10-11.

task of formulating plans of procurement and distribution of firewood among the residents of Srinagar city at controlled rates which were lower in comparison to open market prices prevailing at that time. To resolve the problem the organization was asked to provide twelve lakh mounds of firewood annually which was to be obtained from the willow plantations or coniferous forests.[73]

[73] ARFD, 1934,PP.64-68.



CONCLUSION



Conclusion

From the past forty years and especially in the last twenty years, environmental history all over the world had become a well- recognised field with the strong support at both individual and institutional level. Broadly speaking the environmental history is the history of the role and place of nature in human life and the same time presents the history of the interactions that the societies had developed with the non-human past in their respective environments. The study of environmental history led to the focus on the ways on which the people have tried their best to transform nature into a system that suits and works for them and at the same time provides and produces sources for their consumption as well as sustenance. It is the quest of historians who provided ecological background to the ecological problems which had further led to the evolution of environmental history as a separate branch of history. Both in India and Euro-American world, environmental movement inspired and promoted the historians all over the world to identify the background of ecology in the past. The main objective of environmental history which emerged in South-Asia as a separate branch was to document the relationship between man and nature in Indian history.

Environmental history in South-Asia has mainly touched the three main broad aspects: analysed the traditional resource use and management system during pre-colonial period, documented the ecological changes brought about by the British colonial rule finally the reflections of ecological changes in independent India. The environmental history had made its inroads in the Indian academic world in the mid 1980's, and the reason for this was due to the ecological disturbances at the hands of colonial rulers because of the industrial modernity which had affected the ecology. The movements related to the ecological protection emerged all over the world and that have provided historical dimensions to the problems related to the ecology and such kind of systematic movements were initiated in India by the pioneers of the subject like Ramchandra Guha and Madhav Gadgil. Several other works were also started by the environmental historians in other parts of the country.

We know the establishment of Calcutta Botanic Garden led to the introduction of several beneficial plants and was used as a base by the colonial botanists in order to

enhance the knowledge of Indian flora. However due to the very few number of botanists belonging to the British in India, they were not having the full capacity to process the collected plants or can publish their findings. So, in this field, they further sought the assistance of other Europeans and Indians who were having knowledge in the field.

It was from 1890's that the Government has turned its face to newer institutions like the Agriculture Department and Forest Department in order to enhance the productivity of Indian agriculture and both the departments succeeded in this attempt having well equipped training and research facilities. Being influenced by the application of colonial science and establishment of scientific institutions in various parts of India, the State Government in Kashmir quickly responded the changes happening there in such kind of institutions. The establishment of Imperial Agricultural Research Institute Pusa and Indian Council of Agriculture Research led to the beginning of an organised work in the field of agriculture and horticulture. The people in the Kashmir were strongly associated with both the departments and any kind of change or modification in them was a welcome step for the people. The establishment of the Pratap Model Farm in Srinagar in1906 was the creation of the Imperial Agricultural Research Institute Pusa as the former was the inspiration for the later. Different kinds of vegetables and fruit trees along with the improved implements were being imported from the foreign countries for an experimental purpose here in the farm and it was only after the successful experiment that the seeds were being distributed among the cultivators. The State Government created a desire among the zamindars and developed the interest among them by organising the various exhibitions and were further encouraged by giving the prizes whosoever would take a deeper interest in the cultivation of improved varieties. While after noticing the progress of Pratap Model Farm, several other research stations were also opened in other parts of the Kashmir with the same objective. With a view to attain the desired and practical results, the Government started to give training to the students and educated sons of zamindars in agriculture and its allied subjects. This had led to the creation of technical experts who besides employed by the agriculture department were also helping and guiding the private growers. This has led to the production of more improved varieties with better results, ameliorating the long standing sufferings and had forced the zamindars to bring more area under cultivation.

The French experts helped the State Government in bringing the horticulture on scientific lines, although the fruits were grown in the state but mostly in the wild form, by introducing the improved varieties of fruits which they experimented earlier to thrive and give desired results. First of all the wine was being produced by the French experts, when for the first time wine cuttings were planted in the 1875 in the Chashmashahi Garden. The grapes produced were sent for wine manufacturing in the distillery which was established in Gupkar Srinagar. Besides meeting the requirement of European visitors, wine manufacturing and its sale became a source of revenue for the Government until 1914. After that the cultivation of grapes was given up and wine manufacturing was stopped due to the competition in the market, as the wine of much greater quality was available in the market on reasonable rates. The development of horticultural activities under the viticulture continued up to the 1902, when the regular Department of Horticulture was established. The department then stated its work by establishing the various nurseries at scattered places across the Valley in which the trees were grafted with the foreign varieties and the seeds were sown of improved varieties. The results of the department can be gauged from the fact that only 560 trees were distributed in the year 1902-03, so with the each passing year the demand of the grafted trees went on increasing that in the year 1939-40, the tree distribution in both the provinces went up to 1,34,359 trees. Besides the grafted trees, the seeds sown in the nurseries were also distributed among the cultivators in every tehsil. The people gave an overwhelmed response to this act of the Government and brought more and more agricultural land under cultivation by planting trees as well as seeds, thus helping the ecology of the region. The positive contribution of the Government can also be seen here as well, as it was under their supervision that the plantation was done by the zamindars and the picture demonstrations were being given to the cultivators regarding the plantation, harvesting and protection against the various kinds of plant diseases. Moreover the fruit trees were also planted in the state gardens and pleasure parks maintained by the Government. Regarding the cultivation of hops, a large tract of land measuring 119 acres in Dubgam Baramulla, the only hop producing area in the state, was managed by the State Government by seeking the advice of the Imperial Economic Botanist Mr. A. Howard. The garden besides being a source of revenue to the state also brought barren land under its cultivation. Apart from fruit trees, plantation of arboriculture trees which mainly include the poplars and chinars was also taken in hand during the period of our study. These trees were planted either in the state gardens or

along the road sides and pleasure parks. Plantations of such trees along with the flower plants definitely describes the ecological consciousness and interest of the government at a time when the concept of ecology was completely absent and alien in Kashmir.

We know the existing literature on the colonial forest policies did not cover up the forest of Kashmir or did not received the attention in the discourses of environmental historians on forest management practices in colonial India. In the present study attention was diverted towards the discourses on the various attempts which were related to the forest management at the hands of colonial rulers, State Government, scientists and foresters. The other discourses which received an adequate attention in the study were the socio-economic and cultural aspects. Several works at regional level were undertaken in order to highlight the exploitation of forests and documenting the alienation of communities from nature which were dependent directly on the forests. Although the concept of ecology was uncommon during our study period but still the State Government had taken very deep interest to prevent the natural resources from destruction. The man and nature relationship more particularly with the forests had a very deep impact on the ecology of Kashmir.

The State of Jammu and Kashmir with its vast lush green forests which include some of the important varieties was not under the eye of resource hungry colonial masters at a time when the British Indian forests were developed on sound scientific lines. The forests of the state at that time were passing through a precarious situation as there was no regular check on the wanton destruction of the trees. The trees were cut mostly for the timber and construction purposes. The appointment of a British resident in Kashmir had a very deep impact on the management and moderation of the state. It was through the resident that the Kashmir was exposed to the British and later came to know about the resources available here. The appointment of J.C. MacDonnell as the first conservator of Forests in the State has been the watershed in the forest history of Kashmir. It was after his appointment that the forests of the state had been brought on the scientific lines. The first and foremost step taken was the demarcation, through which the forest area of the state has been extended and more forest cover was brought under the protection zone, which ultimately curtailed the illegal felling of the more important species. The results of the demarcation can be judged from the fact that in 1947, only 3.7 square miles remain un-demarcated in the Kashmir Circle. It was only after the demarcation work that the proper management or working plans were

prepared. After ten years of the introduction of the scientific forestry, the need for the proper working plans on the accepted lines of management was felt, as the contractors were felling the trees on the basis of their choice and accessibility. The working plans for almost all the forest divisions of the state were prepared out and only the trees of particular girth or the criteria fixed by the Government were being removed out. We can say that the scientific method for the removal of trees from the forests was adopted and the selective feeling was stopped to a large extent. Thus the first thirty years since the beginning of scientific forestry were devoted to the demarcation, mapping and working plans. The need was felt for the regeneration or silvicultural practices which commenced from the year 1925, which include both artificial and natural regeneration. Through the silvicultural practices, the area which was devoid of the tree growth were planted with the species of important varieties and the areas which were under the continuous threat by the grazing animals making impossible for the seedling to establish, artificial regeneration was done in those areas. Certain tract of the land was under the brushwood or the trees of less importance, the Government felt it necessary to apply the silvicultural practices by replacing them with other important species like deodar.

The communication work which includes the construction of roads, bridges, culverts, buildings, rest houses started by the Forest Department besides serving its needs like inspection and exploitation, also facilitated the movement of the people living in the far flung areas. The exploitation work was done at the hands of the Departmental Agency, the Contractual and Purchasers Agency and there was a regular check on the illegal felling of trees which was at alarming rate before the beginning of scientific forestry. For the extraction of sleepers, scantlings, timber and logs, different means of extraction were applied in order to bring them down on the plains to the nearest floating streams. While extraction special care was taken of young plants so that they may not get affected. The state administration was keen enough to keep themselves abreast of the latest developments going on in the British India and the world in the field of forest management and its related issues. The steps which the state government took and the efforts which the forest department made in getting the personnel of the forest department trained in the best forestry practices shows that the state government had made training a corner stone of its Forest Policy. In the beginning of the establishment of the Department the students from the state were sent to the Dehradun Imperial Forest

College for attaining the training in the respective field. Even the State Government had sent its forest personnel to America for the training course which also depicts the far sighted policy of the government on bringing the forest on modern lines. With the establishment of the Forest Training School in the Kashmir, both the Foresters and Forest Guards were attaining the training courses and were later sent to the Dehradun Imperial Forest College for the Rangers course. With the establishment of the Research Division in Srinagar in 1928, many new exotic species were introduced by laying out the sample plots of deodar, kail, fir etc. and studied various problems of the forestry. However there were certain problems which were the stumbling block in the way of forests which includes the grazing, lopping and forest fires. There were several causes which were held responsible for the incendiarism of the forest. The forest laws framed by the government were so rigid according to the people who are forcing them to go to such extent and put forests on the fire in order to meet their needs.

During the period of our study we have noticed that forests have been the important and principal source of revenue to the state. There was no income from the forests during the pre-colonial Kashmir but the people were highly dependent on them as it was an important component of local livelihood. The positive results of the department can only be seen from 1890 onwards, as it had made a tremendous progress by applying the scientific principles on the model of British Indian Forestry. The effect of introducing sound methods of working is also reflected in the financial results of the department. While comparing the Kashmir Forest Department with other provinces of British India, a remarkable progress has been shown by the department so far as its revenue and expenditure is concerned. The forests of the state were developed at a time when the demand of sleepers for the railways in British India was very much and to the North Western Railways, a large number of sleepers were supplied to it from Kashmir. Apart from the sleeper sales there were also large exports in the form of logs, timber and the fire wood which also added to the state exchequer. When we talk of the forest economy of the Kashmir, we can't ignore the minor forest products which contribute about 50 % of forest revenue and 70 % of income through export. The produce from the forests also served as the raw material to several industries which were wholly and solely dependent on the forests besides that providing an employment to the large section of people.

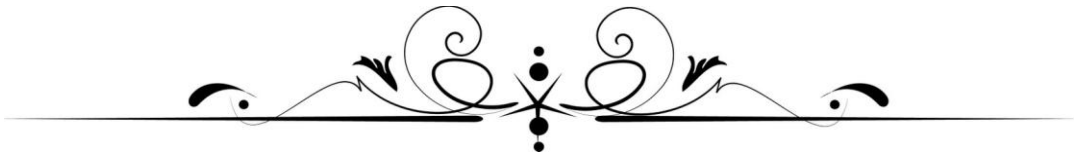
Forest Department and the formulation of its policies had an everlasting and far reaching impact on Indian society during colonial rule. The results were quite clear as

the poor people lost their supplementary source of livelihood and it became very cumbersome for the cultivators to keep cattle which were their essential component of life, due to the restrictions imposed on grazing by the colonial authorities. The designs of the colonial forestry as we have noticed in the British Indian forest management were more particularly economical rather than conservation for the protection of climate which they justified in their discourse. The intellectual class also believed that the rules regarding the conservation and protection measures of forests mostly benefited the colonial Government. The local inhabitants remained at the receiving end as they were not able to take the benefits of the forest produce in the nearby forests. There is no doubt that some grants and concessions were granted to the people by the Forest Department but simultaneously some needless restrictions were imposed which curtailed their movement. In such circumstances the forest offences were bound to occur as there were some forest products which were desperately needed by the people for their survival. In spite of bringing the Forest Department on scientific lines, the numbers of offences were increasing by every passing year regarding the illegal removal of timber. This was the clear indication which depicts that the new forest policies were not meeting the demands of the local people and hence were forced to go for such an extent. Due to this was reason there was a sharp increase in the cases related to the forests right from the beginning of scientific forestry in the state. The restrictions imposed to the local inhabitants living in the vicinity of the forests led to the corruption in the state administration in a number of ways. However, there is no denying in the fact that the restrictions imposed by the Forest Department led to the constant increase in the greenery of the state and also marked a success in maintaining the ecological balance to a large extent.

