MUGHAL STATE, ECOLOGY AND ENVIRONMENT

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CERTIFICATE

This is to certify that the thesis entitled **'Mughal State, Ecology and Environment**' submitted by **Ms. Renu Baliyan** for the award of **Doctor of Philosophy** in History is a bona fide work carried out by her under my supervision and guidance. This thesis has not been submitted previously in part or in full to any other university or institution for the award of any degree or diploma.

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BIBLIOGRAPHY

Primary Sources

Persian

Abdul Qadir Badaoni, A History of India *Muntakhab-ut-Tawarikh*, Eng. translation by G.S. Ranking, W.H. Lowe & W. Haig, 3 vols; Delhi: Atlantic Publishers, [1898-1925], 1990.

Abul Fazl, Ain-I Akbari, Eng. translation by H.Blochmann, & H.S. Jarrett, revised by J.N. Sarkar, Delhi: Oriental Books Reprint Co., [1949] 1978.

Abul Fazl, *Akbar Nama*, Eng. translation by H. Beveridge, 3 vols., New Delhi:Atlantic Publishers, [1873-87] 1989.

Alberuni, *Alberuni's India, an account of the religion, philosophy, literature, geography, chronology, astronomy, customs, laws and astrology of India about A.D.1030*, translated by Dr. Edward Sachau, London: Printed by Ballantyne, Hanson and Co., 1910.

Ali Muhammad Khan, *Mirat-i-Ahmadi,* translated by M.F. Lokhandwala, Oriental Institute, Baroda,1965.

Barani, Zia-ud-din, *Tarikh-i-Firuz Shahi,* Ishtiyaq Ahmad Zilli, Delhi: Primus Book, 2015, S. A. A. Rizvi, *A Turk Kalin Bharat; Tughlaq Kalin Bharat*, part I&II, Aligarh, 1956.

Elliot, H.M. and J. Dowson, *The History of India as told by its own Historians,* 8 vols*.,* New Delhi: Low Price Publication, [1867-77], 2014.

Erskine William and John Leyden , *Memoris of Zehir-ed-Din Muhammed Baber, Emperor of Hindustan* (written by himself in the Jaghatai Turki)*,* London: Longman, 1826.

Gulbadan Begum, *Humayun Nama* ,Eng. translation by A.S. Beveridge, Delhi: Low price Publications[1902] 2006.

Ganesh Das, *Char Bagh-i-Punjab Early Nineteenth Century Panjab,* translated and edited by J.S. Grewal and Indu Banga, Amritsar: Published by GNDU, 1975.

Inayat Khan, *The Shah Jahan Nama*, edited by W. E. Begley and Z.A. Desai, Delhi: Oxford University Press, 1990.

Inayatullah Khan, *Kashmiri, Kalimat-i –Taiyibat (collection of Aurangzeb's orders),* Edited by S.M. Azizuddin Husain, Delhi: Idarah-I Adabiyat-i Delli, 1982.

Ishwaradas, Nagar, *Fatuhat-i- Alamgiri*, translated and edited by Tasneem Ahmad, Delhi: Idarah-I Adabiyat-i Delli, [1978] reprinted 2009.

Jahangir, *Tuzuk-i-Jahangiri*, Eng. translation by A. Rogers & ed. by H. Beveridge, 2 vols., Delhi: Low Price Publishers, [1909-14], 2006.

Jouhar, The Tezkereh Al Vakiat, or *the private memories of the Mogul Emperor Humayun*, Eng. translated by Major Charles Stewat, Delhi: idarah-I Adabiyat-I Delli, 2009.

Khwandamir, *Qanun-i –Humayuni*, Eng. translation by Baini Prashad, Calcutta, The Asiatic Society , [1940], 1996.

Muhammad Arif Qandhari, *Tarikh-i-Akbari*, Eng. translation by Tasneem Ahmad, forwarded by Irfan Habib, Delhi: Pragati publications, 1993.

Muhammad Qasim Farishta, Hindu Shah, *History of the Rise of the Mahomedan power in India till the year A.D. 1612,* 4 vols.,Translated by John Briggs, vol. II. , New Delhi: Atlantic Publishers, 1989.

Nizamuddin Ahmad, *Tabaqat-i-Akbari* ,Eng. translation by B.De,3 vols, , [1913-36], Calcutta.

Ruka'at-i-Alamgiri or Letters of Aurangzeb, translated by Jamshid H. Bilimoria, Delhi: Idrah-I Adrabiyat-I Delli, [1972] 2009.

Saiyid Ashraf Khan Husaini, *Raqim-i-Karaim Episodes of Aurangzeb*, edited by S.M Azizuddin Husain, Delhi : Idarah-I Adabiyat-I Delli, 2009.

Saqi Must'ad, Khan, *Maasir-I- Alamgiri: A History of the Emperor Aurangzib-'Alamgir (reign 1658-1707 A.D.),* translated into English and annotated by Sir Jadu Nath Sarkar, Calcutta: The Asiatic Society, [1947], 1990.

Shaikh Zain Khwafi, *Tabaqat-i Baburi*, translated by Sayed Hasan Askari, Delhi: Idarah-I Adabiyat-i Delli, 2009.

Shams Siraj Afif, *Tarikh i-Firoz Shai,* translation by S.A.A. Rizvi, *Tughlaq Kalin Bharat,* part I & II, Aligarh, 1956, Jauhri, R.C., *Medieval India in transition A first hand account*, New Delhi: Sandeep Prakashan, 2001.

Shah Nawaj Khan and His son Abul Hayy, *The Maathir-ul-Umara*, 3 vol.,Translated by H. Beveridge and revised annotated & completed by Baini Prasad, Patna: Janki Prakashan, [1952] 1979.

Sujan Rai Bhandari & Rai Chaturman Man Kay *Khulasatu-t Tawarikh & Chahar Gulshan,translated by J. N. Sarkar, India of Aurangzib,* Calcutta: Sanyal & Co.1901.

Zahiru'd Din Muhammad Babur,*Baburnama*, Eng. translation by A. S. Beveridge, Delhi: Low Price Publication, [1921], 2010.

Travelogues and European Account

Abbe Carre, *The Travels of the Abbe Carre in India and the Near East, I672-1674*, 3 vols. London, Hakluyt, 1947-48.

Father A. Monserrate, *Commentary on his journey to the court of Akbar*, eng. translation by J.S. Hoyland, annotated by S. N. Banerjee, Cuttak: Mission Press, 1922.

Francois Bernier, Travels in the Mogul Empire AD 1656-1668, translated by Archibald Constable, second edition revised by Vincent A. Smith, Atlantic publishers, New Delhi, 1990.

Fr. Pierre Du Jarric*, Akbar and the Jesuits: An account of the Jesuit Missions to the court of Akbar,* translated with introduction and notes by C H Payne, New Delhi : Tulsi Publications,1976.

Francois Pyrard de Laval, *The Voyage of Francois Pyrard of Laval to the East Indies*, vol. II London, I888.

