THE STATE, SOCIETY AND EPIDEMICS
IN
COLONIAL PUNJAB 1849 -1947

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CERTIFICATE

It gives me pleasure to certify that the thesis on 'The State Society and Epidemics in Colonial Punjab 1849-1947', submitted by Sasha under my supervision is a piece of original research contributing to advancement of knowledge.

The researcher has completed this work to my satisfaction, and it is fit to be evaluated for award of the degree of Doctor of Philosophy in the discipline of History.

Certified further that the format of the thesis, including spacing, conforms to the Panjab University guidelines dated 14.2.2002.

Dated: 28 May 2003

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THE STATE, SOCIETY AND EPIDEMICS

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CONTENTS

PREFACE

An epidemic is a widespread occurrence of a disease in a particular area at a particular time. The present work attempts to study the epidemics of malaria, smallpox, cholera and the plague in the particular context of colonial rule in the Punjab. The region under study stretches from the Khaibar to Delhi, and covers areas that remained administratively attached to the British province of the Punjab for varying periods from 1849 to 1947. Wherever warranted by evidence, the sub-regional peculiarities and relevant developments outside the Punjab have been brought in.

After the Introduction which discusses the historical and historiographical context and delineates the conceptual framework, the subject is treated in five main chapters. The pattern of epidemics in terms of their outbreak, spread, and mortality in the Punjab is studied in the first chapter. The handling of fevers, smallpox and cholera by the colonial state is the theme of the second chapter, and the dreaded plague epidemic is dealt with in the next, also bringing out the alacrity with which the colonial state came into action to contain its recurrence. The chapter on 'The People and the Epidemics', studies the difficulties posed by the governmental operations, and the responses of different sections of the society towards these. The bearing of the indigenous patriarchal structure and the colonial attitudes on 'Gender and Epidemics' is the thrust of the fifth chapter. The Conclusion sums up the findings.

The present study is based on a variety of government and non-government sources. The most comprehensive contemporary

accounts for the present study are those of the district administrators who constituted the main agencies for combating and containing epidemics. Their perceptive observations comprise the primary data for the present study. These are supplemented by the valuable information gleaned from the numerous files and proceedings relating to the medical and sanitary department, public health and jails for the years 1897-1947. The preventive measures of the municipalities and their difficulties figure in the proceedings of the municipal committees. The other major categories of official sources tapped are the reports on the decennial census, sanitary arrangements, vaccination operations, dispensaries and charitable institutions, and the annual administration for the Punjab and its dependencies. Together, these sources also reflect the priorities and attitudes of the colonial administrators.

Notwithstanding the usefulness of the governmental sources, these cannot be relied upon in their entirety. Apart from the built-in limitations of the official perspective, these sources suffer from statistical discrepancies which required to be cross checked. The variety of information provided by these sources on epidemics is nonetheless invaluable. Their tendency to underplay the loss of life and the coercive measures of the state, and to generally defend the administration, is balanced by the contemporary newspapers like *The Tribune* and *Khalsa Advocate* which highlight the human side of the situation, particularly from the people's angle. The complementarity and richness, on the whole, of the contemporary sources on epidemics was a measure as much of a new idiom of governance based on the maxim, 'knowledge is power', as of a new conception of public health and a new social consciousness underpinning it.

The primary sources used for the present study are scattered in different libraries. I gratefully acknowledge the co-operation received from the staff of the Punjab State Archives at Chandigarh and Patiala, where the bulk of the source material was housed. I am thankful to the staff of the National Archives of India and Nehru Memorial Museum and Library at New Delhi for their help. I feel happy to acknowledge the help received from several local institutions and their staff, most notably *The Tribune*, Dwarka Das Library, Panjab University Library and the library at the Department of History, Panjab University -- all at Chandigarh. In addition, some valuable materials were consulted at the Haryana State Archives, Panchkula.

I take this opportunity to express my gratitude to Professor J. S. Grewal for his invaluable suggestions from time to time. I also wish to thank Professor R. P. Bambah who took keen interest in this work and facilitated my access to the record room of *The Tribune*.

Finally, I wish to express my deep sense of gratitude to my supervisor, Professor Indu Banga for her constant help, guidance and interest at every stage of this study.

On a personal plane, I would like to thank my family for their help and encouragement. I am indebted to my brother for assisting me at every step in the computer operations.

Dated: May 28, 2003

Sasha

Sasha

LIST OF MAPS AND DIAGRAMS

LIST OF TABLES

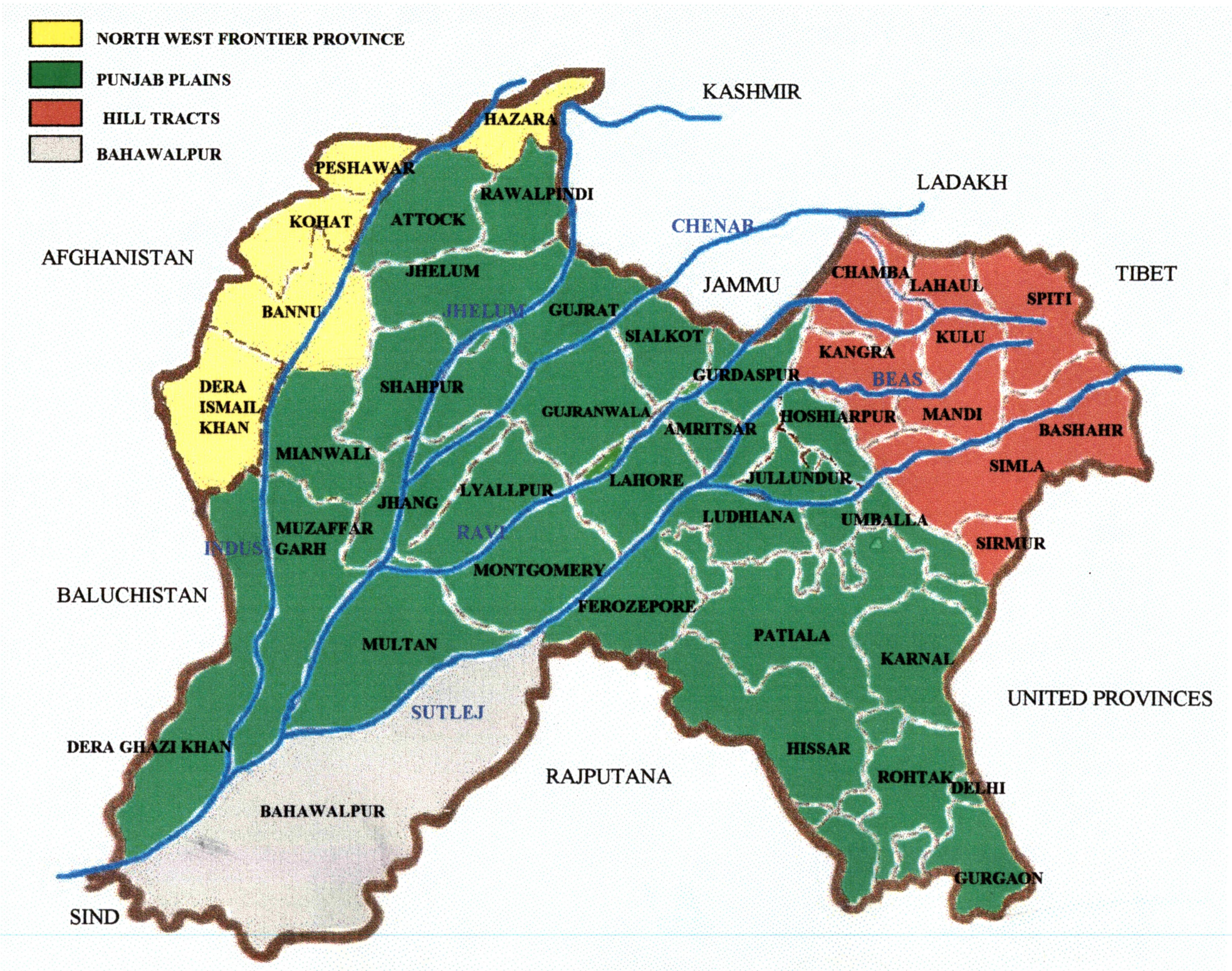

FIG i - THE PUNJAB AND NORTH-WEST FRONTIER PROVINCE

INTRODUCTION

Epidemics of fevers, smallpox, cholera and the plague have afflicted societies intermittently with the force of a natural disaster, killing a large number of people. Epidemics entail not only the problem of mortality, but also of the collapse of administrative structures, exodus from the cities and breakdown of trade and agriculture. As the biggest scourges in history, epidemics have also shaped the world around, influencing theological, political and social thought over time. The exceptionally stressful situation created by epidemics in recent centuries has reshaped medical assumptions and attitudes. Gradually, public health and sanitation emerged as the responsibilities of the modern state and society. Epidemics also presented dilemmas peculiar to the colonial situation and the colonial state felt obliged to explain and combat them. However, the degree of its involvement and the methods used were determined by its priorities, which, as was to be expected, were economic gain backed by political and administrative control. The chapter introduces the present study with reference to its historical and historiographical context and conceptual framework.

I

It may be appropriate to begin with an overview of the major epidemics in the world context. In the mid-fourteenth century, the pandemic of the plague later known as the Black Death originated in Central Asia and China and spread rapidly through Europe, causing diminution of population, social dislocation and struck a shattering blow to the economic and social framework.[1] The major

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[1] C. E. A. Winslow, *Man and Epidemics*, Princeton University Press, Princeton, 1952, pp 196-99. In England alone, where the plague reached in 1348, it killed

fever epidemic broke out in Britain in the middle of the nineteenth century and spread to Europe, resulting in the rejection of the old forms of medical authority. It also caused a change in the ideologies whereby aristocratic patronage started losing its importance.[2] The cholera pandemic is believed to have originated in India in 1830-31 and spread to Africa, Europe and North America. The estimated death rate varied from fifteen to twenty per cent, leading to unprecedented social tensions, popular unrest and economic dislocation.[3]

Turning to the Indian subcontinent, the contemporary accounts contain stray references to fevers and epidemics pertaining to the north-western India. Gulbadan Begum refers to a malignant fever that broke out in Quetta during the early sixteenth century, affecting both the common people and the royalty, including Shahr Banu Begum, the third daughter of Umar Shaikh Mirza.[4] Manucci travelling in the reign of Aurangzeb notices that the most common complaint in India was fever accompanied by inflammation in the legs.[5] Alexander Burnes notices its prevalence

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between one-third and one half of the population in a matter of months. The term 'Black Death' is said to have come into currency in the early nineteenth century. *The New Oxford Dictionary of English*, First Indian Edition, 2000, p 182.

[2] John V. Pickstone, 'Dearth, Dirt and Fever Epidemics: Rewriting the History of British Public Health, 1780-1850', in *Epidemics and Ideas*, ed. Terence Ranger and Paul Slack, Cambridge University Press, Cambridge,1995, pp138-42.

[3] William H. Mc Neil, *Plagues and Peoples*, Camelot Press Limited, Southampton, 1977, pp261-67.

[4] Gulbadan Begum, *The History of Humayun (Humayun Namah)*, tr. Annette Susannah Beveridge, Idarah-i-Adabiyat-i-Delli, Delhi, 1972, pp285-86.

[5] Niccolao Manucci, *Storia Do Mogor or Mogul India (1653-1708)* tr. William Irvine, Editions Indian, Calcutta, 1966, Volume II, p157. According to Manucci,

in Peshawar during the early nineteenth century.[6] Hugel mentions that during his journey to Kashmir, hardly a day passed in which a case of fever did not occur among the people accompanying him.[7]

The stray references to smallpox suggest that probably it too was widely prevalent and also a recurrent phenomenon in the region. The principal shrines dedicated to the goddess of smallpox (Sitala) were scattered at seven places in the Punjab.[8] The descriptions of 'pock-marked' persons in the judicial documents from the seventeenth to the early nineteenth century also point to the recurrence of the disease.[9] The judicial documents too suggest that the cases of smallpox occurring amongst people in the villages were greater.[10] Occasionally, however, smallpox broke out in

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venereal diseases in India were not very common. He even says that gout, catarrhs, stone and quartan-agues were unknown.

[6] Alexander Burnes, *Travels into Bokhara*, John Murray, London, MDCCCXXXV, Volume II, p41.

[7] Baron Charles Hugel, *Travels in Kashmir and the Punjab*, Notes by T. B. Jervis, Languages Department Punjab, Patiala, 1970, pp244-45.

[8] William Crooke, *An Introduction to the Popular Religion and Folklore of Northern India*, Government Press, NWP and Oudh, Allahabad, 1894, pp 86-87.

[9] See in particular J.S. Grewal, *In the By-Lanes of History: Some Persian Documents from a Punjab Town*, Indian Institute of Advanced Study, Simla, 1975, pp 175-78, 182-84. In a sale deed of 1748, the two mortgagers, Gur Sahai and Karam Chand have 'pock-marked' faces. In 1752, another document has the description of a mortgager, Godaria who also bore pock-marks. Writing about smallpox in Bengal in 1767, Holwell, notices that the epidemic occurred every seventh year without any exception. Ishrat Alam, 'Smallpox and its Treatment in Pre-Modern India,' in *Disease and Medicine in India: A Historical Overview*, ed. Deepak Kumar, Tulika Books, New Delhi, 2001, p 87.

[10] J.S. Grewal, *In the By-Lanes of History: Some Persian Documents from a Punjab Town*, pp 177. For cases of smallpox occurring in people in the villages

epidemic form in urban centres as in Delhi in 1842, 1846 and 1849.[11]

Cholera engulfed villages in the Punjab, Kabul and Herat in 1827.[12] According to Masson's travel account, the cholera epidemic broke out in Peshawar in the 1830s and spread to Amritsar, Lahore and other parts.[13] The Punjab, Sindh and Persia were again affected by cholera epidemic in 1845.[14] The disease in its epidemic form had affected some other parts of the subcontinent from 1826 to 1834.[15] Starting in lower Bengal, in the

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see, B. N. Goswamy and J. S. Grewal, *The Mughal and the Sikh Rulers and the Vaishnavas of Pindori*, Indian Institute of Advanced Study, Simla, 1969.

[11] O.P. Jaggi, *History of Science, Philosophy and Culture in Indian Civilization, Medicine in India: Modern Period,* Volume IX Part 1, Oxford University Press, New Delhi, 2000, p 144.

[12] Dhrub Kumar Singh, 'Clouds of Cholera and Clouds Around Cholera, 1817-1870, in *Disease and Medicine in India: A Historical Overview*, ed. Deepak Kumar, p 147.

[13] Charles Masson, *Narrative of Various Journeys in Balochistan, Afghanistan, and the Panjab,* Richard Bentley, London, 1842, Volume I, p129, Also, J. M. Honigberger, *Thirty Five Years in the East*, R. C. Lepage and Co. Calcutta, 1852, p148.

[14] O.P. Jaggi, *History of Science, Philosophy and Culture in Indian Civilization,* Volume IX PartI, p 110.

[15] *Ibid.,* p108. Earlier, a major epidemic is mentioned in the report by Dr Tytler, Civil Surgeon of Jessore who reports its occurrence in 1817 in Jessore and its spread to Delhi, Bareilley Allahabad and Shahjahanpur. In 1821, the troops carried it to Arabia and Egypt. The other available reference is in the Portuguese source which records its occurrence in the spring of 1543 in Goa when the mortality was so great that it was with great difficulty that people could be buried. It is again reported to have erupted in 1563.

first quarter of 1826, it spread to Benaras and Kanpur and thence to Delhi, Mathura and Agra in November.[16]

The references to the plague are more numerous for the obvious reason that the plague resulted in a great loss of life. The background of the Black Death also made the European travellers more aware of the disease. However, the contemporary observers could not possibly give an exact number of deaths. The figures mentioned by them appear to be exaggerated, or, at best impressionistic. Still, from their accounts it can be discerned that the mortality rate was high. In the plague of 1616-18 in the Punjab, a large number of people died and houses were locked with dead bodies inside. Mutamad Khan writing in Jahangir's reign notes that in an hour about fifteen persons died. While observing that the toll amongst the Hindus was higher than the Muhammadans, he does not give any explanation for this. Writing about the severity of the disease in Kashmir, he mentions that a *darvesh* (a religious mendicant) who performed the ritual of washing the body of a friend also contracted the disease and died the next day.[17]

There are several references to the plague epidemics in other parts of India from the sixteenth to the early nineteenth century.[18] 'Greater part of the people were destroyed' in the

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[16] Dhrub Kumar Singh, 'Clouds of Cholera and Clouds Around Cholera, 1817-1870, in *Disease and Medicine in India: A Historical Overview*, ed. Deepak Kumar, p 147.

[17] Mutamad Khan, *Ikbal Nama-i-Jahangiri*, in *The History of India as told by its own Historians*, ed. John Dowson, Sushi Gupta Private Limited, Calcutta, 1959, pp164-65. Also, Jahangir, *Wakiat-i-Jahangiri*, in *The History of India as told by its own Historians*, ed. John Dowson, Sushil Gupta Private Limited, Calcutta, 1959, p103.

[18] O.P. Jaggi, *History of Science, Philosophy and Culture in Indian Civilization*, Volume IX Partl, pp125-27.

plague, which broke out during the reign of Islam Shah in 1550 says Badaoni.[19] In 1575, there was an outbreak of the plague at Gaur, which according to Abul Fazl was 'fraught with evil to generality'.[20] The severity of the plague in the Deccan during 1702-04, is commented upon by Manucci who says that two million people died and that, compelled by hunger, the fathers, offered to sell their children for a quarter to half a rupee.[21] The plague affected Gujarat from 1812 to 1821, Central India and Rajputana in 1813 and Kumaon and Garhwal in 1823.[22] Honigberger noticed in 1838 that only one person in twenty recovered from the disease at Pali in Rajasthan.[23]

It might be of interest to mention that the Western travellers noticed the occurrence of the plague in other parts of the world as well. When Bernier went to Egypt in 1656-58, the plague was prevalent at Rosetta.[24] The epidemic broke out in upper Egypt in 1820-21 when Mahomed Ali was making preparations to send an expedition there. In 1823 it was reported to be prevalent in Alexandria.[25] In 1832-33 there was an outbreak at Saree, the

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[19] Al Badaoni, *Muntakhab-ut-Twarikh*, tr. and ed. George S. A. Ranking, Idarah-i-Adabiyat-i-Delli, Delhi, 1973, Volume I, pp523-24.

[20] Abul Fazl, *The Akbarnama or The History of the Reign of Akbar including an Account of his Predecessors*, tr. H. Beveridge, Rare Books, Delhi,!973, (Reprint), Volume III, p227.

[21] Niccolao Manucci, *Storia Do Mogor*, Volume IV, p91.

[22] O.P. Jaggi, *History of Science, Philosophy and Culture in Indian Civilization,* Volume IX Partl, pp125-27.

[23] J.M. Honigberger, *Thirty Five Years in the East*, pp91-92. Also, Alexander Burnes, *Travels into Bokhara*, Volume III, pp106-07.

[24] Francois Bernier, *Travels in the Mogul Empire 1656-68*, tr. Archibald Constable, S. Chand and Co., New Delhi, 1968, p451.

[25] J.M. Honigberger, *Thirty Five Years in the East*, pp6, 20-21.

capital of Mazenderan and its neighbouring area of Ushruf.[26] By 1836, it reached Constantinople and Bosphorus.[27]

On the whole, the etiology and the factors responsible for the spread of the plague were not understood and the contemporaries ascribed various reasons to it. Impure air arising from drought and scarcity was considered as the causal agent of the disease in the early seventeenth century.[28] It was also believed that the disease was contagious and anyone touching the corpse or the clothes of the plague victim was liable to contract it. Although the role of rats in transmitting the infection was not understood, yet the characteristic behaviour of the rats was noticed. It was observed that when the disease was about to break out, a rat rushed out of its hole, struck itself against the doors and walls of the house and died. If the inhabitants vacated the place immediately, they escaped contracting the infection.[29] Bernier thought that heat spread the infection; the pores opened due to intense heat following which the pestiferous and malignant material confined in the body was expelled.[30] As late as the early nineteenth century, Honigberger did not consider the disease to be contagious. He believed that the infection spread through the air: 'The pestiferous dust blew which communicated the virus externally by the absorption through lachrymal glands of the eyes, pituitous membrane of

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[26] Alexander Burnes, *Travels into Bokhara*, Volume III, pp106-07. Burnes mentions that so few people survived that the young boys had to dig graves for their relatives.

[27] J.M. Honigberger, *Thirty Five Years in the East*, pp85-86.

[28] Jahangir, *Wakiat-i-Jahangiri*, p103.

[29] Mutamad Khan, *Ikbal Nama-i-Jahangiri*, pp164-65.

[30] Francois Bernier, *Travels in the Mogul Empire1656-1668*, p451.

the nostrils and cavity of the ear and internally through the respiration of the lungs'.[31]

The European travellers prescribed different medicines for curing the plague. Bernier claimed that a person was cured within four days after taking 'butter of antimony' along with lancing the abscess.[32] Manucci does not give the name or any other characteristic feature of the medicine which he prescribed but only refers to it as `pills' which cured the wounds and buboes.[33] Honigberger prescribed small doses of a bean called *Strychnos Faba St. Ignatii,* which according to him was an effective cure.[34]

The evidence from the nineteenth century suggests that to prevent the spread of the plague some kind of quarantine was also resorted to. The house of the person who died of the plague was immediately shut up and self-imposed quarantine was adopted. At Pali, the villagers did not allow Honigberger and his fellow travellers to enter their village and brought whatever provisions they needed to their camps. Honigberger did not give medicines to the people in their houses but asked for the patient to be brought outside.[35] The Western travellers also noticed that the measures taken by the people in India were similar to those adopted in other countries. [36]

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[31] J. M. Honigberger, *Thirty Five Years in the East*, p86.

[32] Francois Bernier, *Travels in the Mogul Empire 1656-1668*, p451. Bernier writes that in Egypt, he gave this treatment to the Vice Consul at Rosetta. Bernier himself contracted the plague there, and after taking his own medicine was cured within three-four days.

[33] Niccolao Manucci, *Storia Do Mogor*, Volume III, p128.

[34] J. M. Honigberger, *Thirty Five Years in the East*, p86.

[35] *Ibid.*, pp91-93.

[36] Alexander Burnes, *Travels into Bokhara*, Volume III, pp106-07. At Ushruf, near Saree, a barricade around the village was put up and a villager with a

However, in the absence of any clear understanding of the etiology of the diseases erupting in epidemic form, the traditional systems of medicine existing in India, that is Ayurvedic and Unani, were probably not in a position to deal with these.[37] There are occasional references to the distinguished practitioners of the two systems of medicine. For example, Shaikh Hasan at Sarhind during the reign of Akbar and Hakim Basant at Lahore during Shah Jahan's reign, and Balram Misr and Manka Tabib at Hissar during Aurangzeb's reign.[38] Some well known physicians in the Punjab during the early nineteenth century were Bahadur Chand at Haranpur, Mohammad Qasim at Gujrat, Bhagat Bishan Chand at Miani, Shaikh Ahmad at Bholu Kochhar, Darvesh Hakim at Kalaske, and Lala Hakim Rai at Lahore.[39] The *dar-ul-shafa*

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stick was seated there to prevent trespassing. At Constantinople, the people shut themselves up in their houses cutting off all contact with the outside world. Also J. M. Honigberger, *Thirty Five Years in the East*, pp85-86.

[37] Debiprasad Chattopadhyaya, *Science and Society in Ancient India*, Research India Publications, Calcutta, 1977, pp19-20. The two systems laid emphasis on the co-relation between the elementary forms of nature to conditions of health and disease. The similarity in the method of diagnosis and training led to the coexistence of the Ayurvedic and Unani systems of medicine in the pre-colonial period. For a detailed account on the traditional medical systems in India, refer to *History of Medicine in India (From Antiquity to 1000 AD)*, ed. Priya Vratt Sharma, INSA, New Delhi, 1992; Asoke K Bagchi, *Medicine in Medieval India*, Konark Publishers Private Limited, Delhi, 1997, pp70-71; Poonam Bala, *Imperialism and Medicine in Bengal*, Sage Publications, Delhi, 1991, p33.

[38] Iqtidar Alam Khan, 'The Middle Classes in the Mughal Empire', *Indian History Congress Proceedings*, Aligarh, 1975, pp16-18.

[39] Ganesh Das, *Char Bagh-i-Panjab*, *Early Nineteenth Century Panjab*, tr. and ed. J.S Grewal and Indu Banga, Guru Nanak University, Amritsar, 1975, pp31, 48, 61, 72, 87, 91, 98, 102, 119.

(hospital) at Lahore where medicines were distributed at the governments' expense was looked after by the well-known Faqir brothers until 1845 when the Austrian physician Honigberger took over its charge.[40]

The well-known physicians generally received *jagirs* for their maintenance. Similar state supported establishments are reported to have existed under the Mughals who too gave assignments of revenue to the physicians.[41] Emulating the rulers, the nobility and the well-to-do persons also provided for the distribution of medicines and patronized the physicians. In fact, the officials, merchants and traders, professional people, and the well-to-do craftsmen got themselves treated from the private practitioners during the Mughal rule.[42]

II

In all probability, the common man in urban areas, particularly in the large administrative centres, had access to the charitable medical institutions supported by the state and the aristocracy. Nonetheless, the existing systems of medicine and institutional arrangements for the treatment of diseases were probably not geared for the handling of diseases on a large scale, let alone in epidemic form.

Therefore, in view of their own helplessness to deal with the epidemics, people tended to combine practices of a psychological

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[40] J. M. Honigberger, *Thirty Five Years in the East*, p viii, xviii.

[41] Irfan Habib, *The Agrarian System of Mughal India 1556-1707*, Asia Publishing House, New Delhi,1963, p312. The *mansabdars* and the trading classes also patronized a large number of physicians. They worked in the contingents of the *mansabdars* and some of them also received *mansabs*.

[42] Iqtidar Alam Khan, 'The Middle Classes in the Mughal Empire', *Indian History Congress Proceedings*, pp16-18.

nature with medicines and some procedures to purify the blood. There were large local and sub-regional variations in these. Generally, there was a very thin line of distinction between the medicinal and non-medicinal remedies, both of which were resorted to and both of which appear to have continued well into the colonial Punjab.

The district administrators extensively reported the traditional remedies for the treatment of various diseases. The belief in the curative properties of herbs and plants was widespread. To cure fever in the area to the south of the Sutlej, a purgative made by boiling mixture of senna, cassia, fennel, rose leaves, figs and tamarind was given to the patient.[43] The treatment of smallpox revolved around cleansing of the blood as the disease was believed to be due to the blood sucked in by the child 'in utero'. For this, *ludhrak* was given to the patient after rubbing it in rosewater and pearls applied externally in the form of powder. Milk was given along with *munaqqa* (dry grapes) to bring pocks out. When the disease matured, roasted gram was given to cause desiccation.[44] Cauterization was carried out by the barber to cure the plague. For this, milky juice of *ak* (wild bush) was collected in a cup of wheaten dough and applied over the buboe, which was then cauterized.[45]

The people also had recourse to certain procedures. Purifying the blood for treating fevers was fairly common; the traveller Charles Masson was bled when he suffered from fever in

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[43] *Gazetteer of Ludhiana District, 1904*, p46.

[44] *Gazetteer of Attock District 1907*, p264.

[45] *Gazetteer of Ludhiana District, 1904*, p46.

1826.[46] The people of Peshawar annually bled themselves to reduce the susceptibility to fevers.[47] Maharaja Sher Singh was bled in 1843 to cure malarial fever.[48] In the south-western Punjab also, bleeding was often carried out to cure fever. The barber bled the patient by cutting open the vein so as to remove the poison.[49] The early British records also refer to variolation as a procedure for reducing the intensity of smallpox. In 1873, about eighty variolators from different social backgrounds were reported to be working.[50]

The belief in 'remedies' of a non-medicinal nature was fairly widespread, albeit its forms and expressions varied considerably.

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[46] Charles Masson, *Narrative of Various Journeys in Balochistan, Afghanistan and the Panjab*, p10. This task was performed by a *hajjam* (barber).

[47] Alexander Burnes, *Travels into Bokhara*, Volume II, p93.

[48] Sohan Lal Suri, *Umdat-ut-Tawarikh*, tr. V. S. Suri, Punjab Itihas Prakashan, Chandigarh, 1972, Daftar IV, p216. The physician Azizuddin performed the bleeding process following which Sher Singh recovered.

[49] *Gazetteer of Muzaffargarh District, 1908*, p48.

[50] *Punjab Government Civil Secretariat Proceedings, Home: Medical and Sanitary* (cited here after as *Proceedings, Home: Medical and Sanitary*) October 1873, Serial Number 5, p815. C.f. Chapter 1. The inoculators kept dry crusts from pustules mixed with a few grains of rice in a box. Smallpox was induced by inserting the mixture into a wound made near the base of the thumb. This was kept for six hours. Dietary restrictions were imposed. For six days cold water was poured over the patients' head. This was discontinued for three days when the eruptions began. Pustules were opened and pus drained off. Amongst the Muslims, the Sayyids and Mullahs performed inoculation. Rajputs and Nais acted as inoculators amongst the Hindus of all areas barring south-east Punjab where the Hindus did not protect themselves for the fear of offending the goddess. *Imperial Gazetteer Of India, Provincial Series, Punjab*, Volume 1, Suprintendent of Government Printing, Calcutta, 1908, p146. Also, David Arnold, *Colonizing the Body: State Medicine and Epidemic Disease in the Nineteenth Century India*, Oxford University Press, New Delhi, 1993,pp127-28.

These included the use of charms, repetition of certain religious *mantras* (hymns) and giving opprobrious names to the patient to expel the disease. In addition, several restrictions were observed and certain rituals were resorted to for obtaining relief from diseases. The attempts to 'transfer' the disease to other people or areas were also common. Simultaneously, people made offerings at Gurudwaras, temples and mosques and worshipped planets for divine intervention. In addition, to obtain cure from smallpox and cholera, the goddesses Sitala and Mari were also propitiated.[51]

Whether or not all the 'remedies' resorted to in the pre-colonial period were always effective, the available evidence suggests that the mortality from the epidemics in the centuries immediately preceding was perhaps not as large as under colonial rule.

III

More than forty million people are estimated to have died of malaria in the subcontinent during the nineteenth and twentieth centuries. Cholera is reported to have caused three million deaths from 1877 to 1916, the annual rate being more than 3.5 lakhs a year.[52] Smallpox took a toll of several million lives in the late nineteenth century, with an annual average of more than one lakh fatal cases. The plague caused over ten million deaths from 1896 to 1921.[53] In the short span of just one year the influenza epidemic

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[51] For details, see William Crooke, *An Introduction to the Popular Religion and Folklore of Northern India,* pp 41-42,86-87,94,106.

[52] David Arnold, *Colonizing the Body,* p164, 201.

[53] Major F. Norman White, *Twenty Years of Plague in India with Special Reference to the Outbreak of 1917-18, Punjab Government Civil Secretariat Proceedings, Home: Medical and Sanitary*, April 1919, Numbers 190-94 (cited hereafter as *Twenty Years of Plague in India*), p2.

claimed around twelve million lives.[54] Apparently, there was some connection between the large-scale mortality and the new situation.

Theoretically, the 'colonial situation' is visualized as a complex interplay of political, economic and cultural domination by an industrially developed European power over a technologically less developed society which provided raw materials for the metropolitan industry and markets for its produce.[55] The depletion of the natural resources, a concomitant of the 'colonial situation' seemed to be particularly conducive for widespread epidemics and large-scale mortality in the subcontinent. Cumulatively, the colonialisation of the Indian economy through increase in land revenue, changes in cropping pattern, ever increasing export of agricultural produce facilitated by the railway, and the destruction of traditional manufacturers led simultaneously to the general impoverishment of the peasantry and artisans. With the shortage of foodgrain, the per capita availability of food became less, and the poor in particular became more vulnerable to famines, diseases and epidemics.[56] As explained below at some length, the rail and

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[54] *Census of India 1921*, Volume XV for Punjab and Delhi, Civil and Military Gazette Press, Lahore 1923, p12. Also, I. D. Mills, Influenza Pandemic in India 1918-19, *IESHR*, Volume 23, Number1, 1986.

[55] For a detailed discussion on the colonial situation, see G. Balandier, 'The Colonial Situation: A Theoratical Approach,' in *Social Change: The Colonial Situation*, ed. Immanuel Wallerstein, John Wiley and Sons, New York, 1966, pp34-63.

[56] The prices of foodgrains in India rose about three times between 1850 and 1900. Irfan Habib, *Essays in Indian History: Towards a Marxist Perception*, Tulika Publications, New Delhi, 1998, p 333.

road networks, which served as the 'arteries' of the new order also facilitated the outbreak and spread of disease.[57]

At the same time, a new concept regarding the state's responsibility for the protection of the health and well being of its people was emerging in Britain during the nineteenth century. It took a concrete shape after the enactment of the Public Health Act of 1848 and subsequent establishment of the General Board of Health. In the early 1850s local bodies were set up in Great Britain for taking care of the matters pertaining to sanitation and public health.[58] These new concerns of the state gradually filtered down to India also.

Initially, however, the public health policy in India emerged out of the concern for improving the health of the British troops in India. Hospitals for the troops and certain medical institutions meant exclusively for the Europeans had come up in the early decades of the nineteenth century. By William Bentinck's time, the government intervention in the matters of health and sanitation began to be advocated.[59] With the takeover of the Empire by the Crown in 1858, the sphere of the public health policy got enlarged. Already, soon after annexation, the local committees had been created in the Punjab for improving the living conditions and

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[57] See chapter 1.

[58] The concept of public health had its roots in the Enlightenment, but it gained momentum in the Utilitarian era. It reflected the ideas of humanism and progress. For a discussion on Public Health in Britain, see John V. Pickstone, 'Dearth, Dirt and Fever Epidemics: Rewriting the History of British Public Health, 1780-1850', in *Epidemics and Ideas*, ed. Terence Ranger and Paul Slack, pp138-42.

[59] Anil Kumar, *Medicine and the Raj: British Medical Policy in India 1835-1911*, Sage Publications, New Delhi, 1998, pp 88-89.

sanitation in urban areas.[60] Conservancy and public health figure among the concerns of the town committees of Lahore, Amritsar, Jalandhar and other district headquarters in the early 1860's. In 1863, the Report of the Royal Army Sanitary Commission drew the attention of the provincial governments towards the unhealthy sanitary conditions in towns, which caused diseases and epidemics among the soldiers marching through or halting at any station. The Commission, therefore, proposed that sanitary commissioners should be appointed to investigate the outbreak of diseases, visit the affected areas, and collect statistics. Consequently, a sanitary commissioner was appointed in the Punjab in 1868.[61] The Commission also suggested that the provincial governments should set up municipalities for improving the sanitary condition of towns and cities.[62]

Under the Punjab Municipal Act of 1867, which was modelled on the Delhi Municipality, municipalities came up in the urban centres of the province in 1868 to look after water supply, lighting and sanitation.[63] In the 1880's, following Ripon's reforms, the financial and administrative responsibility in public health matters was placed with the provincial governments and the

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[60] C.f Anand Gauba, *Amritsar: A Study in Urban History (1840-1947)*, ABS Publications, Jalandhar, 1988, pp161-62. Mark Harrison, *Public Heath in British India: Anglo Indian Preventive Medicine 1859-1914*, Cambridge University Press, New Delhi, 1994, pp 61, 231-34.

[61] John Chandler Hume, ' Colonialism and Sanitary Medicine: The Development of Sanitary Health Policy in the Punjab, 1860 –1900, ' *Modern Asian Studies*, Volume 20, 1986, Cambridge University Press, Cambridge, p 709.

[62] Reeta Grewal, *Urbanisation in Colonial India: The Punjab Region*, Manohar, New Delhi, 1999 (forthcoming—seen with the authors courtesy) Chapter 7.

[63] Anand Gauba, *Amritsar: A Study in Urban History (1840-1947)*, pp161-62.

municipalities. Public health now comprehended matters of sanitation, conservancy, water supply, sewerage and drainage, maintenance of hospitals and dispensaries and vaccination. However, compared with other social concerns like education, public health was given a relatively low priority by the colonial administration. The municipal funds mainly came from octroi, which did not generate enough resources for the effective implementation of the new public health policy and further extension of public health measures.[64]

The British concentrated on providing the best of hygiene, sanitary and medical facilities to the military and civil population of their own race, followed by the troops in general. Therefore, in its actual working, the public health system reflected the priorities of the colonial government. In these special areas the essentials of the metropolitan sanitary science were applied to protect the residents from the effects of hot climate and dust and disease endemic in the areas of native concentration.[65] Thus, the imperial capitals, that is Simla and New Delhi, as well as the hill stations, cantonments and the civil lines, received the utmost priority of the Administration. These areas were followed by the other towns. The rural areas occupied the lowest priority in matters of sanitation.[66]

The Western medicine was the key component of the colonial public health policy. A formal decision to introduce its teaching was taken in 1835. This led to the marginalization of the

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[64] For an all India perspective see, Mark Harrison, *Public Heath in British India: Anglo Indian Preventive Medicine 1859-1914*.

[65] For a discussion see, Anil Kumar, *Medicine and the Raj: British Medical Policy in India 1835-1911*, p161.

[66] Thomas R. Metcalf, *Ideologies of the Raj*, Cambridge University Press, New Delhi, 1998, pp177-82.

traditional medical systems, and the indigenous practitioners began losing aristocratic patronage and public support among the emerging middle classes. However, after the experience of 1857-58 when the troops from the Punjab came to the rescue of the Empire, they got designated as the 'martial' races or castes who were favoured for recruitment. [67] The local *hakims* and *vaids* were trained in the rudiments of the Western medicine to cater to the health needs of the potential recruits in the army. This arrangement continued till 1889, when the indigenous practitioners were excluded from the government medical service under an all India shift in the policy clearly in favour of the Western medicine.[68]

The Western medical institutions were introduced in the Punjab in the first year of annexation. There were hospitals for the troops and those meant exclusively for the Europeans. The missionaries set up their hospitals and dispensaries mainly for the natives. In 1849, the government established civil hospitals at Amritsar, Jalandhar, Multan and Sialkot. In the 1850's, government dispensaries came up at many places including Rawalpindi, Peshawar, Amritsar, Bannu, Hazara, Sialkot, Dera Ismail Khan, Dera Ghazi Khan.[69] During the first three decades, the government

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[67] Under the 'martial castes' theory, the British maintained that the ethnic origins and the racial characteristics of the main groups of Punjabi recruits (Sikh Jats, Hindu Dogras and Muslims of the Salt Range) fitted them for military service. Consequently, the Punjab became the leading recruitment centre of the Indian army and by the outbreak of the First World War three- fifths of the British Indian troops came from this region. For details, see, Ian Talbot, *Punjab and the Raj 1849-1947*, Manohar, New Delhi, 1988, pp41-46.

[68] For a detailed discussion on the introduction of western science and medicine in India see, Anil Kumar, *Medicine and the Raj: British Medical Policy in India 1835-1911*, pp 45-48, 216-18.

[69] Based on the Gazetteers of the districts of Amritsar, Jalandhar, Ambala, Delhi, Dera Ghazi Khan, Multan, Rawalpindi, Bannu, Peshawar and Sialkot.

dispensaries were classified on the basis of their financial resources. In 1879, the medical institutions were reclassified on the basis of the number of beds. Those with forty or more beds were designated as civil hospitals. The first class dispensaries had twenty-four to forty beds, the second-class dispensaries had less than twenty-four beds, while the branch dispensaries had none.[70]

In 1886, medical institutions were broadly categorized as 'government' and 'aided' hospitals and dispensaries. Hospitals were now defined as those medical institutions, which had not less than forty beds and not less than twenty indoor patients daily. Government hospitals were of two kinds—provincial hospitals, which were controlled and supported by the provincial government; and the local hospitals, which were controlled and funded by the municipal committees and district boards. Below them were three grades of dispensaries—Class A had from twenty to forty beds and at least ten indoor patients daily; Class B had ten to twenty beds and at least three indoor patients daily; and Class C were the smallest. The 'aided' medical institutions included private charitable hospitals and dispensaries, which received grants from public funds. [71]

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[70] *Proceedings: Home*, Aug 1879, Serial Number 11, p 765. The first class dispensaries included those institutions where contribution of Rs 72 per mensem was guaranteed from the local source; the staff included a superintendent, a sub assistant surgeon and a compounder. The second class dispensaries included those institutions where a contribution of Rs 39 per mensem was ensured, its staff consisted of a superintendent, a native doctor and a compounder. The third class dispensaries which had guaranteed contribution of Rs 26 only, had a native doctor and a compounder each. These were situated at Delhi, Ambala, Amritsar, Rawalpindi, Multan, Dera Ismail Khan, Peshawar, Sirsa, Pind Dadan Khan, Jhang and Jalandhar.

[71] *Proceedings, Home: Medical and Sanitary*, May 1886, Serial Number 21, pp 48-50.

FIG ii - **FRAMEWORK TO HANDLE EPIDEMICS**

MEDICAL ADMINISTRATION

- Inspector General of Civil Hospitals
- Civil Surgeon
- Assistant Surgeon
- Sub-Assistant Surgeon
- Hospital Assistant

CIVIL ADMINISTRATION

- Commissioner
- Deputy Commissioner
- Extra Assistant Commissioner
- Tahsildar
- Naib Tahsildar

ADDITIONAL STAFF DURING THE PLAGUE

- Chief Plague Medical Officer
- Senior Commissioned Medical Officer
- Medical Officer

- Kanungo
- Patwari

SUPPLEMENTED BY

- Missionaries
- Indigenous Practitioners
- Government Pensioners

The subordinate medical service in the Punjab was recruited from the Calcutta College until 1860 when a Medical School was set up at Lahore. In 1870, its status was raised to that of a college.[72] This college, in addition to the normal medical course, offered a licentiate course of four years duration for indigenous medical service. It thus, produced qualified *vaids* and *hakims* along with civil and military native doctors and physicians. [73]

The hospitals were placed under the inspector general of prisons until 1880, when, the civil medical department was organized. This department was now placed under an inspector general of civil hospitals. The civil surgeon was the chief medical officer who supervised the functioning of the dispensaries of the district. He also supervised the work carried out by the assistant surgeons and hospital assistants. The sub-assistant surgeons looked after the medical institutions at the sub-divisional headquarters. The hospital assistants looked after the functioning of the minor hospitals and dispensaries in the different towns. During epidemic situations, the general administration was required to support the health authorities. Thus, the deputy commissioner at the district level and assistant commissioner, tahsildars and naib tahsildars at the tahsil level worked in association with the medical staff.[74] The services of pensioned subordinates and missionary doctors were also used.[75]

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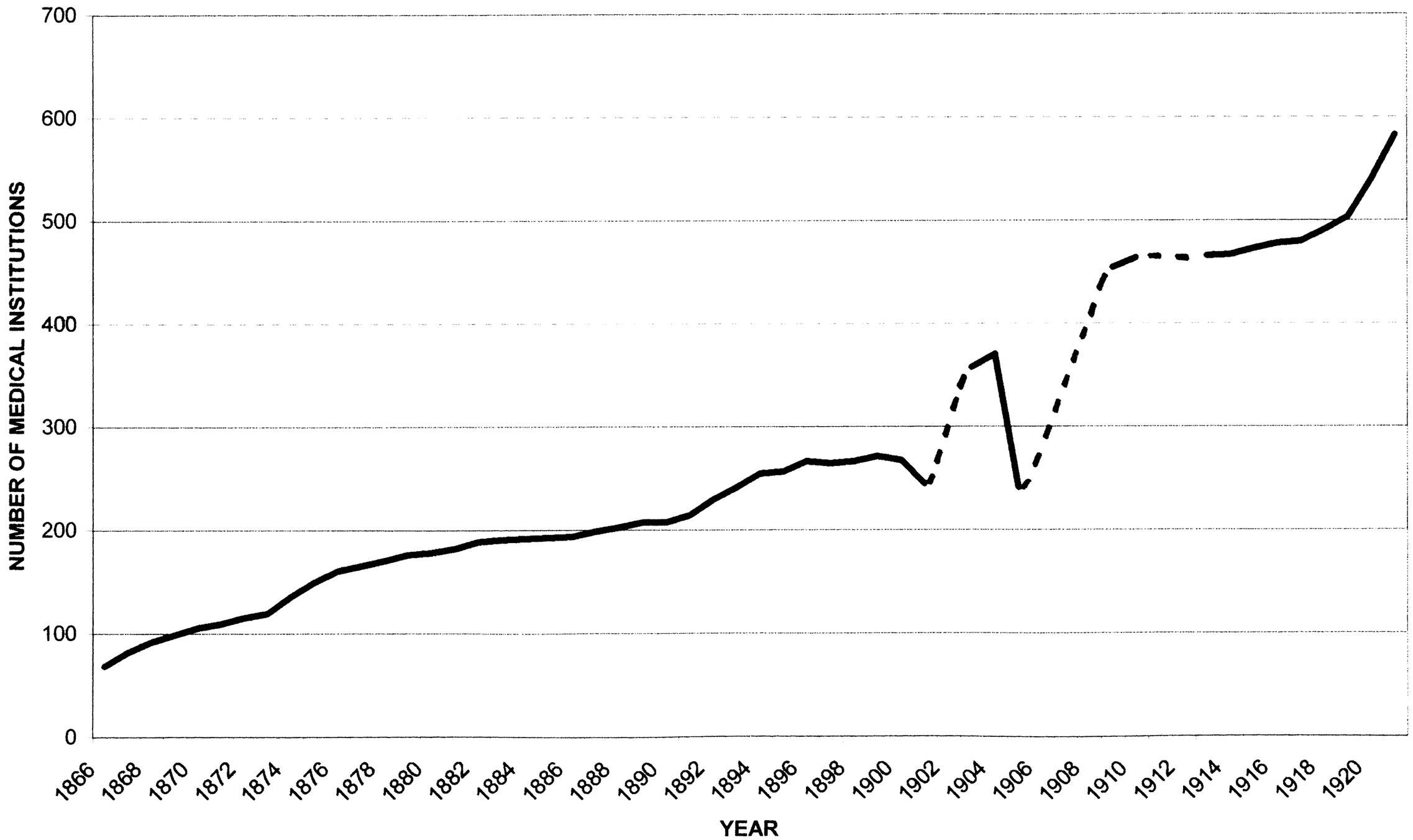
[72] *Imperial Gazetteer, Provincial Series, Punjab,* Volume I, p 145.

[73] Anil Kumar, *Medicine and the Raj: British Medical Policy in India 1835-1911*, pp 45-46.

[74] *Imperial Gazetteer, Provincial Series, Punjab,* Volume 1,pp 98-99, 144-45.

[75] Anil Kumar, *Medicine and the Raj: British Medical Policy in India 1835-1911*,p 99.

FIG iii - NUMBER OF MEDICAL INSTITUTIONS 1866-1921



The degree of involvement of the general administrative staff varied according to the intensity of particular epidemics and scale of mortality. The people nevertheless had limited access to the medical facilities. At the end of 1866, there were sixty-nine dispensaries in the Punjab. Their number rose to 267 in 1898 and to 504 at the end of 1919.[76] Despite an increase in their numbers in 1912, there was only one dispensary for 43,000 inhabitants,[77] and by the end of 1919, there was one dispensary for 40,000 persons.[78] The sanitary commissioner attributed this to the lack of funds and admitted that the medical facilities for the public were insufficient: 'In parts of the Punjab, the medical needs of the people are insufficiently met owing to the scantiness of the dispensaries in proportion to the population'.[79] The administration was scarcely in a position to handle epidemics.

IV

Epidemics have been studied from different perspectives. Among the general studies in the world context an important early work is by C. E. A. Winslow (1952) who gives a descriptive account of epidemics of cholera, plague, typhus and malaria in terms of their

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[76] *Proceedings, Home: Medical and Sanitary*, July 1902, Number 16-17, p1. Also, *Proceedings, Home: Medical and Sanitary*, September 1920, Number 96, p29.

[77] *Proceedings, Home: Medical and Sanitary*, July 1913, Number 60-62, p1. The Budhlada dispensary accommodated an average of six and a half persons per bed while Tohana could accommodate an average of five patients per bed.