One of the greatest dangers to the State Forest Department was the grazing by the livestock of pastoral nomads who utilise the various biotopes of different altitudes. The State Government had taken several steps in order to protect the forests from the injury done by grazing and browsing animals. No doubt some restrictions were put in place for the nomadic grazers by closing the areas of more important species but they continued to be hurdle in the normal functioning of Forest Department throughout the period of our study.

This study explores the trajectory of complex inter-relationship that Dogra State system and its interventions in the natural ecosystems of Kashmir, its implication to the

physical and socio-ecological forms. In the well-established field of environmental history in general and modern forest history in particular, the region of Kashmir remained an unexplored domain which this study seeks to address. Most of the studies on colonial/modern forest histories arrive at conclusion by an exclusive examination of silviculture and arboriculture and other conservation practices devoted to timber trees and very less attention had been devoted to non-timber forest products. The forest history of Kashmir represents a continuous efforts being made by Dogra Rulers under the guidance of European foresters, horticulturalists and other naturalists for maximization of unique and endemic products of the Valley. The scientific community engaged in forest conservation/horticultural crops, mainly came from England, Scotland, Germany and the role of French experts in Indian forest conservation had not been explored by existing studies. Forest history of Kashmir shows an active engagement of French in modernizing forest conservation at own level and promotion of horticultural crops at another level. Several varieties of timber species, breeding, grafting and other innovations were executed for optimum use of forest resources during the period of our study. Contrary to the Forest departments in other provinces of India, Kashmir forest conservation to a large extent is a successful enterprise taken together by the Dogra State and the British.



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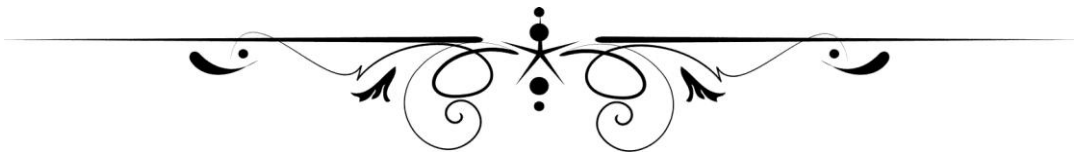

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APPENDIX

Appendix

List of the Heads of the Forest Department Jammu and Kashmir

CONSERVATOR OF FORESTS		
S.No	**Name**	**Time Period**
1	J. C. MacDonnell	1891-1904
2	A. W. Blunt	1904-1907
3	W.H. Lovegrove	1907-1915
4	B.O. Conventry	1915-1922
5	Lt. Col. Pian Singh	1922-1923
	CHIEF CONSERVATOR OF FORESTS	
1	H.L. Wright	1923-1933
2	Sir Peter H. Clutterbuck	1933-1944
3	Th. H.S. Pathania	1944-1957
4	R.L. Khajuria	1957-1959
5	A.A. Firdous	1959-1964
6	G. Naqushband	1964-1976
7	B.R. Gupta	1976-1977
8	N.A. Masoodi	1977-1978
9	A.R. Khan	1978-1981
10	S. Sohan Singh	1981-1982

KASHMIR VALLEY: TEHSILWI SE FOREST AREA

S.No	Tehsils	Geographical Area (Sq.Km)	Forest Area Sq.Km.	Percentage of Forest Area
1	Sopore	2,6552	941	85%
2	Karnah	407	103	25%
3	Handwara	1,588	1,299	80%
4	Uri	697	302	41%
5	Baramulla	829	351	40%
6	Sonawari	394	217	53%
	Distt. Baramulla	6, 568	3, 200	6 9%
7	Anantnag	2,688	1, 881	68%
8	Kulgam	1, 571	592	36%
9	Pulwama	1, 17 2	77 9	66%
	Distt. Anantnag	5,431	3, 214	58%
10	Ganderbal	1, 45 3	39()	26%
11	Badgam	1, 242	210	16%
12	Srinagar	46 9	298	70%
	Distt. Srinagar	3, 121	901	27%
	Kashmir	**15, 120**	**7, 315**	**51%**

Source: Jammu and Kashmir Forest Department, Srinagar, Kashmir, Overview of Forests 1982.

List of Gardens under the control of Director of Agriculture Kashmir State, 1926

S.No	Name of Garden	Area		Tehsil	Remarks
		Kanals	Marlas		
1	Ali Mardan Khan Bagh	296	2	Srinagar (khas)	S.no 1-18 Hariparbat Almond orchards. Total 1275 kanals and 12 marlas
2	Anar Bagh	34	10	-do-	
3	Babuli Bagh	20	-	-do-	
4	Bulbul Bgh	23	-	-do-	
5	Buta Kadal Bagh	132	11	-do-	
6	Deodhi Bagh	124	6	-do-	
7	Gulab Bagh	42	19	-do-	
8	Julai Bagh	37	14	-do-	
9	Khema Doz Bagh	49	19	-do-	
10	Khawjyarabal Bagh	30	2	-do-	
11	Mistri Bagh	68	16	-do-	
12	Paniri Bagh	48	15	-do-	
13	Pir Bagh	68	5	-do-	
14	Qazi Wari Bagh	82	4	-do-	
15	Sukhram Bagh	17	4	-do-	
16	Tawela Bagh	25	16	-do-	
17	Waris Khan Bagh	123	1	-do-	
18	Zer Qila Bagh	30	8	-do-	
19	Malashahi Bagh	236	17	-do-	
20	Pandach Bagh	6	10	-do-	
21	Sonwar Bagh	1429	17	-do-	1185 Kanals, 15 marlas transferred to Military Dept.
22	Zaoora	1213		-do-	Almond Nursery
23	Zoonimar	20	13	-do-	
24	Qasba Tral	127	8	Pulwama	
25	Ranbirpura Nagam	141	19	-do-	
26	Haripore	104	11	Kulgam	
27	Shopian	38	17	-do-	
28	Beragpura	94	3	Anantnag	
29	Hakora	27	16	-do-	

List of Mughal Gardens under the control of Director of Agriculture Kashmir State, 1926.

S.No	Name of Garden	Area		Tehsil	Remarks
		Kanals	Marlas		
1	Chashmashahi	10	15	Srinagar(khas)	Pleasure garden
2	Nasim Bagh	595	6	-do-	Pleasure garden, contains a nursery of Chimars and polars
3	Nishat Bagh	394	17	-do-	Pleasure garden
4	Shalabagh	283	11	-do-	-do-
5	Achabal	85	1	Anantnag	Pleasure garden under fruit trees and cultivated land
6	Verinag	142	15	-do-	-do-

List of Vineyards under the control of Director of Agriculture Kashmir State, 1926.

S.No	Name of Garden	Area		Tehsil	Remarks
		Kanals	Marlas		
1	Buta Rishi Bagh	399	9	Srinagar(khas)	Contains a nursery of wines and Raipur Vineyards
2	Hafiz Bagh	36	-	-do-	
3	Mahigam Bagh	13	-	-do-	
4	Momin Rishi Bagh	8	12	-do-	
5	Raja Bagh	102	7	-do-	
6	Ranbir Bagh	325	6	-do-	
7	Rather Bagh	23	-	-do-	
8	Vatlar Bagh	133	17	-do-	

List of Palace Gardens under the control of Director of Agriculture Kashmir State, 1926.

S.No	Name of Garden	Area		Tehsil
		Kanals	**Marlas**	
1	Farhat Baksh or Narsingh garden	136	11	Srinagar(khas)
2	Pratap Villa	32	1	-do-
3	Pratap Dilkusha	79	5	-do-
4	Old Tehsil garden	10	19	-do-
5	Mandi Lawn	-	-	-do-
6	Inner Palace Lawn	53	17	-do-
7	Kabutar Khana	21	19	-do-
8	Ram Bagh	20	11	-do-

List of Guest House Gardens

S.No	Name of Garden	Area		Tehsil
		Kanals	**Marlas**	
1	Guest House Garden I	19	15	Srinagar(khas)
2	Guest House Garden (GHG) II	36	4	-do-
3	GHG Old Accountant General's Bungalow	9	1	-do-
4	GHG Old State Engineer's Bungalow	10	9	-do-
5	GHG Old Secretary Game Preservation's Bungalow	12	5	-do-
6	GHG Chashmashahi	-	-	-do-
7	Guest House Gulmarg	-	-	Baramulla

THE CATTLE TRESPASS ACT, 1977, (1920 A. D.) ACT No. VIII OF 1977

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SCHEDULE-Omitted.

THE CATTLE TRESPASS ACT, 1977 (1920 A. D.)

ACT No. VIII OF 1977

[Sanctioned by His Highness the Maharaja Sahib Bahadur per Chief Minister's Endorsement No. 8372 dated 11th September 1920, read with State Council Resolution No.1, dated 8th April, 1925. (Notification No. 14-L/81)].

AN ACT TO CONSOLIDATE AND AMEND THE LAW RELATING TO TRESPASSES BY CATTLE

Preamble.-Whereas it expedient to consolidate and amend the Law relating to trespass by cattle. It is hereby enacted as follows:

CHAPTER I

PRELIMINARY

Short title, extent and commencement.-1. This Act may be called the Cattle Trespass Act 1977.

2. It extends to the whole State, except such towns or local *as* 1 r the Government] by notification in the Jammu and Kashmir Government Gazette, may from time to time exclude from its Operation.

3. It shall come into force on the 1st day of Baisakh 1978.

2. Savings.-All pounds established, pound-keepers appointed and villages determined under the State

Council Circular NO. 30 of 1889 (relating to trespasses by cattle), shall be deemed to be respectively established, appointed and determined under this Act.

3. In this Act:-

Interpretation clause.-"Officer of Police" includes also village watchmen and 2[in any local area with respect to which a Notification under section 33 is for the time being in force, also any employee of the local authority referred to in that section].

"Cattle' includes also elephants, camels, buffaloes, horses, mares, geldings, ponies, colts, fillies, mules, asses, pigs, rams, ewes, sheep, lambs, goats, kids.

1 ["Local authority" means anybody of persons for the time being invested by Law with the control and administration of any matters within a specified local area, and "Local fund" means any fund under the control or management of a. local authority].

CHAPTER II

POUNDS AND POUND-KEEPERS

4. Establishment of *pounds.-Pounds* shall be established at such places as the 2 [Deputy Inspector General] of Police of a Province subject to the general control of the' Government from time to time directs.

The village by which every pound is to be 11sed shall be determined by the *2* [Deputy Inspector General] of Police of a Province.

5. Control of *pounds, Rates* of *charge for feeding impounded cattle.-The* pounds shall be under the Control of the 2[Deputy Inspector General] of Police of a Province; and he shall fix, and may from time to time alter, the rates of charge for feeding and watering impounded cattle.

6. Appointment of pound-keepers.-The 2[Deputy Inspector General] of Police of a Province shall also appoint for each pound a pound-keeper.

Suspension or removal of *pound-keepers.-Every* pound keeper appointed by the 2[Deputy Inspector

General] of Police of a -Province may be suspended or removed by him.

Pound-keepers may hold other offices:- Any pound-keeper may hold simultaneously any

other office under Government.

Pound-keepers to be *"public-servants".-Every* pound keeper shall be deemed a public servant within the meaning of the Ranbir Penal Code.

DUTIES OF POUND-KEEPERS

7. To *keep registers and furnish* returns.-Every pound keeper shall keep such registers and furnish such returns as the Government from time to time direct.

8. To *register seizures.- When* cattle are brought, to pound, the pound-keeper shall enter in his registera) the number and description of the animals,

b) the day and hour on and at which they were so brought,

c) the name and residence of the seizer, and

d) the name and residence of the owner, if known and shall give the seizer or his agent a copy of the entry.

9. To *take charge* of *and feed cattle.-The* pound-keeper shall take charge of, feed and water the cattle until they are disposed of as hereinafter directed.

CHAPTER III IMPOUNDING CATTLE

10. Cattle damaging land.-To cultivator or occupier of any land, or any person who has advanced cash for the cultivation of the crop or produce on any land,

or the vendee or mortgagee of such crop or produce, or any part thereof

may seize or cause to be seized any cattle trespassing on such land, and doing damage thereto or to any crop or produce thereon, and send them or cause them to be sent within- twenty-four hours to the pound established for the village in which the land is situate.