Francis Xavier: His Life, His Times 1506-1562, translated by George Schurhammer, 4 vols, Published by The Jesuit Historical Institute, 1977.

Ibn Battuta, Travels in Asia and Africa 1325- 1354, translated and selected by H.A.R. Gibb, New Delhi : Low Price Publications, 2012.

John Fryer, *A New Account of East India and Persia-1672-1681,* 3 vols*.,* Eds. William Crooke, New Delhi: Asian Educational Services, 1992.

John, Ovington, *A Voyage to Surat in the Year 1689*, ed., H.G. Rawlinson, London: Oxford University Press, 1929.

J. Lockman, *Travels of the Jesuits* into various parts of the World Particularly China and East Indies compiled from their letters, 2 vols. New Delhi, First Published: London,1743, Reprint,1995.

Manrique, *Travels of Fray Sebastien Manrique*, *1629-43*, 2 vols., edited by Luard and Hosten, London: Hakluyt Society, 1926.

Niccolao Manucci , Mogul India (1653-1708), 4 vols., Eng. translation by William Irvine, Delhi: Low price publications,[1907-08], 2010.

Pietro Della Valle*, The Travels of Pietro Della Valle in India*, 2 vols., edited by Edward Grey, New Delhi: Asian Educational Service, [1892,London], 1991

Pelsaert, Francisco*, Jahangir's India*, eng. translation by W H Moreland and P Geyl, Delhi: Low Price Publications, [1925], 2011.

Peter Mundy, *Travels in Asia, 1630-34,* (ed.), R.C. Temple, London: Hakluyt Society, 1914.

Reginald Heber, *Narrative of A Journey Through the Upper Provinces of India from Calcutta to Bombay, 1824- 1825,* New Delhi: Asian Educational Services.

Tavernier, Jean Baptiste*, Travels in India,* 2 vols*.,* Eng translation by V. Ball, Delhi: Low price publications, 2007.

Thevenot & Careri, Surenderanath Sen,(ed.), *Indian Travels of Thevenot and Careri*, Delhi: National Achieves of India, 1949.

Thomas Roe,[1926]*,The Embassy of Sir Thomas Roe [1615-19] as narrated in his Journal & Correspondence*, W. Foster, Delhi: Munshiram Manoharlal Publications, 1990.

Encyclopedia/Monograph

Alvi. M.A., A. Rahmam, *Jahangir –the Naturalist,* New Delhi: National Institute of Sciences of India, 1968.

Britannica, Ready Referance Encyclopedia

Elliot, H., *Memoirs of the History, Folklore, and Distribution of the Races of the North Western Provinces of India,* 2vols., London: Trubner & Co., 1869.

Foose, Thomas J. and Nicovan Strien, (ed.), *Status Survey and Conservation Action Plan* : *Asian Rhinos*, International Union for Conservation of Nature and Natural Resources: Gland, Switzerland, and Cambridge, UK, 1997.

Manu, *Institutes of Hindu Law or, The Ordinances of Menu*, translated by William Jones, Reprinted for J. Sewel, Cornhill & J. Debrett London: Piccadilly, 1796.

Rhinoceros unicornis, Indian Rhinoceros, The IUCN Red List of Threatened Species, 2008.

The Elephant principally Viewed in relation to men, London: Printed by William Clowes and Sons, 1844.

Thomson, Pennant, *The View of Hindoostan*, 2 vols., London: Henery Hughs, 1798.

Secondary Sources

Akhtar, Ehsan, 'Zoological interest of the Mughal (with special reference to the Cheetah and the

Rhinoceros', *Essays in Medieval Indian History and Culture, Medieval India: 2,* (ed.), by Shahabuddin Iraqi, New Delhi: Manohar Publishers, 2008.

Alavi, Seema, *Islam And Healing: Loss And Recovery Of An Indo-Muslim Medical Tradition 1600-1900*, Basingstoke : Palgrave Macmillan, 2008

Ali, Daud and Emma J. Flatt, *Garden and Landscape Practices in Pre-colonial India, Histories from the Deccan*,New Delhi: Routledge publication, 2012.

Ali, Salim, *Birds Study in India: Its History and its importance*, 1979, New Delhi: Indian Council for Cultural Relations, 1979.

Allsen, T.T., *The Royal Hunt in Eurasian History*, Philadelphia: University of Pennsylvania Press, 2006

Ansari, Mohammad Azhar, *Geographical Glimpses of Medieval India*, 3 vols., Delhi: Idrah-I Adabiyat -I Delli, 2009.

Arnold ,David & Ramchandra Guha, *Nature, Culture, Imperialism: Essays on the Environmental History of South Asia*, Delhi: Oxford University Press, 1999.

Asher, B. Catherine, Cynthia Talbot, *India Before Europe*, UK: Cambridge University Press, 2006.

Azhar Ansari, Mohammad *Geographical Glimpses of Medieval India*,3 vols.,New Delhi: Idrah –I Adabiyat I Delli, 2009.

Balabanlilar, Lisa, *Imperial Identity in the Mughal Empire*, New Delhi: Viva Books, 2013.

Basham, A. L., 'Practice of Medicine in Ancient and Medieval India,' (ed.) Charles M. Leslie, *Asia medical system- A Comparative Study,* Delhi: Motilal Banarsidas Publishers, 1976

Bhattarchaya,D.K, Ecology and Social Formation in Ancient Period, Delhi, 1990.

Brijbhushan, Jamila, *The World of Indian Miniatures*, Kodansha International Ltd: Japan, 1979

Bose, Shibani, 'From Eminence to Near Extinction The Journey of the Greater One-Horned Rhino', Mahesh Rangarajan and K. Sivaramakrishnan, (ed.) *Shifting Ground people, animals, and mobility in India's Environmental History*, New Delhi: Oxford University Press, 2014.

Buchanan, Francis, *Districts Reports*,(*1807-11*), edited by Mantgomery Martin, *The History*, *Antiquities*, *Topography*, *and Statists of Eastern India's*, vol. II, London: H. Allen & Co., 1838.

Bulliet, Richard W., *The camel and the wheel*, New York: Colombia University press, 1990.

Cullet, Phillippe, Joyeeta Gupta, ' Evolution of water law and policy in India,' Joseph W. Dellapenna & Joyeeta Gupta(ed.), *The Evolution of the Law and Politics of Water*, Dordrecht: Springer Academic Publishers, International Environmental Law Research Centre, 2009.

Collingham, L.,*Curry: a Tale of Cooks and Conquerors*. Oxford: Oxford University Press, 2007.

Das, Ashok Kumar, *Mughal Painting During Jahangir's Time*, Calcutta: The Asiatic Society, 1976.

Desai, Z.A., 'A recently Discovered Inscription of Aurangzeb from Gujarat', in K. V. Ramesh,& S. P. Tewari, (ed.) *Indian History and Epigraphy*, Delhi: Agam Kala Prakashan, 1990,

Divyabhanusinh, *The End of a Trail,* New Delhi: Oxford University Press, 1999.