[78] *Proceedings, Home: Medical and Sanitary*, September 1920, Number 96, p29.

[79] *Proceedings, Home: Medical and Sanitary*, July 1902, Number 16-17, p1.

outbreak, etiology, treatment and impact.[80] G. Melvyn Howe (1972) demonstrates the inter-relationships between people, environment and disease in Britain over time.[81] William H. McNeil (1977) discusses the role of micro parasites in the outbreak of the plague, cholera, smallpox and typhus fever contracted by the ape man as well as the hunter and food producer, and traces the evolution of preventive measures. He also notices the subsequent rise of new infections and diseases due to transoceanic exchanges and invasions.[82] In the context of the outbreak of malaria in the nineteenth and twentieth centuries in India, Ceylon, Malaya and Mauritius, Gordon Harrison (1978) studies the endeavours of scientists like Laveran and Koch against malaria.[83] More recently, Christopher Wills (1996) has studied the origin, causes and treatment of the three dreadful diseases—the plague, cholera and AIDS, also dealing with the growing concern of the masses with the public health measures.[84] However, in all these works, important in themselves, the authors have relied on secondary sources, particularly medical journals. Their treatment, by and

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[80] C. E. A. Winslow, *Man and Epidemics*, Princeton University Press, Princeton, 1952.

[81] G. Melvyn Howe, *Man, Environment and Disease in Britain*, Barnes and Noble Books, New York, 1972.

[82] William H. Mc Neil, *Plagues and Peoples*, Camelot Press Limited, Southampton, 1977.

[83] Gordon Harrison, *Mosquitoes, Malaria and Man: A History of Hostilities since 1880,* John Murray, London, 1978. Another work of this nature deals with the discovery of the smallpox vaccine by Jenner. See Paul Saunders, *Edward Jenner: The Cheltenham Years 1795-1823,* University Press of New England, London, 1982.

[84] Christopher Wills, *Plagues: Their Origin, History and Failure*, Harper Collins Publishers, Glasgow, 1996.

large, is descriptive rather than analytical. It leaves out the political context and the social and economic consequences of epidemics, which are the primary concern of the historian.

The social history of epidemics has lately received some attention in scholarly essays. In the global context mention may be made of a collection of essays, entitled *Epidemics and Ideas: Essays on the Historical Perception of Pestilence* (1995) that deals with various epidemics over time in different parts of the world.[85] These essays show the manner in which epidemics were interpreted and understood and the ways in which they influenced the prevalent ideologies. In the first few essays, the authors study the influence of epidemics on intellectual thought and writings in classical Athens, early medieval Europe and the Islamic world. James Longrigg examines Thucydides' treatment of the Athenian plague. With reference to the malaria epidemic in Paris in the fifth and sixth centuries, Peregrine Hordan studies of the link between epidemics, miracles and public spiritedness. Lawrence I. Conrad focuses on the challenge posed by the plague epidemics to the Islamic thinking; notably the plague as a form of divine mercy and martyrdom for believers, and chastisement for non-believers.

A few essays in this collection deal with the management of epidemics, people's responses and the evolution of the concept of public health. They also deal with social prejudices impeding the work done by the authorities to combat the diseases. The poor were stigmatised as the carriers of the disease. In his study of early modern Italy, Brian Pullan notices the three contrasting roles assigned to the poor—as bearers of the plague, as victims of the

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[85] Terence Ranger and Paul Slack, ed. *Epidemics and Ideas: Essays on the Historical Perception of Pestilence*, Cambridge University Press, Cambridge, 1995.

plague and as beneficiaries of the plague because it is believed to have generated new forms of employment and redistribution of wealth in favour of the poor. John V. Pickstone studies the fever epidemics in Britain from 1780 to 1850 and brings the conflict between the contemporary medical attitudes and theories and the rise of Chadwick's ideas in the1840s advocating public health schemes to prevent outbreak of diseases. Richard J. Evans analyses the ability of the European state structures to adapt to the challenges posed by the cholera epidemic in the nineteenth century. He considers the riots and the disturbances as forms of reaction to strict governmental control.

Some essays in this volume study epidemic diseases outside Europe, in India and Africa, also dwelling on the response of the people to epidemics and the measures adopted by the colonial states. Terence Ranger highlights the social tensions arising in the wake of the smallpox and influenza epidemics in South Africa. With reference to syphilis, Megan Vaughan studies the dilemmas of the colonial rule and the tensions between the Government Medical Officers and Missionaries in Uganda. This collection throws up useful ideas and insights for the study of social history of epidemics, but barring Rajnarayan Chandavarkar's essay on the origin, spread and handling of the plague in the Bombay Presidency, no other essay covers an epidemic that broke out in India.

For a more specific treatment of epidemics in the Indian context, we may turn to a limited but significant set of studies. Mention may first of all be made of the pioneering contributions of David Arnold in this field (1993). He deals with the political and cultural problems in a colonised society as reflected in medical practices and manifested in varying perceptions and responses of

the people to epidemic diseases.[86] Arnold studies the contexts in which Western ideas and practices gained acceptance among the Indians before 1914. He focuses on the three recurrent epidemics—smallpox, cholera and the plague in terms of their origin, spread, mortality as well as the state intervention and public response. Arnold studies the manner in which epidemics hastened the process of the acceptance of Western medicine. He brings out how the state-centred system of scientific knowledge and power was created despite the failure of the Western medicine to make a transition from state medicine to public health. The author makes use of a large number of contemporary sources like *Proceedings of the Home Department, Annual Administrative Reports, Imperial Gazetteer of India, 1907, and Native Newspaper Reports*. In an earlier essay (1987), Arnold studies the complex interplay of coercion and resistance and cooperation and hegemony during the plague epidemic in the Bombay Presidency.[87] In a recent work (2000) he brings out the relationship between Indian and Western science, the nature of science and technology under the Company, the creation of state scientific services and the rise of Indian scientific community.[88] The author argues that there was no unidirectional process of scientific and technological transfer but a series of cross-cultural exchanges. However, the empirical bases

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[86] David Arnold, *Colonizing the Body: State Medicine and Epidemic Disease in India*, Oxford University Press, New Delhi, 1993.

[87] David Arnold, 'Touching the Body: Perspectives on Indian Plague 1896-1900', *Subaltern Studies V*, ed. Ranajit Guha, Oxford University Press, Delhi, 1987.

[88] David Arnold, *Science, Technology and Medicine in Colonial India*, Cambridge University Press, Cambridge, 2000.

of Arnold's valuable works are confined to Western and Eastern India.

In his study of public health, Mark Harrison (1994) discusses the purpose, nature and political significance of colonial medical intervention.[89] He examines the European attitude towards the natives and the way in which it was reflected in the medical policy. He also throws light on the effects of quarantine on colonial trade and pilgrimage to Mecca. However, the effects of the measures taken to combat different epidemics have not been studied by the author.

In a full length study of *Imperialism and Medicine in Bengal* (1991) Poonam Bala studies the relationship between the indigenous and Western systems of medicine.[90] She notices that till 1860 there was a peaceful co-existence between the two systems. Subsequently, till the end of the century, there emerged considerable tension between the two systems due to professionalisation of medicine and standardisation of drugs in Britain. From 1900 onwards, the Western medicine posed a serious challenge to indigenous medicine. She emphasises that the objective of the public health policy was primarily to keep the Europeans and the army healthy. She notices that due to this limited concern and lack of sensitivity to social conditions, the public health policies could not be implemented successfully.

A somewhat similar concern is evident in *Medicine and the Raj* by Anil Kumar (1998) who traces the introduction and spread of Western medical science and education, including homeopathy,

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[89] Mark Harrison, *Public Heath in British India: Anglo Indian Preventive Medicine 1859-1914*, Cambridge University Press, New Delhi, 1994.

[90] Poonam Bala, *Imperialism and Medicine in Bengal: A Socio-Historical Perspective*, Sage Publications, New Delhi, 1991.

in India during the colonial period.[91] While studying the growth of hospitals in India, he maintains that these catered primarily to the needs of the Europeans. The author reflects on the underlying motives of the British medical policy and notices the subservience of medical science to politico-military needs of the Empire. He points out to the growing discrimination faced by the indigenous medical men in various spheres as an outcome of this situation. Like Poonam Bala, Anil Kumar too focuses on the British medical policy in Bengal. However, the role of the state in combating epidemics, let alone examining the bearing of the governmental measures on the general population is outside their purview.

Notice may also be taken of some short studies of the cholera and influenza epidemics. Ira Klein (1980) discusses the controversies that existed in the scientific circles regarding the causal agent of cholera.[92] She shows how the anti-cholera struggle in India was linked to the scientists' attempts to comprehend the origin and treatment of the disease. In another article (1994), Klein traces the increased incidence of the disease during the century of the colonial control from 1850 to1950 to the environmental decay stimulated by material changes and 'development'.[93] I. D. Mills (1986) focuses on the genesis and dissemination of the influenza pandemic of 1918-19 in India.[94] He looks at the Indian situation, particularly in the Bombay Presidency, with reference to the

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[91] Anil Kumar, *Medicine and the Raj: British Medical Policy in India 1835-1911*, Sage Publications, New Delhi, 1998.

[92] Ira Klein,' Cholera; Theory and Treatment in the Nineteenth Century India', *Journal of Indian History*, Volume LVIII, Part I-III, 1980.

[93] Ira Klein, 'Imperialism, Ecology and Disease: Cholera in India 1850-1950', *IESHR*, Volume 31, Number 4, 1994.

[94] I. D. Mills, 'Influenza Pandemic in India 1918-19', *IESHR*, Volume 23, Number 1, 1986.

outbreak of the epidemic on world scale. He relates the spread of the disease to the movement of the troops and postal peons besides the panic migration of the sick, but does not take note of the relief work carried out by the state. Moreover, the author in his analysis of male and female mortality in different age groups and its repercussions on fertility resorts to extrapolation, which discounts the reliability of data.

A recent collection of essays (2001) on *Disease and Medicine in India* deals with a variety of themes from the earliest to recent times.[95] The essays by Raj Sekhar Babu and Sunitha B. Nair analyse the role of the state machinery and Christian missionaries in promoting Western medicine and trace the process of the consequent marginalisation of the indigenous medical practices in the Madras Presidency and Travancore state. Sujata Mukherjee studies the changes in the perspectives on health issues in colonial India, with special reference to women and children, and shifts in the nature of imperial medical intervention concerning them. The papers by Mridula Ramanna and Amit Mishra study the reactions of the people towards Western medicine and Gandhi's reaction towards public health issues including sanitation and infectious diseases.

However, only a few essays in this collection focus on the outbreak of epidemics, their causes and how they were handled. Ishrat Alam studies smallpox and its treatment in pre-modern India by analysing Baldaeus' account of the goddess of smallpox in the Malabar region. Harish Naraindas evaluates the eighteenth century theory and therapeutics regarding smallpox as understood in India and Britain. Ihtesham Kazi studies the environmental factors

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[95] Deepak Kumar (ed.), *Disease and Medicine in India: A Historical Overview*, Tulika Books, New Delhi, 2001.

leading to the epidemics of malaria. He considers ecological disturbances caused by the expansion of communication through roads and railways and the construction of road and rail embankments as the primary causes for creating conditions conducive for malaria outbreaks. With reference to Bombay, Simkie Sarkar also considers various construction activities like Colaba Causeway, Dockworks and reclamation schemes that increased the incidence of malaria, and discusses the different methods to handle the disease in its epidemic form. Dhrub Kumar Singh, while studying the prevalent theories regarding the cause of cholera, brings out mutual contradictions, both in the causes and in the modes of treatment. However, none of these essays focus on epidemics in the Punjab.

Despite their limitations of scope and sources, the works mentioned above constitute the broad historiographical context for the present endeavour, at least in terms of the questions asked. However, there is no serious study directly of the diseases and epidemics within the specificities of the Punjab region.

Chapter 1

PATTERN OF EPIDEMICS IN THE COLONIAL PUNJAB

In the backdrop of a series of epidemics breaking out in British India at regular intervals, and claiming a large number of lives, the fevers in the Punjab accounted for 2,32,82,935 deaths, whereas the plague claimed 34,75,066 victims, smallpox 8,50,591 lives, and 3,57,260 perished of cholera in the province.[1] The mortality rate in the Punjab was the highest for the plague and the third highest during the influenza epidemic. The average annual deaths from malaria, smallpox, and cholera also remained comparatively high in this region. In the overall context of colonial rule, the chapter attempts to discern the broad pattern of epidemics in the Punjab in terms of outbreaks, mortality and spread and in relation to the locale and season. Some kind of pattern is also implicit in the attitudes of the district administrators accounting for the eruption of epidemics.

I

'Fever epidemics' figure most often in the medical and sanitation records of the period. Given the state of medical knowledge during the early decades after annexation, the tendency initially was to club together different types of fevers. It was in the 1880s that a distinction began to be made according to their nature. Among fevers, malaria and influenza assumed epidemic forms.

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[1] Major F. Norman White, *Twenty Years of Plague in India with Special Reference to the Outbreak of 1917-18, Punjab Government Civil Secretariat Proceedings, Home: Medical and Sanitary*,(cited hereafter as *Twenty Years of the Plague in India*) April 1919, Numbers 190-94, p 2. Also, *Census of India, 1951*, Volume I, India, Part I-B, Government of India Press, New Delhi, 1953, pp265-68.

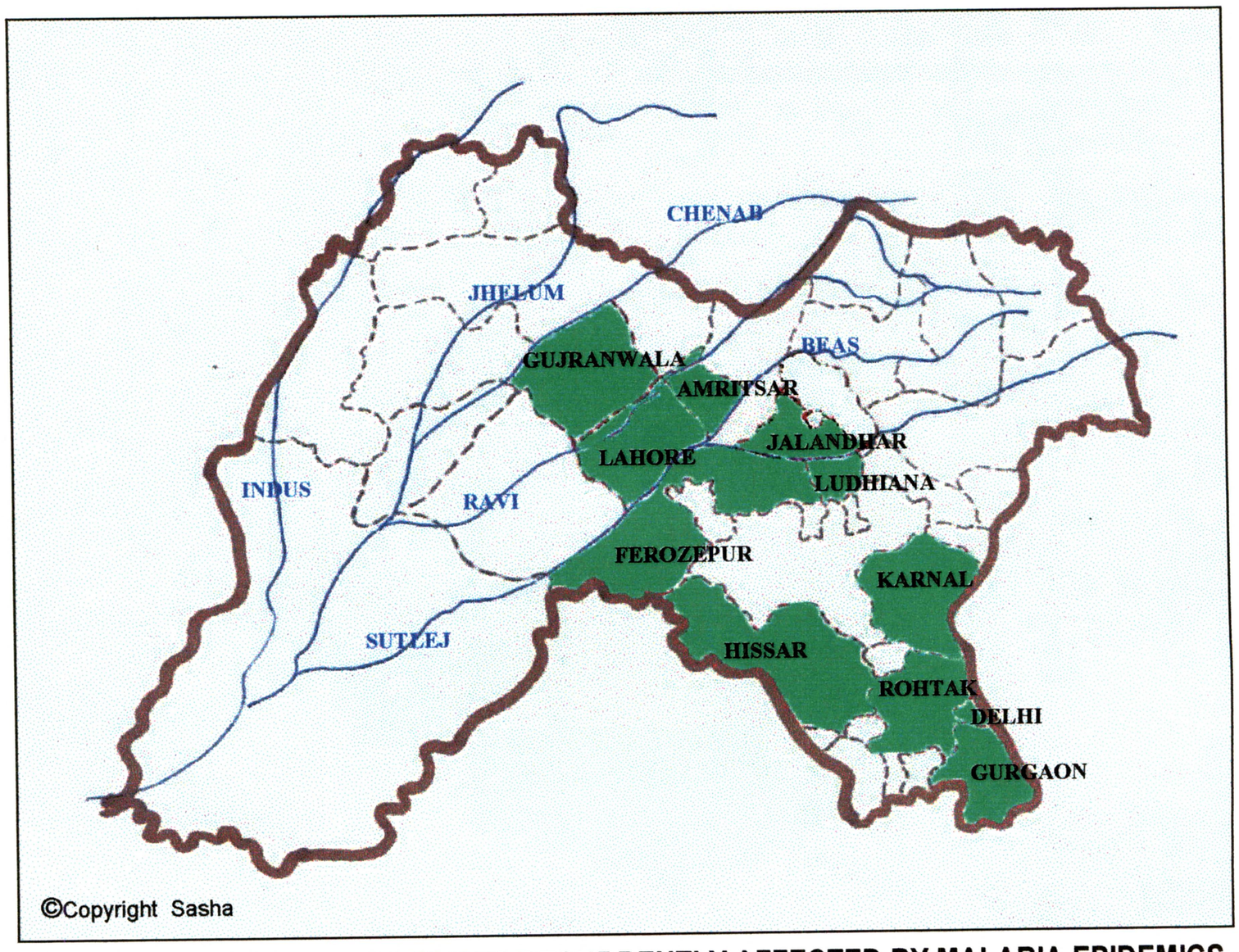

FIG 1.1 PUNJAB : DISTRICTS RECURRENTLY AFFECTED BY MALARIA EPIDEMICS

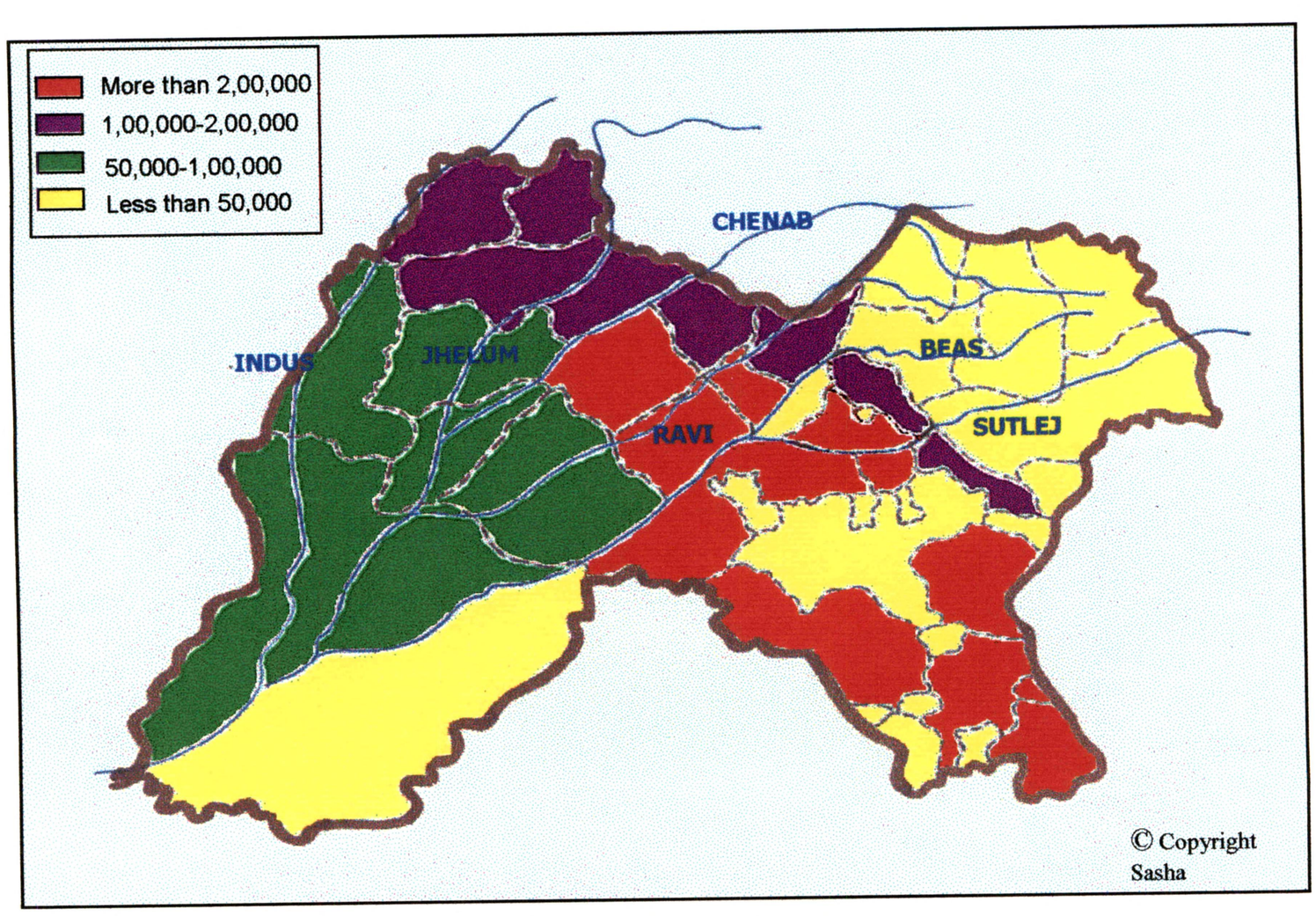

FIG 1.2 DEATHS CAUSED BY MALARIA : 1901-1910

Fifteen major epidemics of malaria broke out in the Punjab during 1850-1947, claiming 51,77,407 lives. The ravages caused by malaria find mention in both the official and non-official sources. During the malaria epidemic of 1877-78, the Cantonment of Ferozepur gave a deserted look. The English residents could not procure the necessities of life and no servants were available for menial work.[2] 'In 1891, several square miles of overripe rice fields could be seen as the villagers were too weak to reap them. In towns, no wages could be earned as the bread winners were prostrated.'[3] The *Khalsa Advocate* commented on the 1908 epidemic: 'Malaria is so depressing in its outset, so devitalising in its effect, so disorganising in its result to the whole system, is (sic) better understood than it used to be, it is still unhappily exceedingly prevalent and is likely to continue until the conditions which produce it have been banished.' [4]

The malaria epidemics affected twenty-five districts of the province. From 1901 to 1911, the worst affected districts were Hissar, Rohtak, Gurgaon, Delhi, Karnal, Jalandhar, Ludhiana, Ferozepur, Lahore, Amritsar, and Gujranwala where malaria is reported to have claimed 22,03,576 lives. Another 12,65,929 people succumbed to the disease in the districts of Ambala, Hoshiarpur, Gurdaspur, Sialkot, Gujrat, Jhelum and Rawalpindi. This was followed by the toll of 8,78,763 people in the north-west

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[2] *Report on the Administration of the Punjab and its Dependencies for the Year 1878-79*, (cited hereafter as *Administration Report*) Punjab Government Civil Secretariat Press, Lahore, 1879, pp43-44.

[3] *Punjab Government Civil Secretariat Proceedings, Home: Medical and Sanitary* (cited here after as *Proceedings, Home: Medical and Sanitary*), June 1891, Serial Number 30, p34.

[4] *Khalsa Advocate*, March 13, 1909.

dry area comprising of Montgomery, Shahpur, Lyallpur, Jhang, Multan, Mianwali, Muzaffargarh and Dera Ghazi Khan. There were relatively few casualties in the Himalayan region where only 1,55,493 deaths were reported during the decade.

A variant of fever, the influenza epidemic coincided with the plague. In 1918 itself, the influenza claimed 8,98,947 lives in the Punjab. The death rate per mille of the population was 45.4. As shown in the table below, the Punjab was next only to the Central Provinces and Bombay and was closely followed by the United Provinces.[5]

Table 1.1: Deaths caused by influenza in 1918 in different provinces.

Province	Number of Deaths	Death rate per mille
Bengal	386572	8.5
Bihar and Orissa	709976	20.5
Bombay	**1059497**	**54.9**
Central Provinces	**924949**	**66.4**
Madras	682169	16.7
Punjab	**898947**	**45.4**
United Provinces	**2034257**	**43.4**

The initial cases of the influenza were reported from Lahore, Simla and Amritsar. The first phase assumed a virulent form in June, reached its peak in July, then dropped, though sporadic cases continued to occur.[6] The second phase began in September

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[5] *Census of India 1921*, Volume XV for Punjab and Delhi, Civil and Military Gazette Press, Lahore 1923, p12. Also, *Proceedings, Home: Medical and Sanitary*, March 1919, Serial Number 93, pp179-84.

[6] *Proceedings, Home: Medical and Sanitary*, February 1919, Serial Number 93, p94.

and reached its peak in November.[7] It started from the south-western districts, then spread to Multan and Dera Ghazi Khan, and by October, it engulfed all the districts from 'Gurgaon to Campbellpore' and 'Simla to Multan.' [8] The worst affected districts were in the Haryana area: at Gurgaon with 63,074 deaths, Rohtak with 61,049 deaths, Karnal with 52,000 deaths and Hissar with 44,327 deaths.[9] While describing the ravages of the influenza epidemic, and the general helplessness of those affected, the *Khalsa Advocate* wrote: 'Death, the oldest enemy of man found its ally in influenza. From one end of the land to another, it prevailed in epidemic form. In the Punjab, wherever there is some man, it is present. When a person gets it, he has nothing but to wait and die.'[10]

Smallpox accounted for 8,50,591 deaths in the Punjab from 1868 to 1947. One in every ten cases of smallpox turned out to be fatal in the Punjab region, and of those who survived the attack, one-fourth were disfigured for life. There was a Pashto saying that, 'every child must get it, until he gets over the smallpox, parents do not count their child their own.'[11] The available figures suggest that smallpox caused the worst havoc between 1875 and 1919, claiming 2,37,853 lives. During this period nine major epidemics broke out. From 1875 to 1904, average annual smallpox deaths

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[7] *Census of India, 1921*, pp12-13.

[8] *Proceedings, Home: Medical and Sanitary*, March 1919, Serial Number 93, p180.

[9] *Proceedings, Home: Medical and Sanitary*, March 1919, Serial Number 93, p184.

[10] *Khalsa Advocate*, October 29, 1918.

[11] *Gazetteer of Bannu District, 1883-84*, p14.

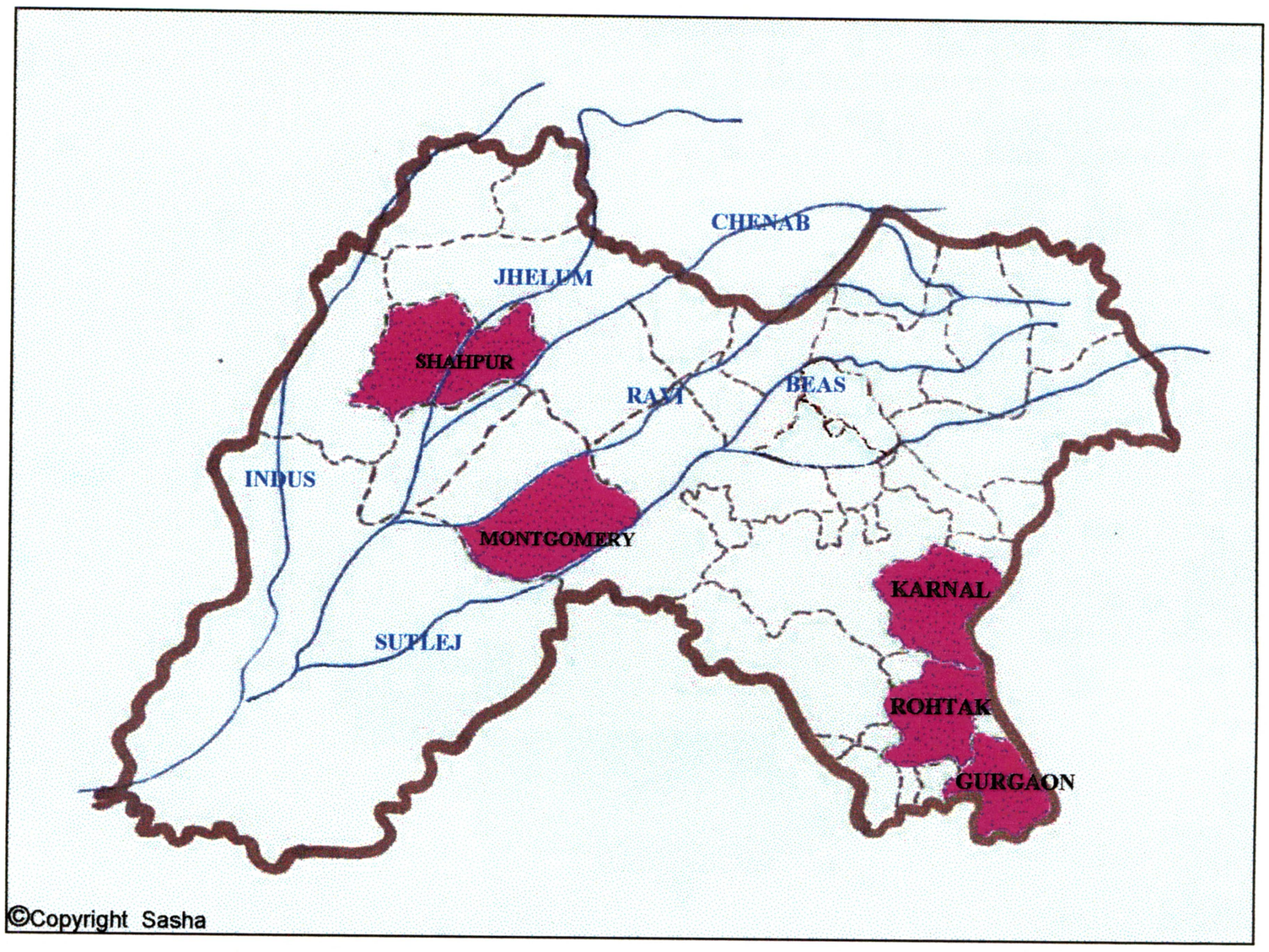

FIG 1.3 PUNJAB : DISTRICTS RECURRENTLY AFFECTED BY SMALLPOX EPIDEMICS

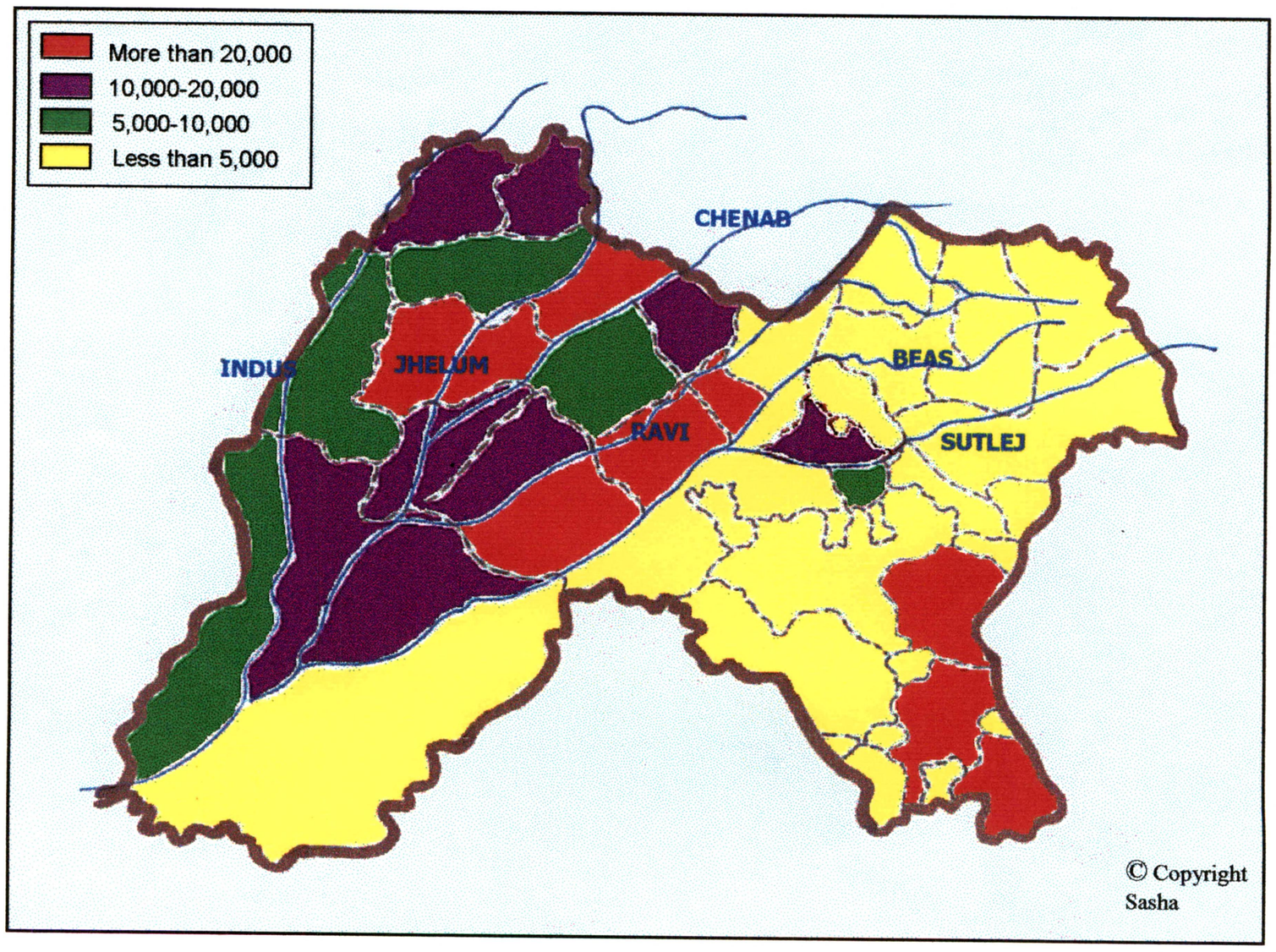

FIG 1.4 DEATHS CAUSED BY SMALLPOX : 1878-1910

per million in the Punjab were 709, which was higher than most of the other provinces as shown in the table: [12]

Table 1.2: Average smallpox deaths per million.

Year	Bengal	NWP	Punjab	Bombay	CP	Madras	British India
1875-79	196	1704	**1430**	590	1848	1428	976
1880-84	280	1782	550	376	490	1000	804
1885-89	98	482	**632**	218	856	860	410
1890-94	208	440	334	152	158	960	430
1895-99	204	580	**774**	172	420	438	432
1900-04	438	152	**532**	262	440	600	392
Average	237	856	**709**	295	702	881	574

As a whole, twenty-seven districts of the region were affected by smallpox. The worst affected districts were mainly in the north-west and south-east where vaccination was rather unpopular. The close proximity of Karnal and Rohtak to the principal shrine of the goddess Sitala in Gurgaon resulted in the people preferring to visit the shrine to obtain relief rather than getting themselves vaccinated. In the districts of Rawalpindi, Jhang, Shahpur, Bannu, Dera Ismail Khan, Peshawar and Montgomery, people preferred recourse to variolation rather than vaccination.[13]

Twelve major cholera epidemics broke out in the Punjab between 1866 and 1921, affecting all areas of the region and killing 2,49,050 people. The districts affected most by cholera were

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[12] David Arnold, *Colonizing the Body: State Medicine and Epidemic Disease in the Nineteenth Century India*, Oxford University Press, New Delhi, 1993, pp118-19.

[13] *Proceedings, Home: Medical and Sanitary*, December 1887, Serial Number 24, pp131-36. For variolation, see 'Introduction', pp

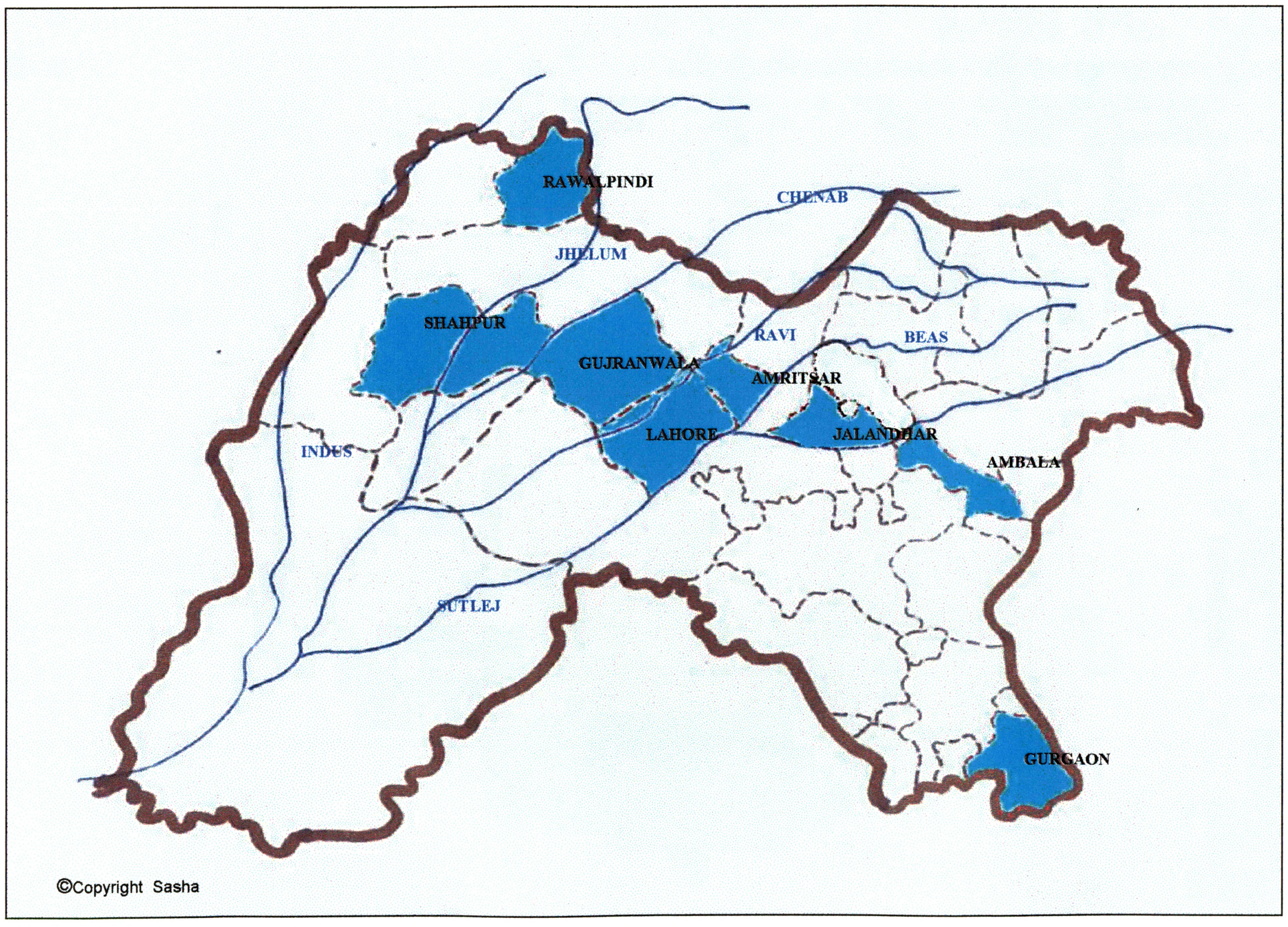

FIG. 1.5 PUNJAB : DISTRICTS RECURRENTLY AFFECTED BY CHOLERA EPIDEMICS

Gujranwala, Hazara, Rawalpindi, Ambala, Gurgaon, Lahore, Jalandhar, Peshawar, Amritsar and Shahpur. The recurrence of cholera in these districts was attributed by administrators to the inadequate and contaminated water supply, compounded as it was by the frequency of local fairs.[14]

II

In intensity, mortality and dreadedness, the plague surpassed all other epidemics in the Punjab. The first case of the plague occurred in Khatkar Kalan village in Banga circle on October 17, 1897. From October 1897 to February 1898, the plague had affected seven villages in Jalandhar district and five in Hoshiarpur district. But in March 1898 alone, it spread to twenty-four villages in Jalandhar district and four in Hoshiarpur district. In the following month, twenty-eight villages in Jalandhar district and four in Hoshiarpur district became infected. In August 1898, no new village got infected and the administrators felt encouraged to think that the epidemic had almost ceased. However, on October 1, 1898, a case was detected at Kariam and Mazara Dingrian in Hoshiarpur district. With this, the 'second season of the epidemic' was said to have commenced which lasted till September 1899. As it had happened earlier in June 1898, the disease started disappearing and very few cases were reported from July to September. In October 1899, it reappeared at Sahiba and soon engulfed many villages. In the terminology of the district

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[14] *Proceedings, Home*, October 1876, Serial Number 8, pp 660-61. Also, *Proceedings, Home: Medical and Sanitary*, June 1877, Serial Number 9, p 440; *Punjab Government Civil Secretariat Proceedings, Home: Jails* (cited here after as *Proceedings, Home: Jails*) May 1889, Serial Number 26, pp 45-47, *Gazetteer of Shahpur District, 1897*, p14.

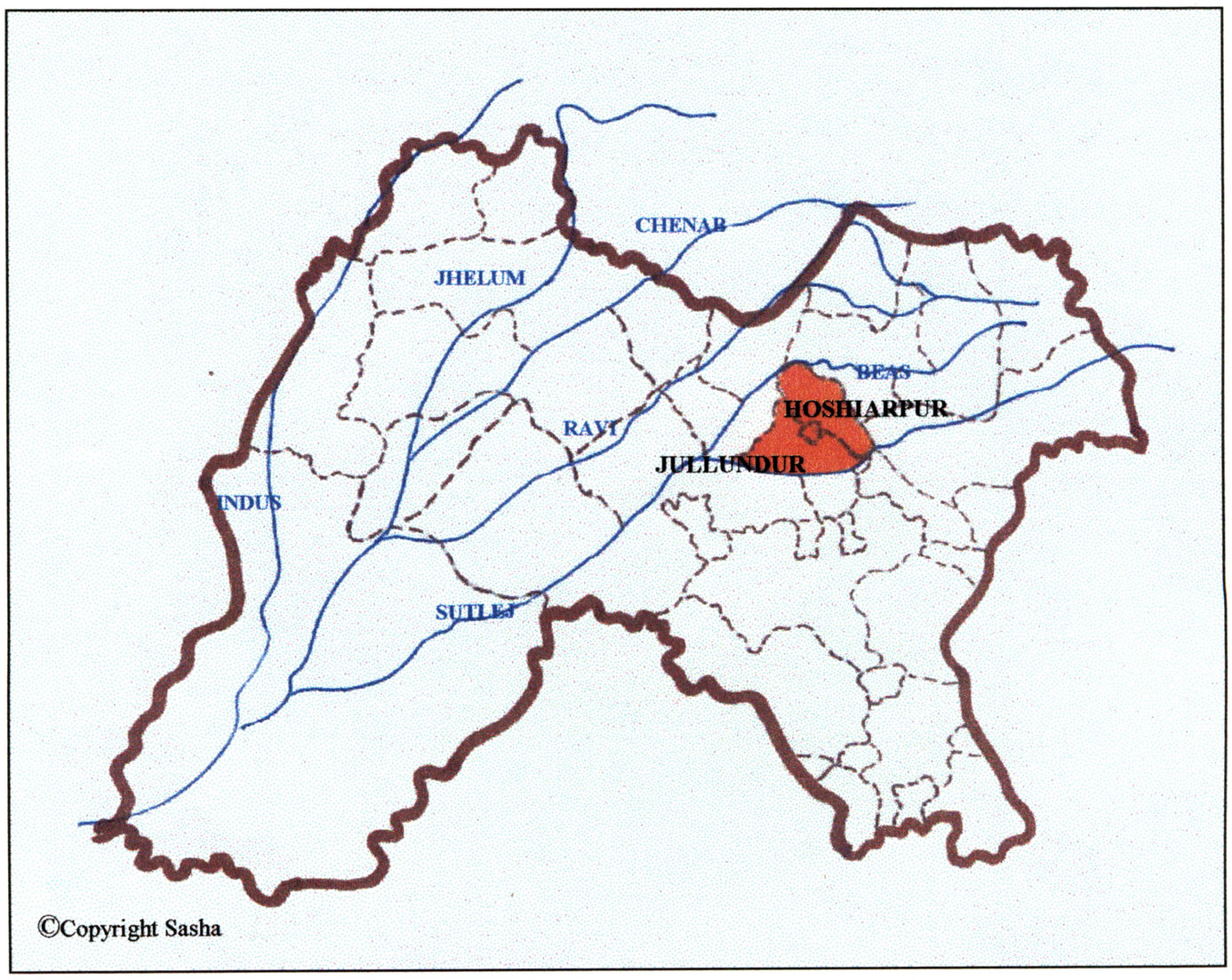

FIG 1.6 PUNJAB : PLAGUE INFESTED AREAS -1897-1900

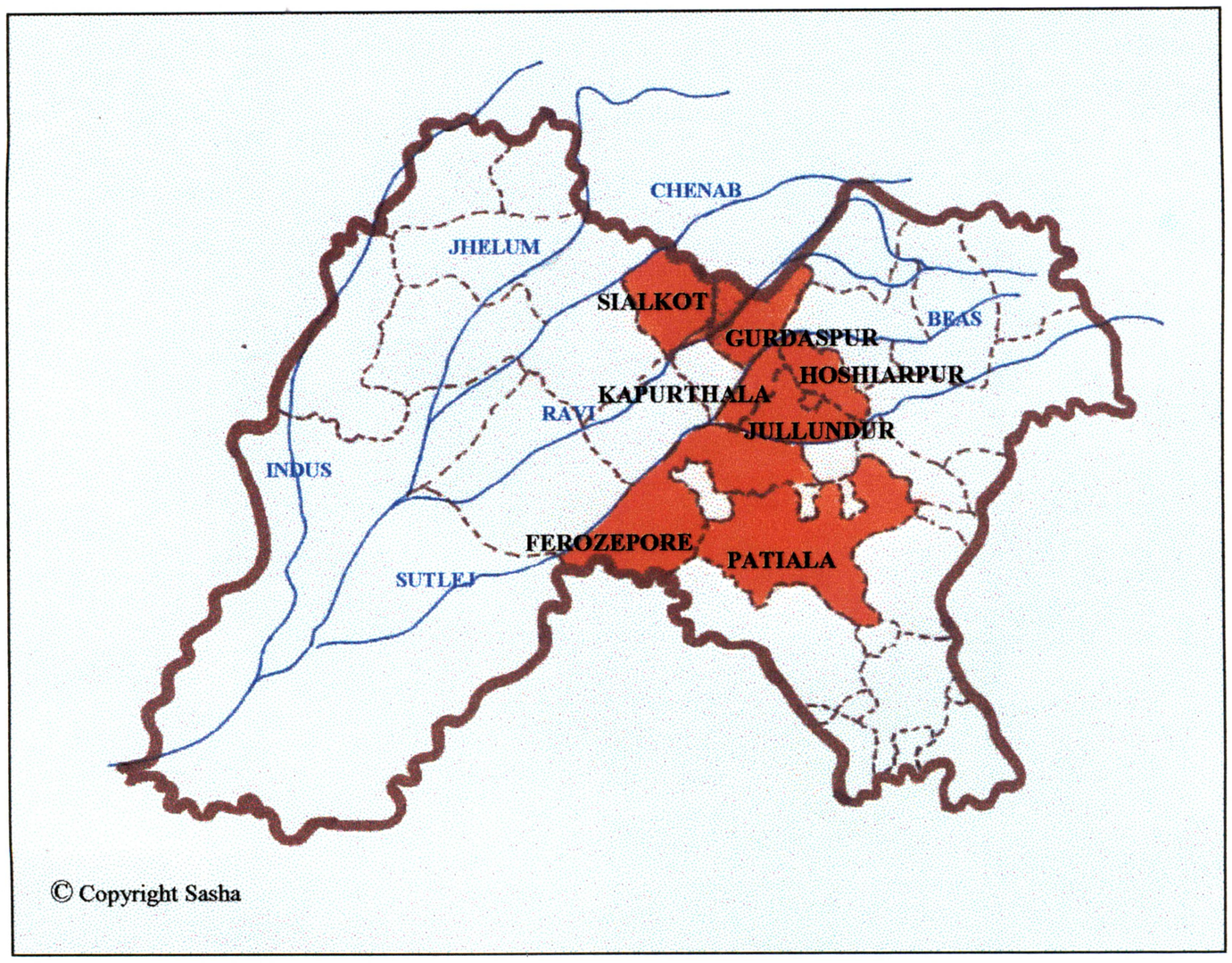

FIG 1.7 PUNJAB : PLAGUE INFESTED AREAS - 1901

administrators, the period from October 1899 to September 1900 constituted the 'third season' of the plague.[15] The ignorance regarding the cause and mode of spread of the disease, compounded with the initially complacent attitude of the administrators, did not help in arresting the plague. Thus, limited to Jalandhar and Hoshiarpur districts to begin with,[16] the plague spread to Patiala state by 1900.[17] In 1901, the epidemic affected 373 villages in seven districts, extending as far as to Ferozepur, Gurdaspur and Sialkot.[18] By 1901-02, it engulfed sixteen districts in all the five divisions of the province. By the end of 1902-03, twenty-one districts had been affected.[19] Simla could remain free of the plague until April 1904 when a woman passenger on the Kalka-Simla highway suffering from the plague was discovered and

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[15] For further detail on the outbreak of the plague, see the authors M. Phil dissertation, 'Social History of the Plague with Special Reference to Medieval and Modern Punjab,' Punjab University , Chandigarh, 1999.