Police to *aid seizures.-All* officers of Police shall, when required, aid in preventing (a) resistance to such seizures, and

(b) rescue from persons making such seizures.

11. *Cattle: damaging public roads, canals and embankments.-Persons* in charge of public roads pleasure grounds. Plantations, canals, drainage-works, embankments and the like, and officers of Police, may seize, or cause to be seized, any cattle doing damage to such roads, grounds, plantations, canals, drainage-works, embankments, and the like, or the sides or slopes of such roads, canals, drainage-works or embankments, or found straying thereon.

and shall send them or cause them to be sent within twenty-four hours to the nearest pound.

12. *Fines for cattle impounded.-For* every head of cattle impounded as aforesaid, the pound-keeper shall levy a fine according to the following scale:-

1. Elephant - 6.00 Per day
2. Camel - 3.00 Per day
3. Buffalo, horse, mare, gelding or pony - 2.00 Per day
4. Bull bullock, cow, heifer or ass... - 1.50 Per day
5. Pig, sheep, ram or ewe. - 0.50 Per day
6. Goat - 1.00 Per day

Note:-Calf, lamb, kid, colt or filly under six months shall be charged at half rates:

Provided that when it appears to the Government from the report of. '2 [Deputy Inspector General] of Police of a Province or on the representation of a local authority, that, in any local area subject to the jurisdiction or control of such 2[Deputy Inspector General] of Police or authority, cattle habitually a11owed to trespass on land and damage crops or other produce thereon, the Government may, by notification in the Jammu and Kashmir Government Gazette, direct that, for every head of cattle of any kind specified therein which may be seized within such local area and impounded as aforesaid the pound keeper shall levy such fine, not exceeding double the fine mentioned in the foregoing scale as may be prescribed in the notification.

List of fines and charges for feeding.-All fines so levied shall be sent to the2 [Deputy Inspector General] of Police of a Province through such officer. as 3 [the Government] from time to time direct.

A list of the fines and of the rates of charge for feeding and watering cattle shall be stuck up in a conspicuous place on or near to every pound.

3 [The Government] may at any time, by notification in the Jammu and Kashmir Government Gazette, cancel or vary a notification under the proviso to the first paragraph of this Section.

CHAPTER IV

DELIVERY OR SALE OF CATTLE

13. Procedure when owner 'claims the cattle and pays fines and charges. - If the owner of the impounded cattle or his agent appear and claim the cattle, the pound-keeper shall deliver them to him on payment of the fines and charge's incurred in respect of such cattle.

The owner or his agent, on taking back the cattle, shall sign a receipt for them in the register kept by the pound-keeper.

14. Procedure if cattle be not claimed within a week.-If the cattle be not claimed within seven days from the date of their being impounded, the fact shall be reported to a Magistrate whom the Magistrate of the District appoints in this behalf.

Such Magistrate shall thereupon stick up in a' conspicuous part of his office a notice stating.

(a) number and description of the cattle.

(b) the place where they were seized,

(c) the place where they are impounded.

and shall cause proclamation of the same to be made by beat of drum in the village and the marketplace nearest to the place of seizure.

If the cattle be not claimed within seven days from the date of the notice, they shall be sold by

public auction, by the said Magistrate, or an Officer of his establishment deputed for that purpose, at such place and time and subject to such conditions as the Magistrate of the District by general or special order from time to time directs:

Provided that, if any such cattle are in the Opinion of the Magistrate, not likely to fetch a fair price

if sold, as aforesaid they may be disposed of in such manner as he thinks fit.

15. Delivery to owner disputing legality of seizure but making deposit.-If the owner or his agent appear andrefuse to pay the said fines and expenses, on the ground that the seizure was illegal, and that the owner is about to make a com plaint under section 20, then upon deposit of the fines and charges incurred in respect of the cattle, the cattle shall be delivered to him.

16. Procedure when owner refuses or omits to pay the fines and expenses.-If the owner or his agent appear and refuse or omit to pay or (in the case mentioned in section 15) to deposit the said fines and expenses, the cattle, or as many of them as may be necessary, shall be sold by public auction by such Magistrate, at such place and time and subject to such conditions, as are referred to in section 14.

Deduction of fines and expenses.-The fines leviable and the expenses of feeding and watering together with the expenses of sale, if any, shall be deducted from the proceeds of the sale.

Delivery of unsold cattle and balance of proceeds.-The remaining cattle and the balance of the purchase-money, if,
any, shall be delivered to the owner or his agent, together with an account showing
(a) the number of cattle seized,
(b) the time during which they have been impounded,
(c) the amount of fines and charges incurred,
(d) the number of cattle sold,
(e) the proceeds of sale, and
(f) the manner in which those proceeds have been disposed of.
Receipts;.-The owner or his agent shall give a receipt for the cattle delivered to him and for the balance of the purchase-money (if any) paid to him according to such account.
17. Disposal of fines, expenses and. surplus proceeds of sale.-The Magistrate by whom the sale was made shall remit to the treasury the fines so deducted. The charges for feeding and watering deducted under section 16 shall be paid over to the pound-keepers, who shall also retain and appropriate all sums received by him on account of such charges under section 13.

The surplus unclaimed proceeds of the sale of cattle shall be held in deposit for three months, and if no claim thereto be preferred and established within that period shall, at its expiry, 'be remitted to the treasury.
18. Omitted.
19. Officer's and pound-keepers not to purchase cattle at sales under Act.- No Magistrate, Officer of Police, or other officer or pound-keeper appointed under the provisions herein contained, shall, directly or indirectly, purchase any cattle at a sale under this Act.

Pound-keepers when not to release impounded cattle.- No pound-keeper shall release or deliver any impounded cattle otherwise than in accordance with the former part of this Chapter, unless such release or delivery is ordered by a Magistrate or Civil Court.

CHAPTER V

COMPLAINTS OF ILLEGAL SEIZURE OF DETENTION

20. Power to make complaints.- Any person whose cattle have been under this Act, or having been so
seized have been detained in contravention of this Act may at any time within ten days from the date of the seizure, make a complaint to [a Judicial Magistrate having Jurisdiction].
21. Procedure on complaint.-The complaint shall be made by the complainant in person, or by an agent personally acquainted with the circumstances. It may be either in writing or verbal. If it be verbal, the substance of it shall be taken down in writing by the Magistrate.

If the Magistrate, on examining the complainant or his agent, sees reason to believe the complaint to be well founded, he shall summon the person complained against, and make an enquiry into the case.

22. Compensation for illegal seizure or detention.-If the seizure or detention be adjudged illegal, the Magistrate shall award to the complainant, for the loss caused by the seizure or detention, reasonable Compensation, not exceeding one hundred rupees to be paid by the person who made the seizure or detained the cattle., together with all fines paid and expenses incurred by the complainant in procuring the release of the cattle;

Release of Cattle.-And, if the cattle have not been released, the Magistrate, shall besides awarding such compensation, order their release and direct that the fines and expenses leviable under this Act shall be paid by the person who made the seizure or detained the cattle.

23. Recovery of *compensation.-The* compensation, fines and expenses mentioned in section 21 may be recovered as if they were fines imposed by the Magistrate.

CHAPTER VI

PENALTIES

24. Penalty for forcibly opposing the seizure of cattle or rescuing the same.-Whoever forcibly opposes the seizure of cattle liable to be seized under this Act,

and whoever rescues the same after seizure, either from a pound or from any person taking or about to take them to a pound, such person being near at hand and acting under the powers conferred by this Act,

shall on conviction before [a Judicial Magistrate] be punished with imprisonment for a period not

exceeding one month, or with fine not exceeding fifty rupees, or with both.

25. Recovery of penalty for mischief committed by causing cattle to trespass- Any fine imposed under the next following section or for the offence of mischief by causing cattle to trespass on any land may be recovered by sale of all or any of the cattle by which the trespass was committed, whether they were seized in the act of trespassing or not, and whether they are the property of the person convicted of the offence, or were only in his charge when the trespass was committed.

26. Penalty for damage caused to land or crops or public roads by pigs. Any owner or keeper of pigs who, though neglect or otherwise, damages or causes or permits to be damaged any land, or any crop or produce of land, or any public road, by allowing, such pigs to trespass thereon, shall, on conviction before [a Judicial Magistrate] be punished with fine not exceeding ten rupees.

The Government. by notification in the Jammu and Kashmir Government Gazette, may from time' to time, with respect to any local area specified in the notification, direct that the foregoing portion of this section shall be read as if it had reference to cattle generally, or to cattle of a kind described in them notification, instead of to pigs only, or as if the words "fifty rupees" were substituted for the words "ten rupees", or as if there were both such reference and such substitution.

27. Penalty on pound-keeper failing to perform duties:-Any pound-keeper releasing or purchasing or

delivering cattle contrary to the provisions of section 19 or omitting to provide any impounded cattle with sufficient food and water, or failing to perform any of the other

duties imposed upon him by this Act, shall, over end above any other penalty to which he may be liable, be punished, on conviction before a [Judicial Magistrate], with fine not exceeding fifty rupees.

Such fines may be recovered by deductions from the Pound-keepers salary.

28. Application of fines recovered under- sections 25, 26, or 27.-All fines recovered under section 25, section 26, or section 27 may be appropriated in whole or in part as compensation for loss or damage proved to the satisfaction of the convicting Magistrate.

CHAPTERVII

SUITS FOR COMPENSATION

29. Saving of rights to sue for compensation.-Nothing herein contained prohibits any person whose crops or other produce of land have been damaged by trespass of cattle from suing for compensation in any competent Court.

30. Set-off.-Any compensation paid to such person under this Act by order of the convicting Magistrate shall be set-off and deducted from any sum claimed by or awarded to him as compensation in such suit.

CHAPTER VIII

SUPPLEMENTAL

31. Power of Deputy Inspectors General of. Police to fix and revise the scale of 'charges.- The [Deputy Inspector General] of Police, may, within their respective jurisdictions, by notification in the Jammu and Kashmir Government Gazette, fix or from time to time revise the scale of charges for the upkeep of the impounded cattle for the purposes of this Act.

32. Pounds may be used for unclaimed or attached cattle.-The pounds established under this Act may. whenever necessary, be utilized for the up-keep of cattle to which the provisions of the law for the time being in force, relating to unclaimed or attached property apply. The expenses of such cattle shall be paid according to the scale in force.

[33. Transfer of functions and surplus to any local authority.-The Government; may, from time to time, subject to such conditions as may be considered proper by Notification in the Jammu and Kashmir Government Gazette ;

(a) Transfer to any local authority all or any of the functions of the Government or the [Deputy Inspector General) of Police of the Province under this Act within the local area subject to the jurisdiction of the local authority, and

(b) direct that the whole or any part of the surplus accruing in such local area under section 17 of this Act shall be placed to the credit of such local fund or funds as may be formed for such local area; and may from time to time by Notification in the Jammu and Kashmir Government Gazette cancel or vary any Notification under this section].

THE CATTLE TRESPASS ACT 1977 (1920 A.D.) ACT No. VIII' OF 1977

Rate of feeding and watering impounded cattle in Jammu District Range Police Officer, Jammu [Notification whereas the price of fodder has increased appreciably during the course of the last few months and whereas the present rates charged for feeding and

watering of impounded cattle are low and inadequate for properly feeding the impounded Cattle].

Now, therefore, in exercise of the powers vested in me by virtue of section 5 of Cattle Trespass Act 1977 (viii of 1977) I, Deputy Inspector of Police Jammu Range, hereby enhance the rates of feeding and watering the impounded Cattle in Jammu District with effect from 1st February, 1969. The revised rates in respect of various categories of cattle shall be as under:

i) Elephant Rs. 7 per day.
ii) Camel- Rs.-5 per day.
iii) Bugalo, Horse, mare, gelding or pony- Rs. 4 per day.
iv) Bull, Bullock, Cow, Heifer or ass Rs. 3 per day.
v) Sheep, Goat, ram, ewe Rs. 1.50 per day.
vi) Pig Rs. 2 per day

POWERS OF CANTONMENT MAGISTRATE, JAMMU
UNDER THE ACT:

Office of the District Magistrate Jammu Province [dated, 20th April, 1938.-In exercise of the powers vested in me under Section 14 of the Cattle Trespass Act, Samvat 1977; I hereby appoint the Jammu Cantonment Magistrate to exercise powers of a Magistrate under the Cattle Trespass Act within the five Rakhs i.e. (1) [Chatta] (2) Farm Satwari (3) Bari Brahamna Rakh (.4) Baran Rakh and (5) Gole Rakh. The Magistrate should exercise these powers strictly in accordance with the sections of the above Act,

POWERS OF CANTONMENT MAG1STRATE BADAMI BAGH
UNDER THE ACT:

Office of the District Magistrate of Kashmir [dated 10th May, 1938].-In exercise of the powers vested in me under section 14 of the Cattle Trespass Act Samvat, 1977 the Brigade Commander, Badami Bagh (Cantonment Magistrate) is hereby appointed a Magistrate under the Cattle Trespass Act. He shall exercise these powers under the said Act within the local area of the following five Military Rakhs:

(1) Banyari (2) Nowgam (3) Gundak Shah (4) Arth and (5) Brah .