----- *The Story of Asia's Lion*, Mumbai: Mark Publication,2005.

------ 'Lions, Cheetahs and Others in the Mughal Landscape,' (ed.) Mahesh Rangarajan & K. Sivaramakrishnan, *Shifting Ground people, animals, and mobility in India's Environmental History*, New Delhi: Oxford University Press, 2014.

Dovers, Stephan, *Australian environmental history: Essays and Cases*, Melbourne: Oxford University Press, 1994.

Elvin, Mark, *The Retreat of Elephants, an Environmental History of China*, New Haven: Yale University Press, 2004.

Equus, A. Hyland, *The Horse in the Roman World*, London, 1990.

Farooque, Ahmad Khair Muhammad, *Roads and Communications in Mughal India*, New Delhi : Idarah-I Adabiyat- i- Delli, 1977.

Foster, Willam, *Early Travels in India 1583-1619*, Delhi: Low Price Publications, [1921] 1999.

Gommans, Jos, *Mughal warefare Indian Frontiers and High Roads to Empire, 1500-1700,* London: Routledge Publications, 2002.

Grove, R.H., *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1860,* New Delhi: Cambridge University Press, 1995.

Grove, H. Richard, Vineeta Damodaran & Satpal Sangwan,[ed.], *Nature & The Orient*, Delhi: Oxford University Press, 1998.

Guha, Ramachandra& Madhav Gadgil, *This Fissured Land: An Ecological History of India*; New Delhi: Oxford University Press, 1992.

Guha, Ramchandra, *The Uniquiet Woods: Ecological Change and Peasant Resistance in Western Himalaya*, Delhi: Oxford University Press, 1989.

---------- [ed.], *Social Ecology*, New Delhi: Oxford University Press, 1994.

Guha, Ranajit, *History at the limit of World History*, New Delhi: Oxford University Press, 2003.

Guha, Sumit, *Environment and Ethnicity in India, 1200-1991*, UK: Cambridge University Press, 1999.

Gupta, Ashin Das, *Indian Merchants and the Decline of Surat, 1700-40*, New Delhi: Manohar Publishers, 1994.

Habib, Irfan, *The Agrarian System of Mughal India 1556–1707*, New Delhi: Oxford University Press,[1963]1999.

---------- *An Atlas of the Mughal Empire: Political and Economic Maps With Detailed Notes*, Bibliography & Index, New Delhi: Oxford University Press, 1982.

---------- *Technology in Medieval India c. 650-1750*, New Delhi: Tulika Books, 2008.

---------- *Man and Environment*, New Delhi: Tulika Books, 2010.

---------- *Medieval India, The study of Civilization*, New Delhi: National Book Trust, 2007

H. Hayes, *A Guide to training and Horse Mangement in India*, Calcutta, 1878.

Hasan, Mohibul, *Babur- Founder of the Mughal Empire in India*, Delhi: Manohar publications,1985.

Harrison, Mark, *Climates and Constitutions: Health, Race, Environment and British Imperialism in India 1600-1850*, New York: Oxford University Press, 1999.

Harrison Mark & Biswamoy Pati, *The Social History of Health and Medicine in Colonial India*, New York: Routledge, 2009.

Hughes, J. Donald, *What is Environmental History?*, UK: Polity press, 2006.

Jafri, S.Z.H., *Studies in the Anatomy of a Transformation Awadh from Mughal to Colonial Rule*, New Delhi: Gyan Publishing House, 1998.

Jeffery, Roger (ed.) *The Social Construction of Indian Forests*, New Delhi: Manohar publications, 1998.

Lane-Poole, Stanley, *Medieval India Under the Mohammedan Rule*, Delhi: Seema Publications, 1980.

Khan, Iqtidar Alam, 'Akbar's Personality Traits and World Outlook – A Critical Reappraisal', in *Akbar and His India*, (ed.) Irfan Habib, New Delhi: Oxford University Press, 1997.

Koch, Ebba, 'My garden is Hindustan: The Mughal Padshah's Realization of a political Metaphor', (ed.) *Middle East Garden Traditions: Unity and Diversity: Questions, Methods and Resources in a Multicultural Perspective*, Michel Conan , Washington, 2007.

Koch, Ebba, The Hierarchical Principles of Shah –Jahani Paintings, Meenakshi Khanna, (ed),*Cultural History of Medieval India*, New Delhi: Social Science Press,2007.

Kumar, Deepak & Raj Sekhar Basu, (ed.), *Medical Encounters in British India*, New Delhi: Oxford University Press, 2013.

Kumar, Deepak , *Disease and Medicine in India: a Historical Overview,* New Delhi: Tulika Books, 2001.

Kumar, Deepak, Vinita Damodaran, & Rohan D'Souza *The British Empire and the Natural World: Environmental Encounters in South Asia,* New Delhi: Oxford University Press, 2011.

Kumar, Mayank, *Monsoon Ecologies: Irrigation, Agricultural and Settlement Pattern in Rajasthan During the Pre- Colonial Period*, New Delhi: Manohar Publishers, 2013.

Kumar,Mayank, ‘ Ecology and Traditional Systems of Water Management,’ in Mahesh Rangarajan, (ed.) *Environmental issues in India : A Reader*, New Delhi: Pearson Longman, 2007.

Krishna, Nanditha, *Sacred animals of India*, New Delhi: Penguin Books limited, 2010.

Majumdar,R.C.(ed.), J.N.Chaudhuri, S.Chaudhuri, *The History and Culture of The Indian People: The Mughal* Empire, Bombay: Bharti Vidhya Bhavan,1984.

Moreland, W.H., *India at the Death of Akbar an Economic Study*, Delhi: Atma Ram & Sons, 1962.

Moose, David, *The Rule of Water*: Statecraft, Ecology and Collective Action in South India, New Delhi: Oxford University Press, 2003.

Moosvi, Shireen, *Man and Nature in Mughal Era*, Recording the Progress of Indian History: Symposia Papers of the Indian 1992-2010, (ed.) by Saiyid Zaheer Husain Jafri, New Delhi, 2012.

Moosvi, Shireen, Episodes in the life of Akbar, New Delhi: NBT, 2007.

Mehta, J.L., *Advanced Study In the History Of Medieval India: The Mughal Empire,(1526-1707*), vol. II, Delhi: Sterling Publications, [1981],1984.

Ojha, P.N., *North Indian Social Life during Mughal Period,* Delhi, 1975.

Pearson, M.N., *Towards Superiority: European and Indian Medicine, 1500-1700*, Minneapolis: Associates of the James Ford Belle Library, University of Minnesota, 1989.

Prasad, Archana, Against Ecological Romanticism Verrier Elwin and the Making of an Anti-Modern Tribal Identity, Delhi: 2003.