Major E. Inglis, *Report on the Outbreak of the Plague in Jullundur And Hoshiarpur Districts of the Punjab in 1897-98* (cited hereafter as *Plague in Jullundur and Hoshiarpur 1897-98*), Punjab Government Press, Lahore 1898, PSA, pp1-2, 15.

[16] Ibid., p2. In 1897-98, ninety-one villages in Jalandhar and Hoshiarpur Districts got infected. In 1898-99, thirty villages got infected, and in 1899-1900 seventy-eight villages got infected.

[17] *Proceedings, Home: Medical and Sanitary,* July 1908, Number 10-11, pp5-8. In March 1900 it was discovered at Haidon in Patiala territory.

[18] *The Tribune*, March 24, 1904, pp 2-3. Also *Proceedings, Home: Medical and Sanitary*, October 1905, Number 13-21, pp 5-8. By the end of 1901, 14,573 cases were reported with 894 deaths. Villages in Jammu and Kapurthala also got infected.

[19] *The Tribune*, March 24, 1904, pp2-3. By the end of 1902, 2,67,581 cases were reported with 1,74,041 deaths.

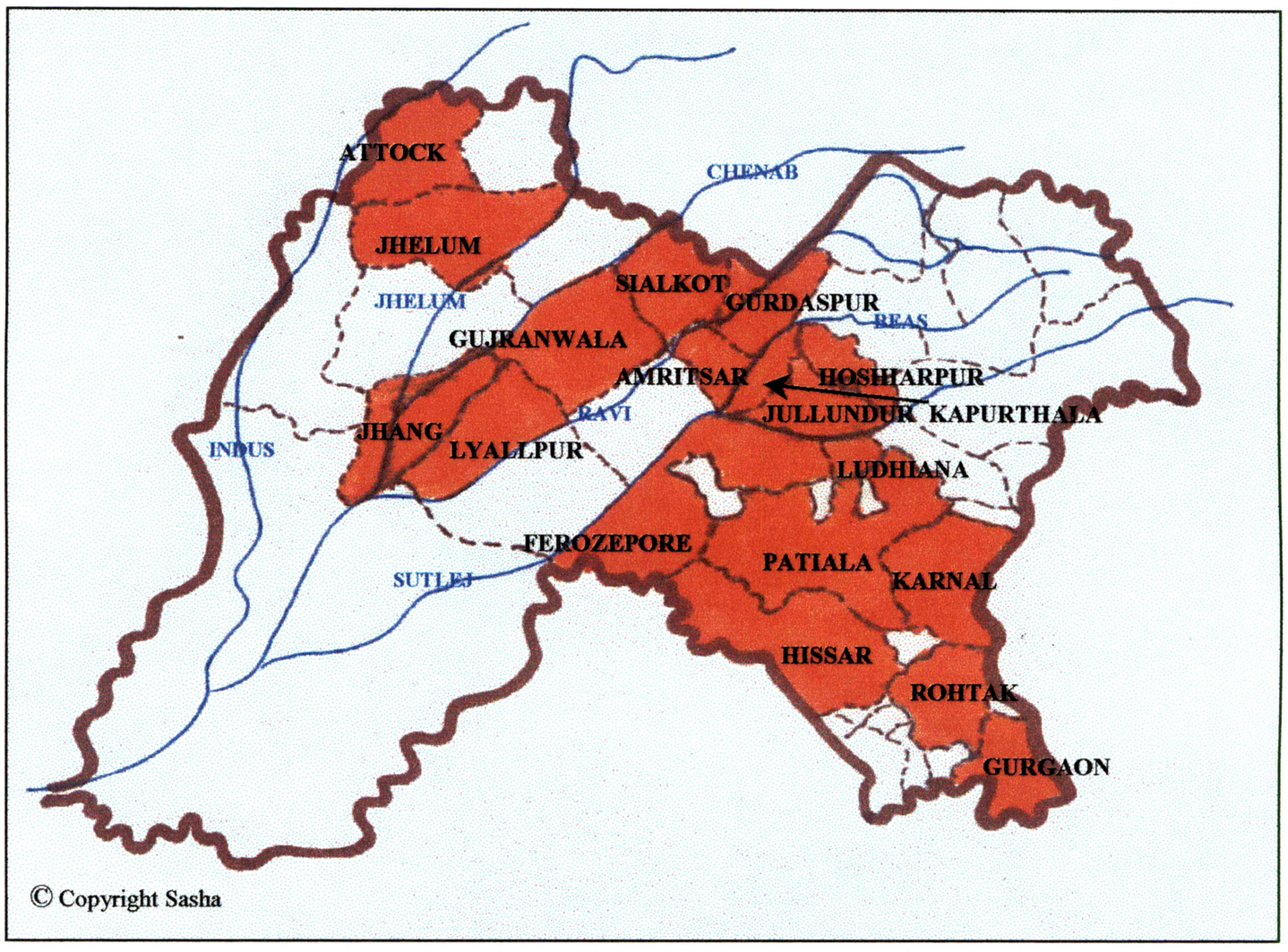

FIG 1.8 PUNJAB : PLAGUE INFESTED AREAS - 1902

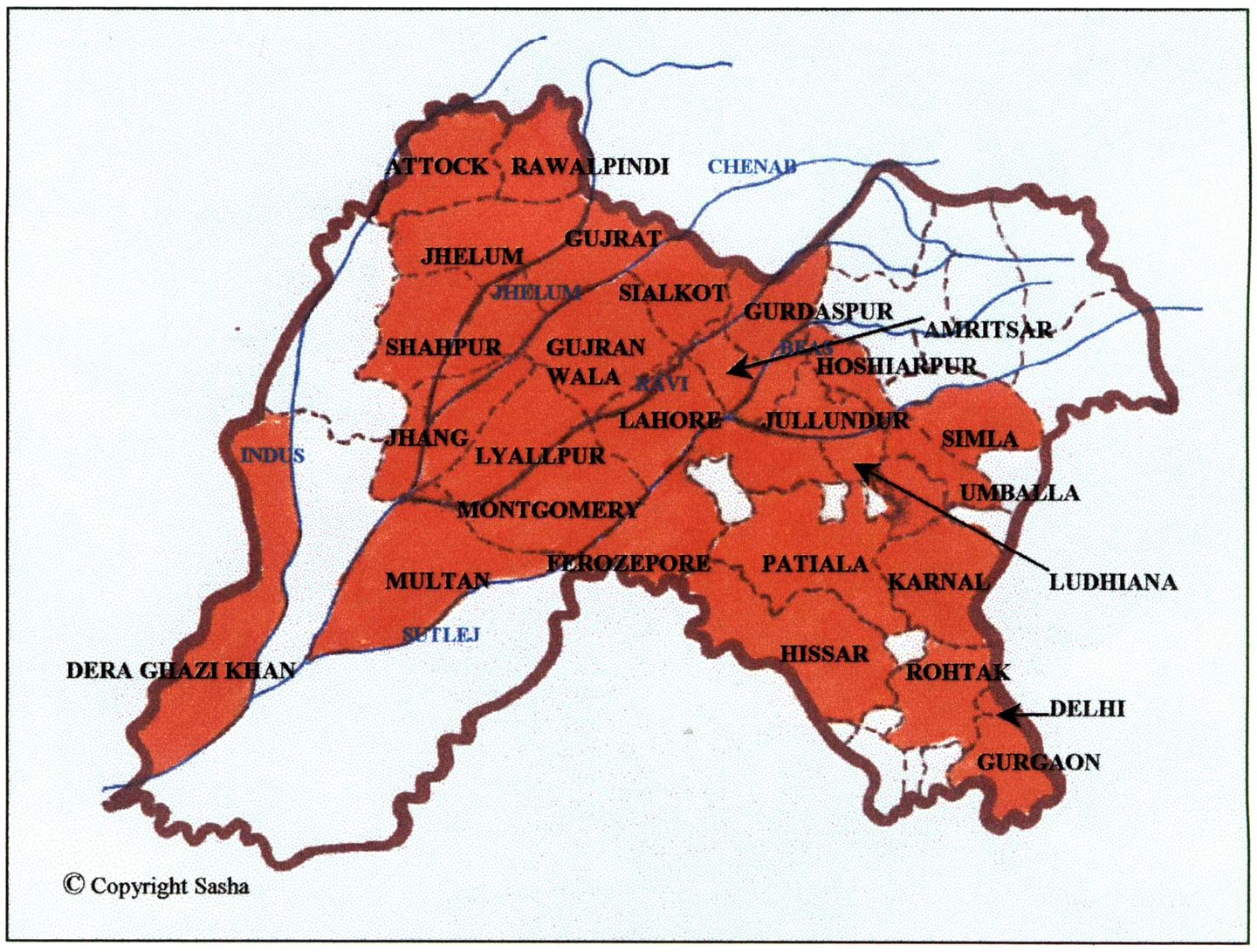

FIG 1.9 PUNJAB : PLAGUE INFESTED AREAS - 1905

admitted at Simla.[20] By 1904-05, the plague had spread to twenty-six districts, including Dera Ghazi Khan.[21]

The epidemic then moved to the other thickly cultivated, densely populated and humid areas in the upper *doabs* (interfluvial tracts) of central Punjab. From there it spread to the once sparsely populated, arid areas in the south-west which were being canalised and colonised. The large-scale immigration from the populous central Punjab districts had led to an increase in the population in these areas. The extensive irrigation from canals also resulted in increasing the humidity level, which was conducive to the spread of the disease.[22]

Table 1.3: Number of plague deaths in the Punjab

Years	Number of Deaths	Ratio per mille
1898-1899	222	.009
1899-1900	538	.02
1900-01	5793	.23
1901-02	**2,17,724**	**8.79**
1902-03	**2,15,350**	**8.70**
1903-04	**4,19,030**	**16.93**
1904-05	**4,14,219**	**16.73**
1905-06	89,307	3.61
1906-07	**6,75,307**	**27.28**
1907-08	49,740	2.01
1908-09	37,932	1.53
1909-10	1,68,805	6.82
1910-11	**2,09,459**	**8.46**
1911-12	95,664	1.47
1912-13	19,480	.81
1913-14	61,595	2.55
1914-15	**2,56,990**	**10.62**
1915-16	4177	.77
1916-17	5365	.22
1917-18	1,05,459	4.36

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[20] *Proceedings, Home: Medical and Sanitary*, May 1904, Number 17-27, p5.

[21] *Proceedings, Home: Medical and Sanitary*, October 1905, Number 13-21, pp 5-8.

[22] *Census of India, 1921*, pp46-47.

During the worst affected period from 1897 to 1918, the number of plague deaths in the Punjab increased from 222 in 1898-99 to 6,75,307 in 1906-07, as shown in the above table: [23]

In fact, the number of deaths from the plague continued to increase from 1898-99 to 1904-05. A considerable decrease during 1905-06, as evident from the table, was due in all probability, to the special measures taken for the destruction of the rats.[24] In the following year, however, complacency in rat eradication campaign and increased humidity resulted in the number of plague deaths rising to almost seven lakhs.[25] A high mortality rate in 1909-10 was attributed to the decline in the popularity of inoculation and the ignorance of the public regarding the importance of rat destruction.[26] The fact that in 1910-11 the plague again claimed nearly two lakh victims was explained in terms of the concentration of efforts on Delhi to keep the city free from the disease at the time of the Imperial *Darbar* to be held there in December. [27] An equally high mortality in 1914-15 was said to be the result, among other things, of the withdrawal of medical officers from the plague duty to perform military duty on account of the outbreak of the war.[28] The

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[23] Major F. Norman White, *Twenty Years of Plague in India, Proceedings, Medical and Sanitary*, April 1919, Number 190-94, p17.

[24] It was in 1905 that it was finally recognised that rats spread the plague. For some detail on the evolution of the etiology of the plague, see chapter 3 below.

[25] *The Tribune*, April 17, 1907, p3. The newspaper reported that nothing had been heard about the rat eradication campaign for quite some time. It was therefore surmised that it had either been abandoned or was not being carried out with any zeal.

[26] *Proceedings, Home: Medical and Sanitary*, September 1910, Number 26-28, p2.

[27] *Proceedings, Home: Medical and Sanitary*, July 1912, Number 28-30, pp1-2.

[28] *Proceedings, Home: Medical and Sanitary*, August 1916, Number 1-4, pp1-3.

plague could assume an epidemic form in 1923 as no efforts were made to reduce rat infestations due to 'financial stringency'. As a matter of fact, in Lahore city, the municipal committee had abandoned the rat destruction programme since 1919.[29]

The contemporaries commented on the havoc caused by the plague. *The Tribune* reported that the people who came to Delhi from distant areas in search of a place free from the epidemic were shocked to see its ravages in the city. There were a large number of houses in Delhi itself in which no family member survived to look after the house.[30] In Patiala, the hired carriers of corpses made rounds in the streets with their 'dread unearthly' calls '*murda chukwalo'* (get the corpse removed). The 'state doli' waited at the fort *chowk* to carry the victims to the hospital.[31] The newspaper also cited the case of a young man of Kutrila, a village in Jhelum *tahsil,* who dug a grave for his sick sister, but he himself contracted the disease to be buried in the same grave in which he had intended to bury his sister.[32] In 1907, 'Rohtak town looked like a city of dead; in many of the *mohullas*, every house and shop was shut and streets were left to the dogs.' [33]

In relative terms, the plague and malaria were the major killers amongst the total number of deaths reported from all causes in the Punjab.[34] From 1903 to 1922, malaria accounted for fifty-seven per cent of the total deaths and the plague sixteen per

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[29] *Administration Report, 1923-24*, p63.

[30] *The Tribune*, April 17, 1903, p3.

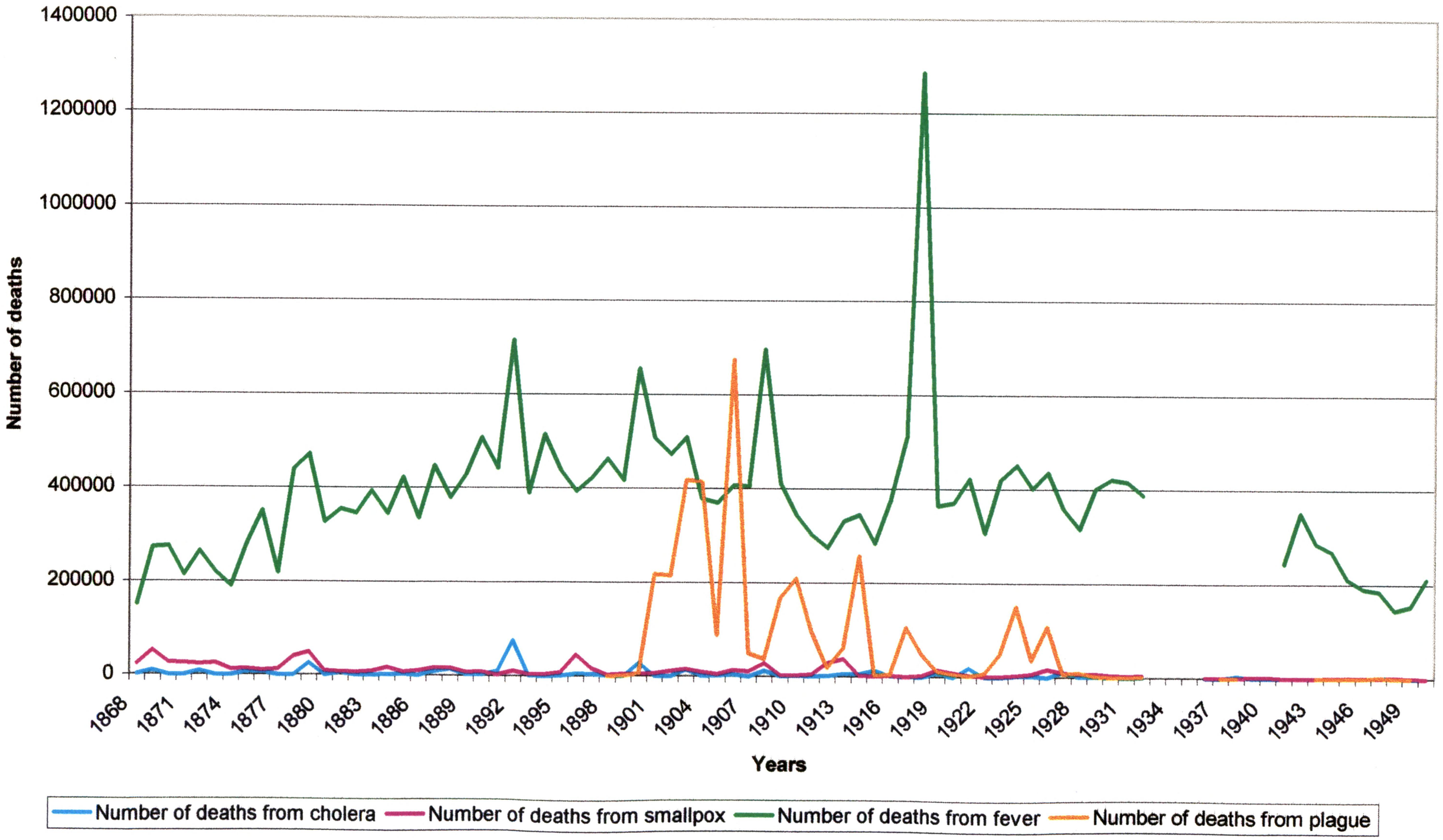
[31] *The Tribune*, April 7, 1905, p5.

[32] *The Tribune,* April 21,1904, p5.

[33] *Gazetteer of Rohtak District*, *1910*, p54.

[34] Major F. Norman White, *Twenty Years of Plague in India, Proceedings, Medical and Sanitary,* April 1919, Numbers 190-94, p3,17.

FIG : 1.10 - MORTALITY FROM DIFFERENT EPIDEMICS : 1868-1947



cent.[35] In 1900-01, 1907-08, and 1917-18, malaria accounted for seventy, sixty-five and again seventy per cent of the total deaths respectively.[36] In 1903-04 and 1904-05 the proportionate figures for the plague mortality were 16.93 per cent and 16.73 per cent, which rose to 27.18 in 1906-07. Thereafter there was a relative decrease in mortality from the plague.

III

The early attempts at understanding the etiology of the epidemics were as much conditioned by the then prevailing levels of scientific knowledge in Britain, as by the anxiety to justify colonial rule in terms largely of certain stereotypes. Often the British administrators mixed up cause with effect, and were generally reluctant to relate the outbreak to the effects of their rule. [37]

The tendency to attribute the prevalence of the diseases to the poor and unhealthy living conditions was rather pronounced in the early years of colonial rule. The district administrators believed that the cholera outbreak of 1876 took place because the natives were poor, underfed and exposed to chilly conditions.[38] The 1880 outbreak was attributed to the poverty and dearness of the grain, which had made the people consume food of 'unwholesome nature'.[39] The fever outbreak in Amritsar in 1881 was traced to the Kashmiri shawl merchants who were 'poor, unable to earn money

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[35] *Administration Report, 1923-24*,p62.

[36] *Proceedings, Home: Medical and Sanitary*, August 1902, Serial Number 57, p85. Also, *Proceedings, Home: Medical and Sanitary,* July 1918, Serial Number 92, pp84-85.

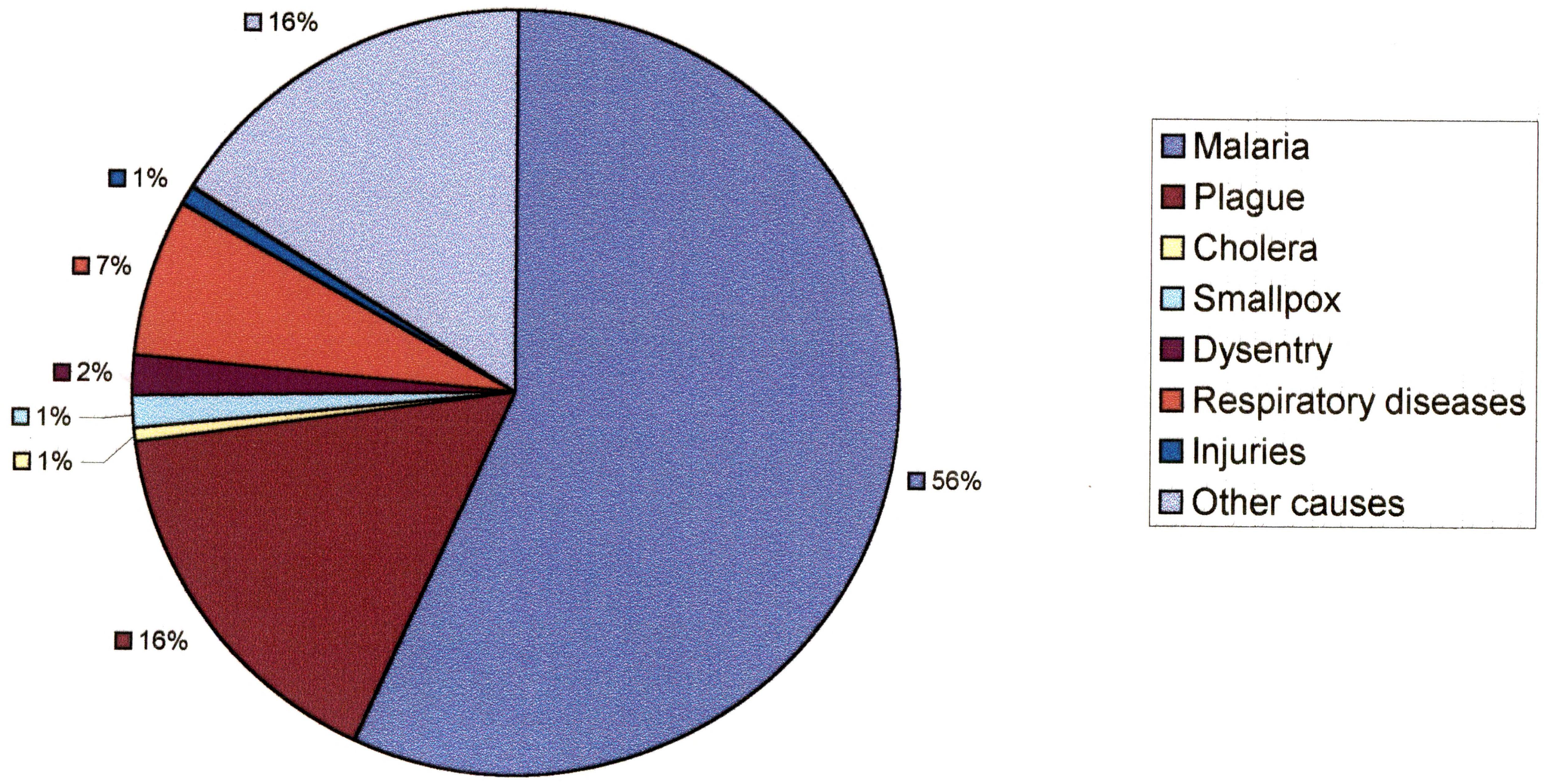
[37] Refer to the discussion of etiology in the following chapters.

[38] *Proceedings, Home: Medical and Sanitary*, November 1876, Serial Number 8, p814.

[39] *Civil and Military Gazette*, 14 January 1880.

Fig 1.11

FIG 1.11 - DEATH RATE FROM DIFFERENT CAUSES IN THE PUNJAB : 1903-1922



to buy food and undernourished.'[40] In 1882, the sanitary commissioner of the Punjab regarded the unfavourable conditions in material prosperity of labouring classes who were insufficiently clad as the predisposing cause of fevers.[41] He was even more explicit two years later, maintaining that the fever epidemic had been caused because the people were 'badly clothed, badly fed, badly housed and less capable of resisting the disease.' [42] In Gurdaspur district, the district administrators believed that the fever epidemic broke out as the people were 'emaciated and sickly looking!'[43]

While attributing the outbreak of epidemics to the prevalent 'insanitary conditions,' certain racial stereotypes are evident in the general attitude of the administrators towards the poor. The cholera outbreak at Amritsar was traced to the 'Kashmiri Mohammmedans' who were considered 'filthy beyond the ordinary filth of the inhabitants of the Punjab in their persons and clothing, their houses reeked with concentrated effluvia of long accumulated faecal dejecta on the tops, while their floors and courtyards were mere cess pools of urine and various sweepings of their household.'[44] The 1875 fever outbreak at Rawalpindi was explained in terms of the 'races' of urban population of Peshawar, Kohat and Rawalpindi who lived in 'closely packed and ill-

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[40] *Proceedings, Home: Medical and Sanitary*, August 1882, Serial Number 14, p62.

[41] *Proceedings, Home: Medical and Sanitary*, May 1884, Serial Number 17, p62.

[42] *Proceedings, Home: Medical and Sanitary*, May 1886, Serial Number 21, p75.

[43] *Gazetteer of Gurdaspur District, 1891-92*, pp16-17.

[44] *Proceedings, Home: Medical and Sanitary*, June 1876, Serial Number 8, p336.

ventilated townships', and who were 'notoriously filthy in their habits'. It was believed that their 'life and constitutions' were 'undermined by malarious atmosphere.' [45] The outbreak of cholera in Gurdaspur and Jalandhar in 1881 was attributed to the people living in 'overcrowded and filthy surroundings', which was accompanied by the seepage of water and urine in the ground.[46] Elsewhere, the same report holds the beggars responsible for first contracting cholera because they 'ate immoderately and drank filthy water.'[47]

At the same time, there were some attempts at explaining the situation in natural terms, which often cloaked prejudice and ignorance. The *Medical and Sanitary Proceedings of 1875* refer to some predisposing cause in the air causing the diseases. Cholera was supposed to have resulted from the burning of the dead as well as the clothing and articles of persons suffering from the disease whereby 'cholera poison' was disseminated through the air.[48] In 1878, the outbreak of fever was traced to noxious inhalations and gases produced by the decomposition of organic matter due to heavy rains accompanied by high temperature.[49] The fever epidemic at Amritsar in 1881 was believed to have been caused by 'poisonous influence' in the air produced from organic

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[45] *Proceedings, Home: Medical and Sanitary*, January 1875, Serial Number 7, p3.

[46] *Proceedings, Home: Medical and Sanitary*, February 1884, Serial Number 17, p10.

[47] *Proceedings, Home: Medical and Sanitary*, February, 1884, Serial Number 17, p12.

[48] *Proceedings, Home: Medical and Sanitary*, October 1875, Serial Number 7, p786.

[49] *Proceedings, Home: Medical and Sanitary*, March 1878, Serial Number 10, p316.

emanations from decomposing animal and vegetable matter.[50] The sanitary commissioner, Punjab, attributed the outbreak of cholera in 1882 to some 'special cause and influence' in the air.[51] The 1889 outbreak of cholera at Murree was believed to have been caused by the poisonous air generated by extreme heat, increase in humidity and low barometric pressure.[52]

A possible connection between swampiness and the outbreak of epidemics began to be noticed fairly early during the period. An enquiry conducted in 1867 concluded that there was a close connection between malaria and swampiness. In 1872, a committee appointed to enquire into the 1870-71 epidemic considered the water percolating through the surface but was not carried away in Rawalpindi as the cause of malaria.[53] The malaria epidemic around Delhi in 1874 was traced to the formation of *jhils* (seasonal ponds) and swamps due to defective drainage.[54] The sanitary commissioner in 1878 attributed the prevalence of malarial fevers to excessive dampness of soil due to floods or swampy lands.[55] In Dera Ghazi Khan and Pind Dadan Khan the incidence

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[50] *Proceedings, Home: Medical and Sanitary*, August 1882 Serial Number 14, pp59-60.

[51] *Proceedings, Home: Medical and Sanitary*, January 1882, Serial Number 14, pp12-13.

[52] *Proceedings, Home: Medical and Sanitary*, May 1889, Serial Number 26, p131.

[53] *Proceedings, Home: Medical and Sanitary*, April 1872, Serial Number 4, p209.

[54] *Proceedings, Home: Medical and Sanitary*, March 1874, Serial Number 6, pp 126-27. The natural drainage line around Delhi known as the Ganda Nalla was obstructed by cultivation which resulted in formation of swamps.

[55] *Proceedings, Home: Medical and Sanitary*, January 1878, Serial Number 14, p13.

of malaria was traced to a rise in the water level, resulting in flooding and back watering of the sub-soil.[56] In 1888, the poor drainage resulting in swampy and waterlogged condition is said to have caused fever in Ambala, Ferozepur, Gurdaspur, Amritsar, Delhi, Gurgaon and Karnal.[57] The fever epidemic in Muzaffargarh in 1903 was traced to floods and inundation in the rivers.[58]

There were some reluctant admissions of the possible connection between the epidemics and the commissions and the omissions of the administration. An enquiry instituted by the Government of India in 1875 noticed that the death rate in the districts irrigated by the Western Jumna Canal was higher than that in the province as a whole.[59] In 1882, the sanitary commissioner admitted that the artificial flooding produced by irrigation resulted in waterlogging and stagnation of water, which resulted in the breeding of the mosquitoes.[60] The malaria outbreaks in the Karnal district were traced to the irrigation of the rice fields by the Western Jumna Canal.[61] There was an admission of the canal contributing towards an increased prevalence of malaria in the Gurgaon district.[62] In Gujranwala, the outbreak of malaria was attributed to

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[56] *Proceedings, Home: Medical and Sanitary*, May 1884, Serial Number 17, pp61-62. Also, *Gazetteer of Dera Ghazi Khan, 1883-84*, pp9-10.

[57] *Proceedings, Home: Medical and Sanitary*, August 1889, Serial Number 27, p300.

[58] *Proceedings, Home: Medical and Sanitary*, September 1905, Serial Number 65, p59. Also, *Gazetteer of Muzaffargarh District, 1908,* p48.

[59] *Gazetteer of Delhi District, 1883-84*, p15.

[60] *Proceedings, Home: Medical and Sanitary*, May 1884, Serial Number 17, p63.

[61] *Gazetteer of the Karnal District, 1883-84*, p10.

[62] *Gazetteer of the Gurgaon District, 1883-84*, p9.

waterlogging caused by the Chenawan Canal.[63] The sanitary commissioner in 1890 observed that the increased incidence of malaria in Sialkot, Gujrat and Gujranwala corresponded with gradual extension of canal irrigation.[64] In Jhang, irrigation from the Chenab Canal was held responsible for the increased incidence of malaria.[65] The admissions of the British were not far removed from the peoples understanding of the phenomenon: In Rohtak district, the common saying was, 'Jahan Jawe Pani Nahar, Wahan Jawe Bimari Bahar.' (wherever goes the canal, there is disease in plenty).[66]

The administrators seldom noticed the ecological disturbances due to the construction of railway, which received the special attention of the British in the Punjab because of its frontier location and its potential for agricultural production and exports.[67] Its rivers necessitated the construction of several large bridges requiring the construction of piers and abutments, and digging of the earth, all of which resulted in waterlogging over large areas, which helped in the breeding of mosquitoes. Moreover, the construction of embankments for laying the railway tracks resulted

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[63] *Proceedings, Home: Medical and Sanitary*, July 1890, Serial Number 29, pp49-50.

[64] *Proceedings, Home: Medical and Sanitary*, June 1891, Serial Number 30, p34.

[65] *Proceedings, Home: Medical and Sanitary*, July 1901, Serial Number 54, p109.

[66] *Gazetteer of Rohtak District, 1910*, p53,

[67] B. S. Saini, *The Social and Economic History of the Punjab including Haryana and Himachal Pradesh (1901-1939)*, Ess Ess Publications, Delhi, 1975, p 312. The railway mileage in Punjab increased from 23 in 1863 to 3117 in 1901. It further increased to 3725 miles in 1910, in 1921 it was 4181 miles while in 1939 it had increased to 6192 miles.

in creating burrow pits over large areas. Filled with water and vegetation, these pits became 'mosquito hatcheries as did the waters impounded by the embankments' which often interfered with the natural lines of drainage, created ponds and raised sub-soil water levels. [68] The Lt. Governor of the province admitted in 1878 that the waterlogging resulting from the embankments on the GT Road and the railway crossings was responsible for a higher incidence of malaria and mortality in the Jalandhar Doab.[69]

The railway lines and the associated buildings constructed by the British required the presence of thousands of workers at each major site who 'lived in crowded unsanitary conditions that virtually guaranteed a rapid spread of diseases.' The labourers were more susceptible to diseases as they were poor, weak and malnourished with lower physiological resistance. For example, cholera could claim thirty per cent of the workers on a section of the line within a few weeks. About seventy five per cent of the workers at the Adamwahan construction colony adjacent to the Empress bridge built across the Sutlej in 1874-78 were incapacitated by fever. Moreover, the railway construction workers were mobile and carried diseases to the work sites and also to their homes and villages. In 1891, around eight hundred workers on the Indus Valley Railway site died from typhus fever brought to the camp by workmen from Kandahar.[70] The 'accumulation of circumstances' in the labour camps was responsible for the virulence of the malaria infection in the wet season and

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[68] Ian J. Kerr, *Building the Railways of the Raj 1850-1900*, Oxford University Press, New Delhi, 1997, pp130-60.

[69] *Proceedings, Home: Medical and Sanitary*, January 1878, Serial Number 10, p2.

[70] Ian J. Kerr, *Building the Railways of the Raj 1850-1900*,pp161-62.

maintenance of 'a reservoir of residual malaria in the dry season from which new outbreaks occurred in the next malaria season.'[71]

IV

Some factors of a social nature were noticed by the administrators as contributing towards the spread of epidemics in specific situations. The transmission of infection by the movement of people from one place to another was mentioned not only in case of fevers of different kinds but also of cholera and the plague. In 1872, the cholera outbreak at Gujrat was traced to a Mohammedan priest from Lahore; at Ambala it was traced to a traveller who came from Kasauli; and at Peshawar to a policeman who came from a quarantine camp between Peshawar and Kohat.[72] The cholera at Simla in 1875 was attributed to a wandering mendicant.[73] Its outbreak at Amritsar in the same year was traced to a traveller who came from Nurpur where the disease was already prevalent, and his stay in a mosque had infected the mosque well.[74] In the following year cholera at Murree was attributed to coolies and servants who moved from one place to other.[75] At Mianwali in the same year, it was traced to the visitors from Jhelum who had come

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[71] *Ibid.,* p106.

[72] J. M. Cunningham, *Report on the Cholera Epidemic of 1872 in Northern India* (Cited here after as *Cholera Epidemic of 1872*) Suprintendent of Government Printing, Calcutta, 1873, p13.

[73] *Proceedings, Home: Medical and Sanitary*, October 1875, Serial Number 7, p774.

[74] *Proceedings, Home: Medical and Sanitary*, June 1876, Serial Number 8, p334.

[75] *Proceedings, Home: Medical and Sanitary*, November 1876, Serial Number 8, pp795-98.

to listen to a religious disputation between two teachers.[76] The typhus fever at Rawalpindi in 1873 was believed to have been caused by the under trial prisoners from Peshawar.[77] In 1879, the Kashmiri refugees were considered to have brought the fever with them to Hazara and disseminated it in Peshawar.[78] In 1881, the civil surgeon attributed the spread of disease at Lahore to its importation from Peshawar by two travellers.[79] The district administrators believed that the famine stricken people from Hissar carried the cholera infection in 1900-01 to Jhang, Shahpur, Gujranwala and Hoshiarpur.[80]

In this context, it is not surprising that through the 1890s, most of the administrators continued to consider human agency as the potent factor in spreading the plague infection. 'To convey infection, it is necessary for a man to live or sleep in an infected house, take the disease, carry it in his body, not on it, to another village, and infect the house by becoming ill in it.'[81] It was generally maintained that while performing their ordinary social activities like condoling with their friends, attending religious gatherings, bringing food and clothes the people got infected and carried the infection

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[76] *Proceedings, Home: Medical and Sanitary*, October 1876, Serial Number 8, p659.

[77] *Proceedings, Home: Medical and Sanitary*, July 1873, Serial Number 5, pp579-80.

[78] *Proceedings, Home: Medical and Sanitary*, December 1879, Serial Number 11, p1012.

[79] *Proceedings, Home: Medical and Sanitary*, February 1884, Serial Number 17, pp 8-9.

[80] *Administration Report, 1900-01*, p254.

[81] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, p6. The assistant commissioners of Banga circle and Nawanshahr circles also opined that human beings were the chief agents to spread the plague.

with them. In 1897-98, in twenty-two out of the twenty-five villages in Jalandhar and Hoshiarpur districts the mode of spread of the infection was traced to human beings.[82] In the following year, in twenty-nine out of forty-two villages human agency was held responsible for spreading the plague.[83] Even after two decades, the influenza epidemic was attributed to certain Bhabras (class of Jains) who came to Pasrur and Sialkot from Karachi and Bombay.[84] In 1928, some labourers were held responsible for carrying the cholera infection to Sakroti.[85] Whether or not the local administration actually subscribed to this belief, it certainly provided some kind of justification for not making a concentrated effort to fight the disease.

The district administrators also assumed that the people belonging to certain social and occupational categories acted as the carriers of the plague. For example, the Nais (barbers by caste) and the Chamars (hereditary leather workers) were said to spread the disease by taking the clothes of the dead as perquisites and by carrying these to other places.[86] The Doms (the untouchables carrying out the task of the disposal of the dead and receiving by custom the clothing of the deceased) were believed to carry the

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[82] Ibid., pp 87-111. The infected villages included Kumam, Bhagwain, Katheron, Bajon, Darman, Lehri Khurd and Sidhwan.

[83] C. H. James, Outbreak of the Plague in Jullundur and Hoshiarpur Districts of the Punjab, 1899-1900. Additions by Wilkinson, Punjab Government Press, Lahore, 1901, pp12-13.

[84] *Gazetteers of Sialkot District, 1920*, p32.

[85] *Punjab Government Civil Secretariat Proceedings, Home: Public Health* (cited here after as *Proceedings, Home: Public Health) B*, *1928*, Bundle Number 185, Serial Number 15207, File Number 64, pp12-14.

[86] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, p6.

infection from one place to another as they acted also as porters.[87] Among the specific localities Bhajjal was believed to have been infected by hereditary butchers, and Lodipur and Musapur by the Chamars.[88]

The pilgrims were generally viewed as the principal carriers of cholera, especially because the pilgrim centres were crowded and there was an inadequate provision for water and sanitation. The pilgrims were supposed to have got infected from contaminated water and carried the infection with them on their way back, travelling in often crowded carriages and spreading the infection through contact. Overcrowding, thirst, consumption of contaminated water and the consequent outbreak of the disease were regarded as different facets of the same situation. The water carried from the pilgrim centre as *prasada* (sanctified food or drink) was said to be often contaminated.[89] One administrator commented on this situation: 'In dealing with the travellers and specially with the pilgrims, it must be remembered that hungry, weary, very dirty and crowded together, as they often are, they are in very circumstances calculated to render them susceptible to cholera, if cholera be about.'[90]

Thus, for more than half a century, the specific outbreaks of cholera continued to be ascribed to the increasing number of people going to the fairs and places of pilgrimage. The cholera

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[87] *Proceedings, Home: Medical and Sanitary,* January1901, Number 69-70, p2.

[88] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, pp87-111. Also, *Proceedings, Home: Medical and Sanitary,* January 1901, Number 69-70, p2; *Proceedings, Home: Medical and Sanitary*, June 1901, Number 56-8, pp1-2.

[89] *Proceedings, Home: Medical and Sanitary,* May 1873, Serial Number 5, p286.

[90] J. M. Cunningham, *Cholera Epidemic of 1872*, p14.

epidemic of 1867 affecting all the major urban centres of the region, from Ambala to Peshawar, was traced to the pilgrims returning from Hardwar.[91] In 1872 also, the outbreak at Ambala, Jagadhri, Bilaspur and Sialkot was attributed to the same source, as was the outbreak at Sialkot in 1875.[92] The epidemic of 1879 was believed to have been diffused by the pilgrims returning from the *Kumbh* fair at Hardwar.[93] In 1885 again, the pilgrims from Hardwar were considered to have brought infection to Kaithal, Amritsar, Rawalpindi, Palwal, Bhiwani, Dera Ismail Khan and Bannu.[94] The epidemic of 1891, which affected twenty-six districts, too was traced to the pilgrims.[95] In 1896, the people coming back from the Nurpur fair were said to have caused cholera in Rawalpindi and Peshawar.[96] The cholera epidemic of 1903, which affected fifteen districts, was traced again to the pilgrims from Hardwar.[97] In a similar vein, the cholera epidemic of 1908 was attributed to the people returning from the religious fairs at Katas,

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[91] James L. Bryden, *Report on the Cholera of 1866-68 and its Relation to the Previous Epidemics,* Suprintendent Of Government Printing, Calcutta, 1869, p138.

[92] *Proceedings, Home: Medical and Sanitary*, May 1875, Serial Number 7, p380.

[93] *Proceedings, Home: Medical and Sanitary*, September 1880, Serial Number 12, pp471-72. Also, *Administration Report, 1878-79*, p43.

[94] *Proceedings, Home: Medical and Sanitary*, May 1886, Serial Number 21, p75.

[95] *Proceedings, Home: Medical and Sanitary*, October 1894, Serial Number 37, p171.

[96] *Proceedings, Home: Medical and Sanitary*, March 1899, Serial Number 47, p61. Also, *Administration Report, 1896-97*, p248.

[97] *Proceedings, Home: Medical and Sanitary*, September 1905, Serial Number 65, p58.

Jwalamukhi and Naina Devi.[98] In 1909, the infection breaking out in the Bhimgoda tank at Hardwar was considered to have been behind the spread of cholera in eighteen districts.[99] The 1911 epidemic at Sialkot was traced to the people returning from Gullu Shah Cattle Fair.[100] The source of the epidemic in 1919 was again traced to Hardwar.[101] In 1921, the pilgrims from Hardwar were said to be behind the outbreak of cholera in twenty districts.[102] In 1928 the pilgrims returning from eastern India were held responsible for spreading cholera in Rohtak.[103] The sanitary arrangements made at the centres of pilgrimage over the period do not appear to have been very effective.[104]

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[98] *Proceedings, Home: Medical and Sanitary*, July 1910, Serial Number 72, p55.

[99] *Proceedings, Home: Medical and Sanitary*, September 1910, Serial Number 76, p86.

[100] *Proceedings, Home: Medical and Sanitary*, July 1912, Serial Number 80, p67. Also, *Administration Report, 1911-12,* p168.

[101] *Administration Report, 1919-20*, p124.

[102] *Administration Report, 1922-23*, p38.

[103] *Proceedings, Home: Public Health, B, 1929,* Bundle Number 189, Serial Number 15235, File Number 11, pp2-3.

[104] This becomes evident as the outbreak of epidemics generally coincided with the fairs. It may be interesting to note, however, that in their reports the district administrators claimed to have made elaborate and foolproof arrangements to prevent the outbreak of epidemics during the fairs. The following detail appears to be by the rule book: During the fairs, additional sweepers were employed to maintain cleanliness. Areas to be used as lavatories were demarcated by flags. Pits were dug to collect refuse. Slaughter houses and burial places were situated at a proper distance from the bazaar. In 1897, local municipal committee made sanitary arrangements. Jungle growth was cut for setting up of camps. The medical officer and sanitary inspector checked that no food unfit for human consumption was sold. In 1920, the district boards made sanitary arrangements during fairs. No person was allowed to sell food or drink at any

The movement of the troops too was seen to have a role in the spread of epidemics. In 1872, the troops of the Peshawar Mountain Battery returning from the Looshaie expedition got infected and were reported to have introduced cholera in Jhelum, Rawalpindi, Lahore and Mian Mir.[105] Again, the troops were believed to have imported the disease from across the border and infected the town of Peshawar, subsequently carrying the infection to Rawalpindi in 1880.[106] In 1891, Murree was infected by the Kashmiri troops moving from Rawalpindi to Kohala. As the troops were fatigued from marching in hot weather, lack of provisions and occasional drenching, this was said to have led to the spread of the infection along the entire route, requiring the sick to be dropped en route and the dead to be buried [107]

Finally, the British found it convenient to attribute the spread of epidemics to certain medical and social practices, both old and new. The 'obnoxious' practice of variolation was believed to be behind the spread of smallpox.[108] Variolation was considered as infectious as the disease itself, because it induced the disease in

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place except the shop site allotted to him. No person was allowed to ease himself except at a place specified for the purpose.
Proceedings, Home: Medical and Sanitary, February 1898, Serial Number 45, p 29. Also, *Proceedings, Home: Medical and Sanitary*, August 1901, Serial Number 54, p 122; *Proceedings in the Boards and Committees Department*, 1904, Serial Number 25, p7; *Proceedings, b, Boards and Committees Department*, 1919, Number 60-61, pp12-21.

[105] J. M. Cunningham, *Cholera Epidemic of 1872*, pp9-11.

[106] *Proceedings, Home: Medical and Sanitary*, January 1882, Serial Number 14, pp10-11.

[107] *Proceedings, Home: Medical and Sanitary,* October 1892, Serial Number 33, p76.

[108] *Proceedings, Home: Medical and Sanitary,* October 1880, Serial Number 12, p541.(Cross reference to Introduction).

its full intensity.[109] The epidemics at Kangra, Hoshiarpur, Jalandhar and Gujrat in 1873 were attributed in particular to the practice of variolation.[110] Elsewhere, variolation was said to be behind the outbreak of smallpox in 1886 at Peshawar, Dera Ismail Khan, Shahpur and Jhelum.[111] The 1887 epidemic at Bannu also was attributed to the arrival of the variolators.[112] The district administrators considered that social customs like sitting next to a sick or a dying person led to the spread of the plague. The infection was particularly conveyed by the women who touched with their *chadar* (a sheet used as a veil) the wounds formed by opening of the buboes by the Chamars.[113]

V

By and large, the British administrators did not appear to be inclined to admit that the eruption and spread of the epidemics in the Punjab could be linked as much to the human and natural circumstances as to the colonial situation itself.

In all probability, a relationship existed on the ground between the acute shortage of foodgrains and the outbreak of cholera and fever epidemics. Scarcities and famines not only resulted in the high prices of foodgrains, but also debilitated the condition of people and lowered their resistance to diseases. The fever epidemic in 1863-64 in Delhi, Ambala, Hissar, Ludhiana and Jalandhar appears to have been a direct consequence of the

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[109] *Proceedings, Home: Medical and Sanitary*, December 1879, Serial Number 11, pp6-7.

[110] *Proceedings, Home,* October 1873, Serial Number 5, pp814-15.

[111] *Proceedings, Home: Medical and Sanitary*, June 1887, Serial Number 23, p56.

[112] *Proceedings, Home: Medical and Sanitary*, July 1887, Serial Number 24, p83.