TRANSFER OF 'FUNCTIONS OF THE DIG OF POLICE TO THE MUNICIPALITIES OF SRINAGAR AND JAMMU

Law Department [Notification No. 23-L/83 dated 4th Jan., 1927 with reference in the provisions of section 33 of the Cattle Trespass Act, Samvat 1977, His Highness the Mahraja Bahadur in Council has. Been pleased]:

(a) to transfer to the Municipal Committees of Jammu and Srinagar Towns (subject to the control vested in the Member of the Jammu & Kashmir State Council in charge of the Municipalities under the Municipal Act over the Municipal officers of the said Committee), all the functions of the Deputy Inspector General of Police of a Province

under the Cattle Trespass Act, Samvat 1977, within the Municipal limits of the said towns;

(b) to direct that the whole of the surplus accruing within the said limits shall be placed to the credit of the Municipal fund of the Municipal Committee concerned; and

(c) to direct .that the functions transferred under clause

(d) may be delegated by the Municipal Committee concerned to any specific employee thereof with the previous sanction of the member of the Jammu and Kashmir State Council-in-charge of the Municipalities.

TRANSFER OF FUNCTIONS OF THE DIG OF POLICE TO CERTAIN NOTIFIED AREAS.

Office of the Minister-in-charge Municipalities [No. 1 dated 26th March, 1932].-With reference to the provision of section 33 of the Cattle Trespass Act Samvat, 1977, His Highness the Maharaja Bahadur has been pleased:

(a) to transfer to the [Notified areas Udhampur, Mirpur, Baramulla and Sopore towns]

subject to the control vested in the Minister in charge of the Municipalities under the Municipal Act, over the Municipal officers of the said Notified Area Committees all the functions of the Deputy Inspector General of Police under the Cattle Trespass Act, Samvat, 1977 within the Notified Areas of 'the said towns;

(b) to direct that the whole of the surplus accruing with in the said limits shall be placed to

the credit of the fund of the Notified Area Committee concerned; and

(c) to direct that the functions transferred under clause (a) may be delegated by the [Notified Area Committee concerned to. any specified employee thereof with the previous sanction of the Minister-in-charge of the Municipalities].

PLATES

Plates

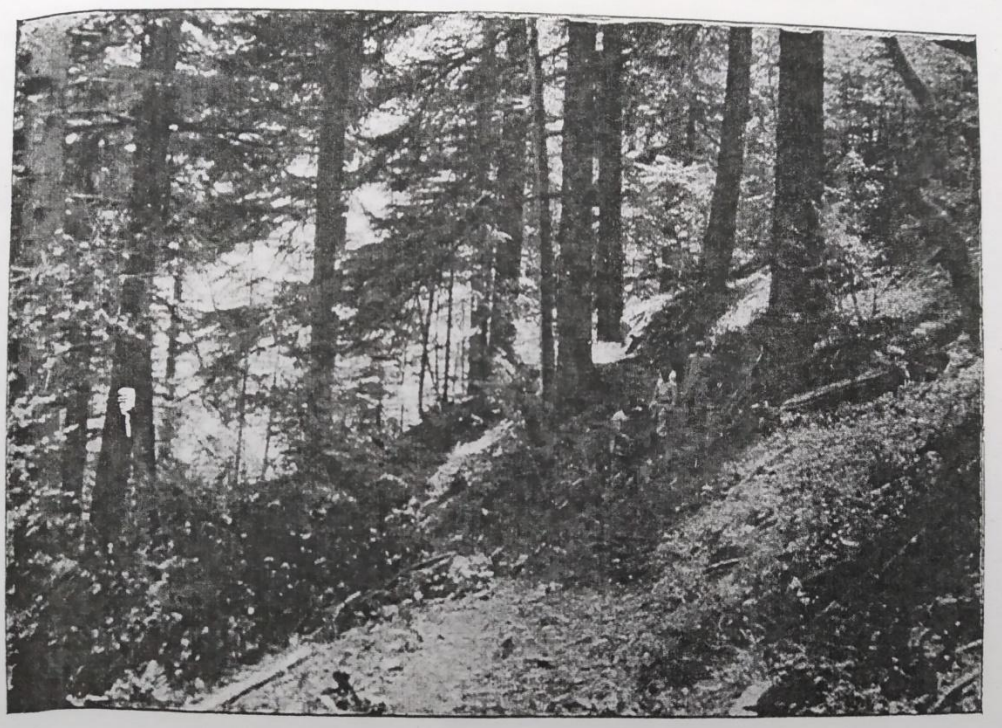


Photo. by Sir Alexander Rodger.

The Lolab.
Typical Kashmir Forests.

The Sindh Valley.

Photo. by Sir Alexander Rodger.

The Lolab.
Typical Kashmir Forests.

Transporting the cuttings.

Photos. by P. Chand.

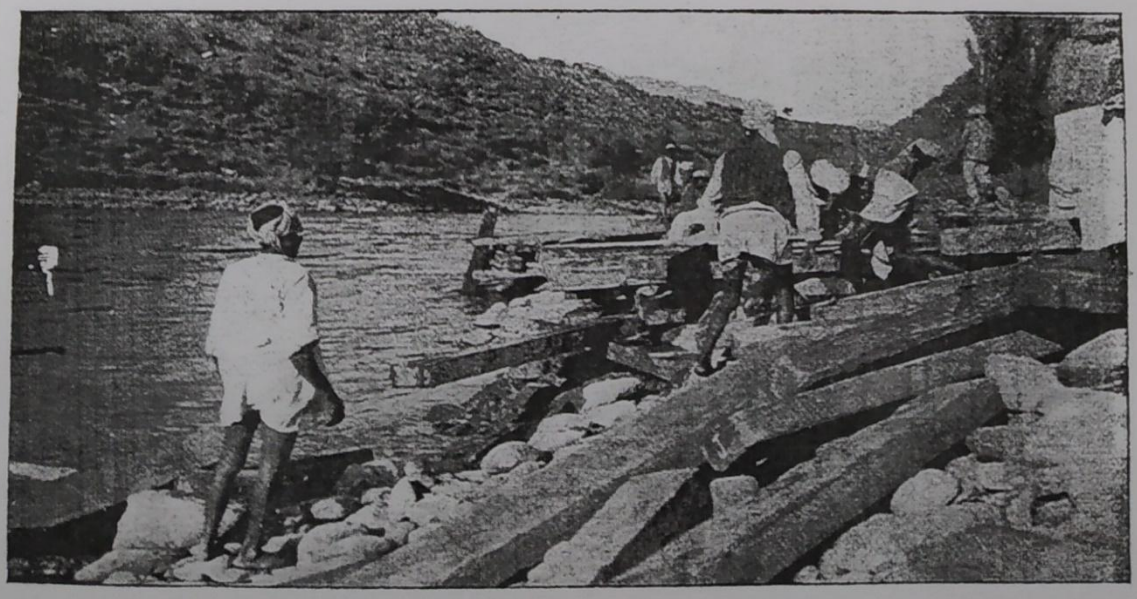
Planting.
Willow planting in the Sindh Division.

Dragging.

Photos. by H. L. Wright.

Floating.
Logging Operations in the Lolab.

Sawing.



Photos by P. N. Kohli.

Launching.
Sleeper work in the Jhelum Valley Division.

Sorting.

Photos by P. N. Kohli.

Cleaning.

Kuth Operations in the Sindh Division.

Cleaning kuth

Photo: P. C. Gupta

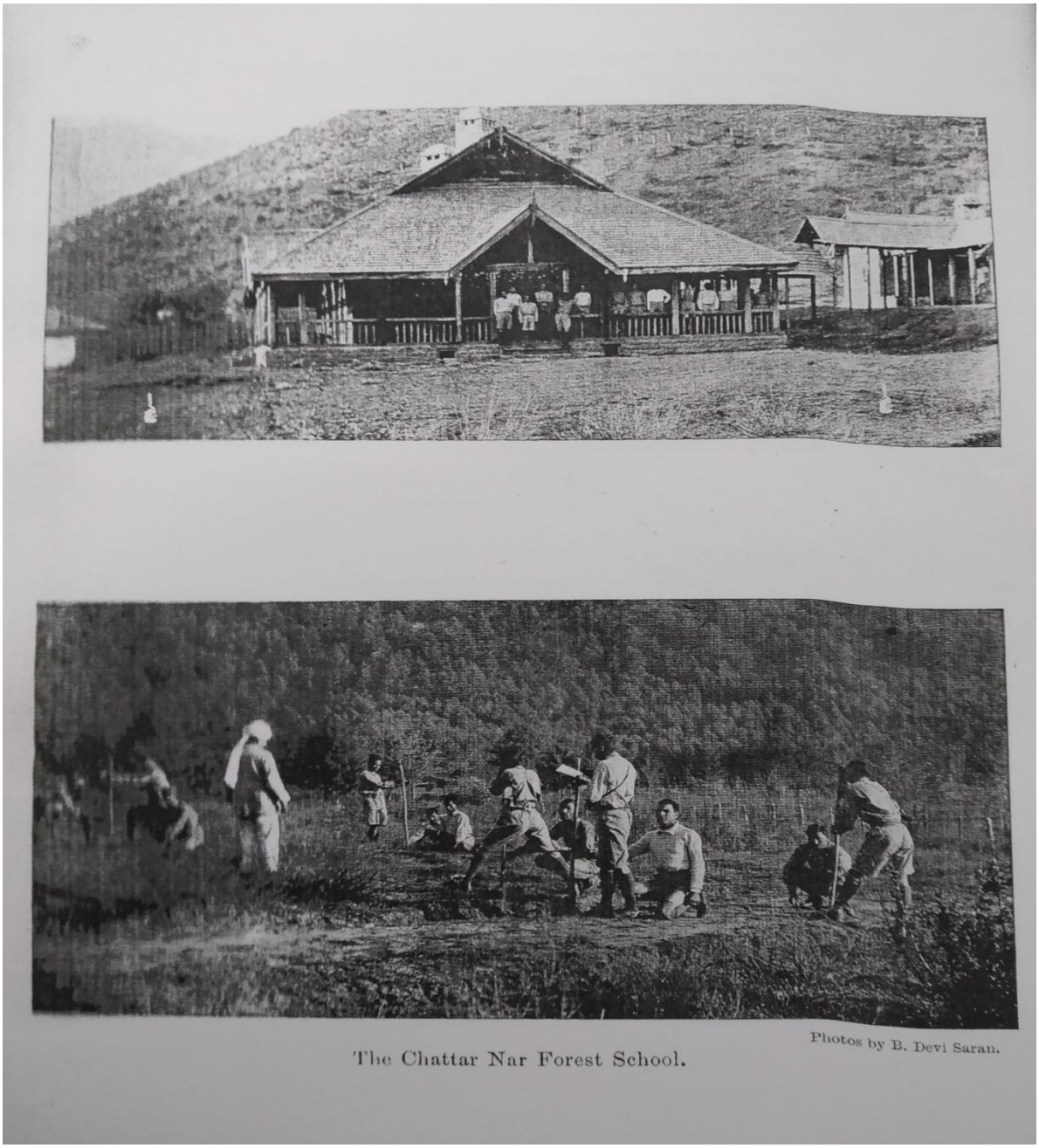
Digitails Nursery


3134 — HDPS

Hop Plant

Photos by W. B. Bakewell.

A Fordson tractor in use on the Lolab tramway.



Photos by B. Devi Saran.

The Chattar Nar Forest School.

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Green economy of Kashmir: past and present

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Abstract

Forests are the natures most beautiful and versatile renewable resources providing simultaneously a wide range of economic, social, environmental and cultural benefits for the society. World-wide demand for their numerous functions is increasing and with the population explosion and urbanization. These are the repositories of biodiversity and have been widely used for centuries as a source of food, fuel, wood, fodder and other biomass by the people living in hilly areas, thus playing a key role in agro-pastoral economy. The forests of Jammu and Kashmir like other forests of the country contribute much to the state economy. They are also known world-wide for their scenic beauty and aesthetics. Forests are largely distributed in the Kashmir Valley and Jammu region while as Ladakh region is devoid of forest vegetation for being a cold desert. During the Dogra rule in Kashmir, the forests of the state were instrumental in boosting the economy of the state and were regarded as backbone of the state economy. Even today the forests play a pivotal role in the growth and development of state economy. The present paper will highlight the economic aspect of the state forests right from the 1891 when they were brought on sound and scientific lines. This study would focus on secondary data. Use of descriptive statistical tools will be used for analysis. The finding of the study shows that there is a severe problem of deforestation;Soil erosion Ecological imbalances, etc. are the real threats to Jammu and Kashmir economy.