Qaiser, A.J., ‘Agricultural technology depicted in Mughal Paintings’, B.L. Bhadani, (ed.) *Medieval India 3, Researches in the History of India*, New Delhi: Manohar Publications, 2012.

Rahman, Abdur, M.A. Alvi, S.A. Khan Gori & K.V. Samba Murthy, *Science and Technology in Medieval India*, New Delhi: Indian National Science Academy, 1982.

Rangarajan, *Mahesh, Fencing the Forest, Conservation and Ecological Change in India’s Central Provinces 1860-1914*, New Delhi: Oxford University Press, 1996.

---------- India’s *wildlife History : an introduction*, Delhi: Permanent Black, 2001.

---------- (ed.) *Environmental issues in India : A Reader*, New Delhi: Pearson Longman, 2007.

Rangarajan and K. Sivaramakrishnan(ed.), *Shifting Ground, People, animals and mobility in India's Environmental history*, Delhi: Oxford University Press, 2014.

Raychaudhuri, Tapan & Irfan Habib, *Cambridge Economic History of India*: *c. 1200-c. 1750,* vol. I, New Delhi: Cambridge University Press, 1982.

Ray, R., *Ancient Settlements Patterns in Eastern India*, Calcutta: Pear Publishers, 1987.

Rezavi, S.A.N., '*An Aristocratic Physician of the Mughal Empire: Muqarrab Khan*'(ed.) Irfan Habib, *Medieval India*, I*, Researches in the History of India 1250-1750*, New Delhi: Oxford University Press, 1992.

Richards, J.F., *The Unending Frontier: An Environmental History of the Early Modern World,* London: University of California Press, 2001.

Richards, J.F., *The Mughal Empire*, New Delhi: Cambridge University Press,[1993] 2007.

Rizvi, S.A.A., *Religious and Intellectual History of the Muslims in Akbar's Reign with special reference to Abu'l Fazl* [*1556-1605*], New Delhi: Munshiram Manoharlal Publishers, 1975.

R. Spies, Joseph, *Big Cats: And Other Animals : Their Beauty, Dignity and Survival*, USA: Lifetime Books, [1988] 1998**.**

Rubies, Joun-Pau, *Travel and Ethnology in the Renaissance ,South India Through European Eyes, 1250-1625*, UK: Cambridge University Press, 2000.

Saberwal ,Vasant Kabir & M Rangarajan,(ed.), *Battles over Nature, Science and the politics of conservation*, Permanent Black, Delhi, 2003.

Sakaria, Ajay, *Hybrid Histories*: *Forests Frontiers and Wildness in Western India*, Delhi: Oxford University Press, 1999.

Sarkar, J.N, *Studies in Mughal India*, Calcutta: M.C. Sarkar & Sons, 1919.

Sarkar, Jadunath, *A Short History of Aurangzeb*, New Delhi: Orient Blackswan, 2012.

Schimmel, Annemarie, *The Empire of the Great Mughals: History, Art and Culture,* translated by Corinne Attwood*,* ed. by Burzine K. Waghmar, with a forward by Francis Robinson, London: Reaktion Books, 2004.

Siddiqui, Iqtidar Husain, *Composite Culture under the Sultanate of Delhi*, New Delhi: Primus Books, 2012.

Singh, Abha, 'Irrigating Haryana: The Pre-Modern History of Western Yamuna Canal' in Irfan Habib,(ed.), *Medieval India, 1, Researches in the History of India 1200-1750*, Delhi: Oxford University Press, 1992.

Singh,Chetan, *Natural Premises Ecology and Peasant life in the Western Himalayas 1800-1959*, Delhi: Oxford University Press,1998.

---------- 'Polity, Economy and Society under the Mughals', Banga, Indu, ed.) *Five Punjabi Centuries: Polity, Economy, Society and Culture, c. 1500-1990,* Delhi: Manohar, 1997.

Sinha, Nandini, *State Formations in Rajasthan: Mewar during the seventh-fifteenth centuries*, Delhi: Manohar Publishers, 2002.

Silverman Buffy, *Can you tell a Cheetah from a leopard?*, U.S.A: Learner Publication Company, 2012.

Sleeman, W.H., *A Journey through the Kingdom of Oudh during 1849-50*, vol. II, London: William Clowes & Sons, 1858.

Srivastava, Ashok Kumar, *Mughal Painting*, New Delhi: Munshiram Manoharlal Publications, 2000.

Spate, O.H.K., & Learmonth, A.T.A, *India and Pakistan: Land, people and economy*, New Delhi: Methuen and Company Ltd, 1967.

Streusand, Douglas E., *The Formation of the Mughal Empire* New Delhi: Oxford University Press, 1989.

Sukumar, Raman, *The Living Elephants: Evolutionary Ecology, Behaviour, and Conservation,* Oxford: Oxford University Press, 2003.

---------- *The Story of Asia's Elephant*, Mumbai: Marg Foundation, 2011.

Thaper, Valmik, *The Tiger in time,* New Delhi: Aleph Book Company, 2013.

Thapar Valmik, Romila Thapar and Yusuf Ansari, *Exotic Aliens: The lions and the Cheetah in India*, New Delhi: Aleph Book Company, 2013.

Tiwari, R.C, *Geography of India*, Allahabad: Prayag Pustak Bhawan, 2006.

Tripathi, R.P., *Rise and fall of the Mughal Empire*, Allahabad: Central Book Depot, 1985.

Trautmann, Thomas R., *Elephants and Kings: An Environmental History*, Chicago: The University of Chicago press, 2015.

Valerie Berinstain, *Mughal India: Splendours of the Peacock Throne*, trans Paul G. Bahn London: Thames and Hudson, 1998.

Valiathan, M.S., *The Legacy of Caraka*, Chennai: Orient Longman, 2003.

Verma, H.C., *Harvesting Water and Rationalization of agriculture in North Medieval India* (*Thirteenth- Sixteenth Centuries*), New Delhi: Anamika Publishers, 2001.

Verma, R.L., Unani Medicine During the Mughal Reign in India,(ed.) B. Subbarayappa & S.N. Murthy, *Scientific Heritage of India*, Bangalore: The Mythic Society, 1988,

Verma, S.P., *Interpreting Mughal Painting Essays on Art, Society and Culture,* New Delhi: Oxford University Press, 2009.

Villiers, Stuart, *Gardens of the Great Mughals*, New Delhi: Asian Educational Services, [1913], 2007.

Wahi,Tripta, ' Water Resouces and Agricultural Landscape: Pre-colonial Punjab' in Indu Banga (ed.) *Five Punjabi Centuries: Polity, Economy, Society and Culture, c. 1500-1990,* Delhi: Manohar, 1997.

Wear, Andrew, (ed.), *Medicine in Society: Historical Essays,* New York: Cambridge University Press, 1992.

Wescoat, James, Jr., ' *Mughal gardens and geographic Sciences,then and now'*, (ed.) *Gardens in the Time of the Great Muslim Empires: Theory and Design*, Attilio Petruccioli, Leiden; New York: E.J. Brill, 1997.