[113] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, p15.

scarcity in Delhi and Hissar during 1861-62 when the prices of food grains became high: In 1861, the prices of wheat, barley, jowar, bajra and gram in seers per ruppee was 17.46, 24.80, 22.12, 22.87 and 19.65 respectively as compared to 26.98, 45.23, 36.43, 32.39 and 33.70 in the following year when normal conditions prevailed.[114] In 1877-78 again, conditions of high prices existed in the Punjab and in the following years fever epidemics broke out in large parts of the Province, claiming five lakh victims. In 1877-78, Hissar in particular was severely affected by drought following which cholera broke out in 1879 and claimed more than twenty-six thousand lives. Again, in 1885, conditions of scarcity existed in Hissar and Rohtak districts when cholera and fever broke out. Famine conditions prevailed in Hissar, Rohtak, Ambala, Ferozepur, Lahore and Gujrat in 1896-97 and in the following year fever epidemic erupted in these areas. In 1899, Hissar again experienced the cycle of famine followed by cholera and fever epidemics. In 1907, conditions of scarcity were again prevalent in the Punjab; there was a shortfall in the *rabi* crop following the failure of the *kharif* harvest. Consequently, prices of foodgrains rose in Gurgaon, Hissar, Ambala, Shahpur and Rohtak, which was followed by fever epidemic in which more than six lakh lives were lost. In 1938-40, Hissar, Rohtak and Gurgaon districts were affected by famine following which cholera and fever epidemics broke out in 1940-42. On the whole, it was the relatively arid south-western Punjab which suffered more from scarcities and therefore more from epidemics as well. The following table shows that scarcities and high prices were conducive to large-scale mortality.

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[114] Brij Narain, *Eighty Years of Punjab Food Prices, 1841-1920*, Civil and Military Gazette Press, Lahore, 1926, pp 51-52.

Table1.4: Prices of different foodgrains in seers per ruppee during epidemic years.

Year	Wheat	Barley	Jowar	Bajra	Gram
1861	17.46	24.80	22.12	22.87	19.65
1869	11.99	18.00	15.56	13.32	10.99
1878	16.07	16.07	24.01	16.66	15.32
1886	19.48	32.40	25.32	21.98	28.85
1896	12.63	16.53	14.78	12.68	15.61
1899	15.76	22.16	19.75	17.09	17.35
1900	11.98	15.06	12.42	11.94	11.56
1907	13.78	20.36	18.67	17.11	16.35
1908	9.55	13.39	11.38	10.55	10.29

Source: Brij Narain, *Eighty Years of Punjab Food Prices, 1841-1920*. pp 51-52.

An interconnection seems to have existed also between the incidence of malaria and heavy rainfall, floods, waterlogging and breeding of mosquitoes.[115] In 1878, Jalandhar and Hoshiarpur districts were affected by floods. These two districts recorded a high incidence of malaria; 254 villages were affected in Jalandhar district and 5512 acres of land were affected in Hoshiarpur district.[116] In 1884, the sanitary commissioner observed that the prevalence of malaria was probably related to the stagnant subsoil

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[115] *Proceedings, Home: Medical and Sanitary*, May 1884, Serial Number 17, pp61-62. Also, Chas A Bentley, *Malaria and Agriculture in Bengal, How to Reduce Malaria in Bengal by Irrigation*, Bengal Secretariat Book Depot, Calcutta, 1925, p1.

[116] *Proceedings, Home: Medical and Sanitary*, March 1879, Serial Number 11, pp123-26.

water augmented by abnormal rain.[117] The malaria epidemic in Multan and Muzaffargarh in 1884 was traced to unusually heavy rainfall and river inundations after the monsoon.[118] In 1889, rainfall in eastern districts was nine inches less than the average and, consequently, mortality was less than the average. On the other hand, in the western districts, it was the opposite as may be seen in the following table:[119]

Table 1.5: Relationship between excessive rainfall and mortality.

City	Rainfall in excess of the average	Mortality in excess of the average
Lahore	1.3	5.62
Gujranwala	1.3	12.51
Dera Ismail Khan	1	9

A similar situation existed in 1891. In Sialkot, Gujrat and Gujranwala, the rainfall was double than the average of the previous five years, and mortality was 35.2 per mille.[120] In 1897, the rainfall was higher by 24.14 inches and mortality reached a high of 31.05 per mille. In 1898, the rainfall was 23.62 inches more and the mortality rate was a high of 31.05 per mille.[121] In 1904, the

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[117] *Proceedings, Home: Medical and Sanitary*, February 1884, Serial Number 17, p19.

[118] *Proceedings, Home: Medical and Sanitary*, February 1885, Serial Number 19, p13.

[119] *Proceedings, Home: Medical and Sanitary*, July 1890, Serial Number 29, pp 49-50.

[120] *Proceedings, Home: Medical and Sanitary*, June 1891, Serial Number 30, p34.

[121] *Proceedings, Home: Medical and Sanitary,* July 1899, Serial Number 51, p34. Also, *Proceedings, Home: Medical and Sanitary,* November 1900, Serial Number 52, pp186-88.

sanitary commissioner noticed a greater prevalence of fevers in areas with heavy rainfall.[122] In 1908, there was a high prevalence of malaria in Fazilka and Amritsar where the area was flooded, 'people homeless and buildings grounded.'[123]

A connection between malaria and seasonal rhythm becomes apparent. The disease was at its peak in the Punjab during the month of October. Of the total of fifteen major malaria epidemics, at least ten attained their height in October. As evident from the table given below, about forty per cent of the deaths took place in the month of October. Following the rains during this month, the land was flooded, the subsoil level was high and the conditions were conducive for the growth of mosquitoes.

Table 1.6: Malaria deaths in October

Year	Total Number of Malaria Deaths	Deaths in October	%age of Deaths in October
1869	272946	116540	**42.69**
1876	351286	174238	**49.6**
1878	440492	180356	**40.94**
1879	472939	141996	30.02
1890	508035	246487	**48.51**
1892	715890	283223	39.56
1894	515238	132767	25.76
1900	655914	254580	38.81
1908	697058	307316	**44.08**

Source: Major S. R. Christophers, *Malaria in the Punjab,* pp24-26.

Moreover, in 1876, the death rate from malaria in the province rose from twenty-one per mille in July to seventy-two per

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[122] *Proceedings, Home: Medical and Sanitary*, July 1904, Serial Number 62, p55.

[123] *Khalsa Advocate*, September 2, 1908.

mille in October.[124] In 1917, mortality rate from fever in the Punjab rose from 45.55 per mille in August to 198.35 per mille in October.[125] The relative position of different months in the table given below also shows that there was a substantial increase in the number of patients suffering from malaria in the month of October.[126]

Table 1.7: Hospital admissions in Amritsar in different months.

Month	1900	1901	1902	1903	1904	1905	1906	1907	1908
January	71	214	143	87	289	81	82	104	96
February	71	123	111	103	203	65	41	77	78
March	143	177	141	113	188	129	81	108	115
April	121	182	161	194	238	147	206	147	123
May	128	221	191	133	240	197	129	146	124
June	98	222	141	128	210	176	139	178	134
July	99	249	163	121	200	156	116	123	139
August	127	319	218	94	186	292	119	182	255
September	486	758	246	309	309	262	200	248	2309
October	**1032**	**1336**	**266**	**1311**	**306**	**218**	**395**	**243**	**3668**
November	903	560	167	1465	199	197	397	206	1534
December	515	298	997	569	173	131	227	150	809

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[124] *Proceedings, Home,* January 1878, Serial Number 10, p1. In Jalandhar, the death rate per mille rose from 18 in July to 208 in October, in Gurdaspur, the mortality rose from 13 in July to 123 in October and in Amritsar, the corresponding rise was from 16 per mille to 127 per mille.

[125] *Proceedings, Home: Medical and Sanitary*, November 1918, Serial Number 92, pp160-62.

[126] Major S. R. Christophers, *Malaria in the Punjab*, Superintendent Government Printing, Calcutta, 1911, pp90-97.

On the other hand, the plague claimed the largest number of lives in the Punjab during the month of April. Sixteen epidemics reached their height in March-April, two in October (1898-99, 1907-08), and one each in September (1899-1900) and February (1917-18). About seventy-seven per cent of the total deaths occurred in the three months of March, April and May when the temperature and humidity levels were favourable to the proliferation of the fleas. The mean number of plague deaths per day in April was 1648, followed by 1218 in May and 923 in March. In the hot months of July and August the figures came down drastically to around 19 and 4 respectively. As evident from the table, the all India figures for the plague mortality broadly conformed to the pattern noticed in the Punjab. [127]

Table 1.8: Comparison of mean monthly incidence of the plague mortality.

	PUNJAB		INDIA	
Months	**Number of Monthly Deaths from Plague 1898-1918**	**Mean Monthly Incidence of Plague Mortality**	**Number of Monthly Deaths from Plague 1898-1918**	**Mean Monthly Incidence of Plague Mortality**
July	12,141	607	1,18,684	5,934
August	2,627	131	2,46,801	12,340
September	5,065	253	4,32,143	21,607
October	18,293	915	5,55,019	27,750
November	44,855	2,243	5,49,633	27,481
December	83,142	4,157	7,16,262	35,808
January	1,41,002	7,050	10,29,194	51,459
February	2,38,591	11,929	12,97,512	64,875
March	**5,72,225**	**28,611**	**20,22,007**	**1,01,100**
April	**9,89,021**	**49,451**	**19,88,738**	**99,436**
May	**7,54,919**	**37,746**	**10,93,138**	**54,656**
June	1,30,285	6,514	2,05,190	10,259

[127] Major F. Norman White, *Twenty Years of Plague in India, Proceedings, Medical and Sanitary*, April 1919, Numbers 190-94. pp 2-4.

A comparison between the figures for the rural and urban areas shows that the incidence of fever epidemic in the rural areas was greater than the urban areas. Even the sanitary commissioner noticed this phenomenon in 1893.[128] However, this situation developed gradually. During the late nineteenth century, there was less difference in the mortality rates in rural and urban areas. For example, in 1882, in the Punjab, the fever death rate in the rural areas was 18.50 per mille while in the urban areas it was 17.14 per mille.[129] Significantly, and as evident from the following table, the gap between the rural and urban mortality rates increased in the 1920's and became substantial in the early 1930's.[130]

Table 1.9: Comparison of rural and urban death rate from fever.

Year	Rural death rate per mille	Urban death rate per mille
1882	18.50	17.14
1896	19.12	16.36
1919	19.20	15.50
1920	19.53	16.12
1930	18.95	10.13
1932	17.59	9.87

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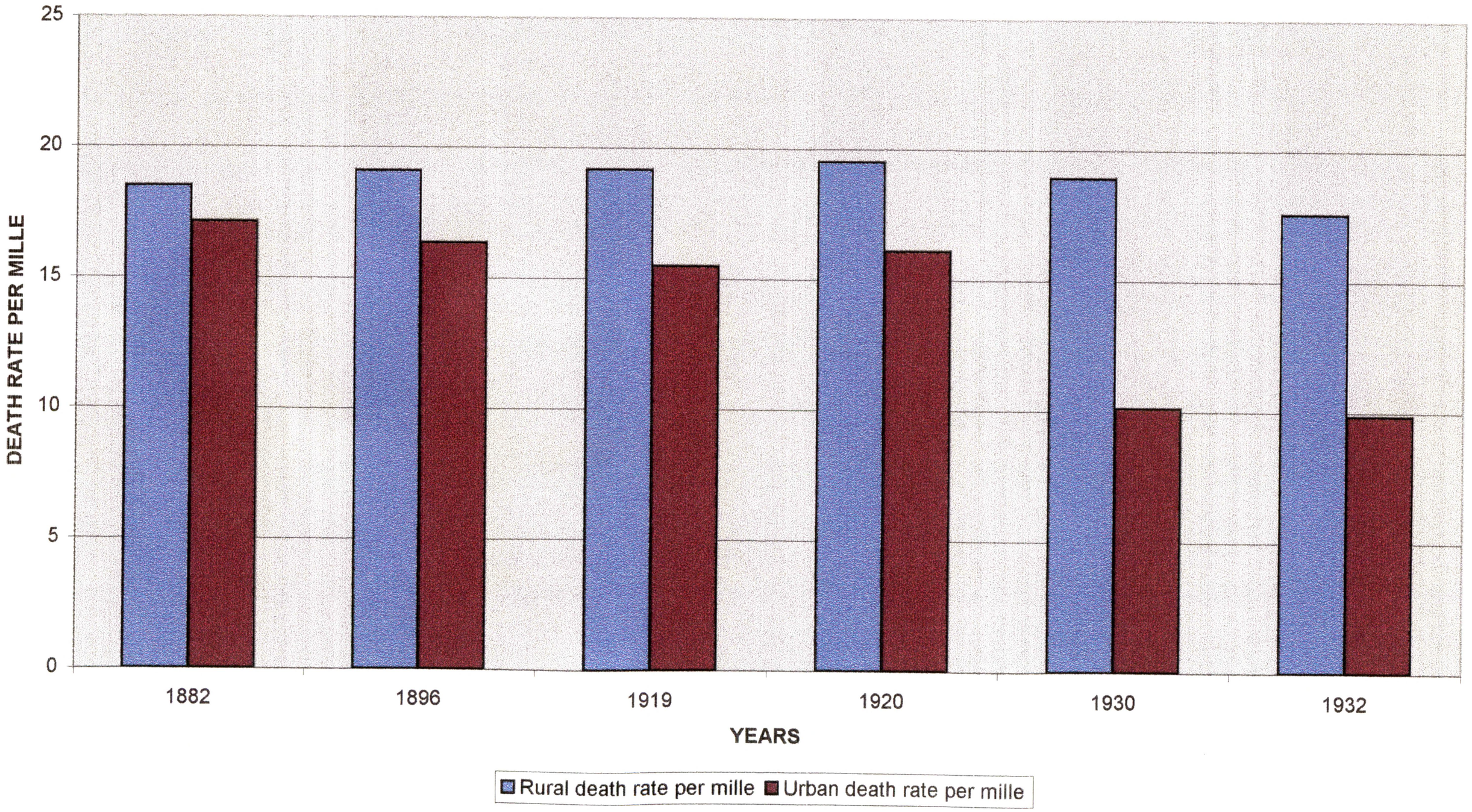
[128] *Proceedings, Home: Medical and Sanitary*, July 1894, Serial Number 37, p132.

[129] *Proceedings, Home: Medical and Sanitary*, May 1884, Serial Number 17, p61.

[130] *Administration Report, 1896-97*, p248. Also, *Administration Report, 1919-20,* p125; *Administration Report, 1931-32*, p110; *Administration Report, 1932-33,* p98.

FIG 1.12 - RURAL AND URBAN DEATH RATE FROM FEVER



Various reasons could be assigned for a higher death rate in villages from nearly all epidemics. Compared to the urban population, the rural population was more exposed to wet and marshy conditions, which were conducive for the breeding of mosquitoes.[131] The lack of funds testified by the administrators themselves also prevented drainage work and filling up of ponds and pools around the villages.[132] In the villages considerable waterlogging was prevalent even in the lanes and by lanes due to absence of good drains, which got aggravated by the expansion of canal irrigation.[133] In general, there was shortage of medical aid and personnel as well. The level of awareness and sanitation was low in villages, and people lived in overcrowded houses. [134] By and large, people lacked information about the contagious nature of the disease and the preventive measures to be adopted.[135]

From 1868 to 1890, the average mortality rate of cholera in the rural areas was 4.87 per mille whereas in the urban areas it was 1.06 per mille.[136] The figures for different years are tabulated below:[137]

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[131] *Proceedings, Home: Medical and Sanitary*, July 1894, Serial Number 37, p132.

[132] *Administration Report, 1903-04*, p44.

[133] *Proceedings of Third Meeting of General Malaria Committee at Madras, November 1912*, Government Central Branch Press, Simla, 1913.p59.

[134] *Census of India,1921,* p13.

[135] *Khalsa Advocate*, October 29, 1918.

[136] *Proceedings, Home: Medical and Sanitary,* July 1890, Serial Number 29, p48.

[137] *Proceedings, Home: Medical and Sanitary*, October 1882, Serial Number 14, p129. Also, *Proceedings, Home: Medical and Sanitary*, June 1891, Serial Number 30, p 33; *Proceedings, Home: Medical and Sanitary*, July 1892, Serial Number 33, p iii; *Administration Report, 1914-15*, pxxii.

FIG 1.13 - RURAL AND URBAN DEATH RATE FROM CHOLERA

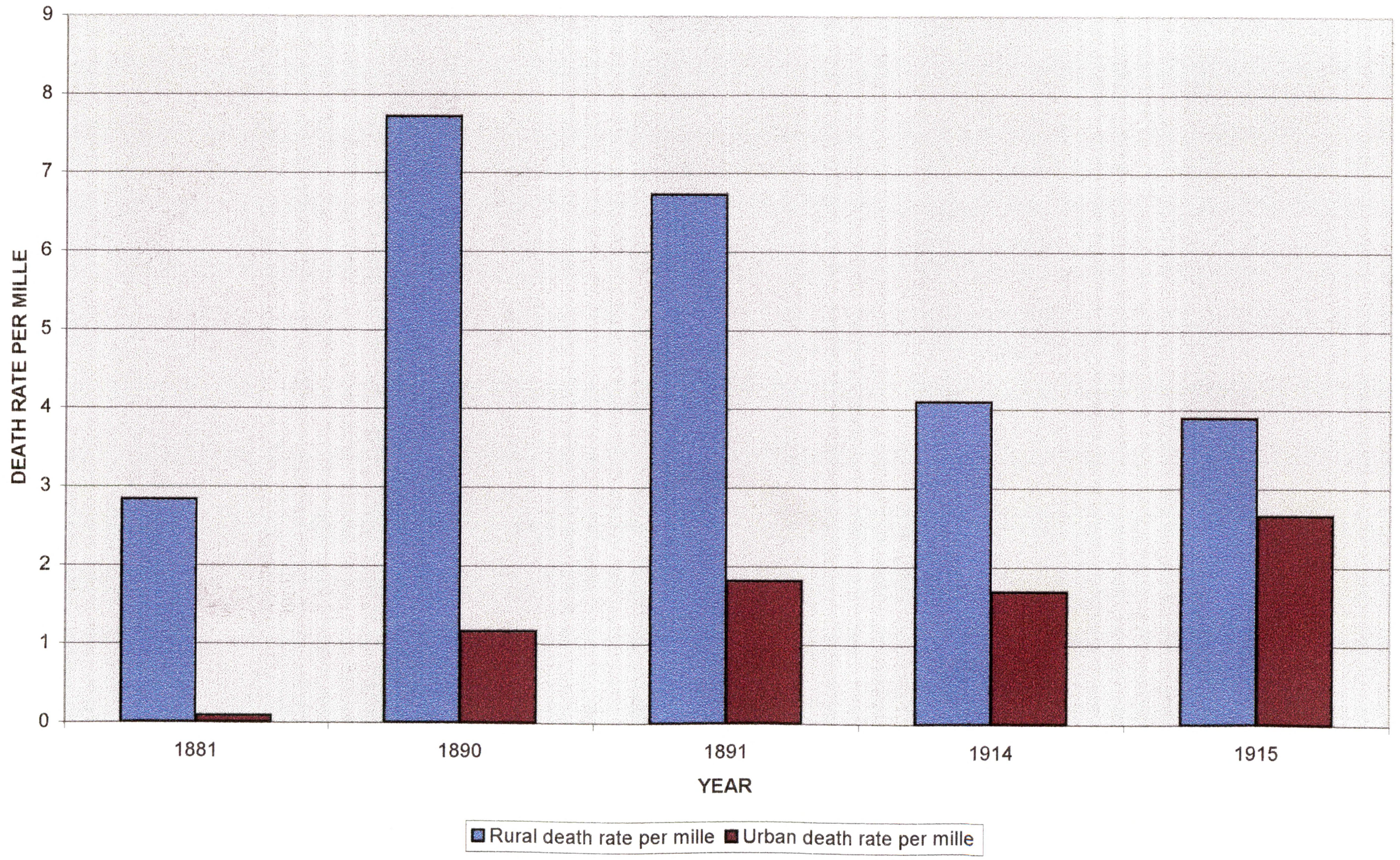

Table 1.10: Comparison of rural and urban death rate from cholera.

Year	Rural death rate per mille	Urban death rate per mille
1881	2.84	0.09
1890	7.72	1.17
1891	6.73	1.82
1914	4.1	1.69
1915	3.9	2.66

This marked difference in the death rate from cholera in the rural areas was primarily due to the impurities of drinking water.[138] It was obtained from *katcha* tanks (tanks made from mud bricks) or shallow wells, which got polluted by organic impurities. Moreover, in most cases, the wells did not have platforms or parapets. The mouth of the wells was lower than the ground around them due to which the water got easily contaminated. In contrast, the wells in the towns or municipal areas were provided with masonary platforms to which copings were attached which prevented the contamination of water.[139] Also, the food sold in the villages was adulterated and unhygienic as the byelaws for the sale of milk, butter and other food articles, which were increasingly being adopted by the municipalities in the urban areas, were hardly not operative in the rural areas.[140]

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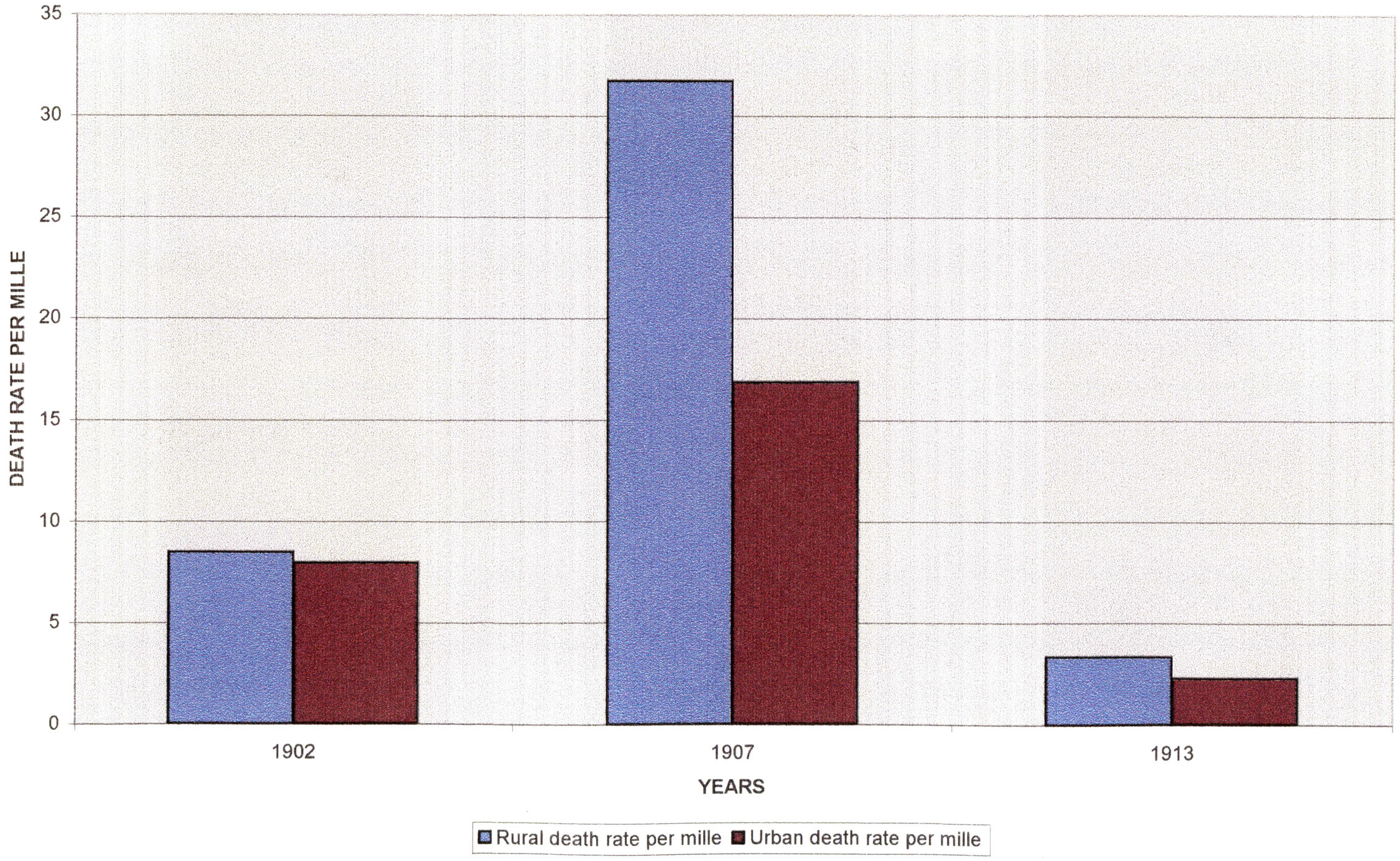
[138] *Proceedings, Home: Medical and Sanitary,* July 1890, Serial Number 29, p48.

[139] *Proceedings of the Government of the Punjab in the Boards and Committees Department,* (cited hereafter as *Proceedings, Boards and Committees Department*) March 1890, Serial Number 13, p74.

[140] *Proceedings, Boards and Committees Department,* 1916, Serial Number 37.

FIG 1.14 - RURAL AND URBAN DEATH RATE FROM THE PLAGUE



The plague too was largely a rural phenomenon. The plague death rate in rural Punjab was 6.30 per mille in excess of the urban deaths caused by the plague.[141]

Table 1.11: Rural and urban mortality rate due to the plague.

Year	Rural death rate per mille	Urban death rate per mille
1902	8.5	7.97
1907	31.76	16.9
1913	3.36	2.3

The poorly ventilated, ill-built and crowded houses facilitated a faster spread of the plague in the rural areas of the Punjab. In the towns, foodgrains were not stored in the houses in as large quantities as in villages, which probably contributed towards a lower prevalence of rats and, consequently, a lower incidence of the plague.[142] Furthermore, the towns had more of *pucca* houses (houses made of burnt bricks), often with several storeys, and compared to the villages the towns had wide streets, paved alleys and sidewalks with covered drains.[143]

The situation in the Punjab was in marked contrast with the situation in other provinces. Apparently, the large irrigation schemes, expansion of cultivation and agrarian prosperity in the region accounted for such a phenomenon.

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[141] *Proceedings, Home: Medical and Sanitary*, July 1916, Number 15-17, p1. Also, *Proceedings, Home: Medical and Sanitary*, July 1903, Number 1-2, pp2-3; *Proceedings, Home: Medical and Sanitary*, July 1908, Number 10-11, p2; Major F. Norman White, *Twenty Years of Plague in India*, *Proceedings, Medical and Sanitary*, April 1919, Number 190-94, p5.

[142] *Proceedings, Home: Medical and Sanitary,* April 1906, Number 20-26, p1.

[143] *Proceedings, Home: Medical and Sanitary,* April 1906, Number 4-8, p2.

Table 1.12: Mean rural and urban plague death rate in other provinces.

Provinces	Mean Rural Plague Death Rate 1913-18	Mean Urban Plague Death Rate 1913-18
United Provinces	1.89	2.30
Bombay	3.1	5
Bihar and Orissa	1.11	2.47
Central Provinces	0.87	6.75

Source: Major F. Norman White, *Twenty Years of Plague in India, Proceedings, Medical and Sanitary,* April 1919, Numbers 190-94, pp3-10.

Among urban areas of the Punjab, the plague caused greater mortality in the small towns. During the early years of the decade, out of the thirty-four towns in which the death rate was over 10 per mille, Ludhiana alone had a population of over 30,000. Only three greatly affected towns had a population between 10,000 and 20,000. There were fifteen towns, including Rupar, Machchiwara and Raikot, with a population between 5000 and 10,000, which had a mortality rate exceeding 10 per mille.[144] In the larger urban centres with a population of 50,000 or more, the plague death rate was 0.04 per mille in 1901.[145] Perhaps, in the cities the emphasis on early detection of the plague cases, followed by segregation, resulted in a lower mortality rate than in the towns. In general too, the municipalities in cities showed more awareness regarding sanitation and also had more funds. As evident from the table given below, the mortality rate in the three major cities was less than 10 per mille in the region.[146]

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[144] *Proceedings, Home: Medical and Sanitary,* July 1903, Number 1-2, p3.

[145] *Proceedings, Home: Medical and Sanitary,* June 1902, Number 5-6, p3.

[146] *Proceedings, Home: Medical and Sanitary*, April 1906, Number 20-26, pp1-3.

Table 1.13: Plague mortality rates per mille in major cities

City	1903	1904	1905
Delhi	0.04	1.29	2.22
Lahore	2.66	9.37	2.49
Amritsar	1.82	6.85	6.91

However, unlike other epidemics, the death rate from smallpox was more in the urban areas. In 1896-97, 'like the previous years,' observed the *Administration Report*, there was a smaller death rate from smallpox in rural areas than in the urban areas.'[147] The relevant figures are tabulated below:[148]

Table 1.14: Comparison of rural and urban death rate from smallpox.

Year	Rural death rate per mille	Urban death rate per mille
1900	0.25	0.53
1901	0.28	0.52
1919	0.74	1.33
1920	0.3	0.5

It may be assumed, on the whole, that since the Vaccination Act was enforced first in the urban areas, people in the towns and cities would ordinarily have benefited from it and got some protection from the disease. Logically, this should have resulted in a lower incidence and mortality from smallpox in the urban areas,

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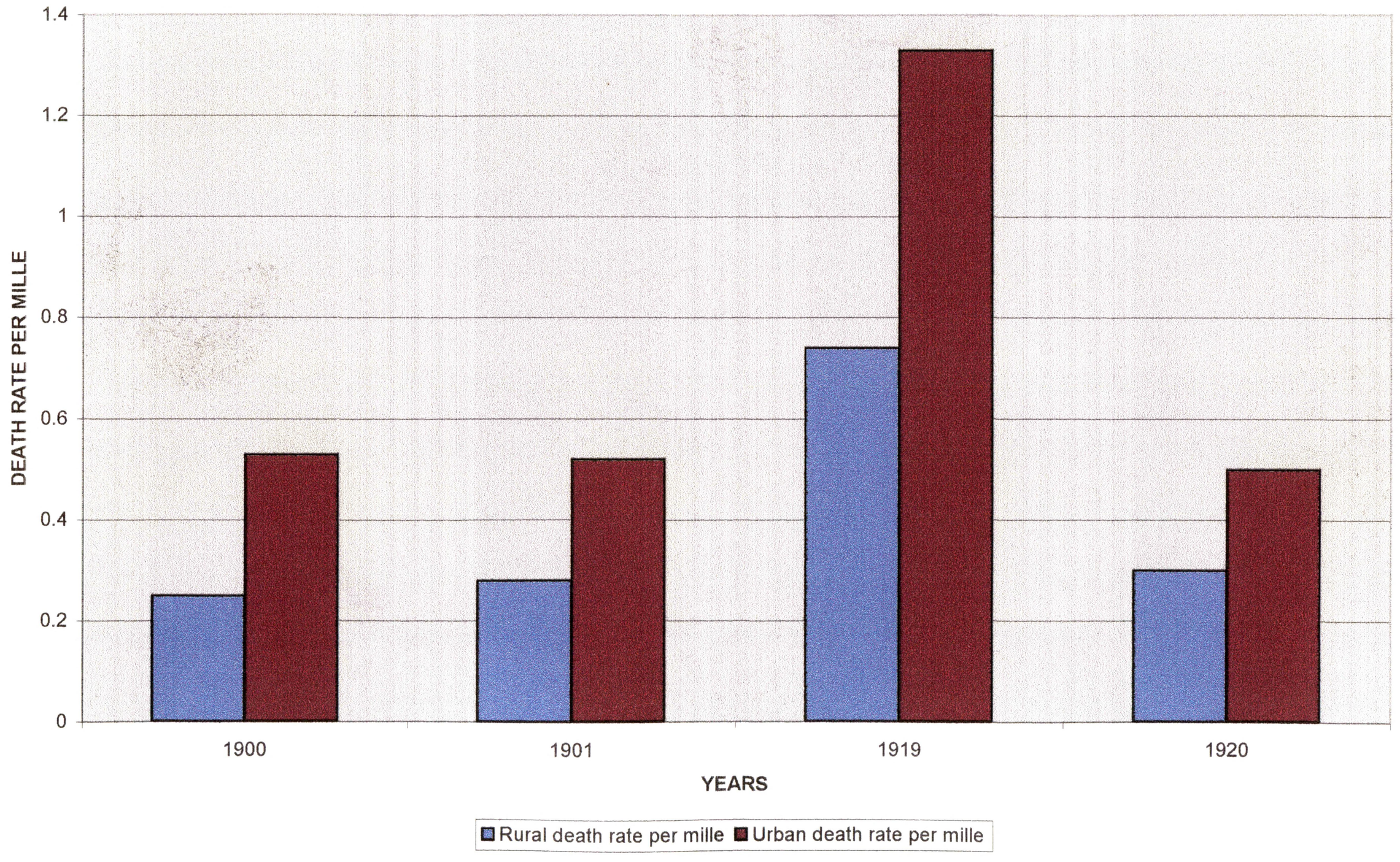
[147] *Administration Report, 1896-97*, p248

[148] *Proceedings, Home: Medical and Sanitary*, October 1901, Serial Number 55, p149, Also, *Proceedings, Home: Medical and Sanitary*, October 1902, Serial Number 56, p 151; *Administration Report, 1919-20*, p124; *Administration Report, 1920-21,* p124; *Administration Report, 1921-22*, p110. In 1925 also, a lower mortality rate from smallpox was noticed in the rural areas.

FIG 1.15 - RURAL AND URBAN DEATH RATE FROM SMALLPOX



but, the available data point to the contrary. Moreover, the awareness level of the urban population would greatly vary by social classes and gender. Also, there were variations in severity and mortality due to geographical and climatic differences in the province. The British tried to contain the epidemics but used funds sparingly in areas where common people were involved. The actual handling of epidemics by the administration reflected the priorities of a colonial regime.

Chapter 2

HANDLING OF MALARIA, SMALLPOX AND CHOLERA

Compared with the pre-colonial times, which were characterised by a total absence of initiative on the part of the rulers in the handling of epidemics, the measures of the British were rather comprehensive. Through its handling of epidemics, the colonial state was enunciating the principle that providing succour in situations of large scale mortality was a function of the government. The measures became more focused and specific as the etiology of different epidemics became clear with the passage of time. At the same time, it is difficult to say whether the British were inspired more by humanitarian considerations or by considerations of preserving their own political and material interests, including the safety of Europeans in the subcontinent. The chapter dwells on the framework and measures adopted by the Punjab Administration to fight the epidemics of malaria, smallpox and cholera and examines their nature and efficacy.

I

The most common way of combating a fever epidemic was to devise ways to prevent the spread of infection, though the emphasis was largely on the use of force and the early experiments in the handling of outbreak of fevers were done with the prisoners. The communication between the infected and the uninfected persons was stopped during the course of an epidemic.[1] Generally, the sick were segregated and kept under

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[1] *Punjab Government Civil Secretariat Proceedings, Home* (cited hereafter as *Proceedings, Home*), November 1872, Serial Number 4, pp 191-92, 859. When

observation; the convalescents were not allowed to return among the uninfected people; and their attendants and relatives were isolated separately. During the fever epidemic at Rawalpindi in 1873, fever cases were kept in huts and tents in the camp for a period of twenty-one days.[2] As evident from the *Medical and Sanitary Proceedings of 1879*, the people suffering from typhus fever were segregated in a similar manner in Peshawar, Lahore and Rawalpindi.[3]

By the 1870s, considerable emphasis began to be laid on disinfection. The houses of the sick were disinfected: floors were leeped, walls were scraped and replastered and the rooms were fumigated. Where the infection was widespread, the infected *mohullas* (residential localities) and the street drains too were disinfected. During the fever epidemic at Rawalpindi in 1873, the rooms were fumigated with sulphuric acid and beds were disinfected by sprinkling carbolic acid and crude oil. Bedding and clothing of the infected persons were washed and fumigated.[4] During the typhus epidemic at Peshawar in 1879 the jail hospital and the cells of the infected prisoners were cleaned, leeped,

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fever broke out in Amritsar jail in 1872, about four hundred prisoners were moved into tents to prevent any communication between the sick and the healthy. For this, extra police guard of sixteen foot constables, two mounted constables and four sergeants were employed. During the fever outbreak in the Central jail at Lahore, the usual weekly day and night leave to the *jamadars* was cancelled.

[2] *Proceedings, Home,* July 1873, Serial Number 5, p 585.

[3] *Punjab Government Civil Secretariat Proceedings, Home: Medical and Sanitary* (cited here after as *Proceedings, Home: Medical and Sanitary*), June 1891, January 1879, Serial Number 11, p10. Also, *Proceedings, Home: Medical and Sanitary,* December 1879, Serial Number 11, p 1012-13.

[4] *Proceedings, Home*, July 1873, Serial Number 5, p585.

disinfected and whitewashed.[5] In 1880, clothes were disinfected by washing and by using hot air chambers.[6]

A scientific understanding of the etiology of malaria took some years to get crystallized. Until 1880, the British attributed malaria to 'miasma' arising from the decomposing vegetable matter. In 1880, Laveran discovered the malaria parasite but his findings were met with considerable hostility and scepticism. In 1894, Sir Patrick Manson suggested that the malaria parasite probably has some kind of mosquito as an intermediate host, but in 1897 Ronald Ross solved the problem of the causation of malaria, clearly establishing the role of mosquitoes in its transmission.[7] Due to the difference in the opinion regarding the cause and mode of controlling malaria, different sets of measures were adopted to combat it. Some administrators favoured Ross's view and advocated mosquito eradication measures while the majority favoured quinine prophylaxis.[8]

There was a general emphasis on the distribution of quinine to prevent and combat malaria. In the course of the malaria epidemic in the 1870s, the government hospitals and dispensaries

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[5] *Proceedings, Home: Medical and Sanitary*, December 1879, Serial Number 11, p 1012-13. Also, *Proceedings, Home: Medical and Sanitary,* August 1881, Serial Number 13, pp 616-23. In 1880, during the outbreak of fever epidemic in Rawalpindi jail, measures similar to the ones adopted in Peshawar jail were carried out.

[6] *Proceedings, Home: Medical and Sanitary*, August 1881, Serial Number 13, pp 616-23.

[7] Simkie Sarkar, 'Malaria in Nineteenth Century Bombay,' in *Disease and Medicine in India: A Historical Overview*, ed. Deepak Kumar, Tulika Books, New Delhi, 2001, pp 134-39.

[8] Mark Harrison, *Public Heath in British India: Anglo Indian Preventive Medicine 1859-1914*, Cambridge University Press, New Delhi, 1994, pp 158-65.

carried out the work of the distribution of quinine. In 1890, tahsildars and vaccinators distributed quinine.[9] Quinine was distributed all through the year from 1897 to reduce the incidence of malaria.[10] In 1898, in Lahore division, the postal agency was used for the distribution of quinine and to bring it within the reach of larger population.[11] In 1903, this arrangement was extended to all the divisions in the province.[12] This was supplemented by some local initiatives taken for the distribution of quinine. The quinine distribution societies were set up in Gurdaspur district in 1909, which distributed the medicine free of cost to the poor and at cost price to those who could afford to buy.[13] In Gurgaon district, the

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[9] *Proceedings, Home: Medical and Sanitary*, April 1891, Serial Number 30, pp 15-17.

[10] *Proceedings, Home: Medical and Sanitary,* July 1898, Serial Number 46, p 177.

[11] *Proceedings, Home: Medical and Sanitary*, July 1898, Serial Number 46, p 181. The system of selling quinine through post offices in the Punjab was borrowed from Bengal. It was started on an experimental basis in 1894 in the Delhi division. After a few months the scheme was extended to Lahore division as well. In this scheme, the consumer paid Rs 1-9-6 for a packet of 102 powders of 5 grams each, Rs 1-8-0 went to the government, and I *anna* (1/16th of a rupee) 6 *pies* (1/12th of an *anna*) was retained by the postal vendor as his commission.

[12] *Proceedings, Home: Medical and Sanitary*, July 1903, Serial Number 60, p 53. Also, *Proceedings, Home: Medical and Sanitary*, July 1908, Serial Number 72, p 55. In 1907, the number of vendors selling quinine in the post offices was increased and their profits augmented. The distribution agencies were attached to the office of the inspector general of hospitals.

[13] *Gazetteer of Gurdaspur District, 1914,* p 197. Also, *Proceedings, Home: Medical and Sanitary*, September 1910, p 87. The societies were set up for the first time in the Punjab in the Gurdaspur district. Here, the society distributed 1,484 pounds of quinine in 1909 and in the next year it distributed 1,195

native druggists were induced to sell quinine.[14] During the malaria epidemic, at Lahore, in 1910, a carriage for the distribution of quinine was bought.[15] In 1910, the local bodies carried out the quinine distribution work. A scheme for the 'quininization' of school children was started in 1916.[16]

As malaria was most prevalent amongst the children and spleen rate was as high as sixty per cent, the chief malaria medical officer prepared a scheme for the spleen census of school children in 1914. The scheme was to be applicable to all children studying in secondary schools recognised by the education department, primary schools in towns and notified areas, and the villages where a government dispensary or a hospital existed. The assistant surgeon or the sub-assistant surgeon was to examine all male children below ten years twice a year in May-June and November-December.[17] Due to the war, this scheme was not carried out until 1918-19, when, six medical inspectors were appointed in the province to carry out spleen census. In 1925, the scheme was

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pounds of quinine. In 1910-11, the societies came to an end and the work of distribution was taken over by the vaccinators and dispensaries.

[14] *Gazetteer of Gurgaon District, 1910,* p 242.

[15] *Khalsa Advocate*, August 14, 1910.

[16] *Proceedings, Home: Medical and Sanitary*, September 1915, Serial Number 86, p 46. Local bodies were asked to bear the cost of 'quininization' of the children. After three to four years the parents were asked to bear the cost in the school fees. The headmasters were asked to explain the disease, the havoc caused by it and its effect on the physical and mental health. They were also asked to maintain quinine registers.

[17] *Proceedings, Home: Medical and Sanitary*, August 1914, Serial Number 84, pp 70-72. The expenditure was borne by the government fund and the assistant surgeons were paid Rs 4 per 100 children.

extended to all schools and colleges and boys studying in certain classes.[18]

Simultaneously, measures for the destruction of mosquitoes and mosquito-breeding places were undertaken. The first detailed investigation to control malaria was carried out in 1901 at Mian Mir cantonment, which laid emphasis on destroying the mosquito-breeding places.[19] This was followed by another investigation in 1908, which studied the relationship between the outbreak of malaria and the incidence of rainfall, canal irrigation and faulty drainage and also established inter-relationship between these.[20] Consequently, the destruction of malaria-carrying mosquitoes was started. For this, collections of water were either drained or filled up, irrigation channels were cut, swamps were oiled and grass and undergrowth were cleared.[21] The mosquito control measures received greater attention in 1940, as there was shortage of

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[18] *Proceedings, Home: Medical and Sanitary*, March 1926, Serial Number 106, pp 1-3.The boys studying in classes one, five, seven, nine and eleven were examined. The hospital staff was paid Rs 8 per 100 boys, the cost of which was met by the Director of Public Instruction. The hospital staff carried out the work of medical examination of all new admissions.

[19] Major S. R. Christophers, *Malaria in the Punjab*, Superintendent Government Printing, Calcutta, 1911, p 5, 84.

[20] *Proceedings, Home: Medical and Sanitary*, February 1910, Serial Number 75, pp 157-58.

[21] *Proceedings, Home: Medical and Sanitary*, October 1908, Serial Number 72, p 80. Also, *Gazetteer of Gujranwala District, 1935*, p54. In the towns, voluntary committees were set which carried out the work of the destruction of mosquitoes under a civil surgeon or a medical officer. This measure was in operation within a quarter of a mile of the inhabited area. The cost of the operation was met by private subscriptions assisted by contributions from the municipal funds.

quinine supplies due to the loss of Java Island in the war.[22] In 1944, spraying of pyretheum and DDT was resorted to for destroying the mosquitoes.[23]

In the areas around the cantonments, efforts were made in the 1890s to reduce waterlogging caused by rice irrigation. For this, rice and sugarcane irrigation was prohibited either by passing an order or by enhancing the water rate. Also, for a while, rice cultivation was replaced by indigo cultivation.[24] In 1892, the irrigation of all *kharif* crops by the Swat river canal in the villages in the vicinity of Mardan cantonment was prohibited.[25] Cultivation of crops was prohibited in the villages in the vicinity of cantonments at Kohat, Dera Ghazi Khan and Edwardesabad (Bannu).[26]

Various drainage schemes introduced in the towns and cities as a part of the general public health measures were intended to

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[22] *Punjab Government Civil Secretariat Proceedings, B, Home: Public Health,* (cited here after as *Proceedings, Home: Public Health*) 1943, Number 140, pp 3-4.

[23] *Proceedings, B, Home: Public Health*, 1944, Number 102, pp 2-3. Local bodies or municipal committees carried out the work of spraying in the towns. In the villages, municipal committees and the villagers carried out the spraying twice a week. Spraying was done with pyrethrum, a flower extract, twice a week. At many places, larvaecidal fish was used in the ponds to prevent breeding of mosquitoes.

[24] *Proceedings, Home: Medical and Sanitary*, December 1890, Serial Number 29, pp 95-99. Drainage of fields was suggested but was not carried out as it injured the neighbouring fields.

[25] *Proceedings, Home: Medical and Sanitary*, January 1894, Serial Number 36, p 22. This was done as it was believed that irrigation had a detrimental effect on the health of the troops. To study the health of the troops, the fever statistics prior to 1886, and after 1886 were observed.

[26] *Proceedings, Home: Medical and Sanitary*, May 1896, Serial Number 40, pp 71-73.

reduce the water-collections, thereby, reducing the breeding of mosquitoes. In 1880, in Amritsar, Akalia *bagh* (garden) was drained and Akalgarh *dhab* (a natural depression) was converted into a garden. A drainage project was also started in Amritsar.[27] Similar schemes were started in 1885 in Rawalpindi and Sialkot.[28] The Ludhiana drainage scheme was started in 1889 and completed in 1895.[29] In 1891, the Ferozepur drainage scheme was started, and the city ditch at Amritsar was filled up.[30] Drainage schemes for different towns and cities continued to be undertaken in the early decades of the next century until the war broke out.[31] The completion of such schemes in Karnal, Jalandhar, Hoshiarpur,

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[27] *Proceedings of the Government of the Punjab in the Financial and Local Funds Department (Municipal)*, (cited hereafter as *Proceedings, Municipal*) 1881, p 10.

[28] *Proceedings, Municipal*, 1885, pp 254-56.

[29] *Proceedings of the Government of the Punjab in the Boards and Committees Department* (cited hereafter as *Proceedings, Boards and Committees Department*) 1896, Serial Number 17, p83.

[30] *Proceedings, Boards and Committees Department, 1891,* Serial Number 14, p36.

[31] *Proceedings, Boards and Committees Department,* 1903, Serial Number 24, p210. Also, *Proceedings, Boards and Committees Department*, 1906, Serial Number 26, pp 168-70; *Proceedings, Boards and Committees Department*, 1913, Serial Number 34, pp 21-22; *Proceedings, Boards and Committees Department,* 1910, Serial Number 31, p3; *Proceedings, Boards and Committees Department,* 1915, Serial Number 36, pp 16-28. Drainage projects for Lahore, Amritsar, Multan and Hoshiarpur were started in 1900. Drainage work was completed in Multan in 1906 while it was in progress in Delhi, Rohtak, Ambala, Jhelum, Rawalpindi, and Hansi. In 1908, intra mural drainage in Delhi was completed, while the work for extra mural drainage was started. The next year drainage scheme for Lahore was started. In 1912, Rs 1.5 lakhs were sanctioned for Rawalpindi drainage project. Drainage schemes were in progress in Wazirabad, Murree, Ferozepur and Amritsar in 1915.

Jhang, Sargodha and Moga were delayed till 1917 due to the wartime scarcities and the increased cost of materials. At this time, the plague is reported to have interfered with the carrying out of the drainage operations in Rewari and Lyallpur.[32] In 1919, drainage projects deferred earlier due to the war were started.[33]

At the same time, it was conceded that the measures like drainage of sub-soil and destruction of mosquitoes were 'large scale, long term and expensive,' and were taken up half-heartedly. Consequently, in 1910, specific preventive measures were discussed in a General Committee meeting on malaria, which laid emphasis on mosquito extirpation and use of well-known contrivances for protection from mosquito bites.[34] The need for adopting a combination of measures was stressed at a Malaria Conference held at Madras in 1912. [35] Following this, malarial surveys were carried out in Delhi and nearby areas and holes and

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[32] *Proceedings, Boards and Committees Department*, February 1919, Serial Number 40, pp 18-19.

