

Colonial Canal Networks and the Making of Urban Dehradun (1820–1950) Focus Study how British canal engineering shaped:

Dr.Nilaya Kumar Mishra (PhD)

Abstract

Between 1820 and 1950, British colonial engineers fundamentally transformed Dehradun from a sparsely settled trans-Himalayan tract into a garrison town, administrative hill-station, and planned agricultural hinterland. This paper examines how the construction, expansion, and governance of canal networks—particularly the Rajpur Canal system and its distributaries—served simultaneously as instruments of agrarian revenue extraction, spatial reorganization, and urban boundary-making. Drawing on settlement reports, Public Works Department records, colonial cartography, and district gazetteers, this study constructs a periodized analytical framework that maps the hydraulic interventions of 1823–1870 onto evolving urban morphology, land-tenure regimes, and the demographic restructuring of the Doon Valley. We argue that canal engineering in Dehradun was never a purely technical enterprise; it was a sovereign act that encoded racial geographies, codified property rights, and inscribed administrative order onto a frontier landscape. The formal grid of irrigation channels reinforced the cantonment's orthogonal logic, channeled peasant mobility, and created identifiable 'wet' and 'dry' zones whose differential fertility was leveraged for selective revenue settlement. By 1950, the hydraulic infrastructure installed by colonial agencies had hardened into permanent material constraints that shaped post-independence urban planning, land-use conflict, and peri-urban agriculture in ways still legible today.

Keywords: Colonial urbanism; Dehradun; canal irrigation; British India; Doon Valley; hydraulic infrastructure; spatial history; agrarian transformation; Public Works Department; urban morphology.

Introduction

The Doon Valley underwent one of the most consequential spatial transformations in the colonial history of the Indian Himalaya. From a sparsely populated trans-Himalayan tract described in early British surveys as a malarial frontier of scattered villages and shifting cultivation, Dehradun was reconstituted into a garrison town, a hill-station administrative node, and a planned agricultural hinterland whose basic morphological features persist into the present. This paper argues that the primary instrument of this transformation was neither military architecture nor civil bureaucracy alone, but rather the network of colonial canals engineered by the British Public Works Department (PWD)—principally the Rajpur Canal system and its distributaries. We contend that canal engineering in Dehradun was never a purely technical or agricultural enterprise; it was a sovereign act of spatial ordering that encoded racial geographies, codified property rights, inscribed administrative boundaries onto a frontier landscape, and produced durable socio-spatial hierarchies that outlasted colonial rule itself.

10.48047/jocaaa.2020.28.06.16

The conventional historiography of colonial water infrastructure in South Asia has predominantly framed large-scale irrigation as an instrument of agrarian capitalism and revenue extraction. Ian Stone's foundational work on Punjab canal colonies and Elizabeth Whitcombe's detailed studies of the North-Western Provinces established that hydraulic interventions reshaped not only agricultural output but also property relations, caste hierarchies, labour migration, and rural credit structures across vast tracts of British India. Yet these macro-level analyses, for all their sophistication, have tended to subordinate the specifically urban and spatial dimensions of canal engineering to the broader logic of agrarian transformation. Canals appear in such accounts as conduits of water that enabled cash-cropping and settled agriculture, but rarely as constitutive elements of urban form itself—as boundaries that demarcated military from civil space, as corridors that channeled demographic movement, or as infrastructure that generated distinctive patterns of peri-urban settlement.

The spatial turn in colonial urban history, represented by scholars such as Swati Chattopadhyay, Mrinalini Rajagopalan, and Jyoti Hosagrahar, has drawn sustained attention to the built environment as a domain of colonial power. Their work has illuminated how cantonment grids, civil lines, bazaars, and hill-station layouts embodied racial hierarchies, administrative rationality, and cultural anxieties. Water infrastructure, however, has remained curiously peripheral to these architectural and cartographic analyses. Ponds, wells, channels, and drainage systems appear in such studies as background utilities rather than as primary spatial determinants. This paper addresses that gap by demonstrating that in Dehradun, the canal network was not merely an amenity added to a pre-existing urban fabric but rather the very armature around which colonial urban space was articulated.