Wessing, Robert, *The Soul of Ambiguity: The Tiger in Southeast Asia*, De Kalb, IL: Centre for Southeast Asian Studies, 1986.

Williams,L.F.Rushbrook, *An Empire Builder Of The Sixteenth Century : A Summery Account of The Political Career of Zahir-Ud-Din Muhammad surnamed Babur,* Delhi: S.Chand & Co., 1900.

Worster, Donald, *Nature 's Economy: A History of Ecological Ideas*, UK: Cambridge University Press, 2011.

Zimmerman, Francis, *The Jungle and the Aroma of Meats: Ecological Themes in Hindu Medicine*, Delhi: Motilal Banarsidass Publishers,1989.

Articles

Akhtar, Ehsan, 'The Cheetah and the Mughals,' *IHC: Proceedings, 57th Session*, 1996, Madrass.

Ali, Salim, 'Mughal emperors of India as naturalists', *Journal Bombay Natural History Society*, vol. xxxii, Madras, 1928.

Ansari, M.A., 'The hunt of the great Mughals', *Islamic Culture,* Vol. XXXIU, No. 1, Hyderabad, January, 1959.

Bala, Poonam, 'The Ayurvedic System of Medicine Its Fate in Medieval India', *Bulletin of Indian Institute of History of Medicine*, Hyderabad: Central Council for Research in Indian Medicine and Homeopathy, Vol. XII, 1982.

Beames, J., 'On the Geography of India in the Reign of Akbar', *Journal of Asiatic Society Bengal*, LIII, 1884.

---------- for *Awadh*; LIV,1885.

Choudhary, K.N., 'Some Reflections on the Town and Country in Mughal India', *Modern Asian Studies*, Vol. 12, no. 1, Cambridge University Press, 1978.

Dickie, James, '*The Mughal Garden: Gateway to Paradise*', *Muqarnas*, vol. III, 1985.

Divyabhanusinh, 'Records of Two Unique Observations of the Indian Cheetah in *Tuzuk-i- Jahangiri*,' *Journal Bombay Natural History society*, vol. 84, 1987.

Fay, Brian, 'Environmental History: Nature at work', *History and Theory, Theme Issue, Environment and History*, vol. 42, No, 4, December 2003.

Khan, Iqtidar Alam, 'Location, Structure and functioning of a Pre-Modern Water-work: A study of Guru ka Tal, *Proceedings of Indian History Congress,* Karnataka session, 1988, Delhi: 1989.

Khan, Enayatullah, 'Akbar and his Cheetah,' *IHC: Proceedings, 73rd Session, 2012*.

Koch, Ebba, 'Mughal Palace Gardens from Babur to Shah Jahan (1526-1648)', *Muqarnas* , 14, 1997.

Koch, Ebba, ' Jahangir as Francis Bacon's Ideal of the King as an Observer and Investigator of Natue', *Journal of the Royal Asiatic Society*, CUP,Vol.19, part. 3, July 2009.

Kohler-Rollefson, I., 'The camel in Rajasthan: Agricultural biodiversity under threat', *Saving the Camel andPeoples*,' *Livelihoods Building a Multi-Stakeholder Platform*

for the Conservation of the Camel in Rajasthan International Conference, Rajasthan: Lokhit Pashu-Palak Sansthan, 23-25 November, 2004.

Kohler-Rollefson, I., 'Camel pastoralism: An indigenous arid land exploitation strategy,' *Journal of Camel Practice and Research*, Camel Publishing House, 1, 1994.

Macneill, J.R., 'Observation on Nature and Culture of the Environment History and Theory', *Environment History*, 42, Dec, 2003.

Mehta, Dharmendra, Naveen K. Mehta, 'Interlinking of Rivers in India: Issues and challenges, *Geo-Eco-Marina*, 19, 2013.

Menon, Ajit, 'Colonial Construction of 'Agrarian fields' and 'forests' in the Kolli Hills', *The Indian Economic and Social History Review*, 41, 3, 2004.

Minhaj, Mohammad Zafar, 'Padshahnama: Some Reflections of Shahjahan's Reign', *International Journal Humanities & Religion*, 2(6): 2013.

Mohammed, Jigar, 'Use of Botanical Products in India during the 16th & 17th Centuries, *Proceedings of IHC*, , 57th Session , Madras, 1996.

Moosvi, Shireen, 'Ecology, Population Distribution and Settlement Pattern in Mughal', *Man and Environment*, XIV, (I), 1989 .

Mukhia, Harbans, 'Was there Feudalism in Indian History?' *The Journal of Peasant Studies*, vol. 8, no. 3,1981.

Rajan S. Ravi, 'Foresters and the Politics of colonial agro ecology: The case of shifting cultivation and soil erosion, 1920-1950', *Studies in History*, Vol. 14, No. 2, n.s, 1998.

Murthy, M.L.K., 'Environment, Royal Policy and Social Formations in the Eastern Ghats, South India', *India History Congress,* Delhi, 1993.

Roff Smith, 'Cheetahs on the Edge', *Journal of the National Geographic Society*, vol. 22. No. 5, 2012.

Pearson, M.N., 'The Thin End of the Wedge Medical Relativities as a Paradigm of Early Modern Indian Europe a Relations,' *Modern Asian Studies*, 29, I, UK: 1995.

Saberwal, Vasant, 'Science and the Desiccationst Discourse of the 20th Century,' in *Environment and History* 4, 3,1997.

Sen, Aloka Parasher, 'Of Tribes, hunters and barbarians: Forest dwellers in the Mauryan Period', *Studies in History*, 14, 2, 1998.

Sharma, Yogesh, 'The Circuit of life: Water and water Reservoirs in Pre- Modern India', *Studies in History*, New Delhi: Sage Publications, 25, 1, 2009.

Singh, Jagat Vir, '*Indian Medical Science and treatment of diseases as described by the Europeans Travellers of the later 17th Century*,' *IHC Proceedings* , 28th Session Mysore , Aligarh, 1966.

Sivaramakrishnan, K., 'Conservation and production in Private Forests: Bengal, 1864-1914, *Studies in History*, vol. 14, No. 2 n.s., 1998.

Sramek Joseph, 'Face Him like a Briton: Tiger Hunting, Imperialism and British Masculinity in Colonial India 1800-1875,' *Victorian Studies*, Vol. 48, No.4, Indiana University Press, 2006.

Thapar, Romila, 'Perceiving the Forest: Early India', *Studies in History*, 17, vol. xvii, Number 1, New Delhi: Sage Publications, 2001.

Tvedt, Terje, 'Water Systems environmental History and the deconstruction of Nature', *Environment and History*, UK: The White Horse Press, 16, 2010.

Verma, R. L., 'The Growth of Greaco-Arabian Medicine in India', *Indian Journal of History Science,* Delhi: National Institute of Sciences of India, vol. V, no. 2, 1970.