[33] *Proceedings, Boards and Committees Department,* 1919, Serial Number 40, pp 16-28.These drainage projects were for Dera Ghazi Khan, Montgomery, Jhang, Sialkot, Gurdaspur and Rohtak.

[34] *Proceedings, Home: Medical and Sanitary*, January 1911, Serial Number 77, p 88. Training was imparted to medical officers and subordinates on malaria prevention.

[35] *Proceedings, Home: Medical and Sanitary*, January 1915, Serial Number 85, pp 107-08. The measures included carrying out simultaneously quinine prophylaxis for the entire population, filling up ditches, and educating children through schools, lectures and lantern demonstrations. The conference also discussed the work of the Central Malaria Bureau, outbreak of malaria in Madras, results of the malaria survey in Delhi, conditions favouring the breeding of mosquitoes and malaria preventive measures.

ditches were filled up to prevent breeding of mosquitoes.[36] Delhi was singled out for this special treatment because of the forthcoming imperial *Darbar* and its impending status as the capital of British India. Various experiments were also carried out to find a successful method to combat malaria. In 1913, experiments regarding the effect of introduction of fish in mosquito breeding grounds were carried out.[37] Experiments regarding the therapeutic value of different drugs were also carried out.[38] Following the experiments, daily dosage of the quinine salt was fixed.[39]

The measures like the use of quinine prophylaxis, destruction of mosquitoes and improved drainage helped to moderately lower the mortality rate in the Punjab. However, their

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[36] *Proceedings, Home: Medical and Sanitary*, November 1918, Serial Number 92, pp160-62. Also, *Proceedings, Home: Medical and Sanitary*, April 1913, Serial Number 81, p 21; *Proceedings, Home: Medical and Sanitary*, December 1913, Serial Number 82, pp 103-07. In 1913, the survey was extended to the nearby Palwal and a grant of Rs. 35,000 was made for malaria eradication. In the same year the scheme was applied in districts of Montgomery and Lahore.

[37] *Proceedings, Home: Medical and Sanitary*, December 1913, Serial Number 82, pp 103-07.

[38] *Proceedings, Home: Medical and Sanitary*, August 1914, Serial Number 84, pp 108-09. Also, *Proceedings, Home: Medical and Sanitary,* June 1912, Serial Number 79, p 123. Experiments regarding the effectiveness of quinine, harmaline, harmine, cinchona febrifuge, quinine hydrochloride, quinine sulphate and cinchonide in the treatment of malaria were carried out. It was observed that both harmaline and harmine were inferior to quinine in destroying the malarial parasite and had a depressing effect on the patient. Also, hydrochloride of quinine was preferred, as it did not upset the digestive system.

[39] *Proceedings, Home: Medical and Sanitary*, March 1914, Serial Number 83, pp 112-13.Thirty grams of quinine for several days formed an effective cure. The dosage for pregnant women was fixed at twenty grams and for the children below five years at five grams while those up to fifteen years at fifteen grams.

implementation remained limited in scope due to financial considerations.

II

As in the case of fevers, to combat smallpox also the British resorted to segregation and disinfection. Their main emphasis however was on vaccination, which was intended to be a long term measure.

Initially, in the 1870s, to prevent the spread of smallpox, the sick were isolated in a tent or a grass hut situated at a distance from the inhabited areas.[40] In 1889, smallpox patients were segregated in isolation wards in the hospitals in addition to tents and huts. At Lahore, Europeans and Eurasians were segregated in a hospital set up for this purpose. Till the time the hospital was constructed, Dr Bilbeys old hospital was used for segregating the Europeans. A similar hospital was opened in Simla at Boileauganj in 1913. A smallpox hospital at Lahore was constructed in March 1915 to segregate the Indians suffering from smallpox.[41] In addition, the isolation wards and tents in which the sick were kept were disinfected and not used for ten days after disinfection.[42]

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[40] *Proceedings, Home: Medical and Sanitary*, November 1877, Serial Number 9, p 1025.

[41] *Proceedings, Home: Medical and Sanitary*, March 1889, Serial Number 26, p 37-38. Also, *Proceedings, Home: Medical and Sanitary*, January 1913, Serial Number 81, p 211; *Proceedings, Home: Medical and Sanitary*, March 1915, Serial Number 85, p 63.

[42] *Proceedings, Home: Medical and Sanitary*, November 1877, Serial Number 9, p 1025.

Even the bedding, clothing, cots and *pankha* (hand-fan) fringes were reported to have been 'thoroughly disinfected.'[43]

The 'benevolent and humane' practice of arm-to-arm vaccination was one of the earliest medical measures undertaken by the Punjab government. During the 'vaccination season,'[44] a few children were vaccinated and then, on the eighth day, children bearing the best lymph vesicles were selected as vaccinifers.[45] The people to be vaccinated were collected together at a place and vaccinated from the vaccinifer belonging to the same village.[46] In 1884, arm-to-arm vaccination was replaced by calf lymph vaccination. Vaccinations were generally carried out at a central place; it was even done in the house after paying a fee to the vaccinator.[47] In 1890, buffalo, donkey, sheep and goat lymph were also used for making the vaccine.[48] In 1896, calf lymph preserved

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[43] *Proceedings, Home: Medical and Sanitary*, November 1877, Serial Number 9, p 1025-26.

[44] *Proceedings, Home: Medical and Sanitary, September 1882*, Serial Number 14, p 95. The vaccination season extended from November 1 to March 31 in the plains and April 1 to October 31 in the hills.

[45] *Proceedings, Home: Medical and Sanitary*, June 1880, Serial Number 12, pp 342-43.

[46] *Proceedings, Home: Medical and Sanitary*, September 1882, Serial Number 14, p 95. Several batches of twenty to thirty people were vaccinated from arm to arm.

[47] *Proceedings, Home: Medical and Sanitary*, September 1903, Serial Number 60, p 127. Initially, calf lymph was used, which was taken on the fifth day from the udder of the animal under one year free from any contagious disease. Vaccination was still carried out in the vaccination season which was the same as was prevalent earlier.

[48] *Proceedings, Home: Medical and Sanitary*, July 1891, Serial Number 30, p 42.

in vaseline was used. Further changes were made in the vaccine in 1904 when glycerinated lymph treated with chloroform was used.[49]

The provincial government set up an elaborate framework for vaccination work for which the province was divided into two circles in 1856. A superintendent-general was appointed for each circle who had an establishment of Indian vaccinators working under him. This system continued until 1868, when, the sanitary commissioner took charge of the vaccination department. Consequently, each circle had a deputy sanitary commissioner who supervised the vaccine operations, and the work of the district medical officers. The district medical officers directed the work of the vaccinators.[50] The existing working staff of the provincial vaccine establishment and the staff of several local vaccine establishments were amalgamated into a single vaccination department in 1881.[51]

Further changes were made in the vaccination establishment in 1889. Vaccination work was carried out by four establishments—dispensary, district, cantonment and special staff.[52] From 1906, vaccinators were employed by the local bodies and were under

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[49] *Proceedings, Home: Medical and Sanitary*, July 1907, Serial Number 70, p 52.

[50] *Proceedings, Home: Medical and Sanitary*, September 1881, Serial Number 13, p 661. The eastern circle comprised of Delhi, Hissar, Ambala, Jalandhar and Amritsar districts while the western circle comprised of Lahore, Rawalpindi, Multan, and Peshawar districts.

[51] *Proceedings, Home: Medical and Sanitary*, September 1881, Serial Number 13, p 660-61. The vaccination department had 312 vaccinators employed in it.

[52] *Proceedings, Home: Medical and Sanitary*, July 1890, Serial Number 29, p 38. The dispensary and district staff worked throughout the province, the cantonment staff worked in the military stations and the special staff worked in the native states.

their administrative control.[53] In September 1926, vaccination work was placed under the district medical officer of health.[54]

In 1929, the province was divided into vaccination circles, corresponding to the area of the police stations. For each vaccination circle the district board appointed a vaccinator who worked under the district medical officer of health. For six vaccination circles, the district board appointed superintendent of vaccination. The vaccinator was required to visit each village in the vaccination circle twice during the vaccination season. Vaccinations by this time were carried out generally in a school or *sarai* (a shelter for transients).[55]

The government sought to make vaccination compulsory for children in certain municipalities and cantonments. For this purpose, a bill was introduced in 1879, which also prohibited the practice of variolation. In 1880, this bill was passed as the

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[53] *Proceedings, Home: Medical and Sanitary*, March 1907, Serial Number 69, p 149. Vaccinators ceased to be enrolled as the servants of the government, though the existing incumbents retained their present rights to pension from the government.

[54] *Proceedings, A, Home: Public Health*, 1936, Number 2, p 3. For district headquarters and municipalities, separate municipal medical officers of health were appointed to carry out the vaccination work. The municipal towns which were the headquarter stations and where no medical officer of health was employed, vaccination work was carried out by the civil surgeon.

[55] *Proceedings, A, Home: Public Health*, 1936, Number 2, p 3. The vaccination work in the district board areas, small towns notified area committees and municipal towns was carried out by the district medical officer of health where no separate medical officer of health was employed. For the towns where separate medical officer of health was employed, the municipal medical officer of health carried out the vaccination work. For the municipal towns where there was no separate medical officer of health, the civil surgeon and the dispensary staff carried out the vaccination work.

Vaccination Act. However, it was enforced mainly in the cities and the summer capital.[56] Gradually, it was extended to some other urban areas of the province.[57] In 1886, although the Governor General-in-Council proposed that before entering the service all government servants should be vaccinated, but it was only in 1919, that this proposal was put into practice.[58] In 1929, compulsory vaccination was extended to rural areas.[59]

The British made efforts to popularise vaccination. The deputy sanitary commissioner went to a number of villages in 1874 to explain the benefits of vaccination to the people.[60] In 1877, the hospital assistants were directed to work towards removing the reluctance of the people for getting themselves vaccinated.[61] In

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[56] *Proceedings, Home: Medical and Sanitary*, July 1884, Serial Number 18, p 93. Also, *Proceedings, Home: Medical and Sanitary*, August 1887, Serial Number 24, p 89; *Proceedings, Home: Medical and Sanitary*, August 1888, Serial Number 25, p 89. In 1884, the Act was enforced in Lahore Municipality, and in 1887 at Simla and Amritsar.

[57] *Proceedings, Home: Medical and Sanitary*, December 1879, Serial Number 11, p 1.

[58] *Proceedings, Home: Medical and Sanitary*, February 1886, Serial Number 21, pp 19-20. Also, *Proceedings, Home: Medical and Sanitary,* August 1919, Serial Number 94, p 70. . This was not applicable in all the provinces but was applied at the discretion of the local governments and the Administration. In the Punjab it was not applied though it was applicable in Madras, Bombay, Central Provinces, Berar and North Western Provinces. After, the proposal was accepted all the heads of the department ensured that the government employees subordinate to them were protected against smallpox.

[59] *Proceedings, A, Home: Public Health,* 1929, Number 4, p 3.

[60] *Proceedings, Home,* February 1874, Serial Number 6, pp 88-89. He showed his scar to the people in an attempt to remove their apprehensions.

[61] *Proceedings, Home: Medical and Sanitary*, July 1877, Serial Number 9, p 681.

1882, the native superintendent of vaccination supervised the operations of the district staff, worked with zaildars and lambardars for giving assistance to vaccinators in carrying out the vaccination work.[62] In 1884, committees and sub committees were appointed to investigate and report on the unpopularity of the vaccination.[63] From 1886, the sanitary commissioner himself gave lectures about the benefits of vaccination in the villages.[64] In 1891, the tahsildars and naib tahsildars were asked to enquire about the conduct of the vaccinators from the people and the difficulties they faced during the vaccination operations.[65]

To make vaccinators acceptable to the people, the municipal committees were asked in 1874 to choose local persons of 'good character' as vaccinators.[66] In 1881, persons with 'some standing' were imparted training and employed as vaccinators.[67] During the non-vaccinating season, the vaccinators were asked to work in the dispensaries.[68] In 1883, the vaccinators distributed medicines to

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[62] *Proceedings, Home: Medical and Sanitary*, February 1882, Serial Number 14, p 27. Also, *Proceedings, Home: Medical and Sanitary*, October 1892, Serial Number 33, pp 74-75.

[63] *Proceedings, Home: Medical and Sanitary*, December 1884, Serial Number 18, p 143.

[64] *Proceedings, Home: Medical and Sanitary*, May 1886, Serial Number 21, p 75.

[65] *Proceedings, Home: Medical and Sanitary*, July 1891, Serial Number 30, p 60.

[66] *Proceedings, Home,* April 1874, Serial Number 6, p 186.

[67] *Proceedings, Home: Medical and Sanitary*, February 1881, Serial Number 13, pp 84-85. For this Sayyids, Mullahs, Brahmans and variolators were employed as vaccinators. No person belonging to low caste was employed.

[68] *Proceedings, Home: Medical and Sanitary*, September 1882, Serial Number 14, p 92.

the sick during the smallpox outbreaks.[69] In the subsequent year, they carried simple medicines for healing the sick.[70] The superintendent of vaccination checked the working of the vaccinators to prevent forcible vaccinations.[71]

The native elites were induced to set examples by getting the members of their families vaccinated. In Delhi, Lala Sheo Sahai Mal, honorary magistrate and member of the municipal committee set an example by getting his own son vaccinated, and also assisted in securing 288 children for vaccination.[72] In Karnal, Jhanda Mal, a member of the municipal committee, got his brother's children vaccinated.[73] In Tanda Urmar and Aiapur, the municipal committee members tried to diffuse knowledge about the benefits of vaccination.[74] In Multan, municipal committee members, in particular Seth Ganga Ram, was reported to have taken 'active interest' in overcoming the prejudices of the people against

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[69] *Proceedings, Home: Medical and Sanitary*, June 1883, Serial Number 15, p 76.

[70] *Proceedings, Home: Medical and Sanitary*, December 1884, Serial Number 18, pp 137-38. Also, *Proceedings, Home: Medical and Sanitary*, July 1888, Serial Number 25, p 73. In 1887, 48,397 people were treated by the vaccinators. Vaccinators treated 5106 persons in Jalandhar, 3799 in Karnal, 3469 in Rohtak, 2832 in Jhang, 1986 in Ambala, 1774 in Multan, 1474 in Bannu, 1251 in Shahpur, 1200 in Gurdaspur, 988 in Ludhiana, 949 in Muzaffargarh, 603 in Rawalpindi, 559 in Kohat, 543 in Gujrat, 412 in Sialkot, 374 in Ferozepur, 347 in Dera Ismail Khan, 300 in Dera Ghazi Khan, 204 in Montgomery, 167 in Lahore, and 60 in Jhelum.

[71] *Proceedings, Home: Medical and Sanitary,* June 1901, Serial Number 54, p98.

[72] *Proceedings, Home: Medical and Sanitary*, December 1884, Serial Number 18, p 142.

[73] *Proceedings, Home*, April 1874, Serial Number 6, p 175.

[74] *Proceedings, Home*, March 1875, Serial Number 7, pp 160-62.

vaccinations.[75] The members of municipal committees of Multan, Ferozepur and Ambala motivated the villagers to come forward for vaccination.[76] The native rulers, for instance, of Bassahir and Faridkot set examples for popularising vaccination by getting their own children vaccinated.[77]

Notwithstanding the elaborate machinery, and the special measures to make vaccination acceptable to the people, the vaccination programme made relatively small progress. Despite an increase in the number of the vaccinated persons, the mortality from smallpox remained high as many new born children were left unvaccinated due to the prejudices of the people, infrequent visits of the vaccinators and practical difficulties of enforcing vaccination over large areas. The conduct of the vaccinators was no less discouraging to the people who in any case found it difficult to adjust with the novelty of vaccination. [78]

III

The handling of cholera also was linked to the level of scientific knowledge, which however remained tentative till the 1890s. The British in India took more than a decade to assimilate the German bacteriologist, Robert Koch's discovery in 1883, of comma shaped bacilli in water as an essential cause of cholera. In fact, there was a considerable difference of opinion among the British medical officers, which could be resolved only in 1897 when E. Metchnikoff,

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[75] *Proceedings, Home*, January 1875, Serial Number 7, p 37.

[76] *Proceedings, Home: Medical and Sanitary*, October 1880, Serial Number 12, p 540-41.

[77] *Proceedings, Home,* August 1876, Serial Number 8, pp 552-53. Also, *Proceedings, Home: Medical and Sanitary*, October 1880, Serial Number 12,p 541.

[78] For a discussion, see chapters IV and V below.

working at Institute Pasteur in Paris, induced cholera in himself after drinking the water containing comma bacilli. These differences of opinion had a bearing on the preventive measures recommended to be adopted. Concurring with Koch's findings, some administrators advocated improvements in the water supply, while others were inclined more towards making sanitary improvements. The view of the Punjab sanitary commissioner expressed in 1896 reflects this ambivalence in the scientific knowledge about the cause of cholera: 'There are of course other modes of dissemination of cholera but probably defiled drinking water is the commonest. It is not certain that a specific organism in water is the cause of cholera, though it is undoubtedly associated with it.'[79]

In this situation of uncertainty and ambivalence regarding the causal agent of cholera during the last quarter of the nineteenth century, the British continued to lay emphasis on preventing the spread of cholera through cordons. A 'sufficient' number of men were deployed to set up a cordon around the infected area on the assumption that there was 'danger from the affected persons and their belongings.' In 1874, nearly one-third of the affected places were cordoned off.[80] Although the sanitary commissioner of the Punjab talked about the futility of quarantine in 1886, it continued to be enforced on river Jhelum near Rawalpindi and Indus.[81]

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[79] *Proceedings, Home: Medical and Sanitary*, July 1897, Serial Number 44,p609.

[80] *Proceedings, Home,* November 1874, Serial Number 6, pp 457-58. Forty-eight towns out of a hundred and fifty seven towns were placed under quarantine. These included Jalandhar, Ferozepur, Multan, Sialkot, Mian Mir, Murree, Naushera and Peshawar amongst others.

[81] *Proceedings, Home: Medical and Sanitary*, October 1876, Serial Number 8, p 660.

The next logical step was the segregation of the infected persons during the course of an epidemic. In 1867, in Sialkot district, the sick were forcibly removed to groves and areas near the wells outside the village.[82] In 1872, the native doctors were required to isolate all the cases of diarrhoea till their nature was ascertained.[83] Although the segregation of the sick continued even in the twentieth century, they were not forcibly removed to camps or hospitals. In Amritsar in 1914, the patients were segregated in their houses as well as in the hospitals. In 1937, in Ambala, the sick were asked to move to the civil hospital; those who refused were kept in isolation in their houses only.[84]

Simultaneously, restrictions were placed on the movement of people. They were not allowed to fulfil social obligations. In 1867, marriage processions and fairs were prohibited in the Sialkot district.[85] Marriage feasts were prohibited again in 1874 to prevent the spread of cholera.[86] In 1882, a limit was imposed on the number of the people attending the fairs, especially at Hardwar.[87] In 1897, all fairs were prohibited, as the British administrators came to believe that large gatherings led to insanitary conditions.[88]

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[82] *Proceedings, Home*, May 1875, Serial Number 7, p 381.

[83] J. M. Cunningham, *Cholera Epidemic of 1872,* p 30. Also, *Proceedings, Home,* November 1872, Serial Number 4, pp 859-60. The prisoners of Lahore jail were removed from their barracks and isolated in the tents in the camps.

[84] *Proceedings, B, Home: Public Health,* Number 195, pp 8-10.

[85] *Proceedings, Home*, May 1875, Serial Number 7, p 381.

[86] *Proceedings, Home,* November 1874, Serial Number 6, p 457.

[87] *Proceedings, Home: Medical and Sanitary,* November 1883, Serial Number 15,p 282.

[88] *Proceedings, Home: Medical and Sanitary*, February 1902, Serial Number 56, p 6. Also, *Proceedings, Home: Medical and Sanitary*, September 1914, Serial Number 84, p 142; *Proceedings, B, Home: Public Heath,* 1928, Number

Disinfection followed cordons and segregation, though the disinfecting agent varied with place and time. In 1867, the infected houses in Sialkot were fumigated and replastered.[89] When cholera broke out in Lahore jail in 1872, all rooms in the barracks were cleaned and fumigated.[90] In 1875, the infected houses in Amritsar were fumigated with sulphur and drains cleaned with McDougals powder.[91] In 1891, the *sarais* and houses in the neighbourhood of the infected area of Murree were whitewashed and disinfected with soluble phenyl.[92] During the cholera outbreaks at Lahore and Amritsar in 1908 and 1914 respectively, similar methods of disinfection were carried out.[93]

Even the belongings of the people were disinfected. It was based on the principle of destroying the infection 'when we are unable to prevent it.' During the cholera epidemic at Sialkot in 1867, the sick were required to change and wash their clothes so as to disinfect them.[94] In 1875, the linen and the clothes of the sick

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64, pp 9-10. In 1897, 1902, the Barri Latif Shah fair held annually was prohibited. The Thanesar Sun Eclipse fair too was not allowed to be held. In 1928, the Bhawarna agricultural fair and fairs at Siraj and Nikhans in Dehra *tahsil* were prohibited.

[89] *Proceedings, Home,* May 1875, Serial Number 7, p381.

[90] *Proceedings, Home*, November 1872, Serial Number 4, pp 859-60.

[91] *Proceedings, Home: Medical and Sanitary*, June 1876, Serial Number 8, pp 338-39.

[92] *Proceedings, Home: Medical and Sanitary,* October 1892, Serial Number 33, pp85-86. *Sarais* at Tret and Chattar were whitewashed, fumigated and disinfected.

[93] *Proceedings, Home: Medical and Sanitary,* October 1909, Serial Number 74,pp 51-55. Also, *Proceedings, Boards and Committees Department,* October 1914, Serial Number 217, pp 1-2.

[94] *Proceedings, Home,* July 1875, Serial Number 7, p381.

were boiled so as to disinfect them.[95] Although in 1881, the Lt. Governor prohibited the disinfection of personal belongings, it was still carried out. In some situations in 1882, the clothes and furniture were washed with phenyl and kept in the sun.[96] In 1886, the linen and clothes of the patients were washed with soap and water, boiled and kept in the sun, while, the bedding was burnt.[97] The burning of the soiled clothing and articles continued till 1937.[98]

For providing medical relief to people, makeshift hospitals were set up in the existing dispensaries or even using temporary accommodation.[99] During the cholera outbreak at Amritsar in 1875, four temporary hospitals served as the headquarters where medical staff treated the patients and medicines were stored.[100]

Some efforts were made in the rural areas towards improving the water supply. The wells in the rural areas were disinfected with lime, alum or potassium permanganate from

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[95] *Proceedings, Home: Medical and Sanitary,* June 1876, Serial Number 8, p 337.

[96] *Proceedings, Home: Medical and Sanitary,* October 1882, Serial Number 14, pp 126-27.

[97] *Proceedings, Home: Medical and Sanitary,* May 1886, Serial Number 21,p73.

[98] *Proceedings, B, Boards and Committees Department,* October 1914, Serial Number 217, pp 1-2. Also, *Proceedings, B, Home: Public Health,* Number 195, pp 8-10.

[99] *Proceedings, Home: Medical and Sanitary*, November 1876, Serial Number 8, p 798. These were looked after by an assistant surgeon, hospital assistant and attendants.

[100] *Proceedings, Home: Medical and Sanitary,* June 1876, Serial Number 8, p337. The hospitals had *sirki* walls, thatched roofs and raised floor which was disinfected by Mc Dougals powder and burning of charcoal.

1895.[101] From 1897 onwards, the wells of all villages in the immediate vicinity of the affected area were disinfected toss obviate the appearance of cholera. Also, platforms and parapets were provided on the wells with monetary assistance from the district funds.[102] In the Gurgaon district, annual cleaning of drinking wells was started in 1910 and parapets constructed.[103] In 1929, matters relating to water supply schemes in the rural areas were dealt with by the rural sanitary board, following which hand-pumps were installed in the villages.[104]

Bathing on the platforms of the wells was prohibited in the towns in 1875.[105] In 1879, the sanitary commissioner Punjab directed the municipalities to clean the wells and the tanks and to protect them from all polluting matter.[106] During the cholera epidemic in 1908, people were asked to consume boiled water,

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[101] *Proceedings, Home: Medical and Sanitary,* July 1896, Serial Number 41, p 120.

[102] *Proceedings, Home: Medical and Sanitary*, July 1897, Serial Number 44, p 609. Also, *Proceedings, Home: Medical and Sanitary*, September 1905, Serial Number 65, p 59. In 1903, 8825 wells were cleaned and 2710 wells protected with parapet walls.

[103] *Gazetteer of Gurgaon District, 1910*, p 242.

[104] *Proceedings, B, Home: Public Health*, 1929, Number 6, pp 1-2. Also, *Proceedings, B, Home: Public Health*, 1944, Number 66, p 3. Funds were placed at the disposal of the board for water schemes and grants in aid were made for water supply schemes in the villages. In 1935, in Gujranwala district, 926 hand-pumps were installed in the houses.

[105] *Proceedings, Home,* June 1876, Serial Number 8, p 335.

[106] *Proceedings, Home: Medical and Sanitary*, January 1879, Serial Number 11, p 13. The wells were cleaned with Potassium permanganate.

use hot water for rinsing mouths, and washing.[107] Only Jhiwars (water-carrier by caste) were allowed to draw water from wells in 1915.[108] In 1921, the district boards provided vessels to draw water from the wells.[109] Chlorination of water was started in 1937.[110]

In some urban centres, initially, the major cities and cantonments, water supply schemes were undertaken which included construction of large reservoirs, laying of pipes and sinking of additional wells.[111] In the first decade of the twentieth century, such schemes were extended to other towns as well. [112]

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[107] *Khalsa Advocate,* March 13, 1909. Drinking water was purified by adding 6 grams of Potassium Permanganate to each litre and adding 10 grams of Manganous sulphate.

[108] *Proceedings, Home: Medical and Sanitary,* July 1915, Serial Number 86, p 198.

[109] *Proceedings, Boards and Committees Department,* January 1921, Serial Number 42, p6. Separate vessels for different people were provided for caste considerations.

[110] *Proceedings, B, Home: Public Health*, 1938, Number 195, pp 8-10. During the cholera outbreak at Ambala, the water reservoir in the town was chlorinated and aerated water factories were inspected.

[111] *Proceedings, Municipal*, May 1878, p 17. *Also, Proceedings, Municipal*, May 1878, p 17; *Proceedings, Boards and Committees Department*, 1887, Serial Number 10, p32; *Proceedings, Boards and Committees Department, 1892,* Serial Number 15, p258; *Proceedings, Boards and Committees Department,* 1893, Serial Number 16, pp 5-7. In 1878, water supply projects for Delhi and Lahore were undertaken. In 1887, Rawalpindi water supply scheme was started. In 1890-91, Murree water supply project for the cantonment, Dalhousie water supply scheme and extension of Lahore scheme to Mozang was started. In 1896, Murree water supply scheme at the cost of Rs 1 lakh was started.

[112] *Proceedings, Boards and Committees Department,* 1901, Serial Number 23, p262. Also, *Proceedings, Boards and Committees Department,* 1907, Serial Number 28, p3; *Proceedings, Boards and Committees Department,* 1912, Serial Number 33, p31. In 1902, pumping engine in Lahore water works was

The 'financial stringency' due to war, led to the deferment of the government grants for projects for Moga, Khushab, Rewari and Lyallpur.[113] Around the1930s, some 'improvements' were said to be made in the water supply in the towns of the south-east Punjab.[114]

Inoculations were also tried as a preventive measure. From 1893, clinical trials of cholera vaccine were carried out whereby 42,000 people were inoculated.[115] Even the contacts of the infected person were inoculated. To prevent the outbreak of cholera, the medical officer inoculated the people going to the fairs. In 1928, the district medical officer of health was authorised to obtain large reserve stocks of vaccine for this purpose.[116] In 1931, the Government of India proposed to make inoculation compulsory

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installed, twelve additional wells constructed and Lyallpur water works started. In 1907, Ludhiana water supply scheme was undertaken. In 1912, loan of Rs 5,50,000 was granted to Delhi municipality for extension of the water works.

[113] *Proceedings, Home: Medical and Sanitary*, July 1917, Serial Number 90, pp77-79.

[114] *Proceedings, B, Home: Public Health*, July 1929, Number 99, p5. Also, *Proceedings, B, Home: Public Health*, July 1930, Number 139, p43; *Proceedings, B, Home: Public Health*, July 1936, Number 42, p 7; *Proceedings, B, Home: Public Health*, July 1936, Number 192, pp 7-9. In 1929, urban sanitary board sanctioned water supply scheme for Rohtak. In 1930, Bhiwani water supply project was undertaken. In 1936, the district board of Hissar undertook the work of the construction of a *pucca* tank. In 1935, Panipat water supply scheme which was proposed in 1925 was executed.

[115] B. B. Gaitonde, 'Haffkine Institute,' *Haffkine Institute 1899-1974,* Central Government Press Bombay, 1975, pp 1-2. In 1892, Haffkine prepared cholera vaccine and inoculated himself.

[116] *Proceedings, B, Home: Public Health*, 1929, Number 4, pp 3-5. In Kulu, 21,000 cc of cholera vaccine was supplied to the district medical officer of health.

for pilgrims going to United Province for *melas* (fairs), but it was not acceptable to the Punjab government. It preferred voluntary inoculations following which it was decided to propagate inoculation through the press, leaflets and through religious bodies.[117] In 1946, however, cholera inoculations were made compulsory for pilgrims attending Jwalamukhi, Chintpurni and Bhikha Shah fair in Kangra district.[118]

IV

Special efforts were made to protect the European enclaves – cantonments, civil lines (also called civil stations) and the hill stations – from disease and epidemics. Since they housed 'the "managers" of the colonial system', their location and lay out was influenced by considerations of physical distance from the natives for political as well as medical reasons. The mid and the late nineteenth century medical and scientific theories, in fact, assumed 'a causal connection between aerial distance and bacterial infection.'[119] Therefore, generally, a 'green belt of gardens' separated the 'unhealthy, noisy and distasteful' indigenous town from the civil lines and the cantonments both of which had 'wide, tree-lined roads' for housing 'the bunglows of the civil and military officers spread over several acres.'[120] The development of the hill station was influenced also by the ethno-medical theories current in the nineteenth century Europe that 'certain diseases, particularly

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[117] *Proceedings, B, Home: Public Health*, 1931, Number 9, pp 5-9.

[118] *Proceedings, B, Home: Public Health*, 1944, Number 201, p3.

[119] Anthony D. King, *Colonial Urban Development: Culture, Social Power and Environment*, Routledge and Kegan Paul, London, 1976, pp37-38.

[120] Reeta Grewal, 'Urban Morphology Under Colonial Rule,' in *The City in Indian History*, ed. Indu Banga, Manohar Publications, New Delhi, 1991, pp178-80.

cholera, malaria and typhoid were less likely to occur in the elevated regions of the hill station.'[121]

The available sources however, provide more information about the cantonments, which also housed the troops as the mainstay of the Empire. The specific measures concerning cantonments appear to have been streamlined by the 1890s. During the cholera outbreak in 1867, people living in the vicinity of the infected villages were not allowed to visit the cantonments till the cordons were removed.[122] During the cholera outbreak in 1872, quarantine was established in the military stations.[123] The imposition of quarantine in the immediate vicinity of cantonments came to be generally regarded as 'a means of protection' which 'certainly can do no harm'.[124] In 1874, the roads around the cantonments were diverted so that the people did not have to enter the cantonment.[125] In 1875, in conjunction with the district and cantonment police, the military authorities at Sialkot drew cordon around the cantonment.[126] In 1876, cholera quarantine was

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[121] Anthony D. King, *Colonial Urban Development: Culture, Social Power and Environment*, pp 164-65.

[122] *Proceedings, Home*, May 1875, Serial Number 7, p 381. The *'hakims*, attendants, water suppliers, bier bearers were removed from their duties so as to prevent any communication.

[123] J. M. Cunningham, *Cholera in 1872*, pp 26-27. Subathu, Dagshai, Ambala, Mian Mir and Murree were cordoned off. Additional force was employed to see that cordons were not broken. In Mian Mir, forty-four sentries and 132 native troops were posted around the station. In Ambala, forty-seven sentries were deployed around the cantonment while seven NCO's, forty-two troopers, forty-five sepoys, forty-two constables and four police sergeants were deployed around the cordon.

[124] *Proceedings, Home,* March 1874, Serial Number 6, p 132.

[125] *Proceedings, Home,* November 1874, Serial Number 6, pp 459-60.

[126] *Proceedings, Home*, May 1875, Serial Number 7, p400.

enforced at the Kohala ferry on the river Indus for the 'benefit of the troops stationed at Murree and its neighbourhood.'[127] In 1879, committees were convened to inspect the sanitary state of all villages within a radius of five miles of the important cantonments of Mian Mir and Rawalpindi.[128] Gradually, the protective ring appears to have become more extensive.[129]

The preventive measures taken in Simla provide insights into the extent to which the colonial authorities would exert themselves to keep this town safe from disease and epidemics. Simla had been the summer capital of the British Indian Empire since 1864. It also served as the summer headquarters of the Punjab Administration. In 1903 the Kalka-Simla railway came into operation. After the shifting of the imperial capital from Calcutta to Delhi in 1912, Simla became even more important as a resort for Europeans and as a place where their children studied and families stayed for most part of the year.[130] Emulating them, the Indian aristocracy, particularly the princes and the professional people,

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[127] *Proceedings, Home: Medical and Sanitary*, July 1876, Serial Number 8, p 376.

[128] *Proceedings, Home: Medical and Sanitary*, January 1878,Serial Number 10, pp 7-9. The Mian Mir cantonment was adjacent to Lahore, while Rawalpindi was the largest cantonment of northern India as well as the headquarters of the Northern Command of the British Indian Army. James Douie, *The Punjab North-West Frontier Province and Kashmir*, Low Price Publication, New Delhi, 1994, p256.

[129] *Proceedings, Home: Medical and Sanitary*, January 1888, Serial Number 25, pp 2-3.

[130] Anthony D King, *Colonial Urban Development, Culture, Social Power and Environment*, pp157-59.

also started spending the summers at Simla. Many Punjab rulers had their summer residences in or around Simla.[131]

'To improve the sanitary condition of Simla for establishing its agreeable character as the Summer Capital of the Government of India, and the resort of so many hundreds of Europeans,' a special amount of Rs. 5 lakhs was sanctioned. Seven lakh rupees were given by the Punjab government as loan to the municipal committee to 'improve water supply, conservancy and bazaar conditions.'[132] In 1877, the Lt. Governor sanctioned Rs. 25,000 for re-roofing slaughterhouses and improving the public toilets in Simla.[133] In 1878, a new grain market and slaughterhouse were constructed.[134] In 1879, Rs. 2 lakhs were assigned for conservancy.[135] In 1884, the government sanctioned Rs. 1,10,000 to the municipality for a new sewage system in which the night soil

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[131] Pamela Kanwar, *Imperial Simla The Political Culture of the Raj*, Oxford University Press, New Delhi, 1990, pp131-34.

[132] *Proceedings, Home: Medical and Sanitary*, March 1878, Serial Number 10, p 349. Also, *Proceedings, Home: Medical and Sanitary*, August 1877, Serial Number 9, pp 704-05. At the same time, the Lt. Governor of the Punjab felt that 'the more important improvements' which were 'necessitated by the residence here of so many months of the Supreme Government should be carried out at the Imperial cost.'

[133] *Proceedings, Home: Medical and Sanitary*, August 1877, Serial Number 8, pp 705-11. The proprietors provided iron receptacles with tight fitting covers for night soil. The conservancy officials daily inspected the filth. The natives were not allowed to defile ravines and wastelands. Wooden drains and new toilets were constructed and old ones repaired. Six European inspectors were employed to check sanitary neglect.

[134] *Proceedings, Home: Medical and Sanitary*, March 1878, Serial Number 10, pp 352-53.

[135] *Proceedings, Municipal*, 1879, Serial Number 2, p5.

was collected in tanks and flushed through iron pipes.[136] In 1893, sewage extension scheme at a cost of Rs.2,05,482 was carried out.[137] Simultaneously, improvements were made in the water supply in Simla. As early as in 1875, pipes were provided in the houses.[138] In 1877, a scheme in which the water was led in covered iron pipes to reservoirs near Simla and then into the town was started. The water supply scheme of Simla was strengthened subsequently by some special grants.[139]

Furthermore, special efforts were made to protect Simla from infection. During the cholera epidemic in 1875, medical examination of the travellers coming from plains was carried out at Kalka by the hospital assistants assisted by the police. This was done to 'guard not only Simla from importation of the disease but also to guard European soldiers' at Kasauli, Dagshai and Subathu and the Lawrence Military Asylum at Sanawar.[140]

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[136] *Proceedings, Home: Medical and Sanitary*, May 1884, Serial Number 17, p67.

[137] *Proceedings, Boards and Committees Department*, 1893, Serial Number 16.

[138] *Proceedings, Home,* October 1875, Serial Number 7, pp 778-79.

[139] *Proceedings, Home: Medical and Sanitary*, March 1878, Serial Number 10, pp 349-50. Also, *Proceedings, Boards and Committees Department, 1893*, Serial Number 16, p9; *Proceedings, Boards and Committees Department,* 1920, Serial Number 41, p15; *Proceedings, B, Home: Public Health*, 1936, Number 129, pp 4-5.The water supply scheme was completed in 1883, and in the same year, another one was started in Sanjauli. In 1893, work for the Simla water works extension scheme was started at a cost of Rs. 3,81,856. In 1881, an imperial grant in aid of Rs. 27,27,00 was given to Simla for the water works. In 1920, the government granted Rs.40,000 for water extension scheme both at Simla and in the Bemloe estate. In 1936, another water supply scheme at a cost of Rs. 27 lakhs was started.

[140] *Proceedings, Home: Medical and Sanitary*, October 1875, Serial Number 7, p774.

It seems, on the whole, that the epidemics of malaria, smallpox and cholera were relatively early in time and that the measures to contain these were evolved slowly. The experience of dealing with these epidemics for over three decades was put to a systematic use after the outbreak of the plague in 1897. Raging intermittently for over two decades, the plague posed a severe challenge for the British who felt obliged to put to test all their civil, military and technological resources to combat the epidemic.

Chapter 3

THE STATE AND THE PLAGUE

With the memory of the Black Death lurking in the background, the plague was perceived as an emergency situation by the Administration. Its policy involved an unprecedented degree of medical and sanitary intervention which was unparalleled in the earlier campaigns against malaria, smallpox and cholera. 'To all intents and purposes,' the plague was 'an exotic, generating fear and scientific interest on a scale unmatched by malaria and other diseases indigenous to India.'[1] The British were reluctant, initially, even to admit the outbreak of the disease. They feared the imposition of an international embargo on Indian shipping which would close an important market and a source of raw material for Britain. This could disturb the balance of payments in which India played an important part. If the disease spread across the subcontinent, it would 'devastate India's social order and economic base and flatten the pivot of the Empire.'[2] Besides, a period of heavy mortality also meant adverse effects on trade, reduced productivity and enhanced cost of administration.[3] The plague thus entailed a crises situation for the government, which felt obliged to adopt exceptionally stringent and pervasive measures to combat

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[1] Mark Harrison, *Public Health in British India: Anglo Indian Preventive Medicine, 1859-1914*, Cambridge University Press, New Delhi, 1994, p 150.

[2] Rajnarayan Chandavarkar, 'Plague Panic and Epidemic Politics in India, 1896-1914,' in *Epidemics and Ideas: Essays on the Historical Perception of Pestilence*, ed. Terence Ranger and Paul Slack, Cambridge University Press, Cambridge, 1995, p 210.

[3] Anil Kumar, *Medicine and the Raj: British Medical Policy in India, 1835-1911*, Sage Publications, New Delhi, 1998, p 194.

the disease, eliciting in the process spontaneous and hostile reactions from the people.

During the outbreak of the plague, a comprehensive framework for the plague administration was created. It proposed surveillance and inspection for early detection of the disease, evacuation of the infected dwellings, segregation of the sick and their relatives and disinfection of infected articles. A regular hierarchy of administrative and medical officials evolved in about a decades' time, which was later systematized as the *Punjab Plague Manual* (1911).[4]

I

During the first outbreak of the plague, which affected the rural areas of Jalandhar and Hoshiarpur districts, the primary concern of the district administrators was to prevent any communication between the infected and uninfected areas. They were acting on the assumption that the human contact was the agency of spread of the epidemic. Therefore, they got the infected villages partially or wholly evacuated, village sites disinfected, and the plague infested areas cordoned off.[5]

In the initial course of the epidemic, each village was cordoned off separately. As the infection spread to other areas, several villages were cordoned off together.[6] Up to May 1898,

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[4] For some detail on the framework of the plague administration, see Appendix: Framework of the Plague Administration, below.

[5] Major E. Inglis, *Report on the Outbreak of the Plague in Jullundur and Hoshiarpur Districts of the Punjab in 1897-98*,(cited hereafter as *Plague in Jullundur and Hoshiarpur 1897-98*), Punjab Government Press, Lahore, 1898, PSA, p2.

[6] *Ibid.*, pp7-23. The medical officer took the decision of putting the cordons. In 1897-98, there were two cordons, which had about sixty villages between

there was no efficient cordon as only four sentries to a mile were deployed whereas for a cordon to be efficient eighteen sentries to a mile were necessary. This enabled the people to get through the cordons and carry the infection to villages in Nawanshahr area.[7]

In the beginning anyone who wanted to cross the cordon had to obtain a pass from a European in the civil, medical or police administration. Any official on duty inside the cordon could also cross it without a pass. In May 1898, changes were made in the rules pertaining to issuing of the passes. Consequently, three types of passes-- permanent, temporary, and quarantine-- were introduced. The permanent passes were given to tahsildars, naib tahsildars, assistant surgeons and later on to all the government officials. The temporary passes were given to all others whose duties took them across the cordon. The quarantine passes were issued to those who went in to the quarantine camps. It became mandatory to hold one of the above passes to cross the cordon.[8]

After the infected areas were cordoned off, the villagers were asked to evacuate their homes and to move into the camps within forty-eight hours. They were required to take their moveable property and supplies for about two months. The administrators began to lay stress on evacuation after observing that the incidence of the plague was high in Banga, Bhangal, Garhshankar and Nawanshahr where immediate evacuation had not been

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them. In the Hoshiarpur district, the villages were isolated in to separate cordons except in one or two cases.

[7] *Ibid.*, pp7-16. Even after augmenting the strength, the number of sentries was increased to only eight and not eighteen. As a result of the 'inefficient' cordons, Sheikhupur, Jagatpur, Lakhur, Gunachaur, Baharwal and Bhaura villages were reported to have got infected.

[8] *Ibid.*, p17.The police escorted the people who were in the quarantine camps from the cordon line to the camps.

insisted upon. Once the evacuation had taken place, no one was allowed to go back. [9]

The assistant commissioner and the medical officer determined the location of the camp; the camps were generally located away from the villages, high roads and sandy soils. Three categories of the camps-- hospital camps, segregation camps and observation camps were created. In the hospital camps, the relatives and the friends of those afflicted with the disease were kept. The segregation camps were meant for those who came from infected houses or *mohullas* and the observation camps were for the patients. The last consisted of two hospital sheds, isolation shed, observation shed and quarters for medical servants.[10]

Each of the above mentioned camps further consisted of three parts-- one for single men, the other for families and the third for women and children. The authorities generally provided huts to the villagers in the camps. Sometimes, material was provided to them and rewards were given for the huts made out of these. In 1907, it was decided that the village headmen would build huts for the *kamins* (village servants) and the outcastes; the *zamindars* would pay for their own huts or build them at their own expense.[11] The accommodation for the women and the families was screened off by a *sirki* (a screen made of straw). In case of women observing *purdah*, a screen or curtain was provided during their stay in the camps.[12]

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[9] *Ibid.*, p10,24.

[10] *Ibid.*, pp23, 44-45.

[11] *Punjab Government Civil Secretariat Proceedings*, *Home: Medical and Sanitary* (cited hereafter as *Proceedings, Home: Medical and Sanitary*), November 1907, Number 23-66, p1.

[12] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, p27.

The social divisions were transplanted in the camps too which were divided on the basis of the residential localities *(mohullas)* or the sub-divisions *(patties)* in villages. Generally each caste or community was allotted a separate site or there was a small distance in the huts allotted to them.[13] For instance, in Khatkar Kalan, Sikh Jats, Brahmans, Jhiwars, and Darzis (tailors by caste) occupied one camp; the Chamars occupied another camp, and the Muslims occupied the third camp.[14]

Arrangements were made for meeting the basic needs of the people in the camps. There were separate wells for the Hindus and the Muslims.[15] The *bhishtis* (water carriers) supplied water to the people in the camps. Generally, two cooks were provided in each camp. One cooked for the Muslims and others, while the second was for Brahmans and the orthodox Hindus. Food was also provided to those detained in the camps. Men took food for their women from the *serais* (shelter created for transients). The *dhais* took food for the women detained all by themselves in the camps.[16] To meet the daily requirements of the people, shops were set up in the camps itself and separate entrances were created to approach the shops in the camps.[17] Where there was no such arrangement, people could go to the police shops. The police delivered letters and money orders to the people. At Banga, a

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[13] *Ibid.*, pp60-61.

[14] *Proceedings, Home: Medical and Sanitary*, April 1898, Number 272-B, pp1-3.

[15] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, p89.

[16] *Ibid.*, pp24-25, 48-61.

[17] *Proceedings, Home: Medical and Sanitary*, April 1898, Number 272-B, p3.

vendor for court fee stamps and petition papers was also made available.[18]

Meanwhile, the evacuated houses in the villages were disinfected, ventilated and whitewashed. During the course of disinfecting, the owner was brought from the camp to open the lock of the house but was not permitted to assist in any operation.[19] The Chamars, coolies and water-carriers were ordered to thoroughly soak the walls, flooring and ceiling with the phenyl solution.[20] The coolies took the furniture, earthen vessels and other articles to the roofs or the streets for exposure to sunlight and some were even burnt. The magistrate could order the burning or destruction of any article during the process of disinfecting.[21] A hole of about twenty-four square feet was made in the roofs to allow the sunlight. The next day, the house was white washed.[22]

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[18] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98,* pp24-25, 48-61.

[19] *Proceedings, Home: Medical and Sanitary*, June 1898, Number 119-121, pp1-2. The inhabitants of Garhshankar and Bilron asked for permission to assist in disinfecting work but were refused. The district administrators felt that 'the owners could not be relied upon' and to be effective, the process had to be completed by trained men.

[20] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, pp31-33. The material for disinfection consisted of large drums of phenyl, garden syringes, continuous action hand pumps, buckets, spades, ladders, baskets, lime, brushes and oil. Initially, phenyl was used as a disinfectant. In 1901, both phenyl and perchloride of mercury were used. In 1905, it was decided to use only perchloride of mercury on grounds of effectiveness, simplicity of application, and above all, cheapness. In 1906, germicides Cyllin and Izul replaced perchloride of mercury.

[21] *Proceedings, Medical and Sanitary*, September 1898, Number 121-29, pp4-5.

[22] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, pp31-33.

The plague measures extended even to the dead. The district administrators favoured corpse inspections, but they felt that though advisable, such measures could not be enforced due to hot weather and social customs like *purdah*.[23] Therefore, post-mortem examinations were not carried out in 1898, but if the police wanted it, they could do so after following the instructions laid down in the Criminal Procedure Code.[24] In 1905, by a Gazette Notification, the authority to conduct post-mortem examinations was extended to certain executive officers.[25] The police disposed off the corpses of those who died in trains or in hospitals, due to the plague or even of suspected plague.[26] In the outbreak of 1911, at many places, including Jalandhar, corpse inspections were rigorously carried out much to the chagrin of the people.[27]

II

The movement of the people from one place to another in both urban and rural areas was restricted during the course of the epidemic. Orders were issued prohibiting the granting of leave to government servants, sepoys and students to visit any infected

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[23] *Ibid.*, p21.

[24] *Proceedings, Home: Medical and Sanitary*, August 1898, Number 172-B, p3.