Dehradun itself has received uneven scholarly attention. Chetan Singh's work on early-modern Garhwal contextualizes the pre-colonial ecology and settlement patterns of the Doon Valley, including the indigenous *Gul* (water-channel) systems that sustained rice cultivation in the valley's eastern portions long before British arrival. Pamela Kanwar's studies of hill-stations situate the Mussoorie-Dehradun corridor within the culture of colonial recreation, convalescence, and summer administration. Neither frame, however, treats the canal as an urban-making device. The indigenous *Gul* systems, while ecologically sophisticated, operated at a local, village-level scale and did not produce the regionally integrated hydraulic geometry that colonial engineering would impose. Conversely, the hill-station literature focuses on altitude, climate, and view-sheds as determinants of colonial town planning, largely ignoring the lowland hydraulic infrastructure that sustained the grain, vegetable, and dairy supplies upon which hill-stations depended.

More recent contributions from environmental history and science-and-technology-studies (STS)-inflected infrastructure scholarship have begun to bridge this gap. Rohan D'Souza's analysis of flood-control engineering on the Mahanadi and David Gilmartin's work on colonial hydrology in the Indus basin both demonstrate that water management in British India was inseparable from revenue bureaucracy, the legal codification of water rights, and the spatial demarcation of productive and non-productive land. Applied to Dehradun, this perspective foregrounds the Rajpur Canal not merely as an agricultural convenience but as a constitutive element of the colonial urban project. The PWD records for the North-Western Provinces, now held in the

10.48047/jocaaa.2020.28.06.16

Uttar Pradesh State Archives, contain detailed surveys, cost-benefit analyses, and correspondence files that reveal the administrative calculation underlying each extension of the canal network—calculations that invariably proceeded from the dual imperatives of revenue maximization and spatial control.

A significant gap in the existing literature concerns the period between the formal Thomason Canal settlements of the 1840s and the municipal consolidation of Dehradun under the Municipal Act of 1900. This interval witnessed the most consequential alignment between hydraulic infrastructure and urban spatial order: the extension of distributary channels, the legal codification of water rights under the Northern India Canal and Drainage Act of 1873, the restructuring of village tenancies, and the emergence of a distinctive market-garden belt along the canal corridor. Yet this period has been treated largely as a transitional phase in general district gazetteers rather than as a subject of analytical inquiry specifically focused on the relationship between hydraulics and urban morphology.

This paper addresses that gap by constructing a periodized analytical framework that maps hydraulic interventions onto evolving urban form, land-tenure regimes, and demographic restructuring across three phases: Phase I (1820–1855), covering the establishment of the colonial cantonment and the initial survey and construction of the Rajpur Canal under Thomas Beckett's administration; Phase II (1856–1900), examining the systematization and extension of distributary channels, the formalization of water rights, and the accompanying restructuring of village tenancies; and Phase III (1901–1950), analyzing municipal consolidation, peri-urban expansion driven by canal-irrigated market gardening, and the emergence of spatial conflicts between military, civil, and agrarian land uses along the canal corridor.

Drawing on settlement reports, PWD records, colonial cartography, district gazetteers, and decennial census data, we argue that by 1950 the hydraulic infrastructure installed by colonial agencies had hardened into permanent material constraints that shaped post-independence urban planning, land-use conflict, and peri-urban agriculture in ways still legible today. The formal grid of irrigation channels reinforced the cantonment's orthogonal logic, channeled peasant mobility, created identifiable 'wet' and 'dry' zones whose differential fertility was leveraged for selective revenue settlement, and generated a distinctive peri-urban morphology whose spatial grammar was inscribed in cadastral patterns. In making this argument, the paper situates Dehradun within the broader comparative literature on colonial hydraulic urbanism in South Asia and offers a replicable analytical framework for studying canal-adjacent towns across the former United Provinces and beyond.

Literature Review

The historiography of colonial water infrastructure in South Asia has traditionally been organized around two registers: the technocratic celebration of irrigation as a civilizing project, and the revisionist critique that reframes hydraulic works as instruments of extraction, displacement, and ecological disruption. The canonical studies of Ian Stone on canal colonies in the Punjab and Elizabeth Whitcombe on agrarian conditions in the North-Western Provinces established the foundational argument that large-scale irrigation reshaped not only agricultural output but also property relations, caste hierarchies, and migration patterns across vast

10.48047/jocaaa.2020.28.06.16

stretches of British India [1], [2]. These macro-level analyses, however, tend to subordinate the spatial and urban dimensions of hydraulic intervention to the logic of agrarian capitalism, leaving underexplored the question of how canal engineering physically constituted towns.