Villiers, Stuart, 'Indian Water Gardens', *Journal Of the Royal Asiatic Society of Arts*, vol. 62, No. 3203, April, 1914.

Wescoat, James, 'Early Water Systems in Mughal India', *Environmental Design*: *Journal of the Islamic Environmental Design Research Centre*, 1985.

Yule, Lieut., 'A Canal Act of Emperor Akbar, with notes and remarks on the History of the Western Jumna Canal', *Journal of the Asaitic Society of Bengal*, Calcutta, vol. XV, issue-171, 1846.

Journals-

Environment History

Environment and History

Geo-Eco-Marina

Islamic Culture

Bulletin of Indian Institute of History of Medicine

Indian Journal of History Science

International Journal Humanities & Religion

Journal of Asiatic Society Bengal

Journal Of the Royal Asiatic Society of Arts

Journal Bombay Natural History Society

Journal of the National Geographic Society

Journal of Camel Practice and Research

Journal of the Islamic Environmental Design Research Centre

Lokhit Pashu-Palak Sansthan

Man and Environment

Modern Asian Studies

Muqarnas

Proceedings of Indian History Congress

Studies in History

The Indian Economic and Social History Review

The Journal of Peasant Studies

Victorian Studies

CONCLUSION

Mughal Empire had an overarching reach over large parts of Indian subcontinent. Its centralized imperialistic policies influenced the cultural, political, social, religious and economic scenario of India. India is a land of rich natural resources. Historians and environmentalists are grossly divided over the fast depletion of natural resources of India. While one group of historians believe that it were the British policies that precipitated the depletion of vast reserves of forest and wild life. They emphasis that during the pre-colonial period, though process of reclamation of land for extensive and cultivation, fuel etc. were largely sustainable. However, other argues that reclamation of land did result in depletion of forest cores as well as the state policies of the emperors did harm the wild life.

The Mughal State policies were no doubt led to encroachment of natural resources; then prime focus was on the unprecedented demands on land, water, forest and other natural resources to maximize the revenue returns. It resulted in the clearing of bushes and forest lands, farming marginal lands, new settlements, intensifying cultivation or herding in the interests of enhancing productivity. State did interfered with nature in the form of massive irrigation projects, construction of reservoirs and water bodies. At the same time, many drastic changes were brought out by the emperors in the cattle and animal breed; new fruits were introduced. Grafting techniques popularized further the dissemination of new technology to grow new variety of plants and fruits. A number of verities of mango, particularly Alfanso was developed. Nonetheless, the nature of interference with nature depended upon the individual personality of the emperor. They had their own individual personality, distinct outlook and interests towards nature. But some continuities are also apparent. Mughal emperors had inquisitive mind they used to notice all the rare things. Equally vibrant were the emperors and notables nobles/ *umra*/elite often who aped the life style of the emperor and played a significant role in the preserving the environment.

There were many cultural, social, religious trends in India which had their impact on the environmental issues. The worship of Mother Earth is a universal phenomenon in many indigenous cultures. Indigenous people attribute supernatural powers to plants,

animals, rivers, oceans, mountains, the wind, sun and moon. The worship of nature in the form of sacred trees such as - *tulsi*, *vat*, *kadamb*, *pipal*, *bel*, *kela*, *amla* did help with preservation of a vast variety of flora. Similarly, there were concepts about forests as *Vana devta*, animals like cow, ox, monkey, crow, snake worshipped with the faith of different perspectives, unit of water - as rivers, ponds, were very much part of the revered Indian religious tradition. Respect for nature is inherent in the religious faith. Many Hindu gods and goddesses are shown to use animals as mounts. Sacred groves or sacred forests preserved with reverence have been part of Hindu, Buddhist, Islamic and Christianity culture.

From the establishment of the Mughal Empire, Babur, the founder, was a great naturalist. He observed often minutely, curiously the flora and fauna of India. His comparison of India with Kabul and Central Asia, his homeland was unique. From his *Memoirs* we come to know his strong liking and dislikings about India, his love for gardening. Babur's observation and approach is scientific. His curious description of birds, even his observation is often too accurate. He described then with a lot of interest inspite of his constant engagements in military expedition. Lanepool observes that Babur is perhaps the most captivating personality in oriental history, and the fact that he is able to impart this charm to his own *Memoirs* is not the least of his titles to fame. "He is the link", comments Lanepool, "between Central Asia and India, between predatory hordes and imperial government, between Timur and Akbar."[1] Rushbrook Williams also rightly observes that during all the three years which elapsed between the battle of Kanua and the day of his death in 1530, Babur, 'in the intervals of campaigns, he amused himself by touring the country, seeing it with his own eyes, and recording his impressions for the benefit of his readers. He also spent much time in superintending building operations, constructing for himself palaces, baths and gardens designed as refuges against the burning summer heats.'[2] He was keenly sensitive to the beauties of nature. His description of the "flora and fauna of Hindustan reveals his quickness of observation and his marvelous interest in natural

[1] Lane-Poole,Stanley, *Medieval India Under the Mohammedan Rule*, Delhi: Seema Publications, 1980, p. 193.

[2] Williams,L.F.Rushbrook, *An Empire Builder Of The Sixteenth Century : A Summery Account of The Political Career of Zahir-Ud-Din Muhammad surnamed Babur,* Delhi: S.Chand & Co., 1900,p.163.

history."[3] Mohibul Hasan comments that till the end of his days Babur retained his love of nature and his aesthetic tastes. He went into 'ecstasies of delight whenever he came across a beautiful object, be it a natural scenery, a running–brook, a flower, a garden, a bird or a building. It was, therefore, natural that he should lay out orderly and symmetrical gardens excavate wells and tanks and construct baths and buildings in various towns of Hindustan'[4] J. L.Mehta writes that Babur as a lover of nature, and comments that Babur took 'delight to be in the lap of natural environment where verses flowed like torrents from his lips'.[5] R.P.Tripathi also comments that Babur was fond of laying out gardens and making experiments in horticulture. His love for flowers and gardens would seem to have been described him as a "Prince of Gardeners".[6] He was a great naturalist, though at times his account reflects biases too. Babur encouraged gardening in India; he showed curiosity towards wonderful though diverse flora and fauna of Hindustan. However, it is interesting that barring description of hunting of rhinoceros, tiger, wild ass, Babur hardly applauds hunting, which became rampant during his successor's reigns. Amazingly, there is no instance where Babur involved in hunting in person. We also do not find any reference of birds catching either by Babur or by his army. Babur describes amazingly about the Gangetic dolphins as he writes, 'the water –hog (P. *khuk-abi*, *Platanista gangetica*, the porpoise) is in all Hindustan rivers. It comes up suddenly out of the water; its head appears and disappears; it dives again and stays below, shewing its tail.'[7] It shows that dolphins were at that massively available in Indian rivers but they are now on the endemic stage. It was Babur, who first time felt the scarcity of 'running' water in India in spite of availability of water everywhere.