Key Words: Agro-economy, Deforestation,Forest, Forest produce, Revenue.

1. Introduction

Forests are very important to the social, cultural and economic life of the millions of people in the country. Forest industry provides mankind a wide variety of important products. They provide fuel wood for energy, fodder for livestock, timber for domestic use, raw material for industrial requirements and various non-timber forest products for medicinal and other purposes. The ever-expanding population of the world has its hope for feeding and clothing on the forest resources which are fortunately renewable. The worldwide demand for their numerous functions and outputs is increasing with the population explosion and urbanization. Forests can be viewed as one of the economic assets for the country's prosperity and a major segment of it is owned by the government. Likewise the forests of Jammu and Kashmir contribute much to the state economy as they contain some rich and valuable species. The state is the home of the best natural temperate conifers in the world, spread over the entire mountain chain of the Jhelum and Chenab mountains. The total forest area of the state is 20,230 square kilometres among which Kashmir has 8128 square kilometres, Jammu 12,066 square kilometres and Ladakh which is almost devoid of natural vegetation has only 36 square kilometres forest area.

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2. Forest based Economy in Pre-Colonial period

The people in ancient period were great lovers of trees and nature conservation, hence the cutting of a tree was considered to be great sin. They were much conscious about the nature and natural vegetation. In medieval period also, Afghans, Mughals and Sikhs lived in harmony with the surroundings and do not seem to have much impact on the forest of the state. Before colonial rule there were no definite forest laws or plans and the work was confined only to the extraction of timber. Forests were not the major asource of revenue to the state. However the people were highly dependent on the forests for the timber, fuel wood, fodder for their livestock and many more minor products among which some were mainly used for medicinal purpose. However among the various communities in Kashmir, Gujjars and Bakerwals were totally dependent on these forests, as rearing of sheep, goats and buffaloes were their only source of income.

3. Forest economy in Colonial Period

It was about 1847-48 that some restrictions were imposed on the reckless felling of trees and a separate section in the revenue administration called *Mahal Nawara* was created with a special creative force to look after the forests. This was created more with the idea of exploitation and collection of revenue. It was laid down that while the zamindar could fell any tree for their bonafide need of timber and firewood; the contractor who would desire to fell the trees had to share the outturn half and half between the state and themselves. In 1883, a preliminary regulation to control forest working *"Ain-i-Jnaglat"* was introduced where by the collection of government share in kind was change to one for collection of royalties for the produce removed from the forests. After seven years later in 1891, the service of an officer of Indian Forest service J.C MacDonnell was secured and foundation was laid for scientific forestry in a systematic way. Demarcation of forests was taken up and ten years later proper working plans on the accepted lines of management were started. With the introduction of scientific forestry much revenue was realised from this source and from then it became an important component of the state economy. In the year 1893, the gross revenue of the Forest department was Rs 3, 92,533 and expenditure of Rs. 1, 88,001 giving a surplus of Rs. 2, 04,532. The total quantity of various classes of timber in logs sold during the year was 7, 27,261 cubic feet valuing Rs. 3, 69,664 against 6, 79,291 cubic feet valuing Rs. 3, 41,377during the year 1892. The effect of introducing sound methods of working is reflected in the financial results, as will be seen from the following table:

Table 1

Sub-Period	Average Surplus (Rs)
1890-1892	3,06,848
1893-1897	5,68,348
1898-1902	6,57,259
1903-1907	9,64,886
1908-1912	12,36,839

Source: Annual Progress Reports of the Forest department for the concerned years.

The financial results of the working of the department during 1905 as compared with 1904 and with average of preceding five years were as under:

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Table 2

Year	**Revenue**(Rs.)	**Expenditure**(Rs.)	**Surplus**(Rs.)
1905	9,79,147	3,68,131	6,11,016
1904	11,86,298	4,07,508	7,78,790
1900-1904	9,69,429	3,34,874	6,34,555

Source: Annual Progress Reports of the Forest department for the concerned years.

The percentages of expenditures and net revenue on the gross revenue are therefore 37.6 and 62.4 respectively.In 1911-12, the gross revenue of the Forest Department was Rs. 16, 43,299 as against the receipts of Rs. 1, 82,879 during 1910-11. The receipts compared to 1910-11 depicted a decrease of one lakh and a half; however they were still above the average receipts between 1906-07 and 1910-11. During the year 1916-17 the forest revenue rose by Rs. 5, 88,442 to Rs. 30, 62,786 and the expenditure by Rs. 13,112 to Rs. 7, 71,879. Excluding the Kuth accounts the cash surplus of the year was over 67 % of the gross receipts. The percentage was about the same as the average of past five years and slightly higher than in the previous year. During 1918-19, the total revenue realised by the department including the receipts from Kuth amounted to Rs. 3,746,595 which was an increase of Rs. 3,83,473 over 1917-18. Including the receipts from Kuth, the total revenue realised by the forest Department during 1919-20 amounted to Rs.3, 690,291 thus there was a decrease of Rs. 55,304 as compared to 1918-19. The total revenue realised from the sales of timber and firewood extracted by state agency during 1919-20 and 1921-22 is as under:

Table 3

Year	**Timber (Rs)**	**Firewood (Rs)**
1919-20	9,85,852	1,25,519
1920-21	9,25,811	2,45,277
1921-22	11,45,378	2,76,779

Source: Annual Progress Reports of the Forest department for the concerned years.

The total amount realised from the sale of minor forest products extracted by departmental agency amounted to Rs. 3, 04,742 during 1921-22 as compared with Rs. 2, 82,347 during 1920-21. Thus during 1921-22, the total receipts including Kuth amounted to Rs. 44, 71,164 as compared with Rs. 41,80,463 during 1920-21, thereby showing an increase of Rs. 2,90,701.

In 1926-27, the department broke all previous records as the total surplus amount was increased to Rs. 42, 50,000 as compared to 36 lakh surplus of the financial year of 1925-26. The gross revenue for the year exceeds rupees seventy lakh. The receipts, expenditure and surplus of the Forest Department for the period 1927-28, 1928-29 and 1929-30 are as under:

Table 4

Year	**Receipts(Rs)**	**Expenditure(Rs)**	**Surplus(Rs)**
1927-28	77,55,978	28,70,472	48,85,506
1928-29	79,44,724	23,60,377	55,84,347
1929-30	71,02,043	23,21,686	47,80,357

Source: Annual Progress Reports of the Forest department for the concerned years.

The economic conditions of the above mentioned period were very unfavourable. The 'Great Depressions' in the thirties left its impressions on the state economy as well. This in turn adversely affected the price of timber. The results of the working of the Forest Department during 1935-36 were more or less same as in 1934-35. The revenue generated was Rs. 42, 74, 000, expenditure incurred was Rs. 12, 81,000 and the surplus depicted Rs. 29, 93,000. During 1942, the Forest

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Department generated receipts worth Rs. 83, 64,000 whereas the total expenditure amounted to Rs 20, 80,000 thus resulting in a surplus of Rs. 63, 46,000. The department has also made a great progress in extending and developing the market for minor products such as Kuth, Resin, and Artemisia etc. The income from the minor forest produce also gave a boost to the economy of the state.

4. Forest and Economy in Post-Colonial period

The forests continued to be the most important resource in the state in the post- colonial period. They have assumed a great importance in the economy of Jammu and Kashmir State as substantial revenue yielding industry. The diversity of the regions flora is astonishing, ranging from silver birch in the sub-alpine mountain ranges to the majestic Chinar (a richly verdant variety of maple), walnut, conifers and deciduous trees in the valleys and plains. Several favoured lessees have had access to this land, making the local government very rich. Being a main source of revenue, the forest exploitation contributed about 34 crore in 1984 as annual revenue to the state and Rs.43.55 crore in 1994. Besides revenue, they also provide employment to many people and raw material to large number of forest based industries. Poplar wood available in the Valley is mainly used for match industry. Wood of polar and willow is used for making cricket bats and bringi wood is used for making hockey sticks. Walnut wood is suitable for wood carving and the carved goods are exported to foreign countries as well. At Pampore (Kashmir) and Bari Brahmna (Jammu) plywood, hardboard and chip board manufacturing factories have been established. Pulp required for the manufacture of handmade paper, straw board and card board is also obtained from the forests.

The following table will show the out turn and value of major and minor forest produce from the year 2000 to 2010.

Table 5. Out turn viz–a-viz value of Major and Minor Forest produce

S. No	Year	Total extraction(000m^3)			Value of timber/firewood Lakhs (Rs)	Value of minor forest produce Lakh (Rs)	Revenue realised Lakh (Rs)
		timber	firewood	Total			
1	2000-01	102.48	4.18	106.66	8419.09	2944.52	4591.62
2	2001-02	152.41	10.28	162.46	14628.42	2384.37	3904.57
3	2002-03	166.47	28.14	194.61	18209.05	1943.41	3616.85
4	2003-04	94.94	25.17	120.11	12798.31	2151.64	4413.43
5	2004-05	96.25	23.70	119.95	15543.02	1061.88	4158.92
6	2005-06	86.40	22.92	109.32	15039.48	1893.03	4391.41
7	2006-07	80.85	20.19	101.04	9852.09	1114.54	1691.52
8	2007-08	68.27	23.92	82.194	8319.13	959.28	2266.84

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9	2008-09	72.21	18.89	91.10	8800.30	1029.00	2335.29
10	2009-10 Ending Dec,2009	0.27	0.31	0.58	1357.88	14.86	951.42

Source: J and K Economic Survey 2009-10

The outturn of timber which was 102.48 thousand cubic metres in 2000-01 has declined to 72.21(000m^3) in 2008-09. The firewood has however increased from 4.18 (000m^3) in 2008-09. The value of output of timber which was Rs. 8419.09 lakh in 2000-01 has fallen to Rs. 8300.30 lakh in 2008-09. The value of output under minor forest produce which was Rs. 2944.52 lakh in 2000-01 has decreased to Rs. 1029.00 in 2008-09.

The revenue receipts on account of sale of timber, firewood, resin, minor forest produce etc. amounted to Rs. 47.97 crore during 2012-13, recording growth of 8.46 per cent over 2010-11 revenue receipts. The GSDP estimates in forestry and logging sector for the financial year 2013-14 is estimated at Rs. 1310.83 crore against Rs.1300.59 crore during financial year 2012-13 registering a growth of 0.79 per cent.

5. Conclusion

Forests also known as Green Gold are the precious wealth of the state. The intangible benefits provided by forests for supporting human and vegetation life is far more superior to those of tangible benefits. Especially in case of our state where the three major sectors are heavily relying on forests, these form the backbone of Jammu and Kashmir economy. Tourism, electricity, horticulture/agriculture have genesis in forests which directly made the state a dream destiny of tourism. With the increase in population of both human as well as livestock, the forests are under great pressure due to open grazing, heavy exploitation and excessive biotic dependence. Now the situation has become so alarming that in most of the areas that the forests are lacking in natural regeneration and are at different stages of degradation. Therefore the augmentation of natural regeneration and eco-restoration of degraded forests and along with their increasing productivity are the major concerns.

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Green History of Kashmir: Evolution of State Forestry under Dogra Rule

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V.M. Ravi Kumar**

Abstract
The introduction of scientific forestry from the middle of the 19th century was an innovative phase of British colonialism of turning the forests into a valuable resource. Almost one-third of the total land area of British India was occupied by the Princely States. But less attention was paid towards discussing the environmental histories of these regions and so was the case with Kashmir State. This paper will highlight the resource management strategies in the Dogra ruled Kashmir State through the hands of British. The present work is an endeavour to show the genesis of Forest Department in Kashmir under the Dogra Maharajas with the direct interference of the resource hungry Colonial masters. The paper throws light on the Colonial use of Science for the management of forest practices. The paper will also point out the major developments in the forest policy process and the impact it had generated on Kashmir.
Keywords: British, Conservation, Dogra, Forests, Management.