[25] *Proceedings, Home: Medical and Sanitary*, April 1905, Number 7-15, p2. The authority to conduct post-mortem examination was given to all civil surgeons, medical officers holding collateral civil charges, assistant surgeons, and the superintendents of Lahore, Montgomery and Multan Jails. The staff surgeon could carry out post-mortem of the bodies of soldiers, camp followers, other persons entitled to professional attendance of Military Medical Service, or if the death occurred in the jurisdiction of cantonment magistrate and there was no civil surgeon or assistant surgeon residing within three miles of the cantonment.

[26] *Proceedings, Medical and Sanitary*, August 1898, Number 172-B, p3.

[27] *The Tribune*, May 18, 1911, p3.

area.[28] The people were not allowed to visit the neighbouring villages to fulfil social obligations. The inhabitants of Dosanjh village in Banga circle were not given permission to conduct a marriage ceremony, which had to be postponed. In another instance, certain Brahmans were not permitted to go to the neighbouring village to collect offerings from their *jajmans* (Brahman's clients or a patrons) on account of an eclipse.[29] The district magistrates of Jalandhar, Hoshiarpur, Gurdaspur and Sialkot were given powers to prohibit the holding of caste gatherings and other social assemblies in Nawanshahr, Nakodar, Phillour, Hoshiarpur, Garhshankar, Shakargarh, Zaffarwal and Sialkot *tahsils*.[30]

Special measures were taken to prevent the periodic and local fairs, which were a regular feature of the people's life in both urban and rural areas. The assistant commissioner of Jalandhar district, Leslie Jones, prohibited the holding of fairs at villages Angle and Garcha.[31] All persons believed to be proceeding to Barri Latif Shah fair to be held at Nurpur were prevented by the Gazette Notification of February 9, 1902, which prohibited the sale of train tickets from February 14 to 26 at all railway stations in Lahore and Sialkot districts and Wazirabad railway station. The commissioner of Rawalpandi was given executive powers to deal with the fair and it was cancelled.[32] At Jalandhar, the *Basant* fair was not allowed

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[28] *Proceedings, Home: Medical and Sanitary*, March 1901, Number 58, p1.

[29] *Proceedings, Home: Medical and Sanitary*, August 1898, Number 208.

[30] *Proceedings, Home: Medical and Sanitary*, May 1901, Number 134-35, p1.

[31] *Proceedings, Home: Medical and Sanitary*, April 1898, Number 276-B, p23.

[32] *Proceedings, Home: Medical and Sanitary*, February 1902, Number 4-11, pp1-3. The fair was prohibited as Nurpur was close to 'the great cantonment of Rawalpindi' and people going to the fair would have to cross Rawalpindi.

to be held for the fear of the plague.[33] In Lahore district, the local fairs at Gharyala and Chathianwala, the *Charan Ka Mela* at Baghbanpura, the *Baisakhi* fair at Ram Thamman, and the *Basant Mela* at Kasur and Lahore were cancelled.[34] Orders were also issued to prohibit the booking of train tickets of people, for attending the Sun Eclipse Fair to be held at Thanesar.[35]

Similar restrictions were imposed on the movement of articles from one place to another. The articles to be sent were to be packed according to specific instructions. The sender had to declare the nature of the article and sign a certificate that he had advised the consignee of the dispatch. The article could be consigned to a person 'permitted' by the Governor-in-Council or the local administrator.[36] It was still liable to be detained for examination at an octroi post or railway station before admission into a municipal area or a cantonment. In such situations, the consignee was called to witness the inspection of the article and to take its delivery.[37] Subsequently, the local sanitary authority was

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[33] *The Tribune*, February 15, 1902, p5. Also, *The Tribune,* February 20, 1902, p5.

[34] *Proceedings, Home: Medical and Sanitary*, March 1902, Number 180-82, p1.

[35] *Proceedings, Home: Medical and Sanitary*, February 1903, Number 8-17, pp1-3.

[36] *Proceedings, Home: Medical and Sanitary*, October 1899, Number 32-33, p1. The article was packed in a closed tin placed in an outer box of wood or tin with a layer of cotton wool between the inner and outer layer. The outer case was enclosed in a cloth, sealed and properly labelled showing the nature of the contents.

[37] *Proceedings, Home: Medical and Sanitary*, September 1898, Number 121-29, p7.

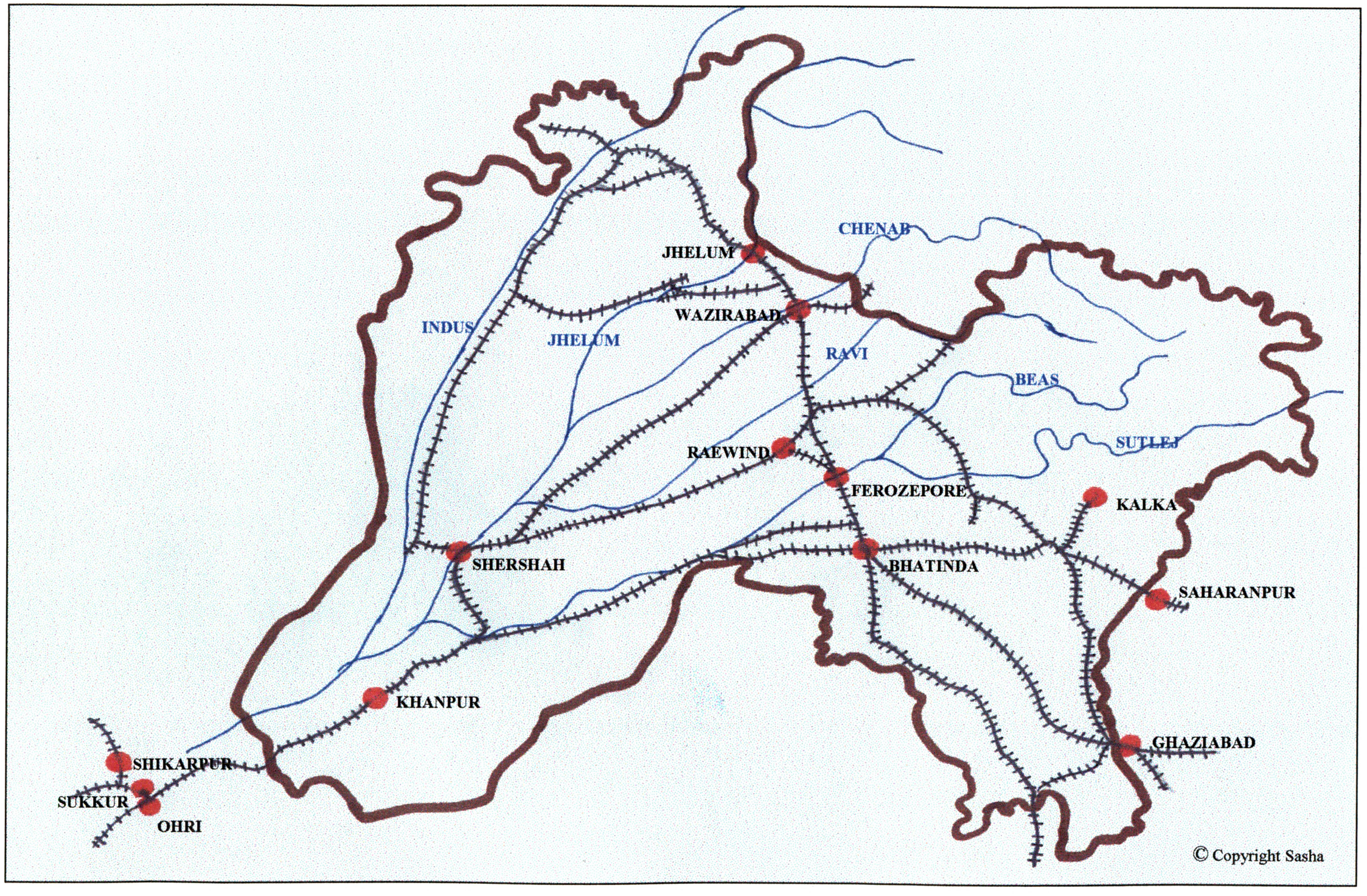

FIG 3.1 MAJOR PLAGUE INSPECTION POSTS - 1900

empowered to enforce the regulations regarding packing, supervision and trade.[38]

The movement of the rail passengers was likewise monitored and they were subjected to medical examinations at various inspection posts.[39] The rail passengers were medically examined by an assistant surgeon and a woman hospital assistant.[40] The passengers of the first, second and intermediate classes were given precedence over the passengers travelling by the third class. The latter were 'inspected' on the railway platforms while former were 'examined' in their carriages.[41] The clothes, bedding and other articles of the passengers were also checked, and the 'filthy' articles, mostly belonging to third class passengers, were burnt.[42]

Those third class passengers who seemed likely to be carrying the plague were detained. The authorities went by their

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[38] *Proceedings, Home: Medical and Sanitary*, January 1907, Number 42-46, pp2-3.

[39] *Proceedings, Home: Medical and Sanitary*, May 1898, Number 69-71, p3. Inspection posts were also set up at Khanpur, Shershah, Bhatinda, Ferozepur, Raewind, Jhelum, Wazirabad, Pathankot, Ambala, Kalka, Ghaziabad and Saharanpur as shown in the map. Also, *Proceedings, Home: Medical and Sanitary*, September, 1898, Number 143-45, p3; *Proceedings, Home: Medical and Sanitary*, July 1898, Number 91-104, pp3-5; *Proceedings, Home: Medical and Sanitary*, July 1898, Number 282-85, p3.

[40] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, p46. The assistant surgeon and a female hospital assistant were required to be present on the railway platform before the train arrived.

[41] *Proceedings, Home: Medical and Sanitary*, August 1898, Number 172-B, p1.

[42] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, p47. The authorities claimed that compensation either in kind or in cash was given to the owner for the articles destroyed.

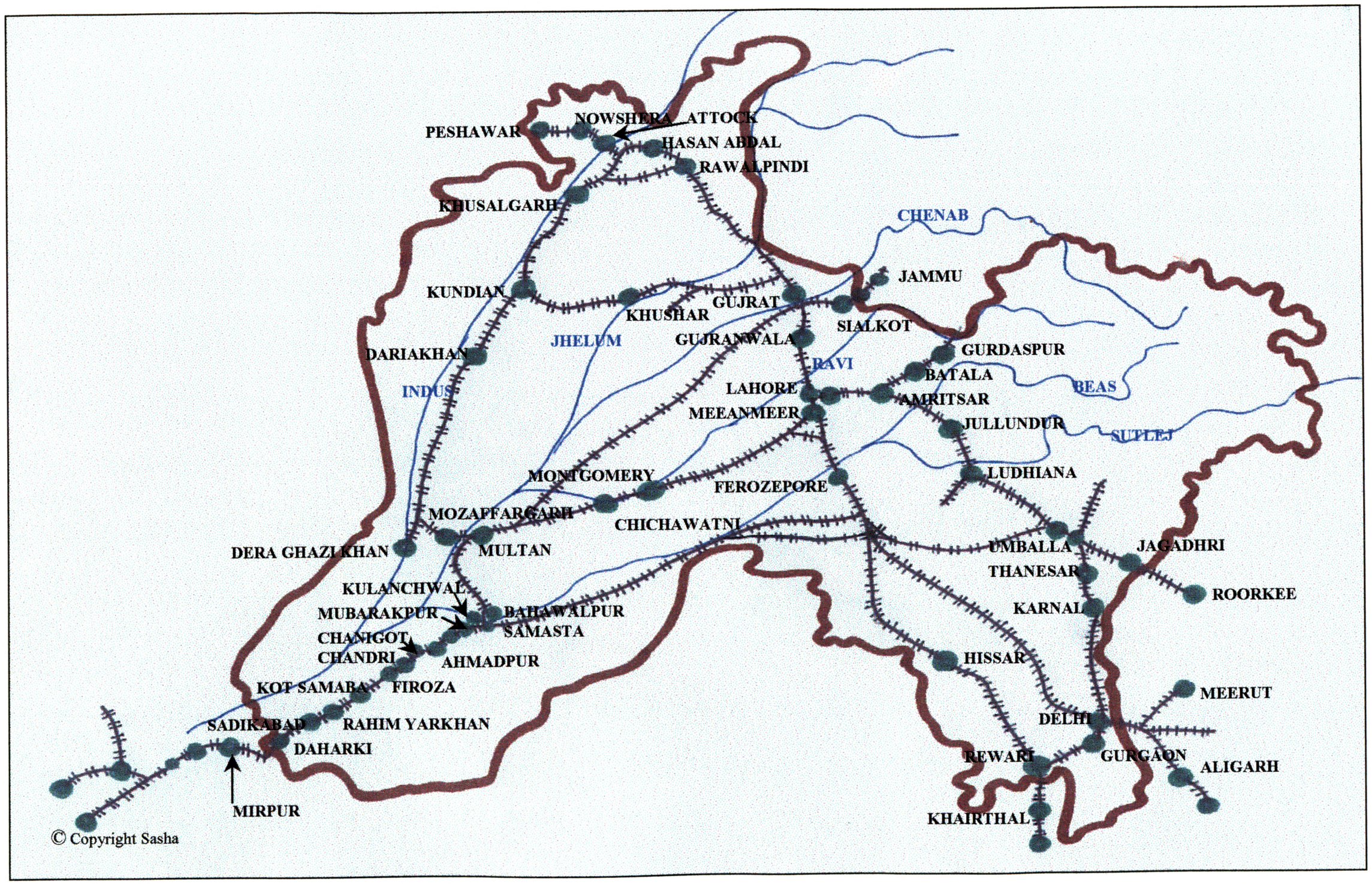

FIG 3.2 MINOR PLAGUE INSPECTION POSTS - 1900

'dirty' appearance and their social background. It was believed that lower classes were more likely to spread the disease as they travelled in gangs whose whereabouts could not be traced on arrival at their destination; nor could they be depended upon to give correct information. Initially, the detention period was seven days but was later reduced to twenty-four hours as the number of passengers detained increased considerably and became unmanageable. The detained men and women passengers were taken to the separate disinfecting tank and quarters where they were disrobed, and then escorted to the river to bathe and wear the clothes given to them. Their own clothes were disinfected with the steam apparatus after which the passengers were allowed to proceed with their journey.[43] In contrast, the Europeans or Eurasians, even if they were sick, were allowed to continue with their journey in the rail carriage in which they were travelling. Their relatives and friends could also accompany them. The civil surgeon of their place of destination was telegraphically informed about their arrival. The other passengers were shifted to another carriage before they were allowed to proceed.[44]

Finally, the tickets of the passengers coming from the infected areas were punch marked, whereas the tickets of those passengers who were not detained were stamped.[45]

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[43] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, pp46-47. The detained men and women passengers were escorted by the policemen and the *dhais* respectively. The men were given *dhotis* (piece of cloth used for covering the lower portion of the body by wrapping around the waist) and *langochhas* (a sort of underwears) while the women were given *kurtas* (long loose shirts) and a *chadar* (sheet). The steam apparatus used for disinfecting the clothes was provided by the railways.

[44] *Proceedings, Home: Medical and Sanitary*, August 1898, Number 172-B, p1.

[45] *Proceedings, Home: Medical and Sanitary*, May 1898, Number 52-62, pp3-4.

III

The understanding about the etiology of the plague took some time to crystallize. The role of rats in spreading the plague was not fully understood in the 1890s though there was some talk of its possible connection with rats. Surgeon Captain C. H. James, the plague medical officer at Banga, was amongst the few who thought that rats 'could be' the potent cause of the spread of the disease. In his view, the disease was spread by the migration of rats from one house to another as the houses had their walls or roofs touching each other.[46] This was contended by others who continued to maintain that the plague was spread by human agency.[47] Understandably, therefore, in the early years, the emphasis remained on disinfecting the houses, which failed to kill the fleas or the infected rats.[48] Rather, flushing the houses with phenyl caused the rats to move from one *mohulla* to another and even from one village to another, thereby spreading the infection.

It was in May 1898, when the disease spread despite the cordons, that the role of rats in transmitting the disease started

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The stamps had the date of inspection along with the name of a particular station where the inspection was conducted.

[46] *Proceedings, Home: Medical and Sanitary*, May 1898, Number 84B, pp1-2. Capt. James cited the cases of Chak Kalal and Mohrampur in Banga circle, where the villages were evacuated even before a single case appeared and the rats died in a characteristic way.

[47] Major E Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, p5. Surgeon Captain Smith argued against rat theory and believed that infection could 'never be spread by rats'. He asserted that Chak Kalal was infected even before evacuation and the villagers evacuated only because they had prior knowledge of the disease.

[48] Ibid., pp31-33.

gaining credence.[49] Rats were considered to have spread the infection in Katt, Lalpur and Punian in the Banga circle in Jalandhar district.[50] Some attempts were even made to kill rats or to prevent their migration from the infected to the uninfected areas.[51] However, the measures adopted by the authorities were not focused on rat destruction as the relationship between rats, fleas and human beings was not clearly established until the middle of the first decade.

The insistence on rat destruction by the framers of the Paris Convention in 1905 brought about a change in the general understanding regarding the role of rats in spreading and keeping alive the disease.[52] The findings of the Scientific Commission appointed by the Government of India to inquire into the etiology of the plague in 1905 also concurred with the Paris Convention. It was now recognised that rats spread the plague, the rat fleas acted

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[49] Ibid., p5.

[50] Ibid., pp80-83. Also, *Proceedings, Home: Medical and Sanitary*, May 1898, Number 135-36B, p1.

[51] *Proceedings, Home: Medical and Sanitary*, December 1898, Number 242. Also, *Proceedings, Home: Medical and Sanitary*, June 1898, Number 122-26, pp1-3. A tar cordon was made at Rahon. At other places, a trench around the infected pockets was dug. The tar cordon was one yard in width and one mile in length and cost around Rs 3,000. The trench was one yard deep and one yard broad and cost around Rs 200. Along with the measures to prevent the migration of rats, rat destruction too was encouraged. In May 1898, the local residents were given a reward of one *pice* (1/12 of an *anna*) for every rat killed. After a couple of months, the prize money was raised twenty-four times, that is to two annas (1/16 of a ruppee) for every rat killed as very few people came to collect the reward. For instance, in Banga, not even a single person came to collect the reward while at Lehra, in Garhshankar circle, the reward was claimed for only five mice.

[52] *Proceedings, Home: Medical and Sanitary*, April 1906, Number 4-8, p1.

as a vehicle of contagion between 'rat and rat' and 'rat and men', and that the life of the plague germ in the soil, floors and walls of the houses was of short duration.[53]

Furthermore, the linkage between atmospheric humidity and the severity and diffusibility of the plague was demonstrated in 1908 by the Plague Research Commission of the Government of India. The Commission established that humidity in excess of the normal at a certain temperature is beneficial to the growth of the rat flea. The plague erupted in Gujranwala, Jhang and Lahore in a situation of increased humidity resulting from canalisation and colonisation in these districts.[54] As a matter of fact, in all the years of severe epidemics since 1903, the mean humidity was above normal. In April 1907, for example, it was sixty-three as compared to the normal of forty-eight.[55]

Various experiments were carried out in the province to confirm the cause of the annual recrudescence of the plague and to prevent it. A colony of healthy rats was infected at the end of the epidemic season and was observed throughout the hot weather for the reappearance of the epidemic. In another experiment a colony of rats was infected and at the beginning of hot weather, and the rats surviving the epidemic were removed and healthy rats introduced in the autumn to test whether the infection was present or not. The effect of iodine taken internally coupled with its external

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[53] *Proceedings, Home: Medical and Sanitary*, November 1907, Number 23-66, pp2-3.

[54]The canal colonisation in these districts took place respectively in 1892-1905, 1902-06 and 1904-06. For some detail, see Imran Ali, *Punjab Under Imperialism 1840-1947*, Oxford University Press, Delhi, 1981, pp 9-23.

[55] Major F. Norman White, *Twenty Years of Plague in India with Special Reference to the Outbreak of 1917-18, Punjab Government Civil Secretariat Proceedings, Home: Medical and Sanitary*, April 1919, Numbers 190-94, pp3-5.

application as an effective cure was studied. Experiments were also carried out to study the effect of humidity in different godowns.[56] Experiments had also been conducted to devise a successful method for the extermination of rats.[57] Different methods such as chemical poisoning, trapping, and baiting were employed for rat destruction. Initially phosphorous paste was used to poison the rats, which was replaced by mushicide. Rats were also killed by bacterial substances producing epizootic diseases in them.[58]

It was decided to extend the 'ratting' operations in 1906.[59] Ballabgarh, Faridabad and forty-five neighbouring villages in Delhi district were 'ratted' on an experimental basis and it was found that the incidence of the plague was less in the 'ratted' areas than in the untreated ones.[60] In Lahore district, 'ratting' was to be done twice, in autumn and spring, in all the towns and villages. For this,

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[56] *Proceedings, Home: Medical and Sanitary*, February 1911, Number 31-34, pp1-3.

[57] *Proceedings, Home: Medical and Sanitary*, July 1912, Number 28-30, pp2-3.

[58] *Proceedings, Home: Medical and Sanitary*, November 1907, Number 67-73, pp1-3. Also, *Proceedings, Home: Medical and Sanitary*, February 1920, Number 1-5, pp3-6. Trapping was resorted to at a later stage when the rat population had to be reduced in an area. Traps having baits of poisoned *chapatis* (flat unleavened breads made of wheat or millet) were used. Baiting was done when the rat population had to be reduced rapidly in the evacuated localities. Trapping was done in grain markets, depots, bazaars, houses, godowns, sheds, stables, and cattle houses. Generally, houses were not baited as there was every possibility of a small child eating the poisonous bait.

[59] *Proceedings, Home: Medical and Sanitary*, August 1906, Number 41-44, pp1-4.

[60] *Proceedings, Home: Medical and Sanitary*, August 1906, Number 45-46, pp1-2. Due to 'trapping,' Delhi, Gurgaon and Sonepat area had very little incidence of the plague.

both the official and non-official agencies were used.[61] During 1905-06, rat destruction was carried out in 3,000 towns and villages while in the subsequent year 8,650 villages and seventy municipal areas were 'ratted'.[62] It was in 1911 that measures were taken for the destruction of rat fleas. A flat hard piece of ground with a covering of sand was selected for the exposure of baggage and clothes. The clothes were spread in single layers, to be exposed to the sun in a temperature of about 116 F for about an hour to kill the fleas.[63]

By 1907, a reduction in the severity of the plague in the 'ratted' villages was reported which also reduced the number of the infected villages. It was further observed that the average length of the epidemic was less in the villages 'ratted' before the onset of infection.[64]

Table 3.1 :Effects of 'ratting' on mortality and infection rates.

	Villages ratted before the plague	**Villages ratted after the plague**	**Villages not ratted at all**
Mortality Rate in per cent	3	5	5.5
Infection rate in per cent	48	--	66
Duration in weeks	4	7	5.5

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[61] *Proceedings, Home: Medical and Sanitary*, October 1906, Number 51-62, pp2-3. The official agency for 'ratting' comprised of assistant surgeons, hospital assistants, and tahsildars. In each *tahsil*, three gangs each consisting of nine coolies were employed. Non-official agency comprised of *vaids* and *hakims*.

[62] *Proceedings, Home: Medical and Sanitary*, November 1907, Number 67-73, p2.

[63] *Proceedings, Home: Medical and Sanitary*, May 1911, Number 17-20, p2.

[64] *Proceedings, Home: Medical and Sanitary,* November 1907, Number 67-73, pp3-6. Also, *Proceedings, Home: Medical and Sanitary*, October 1907, Number 3-14, pp2-6.

The other measures for protection from rats included improving the structure of the houses, opening the congested quarters and protecting the grain stores, which would diminish the food supply of the rats and, consequently, the prevalence of the rats.[65] In October 1907, inspector-general civil hospitals, Punjab mooted a proposal to render rat-proof, government buildings, hospitals, quarters for the `lower and menial classes,' and godowns for the storage of grain. It was in February 1908, that sanction was given for the construction of rat-proof buildings.[66] Following this, changes in the designs of houses were made and the recommendation of the Public Works Department regarding cement flooring and tiled coping in the houses was accepted.[67] Orders were issued to prepare plans, in consultation with the sanitary commissioner Punjab, for the construction of rat-proof shops and grain stores, suitable for *mandis* (markets generally for any one agricultural commodity) in canal colonies.[68] It was decided that wholesale godowns would not be constructed near residential

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[65] *Proceedings, Home: Medical and Sanitary*, November 1907, Number 23-26, p3.

[66] *Proceedings, Home: Medical and Sanitary*, February 1908, Number 22-24, p1.

[67] *Proceedings, Home: Medical and Sanitary,* October 1908, Number 21-26, p2-4. Earlier, Bradford and Guilford Molesworth submitted a report suggesting modifications in the structure of houses to render them rat-proof. They recommended that houses should have *'pucca'* plinths raised two feet above the ground with a projecting cornice or coping all around the upper surface. The plinths would be rectangular and would consist of concrete walls filled with earth, covered with eight inches of concrete while the coping would be of double tiles and flagstones about one and a half inches thick. Their proposal was not accepted on the ground that it required construction by the skilled labour.

[68] *Proceedings, Home: Medical and Sanitary*, July 1913, Number 58-59, p1.

areas. Also, the godowns were to be constructed on a raised platform.[69]

The preventive measure on which the British authorities spent considerable energy was inoculation. The object of mass inoculations was to prevent a fresh outbreak, or in the event of an outbreak, to reduce its severity, and by concentrating on this, to ultimately stamp out the epidemic. The commissioned medical officers, along with assistant surgeons were employed to carry out the inoculations. Each medical officer had a staff of one compounder and two or more clerks to assist him. To encourage inoculation, and to extend it in the plague-infected areas, the authorities visited villages and towns, addressed the public and explained to them the value of inoculation. In 1907, the hospital staff was inducted to encourage inoculation.[70]

IV

The measures carried out in the cities, cantonments, hill stations, particularly the imperial capital Simla, were different from those in the rural areas. The strategy to prevent the cantonments from

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[69] *Proceedings, Home: Medical and Sanitary*, March 1919, Number 86-87, p5. The godowns were constructed by raising them on a three ft high plinth with a ledge projecting nine inches at the floor level if no steps were up from the ground and with the roof projecting beyond the ledge.

[70] Captain E. Wilkinson, *Report on Inoculation in Jullundur and Hoshiarpur Districts of the Punjab October 1899-September 1900*, Punjab Government Press, Lahore, 1901, pp31-50. Also, *Proceedings, Home: Medical and Sanitary*, July 1904, Number 102-166, pp6-17. The prophylactic serum was tested for its immunizing property, presence of contamination and diminution of carbolic acid. It was observed that inoculation from such prophylactic serum would not bring about rapid recovery as inoculation from fresh serum. This would result in a higher morality rate.

getting infected by the plague had already been perfected to save them generally from disease and epidemics. The core of the plague measures remained the application of the principle of physical distance from the natives and their habitations.[71]

To deal with the plague in the cantonment areas, a committee consisting of two members was appointed to assist the health officer. They accompanied the health officer on his rounds and explained the necessity of sanitary measures to the public. The members also helped in arranging suitable accommodation and temporary hospitals for the sick. They kept themselves informed about the health of the residents and reported to the health officer any complaints they received or abuses they noticed.[72]

Special administrative machinery was created separately for the municipal areas. A committee was appointed by a magistrate in consultation with the municipal board, which discussed the questions brought to it regarding the plague administration and reported cases of the plague to the health officer. The committee consisted of five members-- the president, civil surgeon, health officer, assistant surgeon and the naib tahsildar. The president, who was generally a European, supervised the plague measures.

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[71] Anthony D. King, *Colonial Urban Development: Culture, Social Power and Environment*, Routledge and Kegan Paul, London, 1976, p37. The British believed that the decaying vegetable matter and exhalations from the human body poisoned the air and caused diseases. Therefore, the British built their residences at a considerable distance from the existing town. For a detail discussion on the morphology of the urban centres, see, Reeta Grewal, 'Urban Morphology Under Colonial Rule,' in *The City in Indian History*, ed. Indu Banga, Manohar Publications, New Delhi, 1991, pp173-205.

[72] *Proceedings, Home: Medical and Sanitary*, September 1898, Number 121-29, pp2-3.

He also tried to assure the people that their customs would not be violated. The civil surgeon, assisted by the health officer, was in charge of the sanitary measures. The naib tahsildar was required to deal with the violent reactions of the people and the related law and order problems arising in the course of the handling of the plague epidemic.

To make the plague measures acceptable, the committee also made use of the services of the *vaids* and *hakims*, the practitioners of indigenous medicine. They accompanied the health officer when he visited the patients' houses to verify the disease. The *vaids* and *hakims* assisted in the maintenance of the camps and hospitals as well.[73] Yet, they were inducted only in small numbers, which obliged many of the *vaids* and *hakims* to hold a meeting at the Tibbia School Premises at Delhi on March 20, 1906 and adopt resolutions pleading for their employment in the plague eradication programme.[74] In early 1907, the secretary to the government of Punjab proposed to employ them in local bodies and municipal committees.[75] Subsequently, in July 1907 the district and local bodies and municipal committees started employing *hakims* and *vaids* for carrying out functions like the distribution of medicines.[76]

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[73] *Proceedings, Home: Medical and Sanitary*, September 1898, Number 121-29, pp2-3.

[74] *Proceedings, Home: Medical and Sanitary*, May 1907, Number 28-32, pp1-3. They asked for making it obligatory on all municipalities, district and local bodies to help the Unani and Ayurvedic systems of medicine by giving adequate grants from municipal or local boards to highly qualified *hakims* and *vaids* and by opening free dispensaries of indigenous medicine.

[75] *Proceedings, Home: Medical and Sanitary*, May 1907, Number 28-32, pp1-3.

[76] *Proceedings, Home: Medical and Sanitary*, July 1907, Number 32-35, p1. Also, *Gazetteer of Attock District, 1907*, p 261. For instance, the district boards

In urban areas, stress was laid on the early detection of the disease. For this, the owner of the house, the occupier, or the head of the family was required to report to the health officer on the illness of any person with symptoms resembling those of the plague. After the confirmation of the disease, the patient was moved to the upper storey of his own house. In case of the single storey houses, the affected persons were shifted to the camp or the private or government hospitals. Three attendants could accompany the patient to take care of him during his segregation. The patients could employ their own native medical practitioners and were under no compulsion to get themselves treated from European physicians. The *maulvis* (Muslim religious teachers), priests and other religious preachers could visit the patient subject to the sanitary control of the health officer. In case of any death during the course of the epidemic, the owner or occupier of the premises or the head of the family was required to inform the health officer immediately. They were also required to produce a certificate specifying the cause of death. The friends and relatives of the deceased could dispose of the body according to the rites of their religion.[77]

To prevent the disease from spreading, the persons associated with the sick were kept under observation in the camps or the hospitals. The health officer visited them every three days until ten days elapsed from the date of death or recovery of the patient to ascertain that they had not been infected. Meanwhile, the evacuated rooms in the houses were disinfected in the same

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of Tallaganj and Pindigheb in Attock district employed *hakims* to distribute medicines during the outbreak of epidemics.

[77] *Proceedings, Home: Medical and Sanitary*, September 1898, Number 121-29, pp2-3.

manner as in the villages.[78] Specific instructions were also laid down for the people who came from other places to work in the factories in the Punjab. Every factory owner was required to report to the magistrate, the names and addresses of such employees who came from the plague infected areas.[79]

As in the case of other epidemics, Simla received the special attention of the plague authorities. To prevent the outbreak of the plague in Simla, the bazaars and houses were cleaned and lime washed in 1897 and again in 1898. Garbage was regularly removed from the markets and the Mall was sprinkled regularly with kerosene to diminish the dust. The sanitary conditions of the municipal markets, bakery and slaughterhouses were improved and inspected frequently. The pipes, gutters, drains and bathrooms were repaired. In 1898, forty-two new and remodelled lavatories, fifty-two urinals and four incinerators were constructed. The ravines and watercourses were searched, and five miles of sewage pipes and tanks were supervised and inspected frequently.[80] In the bakeries, workers were not allowed to sleep on the floors and systematic trapping of rats was done.[81]

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[78] *Proceedings, Home: Medical and Sanitary*, September 1898, Number 121-29, pp2-3.

[79] *Proceedings, Home: Medical and Sanitary*, May 1898, Number 69-71, p3. The job porters who came to Murree for a job were required to take a license and pay a license fee of Re. 1 failing which they were fined Rs. 50. A register was maintained which specified the name and address of each porter. However, it seems unlikely that the porters could pay such a heavy fine.

[80] *Proceedings, Home: Medical and Sanitary* , July 1898, Number 214-16, p2. About 9,700 feet of V-drains were constructed to prevent the liquid sewage from stagnating in the drains and the ravines. These drains were flushed regularly with carbolic acid.

[81] *Proceedings, Home: Medical and Sanitary*, April 1911, Number 10-16, pp1-7.

The service areas and villages surrounding Simla also received attention. Ninety-three lodging houses were brought under license and were inspected at night. Regular inspections in thirty-nine villages and settlements and fourteen *dhobi* (washermen) settlements below Simla were carried out. The police prepared lists of the people arriving from the plague infected areas of Jalandhar, Hoshiarpur, Kapurthala and Ludhiana and kept them under observation for fifteen days. The traffic in fowls from Garhshankar *tahsil* was diverted by turning it north through Una. The rulers of the states of Bilaspur and Nalagarh were asked to detain all suspicious cases arriving from the Ropar area in the plains.[82] Inspection posts were set up at Kalka, Tara Devi and Tuttoo near Simla and the river Tawi.[83]

A series of measures were adopted to check the rail passengers between Kalka and Simla. All the passengers connected with the Government of India and proceeding from Calcutta to Simla were subjected to medical examination at different examination posts and were kept under observation for ten days from the date of departure.[84] The medical 'inspections' of

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[82] *Proceedings, Home: Medical and Sanitary*, April 1898, Number 421-72, p9.

[83] *Proceedings, Home: Medical and Sanitary*, March 1903, Number 319-32, p20. Also, *Proceedings, Home: Medical and Sanitary*, April 1898, Number 421-72, p6. The Tara Devi post was a safeguard to the cart road while the Tawi post protected Simla from the passengers coming from Hoshiarpur district and Arki. The proposal to set up an inspection post at Boileauganj below the Viceregal Lodge at Simla, however, was not accepted.

[84] *Proceedings, Home: Medical and Sanitary*, April 1900, Number 90-109, p3. Also, *Proceedings, Home: Medical and Sanitary*, May 1904, Number 34-35, p1; *Proceedings, Home: Medical and Sanitary*, May 1906, Number 45-46, p1. The passengers from Calcutta were examined at the Howrah Railway station. If pronounced in good health, they were given a certificate and were allowed to

the Indian passengers were carried out on the railway platforms on the Kalka-Simla railway line. They were allowed to board trains after answering several questions to the satisfaction of the authorities and after registering their names and addresses. The suspected and the infected persons were detained with all their belongings and treated in a two-room hut built for this purpose on the Tara Devi road. The infected railway carriage was sent back to Kalka for disinfecting. To prevent evasion of inspection by the passengers, the carriages were locked on one side at the Shoghi station and on both sides at the station at Tara Devi.[85] The medical examination of the Native Rulers and their entourage was carried out in all cases except where special exemption had been obtained from the Government.[86] Even the educated Indian passengers possessing some social standing were made to stand in a line and asked several questions while their Anglo-Indian counterparts merely filled in the forms and were allowed to continue with their journey.[87]

As was to be expected, the Europeans travelling to Simla were treated differently. An inspecting officer carried out the medical examination of the European passengers within their compartments. The suspected or infected passengers were

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travel. They were again examined at Kalka and their certificates were countersigned. The passengers gave up their certificates in Simla and were kept in observation. The procedure for the passengers coming from Lahore was similar except for the fact that they were examined at Tara Devi instead of Kalka.

[85] *Proceedings, Home: Medical and Sanitary*, May 1904, Number 17-27, p2.

[86] *Proceedings, Home: Medical and Sanitary*, June 1900, Number 14-15, p3. The ruling chiefs were not permitted to come to Simla without the prior sanction of the Government of India obtained through the Government of the Punjab.

[87] *The Tribune*, May10, 1917, p5.

allowed to proceed in the same compartment while the fellow passengers were put in a special carriage. A telegram was sent to the officer on plague duty at Simla informing him about the detected cases. On arrival at Simla, the infected Europeans were isolated either in their houses or in Ripon Hospital.[88] In 1904, it was decided to construct a separate Contagious Diseases Hospital in Simla for Europeans and Eurasians.[89]

On the whole, in situations such as these, racialism of the British was visibly on the surface, and their class prejudices were only partially hidden. The Europeans and Anglo-Indians were treated as a category apart from the natives. Among the latter, some consideration was shown to the susceptibilities of the aristocracy and the educated middle class. In rural areas and small towns the administrators used plain coercion to implement the plague measures. Many of them were indifferent to the people's sentiments and violated their social customs. The authorities were more concerned with the cost effectiveness of the plague measures than with their effectiveness in fighting the epidemic. While congratulating themselves over the 'success' of their plague measures and feeling happy about the 'cooperation' of the people, there was a lot that the British missed or were not sufficiently sensitive to notice.

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[88] *Proceedings, Home: Medical and Sanitary*, May 1904, Number 17-27, p2. The reason given for not detaining European passengers was that suitable accommodation was not available, and that a tent, if provided, would be in an exposed position.

[89] *Proceedings, Home: Medical and Sanitary*, March 1904, Number 149-50, pp9-23. To construct the hospital, Simla municipal committee sanctioned Rs 13,000. Furthermore, Rs 11,700 were sanctioned for this purpose from the Provincial Funds.

APPENDIX: FRAMEWORK OF THE PLAGUE ADMINISTRATION

The infected area was divided into 'divisions' to implement the plague eradication measures. Each 'plague division' comprising of about a hundred villages was supervised by a deputy commissioner, an assistant commissioner, a divisional officer, civil surgeon and a medical officer.[1] There were three tahsildars or naib tahsildars, six kanungos, some patwaris, one or two hospital assistants, two compounders and five nurses and *dhais* (midwives) to assist the operations. A separate observation staff was appointed in the first year of the plague.[2] Assistance from sepoy pensioners was also taken to keep the disease under control.[3]

As the disease spread and mortality increased, the plague duties of different officials came to be spelt out in great detail. The district administration was responsible for providing hospitals, huts and shelters; it supervised the disinfecting work, paid compensation, arranged support and relief for helpers.[4] The deputy commissioner appointed the auxiliary staff in his district in

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[1] *Punjab Government Civil Secretariat Proceedings*, *Home: Medical and Sanitary* (cited hereafter as *Proceedings, Home: Medical and Sanitary*), June 1898, Number 260-61, p1.

[2] Major E. Inglis, *Report on the Outbreak of the Plague in Jullundur and Hoshiarpur Districts of the Punjab in 1897-98*,(cited hereafter as *Plague in Jullundur and Hoshiarpur 1897-98*), Punjab Government Press, Lahore, 1898, PSA, p3, 19.This was done during the month of March when disease started becoming severe.

[3] C. H. James, *Outbreak of the Plague in Jullundur and Hoshiarpur Districts of the Punjab 1899-1900,* Additions by Wilkinson, (cited hereafter as *Plague in Jullundur and Hoshiarpur 1899-1900)*, Punjab Government Press Lahore, 1901, p8.

[4] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, p4.

consultation with the civil surgeon. When the disease persisted, the deputy commissioner also asked the members of the municipal and district board committees to co-operate and participate in the preventive measures.[5] The assistant commissioner looked after the evacuation of the villages, arranged for provisions in the camp and maintained accounts.[6] The sub-divisional officer subdivided his area amongst respective tahsildars and inspected around two villages daily. He supervised the work of the subordinate staff and exercised an over all check on the chowkidars' books and the absentee list. On the discovery of any plague case he was supposed to inform the plague executive officer who was especially appointed for combating the epidemic.[7]

The tahsildars and the naib tahsildars had about thirty villages each under them and they supervised the work of the kanungos and the patwaris. They visited every village under their charge once in every three days to examine the residents. They also examined the death-report books and absentee lists. The kanungos supervised the working of the patwaris and checked the absentee list and patwaris' reports, and reported to the tahsildar on all plague cases referred to them by the patwaris.[8] The patwaris maintained a roll of the inhabitants, list of sick persons and also an absentee list. They were required to visit the villages under them to ascertain whether anyone had died or was ill.[9]

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[5] *Punjab Plague Manual, 1911*, Government Printing Press, Lahore, 1917, pp5-11.

[6] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, pp22-25.

[7] *Proceedings, Home: Medical and Sanitary*, June 1898, Number 260-61, pp1-2.

[8] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, pp1-3.

[9] C. H. James, *Plague in Jullundur and Hoshiarpur 1899-1900*, p4.

The inspector general of civil hospitals prepared the budget for the plague expenditure as well as the weekly statements of the number of deaths recorded in the province. The chief plague medical officer assisted the inspector general of civil hospitals and directed all the plague operations and dealt with the reports and statistical returns. The civil surgeon, who was the health and sanitary officer of the district, submitted an annual report pertaining to the incidence of the plague. The senior commissioned medical officers assisted the civil surgeons and supervised the plague operations.[10] The medical officers looked after the hospitals, performed inoculations, supervised the segregation and quarantine camps and were in charge of the disinfecting work.[11] The civil assistant surgeons who were both Indians and Europeans encouraged the people to adopt plague eradication measures.[12]

The medical staff in a plague circle trained and supervised the auxiliary staff, which comprised of hospital assistants, compounders, nurses, *dhais* and clerks. The hospital assistants looked after the disinfecting work.[13] The compounders accompanied both the medical officers and the assistant surgeons on their inspection tours, distributed medicines and assisted in inoculations. The nurses and the *dhais* attended to the requirements of the women.[14]

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[10] *Punjab Plague Manual, 1911*, Lahore, 1917, pp3-31.

[11] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, pp22-25.

[12] *Punjab Plague Manual, 1911*, Lahore, 1917, p7.

[13] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, p31.

[14] *Punjab Plague Manual, 1911*, Lahore, 1917, p8.

Chapter 4

THE PEOPLE AND EPIDEMICS

Epidemics were a frequent and widespread phenomena for three quarters of the century after annexation, affecting almost three generations of the Punjabis. The exceptional situation presented by epidemics was sought to be handled by the state through a diversity of measures that touched different segments of population in different ways. They were affected materially and emotionally as quite often their cultural and religious susceptibilities were hurt by the forcible handling of the situation. The responses to this exceptional situation were equally varied. Despite themselves, the official sources have yielded insights into resentments of the people against the handling of epidemics. Their experiences have also been highlighted by the native press, though it tended to say more about the discontent of the urban population.

The actual sources of discontent varied from locality to locality, but related by and large to evacuation, disinfection, vaccination, and medical examination, and more importantly, the use of force in the implementation of these measures.

Unsettling and hardship were built into the process of evacuation. During their evacuation to the camps, arrangements for accommodating the evacuees often caused discontent. During the cholera epidemic in 1872, the villagers were 'huddled in quarantine camps'; they were exposed to 'harsh conditions and

inclement weather'.[1] *The Tribune* reported that during the plague epidemic of 1901, there were insufficient number of huts in Hudiabad, Zaffarwal, Moga and villages of Ali Mardan and Gundial. In Moga, the residents from both the infected and uninfected localities were asked to move into the camps and thus increase the risk of spread of the infection. The inhabitants of Zaffarwal were obliged to live under the trees, in the open and in temples. Irving, assistant commissioner on plague duty at Zaffarwal, conceded that there was a shortage of huts in the villages of Gundial and Ali Mardan.[2] By 1904, the government absolved itself of any responsibility in this matter. In a speech of the Governor General Curzon, published in *The Tribune* it was made clear to the people that they should make their own arrangements as the government could not provide huts for everyone.[3] Though the zamindars and the people with means could manage somehow, the rural poor, uprooted from their homes and hearths were left exposed to the elements.

Logically, the authorities would not take responsibility of providing the necessities of life to the people evacuated to the camps.[4] In the cholera camps, there were complaints of scarce food and poor quality of vegetables.[5] In the plague camps also,

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[1] J. M. Cunningham, *Report on the Cholera Epidemic of 1872 in Northern India* (cited here after as *Cholera Epidemic of 1872*) Suprintendent of Government Printing, Calcutta, 1873, p28.

[2] *The Tribune*, May4, 1901, p5. Also, *The Tribune*, April 27, 1901, p2; *The Tribune*, May4, 1901, p3.

[3] *The Tribune*, March 24, 1904, pp2-3.

[4] *The Tribune*, April 27, 1901, p2.

[5] *Punjab Government Civil Secretariat Proceedings, Home: Medical and Sanitary*, (cited hereafter as *Proceedings, Home: Medical and Sanitary*) September 1897, Serial Number 44, pp634a-634i.

there was shortage of provisions like water, food and milk.[6] The official accounts admit that the lay out of the plague camps at Ambala was extremely unhygienic. The living area was full of stench due to the proximity of the huts to the lavatories.[7] In Moga, the temporary shelters (*chhappars)* were erected at a place where there was no tree or well nearby and the area was surrounded by small hillocks of burning sand (*tibbas)*.[8]

The contemporary sources are replete with instances of coercion, callousness and incompetence exhibited in the course of vaccination operations.[9] The vaccinators performed a large number of operations in a limited time without any regard to the 'convenience and religious observances' of the people.[10] Often the vaccinators carried out their work negligently. In Hazara, buffalo

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[6] Major E. Inglis, *Report on the Outbreak of the Plague in Jullundur and Hoshiarpur Districts of the Punjab in 1897-98*,(cited hereafter as *Plague in Jullundur and Hoshiarpur 1897-98*), Punjab Government Press, Lahore, 1898, PSA, p143. Also, *Proceedings, Home: Medical and Sanitary*, May 1898, Number 16-51B, p5; *Proceedings, Home: Medical and Sanitary*, April 1901, Number 44, p1. At Ambala, there was only one person for supplying water for both drinking and bathing purposes which led to insufficient water supply. The residents of Balachaur complained to the divisional officer that they did not get sufficient food in the camps. At Baghiari, no provision for selling milk to the people was made.

[7] *Proceedings, Home: Medical and Sanitary*, May 1898, Number 16-51B, p5.

[8] *The Tribune*, May 4, 1901, p3.

[9] *Proceedings, Home: Medical and Sanitary*, November 1878, Serial Number 10, p 941; Also, *Proceedings, Home: Medical and Sanitary*, December 1879, Serial Number 11, p7. In Rohtak and Pind Dadan Khan, people were opposed to vaccination due to the 'worthless nature of the work of the incompetent local vaccinators.'

[10] *Proceedings, Home: Medical and Sanitary*, February 1881, Serial Number 13, pp82-83.

lymph was taken on the fifth day instead of the sixth due to which people complained of inflammations and vesicular eruptions.[11] Some children died after they were improperly vaccinated.[12] .The grandchild of the Nawab of Loharu in Delhi died three days after getting vaccinated.[13] At many places, the lymph used for vaccine operations was of a poor quality which made vaccinations operations ineffective.[14]

The vaccinators of the provincial establishment used the authoritative influence of the *tahsil* agency - lambardars and zaildars, for vaccinating the children, who were often collected forcibly and vaccinated without the consent of their parents. The women were dragged out of their homes and children snatched from their arms. The beards of the men were also pulled for not

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[11] *Proceedings, Home: Medical and Sanitary*, February 1890, Serial Number 28, pp9-10. Also, *Proceedings, Home: Medical and Sanitary*, January 1896, Serial Number 40, pp1-6. Instances of poor vaccine operations were also reported from Khangarh in Muzaffargarh district, Satrad Kalan village in Hissar district, and villages in districts of Gurgaon, Hissar, Karnal, Jalandhar, and Montgomery.

[12] *Punjab Government Civil Secretariat Proceedings, Home,*(cited hereafter as *Proceedings, Home)* April 1874, Serial Number 6, p185. Also, *Proceedings, Home: Medical and Sanitary,* December 1884, Serial Number 18, pp140-41. The sanitary commissioner himself wrote that he rarely found a good cicatrix in the children. The vaccinators hurriedly carried out vaccinations to show the largest number of operations to please the authorities.

[13] *Proceedings, Home: Medical and Sanitary,* December 1884, Serial Number 18, p145.