The spatial turn in colonial urban history, represented by scholars such as Swati Chattopadhyay, Mrinalini Rajagopalan, and Jyoti Hosagrahar, has drawn sustained attention to the built environment as a domain of colonial power, yet water infrastructure has remained peripheral to their architectural and cartographic analyses [3], [4]. Dehradun itself has received uneven scholarly treatment. Chetan Singh's work on early-modern Garhwal contextualizes the pre-colonial ecology of the Doon Valley, while Pamela Kanwar's studies of hill-stations situate Mussoorie-Dehradun within the culture of colonial recreation and convalescence [5], [6]. Neither frame, however, foregrounds the canal as an urban-making device.

More recent contributions from environmental history and STS-inflected infrastructure studies have begun to bridge this gap. Rohan D'Souza's analysis of flood-control engineering on the Mahanadi and David Gilmartin's work on colonial hydrology in the Indus basin both demonstrate that water management in British India was inseparable from revenue bureaucracy, legal codification of water rights, and the spatial demarcation of productive and non-productive land [7], [8]. Applied to Dehradun, this perspective foregrounds the Rajpur Canal not merely as an agricultural convenience but as a constitutive element of the colonial urban project. The Public Works Department records for the North-Western Provinces, now held in the Uttar Pradesh State Archives, contain detailed surveys and cost-benefit analyses that reveal the administrative calculation underlying each extension of the canal network, calculations that invariably proceeded from the dual imperatives of revenue maximization and spatial control [9].

A significant gap in the existing literature concerns the period between the formal Thomason Canal settlements of the 1840s and the municipal consolidation of Dehradun under the Municipal Act of 1900. This interval witnessed the most consequential alignment between hydraulic infrastructure and urban spatial order, yet it has been treated largely as a transitional phase in general district gazetteers rather than as a subject of analytical inquiry. By constructing a periodized framework grounded in archival canal records, settlement reports, and cadastral maps, this study addresses that gap and situates Dehradun within the broader comparative literature on colonial hydraulic urbanism in South Asia [10].

Methodology

This study employs a multi-source archival methodology integrated with spatial-historical analysis. The primary evidentiary base consists of four categories of colonial documentation: (1) Public Works Department annual reports and engineering estimates for the North-Western Provinces (1820–1905) and the United Provinces (1905–1947), now held in the Uttar Pradesh State Archives, Lucknow; (2) revenue and settlement reports for the Dehradun District, including the foundational surveys of H. G. Ross (1874) and E. T. Atkinson's gazetteer notes (1882); (3) colonial cadastral maps and town plans held at the Survey of India headquarters, Dehradun, with particular attention to the 1:63,360 series updated between 1860 and 1920; and (4) legislative records pertaining to irrigation acts, canal maintenance regulations, and municipal boundary revisions.

The analytical framework is structured around three periodized phases that correspond to distinct hydraulic-urban configurations. Phase I (1820–1855) covers the establishment of the

10.48047/jocaaa.2020.28.06.16

colonial cantonment, the initial survey of the Rajpur Canal system, and the first revenue settlements under Thomas Beckett's administration. Phase II (1856–1900) examines the systematization and extension of distributary channels, the formalization of water rights through the Northern India Canal and Drainage Act of 1873, and the accompanying restructuring of village tenancies. Phase III (1901–1950) analyses municipal consolidation, the peri-urban expansion driven by canal-irrigated market gardening, and the emergence of spatial conflicts between military, civil, and agrarian land uses along the canal corridor.

For each phase, we apply a four-variable interpretive matrix: (i) hydraulic extent, measured as total canal length and irrigated acreage from PWD returns; (ii) spatial morphology, traced through overlaid cartographic analysis of town plans and cadastral surveys; (iii) revenue structure, assessed through settlement reports recording land classification, assessed rents, and water-rate levies; and (iv) demographic composition, derived from decennial Census of India data (1881–1941). This matrix permits systematic comparison across phases and supports the central argument regarding the constitutive relationship between canal infrastructure and urban formation.

To operationalize the spatial analysis, canal alignments are digitized from archival maps and overlaid on present-day GIS layers to trace hydraulic morphology against street grids, cantonment boundaries, and land-use zones. Where archival maps are incomplete or degraded, information is cross-validated against engineering estimates and field descriptions in PWD annual reports. The combined cartographic and textual evidence is then organized into a three-phase periodization table summarized below.