Humayun did possess a scientific temper. Ferishta mentions his overview and mentions that he devoted himself, to the 'sciences of astronomy and geography; and not only wrote dissertations on the nature of the elements, but had terrestrial and

[3]Majumdar,R.C.(ed.), J.N.Chaudhuri, S.Chaudhuri, *The History and Culture of The Indian People: The Mughal* Empire, Bombay: Bharti Vidhya Bhavan,1984,p.40.
[4] Hasan,Mohibul *, Babur- Founder of the Mughal Empire in India*, Delhi: Manohar publications,1985, p. 185.
[5] Mehta, J.L., *Advanced Study In the History Of Medieval India: The Mughal Empire,(1526-1707*), vol. II, Delhi: Sterling Publications, [1981],1984, p.144.
[6] Tripathi, R.P.*, Rise and the Fall of The Mughal Empire*, Allahabad : Central Book Depot, 1985, p.56.
[7] Zahiru'd Din Muhammad Babur, *Baburnama*, Eng. translation by A. S. Beveridge, Delhi: Low Price Publication, [1921], 2010, pp. 502-503.

celestial globes constructed for his use.'[8] He inherited the love of nature from his father and would make excursions with his ladies to enjoy the flowers on the mountains.[9] Abul Fazl remarks about 'Humayun as 'mathematician and a keen astrologist, he had collected equipment for setting up observations at selected places. His weekly business was arranged according to the interpretation of the influence of various planets; he 'invented' a tent which had twelve partitions corresponding to the signs of the Zodiac and a round carpet 'corresponding to the orbits of the spheres and the elemental spheres'; and he wore clothes each day corresponding to the colour of the planet of that day. On the evening of his fatal accident he had invited fellow mathematicians to the roof of his library to observe Venus which was expected to rise that night.'[10] Humayun keenly observed and distributed the days of weeks according to planets.[11] Jouher and Nizamuddin Ahmad also throws light on the Humayun hardships at the time of his banishment; and gives the incident of searching water sources in the out skirt of Joudpur, where they killed a deer which was opposed by Hindus Raja, who was not in favor of killing beasts.[12] Abul Fazl describes about a bird and correlate this with the perception of good-luck when Humayun 's army returned to Kabul June,1548.[13]

Under Akbar, (1556-1605) one of the greatest and the most popular emperor among the Mughal's the empire flourished. He gave a new direction, and a new meaning to

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[8] Farishta, Muhammad Qasim, Hindu Shah, *History of the Rise of the Mahomedan power in India till the year A.D. 1612,* Translated by John Briggs, vol. II., New Delhi: Atlantic Publishers, 1989, p. 44.

[9] Gulbadan Begum, *Humayun Nama* ,Eng. translation by A.S. Beveridge, Delhi : Low price Publications, [1902], 2006, pp. 188-190.

[10] *Abul Fazl*, *Akbar Nama*, eng. translation by H. Beveridge, New Delhi: Atlantic Publishers, [1873-87], 1989, vol. I, pp. 665,644,649-50.

[11] Khwandamir, *Qanun-i –Humayuni*, Eng. translation by Baini Prashad, Calcutta, The Asiatic Society , [1940], 1996,p. 46, Khondamir, *Humayun-Nama*, Elliot and Dowson, The History *of India as told by its own Historians*, vol. V, Allahabad: Kitab Mahal, 1975, pp.121-122.

[12] Aftabchy, Jouher, *Tezkereh Al Vakiat* or *Private Memoirs* of the Moghul Emperor Humayun, Translated by Major Charles Stewart, New Delhi: Idarah-iAdabiyat- i-Delli, 2009, p.35, p. 40. Aftabchy noted, At this place two messengers arrived from Maldeo, the Raja of Joudpur, who stated, "that the King had entered his territory without any invitation; and although it was must be known that the killing of kine (that deer) was forbidden in Hindu districts, we had nevertheless killed a number of these sacred animals…Ahmad, Nizamuddin, *Tabakat-i Akbari*, Translated by Brajendra Nath De, and revised and edited by Baini Prashad, vol. II, Delhi: Low Price Publications, 1992,[1936], see the details, pp. 87-88.

[13] *Akbarnama*, op.cit., Humayun was standing in the ewer-room. Suddenly it occurred to his sanctified mind that 'if this white bird (referring to a cock was always in the room) come upon my shoulder and crow, it will be a sign of victory.' As soon as he had this thought, the auspicious bird came flying and flapping its wings like a *huma,* perched on his shoulder, and cast an auspicious shadow over the head of fortune. His Majesty returned thanks, and ordered that a silver ring to be put on the bird's foot. This story is told by Jauhar who adds that Humayun used to feed the bird with raisins.

the Mughal empire in India. Akbar moved away from his former devotion to Islam and towards a self conceived eclectic form of worship focused on light and the sun. Akbar ruled over with a social and religious toleration though was relative, not absolute, and was based on his concept of *sulh-i-kul* (for the general good of all people) which was built on his liberal views of religion. Akbar took the Sufi mystic notion of *sulh-i-kul* and transformed it to become a principle denoting amity within a culturally pluralistic India.[14] About the worship of sun and its exact origins and direct influences on Akbar are arguable, but most agree that it was a concoction of his fertile intellect. Abu'l Fazl offers a short justification of the sun being divine because every flame is derived from the divine light and the fire of the sun is the torch of God's sovereignty.[15] He was not the first Mughal to recognize the spiritual importance of the sun. Humayun's mystic beliefs and faith in astrology led him to first synthesize the idea of the sun with the Divine light of God.

In Akbar one finds diverse traits. He was the perfect genius who probably introduced innovation in every walk of life. In his initial year Akbar appears to be a great hunter. However, after 1580 such operations got minimized. Abul Fazl, gives the argument that 'the inspired soul of H.M the *Shah-in-Shah,* and his true interest in miscellaneous matters, such as hunting, etc., is to acquaint himself with the condition of the people, without the intermediary of interested persons and hypocrites, and to take proper measures for the protection of mankind.'[16] According to Monserrate, Akbar had 'a somewhat morose disposition' to which he attributes the latter's excessive interest in 'various games'.[17] Abul Fazl devoted a whole chapter in the *Akbarnama* to Akbar's inclination for elephants. This psychological factor in Akbar's personality also appears to have manifested itself in the occasional fits of depression and melancholy that he is reported to have suffered down to 1578, it came in the midst of a hunting expedition. On this occasion Akbar fell unconscious for some time. It appeared, according to Abul Fazl, as if he was dying.[18] That these fits, which were characterized by Abul Fazl and by Akbar himself as spiritual experiences, recurred down to 1578