[14] *Proceedings, Home: Medical and Sanitary*, April 1874, Serial Number 6, p185. Also, *Proceedings, Home: Medical and Sanitary*, January 1896, Serial Number 40, pp1-6. For instance, there were reports of use of poor quality lymph from districts of Jhelum, Rawalpindi, Hissar, and Rohtak.

bringing the children out of their homes.[15] In many cases, the mother along with the vacciniferous child was dragged for days and made to travel for miles to witness the torture of her child in the extraction of the lymph. This continued till either the arm of the child became inflamed or the child became feverish.[16]

A confrontationist attitude bordering on apathy and perhaps sadism, was exhibited by the local administrators in the handling of the epidemics.[17] During the plague epidemic, Stow, the assistant commissioner on plague duty at Garhshankar, felt that the inhabitants of village Garhi 'must suffer' as they had instigated the Chamars to refuse to carry out plague operations. Consequently, he stopped all the cleaning operations in the village.[18] In another incident, at Kariha in Nawanshahr circle, the British officer considered it 'better and kinder' to shoot 14 men than to let 120 die of the plague.[19]

The administrators often showed an indifference towards the economic hardships entailing their measures. During the cholera epidemic at Mianwali in 1876, no remittance of land revenue was given in the autumn crop.[20] In the areas around Kohat cantonment and Dera Ghazi Khan, where rice cultivation and cultivation of

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[15] *Proceedings, Home: Medical and Sanitary*, February 1881, Serial Number 13, pp 82-83. If the people resisted, the *chaprasis* and vaccinators used violent means against them.

[16] *Proceedings, Home: Medical and Sanitary*, December 1884, Serial Number 18, p141.

[17] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, p117.

[18] *Proceedings,Home: Medical and Sanitary*, June 1898, Number 149, p14. The chamars refused to carry out the plague operations for the fear of getting infected by the plague.

[19] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, p117.

[20] *Proceedings, Home*, October 1876, Serial Number 8, p661.

high-grade crops was prohibited to prevent outbreak of malaria, no compensation was given to the villagers, even though it had been promised.[21] The colonial authorities generally believed that the measures to combat the plague left the 'agricultural pursuits' unaffected and that the people were in a position to pay the land revenue. No remission of land revenue was provided to the farmers in the worst and longest affected Jalandhar division. In 1898, they were only given respite of a few days in the payment of the revenue of the *rabi* (spring).[22] Contrary to the assurances of compensation by the administrative and medical authorities, the sources are silent about any funds being earmarked for making good the loss of property suffered by the people. It is not surprising therefore, that a petition seeking compensation for the loss of property in the course of disinfection went unheeded by the commissioner and superintendent of Rawalpindi division.[23] In Jalandhar, compensation was refused to those, whose houses were burnt while disinfecting against the plague.[24]

Negligence on the part of the local administrators was also seen during the plague epidemic. For instance, *The Tribune* reported that during the Basant Panchami fair at Wazirabad in 1902, the authorities took no steps to check the arrival of people

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[21] *Proceedings, Home: Medical and Sanitary*, September 1894, Serial Number 37, pp163-64. Also, *Proceedings, Home: Medical and Sanitary*, May 1896, Serial Number 40, p71.

[22] *Proceedings, Home: Medical and Sanitary*, June 1898, Number 149, p2.

[23] *The Tribune*, April 27, 1901, p2. The petition was from the Public Association of Zaffarwal which had co-operated with the authorities in carrying out the plague operations.

[24] *The Tribune*, May 18, 1911, p3.

from the plague stricken areas of Sialkot and Jammu to the fair.[25] *The Tribune* referred to the most glaring example of negligence as the 'Mulkowal mishap'. On October 30, 1903, nineteen persons were inoculated in Mulkowal in Gujrat district with contents of a bottle contaminated with tetanus following which all of them contracted tetanus and died.[26] In a similar incident, on November 3, 1907, at Jalalpur Jattan in Gujrat district, a boy inoculated for the plague contracted tetanus and died.[27]

Medical and sanitary aid was available to the people at a few places only and that too after the area got infected. Only a small number of people had access to medical aid during the cholera epidemic of 1876.[28] During the plague epidemic of 1901-02, only 148 villages were disinfected completely and 116 partially, while in 1902-03, only 15,503 rooms were disinfected.[29] The rat eradication campaign appears to have been abandoned midway or not carried out effectively as 'nothing' was reported to be heard of it after a 'couple of years'.[30] The additional vaccinator employed during the smallpox epidemic at Bhera in 1939 did not have adequate supplies of the requisite apparatus and vaccine.[31]

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[25] *The Tribune*, February 4, 1902, p3. Also, *The Tribune*, February 18, 1902, p5. Even grains and other articles of food were exchanged between the infected and the uninfected areas.

[26] *The Tribune*, March 24, 1904, pp2-3.

[27] *Khalsa Advocate*, December 7, 1907.

[28] *Proceedings, Home*, October 1876, Serial Number 8, p660.

[29] *The Tribune,* March 24, 1904, pp2-3.

[30] *The Tribune*, April 17, 1907, p3.

[31] *Punjab Government Civil Secretariat Proceedings, B, Home: Public Heath*,(cited hereafter as *Proceedings, B, Home: Public Health*) Number 135, pp6-7.

The municipal authorities do not appear to have contributed much towards checking the spread of epidemics. The official reports cite instances of contaminated water and poor water supply in urban centres of the province, from cities as well as small towns.[32] The municipal committees probably gave no assistance in vaccine operations.[33] They took no special interest in the cleanliness operations during the epidemics. *The Tribune* cites examples of not only the district and divisional headquarters, but also of the provincial capital which were characterised by miry and odorous streets and blocked drains.[34] Commenting on the work carried out by the municipal committees, the official review stated that 'even the Committees which work efficiently are still far from being alive to their respective responsibilities in matter of sanitation.' In fact, it added that: [35]

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[32] *Proceedings, Home*, Serial Number 6, pp186-87. Instances of contaminated water supply were reported from Delhi, Gurgaon, Panipat, Ludhiana, Kalanaur, Gurdaspur, Nurmahal, Nakodar, Tarn Taran, Multan, Dera Ghazi Khan, Shahpur, Kohat, and Edwardesabad (Bannu).

[33] *Proceedings, Home*, August 1876, Serial Number 8, p552. Also, *Proceedings, Home: Medical and Sanitary*, October 1880, Serial Number 12, p540; *Proceedings, Home: Medical and Sanitary*, September 1886, Serial Number 22, pp120-21; *Proceedings, Home: Medical and Sanitary*, August 1887, Serial Number 24, p89; *Proceedings, Home: Medical and Sanitary,* July 1890, Serial Number 29, p41. The municipal committees of Rohtak, Bhiwani, Delhi, Gurgaon, Sonepat, Jagadhari, Amritsar, Ropar, Ladwa, Nurmahal, Gujrat, Multan, and Peshawar, were indifferent to vaccination.

[34] *The Tribune*, February 20, 1902; *The Tribune*, April 9, 1903; *The Tribune*, April 17, 1907; *The Tribune*, April 30, 1907. The cities and towns mentioned areSialkot, Eminabad, Lahore, Ambala, Delhi and Gujranwala

[35] *Proceedings of the Government of the Punjab in the Boards and Committees Department,*(cited hereafter as *Proceedings, Boards and Committees Department)* February 1919, Serial Number 40, pp16-17.

The Committees in larger towns are apt to display intense jealousy of the control exercised by their executive officers over the subordinate staff, and often more time is spent in deciding whether some subordinate official should be dismissed or whether a vacancy is to be filled by a Hindu or a Mohammadan than over an important drainage question or an improved system of municipal taxation.

II

The epidemic situation resulted in suspension of the means of livelihood of different sections of population. Those who depended on their daily work for procuring the necessities of life were the worst affected.[36] In Berampur, in Garhshankar *tahsil,* the measures like cordoning and evacuation prevented the pedlars from selling their wares in the neighbouring villages. The Julahas (weavers by caste) also were reported to have become unemployed, as they did not have access to the market.[37] The Brahman priests who depended on weddings, and the Bania moneylender who lived by the recovery of interest on debts also lost their earnings.[38]

The measures like quarantine and cordoning had an adverse effect on activities related to trade. During the cholera epidemic in 1872, quarantine restricted the movement of traders, causing disruption in the movement of goods, and consequently, a rise in prices.[39] The British officers reported that the shopkeepers in Hoshiarpur suffered following the closure of their shops during evacuation to the plague camps.[40] During the plague epidemic, the

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[36] *The Tribune*, April 27, 1901, p2.

[37] *Proceedings, Home: Medical and Sanitary*, April 1898, Number 279 B, pp1-2.

[38] *Proceedings, Home: Medical and Sanitary*, June 1898, Number 149, p12.

[39] J. M. Cunningham, *Cholera Epidemic of 1872*, p28.

[40] *Proceedings, Home: Medical and Sanitary*, April 1898, Number 398-405B, p2.

wholesale market in Delhi was closed, resulting in paralysing the local as well as external trade.[41] The lime industry suffered as the limekilns were located in the infected villages and the buyers were not allowed to enter these villages.[42] Trade declined in Garhshankar, in spite of the manufacturing work remaining unaffected.[43] At Phillour, the timber merchants suffered as the railways stopped the ferry train between Phillour and Ladhowal and vice versa from April 1, 1898.[44]

The production of certain crops also declined due to the measures adopted to contain epidemics. During the cholera epidemic in 1872, quarantine prevented the farmers from cultivating their fields which affected the agricultural production.[45] To reduce waterlogging as a factor contributing towards malaria, the administration discouraged rice cultivation in the districts of Hissar, Karnal and Rohtak by raising the occupier's rate vis-à-vis the owner's rate along the Western Jumna Canal.[46] The owners of the mango and the sugarcane crops which required selling or processing immediately on ripening were unable to get through the

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[41] Narayani Gupta, *Delhi: Between Two Empires 1803-1931, Society, Government and Urban Growth*, Oxford University Press, New Delhi, 1981, p 137.

[42] *Proceedings, Home: Medical and Sanitary*, April 1898, Number 279 B, pp1-2.

[43] *Proceedings, Home: Medical and Sanitary*, June 1898, Number 149, p15.

[44] *Proceedings, Home: Medical and Sanitary*, June 1898, Number 39-51, p3. Due to the cancelling of the ferry train, the traders could not afford to send their goods by ordinary trains as it was impossible for their heavily laden carts to cross through the sand on the banks of the Sutlej near Ludhiana.

[45] J. M. Cunningham, *Cholera Epidemic of 1872*, p28.

[46] *Proceedings, Home: Medical and Sanitary*, December 1892, Serial Number 33, p134.

cordon everyday to attend to their crops or sell their produce.[47] The cultivators of Moga in Ferozepur district were not allowed to bring their new crop of corn into their houses following which it was left unprotected and unsafe in the open.[48] Although the government reports are silent on the issue, it can be safely assumed that the maximum intensity of the plague in the months of April and May would have impeded the harvesting of the *rabi* crop in the affected areas.

The panic migration of the people during epidemics had varied results. The large-scale migration of the people of Delhi during the plague epidemic led to a hike in the house rents in the neighbouring areas of Jaisinghpura, Kutab, Shahdra, Ghaziabad and Faridabad. The houses, which had a capacity to accommodate ten to fifteen persons, were occupied by almost forty persons. Besides poor ventilation, this situation resulted in the shortage of daily necessities of life and medical aid. An increase in the number of thefts was another outcome of this situation.[49] There are references to the incidents of thefts and housebreaks during the absence of people from their homes, or as a result of evacuation to camps. Notwithstanding the assurances of safety against thefts given by the British officers dealing with the evacuation operations, it was impossible to actually provide guard for the homes and the

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[47] *Proceedings, Home: Medical and Sanitary*, August 1898, Number 206, pp3-4. Henriques, the assistant commissioner on plague duty in Hoshiarpur circle, recommended compensation to the extent of two-third of the estimated crop in his diary of July 20, 1898, while in his diary of the following day he writes that it was impossible for the government to pay any compensation!

[48] *The Tribune*, May 4, 1901, p3. The decline in production or damage to crops is likely to have affected the prices, but the available sources do not point to this conclusively.

[49] *The Tribune*, April 17, 1907, p3.

property left behind. In Banga, for instance, a coolie of the disinfecting gang was caught stealing during disinfecting while another man was caught stealing from a house in Sotran when the people had moved into the camps.[50] As a typical case, *The Tribune* quotes a letter from Ralla Ram, a settlement patwari of Zaffarwal, to his son lamenting that while they were compelled to move to the camps, there was a theft in their house as there was no guard in the town.[51]

III

As may be expected *a priori*, responses of the different sections of the people to the epidemic measures would be different depending upon the extent to which they were involved and affected, and the manner in which the representatives of the state dealt with them. Some sections of the society collaborated with the British and voluntarily carried out the requisite measures. In other cases, the reactions varied from sullen acceptance to active resistance.

'Leading men of influence' were selected in consultation with the deputy commissioner to assist the medical staff in the implementation of the plague eradication measures. They were explained the importance of different measures and were required to instruct the headmen (lambardars) and villagers of their area. The reports claim that several individuals co-operated with the

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[50] *Proceedings, Home: Medical and Sanitary*, August 1898, Number 204.

[51] *The Tribune*, May 16, 1901, p3. Ralla Ram's case was noticed in *The Tribune* as he was an old man staying with three widows-- his sister, daughter, and grand daughter. Since he possessed a lot of wealth and did not want to expose his relatives, he initially refused to leave his house. He was compelled to move in to the camp, and despite being assured of safety of his belongings, all his valuables were stolen.

authorities in their implementation.[52] The 'leading men' of Lahore bought a desiccator for use in the neighbourhood.[53] Rai Bahadur Lala Kishen Das of Delhi placed four of his gardens at the disposal of the public for use during evacuation.[54] Also, the Imam of Jama Masjid and Hakim Abdul Majid helped in allaying the panic caused by the plague.[55] At Denga, Attar Singh, a doctor, visited every house during the influenza epidemic, gave solace and consolation, and did not charge any fees. The 'leading men' of Denga opened a milk shop, where milk was given free to the poor and at a half price to others.[56]

The missionaries and other philanthropist organizations originating in the West also made efforts to provide relief during epidemics. In 1904, the Ludhiana Zenana and Medical Mission opened plague camps at Gill, Bulara and Ludhiana.[57] The Baptist Mission at Palwal and the Society for the Propagation of Gospel at Rewari distributed free quinine to the villagers during the malaria outbreak of 1908.[58] The American Presbyterian Mission administered medicine to 11,331 patients in Lahore and Ludhiana.[59] In 1933, assistance from 2,875 Boy Scouts was

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[52] *Proceedings, Home: Medical and Sanitary*, December 1907, Number 6-9, pp1-2.

[53] *The Tribune*, March 24, 1904, pp2-3.

[54] *The Tribune*, April 17, 1907, p3.

[55] Narayani Gupta, *Delhi: Between Two Empires 1803-1931, Society, Government and Urban Growth*, p 138.

[56] *Khalsa Advocate*, November 5, 1918.

[57] *Gazetteer of Ludhiana District, 1904*, p 95.

[58] *Gazetteer of Gurgaon District, 1910*, pp 41-42.

[59] *Gazetteer of Ludhiana District, 1904*, p 95.

sought during the cholera epidemic. [60] In 1934, the Red Cross Society helped in transporting people and providing relief material in the form of temporary kitchens, first aid, milk, clothing and shelter.[61] In 1935, in Gujranwala district, the honorary health lecturer of the Red Cross society delivered 622 lectures with the help of a magic lantern.[62]

Some socio-religious associations too helped in the epidemic operations. The Arya Samaj in Jalandhar explained the necessity and importance of the preventive measures to the traders and asked them to co-operate with the authorities.[63] The Jalandhar Aryas organized visits to the houses of those afflicted with the plague and gave them financial help.[64] The relief committee of the Punjab Brahmo Samaj appealed to the educated people to induce the poor to burn the plague infected *charpoys* (bedsteads) and gave two rupees as an incentive for every *charpoy* burnt in the presence of three persons. The committee put

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[60] *Proceedings, B, Home: Public Health*, 1936, Number 178, p 43. The Boy Scout movement was founded by Baden Powell in 1908. It laid emphasis on outdoor activities and evinced concern for the poor and the needy.

[61] *Proceedings, B, Home: Public Health*, 1934, Number 36, pp 31-39. In addition to camps in schools and tents, the Red Cross also set up two health centres, one at Wazirabad and the other one at Gujranwala. Its women health visitors visited the sick and administered medicines.

The Red Cross was organised in 1864 for the treatment of the sick and the wounded in war and those suffering from the effects of large-scale natural disasters.

[62] *Gazetteer of Gujranwala District, 1935*, p 335.

[63] *Proceedings, Home: Medical and Sanitary*, June 1901, Number 99-100, pp2-5. To prevent the spread of the plague in Jalandhar, the Aryas decided to deploy watchmen at all the entrances to the city to check the entry of the people from the plague infected areas.

[64] *The Tribune*, February 20, 1902, p5.

up *chhappars* (thatched roofs) for the accommodation of persons who wished to get away from the infected areas. They also supplied medicines and carried the work of disinfecting.[65] The Punjab Hindu Sabha issued pamphlets in the vernacular to give directions regarding implementation of the plague measures. People like Pandit Sundar Mal at Lahore devoted their time and energy in treating the plague patients with the Ayurvedic system of medicine.[66]

Public associations and committees were also formed to assist in the situation created by the plague. For instance, in Zaffarwal, a Public Association comprising of both the Hindus and Muslims of the town was formed to allay the excitement of the people and to co-operate with the authorities to combat the plague.[67] In 1902 a public meeting was held at Gujranwala in which measures to combat the plague were proposed, discussed and accepted.[68] In Delhi, a meeting was held to devise the means to check the spread of the plague.[69] The plague epidemic demonstrated that the services of the local population were necessary for the success of the public health measures. Till 1905, the anti-malarial measures carried out exclusively by the British did not reach out to the wider public. In 1908, voluntary committees in the towns were formed which worked under a civil surgeon or a medical officer to carry out measures to prevent malaria. In 1915,

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[65] *The Tribune,* April 19, 1907, p5.

[66] *The Tribune,* April 30, 1907, p5.

[67] *The Tribune*, April 27, 1901, p2.

[68] *The Tribune*, February 15, 1902, p5.

[69] *The Tribune,* April 27, 1907, p4. The meeting was attended by local Hindu and Muhammadan *hakims, vaids*, doctors, medical practitioners of Delhi, public Leaders, members of the municipality and a lady doctor, Miss Sorabjee of Victoria *zenana* Hospital.

in Hansi, a 'gang' of natives was organised to gradually fill in the disused wells and depressions and level the dilapidated houses.[70]

The educated middle classes comprising of doctors, lawyers, teachers and journalists, acted as intermediaries between the colonial state and the masses and consolidated their leadership. They made use of the press and appealed to the fellow countrymen to co-operate with the authorities in stamping out epidemics. *The Tribune* exhorted the people to devise means to combat the plague, adopt precautionary measures and observe the rules of hygiene. It called upon the educated to give the necessary advice to their ignorant brethren and to remove their misunderstandings regarding the preventive measures.[71] Following the shortage of huts in the camps at Ludhiana, the local correspondent of *The Tribune* appealed to increase the number of segregation huts and to close the educational institutions.[72] In an article in the *Khalsa Advocate* on 'Self help for the Plague,' an appeal was made to the 'Indian brothers and sisters to awake from deep slumber and to unite to scare away the plague demon.'[73] During the malaria epidemic in 1908, an appeal was made in the *Khalsa Advocate* to the Lt. Governor for organising the relief measures.[74] In 1910, the residents of Amritsar appealed to the health officers and engineers to take timely precautions like

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[70] *Proceedings, Home: Medical and Sanitary*, September 1915, Serial Number 86, p 40. The measures included distribution of quinine, filling depressions and spraying oil on the stagnant water so as to prevent the outbreak of malaria.

[71] *The Tribune*, April 28, 1907, p3.

[72] *The Tribune*, February 4, 1902, p5. An appeal was made to close the C. B. H. School at Ludhiana for a month as the boys came from all parts of the Punjab to study.

[73] *Khalsa Advocate*, December 14, 1907.

[74] *Khalsa Advocate*, November 7, 1908.

clearing drains to prevent disastrous outbreaks.[75] During the influenza epidemic in 1918, the *Khalsa Advocate* appealed to the Lt. Governor to arrange medical relief for the helpless village folk.[76]

IV

Notwithstanding the gestures of cooperation with the authorities in dealing with epidemics, there were some voices of discontent, sometimes resulting in active resistance and violent outbreaks. Even when disapproving of certain preventive measures, or mode of their implementation, the educated middle classes were generally restrained in expressing their resentment against the handling of epidemics. It was mostly voiced through the lodging of complaints with the authorities. In Moga, a complaint was made against a native doctor in connection with the plague operations.[77]In Jalandhar, the higher authorities were approached against the 'arbitrary' orders of the cantonment magistrate to disinfect the houses by burning dry grass in them.[78] With reference to overcrowding around Delhi it was asked in a letter to the editor of *The Tribune*:[79]

> Whether the Government will look on with unconcern and remain unmoved at the sight of their subjects dying by hundreds in distressing circumstances. Is it not the bounden (sic) duty of the authorities to take

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[75] *Khalsa Advocate*, September 14, 1910.

[76] Khalsa Advocate, October 27, 1918.

[77] *The Tribune*, April 30, 1901, pp3-4.

[78] *Proceedings, Home: Medical and Sanitary*, July 1911, Number 16-18, pp1-3. Also, *The Tribune*, May 19, 1911. The people sent a telegram to the authorities to seek protection. A large number of people lodged a protest in writing with the president of the Jalandhar Cantonment Committee.

[79] *The Tribune*, April 17, 1907, p3.

such measures as to stamp out the plague and prevent its spread to other places.

The newspapers were rather stringent in voicing their criticism of the inadequacy of the eradication measures. The *Khalsa Advocate* condemned the mode of vaccination and pleaded for its discontinuation: [80]

> Vaccination is useless and there is no excuse for continuing it. In many cases, leprosy spread through vaccination. Children die in great agony. The whole business of inoculation is quackery. How long the people will continue to submit to this infamous treatment, I cannot say, but in their ignorance they are the prey of Government supported quacks who make a living by putting poison in the blood of the people. The whole thing is horrible and disgusting for words.

Vaccination was condemned in another article entitled, 'Zymotic epidemics and their prevention,' and stress was laid on the need for improving the living and sanitary conditions instead. It was maintained that 'intellectually and scientifically, vaccination is dead.' The remedy lay in changing the condition of India: 'Let cleanliness supersede dirt.'[81] In an article on 'The Plague Administration in the Punjab,' *The Tribune* condemned the callous attitude exhibited by the officials in dealing with the plague afflicted people and highlighted the need for appointing men of special tact to take charge of the plague operations.[82] In a yet another article on 'The Plague in the Punjab,' the paper lamented: [83]

> The fact of fifty thousand human beings falling victims to the disease weekly in a small province like the land of five rivers is a heart rending calamity indeed. The Russo Japanese war cost between one and one

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[80] *Khalsa Advocate*, September 9, 1908.

[81] *Khalsa Advocate*, August 22, 1908.

[82] *The Tribune*, April 30, 1901, pp3-4.

[83] *The Tribune*, April 21, 1907, p3.

and a half lakh lives and the figures sent a thrill of horror through the civilized world. Here the plague is carrying 1,00,000 human beings fortnightly but no one gives a thought to this. Is no weight attached to the public opinion or does no public opinion exist in this part of the world? Had England been in the position of the Punjab today, which God forbid, or if the plague had been working havoc in a part of a European country or the USA for the last ten years, the people concerned would have strained every nerve to stamp out the disease. Why do Municipal Committees and the authorities give no signs of life?

The indifference of the authorities towards the sufferings of the people was highlighted in a piece on 'The Plague Stricken Lahore:'[84]

> If a person is killed by another, the police display a very great zeal in inquiring into the murder and a very large number of people are involved in trouble. Government also spends considerable time and thousands of rupees in seeing the case through the original, the sessions and the Chief Court. While, however the plague is carrying off hundreds and thousands of human beings daily, the Government is doing little or nothing to save life.

The *Khalsa Advocate* maintained that the efforts to contain the plague had failed to 'secure the cooperation of the people or to excel (sic) much influence on the course of the epidemic.'[85]

The racialism built in to the preventive measures also came in for criticism. The practice of asking several questions during medical examination at Tara Devi station before Simla was seen as imbued with racialism: 'The Government of India's administration is infected with the colour pest.' Further, 'within an area of twenty miles of the Imperial headquarters, an educated

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[84] *The Tribune*, April 28, 1907, p3.

[85] *Khalsa Advocate*, December 8, 1903.

Indian was treated as a menial.'[86] The *Muslim Outlook* considered 'the racial discrimination made at Tara Devi' as 'more reprehensible.' It failed to understand 'why a European cannot be a carrier of cholera and he is allowed to proceed on his journey undisturbed while Indians are bombarded with questions as if they were criminals.'[87]

The articulation of resentment in the press through editorials, articles and letters, however, was rather subdued and restrained compared to the reactions of the trading classes in the small towns, and of the peasantry and rural artisans whose livelihood was threatened equally by the epidemics and the preventive measures.

The spate of rumours was one manifestation of the disapproval of the people towards the measures to prevent epidemics. The rumours revolved around the vaccinations and the plague eradication measures, both of which were carried out with coercion. Regarding vaccination, it was believed by some that the government was marking the children because it was looking for people fit enough to be slaves.[88] Another rumour that found easy acceptance was that the British wanted to cut short the growth of the nation by injuring the nerves of virility and making the children impotent. They also believed that the British were taking out blood to prepare a blood mummy. Some even believed that the government was trying to find a child who had milk in his veins as such a child would be Imam Mahdi whom the British were trying to

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[86] *The Tribune*, May 10, 1917, p5.

[87] *Proceedings, B, Home: Public Health*, 1931, Number 10, p11.

[88] *Proceedings, Home: Medical and Sanitary*, December 1879, Serial Number 11, pp6-7.

kill.[89] Some thought that by vaccinating people the government was collecting a certain quantity of human blood for propitiating a deity.[90] Vaccinations were also seen as a means of spreading Christianity! [91]

One of the rumours finding easy credence was that to arrest the plague the government was resorting to poisoning the afflicted persons.[92] The medical subordinates were believed to be administering pills of suspicious character and a certain hospital assistant had actually died after consuming his own pill.[93] The authorities were said to be interested in killing a large number of people simply because Queen Victoria had died. The inoculators were seen as moving around the villages, carrying needles filled with the plague poison to spread the disease. The native officers like the assistant surgeons and naib tahsildars were suspected to be spreading the disease by distributing poisoned sweets or by poisoning the village wells.[94] Credence was also given to the idea that the male members were being killed by the plague poison to secure their female relations for the enjoyment of the officials. *The Tribune* reports another widespread rumour that the people were

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[89] *Proceedings, Home: Medical and Sanitary*, February 1881, Serial Number 13, p84.

[90] *Proceedings, Home: Medical and Sanitary*, December 1879, Serial Number 11, pp6-7.

[91] *Proceedings, Home: Medical and Sanitary*, February 1881, Serial Number 13, p84.

[92] *Proceedings, Medical and Sanitary*, June 1898, Number 122-26B, p1.

[93] *The Tribune*, May 14, 1901, p3.

[94] *Proceedings, Home: Medical and Sanitary*, June 1901, Number 99-100, pp2-3. In a village in the Jalandhar district, an excited mob seized and beat up a group of travellers resting near a well as they were believed to have come to poison the wells.

being poisoned as the King required money; if they died leaving behind no heir, the property would be escheated to the King. It seems that rumours were more prevalent in areas where the measures were forced upon the people and mistrust of the local administration was high.[95]

The sick were often concealed on account of unpopularity of the governmental measures and the fear of separation from the family members. During the cholera epidemic in 1872, cholera cases were concealed because they were afraid of quarantine.[96] In 1875, people concealed the sick in Amritsar due to the resentment against the cleaning operations.[97] The civil surgeon of Jalandhar wrote that in the course of the cholera epidemic in the city, quarantine seemed to be the 'first dread in the eyes of the people, and their sole motive for concealment.'[98] Concealment of the cholera cases continued till the third decade of the twentieth century. This tendency was rather pronounced among the rail passengers going to Simla because of the stringency of measures. Sometimes, while travelling in the trains, the children suffering from cholera were hidden under seats or in the toilets. [99] There was also an utmost dislike for the arm-to-arm vaccination of the children who were concealed in their homes till the tour of the vaccinator was

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[95] *The Tribune*, May 14, 1901, p3. It is significant that there was relatively much less circulation of rumours in Zaffarwal where the plague operations were carried out by a Public Association. The people seemed inclined to co-operate with the authorities.

[96] J. M. Cunningham, *Cholera Epidemic of 1872*, pp 4-5.

[97] *Proceedings, Home*, June 1876, Serial Number 8, p337.

[98] *Proceedings, Home: Medical and Sanitary*, February 1884, Serial Number 17, p9.

[99] *Proceedings, B, Home: Public Health*, 1931, Number 10, p29.

over.[100] One such instance was reported from Jhang where the women locked themselves in along with their children.[101] In Lahore city, the children afflicted with smallpox were concealed precisely when the vesicles were ripe and they were required to be brought for inspection.[102] The fear of segregation was generally behind the concealment of the plague cases. In Khan Khanan, for instance, even after evacuation, Dr. James discovered eleven more cases.[103] In Sadhowal village, constable Sadr Din discovered graves of people who had been secretly buried after succumbing to the plague.[104] The villagers buried the corpses even within their houses; in Sheikhupur, the body of a person who had died of the plague was found hidden in a stack of *chari* (fodder).[105]

The resistance to the government measures was not possible without the connivance of the lower government functionaries who were probably carrying these out without any real awareness or conviction. In the Rohtak district, villagers gave presents to the vaccinators for allowing the children to remain unvaccinated.[106] In Palwal, the members of the municipal

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[100] *Proceedings, Home: Medical and Sanitary*, June 1880, Serial Number 12, pp342-43.

[101] *Proceedings, Home: Medical and Sanitary*, February 1881, Serial Number 13, p83.

[102] *Proceedings, Home: Medical and Sanitary*, July 1884, Serial Number 18, p92.

[103] *Proceedings, Home: Medical and Sanitary*, April 1898, Number 273 B, p9.

[104] *Proceedings, Home: Medical and Sanitary*, June 1898, Number 149, p3.

[105] *Proceedings, Home: Medical and Sanitary*, April 1898, Number 276 B, p20. Also, Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, p81. In another village, Dhahan, in Banga circle, an infected corpse was found locked up in a room.

[106] *Proceedings, Home*, April 1874, Serial Number 6, p185.

committees bribed the vaccinators for not carrying out any vaccinations in their *mohullas*.[107] To escape vaccinations in Ludhiana, the residents probably bribed the registration writer not to get the births registered.[108] In Karnal, the wealthier people paid money to the vaccinator to go away and not vaccinate the children.[109] In Simal Mazra, in Garhshankar district, the lambardars allowed the plague victims to be secretly buried.[110]

The temporary migrations were another means of dealing with the fear and panic caused by the eradication measures. During the vaccination season the people in the Jhang and Lahore districts migrated to other places and returned only after the vaccinator had left the village.[111] The widespread exodus during the plague epidemic was fairly common. The inhabitants of Sialkot and other infected areas moved to Lahore.[112] There was a considerable movement of the panic stricken people from Jalandhar to other areas.[113] Only about half of the population was

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[107] *Proceedings, Home: Medical and Sanitary*, October 1880, Serial Number 12, p540.

[108] *Proceedings, Home: Medical and Sanitary*, June 1880, Serial Number 12, pp342-43.

[109] *Proceedings, Home: Medical and Sanitary*, July 1891, Serial Number 30, p59.

[110] *Proceedings, Home: Medical and Sanitary*, April 1898, Number 280B, p5.

[111] *Proceedings, Home: Medical and Sanitary*, February 1881, Serial Number 13, p83. Also, *Proceedings, Home: Medical and Sanitary*, July 1884, Serial Number 18, p92; *Gazetteer of Hissar District and Loharu State,* 1904, p313. Such instances of people leaving their homes till the tour of the vaccinator was over were also reported from Hansi and Bhiwani in Hissar districts.

[112] *The Tribune*, February 22, 1902, p5. Also, *The Tribune*, February 20, 1902, p5. Even in Jammu, the shopkeepers left the place and moved to the less infected areas of the Punjab.

[113] *The Tribune*, February 24, 1902, p5.

left behind at Eminabad.[114] In Singhoi, in Jhelum *tahsil*, the people deserted the village and all shops were closed; 'scarcely is a Emam seen there' reported *The Tribune*.[115] The residents of Delhi moved to the suburbs. Some even went back to their native villages.[116]

The resistance to the eradication measures also came from those people who were directly hit by these. In Amritsar, in 1875, during the cholera epidemic, a native practitioner of traditional medicine incited the Kashmiris not to get themselves inspected. His private practice 'got affected by the medicines administered by the administration.'[117] In the early 1880s, in Delhi, a native Christian, Udey Ram, prevented the vaccinator from vaccinating the Chamars.[118] Some sections of society like Brahman priests, keepers of Sitala temple, Mullahs and variolators felt that vaccinators deprived them of their livelihood. They tried to prevent the vaccinators from doing their job.[119]

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[114] *The Tribune*, April 9, 1903, p5. Also, *Gazetteer of Hissar District and Loharu State*, 1904, p52. In Hissar district, people refused all kinds of assistance during the plague outbreak and left the infected places. They went to other towns and villages where they had relatives.

[115] *The Tribune*, April 21, 1904, p5.

[116] *The Tribune*, April 17, 1907, p3. Those who stayed in the vicinity came to Delhi everyday to transact their daily business. Also, Narayani Gupta, *Delhi: Between Two Empires 1803-1931, Society, Government and Urban Growth*, p137. Temporary migration was more pronounced amongst the Marwaris who sent their families as well as their goods away from the city.

[117] *Proceedings, Home*, June 1876, Serial Number 8, p337.

[118] *Proceedings, Home: Medical and Sanitary*, July 1884, Serial Number 18, p89.

[119] *Proceedings, Home: Medical and Sanitary*, February 1881, Serial Number 13, pp81-82.

The vested interests did not have to exert much to generate resistance and opposition to the governmental measures. In Khatgarh, the villagers refused to get themselves examined by Dr. Miran Baksh Uttarid. It was only after he explained the importance of early detection of the infection that the people got themselves examined. At Garhshankar, the Sayyids objected to the house-to-house inspection by the Muhammedan *dhais*.[120] During the cholera epidemic, the Muhammedans at Khanpur strongly objected to the disinfection of bedding and articles by steam or the sunlight on the ground that they were Namazais and their religion did not permit such practices.[121] The inhabitants of Kalka were so opposed to desiccation and disinfecting that they did not let even the affected houses to be desiccated or disinfected.[122] Several Hindus and Jains were opposed to rat destruction on religious grounds. They either buried the baits laid by the district administrators or released the rats caught in the traps The Jains established rat hospitals to protect them. In one such hospital 8,000 rats were found.[123] In Sialkot district, the Jains, locally called Bhabras did not permit rat destruction in their houses.[124] During the malaria epidemic in 1910 in Gurdaspur district, instead of taking the quinine given by the quinine distribution society, the villagers gave the medicine to their cattle or put it in the ponds and dung heaps.[125]

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[120] *Proceedings, Home: Medical and Sanitary*, June 1898, Number 149, pp2-5.

[121] *Proceedings, Home: Medical and Sanitary*, September 1897, Serial Number 44, pp634a-634i.

[122] *Proceedings, Home: Medical and Sanitary*, May 1904, Number 42--43, p2.

[123] *Proceedings, Home: Medical and Sanitary*, October 1907, Serial Number 70, p75.

[124] *Gazetteer of Sialkot District*, 1920, p31.

[125] *Gazetteer of Gurdaspur District*, 1914, p197.

In fact, there was a general reluctance to co-operate with the plague measures. At Khan Khanan, the people preferred to die in their own village rather than move into the camp.[126] The residents of Paragpur were `obstructive and impertinent' while refusing to go to the camps; they moved into the camp only after the arrest of a couple of men.[127] The people in Sialkot district refused to evacuate their houses due to the fear of theft.[128] The villagers of Raika Patti objected so strongly to evacuation that they could not be persuaded to move into the camps.[129] At Patiala, the *jagirdars* and *sardars* decided against evacuation and it was after a lot of persuasion that they agreed to move out.[130] Even by 1907, the attitudes of the people did not change much and they were not willing to evacuate on any 'considerable scale.'[131]

The resistance against vaccination was even stronger. The caste Hindus resisted vaccination on the plea that the vaccines contained the substances that were not permitted by their religion. The Khatris of Rahon sent a petition to the Deputy Commissioner saying that the prophylactic serum contained animal matter forbidden by their religion.[132] A strong reluctance was reported

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[126] *Proceedings, Home: Medical and Sanitary*, April 1898, Number 273 B, p10.

[127] *Proceedings, Home: Medical and Sanitary*, June 1898, Number 148, p3.

[128] *Gazetteer of Sialkot District*, 1920, p31.

[129] *Proceedings, Home: Medical and Sanitary*, April 1898, Number 398-405 B, p1.

[130] *Proceedings, Home: Medical and Sanitary*, May 1901, Number 94 B, pp1-3. Medical Advisor to the Maharaja, Major Hendley, and the Foreign Minister, Colonel Mohammad Majid, persuaded the people to evacuate.

[131] *Proceedings, Home: Medical and Sanitary*, July 1908, Number 10-11, pp2-3.

[132] Captain E. Wilkinson, *Report on the Inoculation in Jullundur and Hoshiarpur Districts of the Punjab October 1899-September 1900*,(cited hereafter as

from Gurgaon, Lahore, Gujrat, Muzaffargarh and Dera Ismail Khan districts.[133] Even the native rulers of Nahan and Keonthal refused to allow vaccination work in their states on religious grounds.[134] The upper caste Hindus opposed vaccination also on the grounds of caste. In the arm-to-arm vaccination, lymph was often taken from sweepers' children and injected in to the children belonging to the higher castes. Often vaccinators themselves belonged to a lower caste. Thus, in Ludhiana, only 54 Hindus came forward for vaccination out of the 611 persons vaccinated.[135] In Delhi, Lala Hardhyan Singh and Lala Kishan Chand, both members of the municipal committee, and Lala Ram Kishan Das, an honorary magistrate, did not get children from their families vaccinated. The former tahsildar of Ballabgarh received a commendation certificate (*parwana)* for assistance in vaccination work but he did not get his own children vaccinated. [136]

The reactions to the plague inoculations were more complex, though these ranged from ridicule and resistance on the one hand to acceptance and cooperation on the other. Since it was impossible to inoculate the entire population, the people used

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Inoculation in Jullundur and Hoshiarpur 1899-1900) , Punjab Government Press, Lahore, 1901, pp50-51.

[133] *Proceedings, Home: Medical and Sanitary,* July 1890, Serial Number 29, pp40-41.

[134] *Proceedings, Home: Medical and Sanitary*, July 1890, Serial Number 29, p39. Also, *Proceedings, Home: Medical and Sanitary*, August 1895, Serial Number 39, p106.

[135] *Proceedings, Home*, August 1874, Serial Number 6, p378. Also, *Proceedings, Home: Medical and Sanitary*, December 1879, Serial Number 11, p7.

[136] *Proceedings, Home: Medical and Sanitary*, December 1884, Serial Number 18, pp144-45.

fatalistic argument that if it has been decreed that one would get the plague, one would get it in spite of inoculation. Those who did get inoculated took only milk, as they believed that it was unsafe to consume solid food for some days after inoculation. Since everyone could not afford milk, many did not accept inoculation.[137] On the other hand, no serious difficulty was experienced in dealing with the Sikhs. It was as much due to the presence of a large number of them in the British Indian Army, as to the relative absence of the considerations of the caste and the *purdah* amongst the Sikhs.

V

There is some evidence also of active opposition of the people to the preventive measures. In the early period it was directed against the vaccinators. In 1883, the vaccinators were actually assaulted four times and were prevented from carrying out their duty. In another incident, the head vaccinator of Delhi, Ghalib Ali, was attacked in the bazaar.[138] In 1891, in Rohtak, the vaccinators were assaulted on the ground that they unnecessarily vaccinated many children.[139] After the outbreak of the plague and in reaction to the coercive measures of the administration and medical officers, the people took out demonstrations, threatened the government functionaries, hurled abuses at them, and at times, even assaulted them physically. The prime targets of these angry reactions were the subordinate staff dealing with the plague measures.

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[137] Captain E. Wilkinson, *Inoculation in Jullundur and Hoshiarpur 1899-1900*, p41.

[138] *Proceedings, Home: Medical and Sanitary*, July 1884, Serial Number 18, p87.

[139] *Proceedings, Home: Medical and Sanitary*, July 1891, Serial Number 30, p42.

During the plague epidemic, the residents of Garhshankar held a demonstration in the bazaar to protest against the house-to-house 'inspections' by the Muhammedan *dhais* and the arrest of some men.[140] At Hajipur, the hospital assistants were threatened with violence when they came to dispose off the remains of a corpse.[141] The residents of Sihowal and Darya Nangal violently threatened the naib tahsildar;[142] at Kathgarh, a person actually attacked the naib tahsildar, but the chaukidar who was ordered to arrest the culprit, refused to do so.[143] The subordinate medical staff at Hajipur complained of assaults and abuses by the Chamars who had been asked to carry the baggage of nurses.[144] In Banga circle, the hospital assistants and compounders were accused of bribery, extortion and ill treatment; abuses were hurled at them, and some of them were even attacked.[145]

The Tribune reported that the growing discontent erupted at places in clashes between the people and the authorities. The paper blamed the 'police zulum and tactlessness' of the plague officials and high handedness of the civil administrators that 'goaded the people to defiance.'[146] In several situations the people actually resorted to rioting. For a while it seemed that the fear of the authorities had receded into the background. The incidents

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[140] *Proceedings, Home: Medical and Sanitary*, June 1898, Number 149, p5.

[141] *Proceedings, Home: Medical and Sanitary*, June 1898, Number 154-55, pp1-2.

[142] *Proceedings, Home: Medical and Sanitary*, May 1901, Number 111-23, pp3-4.

[143] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, p146.

[144] *Proceedings, Home: Medical and Sanitary*, June 1898, Number 154-55, pp1-2.

[145] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, p53.

[146] *The Tribune*, May 9, 1901, p3. Also, *The Tribune*, May 11, 1901, p1.

reported in the newspapers and the official records point to considerable tension having enveloped different sections of the population. The traders perhaps played an important role in this situation.

On April 28, 1898, Major E. Inglis, who was on special plague duty, went to Garhshankar to evacuate the town by persuasion or force. He was accompanied by the plague officials and police officers of Hoshiarpur district. At the entrance of the town, a crowd refused to let them in or to disperse. A small force of hundred men armed with carbines was detached under assistant district superintendent of police. The magistrate, Leslie Jones, got in by another route, got behind the crowd which resulted in the dispersal of the crowd. The detachment marched back and on its way was attacked by bricks and stones hurled from the rooftops. The policemen fired sixty rounds in which nine villagers were killed and twenty-seven wounded. Three policemen were injured in the fracas. The mob refused to allow entry to the Magistrate in the town and 'the town was in practical revolt against the authority of the government.' The commissioner and superintendent of Jalandhar division considered it an 'organised attempt to resist by all possible means the authority of the state.'[147]

In April 1898, riots broke out in Bhangala in Nawanshahr district, when the people were being forcibly evacuated and sent to the camps. The non-cooperating lambardars were arrested but were rescued by a group of about a thousand men collected from the neighbouring villages. The people then took away the weapons of the policemen and chased them away along with other officials

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[147] *Proceedings, Home: Medical and Sanitary*, July 1898, Serial Number 46, pp188-90.

on the plague duty.[148] To bring the situation under control, the police arrested twenty-nine 'rioters' and sentenced them to imprisonment, ranging from one to twelve months.[149]

On April 28, 1901 at Shakargarh, the European officers had to intervene when about forty men, mainly shopkeepers, armed with cudgels tried to break the cordon. They wanted to remove certain goods from their houses. They claimed that they had obtained permission from the kanungo but he denied having given such permission. They then tried to induce the sentries to let them pass. This led to an argument and some villagers were apprehended to restore order.[150]

In May 1901, in Zaffarwal, three children were inoculated without obtaining the consent of their parents, which resulted in a great hue and cry. A crowd of about 2,000 men gathered, searched for the vaccinator and beat him up. The police intervened and saved the vaccinator by taking him away and putting him in the lock up.[151] In another village in Zaffarwal *tahsil* the naib tahsildar, Babu Ram Das, had to lose his life. A crowd of 1500 men first beat

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[148] *Proceedings, Home: Medical and Sanitary*, April 1898, Number 330-34, p1.

[149] *Proceedings, Home: Medical and Sanitary*, June 1898, Number 148, p3. The junior secretary to the Government, Lahore, in a telegram to the Home Department informed that the Bhangal affair was settled 'peacefully' by the deputy commissioner.

[150] *Proceedings, Home: Medical and Sanitary*, June 1898, Number 148, pp5-6. The shopkeepers wanted to remove certain goods from their houses. They claimed that they had obtained permission from the *kanungo* but he denied having given such permission. They then tried to induce the sentries to let them pass. This led to heated discussions and some villagers were apprehended to restore order.

[151] *Proceedings, Home: Medical and Sanitary*, May 1901, Number 111-23, pp3-4.

him up, pelted him with stones, placed him on top of his thatched hut, and finally burnt him alive along with the hut.[152]

In May 1901, unrest surfaced in Sankhatra town. It had been left to the 'tender mercies' of the subordinate medical staff. It was reported to be 'under the thumb of its hospital assistant and when people gave vent to their feelings, they broke out on him.'[153] The angry mob burnt two camps and killed the naib tahsildar. Some Sikh Jats raided a plague camp, burnt several huts and scattered the cordon.[154] About fifty persons were arrested in connection with the murder of the naib tahsildar.[155] To deal with the riots police reinforcements and troops were called in, following which twenty-seven men were arrested.[156]

On May 15,1901, five villagers came from Baori to see a plague patient in a camp at Mirpur Lakha. They were allowed to do so from a certain distance. One of the visitors, Kahn Singh, wanted to go near the patient but was stopped by a sepoy. When Kahn Singh persisted he was seized by the sepoys. The other visitors were allowed to go back. As was the practice, the matter was reported to the executive naib tashildar and havildar at Garcha who ordered Kahn Singh to be brought there. At night when Kahn Singh was being taken to Garcha, about thirty men armed with *lathis* (sticks) intercepted the official party and attacked them with their *lathis*. A sepoy was seriously injured while others received

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[152] *The Tribune*, May 9, 1901, p3.

[153] *The Tribune*, May 16, 1901, p3.

[154] *Proceedings, Home: Medical and Sanitary*, May 1901, Number 65-68, p7.

[155] *The Tribune*, May 14, 1901, p3.

[156] *The Tribune*, May 18, 1901, p3.

minor injuries. Kahn Singh managed to flee, and so did the rest of his supporters.[157]

The incident at Patiala is even more revealing of the depths of anger felt by the people. In February 1902, the Dogras living in the town obstructed the authorities from removing a kinsman suffering from the plague to the segregation huts. The next day the patient died. On the following day, the officials along with six horsemen went to disinfect the house. The Dogras refused to let them do so and assaulted the officials and Nathu Mal, the civil surgeon. One of the officials received severe blows on his arm. The horsemen protected the officials and carried them through an infuriated crowd. The crowd then set the hospital on fire, also breaking the chairs, tables and windows. They then burnt all the huts in the plague camp. Panic prevailed in the town and soldiers were called in to patrol it. There was a complete *hartal* (strike, usually marked by closure of shops as a form of political protest) in Patiala for a couple of days.[158] The *chaudharis* (headmen) of localities were asked to get the shops opened and help in the arrest of the culprits. However, the *chaudharis* initially pleaded ignorance of the matter and later expressed their willingness to intervene only on the condition of non removal of patients to the plague camps. The authorities did not accept that and put sixty *chaudharis* under surveillance in *Kaur Ji Ki Haveli* under a strong military guard.[159] It may be relevant to point out that at this time the

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[157] *Proceedings, Home: Medical and Sanitary*, May 1901, Number 176-77, pp2-3.