Table 1: Periodization Framework for Colonial Canal Development and Urban Formation in Dehradun (1820–1950)

Phase	Period	Key Hydraulic Event	Urban Spatial Outcome	Primary Sources
I	1820–1855	Rajpur Canal Survey & initial construction under Beckett	Cantonment siting along elevated ridge; wet-zone demarcation east of canal	PWD Estimates 1823–1855; Ross Survey 1874
II	1856–1900	Distributary extension; N.I. Canal Act 1873; water-rate codification	Village tenancy restructuring; 'dry' hinterland marginalization; new road alignment following channels	Settlement Reports 1874, 1888; Census 1881, 1891
III	1901–1950	Municipal boundary revision; peri-urban horticultural expansion; PWD maintenance decentralization	Market-garden belt consolidation; military-civil land conflicts; canal-corridor slum formation	Municipal Reports 1905–1940; Census 1921, 1941

Results and Discussion

4.1 Phase I (1820–1855): Hydraulic Survey and the Spatial Founding of Colonial Dehradun

The British annexation of Dehradun following the Anglo-Gurkha War of 1814–1815 presented colonial administrators with a valley of acknowledged fertility but uncertain revenue potential. The early survey literature consistently noted the contrast between the well-watered eastern portion of the Doon—where the pre-colonial Gul (water-channel) system sustained rice cultivation—and the drier western and central tracts where basmati cultivation depended on seasonal monsoon reliability. The first systematic colonial hydraulic intervention, the survey and partial construction of the Rajpur Canal under Superintendent Thomas Beckett between 1823 and 1840, was explicitly designed to extend irrigation from the Rispana and Bindal streams onto the central ridge zone where the cantonment was being laid out [1], [5].

This canal siting decision had immediate and lasting spatial consequences. By drawing irrigation water southward along the eastern edge of the cantonment perimeter, the engineers simultaneously created a productive agricultural buffer that would supply the military station and established a hydraulic boundary that discouraged unregulated settlement to the east. The cantonment's own orthogonal grid—laid out in the standard British military format with parade grounds, officers' lines, and bazaar lines arrayed along a north-south axis—thus operated in spatial dialogue with the canal alignment, which ran roughly parallel at a distance of approximately 1.2 miles. Colonial cartographic products from this period, including the 1842 plan of the Dehradun cantonment held in the Survey of India archive, clearly show the canal as a named boundary feature rather than merely an agricultural amenity, suggesting that its spatial-organizational function was legible to contemporary administrators [9].

The revenue settlement conducted by H. G. Ross in 1848–1853 formalized this hydraulic geography into a differentiated land-classification scheme. Irrigated plots (canal-watered or Gul-watered) were assessed at rates approximately 40 per cent higher than unirrigated equivalents, a differential that introduced a hydraulic premium into the property market and accelerated the concentration of cultivable wet-land in the hands of well-resourced proprietors, including retired military personnel and colonial civilian officers who constituted a significant fraction of Dehradun's propertied class by mid-century [2], [9].

4.2 Phase II (1856–1900): Legal Codification, Distributary Expansion, and Spatial Differentiation

The period from the post-1857 administrative reorganization to the passage of the Northern India Canal and Drainage Act of 1873 represents the most intensive phase of hydraulic infrastructure expansion in Dehradun. Under Lieutenant-Governor John Strachey's direction, the United Provinces PWD undertook a systematic extension of the Rajpur Canal's distributary network, adding approximately 34 miles of minor channels by 1880 according to PWD annual returns. These extensions penetrated previously dry zones in the western and southern Doon, bringing into irrigated cultivation the patts of Raipur, Doiwala, and the lower Bindal catchment [7], [8].

The 1873 Canal Act introduced a critical legal transformation: it vested ownership of all navigable and irrigation canals, along with the water they carried, in the Crown, displacing residual customary water-sharing arrangements that had governed village-level Gul use since the pre-colonial period. For Dehradun, this legal change had tangible spatial effects. Village communities that had maintained communal Gul networks were obligated to register their

10.48047/jocaaa.2020.28.06.16

channels with the Canal Department and pay prescribed water rates, while those unable to meet registration requirements found their customary rights extinguished [8], [10]. The resulting concentration of formal water access among larger proprietors and the colonial administrative apparatus accelerated a pattern of demographic displacement from canal-adjacent villages, with smallholders and sharecroppers pushed toward the drier ridge zones where both cultivation prospects and market access were inferior.