1. Introduction

For maintaining the ecological balance and environmental stability, forests play a very important role. Survival of mankind also depends on the healthy forests as they provide employment to people, revenue to state, raw material to industries and that is why its conservation and exploitation has been an age old phenomenon. Enthusiasm was created by the industrial revolution among the humans mostly from the West to utilize the natural resources. Since India being one of the richest colonies of British so far as its natural resources are concerned, was an obvious target for them to fulfil their desire. After seeing the immense amount of natural resources along with possibilities for their extraction, the British started applying techniques and methods to complete their aim of exploiting the natural resources of India. However they started the process of ecological change which is continuing even after the end of their rule in India. The British left no part of the country untouched since their initiation of the process of commercialization. So was the case of princely state of Jammu and Kashmir. As the British were the indirect rulers of the state, their increasing demand for railway sleepers and other purposes led them to divert their full attention towards the forests which were rich in some superior and valuable varieties of timber and other minor products. The nature of forest resource utilisation and management in Dogra ruled Jammu and Kashmir significantly influenced by the intervention of the British directly and indirectly. Obviously the critical requirements of forest resources for colonial economic process in general and Railways in particular created an immediate context for expansion of state forestry in British India. The three varieties of Indian timber

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particularly Sal, (*Shorea robusta*), deodar, (*Cedrus deodara*), and teak, (*Tectona grandis*) were mostly preferred as sleepers because of their considerable lifespan and were intensively exploited. The British require 860 sleepers for the construction of a mile of railway and it was calculated in 1870 that over a million sleepers were required annually (Rangarajan, 1996, p.29). In the fifty years between 1860 and 1910, railway track increased from 1349 Kms to 51,658 Kms (GOI, 1964). This pace of railway expansion led the British to establish a sustained availability of enormous requirements of the railway companies. This has led to the creation of the Imperial Department in 1864 with the help of German experts. Seeing the similar immense treasures of natural resources in Kashmir more particularly the deodar trees diverted their attention towards this princely state. This in turn led to the hasty creation of the Forest Department in 1894 during the reign of Maharaja Pratap Singh, being one of the oldest departments in the state of Jammu and Kashmir. They introduced some scientific techniques of forest management which they have already applied in other parts of British India and achieved success to a great extent. Meanwhile it became an important source of revenue to the state. There are number of works which focus on the political and social aspect of Colonialism on Kashmir. But the scientific attitude of British towards natural resource management of Kashmir received inadequate attention at the hands of scholars. Since Forest Department, being one of the oldest departments in the state, little focus has been diverted toward its genesis and development in pre-colonial and colonial Kashmir. The focus of the present paper is to show how the forests of the state were brought under techno-managerial strategies of the Dogra state aided by the British colonial ruleand to highlight the application of modern scientific techniques by the colonial masters in order to increase the productivity and potential of forests. The impact of these techniques on Kashmir will also be worthy of a special mention.

2. Review of Literature

Colonialism in India initiated fundamental changes in patterns of resource use, notably forests, and has been described by some studies as a 'watershed' in the history of the subcontinent (Gadgil and Guha, 1992, p.116). According to Richard Grove, during the early phase of British forestry, personnel belonging to professions such as medicine and botany, who were genuinely concerned about the conservation of forests to maintain sound climatic conditions and prohibit phenomenon such as soil erosion, were given the charge of forests and it were these people who started the process of scientific conservation in India (Grove, 1995, p.11, 62). These men of Science were charged with three main objectives: to satisfy the complaints and demands of the lessees of the forests; to assure the government the provision of its full timber demands for the dockyards, gun carriage factories, and public works; and to restrict practises such ad shifting cultivation(Stebbing, 1922, pp.219-20). The need to stop the mindless detruction of forests began to be felt only when the demand for steady supply of timber for shipbuilding arose (Ribbentrop, 1900, p.67).The forces that shaped the forestry were material concerns for revenue and ideological anxieties about desiccation and also the enterprise of imperial forestry became a means to bind down mobile land users and regulate sedentary agriculture (Rangarajan, p.8, 1996). The general attitude to forests among colonial officials and governments was to view them as a timer mines or as a source of other minor forest products and appointed some doctors and botanists to the post of forest conservators to initiate scientific forestry (Ravi Rajan, p.10 2006). The first step towards protection of forests in the Kashmir was taken up in 1857-58

AD, when a forest section called "Mahal Nawara" was created in the department of revenue of the state (Kawoosa 2001, p.36).He further says that it was the first time when forestry staff was created mainly with an aim to collect revenue from the contractors who worked in the forests at their will. Work in the forests till 1890 was carried out in a most haphazard manner and was confined only to the extraction of timber by the contractors (Kapoor, 1992, p.254). The old administration of forests in Kashmir had been reckless and short sighted (Bamzai, p.180). The history of the Kashmir Forest Department as an organised and scientific body dates back to the year 1891, when Mr J. C. McDonnell, an officer from the Indian Forest Service, joined the State as its first Conservator of Forests and the first twenty years of the existence of the department were devoted to laying the foundation on scientific lines (Wright 1931, p.182).State Government did not show any interest in developing, maintaining and exploiting the green gold treasure until 1890 on an organised and scientific pattern and the forest activities were confined to the extraction of timber which causes its decay (Ahmad, 2007, p.55). It is a matter of congratulation that the danger of scarcity of timber and fuel threatened by thoughtless and self-interested action of temporary contractors will now be averted by the introduction of some system of forest conservancy (Lawrence, 1895, p.78).

In spite of the above-mentioned literature there are number of gaps which are yet to be filled. During British period, princely states constitute almost one third of the total land area but in spite of this, these states received inadequate attention by environmental historians in most of their discussions on environmental histories for the colonial period. Kashmir is one among them which is totally ignored so far as its environmental history and more particularly the forests are concerned. The context which drove the British towards the initiation of scientific forestry has almost been neglected. The way forests became a part of colonial economic process has also received inadequate attention in the existing literature. This paper attempts to address these gaps by focussing on the evolution of state forestry during the Dogra regime and the scientific approach adopted by the government at the hands of British.

3. Forests in Pre-Colonial Kashmir

"Ann Poshi Teli Yeli Van Poshi" (Food is Subservient to forests), the aphorism of famous Sufi saint of Kashmir Sheikh Noor-Ud-Din Wali reveals the consciousness of people of Kashmir 500 years ago regarding the forests. The people during the ancient period were great lovers of trees and nature conservation. Afghans, Mughals and Sikhs also appeared to have lived in ecological harmony and do not seem to have had much impact on the forests of the state. Groves of forests near the religious places were revered by the people and cutting of a tree was considered to be a sin. In India nearly 13,720 sacred groves have ben enumerated from 19 states (Malhotra *et.al*, 2001, p.12) but from Jammu and Kashmir no sacred grove has been reported. Although there are some sacred groves like the Mata Vaishnov Devi, the Jasrota Mata, the Shankaracharya temple etc. present in the state. The Shankaracharya sacred grove located in the south-east of Srinagar about 4.5 Km from the city centre is well maintained by the state Forest Department for aesthetic and recreational purpose. It also contains some valuable plant species. With the passage of time and due to the pressure of population it became very cumbersome to behold the environment untouched. Increasing demands led humans to start modifications in ecology which led to disturbance. Unfortunately, the state also was not serious about to exploit and maintain the state forests in an organised way. There was a reckless cutting of the trees and were left to

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rot. Mostly the green trees were felled down in large numbers, as it was easy for the contractors to cut these instead of dry ones. These contractors were not under the control of government and were free to fell trees according to their wishes. There were no working plans, no definite forest law, no demarcated forest areas, salary of forest officials was very low and the work was confined only to the timber extraction. In 1883, a preliminary regulation called *Ain-i-Janglat* was passed for controlling the forest working but there was nothing in it to stop the felling. However the creation of a section called *Mahal Navara* in the Revenue Department was found to be the initial step regarding forest management. The motive behind this section also was not to conserve the forests but to generate more revenue. Un-management of Kashmir forests was due to the less demand of timber and other forest products.

4. Beginning of modern Forestry and its Impact

During the initial years of the British rule in India, there was a large scale felling of valuable trees. However, the British soon began to realise that whether such kind of requirements be available if deforestation in such an alarming pace would continue in future also. This doubt in mind led them to start a scientific forestry and bring all the forests of the Empire on sound and scientific lines. Ravi Rajan has pointed out that British Colonial administrators adopted an ad hoc attitude to forest management up until mid-nineteenth century and later (Ravi Rajan, 2006, p.7). Forest Departments with scientific management practices were created in various provinces in the early sixties of nineteenth century. However in case of Kashmir the department of such kind was not created till 1890.

Appointment of British resident had significant impact upon the process of management of forests in Jammu and Kashmir. Their resource requirements led them to divert their attention to the state forests and brought them on sound and systematic lines. The state government also wasted no time in requesting the services of trained European Forest Officers, both the English and The German to manage the state's forest resources. In 1891, they obtained the service of a British Forest Officer called J.C MacDonnell who joined the state as the First Conservator of Forests and began to exploit the natural wealth of state in the form of forests on scientific methods. He started the work of demarcation, organised and consolidated the forests of the state on sound and scientific lines. Simultaneously, emphasis was laid on building up a sustainable communication network comprising of roads and buildings. In 1905, with the approval of the Resident and State Government, the Government of India sent S. Eardley Wilmot (*Inspector General of Forests to the Govt. of India*) to visit the forests of Kashmir state. He along with the then conservator Mr Blunt toured and inspected some forests of the state. He focussed on the permanent demarcation of the reserved areas and suggested that necessary steps should be taken by the State Government to stop the grazers to enter these areas. He also laid stress on the working plans for reserved areas and further suggested that there should be a significant increase in the establishments of the state forest department. The forests of the state were major source of revenue and Maharaja Pratap Singh felt it inevitable to establish a training school for the management of state forests. In 1911, Mr W. H. Lovegrove, the Conservator of forests led to the formation of a Forest Training School in Chattarnar-Bandipora. Its purpose was to impart training to the forest officers and every year a batch of forest guards and forest officers were deputed to this school. In 1912, F. Beadon Byrant (*Inspector General of Forests to the Govt. of India*) also received the orders from Government of India to carry

out a tour of inspection in the forests of Kashmir State. Byrant noticed that very great and permanent progress has been made in all the branches of forest administration. In 1905, the area under demarcated forests was 2,314 square miles and in 1912 it was 3,532 square miles. Working plans were drawn up for the more valuable forests and were also in force for the jagir forests. The department devoted its first twenty years in organising and consolidating its position in the state and the scope of the department began to be widened much further. In 1920, Sir George Hart (*Inspector General of Forests to the Govt. of India)* also made a visit to the Kashmir forests. He found that much progress has been made in the development of forests during the last few years as the area under demarcated forests has been increased from 3,512 square miles to 9,639 square miles and the gross revenue has been increased to Rs 18,72,940 in 1913 to Rs 36,90,291in 1920. During his tour he gave some valuable suggestions regarding the management of grazing and suggested that revenue derived from grazing should be credited to Forest Department instead of Revenue Department. Because grazing also formed an important source of income to the state. It was known as *Zar-i-Chaupan* (Tax on Shepherds). Due to the much expanded work of forests and forest department, the need was felt to create a separate department in both Kashmir as well as Jammu Circle. In 1917-18, both these circles of conservancy were created and officers of these circles were called as Assistant Conservator and Head of the Department was designated as Conservator of Forests. Another tour of inspection was made in October 1924 by Sir Peter Clutterbuck (*Inspector General of Forests to the Govt. of India*) through the parts of Kamraj and Muzaffarabad divisions. He provided some valuable suggestions on the working plans which were under progress. The forests of the state underwent a great and historical change in 1920's when they were exploited under the Uniform System of felling and at first the forests of Lolab and Buniyar came under this system. During 1925-26, 3738 acres of forests were marked in thinning's under the Lolab working Plan. Artificial regeneration was also done and tremendous progress was shown by Sindh Divisional Headquarter nursery at Chattarnar in which there was a good stock of exotics such as English oak, the American ash, the Cricket bat willow and the American walnut. During the initial days of State Forest Department, most of the forest work was done by departmental agency. Latter on the standing trees were being purchased by contractors on monopoly-cum-royalty basis. However the contractors worked on old Indian selection system, but received severe criticism because young plantation was getting destructed. Soon this method was given up and main blocks of forests were now sold on 3 to 5 years lease. This system worked very well and had great advantage.