[158] *The Tribune*, February 22, 1902, p5.

[159] *The Tribune*, February 24, 1902, p5.

state of Patiala was being administered by a Council of Regency under the control of the British Political Agent, J. Dunlop Smith.[160]

To deal with the situation, the police and the military blocked all the entrances to the Dogra Street early in the morning. About a thousand of the Dogras were arrested, stripped off their turbans, and their hands twisted and tied at their backs with their turbans. They were paraded in the town and taken to *Kaur Ji Ki Haveli* where they were kept with the already detained *chaudharis*. Following the arrest of the Dogras, several more arrests were made and the stoppage of the *hartal* was ordered. `With mixed threats and entreaties,' the police caused most of the shops to be opened.[161]

The angry outbursts of the people and the alarmist responses of the authorities relate to the early years of the plague outbreaks when both were trying to adjust with the new situation. It is equally possible that the political and economic measures of the provincial government causing widespread discontent may also have contributed towards the strong reactions against the epidemic measures.[162] The prevalent discontent appears to have been compounded by the generally apathetic attitude exhibited by the local administrators. In voicing their discontent, at least for some time, the people from different backgrounds came together, cutting

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[160] K. Natwar Singh, *The Magnificient Maharaja, The Life and Times of Maharaja Bhupinder Singh of Patiala, 1891-1938*, Harper Collins India, New Delhi, 1998, pp35-36.

[161] *The Tribune*, February 27, 1902, p5.

[162] S. R., Sharma, *Punjab in Ferment*, S. Chand and Co., New Delhi, 1971, pp18-45. During the first decade of the twentieth century there was widespread discontent in the Punjab as a result of the Punjab Alienation of Land Act (1901), increase in water rates and land revenue in some parts of the Punjab, and the Chenab Colony Bill.

across communal and caste barriers. In short, in the crisis situation presented by the plague, the common people shed their habitually docile attitude towards the British and the administrators shed their posture of paternalism.

Chapter 5

GENDER AND EPIDEMICS

The Punjab has had an unfavourable sex ratio throughout the twentieth century. It touched the lowest point during the colonial period in the census of 1911, and showed only slight improvements in 1921 and 1931.[1] These three decades represented the maximum female mortality from epidemics, the plague being its 'single most important cause.'[2] However, this aspect has generally been ignored even in studies that highlight different forms of violence and social neglect concerning women.[3] The chapter, therefore, focuses on the systemic disadvantages of women in the Punjab which appear to have got aggravated in the course of epidemics.

I

The incidence of diseases was generally greater in women as compared to men. The difference between the male and female

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[1] This is evident from the comparison of sex ratio of India and the Punjab:

	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001
India	972	964	955	950	945	946	941	930	934	927	933
Punjab	832	780	799	815	836	844	854	865	879	882	874

Census of India 1991, Part II A, General Population Tables, p7. Also, Ashish Bose, *India's Billion Plus People, 2001 Census Highlights, Methodology and Media Coverage*, B.R. Publishing, New Delhi, 2001, p76.

[2] Sasha, 'Women and the Plague in Colonial Punjab 1897-1918,' *Social Sciences Research Journal*, Volume VII, Panjab University, Chandigarh, 1999, p137.

[3] Cf. Rainuka Dagar, 'Patriarchal Structure and Violence Against Women,' in J. S. Grewal and Indu Banga (eds.): *Punjab in Prosperity and Violence, Administration, Politics and Social Change 1947-1997*, Institute of Punjab Studies, Chandigarh and K. K. Publishers, New Delhi,1998, p200.

mortality from epidemics was even greater. This is evident particularly in case of fevers and the plague.

Table 5.1 : Comparative death rates due to different epidemics in males and females.

Disease	Years			
	1901-1910		1911-1920	
	Males	Females	Males	Females
Fevers	20.9	**23.7**	21.6	**24.2**
Cholera	0.2	0.3	0.2	0.3
Smallpox	0.5	0.5	0.5	0.6
Plague	8.8	**11.4**	2.9	**3.7**

Source: *Census of India 1921*, Volume XV for Punjab and Delhi, Civil and Military Gazette Press, Lahore 1923, p61.

The average plague mortality rate of men per mille in the Punjab from 1901 to 1910 was 8.8 while that of the women was 11.4. In the next decade, the corresponding figures were 2.9 and 3.7 respectively. Similarly, in case of fevers, from 1901 to 1910, the average annual death rate per mille for men was 20.9 while the corresponding figure for women was 23.7. During the next decade, the fever mortality rate per mille for men and women was 21.6 and 24.7 respectively. Significantly, as a result of general improvement in health and sanitation, the gap between the male and female mortality got reduced in the province during the next decade, but it could not be bridged. [4]

In fact, the biological advantages of women over men appear to have been substantially neutralized if one has a close look at the percentage of male and female death rate from 1900 to

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[4] *Census of India 1921*, Volume XV for Punjab and Delhi, Civil and Military Gazette Press, Lahore 1923, p61. From 1921 to 1930, the average annual plague death rate per mille for men and women was 1.8 and 2.4 respectively, and that for fevers was 17.5 and 18.9.

1904, that is, during the worst years of the worst decade of the twentieth century.[5]

Table 5.2 : Comparison of death rate per mille due to the plague and all other causes in males and females.

Years	1900	1901	1902	1903	1904	Average
DEATH RATE PER MILLE DUE TO THE PLAGUE						
Males	0.02	0.56	7.02	8.27	16.52	6.48
Females	0.03	0.96	10.26	12.47	23.41	9.42
Percentage of female rate to male rate	**150**	**171**	**146**	**151**	**142**	**145**
DEATH RATE PER MILLE DUE TO ALL CAUSES						
Males	43.93	34.48	41.07	45.08	44.47	41.81
Females	48.63	38.05	47.63	53.56	54.37	48.45
Percentage of female rate to male rate	**111**	**110**	**116**	**119**	**122**	**116**

II

There appears to have been a connection between the higher incidence of disease and mortality among women and the prevailing social norms. The patriarchal system enforced the norm of the complementarity of sex roles. The men were the earners and the decision-makers; they exercised control over financial and social matters, including access to health facilities. On the other hand, the women had the primary responsibility of carrying out domestic chores like fetching fuel and water, cooking, washing, cleaning and leeping floors, nursing the children and the sick. [6] There was little participation of men and women in each other's

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[5] *Punjab Government Civil Secretariat Proceedings*, *Home: Medical and Sanitary* (cited hereafter as *Proceedings, Home: Medical and Sanitary*), April 1906, Number 20-26, pp2-4.

[6] Neera Desai and Maithreyi Krishnaraj, *Women and Society in India*, Ajanta Publications, Delhi, 1987, p121. Also, Jana Mason Everette, *Women and Social Change in India*, Heritage Publishers, Delhi, 1981, p41.

spheres in both urban and rural areas.[7] With the general acceptance of polygamy and remarriage of widowers, at least among the upper classes of a large segment of the Punjabi society, a woman was implicitly dispensable. The social attitudes also devalued her person and affected her nutrition and access to health care. The multiple pregnancies, particularly to obtain a son, further drained her off. This situation cumulatively resulted in the women in the region generally suffering from malnutrition and remaining vulnerable to disease.[8]

Turning specifically to the situation related to the plague, it is relevant to note that while carrying out the household chores, the rural women in particular were exposed more to the infection from rats and fleas.[9] The women were also required to nurse the sick, and in the process also handle their soiled clothes without being aware of the implications. During mourning, the custom required the women to sit around the corpse on the ground in poorly ventilated houses and sleep on the floor, which exposed them more to the fleas.[10] In fact, the wounds of the plague victims formed by opening of the buboes were customarily touched with

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[7] Veena Das, 'Indian Women: Work, Power and Status,' in Nanda, B. R (ed.): *Indian Women from Purdah to Modernity*, Vikas Publishing House, Delhi,1976, p144.

[8] For a discussion see, Rainuka Dagar, 'Patriarchal Structure and Violence Against Women,' in J. S. Grewal and Indu Banga (eds.): *Punjab in Prosperity and Violence, Administration, Politics and Social Change 1947-1997*, p189.

[9] *Proceedings, Home: Medical and Sanitary*, April 1906, Number 20-25, pp2-3.

[10] *Proceedings, Home: Medical and Sanitary*, July 1912, Number 51-53, p1.

the *chadar* by the condoling women which increased their chances of getting infected.[11]

Moreover, compared to their men folk, women could benefit much less from inoculation. In a village in Banga circle, twenty-eight per cent of the women and in another village in Hoshiarpur district, thirty-eight per cent of them could avail of this preventive measure.[12] This was as much due to ignorance as to the general disregard for women's health. The upper classes brought in also the question of 'honour' and 'custom'. The elite among both Hindus and Muslims forbade their women to get inoculated. The Rajputs believed that exposing their women violated the *purdah* and would make their daughters' marriage difficult. The Sayyids believed that their religion forbade women to get inoculated by men.[13]

The situation was no different in case of smallpox vaccination in the province as a whole and also in some of its most populous districts.

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[11] Major E. Inglis, *Report on the Outbreak of the Plague in Jullundur and Hoshiarpur Districts of the Punjab in 1897-98*,(cited hereafter as *Plague in Jullundur and Hoshiarpur 1897-98*), Punjab Government Press, Lahore, 1898, PSA, p15.

[12] Captain E. Wilkinson, *Report on Inoculation in Jullundur and Hoshiarpur districts of the Punjab October 1899- September 1900*, (cited hereafter as *Inoculation in Jullundur and Hoshiarpur*) Lahore, Punjab Government Press 1901, pp vi-vii.

[13] *Ibid*., pp50-51.

Table 5.3 : Number of vaccinations in males and females

Year	Area	Number of Vaccinations in Males	Number of Vaccinations in Females
1883	Punjab	338315	294747
1886	Punjab	341591	285326
1887	Punjab	374056	306686
1900	Punjab	517405	425669
1900	Amritsar district	20611	17813
1901	Amritsar district	18481	14794
1902	Amritsar district	17432	14172
1900	Karnal district	7696	6377
1901	Karnal district	10208	8181
1902	Karnal district	11613	10465
1901	Jalandhar district	10107	8420
1902	Jalandhar district	11068	9176
1903	Jalandhar district	12129	10463
1905	Punjab	81027	29402
1906	Punjab	70622	26688
1907	Punjab	90177	35051

The prejudice attached to vaccination and revaccination was one of the major obstacles in the path of the preventive measures.[14] The women regarded the visit to the temple of goddess Sitala as 'far more efficacious' than vaccination.[15] An assistant surgeon, Ram Kishen, was of the opinion that the Hindu women were opposed to vaccination due to their upbringing, which made them timid and averse to any kind of surgical intervention.[16] The women also felt discouraged by the manner in which vaccination was

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[14]*Report on the Administration of the Punjab and its Dependencies for the Year 1905-06,*(cited hereafter as *Administration Report)* Punjab Government Civil Secretariat Press, Lahore, 1907,p50.

[15] *Proceedings, Home: Medical and Sanitary*, August 1908, Serial Number 72.

[16] *Proceedings, Home: Medical and Sanitary*, July 1884, Serial Number 18, pp92-93. He worked in Lahore and Delhi.

carried out. Often, they were dragged out of their homes.[17] The vaccinators were overbearing and unmindful of their domestic privacy. A vaccinator's visit was considered as alarming as 'a visit of a tiger or beast of prey.'[18] Then the vaccinators often did their job negligently which also added to its unpopularity. For instance, at Sialkot, Nur Zainab and Farkhanda were said to have got the disease because of improper vaccination.[19]

The considerations of family honour prevented the infected women from getting themselves treated in hospitals and dispensaries. Compared to men, there were lesser number of women who received treatment in the government hospitals and dispensaries. From 1875 to 1885, of the total number of people going to dispensaries, the percentage of males varied between seventy and seventy-five, while the corresponding figures for women were twenty-five to thirty per cent. The situation improved marginally in the next ten years when the percentage of women going to dispensaries increased by about five per cent. There was no substantial improvement in the situation at the beginning of the twentieth century as the number of women availing of the medical facilities continued to be considerably less than that of the men. Of the total number of the patients treated in the dispensaries in 1901-02, 54.1 per cent were males, whereas the remaining 45.9 per

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[17] *Proceedings, Home: Medical and Sanitary*, February 1881, Serial Number 13, p83.

[18] *Proceedings, Home: Medical and Sanitary*, December 1884, Serial Number 18, pp140-41.

[19] *Punjab Government Civil Secretariat Proceedings, Home: Public Health* (cited hereafter as *Proceedings, B, Home: Public Health)*, 1937, Number 61, p5.They were not allowed to embark on their way to South Africa. Following this the health officer of Sialkot municipality was asked to get revaccination done in March 1937.

cent, probably included more male children than females, both young and adult.[20]

The implication of the patriarchal framework extended to all sections of the society, though the rural women suffered more from diseases than the women in the urban areas.[21] In the urban areas the people showed comparatively greater receptivity towards the measures laying emphasis on the early detection of the disease. Moreover, the majority of the rural women were engaged in agricultural as well as domestic work, which exposed them more to the sources of infection. In addition, the forced temporary migration to the camps and other villages during the course of an epidemic adversely affected their health and nutritional status and aggravated the incidence of the disease among them. Generally, the occurrence of disease amongst the women of the landless class was even higher, because they not only worked in the fields, they also tended to move from place to place while their nutritional status was lower than that of an average peasant woman. On the other hand, the suspected and the infected cases among urban women were not removed to the segregation huts in the camps, but were isolated in their homes only. The corpse inspections too were ordinarily not carried out in their case. The administration appears to have been relatively accommodating to the urban middle classes who were more vocal.

III

On the whole, however, the women were treated differently vis-à-vis men. The treatment received by women during epidemics was

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[20] *Proceedings, Home: Medical and Sanitary,* July 1903, Number46-47, p1.

[21] *Proceedings, Home: Medical and Sanitary*, September 1898, Number 121-29, pp1-6.

the result of the convergence of patriarchal prejudices from three sources - of their own men folk, of the lower rung government functionaries who belonged overwhelmingly to the region, and also of the British administrators. Compared to the natives, however, the British were more enlightened, yet their attitudes were conditioned as much by the patriarchal notions current in their own milieu as by the notions of the relative worth of women in the rural Punjab.

A much smaller proportion of the resources allocated for health care in the colonial Punjab appear to have been spent specifically on, and for, women. The specifically 'female hospitals' set up by the British in the second quarter of their rule happened to be located in the provincial capital, Lahore, and the more important divisional or district headquarters of Amritsar, Multan and Peshawar.[22] The separate female hospitals at Simla and Dharamsala were meant to cater more to European women.[23] In terms of the relative access to medical facilities, out of 2,755 beds for indoor patients in 1886, only 823 were meant for women.[24] In 1911, only twenty-five dispensaries in the province catered for the women patients; of these only seven were run by the government.[25]

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[22]*Proceedings, Home: Medical and Sanitary*, May 1887, Serial Number 23, pp43-44. Also, *Proceedings, Home: Medical and Sanitary*, July 1889, Serial Number 27 p 283; *Proceedings, Home: Medical and Sanitary*, July 1894, Serial Number 37, pp145-46.

[23] *Proceedings, Home: Medical and Sanitary*, July 1898, Serial Number 46, p205.

[24] *Proceedings, Home: Medical and Sanitary*, May 1887, Serial Number 23, pp43-44.

[25] *Proceedings, Home: Medical and Sanitary*, July 1912, Serial Number 80, p80.

The efforts made to increase the number of the female medical staff were rather slow. In 1883, a class for training female hospital assistants at Lahore Medical School was started.[26] In October 1884, a class for native women for training them in medicine, midwifery, women's diseases and elementary surgery was started.[27] In 1888, to improve the number of the trained female native doctors and nurses, the local bodies in the Punjab were asked to render help by giving grants, stipends and scholarships.[28] Apparently these measures did not bear much fruit, as in 1909, there were only five female assistant surgeons and eleven female hospital assistants working in the hospitals and dispensaries in the Punjab.[29] In 1917, at Ambala, Rawalpindi and Muzaffargarh the female hospital assistants were attached to the Sadr dispensaries in the cantonment area.[30] It is not certain how effective were the female health visitors employed in 1917 to report on infectious diseases, create awareness about sanitation amongst the *purdah* women, advise on sanitary arrangements in homes, and impart

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[26] *Proceedings, Home: Medical and Sanitary*, July 1883, Serial Number 16, p88. The Lt. Governor sanctioned Rs. 1200 as annual grant from the provincial funds for providing six scholarships of Rs 10 each per month and for services of a matron at Rs. 40 per month.

[27] *Proceedings, Home: Medical and Sanitary*, July 1883, Serial Number 16, pp86-87. In this three years course duration, the European professors examined the trainees every month. At the end of the course, the successful candidates were admitted in the service of the government as female hospital assistants.

[28] *Proceedings, Home: Medical and Sanitary*, May 1888, Serial Number 25, p50. Amritsar municipality and Multan district board supported this movement.

[29] *Proceedings, Home: Medical and Sanitary*, August 1910, Serial Number 76, p229.

[30] *Proceedings, Home: Medical and Sanitary*, July 1894, Serial Number 37, pp145-46.

instructions in domestic hygiene in the girls schools.[31] Towards the end of colonial rule, in 1946, an itinerating health unit was started which worked towards improving health of the women and reducing their ailments. [32] The records are silent about the effects of this measure.

IV

The concern of the state for women may be gauged from their actual handling during epidemics. The local British administrators not only adopted a rather rigid attitude, they also allowed the subordinate native functionaries to implement the preventive measures with force which not infrequently resulted in the maltreatment of the women.

Initially, the rural women were vaccinated at a central place, often the ground of a village. Sometimes, they had to walk for several miles before reaching the vaccination ground and, wait there for several hours before a 'crowd of men.'[33] Also, vaccination was carried out by the male vaccinators whose touch was considered polluting.[34] In 1884, house-to-house vaccination was started. The vaccinators, accompanied as they were by a *tahsil* or

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[31] *Proceedings, Home: Medical and Sanitary*, July 1917, Serial Number 90, pp103-04.

[32] *Proceedings, B, Home: Public Heath*, 1946, Number 29, p34. This was started in the villages around Ludhiana. The staff comprised of a woman sub assistant surgeon, a nurse, a heath visitor a woman dispensar, two *dhais*, one cooperative village worker. The unit visited two villages everyday and moved in an ambulance.

[33] *Proceedings, Home: Medical and Sanitary*, February 1881, Serial Number 13, pp82-83.

[34] *Proceedings, Home: Medical and Sanitary*, December 1881, Serial Number 13, p83.

a municipal *chaprasi* or a policeman, generally adopted an overbearing attitude.[35] They often came when there was no male member in the house, which was construed as an invasion of domestic privacy.[36] In 1885, female vaccinators were employed in Delhi for vaccinating women;[37] but it was only in 1910 that the system of house-to-house vaccination gained acceptability in most of the district headquarters.[38] Under the dyarchy and the provincial autonomy, measures were introduced to make vaccination operations more effective. By 1925, the scheme to employ female vaccinators for vaccinating the women observing *purdah* was in operation in greater parts of the Punjab. However, at many places, difficulty was experienced in obtaining women vaccinators.[39] In Hissar district, the question of employing lady doctors for vaccinating the *purdah* women was discussed but not implemented. Here the Director Public Health thought that it involved a matter of policy and that it was difficult to obtain sub assistant surgeons in Hissar, and moreover, the expenditure for this would not be justified.[40] It may be of some interest to note that in 1944 a scheme for training women in the girls school run by the

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[35] *Proceedings, Home: Medical and Sanitary*, December 1884, Serial Number 18, p140-41.

[36] *Proceedings, Home: Medical and Sanitary*, December 1884, Serial Number 18, p140-41.

[37] *Proceedings, Home: Medical and Sanitary*, December 1884, Serial Number 18, pp140-41. For vaccinating women, assistance of the medical mission was sought.

[38] *Proceedings, Home: Medical and Sanitary*, August 1910, Serial Number 76, p233. Although popular in the plains it was not suitable in the hills where the houses were scattered and difficult to access.

[39] *Administration Report*, *1925-26,* p111.

[40] *Proceedings, B, Home: Public Health*, 1940, Number 159, pp1-5.

local bodies and the government was started. These teachers wielded influence with the local people and could vaccinate women in their homes.[41]

However, during the period of maximum intensity of epidemics lasting till the early 1920s, women continued to be dealt with indifferently. Their forcible evacuation to the cholera camps was admittedly 'most repugnant to the feelings of the people.' [42] Although the British administrators reported that the female hospital assistants and *dhais* looked after women during the plague epidemic, the ground situation was different at many places. At Ambala, for instance, there were no *dhais* to look after the requirements of women in the camps.[43] Some regard to their privacy was shown only in the camps where women and children were accommodated separately in the huts, which were marked off by a bamboo screen (*sirki).*[44]

However, on their return to the village, women were roll-called every day and 'passed under the personal observation' of the tahsildar and the hospital assistant accompanying him. The medical officer then examined them along with men in the village

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[41] *Proceedings, B, Home: Public Health*, 1944, Number 76, p5. One teacher was trained from each school. The training was of ten days, the course of which was conducted by the district medical officer of health at the places suitable to the local body. At the end of the course, the candidate was examined and a certificate given. The teachers were given Rs,. 5 per 100 vaccinations as reward. This expenditure as well as that of the vaccine and the apparatus was met by the local body employing the teacher.

[42] J. M. Cunningham, *Report on the Cholera Epidemic of 1872 in Northern India* (cited here after as *Cholera Epidemic of 1872*) Suprintendent of Government Printing, Calcutta, 1873, p29.

[43] *Proceedings, Home: Medical and Sanitary*, May 1898, Number 16-51B, p5.

[44] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, pp 20-27.

ground. For taking more critical decisions, the male doctors had to search for bodily signs of the plague by examining the armpits, neck and thighs of women. Often, they were forced to go through the procedures. For instance, in March 1897 at Kalka, Jackson, a European plague medical officer made them uncover their faces in the course of medical examination.[45] In another instance at Jandiala, the civil surgeon examined a woman suffering from fever who came from Khatkar Kalan. He examined a gland in her right groin and reported that it was of a size of 'an almond,' following which she was moved to a shed. Her attendants were not allowed to accompany her; the house she came from was dug and whitewashed. Commenting on this the civil surgeon of Hoshiarpur wrote, 'she was so nervous and terrified that her one desire was to be left alone, and allowed to go back to her own home.'[46] It was only at a few places that the upper class women observing *purdah* were examined in their homes by the *dhais*.[47] However, the appeals in *The Tribune* asking for the medical examination by the *dhais* in all cases were turned down by the administration.[48]

The dead bodies of women were inspected by the medical officers and the male subordinate staff for any signs of the plague. Surgeon Captain C. H. James recorded that he himself inspected the body of Nihali, wife of a Lohar (blacksmith) at Kumam village in Banga circle, and found enlarged glands and other signs of the

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[45] Proceedings, *Home: Medical and Sanitary*, April 1897, Serial Number 43, p376.

[46] *Proceedings, Home: Medical and Sanitary* , January 1898, Serial Number 45, pp18(2)-18(3).

[47] *Proceedings, Home: Medical and Sanitary* , January 1898, Serial Number 45, p20.

[48] *The Tribune*, April 23, 1901, p5

disease.[49] In Aur circle, corpse inspections were carried out in several villages. The bodies of women were inspected by medical officer Clerk at Palewal, medical officer Davis and hospital assistant Asa Ram at Mukandpur, and hospital assistant Jawahir Singh at Rahpa.[50]

The medical inspection of women passengers was however carried out by the female hospital assistants at the special inspection posts [51] But, even when a cloth screen was erected on the platforms for this purpose, it was seldom used.[52] The deputy commissioner of Jalandhar himself reported that 'female passengers are examined by the female hospital assistant in the same manner as the male passengers'.[53] The women suspected of suffering from the disease were detained and taken to the disinfection quarters where they were disrobed. Then a *dhai* escorted them to the nearby river or the tank where they were required to bathe themselves and wear the given clothes. Their own clothes were disinfected using the steam apparatus. Food was taken to them by their men folk or the *dhais* in case of the unaccompanied women.[54]

The plague inoculations were carried out by male medical officers who inoculated both women and men in the village ground.[55] Only the women observing *purdah* were inoculated in their homes or their friends' houses. They covered their arms with

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[49] Major E. Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, p137.

[50] *Ibid.*, pp137-39.

[51] *Ibid.*, p46.

[52] *Proceedings, Home: Medical and Sanitary*, August 1898, Number 172B, p1.

[53] Major E.Inglis, *Plague in Jullundur and Hoshiarpur 1897-98*, p51.

[54] *Ibid.*, pp46-48.

[55] Major E. Inglis, *Plague in Jullundur and hoshiarpur 1897-98*, p20.

muslin and extended them through a small hole in the curtain for inoculation by the assistant surgeon.[56] When the Khatris of Rahon, Rajputs of Garhshankar, and Sayyids of Saloh asked for permission to get their women inoculated by a lady doctor, their request was turned down.[57]

Various incidents of molestation of women were reported in the press. For instance, in Jalandhar, contrary to the Plague Rules, an Aggarwal Bania woman suffering from the disease was forcibly removed from her house by coolies and taken away to the camp in a *rehri* (a hand driven cart) in the presence of all.[58] The correspondent of the paper appealed to his countrymen to demand a public enquiry into the incident.[59] *The Tribune* highlighted another case in which a Muhammedan woman travelling from Jalandhar by the evening train was misdirected, threatened and raped by a constable. The paper commented on the incident saying, ' these kinds of danger make the common man look upon the plague operations as greater plague than the disease itself'.[60]

V

The people reacted sharply to the measures involving the handling of women. The invasion of their domestic sphere, nay their women's bodies, appears to have at least momentarily eroded the fear of the authorities. At many places different sections of society exhibited determined resistance to the plague measures. At Kalka, in May 1900, while travelling to Simla with his *zenana* the Maharaja

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[56] Captain E. Wilkinson, *Inoculation in Jullundur and Hoshiarpur*, pp47-49.

[57] *Ibid.*, pp50-51.

[58] *The Tribune*, April 14, 1903, p5.

[59] *The Tribune*, May 10, 1903, p5.

[60] *The Tribune*, May 11, 1901, p3.

Rana of Dholpur did not allow their medical inspection. A large number of armed men accompanying him surrounded the carriage in which the Dholpur ladies were travelling and prevented the medical staff from carrying out the required check up.[61] In another interesting case in Jalandhar town, a Brahman was warned, threatened and served a legal notice as he prevented the staff from removing his ailing mother to the camp. Ultimately, he was allowed to keep his mother in his house only.[62] At Garhshankar, the residents objected to the house-to-house inspection even by the *dhais* and held a demonstration in the bazaar.[63]

The forcible examination and removal of women to the segregation camps provoked the fiercest resistance and resulted in direct clashes between their men folk and the authorities. In one such instance, on April 18,1901, in village Shahzada in Sialkot district, a hospital assistant went to examine a sick girl and declared that she was not suffering from the plague. After two days, assistant commissioner Howell examined her again which evoked protests from the villagers who pelted the officer with cow dung. The matter was reported to the deputy commissioner Tollinton who met the 'leading men' of the locality. They protested and an argument ensued following which they were arrested, but some of them escaped. Tollinton ordered a first class magistrate, thirty policemen and 350 cordon levies to 'control' the situation. The villagers came out in large numbers and attacked the policemen. The 'ring leaders' were arrested and tried and 'order' was restored.[64] In another instance, at Khanowal in Gurdaspur

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[61] *Proceedings, Home: Medical and Sanitary*, June 1900, Number 14-15, pp1-3.

[62] *The Tribune*, April 9, 1903.

[63] *Proceedings, Home: Medical and Sanitary*, June 1898, Number 149, p5.

[64] *The Tribune*, April30, 1901, pp3-4.

district, a hospital assistant who went to examine a woman suspected of the plague, was initially chased away and later assaulted by the villagers carrying *lathis* (wooden sticks) and stones. Here also the 'leaders' were arrested to restore 'peace and order'.[65]

It may be relevant to note that the handling of women in the Punjab was similar to that in Bombay and so were the general responses of the people.[66] They considered the touch of 'male white doctors' carrying out the medical examination of women as tantamount to their sexual molestation. In Bombay also, the women passengers were examined on the platforms in the presence of all. When the press vehemently opposed such a practice, screens were provided on the platforms and the lady doctors were brought in to examine the women passengers. The forcible seizure of the women suspected of the plague resulted in violent attacks at many places. In one such incident, nearly a thousand mill workers attacked a hospital in Bombay where a woman had been taken as a plague suspect. In another incident, the Julahas prevented the removal to hospital of a twelve-year-old girl suspected of the disease. In the fracas that ensued, a magistrate was injured and a hospital was attacked.

In all probability, a determined resistance from their men folk would only have deterred the women actually suffering from the plague to have access to medical help. In sum, as the crisis situations, epidemics provided a mirror to the 'systemic' disadvantages of women. The patriarchal social structure confined women to the roles that steadily exposed them to disease and then

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[65] *Proceedings, Home: Medical and Sanitary*, May 1901, Number65-68, pp1-8.

[66] David Arnold, *Colonizing the Body: State Medicine and Epidemic Disease in Nineteenth Century India*, Oxford University Press, Delhi,1993, pp214-15.

deprived them of access to medical facilities. The individual British administrators and the Indian functionaries at the lower levels, who were as much influenced by the patriarchal notions as the society at large, did not always consider women's health a matter of equal concern. At any rate, scant attention was paid to the needs of women. In this situation, a large number of women lost their lives due to epidemics, and a larger number suffered from insensitive handling, loss of personal dignity and, even honour.

CONCLUSION

The period of colonial rule in the Punjab was marked by an unprecedented mortality from disease and epidemics. From the 1850s to the 1920s, the Punjab was one of the regions worst affected by epidemics. Fifteen major epidemics of malaria claimed nearly twenty-three million lives in twenty-five districts of the province. Nine major epidemics of smallpox broke out in twenty-seven districts over this period. The average annual smallpox deaths were considerably higher than the rest of the provinces of British India. Cholera caused havoc in all parts of the Punjab and an average of 4,357 people succumbed to it annually. From 1897 to 1918, the plague erupted with varied intensity in twenty-six districts of the region, and had a mortality rate which was approximately four times the all India average.

It is possible to discern a pattern in the outbreak of epidemics and identify the factors that probably contributed towards this exceptional situation.

The outbreak of malaria coincided with the periods of heavy rainfall, which caused flooding of vast areas, waterlogging of the sub-soil, and provided a breeding place for mosquitoes. About forty per cent of the deaths from fever – the term commonly used for malaria, took place in the month of October. Sixteen epidemics of the plague reached their height in the months of March and April. About seventy-seven per cent of the total deaths from the plague took place in these months when the humidity level and temperature were most conducive for the proliferation of rat fleas.

The districts most affected by epidemics were spread all over the region – encompassing the south-east, central and north-west Punjab. Perhaps, the climatic conditions and other local peculiarities accounted for a higher incidence of epidemics in these districts. A higher rainfall made the central Punjab districts of Jalandhar, Amritsar, Lahore, Gujranwala and Shahpur, and the sub-montane areas of Rawalpindi and Peshawar, a perennial breeding ground for mosquitoes, leading to recurrent outbreaks of malaria. The close proximity of Gurgaon and Karnal to the principal shrine of goddess Sitala at Gurgaon resulted in the local people seeking protection from the goddess of smallpox rather than from vaccination. A large number of local and regional fairs periodically held in the Punjab were characterized by overcrowding, insanitary conditions, inadequate water supply, and consumption of contaminated water, all of which were conducive for the outbreak of cholera.

There was a tendency on the part of the British administrators and medical officers to explain away the recurrence of epidemics and high mortality in terms of the attitudes, habits and living conditions of the people. The prevalence of epidemics was attributed to climatic conditions as well as to people's fatalism, inertia, superstitions and unhygienic living. It was widely held in the official circles that the 'peculiar sanitary habits' of the Indians caused epidemic outbreaks. The houses of the 'natives' were considered 'filthy' and ideal homes for the rats, fleas and mosquitoes. It was commonly held that the *katcha* floors absorbed filth of every kind and became 'squalid and wretched' in the rainy season.

However, in their explanations of high mortality, the British overlooked the administrative and environmental factors under

their rule that appear to have contributed to this situation. The defence and developmental needs of the Empire were in fact largely responsible for the recurrence of epidemics. The frequent movement of troops through the Punjab region was marked lack of provisions, drenching and insanitary conditions, which led to the spread of cholera along the entire route. The burrow pits created in the course of railway construction generally got filled with water and vegetation, which turned them into veritable breeding grounds for mosquitoes. The construction of piers and abutments and digging of earth for the building of railway bridges caused waterlogging. The canal irrigation also caused waterlogging and breeding of mosquitoes in nearly all parts of the Punjab plains. It even resulted in increasing the humidity level, which was favourable for the rat fleas.

Moreover, the outbreaks of the cholera and fever epidemics were preceded by the periods of famines and scarcities. The export of foodgrains to Europe and their high prices in the Punjab were the obverse of the debilitated conditions of the poor, with a low resistance to disease. Furthermore, no remission in land revenue was made even during the years when the epidemics claimed lakhs of lives and the ripe crop could not be harvested. The situation would have substantially reduced the availability of food and aggravated the difficulties particularly of the small farmers, landless labourers, village artisans and the poor in general.

II

The British rule nevertheless represented a new conception of governance in which the state in principle assumed the responsibility for public health and sanitation. It is a different matter

that in the colonial situation resources tended to be used selectively and in accordance with the priorities of the regime. The status of the then scientific and medical knowledge is also reflected in the measures adopted by the British to deal with epidemics. There was generally a time lag between a particular scientific discovery in Europe and its implementation in British India and its various provinces. In the specific regional context again, there was a lag between the knowledge of the new measures and their application to different areas and segments of population.

Moreover, the medical measures to combat malaria and cholera were marked by debates over the causes and curative factors, which often resulted in preventive measures remaining haphazard and even half-hearted. In the first half of the colonial rule only a few administrators advocated mosquito eradication measures while the majority favoured quinine prophylaxis for preventing malaria. In the early decades of the twentieth century, improvements could be made in the drainage of cities and towns to reduce the breeding of mosquitoes, but drainage of rural areas hardly received any attention. Some administrators advocated improvements in water supply to control cholera, while others were inclined more towards making sanitary improvements. The only sanitary measure adopted in the rural areas was the cleansing of wells but it is unlikely to have covered all the wells. In view of the scale and costs involved, the provincial government finally handed over sanitation and related matters to the municipalities which neither had the resources nor the awareness to fight the diseases, let alone their epidemic forms.

It must be conceded that the measures adopted to combat the epidemics of malaria, smallpox, cholera and the plague were generally comprehensive, though directed more against the

afflicted natives than the actual bacilli as the causal agent. The British acted on the assumption that the Indians had insanitary habits, which required constant surveillance and isolation. Consequently, the administrators laid stress on cordoning, quarantine and disinfection of the dwellings and personal belongings of the sick. The afflicted were segregated in tents and huts till they recovered or expired. Their attendants and relatives were isolated separately. Disinfection and fumigation of their dwellings and household articles was carried out to prevent the spread of the disease.

Vaccination against smallpox was the most important among the specific medical measures introduced by the British. Carried out with great enthusiasm, it acted as one of the earliest forms of colonial medical intervention in India. At the same time, vaccination was implemented selectively as this involved considerable infrastructure and heavy finances. There also was the possibility of vaccination engendering unrest, because of its interference in the indigenous customs and personal lives of the people. The arm-to-arm vaccination was considered polluting by the high castes as it often involved transfer of bodily fluids from people belonging to the low castes. Its replacement by calf lymph vaccine, too, was not liked by the Hindus as it hurt their religious sentiments. Therefore, the Vaccination Act passed in 1880 was enforced only in cantonments and municipalities and was extended in 1919 to the government employees. It was in 1929 that the Vaccination Act was made compulsory in rural areas, though it is not certain if it ever was intended to cover the entire population.

The plague epidemic presented a crises situation for the people and the government alike, but initially the authorities were reluctant even to admit the outbreak of the disease for fear of

international censure and disruption of trade. But the rapid spread of the plague, the magnitude of mortality, and the fear of its spreading to other countries, made the administration adopt drastic measures to control it. A period of heavy mortality also meant the reduced productivity and enhanced cost of administration. It was the possibility of a European embargo on Indian trade that compelled the British to abruptly change over from a relatively easy going medical policy to that of interventionism.

To combat the plague, the British adopted a series of measures, which were by and large coercive in nature and not very effective in containing the epidemic. The tried devices of isolation and segregation of the sick were enforced with strictness. The inspection of the corpses, post-mortems and the work of disposal of the dead was carried out by the police, much to the chagrin of the people. The massive disinfection of dwellings caused the rats to move from one locality to another, carrying the infection and the fleas with them. The measures adopted in the towns however were less coercive than those in the villages, because the incidence of the plague was much less in urban areas throughout the period. The plague riots in Bombay also appeared to have made the authorities a bit cautious, and in urban areas they laid more emphasis on the early detection of cases rather than on evacuation.

One of the most humiliating and discriminating measures adopted was the medical 'inspection' of the rail passengers. The passengers travelling in the third class were 'inspected' on the platforms with severity. The poor and the low castes were assumed to be dirty and, therefore, the potential carriers of the disease. The suspected cases among the natives were detained and their bedding and clothing along with the other belongings

were disinfected or destroyed. On the other hand, the Europeans and the Eurasians were examined within their carriages. If anyone of them was found to be sick, he was allowed to proceed with his journey, even accompanied by his relatives.

In matters of health and sanitation, the civil lines and cantonments were accorded a higher priority as these were occupied by the British civil and military personnel and their families, besides the troops, of course. The lay out of the civil lines and cantonment was based on the principle of physical distancing from the habitations of the natives, which lessened the risks of infection for the Europeans. Furthermore, they could enjoy immunity against smallpox with vaccination, and quinine gave them relative protection against malaria. Due to the concentration of the sanitary measures in and around the civil stations and cantonments, the Europeans were relatively free of cholera as well. In the early years of the plague, however, the Europeans were not known to have acquired immunity against this dreaded disease. The administration therefore sought to protect them by cordoning off their residential areas. Additional forces were deployed to see that the cordons were not broken and that the Europeans generally remained safe.

The hill station was yet another safe haven created for the European civilians and military men. Its lay out and administration ensured that the disease and epidemics were kept at bay. In fact, a stark contrast in the sanitary and other measures like water supply adopted by the authorities is seen between Simla and the other cities and towns in the plains. Because of its importance as the summer capital of the Empire and as the major summer resort of the Europeans, special measures were adopted in Simla. The town

could remain free from the plague till 1904, that is for seven years after the epidemic broke out in the Punjab.

III

The measures adopted by the British to combat epidemics restricted the movements of the people, controlled the disposal of their dead, and interfered with their social customs and religious practices. Physical dislocation and economic hardships, especially of the poorer sections, were integral to this situation. The responses of the people to the eradication measures, however, depended on the ways in which the measures affected particular sections of the society. Their reactions varied also over time, and in response to the changing socio-political climate in the region.

The measures like vaccination and inoculations evoked the maximum reaction. The social leaders raised objections on grounds of religion and customs. Their resistance was encouraged by the priestly classes and the practitioners of indigenous medicine like *vaids* and *hakims* who held meetings and passed resolutions against the Western systems of medicine.

On the other hand, the professional middle class comprising of lawyers, doctors, teachers, and journalists came forward to educate the general public regarding the benefits of vaccination. They also felt that in order to stamp out epidemics, certain basic measures of sanitation and public health were necessary. At the same time, they disapproved of coercion in their implementation. They used the press to familiarise all sections of the society with the various activities of the government. They also voiced the grievances of the public and highlighted the risks created by the epidemic operations for the poor and the ignorant. They even condemned the inefficiency and negligence of the authorities and

their inaction and indifference in dealing with the common people. The reactions of the educated became sharper with the passage of time. By the second decade of the twentieth century, the newspapers became more vocal in highlighting the sufferings of the common people and exposing the social prejudice and racial discrimination exhibited by the Europeans while dealing with the plague. The general opposition to the manner of vaccination and inoculation became more vocal in the wake of the plague epidemic and the prevailing conditions of distrust and panic.

It was the common people who bore the brunt of the high-handedness of the lower rung government functionaries and the 'incompetent' and 'ignorant' vaccinators. The callous and confrontationist attitude of some of the local British administrators also became evident in different situations. The farmers were not only refused remission of land revenue, they were also denied compensation promised for the loss of property during evacuation and disinfection. The evacuees were exposed to harsh conditions and inclement weather as the camps could not accommodate them all. The inadequacy of the preventive arrangements was more due to the fact that the government allocated limited resources for the situations involving the ordinary people.

In fact, hardships to the poorer sections were built into this situation. Measures like cordoning resulted in the suspension of the means of their means of livelihood. Trade activities got adversely affected following the closure of shops and manufacturing units in the rural areas. Agricultural production and marketing received a set back. The ramifications of epidemics extended far beyond the people and their kin. The general panic and the stringent measures to handle epidemics led to the flight of people to the urban places considered safe. This panic migration

resulted in overcrowding, poor sanitation, shortage of necessities, and increase in rents.

The women of the lower classes suffered even more. They were exposed to the sources of infection while carrying out the household chores like nursing the sick and handling soiled clothes without taking any precautions. The greater exposure to infection due to the male oriented division of labour made the women more vulnerable to the diseases. Their general neglect in the home, low nourishment and limited access to medical facilities accounted for a higher mortality rate. The insensitive handling of women during epidemics made matters worse for them as no consideration was shown for their privacy, personal dignity and social customs like *purdah*. The male vaccinators dragged women out of their homes and forcibly vaccinated them in the village ground. Their medical inspection was carried out by the male medical officers in the presence of all, which caused general resentment. Sometimes, in the name of carrying out the epidemic measures the subordinate officials even molested the women.

The measures to prevent and eradicate epidemics were viewed by the masses as violating their religious susceptibilities, domestic privacy and family honour. Their fears found expression in different ways. The people were quick to give credence to rumours, which grew as a reaction against the forcible use of Western medicine and vaccination. The fear of forcible removal of their family members in to the segregation wards induced people to conceal the infected cases. Often, the villagers gave bribes to the local officials and connived with them to prevent the implementation of the requisite measures. Sometimes, the villagers refused to move into the camps or take the quinine, even throwing it in dung heaps or giving it to the cattle. There is evidence also of

the pious among Hindus and Jains opening up hospitals for rats and burying the baits meant for rats!

Then there were several instances of actual resistance to the preventive measures. The reactions ranged from mild opposition to the eruption of violence, which became more intense and frequent during the plague epidemic. The targets of the anger of the masses were generally the subordinate staff on plague duty. The naib tahsildars and hospital assistants who represented the authority of the state and who came into contact with the people, bore the brunt. They were often beaten up, pelted with stones and cow dung, and sometimes even killed. The stronger reaction took the form of riots, which were marked by attacks on the officials and the policemen, breaking of cordons, and damage to camps, hospitals and huts. The small town traders played a prominent role in demonstrations, riots and other forms of resistance. The people generally exhibited village and kin based solidarity, often cutting across caste and communal affiliations.

In the handling of such situations the Punjab Administration shed its somewhat obsolete posture of paternal concern, exposing in the process, its prejudices against the lower classes and their women specifically, and against the natives in general. At the same time, epidemics presented a crises situation in which the health and physical survival of Europeans and viability of their rule were at stake. Most of the preventive measures were intended initially to safeguard the imperial interests and protect the Europeans and the troops. Understandably, therefore, the epidemic operations were most effective in the European enclaves like civil lines, cantonments and hill stations. Thus, while carrying out the public health measures, the colonial state appears to have been concerned more with their cost effectiveness and limited

applicability scale rather than with their comprehensiveness and wider coverage.

GLOSSARY *

ak	a wild bush, the milk of which is used as a medicine
anna	1/16th of a rupee
bagh	a garden
Baisakhi fair	the fair held on April 13 to mark the advent of the harvesting season and the institution of the Khalsa by Guru Gobind Singh
Bania	a mercantile caste of Hindus
Basant Panchami	a festival to mark the onset of spring
Bhabras	a local name for Jains
bhishti	a water carrier
burka	a veil
chadar	a sheet used as a veil
Chamar	an untouchable caste of leather tanners and workers
chapati	a flat unleavened bread made of wheat or millet which is the staple diet in the Punjab; popularly called roti
chaprasi	a peon
chari	fodder or millet to feed the bullocks
charpoy	a bedstead
chaudhari	hereditary headman of a group of villages; the headman of a mohulla or a locality
chhappar	a thatched roof
chhuto	release
chowk	an intersection in a town where four roads meet

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* The meanings in the Glossary are specifically in the sense in which non-English words and terms have been used in the present work.

chowkidar	a night-watchman
Darbar	a royal court
dar-ul-shafa	a hospital during Maharaja Ranjit Singh's reign
darvesh	a Muslim religious person avowed to austerity; a mendicant.
Darzi	a tailor by caste
dhab	a natural depression where water got collected
dhai	a midwife; looking after the pre-natal and post-natal requirements of women
Dhobi	a washer man by caste
dhoti	a piece of cloth used for covering the lower portion of the body by wrapping it around the waist
doab	an inter-fluvial tract
doli	a carrier
Dom	an untouchable caste carrying out the work of the disposal of the dead.
Emam (Imam)	a leader of prayer in a mosque
faqir	used generally for a Muslim mendicant
Gurukula	the Arya institution near Hardwar laying stress on Vedic and Sanskritic education, and founded in 1901
hajjam	a barber
hakim	a physician practising Unani system of medicine
hartal	strike; a form of protest marked by closure of shops
haveli	a mansion
jagir	the assignment of land revenue in lieu of salary
jagirdar	the holder of a jagir
jajman	a Brahman's client or a patron
jamadar	a sweeper; a rank in the police/army
Jat	the dominant agricultural caste in the central

	Punjab
jhil	a seasonal pond
Jhiwar	a water carrier by caste
Julaha	a weaver by caste
kamin	a village servant of low caste
kanat	a cloth partition used as a screen
kanungo	a keeper of land records at the tahsil level
katcha tank	tanks made of mud bricks or burrow pits
Khatri	from Kshatriya; an important caste in the Punjab, engaged mostly in trade and government service
Khojas	the Khatri converts to Islam concentrated in western districts and the Salt Range in the Punjab
kurta	a long loose shirt
lambardar	a village headman
langochas	a type of underwear worn by men
lathis	a wooden stick used as a weapon
ludhrak	a plant, the root of which has medicinal value
mandi	a grain market or a market for any one commodity
mansab	literally office, position or rank; indicating under the Mughals the status, obligations and remuneration of its holder in official hierarchy
mansabdar	the holder of a rank in the system evolved by the Mughal emperor Akbar
mantra	a magical formula
mela	a fair
mohulla	a residential locality in a town.
mullah	a Muslim teacher, generally attached to a mosque; also called *maulvi*
munaqqa	dry grapes

murda	a corpse
Nai	a barber by caste
pankha	a hand fan
patti	a part or portion of a village
Patwari	the village accountant
pice	1/12 of an anna, 1/192 of a rupee
pipal	a tree
prasad	sanctified food or drink
prayog	a ritual in which offering of cows and precious metals was made
pucca houses	houses made with burnt bricks
purdah	a veil; a screen or a curtain
purdah-nashin	women observing purdah
rabi	spring crop generally sown in October-November and reaped in April-May
Rai	an important or an honourable man
rehri	a hand driven cart used for transporting men and baggage
sahukar	a wealthy businessman, also a money lender
sardar	the title given to the Sikh aristocrats
Sayyids	the descendants of the Prophet held venerable among Muslims
serai	a shelter for transients
sirki	a screen made of straw
tahsil	sub-division of a district in the British and post-independence period
tahsildar	officer in charge of a tahsil
tibba	a small mound of sand
vaids	physicians practising Ayurvedic system of medicine
zaildar	head of a zail or a sub-division of a district under

	the British
zamindar	holder of land; generally a peasant proprietor in the Punjab
zenana	related to women; women's quarters
zulum	atrocity

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