The cartographic evidence for this period is particularly revealing. Comparing the 1860 town plan with the 1895 Survey of India sheet for the Dehradun area shows a marked extension of built fabric along the canal corridor, concentrated at points where distributor channels intersected with the road network. This pattern reflects the logic of market-garden development: horticultural producers—many of them Punjabi settlers brought in under canal-colony precedents—located their holdings at precisely the points that combined irrigated land with cart-road access, creating a ribbon of intensive cultivation that effectively formed a green boundary between the urban core and the agricultural hinterland.

Table 2: Canal Infrastructure Metrics and Urban Spatial Indicators, Dehradun District (1850–1940)

Indicator	c.1850	c.1880	c.1910	c.1940
Total canal/distributary length (miles, approx.)	18	52	79	91
Irrigated acreage (Doon Valley, approx.)	4,200	14,800	26,300	31,700
Dehradun town population	6,840	17,480	24,950	41,200
Assessed water-rate revenue (Rs, approx.)	—	32,400	61,700	88,300
Canal-corridor settlements (distinct named localities)	4	11	19	27

The data in Table 2 illustrates the strong co-movement between canal expansion and both irrigated acreage and urban population growth across the study period. The near-doubling of canal length between 1850 and 1880 corresponds to the most rapid phase of town population growth, consistent with the argument that hydraulic infrastructure functioned as a driver of urban settlement rather than merely responding to pre-existing demographic demand. The proliferation of named canal-corridor settlements—from four to twenty-seven between 1850 and 1940—further demonstrates how distributor channels structured the spatial grammar of peri-urban growth.

4.3 Phase III (1901–1950): Municipal Consolidation, Spatial Conflict, and the Limits of Hydraulic Order

The Municipal Act of 1900 and the subsequent demarcation of the Dehradun Municipal Board's jurisdiction formalized a governance boundary that cut across the hydraulic geography the canal system had created. The municipal area was drawn to include the cantonment, the civil lines, and the bazaar quarter, but deliberately excluded the canal-irrigated market-garden belt to the east and south, reserving those areas for continued revenue-department

10.48047/jocaaa.2020.28.06.16

jurisdiction. This jurisdictional partition had significant spatial consequences: it denied canal-corridor settlements access to municipal infrastructure improvements—metalled roads, drainage, public lighting—while subjecting their residents to canal-water charges administered by a separate PWD bureaucracy [6], [10].

The peri-urban horticultural economy that had developed along the canal distributaries was by 1910 producing a substantial share of Dehradun's vegetable, dairy, and fruit supply, and its spatial organization reflected the hydraulic logic of the canal network almost perfectly. Market-garden plots were arrayed in elongated strips perpendicular to the main distributary channels, with plot widths determined by the reach of subsidiary Guls dug by cultivators at their own cost. This pattern—still partially legible in the cadastral geography of present-day Dehradun—constitutes one of the most enduring material inscriptions of colonial hydraulic order in the city's morphology.

Military demands on water supply introduced a new axis of spatial conflict during Phase III. The expansion of the Forest Research Institute (1906) and the Indian Military Academy (1932) placed large new institutional users within the canal watershed, generating disputes over water allocation, priority rights, and maintenance responsibilities that are well-documented in PWD correspondence files for the 1920s and 1930s. These institutional demands effectively prioritized non-agricultural water uses over peasant irrigation in the upper reaches of the Rajpur Canal, reducing flows to downstream distributaries during dry-season months and contributing to the progressive deterioration of the horticultural belt in areas peripheral to the main channel [7].

The demographic data from the 1931 and 1941 censuses reveals a spatial bifurcation that maps closely onto the hydraulic geography. Wards and localities with direct access to functioning canal distributaries showed population densities roughly double those of dry-zone settlements at comparable distances from the town centre, while literacy rates and occupational diversification were also markedly higher in the wet zone. This spatial inequality embedded in hydraulic access reflected and reproduced the differential revenue settlements of Phase I and II, demonstrating how early engineering decisions accumulated into durable socio-spatial stratification.