Generally the trees were cut by hand saws and the resulting sleepers and scantlings were then taken to the nearby floating streams and then to the rivers. There were different ways of extraction of timber for example in Lolab there was a tramway and in other places aerial wire ropes were used. India served as main market for state timber and the much demand came from Indian Railways because of its need of sleepers of deodar. The demand of hardwood (walnut) came from Indian Army for rifle parts and for which the factory was established at Baramulla during 1919-20. A large number of half-wrought were prepared and sent to Ishapur Rifle Factory. Abundant supply of firewood in the vicinity of Srinagar was available but in spite of that people were facing problems due to absence of proper forest conservancy. The policy of the State government was to sell the standing coupes to the royalty contractors (Kapoor, 1992). However, contractors sell the firewood on exorbitant rates and further exasperating the situation. This led to the Government to form

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a new policy in 1919-20 under which the State Forest Department was given the authority to control the whole output of fire-wood. Afterwards, the firewood was cut by departmental agency and stored in the departments on the Jhelum River. It was then given to the contractors on the condition that they would sell it on the fixed rates in the Srinagar depots. These contractors were being supervised by the government officials at the time of sale. However the government suffered a heavy loss with this policy but to overcome it, some swampy areas in the vicinity of Srinagar were handed over to the department for willow plantation. With the establishment of the department, a large number of roads were constructed not only in Kashmir but in other parts of the Empire which served not only the department but proved of a great use to the general public. An average of 171 miles of forest roads were annually constructed during the period from 1907-12. During 1912-13, 274 miles of new forest roads and inspection paths were constructed, 258 miles in 1913-14, 111 miles in 1923-24, and 282 miles in 1925-26. Besides this, the government also constructed one and a half mile tramway in the Lolab Valley for carrying the timber. This in turn increased the supply of timber and firewood to the markets in plains which were facing scarcity. So far as financial aspect of the department is concerned, it was the largest revenue producing department in the state and has shown a tremendous and un-broken progress since 1890. The forests were the mainstay of the economy both to the people and the government. Main income of the state was derived from the timber which was increased from 6314275 cubic feet in 1915-16 to 17570379 in 1934-35. The following table will give the decennial increase in its revenue, expenditure and surplus.

Table: 1: Revenue, Expenditure and Surplus of Forest Department (1890-1926)

Year	**Revenue**	**Expenditure**	**Surplus**	**Average surplus**	
				5 years	**10 years**
1890	627732	120207	507525	---	---
1900	899893	278054	621839	630944	520315
1910	1643299	514113	1129186	1179742	976230
1920	4471164	2010232	2460932	2508358	2068762
1926	7124002	2895227	4228775	3427850	2968104

Source*: Compiled from Annual Progress reports of Forest department, Jammu and Kashmir for relevant years.*

While comparing the Kashmir Forest Department with other provinces of British India, a remarkable progress has been shown by the department so far as its revenue and expenditure is concerned. The following table will show the percentage of net Revenue and percentage of Expenditure of the Kashmir Forest Department as compared with different provinces in British India.

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Table: 2: Net Revenue and Percentage of Net Expenditure in different provinces of British India (1939)

Province	Net Revenue	Percentage of expenditure on gross Revenue
Kashmir	36,25,213	26.10
Bombay	20,50,473	56.91
United Provinces	16,70,207	62.32
Central Provinces	13,05,304	72.60
Madras	5,86,621	87.35
Assam	4,92,254	70.79
Bengal	3,99,873	78.22
Sindh	3,93,013	46.04
North Western Frontier Province	1,29,230	70.34
Bihar	71,951	87.26
Orissa	4,578	101.33
Punjab	1,43,542	106.39

Source: Report of Forest Enquiry Committee H.H Government, Jammu and Kashmir, 1939.

The above table clearly shows that the forest Department in Kashmir is earning the highest revenue from its forest as compared with all the provinces of British India, its percentage in expenditure in forest administration is less than half of the highest net revenue producing province of British India. It shows how valuable were the forests both to the public and to the Government.

5. Peculiar features of Kashmir Forestry

Few countries have been so richly endowed by nature as Kashmir, and one of her greatest heritages is her richly stocked forests (Sinha, 1943, p. 98). Jammu and Kashmir the western extremity of the Himalayan mountain chain is the home of best natural conifers in the world spreading over the entire mountain chains of the Jhelum and Chenab mountains. The forests of the Kashmir may be broadly divided into two main zones namely the sub-Himalayan tract and the Himalayan. Trees like scrub, bamboo and chir pine mostly fall in the sub-Himalayan zone while as deodar, blue pine, fir and spruce were found in the Himalayan zone. Here is a brief mention of some of the important trees located in the Kashmir forests.

i. **Deodar (*Cedrus deodara*):** The deodar is a very handsome tree and is a variety of Cedar of Lebanon (Younghusband, p.206). It is the most valuable and important tree found at an elevation of 5000 feet to 9000 feet. The deodar forms the dominant crop in Kamraj Forest Division of Kashmir province covering 29.2% of the total area of the division. Deodar forests of Lolab valley are one of the best in Kashmir because of their compactness and suitability for a concentrated form of working. Maximum area under deodar in the Kamraj Forest division falls in the south Lolab range followed by the north. Small patches of pole crop of deodar are found in the Lidder, the Verinag and the Noor-a-bad range of Kashmir forest Division. In this division deodar crop occupies largest area in Kuthar range and Lidder range. Deodar also grows abundantly in Langet Forest Division where it occupies 30.98% of the total area of the division while as deodar is poorly represented in Pir Panjal division. In the Jhelum Valley Division,

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deodar is represented in all the four ranges i.e., Buniyar, Baramulla, Uri and Gulmarg. More or less deodar forests are found in all the forests of Kashmir province. Its timber is of great demand and was used in the construction of houses, boats and bridges as it was resistant to water. From the roots of deodar, a resin was distilled, being used by herdsmen as an ointment for buffaloes. The mortars *(kanz)* in which rice was husked were usually made of deodar.

ii. **The Blue Pine (*Pinus excelsa*):** Blue pine happens to be one of the most beautiful pines in the world during its young age but loses its charm and looks rugged when it becomes old. It is found at an elevation of 6000 feet to 10000 feet. It occupies greater area than deodar both in Kashmir valley and Jammu province. It is found everywhere in the state within its altitudinal zone. In Jhelum Valley Forest Division of Kashmir province it is found around Tangmarg, Badarkot and Golaldara side. Blue Pine is also found abundantly in all the forest divisions of Kashmir province. It is next important to deodar and is mostly used for building houses. Its white resin was used by the native people as a paste on wounds and its black resin was used by the farmers on legs and arms in order to protect themselves from water insects in the fields. Its charcoal was widely used by the blacksmiths.

iii. **The Silver Fir *(Abies Webbiona)***: It is found at an elevation of 8000 feet to 11000 feet. In Kashmir Forest Division fir forests are found in Ahlan and parts of Sandran valley in Verinag range. The Liddar and Kuthar range also contains important fir forests. The Verinag and Noor-a-abad range together contains 40.39% of areas under fir forests. In Jhelum valley Division, the Gulmarg, the Baramulla and the Buniyar ranges cover the greater area of the division and accounts for 42.79%, 22.28% and 30.06% respectively of the area under fir forests in the division. Its timber was very suitable for joists. It is free from knots and is more durable than spruce.

iv. **Himalayan Spruce *(Picea Morinda):*** Spruce including Fir is found extending to all the catchment areas of the major rivers. It is found along with fir. While as in Sindh forest Division it is generally absent in the fir forests of the division. It is much used in house building. Excellent planks for indoor work are obtained from spruce. The young ones of the spruce are used in the manufacture of a drug called *gaz pipal.*

No description of the Kashmir forests would be complete without mentioning the minor forest products, which play an important part in the working of the department, much more so than in most parts of India (Wright, p.188). These minor products include valuable drugs, medicines and herbs which were used in day to day life. Here is a brief mention:

i. **Kuth (*Saussurea Lapa*):** It is the most aromatic plant and grows extensively in Kashmir at an elevation of 8000-9000feet. It was chiefly used in China as it yields a perfume which was supposed to be used for incense in the Joss houses. In Kashmir it was used as a medicine in Cholera and also for preserving clothes against the damages of vermin. In 1914, Kuth Department was established directly under the control of Minister of Agriculture to collect process and export the Kuth roots to India. Kuth was an important source of revenue to the state as the revenue realised from this product has increased to Rs 1592300 in 1929 from Rs 906578 in 1924.

ii. **Artmesia:** Locally known as *Tethwan*, was found on the dry open hill slopes from 1600-2700 metres elevation in abundance in the Gurez area of Sindh Forest Division in Kashmir. It was chiefly used as a vermifuge and was also useful as cardiac stimulant.

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iii. **Santonian:** It was the most costly drug found in Kashmir forests. Experiments to extract Santonian were made during the reign of Maharaja Pratap Singh. Its collection was made between July and August, at a time when its mother plant contained a fair percentage of Santonian. The State received Rs. 2.5 lakhs per annum revenue from this source.

iv. **Atropa Bellodana:** This was locally known as *Mait Brand* and was abundantly found in the fir forests of Kashmir valley in a wild form at an elevation of 6000-9000 feet. Atropa had ophthalmic uses and its roots were used as sedative and as an antidote in opium poisoning (Forest Statistics, 1974, p. 10).

v. **Berberis Aristata:** Locally known as *Kaodach* and *Rasuant* in Hindi was found commonly in the Valley and in Karnah. The extract of wood, root and bark was supposed to be useful in malaria fevers and was consumed in large quantities in the State.

vi. **Asafoetida:** It was locally known as Yeung and Hing and was found all over the state over 5500 feet elevation. It was used for many ailments such as stomach disorder, whooping cough and as a nerve stimulant. It was also used as flavouring agent in cooking.

vii. **Lac:** During the Dogra rule the existence of natural lac was noticed for the first time but it was not exploited on scientific lines due to lack of transport. But a proposal was made during the reign of Maharaja Pratap Singh for the deputation of forest officer of Central Provinces for acquiring training in lac culture.

Besides there were many other plants yielding medicinal drugs such as Valeriana (Musk-bala), Viola Serpens *(Banafsha), Kahazaban*, Inularacemosa (*Pokhermool*).

6. Conclusion

Colonial intervention had a deep impact on the princely state of Jammu and Kashmir and this led to centralization and bureaucratization of state structures along the lines of British India. Similarly the Forest department of the state was also modernised on the similar pattern. Immense treasures of forests with some valuable species were available but remained un-managed till 1890 because of limited demand as well as lack of knowledge of conservancy. The influence of British on the rules and regulations for forest conservation and protection largely benefited the Colonial government in general and British in particular. Forest then became the major source of revenue to the state but if we talk of the locals they were devoid of taking benefits of forest produce. Although some concessions and free grants were granted to the people but simultaneously some sorts of restrictions were imposed on them. Every year several cases were detected which clearly indicates that these policies did not cover the needs of the people. It is also the fact with the establishment of department, the "green gold" of Kashmir increased a lot and the restrictions imposed by the department helped in maintaining the ecological balance up to a certain extent. The State Forest Department must have expanded much further but there were several problems which hampered its progress and that is why some excellent forests were then of any commercial use. Firstly, there were inadequate transport facilities to export the timber as the nearest railway station was Rawalpindi in Punjab about 200 miles far from Srinagar and to export the timber through Jhelum valley road was too much expensive. Secondly, the forests suffered heavy loss due to frequent fires and excessive grazing. The department to some extent tackled these problems and Forest Regulation was adopted on the lines of Indian Forest Act of 1878 but still could not solve the problem

satisfactorily. Still the department progressed much and maintained the position of leading department during the period of our study, as far as the revenue of the state is concerned.

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The Tribes and the Environment: A Study of Gujjars and Bakerwals of Kashmir

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ABSTRACT

The relation between human life and natural environment has been unnoticed in the discourse of human history while more focus has been on the political and social aspect of human life. Environmental movement has raised the awareness how human attitude to nature have been moulded the cultural and ecological traditions. There are various ethnic groups in the world and every ethnic group uses and misuses its natural resource base. The state of Jammu and Kashmir Gujjars and Bakerwals is one of the largest tribe inhabiting in the mountainous and kandi areas of the state. They migrate annually for their economic activities. They mostly utilise the alpine pastures and grassy lands known as margs in Kashmir. There are certain territories which they pass through at different periods of the year according to their schedule and change of season. This paper will highlight the impact of grazing by the Gujjars and Bakerwal tribe on the pastures and forest areas of Kashmir region right from the time when the scientific forestry began in the state. It will also explore the impact of this tribal group on the sedentary or non-pastoral community of Kashmir with respect to the environment. The study will also highlight the various policies and programmes of the government regarding the pastoral management in Kashmir.

Keywords: Bakerwals, Environment Grazing, Gujjars, Pastures Tribes

INTRODUCTION

Kashmir is one among the regions of India located at high altitude about 5000 m above the sea level and covered by the lofty mountains. It is unique not

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only in geography but in its history, culture and ethnicity. The heterogeneous nature of the society of Jammu and Kashmir can be seen at racial, linguistic and religious levels. The state has a proud distinction of being a multi-cultural and multi-linguistic and is like a garden with multi-hued flowers. The various ethnic groups inhabiting the state are Dogras, Chibalis, Phaharis, Kashmiri, Ladakhis and Gujjars. Kashmiris are concentrated in Kashmir valley, Dogras in the Jammu region and Gujjar and Bakerwals lie in the mountainous and kandi areas of the state. These people have opted to live on envious peaks from ancient times. Among the tribal communities, Gujjars and Bakerwals form the main tribal community in the state and have their highest concentration in Pooch and Rajouri districts of the state of about 40% and 33.1%, respectively. The state has 12 Schedule Tribes which received their tribal status by the government in 1991. During 2001 census, all the 12 tribes were first time enumerated officially. The schedule tribes account for almost 10.9% of the total population of the state and 1.3% of the total population of the country. The Gujjar tribe is most populous among all other tribes having a population of 7,63,806 forming about 69.1% of the total schedule tribe population. According to 2011 census reports, the total population of Schedule tribes in the state was 14.9 lakh among which 9.8 lakh were from Gujjars and 1.1 lakh from the related tribe of Bakerwals. The population of Gujjars and Bakerwals from 2001–2011 has grown by 28.4 and 86.4%, respectively, and together have grown by 32.7%.