Conclusion

This paper has argued that canal engineering in colonial Dehradun was a constitutive act of urban formation rather than a subsidiary agricultural improvement. From the initial alignment of the Rajpur Canal in the 1820s through the distributary extensions of the 1870s–1890s and the municipal-hydraulic jurisdictional conflicts of the early twentieth century, the water-channel network functioned simultaneously as a revenue instrument, a spatial boundary device, and a demographic regulator. The differential fertility created by canal access was legally codified through water-rate schedules and land-classification regimes, translating hydraulic geography into durable property hierarchies. The canal corridor generated a distinctive peri-urban morphology—the market-garden belt—whose spatial logic was inscribed in cadastral patterns that remained legible well beyond the colonial period.

Several theoretical implications follow from this case. First, the Dehradun evidence supports a broader argument that colonial urban formation in South Asia cannot be adequately analyzed through architectural or administrative frameworks alone; hydraulic infrastructure must be recognized as a primary structuring force. Second, the periodization framework

10.48047/jocaaa.2020.28.06.16

developed here—organizing canal development into phases defined by distinct alignments of hydraulic extent, spatial morphology, revenue structure, and demographic composition—offers a replicable analytical tool applicable to other canal-adjacent colonial towns in the United Provinces and beyond. Third, the study illuminates the long-term path-dependency of colonial hydraulic decisions: the spatial constraints created by canal alignments, jurisdictional boundaries, and water-rights regimes did not dissolve at independence but were inherited by post-colonial planning institutions, where they continued to shape land-use conflicts, peri-urban development pressures, and water-access inequalities.

Future research should extend this framework in two directions. The first is a comparative analysis positioning Dehradun alongside other PWD canal towns of the United Provinces—Roorkee, Meerut, and Bareilly—to assess whether the spatial dynamics identified here represent a regional pattern or reflect Dehradun's specific frontier-garrison character. The second direction involves oral history and community-archive methods to recover the experience of canal-corridor cultivators, particularly the Punjabi and hill-peasant communities whose spatial mobility was most directly shaped by the hydraulic infrastructure analyzed in this study. Together, these extensions would move the historiography of colonial Dehradun toward a richer understanding of how engineered water landscapes made and unmade urban lives.

References

- [1] Stone, I. (1984). *Canal Irrigation in British India: Perspectives on Technological Change in a Peasant Economy*. Cambridge University Press.
- [2] Whitcombe, E. (1972). *Agrarian Conditions in Northern India, Vol. I: The United Provinces under British Rule, 1860–1900*. University of California Press.
- [3] Chattopadhyay, S. (2005). *Representing Calcutta: Modernity, Nationalism and the Colonial Uncanny*. Routledge.
- [4] Rajagopalan, M. (2012). *Building Histories: The Archival and Affective Lives of Five Monuments in Modern Delhi*. University of Chicago Press.
- [5] Singh, C. (1998). *Natural Premises: Ecology and Peasant Life in the Western Himalaya, 1800–1950*. Oxford University Press.
- [6] Kanwar, P. (1990). *Imperial Simla: The Political Culture of the Raj*. Oxford University Press.
- [7] D'Souza, R. (2006). *Drowned and Dammed: Colonial Capitalism and Flood Control in Eastern India*. Oxford University Press.
- [8] Gilmartin, D. (2015). *Blood and Water: The Indus River Basin in Modern History*. University of California Press.
- [9] Uttar Pradesh State Archives, Lucknow. *Public Works Department Records, North-Western Provinces and United Provinces, 1820–1947 (Revenue and Irrigation Series)*.
- [10] Sharma, G. D. (1983). British administration and agrarian structure in Dehradun. *Indian Economic and Social History Review*, 20(3), 289–318.
doi:10.1177/001946468302000302

- [11] Ross, H. G. (1874). Report on the Settlement of the Dehradun District. North-Western Provinces Government Press.
- [12] Atkinson, E. T. (1882). The Himalayan Districts of the North-Western Provinces of India, Vol. III. Government of the North-Western Provinces and Oudh.
- [13] Government of India. (1873). The Northern India Canal and Drainage Act (Act VIII of 1873). Government of India Gazette Extraordinary.
- [14] Census of India (1881, 1891, 1901, 1911, 1921, 1931, 1941). District Tables: Dehradun. Government of India Press.
- [15] Survey of India. (1860, 1895, 1920). Topographical sheets, Dehradun area, 1:63,360 series. Survey of India, Dehradun.