ORIGIN

The origin of the Gujjars is still a debatable issue among the scholars. It requires information from various sources like historical, anthropological, ecological, folklores, traditions, customs, place names and ethnic study (Crooke, 1974). According to one school of thought, Gujjars were the dwellers of Georgia (Gurjia), a territory positioned between the Black Sea and the Caspian Sea. Due to some factors they left their place and crossed the Khyber Pass through central Asia, Iraq, Iran and Afghanistan to enter the subcontinent of India. Afterwards moved southward through Baluchistan and reached Gujarat. Archaeological evidences have proven that there was a long spell of dryness in Gujarat and Rajasthan during 6th and 7th century which forces them to migrate to the pastures of the Siwaliks and the sub-Himalayas. The 'Gojri' language is now recognised to be a form of Rajasthani language, which supports the hypothesis that Gujjars have out migrated from Rajputana

(Rajasthan). Cunningham is, however, of the opinion that the Gujjars are the descendants of Kusham and Yachi Tribes which are considered to be the tribes of Eastern Tartars Russia (Cunningham, 1970). Bandarkar mentions that the Gujjars came to India as a separate group with the 'Hun' caravans in 6th century BC (Sahni, 2015). The tribe called 'Gurjara' were well established in the area now known as Gujarat and Kathiawar from about 600 AD onwards (Census of India, 1941). Kennedy points out that Gujjars presently settled in Jammu and Kashmir were sun-worshipers, which gives a reference that their original homeland was somewhere in Russia where the cult of sun-worship was prevalent (Kennedy, 1923). The Gujjars of Jammu and Kashmir are supported to have come from Rajasthan and adjoining areas of Kathiawar. They came by the way of Punjab and North Western Frontier Provinces (Census of India, 1941).

Based on their occupation and settlements, the Gujjars are broadly classified into two categories. First category includes the cultivators who have sedantarised on the slopes and side valleys are permanent village dwellers and practice agriculture and the second one who practice transhumance. The latter category is further subdivided into Banihars and Dodhi Gujjars (milkmen) and Bakerwal Gujjars (who rear sheep and goat). Banihars or Dodhi Gujjars as the name suggests are the residents of forests (bans) rear the cattle and sell milk. They usually don't go beyond 60 kms from their base due to the heavy cattle. Bakerwals as the name suggests means the Bakri wala (goat herder), who tend large herd of goat and sheep. They go from the lower altitude to higher altitudes and sometimes traverse a distance of more than 300 kms in the high altitude terrain of the North-western Himalayas during their annual migration. The Gujjars and Bakerwals in Jammu and Kashmir are Muslims and their social structure is somewhat similar.

PASTURES OF KASHMIR

The distinctive and biological entities of the Himalayas are its sub-alpine and alpine pastures. They are long, flat, undulating or sloppy stretches of land covered predominantly by the green turf (Misri, 1995). These pastures are known by different names in different regions. The pastures in Kashmir are known as 'margs'. These are extensively used for grazing purpose and lie in the sub-tropical zone of Jammu, temperate, sub-alpine and alpine areas of Kashmir. They are located at high altitudes and are utilised for grazing only

for 4–6 months and for the rest of the period they are covered with the snow. Pastures in Kashmir are host to different types of livestock. The famous pastures of Kashmir which were extensively utilised by the Gujjars, Bakerwals, Chopans (local shepherds) from times immemorial are briefly described under the following headings.

Bangus Valley

This Valley lies at an elevation of 10,000 feet in the northern part of district Kupwara. It has its exclusive ecological combination like grasslands and flora at lower altitudes and coniferous forests. There is also a very wide range of flowers and medicinal plants in the slopes and meadows of side plateaus. It was widely utilised by the Gujjars for its excellent grasses.

Liddar Valley

This valley lies in the south-east end of Kashmir Valley in a northerly direction from Islamabad (Anantnag) to Pahalgam covering an area of about 22 miles (Bates, 1873). The valley is bounded by mountains having the beautiful woods and fine grassy uplands utilised by the Gujjars for their livestock.

Gulmarg

Gulmarg lying at an elevation of 3000 feet above the sea level is situated on the slopes of Panjal range on the southwest side of the Valley of Kashmir. It is one of the loveliest margs in Kashmir. It is covered with flowers and soft green turf, surrounded by forests of silver fir interspersed with spruce, blue pine, maple and a few horse chestnuts (Young Husband and Francis Young husband, 1996). Originally, it was a meadow used for grazing cattle, sheep and ponies and later on became the famous resort.

Khelanmarg

It is a small meadow about 100 feet above Gulmarg. It covers an area of a mile in length and 400 yards in breadth and is well carpeted by an abundance of plant life and colourful flowers. The marg was the retreat of the galwans or horse keepers who tended their herds of cattle upon these mountain downs.

Tosha Maidan

It is a grassy valley lying on the east side of the Panjal range and served as the most direct path between Srinagar and Poonch with the name of Tosa

maidan pass (Koul, 1971). The meadow and velvety slopes, many miles in extent, were widely utilised by the shepherds for grazing.

PRACTICE OF TRANSHUMANCE

The to and fro movement of the Gujjar and Bakerwal tribe along with their flock to utilise the various biotopes of different altitudes occurs between summer and winter pastures of the state. For the pastoral nomads of Jammu and Kashmir, for centuries, the distribution of margs (meadows) and the routes connecting them were of crucial importance. Transhumance in fact consisted of people and herds from one marg to another along traditionally assigned routes. These margs and routes therefore constituted an interlocking system which was functionally and integrally incorporated in the socio-economic life of transhumant (Magray, 2003). The Gujjars and Bakerwals accommodated to the environmental rhythm through their own movement. Their migration depends on the changing seasons and with the variations of the resource base. After the exhaustion of primary resource base in one season, they start moving to a new location. Their movement was not entirely because of their will and choice but the accentuated topography, seasonal rhythms of climatic conditions and shifting pastures, set limitations to the free exercise of their will. The winter pastures lie in Jammu, Kathua, Riasi and Poonch districts at about 500–1000 m. While as summer pastures are between about 3000–4400 m, to the north, north-west and north-east of Kashmir basin (Casimir and Rao, 1985). They spend 4–5 months from mid-November to the end of March at their winter basis in the Jammu region. With the advent of spring by mid-April, they start migrating towards summer pastures lying across Pir Panjal into the Kashmir Valley where they stayed till the end of September. The seasonal oscillation between these points is an environmental imperative. The foothill pastures in the summer months gets dried up due to intense heat and hence little pastures are left. Therefore these pastoral nomads-Gujjars and Bakerwals had only option to move towards grassy woods and pastures. The grazers have been classified into three categories (1) Pastoral: those migrating from lower to higher altitudes in the same watershed like local pastoral communities, sedentary and semi-sedentary, residing in the villages at foothills. (2) Nomadic: these include the Gujjars who cross the watershed boundaries but do not go very far. (3) Transhumant: those who practice extreme seasonal migration and migrate over the mountain ranges. By this annual oscillation between uplands and

lowlands, it can be assumed that local Gujjars and Bakerwals have been moving ever since they colonised the region. There are some literary evidences as well which indicate the practice of transhumance in the region even before the Mughals. This has developed a symbiotic relationship between Gujjar-Bakerwal community, their livestock and their environment.

IMPACT ON NATURAL VEGETATION AND THE GOVERNMENT RESPONSE

The State Government and the Forest Department were aware that the protection of forests was a vast and complicated matter. All the prevailing factors like grazing, forest fires, illicit felling, lopping of tress, smuggling of fire wood, timber and mi or forest products are widely recognised as well-known elements. It was understood in the early days of forest management itself, particularly in the first half of 20th century that without the active support and cooperation of people living in and round the forests the menace unleashed by such elements could not be tackled.

Among the various causes responsible for ever increasing degradation of mountain ecosystem, one may be the overgrazing of affected areas by the herds of both Gujjar and Bakerwal community. The grazing is of three kinds—firstly, by the cattle, sheep and goats belonging to the indigenous population. Secondly, the cattle belonging to the Gujjars consisting mainly of buffaloes. Thirdly, the sheep and goats owned by nomad professional grazers known as Bakerwals (Byrant, 1913). They also lop the forest trees, remove their bark and use the produce for firewood and the shelter and the other for food. This nomadic community was also responsible for incendiarism in the forests. The problem of grazing was an absolute pest. The government quiet early realised the importance of tacking this problem. The protection of young growth from grazing and browsing animals is a most necessary step in proper forest management and the ideal condition would be exclusion of animals from all forests (Annual Report Forest Department, 1903–1904). Excessive grazing had led to the erosion of soil as the vegetation helps to keep the soil together. So due to the damage done by the goats, the hills were in a deplorable state of denudation. In 1912, the government ordered the closure of all the deodar forests to the goats belonged to the nomadic tribes. After that government promulgated the Forest Regulation which was drawn on the lines of *Indian Forest Act of 1878* but the problem still persisted. Therefore

in 1919–1920, the State Government sanctioned a browsing scheme under which the goats coming from outside were completely forbidden, while as a grazing fee was adopted for the goats belonging to the Bakerwals and others migrating from Kashmir to Jammu province and vice versa (Annual Report Forest Department, 1916–1917). There is still a good deal of poaching especially in the higher grazing areas where Gujjars and Bakerwals are difficult to control. Out of the total area of 8934 square miles of demarcated forests, 198 square miles were closed to grazing during 1921–1922. The Assistant Conservator Kashmir, reports that the damage done by Gujjars and Bakerwals in lopping leaf fodder for their animals is immense and it seems impossible to enforce the lopping rules (Annual Report Forest Department, 1921–1922). For regeneration and conservation of forest growth an area of 538 square miles remained (Annual Report Forest Department, 1947) close to grazing in 1947 and this amounts to 5.6% of the total area which the forest department was entitled to close at a time. The Government had adopted all its measures for the conservation of natural vegetation from the nomadic grazers as well as from the local pastoral communities. Forest areas were well demarcated and restricted the entry of grazers by increasing the grazing fee, as various schemes were initiated with respect to it and remained successful up to a large extent.

The enormous increase of goats and sheep who now come to Kashmir, to graze during the summer months from practically the whole of Punjab, Kaggan, etc. and which now had become a serious menace to the preservation of game as well that unless some steps are taken and at once, the damage will be irretrievable. The increase in their numbers had been most marked in the year 1910 due to the lowness of grazing fee in Kashmir and also due to the fact that they were no longer allowed in to British India, owing to the incredible damage they do to forests and pasture lands (File No. G-13/1911). Game department received the incessant reports that the game is being driven right away from their usual haunts, by the myriads of goats, sheep, etc. from outside Kashmir and that every year that places which used to hold Ibex, Red bear and so on, are now quite destitute of all wild life. The Secretary Game Preservation Department passed out the orders in 1919 that the upper marg on the top of the Sindh Valley were closed on the recommendation of Sir Aural Stein with a view to stop enormous damage that was being done to the higher forest adjoining the state sanctuary of

Ajjas by the grazing of the cattle (File No. G-7/1919). The government felt it essential that they should extend an order and close the Lang Marg which is adjoining the rakh for as long as that it continues open, it is impossible to protect the sanctuary as the Gujjars of Aragam are rapidly ruining the marg and forests adjoining the Ajas Rakh by their ruthless grazing (File No. G-7/1919).

CONCLUSION

There is an urgent need to understand and re-structure the mainstream attitude to both the tribal community and the environment on the basis of ecological paradigm. Although the practice of feeding the livestock of Gujjars and Bakerwals in the various biotopes of the state continued from times immemorial but its effect have been felt only when the scientific forestry began in the state in 1894. The increase in the population from the first decade of 20th century, further led to the pressure on the natural vegetation of Kashmir and simultaneously the population of this tribal community as well their livestock show a tremendous increase altogether. This has forced the Government to introduce some grazing fee schemes from time to time in order to reduce their entry into rich forests and forests which started showing deserted look due to overgrazing. The practice of transhumance still continues but now there is a check on such uncontrolled malpractices and the pastures are developed or managed on ecological principles up to large extent.

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