[14] Iqtidar Alam Khan, 'Akbar's Personality Traits and World Outlook – A Critical Reappraisal', in *Akbar and His India*, (ed.) Irfan Habib, New Delhi: Oxford University Press, 1997, p. 88.
[15] Streusand, Douglas E., *The Formation of the Mughal Empire* New Delhi: Oxford University Press, 1989 , p. 36.
[16] *Akbar Nama*, op.cit., vol.III, p. 220.
[17] Father A. Monserrate,*Commentary on his journey to the court of Akbar*, eng. translation by J.S. Hoyland, annotated by S. N. Banerjee, Cuttak, 1922, p. 197.
[18] *Akbarnama*, *op.cit*.,vol. III, pp. 241-42.

and were not reported from the subsequent period when Akbar had developed a new world view identified with *sulh-i kul*, goes to suggest that these had something to do with the mental tensions of the earlier phase of his life.[19] After this, the hunting by Akbar was very much decreased. He expressed his disapproval of excessive enthusiasm for hunting especially after his own enlightenment whilst out hunting in 1578. Akbar's policy for tolerance towards humanity became very popular. After 1579, we can see a very much drastic change in his personality towards the killing of animals even he did not eat flesh and also banned to cook non-vegetarian for particular days. He issued an order banning bird-catching and fishing, while speaking 'many truths' about these 'improper acts'.[20] Akbar remarks that 'it is not right that a man should make his stomach the grave of animals. The authority to kill should be his who can give life.'[21]Akbar advocates that Butchers, fishermen and the like who have no other occupation but taking life, should have a separate quarter and their association with others should be prohibited by fine and 'were it not for the thought of difficulty of sustenance. I would prohibit men from eating meat. The reason why I do not altogether abandon it myself is, that many others might willingly forego it likewise and be thus cast into dependency.'[22]

Abul Fazl aptly gives to meat-less diet the name *sufiana* in the *Ain-i-Akbari* [23] as Akbar says that in the earliest years, 'whenever I ordered animal food to be cooked for me, I found it rather tasteless and cared little for it. I took this feeling to indicate a necessity for protecting animals, and I refrained from animal food.'[24] Badaoni has attributed this to the influence of Birbal and Akbar's Hindu queens, who argued against beef-eating.[25] But it seems apart from those factors the source of inspiration was clearly from the *sufic* tradition which was based originally perhaps more on ascetic intent than on love of animal life which Akbar deliberately read into it. We can see that Akbar's spiritual inclinations shown in periodic abstention from meat and

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[19] Khan, Iqtidar Alam, Akbar's Personality Traits and World Outlook: A critical Reappraisal, in Meena Bhargava, (ed.), *Exploring Medieval India Sixteenth to Eighteenth Centuries: Culture, Gender, Regional Patterns*, New Delhi: 2010, p. 357.

[20] *Akbarnama, op.cit.,* vol. III, p. 236.

[21] *Abul Fazl, Ain-i Akbari,* eng. translation by H.S. Jarrett, revised by J.N. Sarkar, Delhi: Oriental Books Reprint Co.,[1949],1978, vol.III, p. 443.

[22] Ibid., p. 446.

[23] *Abul Fazl, Ain-i Akbari,* eng. translation by H.Blochmann, Delhi: Oriental Books Reprint Co.,[1949], 1978 p. 164, *Ain-i Akbari*, trans. Jarrett, *op.cit*., vol. III, p. 446.

[24] Ibid.

[25] Badauni's *Muntakhabu al- Tawarikh,* Eng. translated by W.H.Lowe, Delhi, 1986, vol. II, pp. 302-3.

prohibition of bird-killing and fishing were leading up such a denouncement. A slaughter of animals on this scale would have been totally opposed to his developing inclinations towards the protection of animal life. Akbar seems to be moved mainly by his sense of pity for animals; and it is possible that Jain influence might have also confirmed him in his vegetation ideas.[26] Akbar's strong disapproval of meat-eating is also rooted just not in his religious beliefs but basically reflects his natural compassion for living beings. He shames the meat eaters for having converted 'their inner sides, where resides the mysteries of Divinity, into a burial ground of animals', and again : I wish my body, made of elements (*jism-i unsari)*, was big like that of elephant so that these flesh-eating ignorant ones would have satisfied their hunger with my flesh, and so spared other living beings'.[27]

Akbar 'abstained from meat for some time on Fridays, and then on Sundays; now on the first day of every solar month, on Sundays, on solar and lunar eclipses, on days between two feasts, on the Mondays of the month of Rajab on the feast day of every solar month, during the whole month of *Farwardin*, [February and March] and during the month in which H.M. was born.'[28] About the austerities practiced by Akbar, Jahangir detailed that 'one should not eat the flesh of animals, 'during three months of the year he ate meat, and for the remaining nine contented him with Sufi food, and was no way pleased with the slaughter of animals. On many days and in many months this was forbidden to the people. The days and months on which he did not eat flesh are detailed in the A*kbarnama*.'[29] Badaoni informs that, 'On the 24th of the month Jamada-l-awwal of the year 999 the assembly of the New Year was arranged as in former years. This was the beginning of the thirty sixth years from the accession. And among the different edicts, which were fixed in this year, is the forbidding the flesh of cows and buffaloes and sheep and horses and camels….And

[26] *Ain-i Akbari*, trans. Jarrett, *op.cit*., vol. III , p. 447.
[27] Khan, Iqtidar Alam, *Exploring Medieval India Sixteenth to Eighteenth Centuries: op. cit*., p. 361.
[28] *Ain-i Akbari*, trans. Blochmann, *op.cit*., vol. I, pp. 64-65, Moosvi, Shireen, Episodes in the life of Akbar, New Delhi: NBT, 2007, pp. 101-102.
[29] *Jahangir*, *Tuzuk-i-Jahangiri*, Eng. translation by A. Rogers & ed. by H. Beveridge, Delhi: Low Price Publishers, [1909-14], 2006, vol. I, p. 45.

another was that if anyone should eat with a butcher they should cut off his hand, but if he belonged to the butcher's relatives, they should cut off only his little finger.'[30]

Akbar's ideas towards Islam, Aziz Ahmad interprets that 'for him[Akbar] true Islam meant tolerance and understanding an extension of the human rights and privileges reserved in earlier Indo-Muslim political philosophy for Muslim alone, to all non-Muslims, freedom of worship and construction of the houses of worship.'[31] Abul Fazl give reference in *Ain* in the fifth book about the sayings of Akbar, as he explains the relationship between God and the human heart as 'Hindu women fetch water from their rivers, tanks or wells and many of them bear several pitchers one above the other upon their heads and converse and chat freely with their companions, walking the while over any inequalities of ground. If the heart in like manner preserves the balance of its pitchers, no harm will befall them. Why should men be inferior to these in their relations with the Almighty?'[32]

Behind Akbar's personality the development of a taste for the *masanavi* of Maulana Jalalu'd Din Rumi and Diwan of Hafiz,[33] as well as he was attracted towards Hindu ascetics, yogis and *sanyasis* and the *qalandars* and *sufis*.[34] Influence of Mu'inu'd Din Chisti, the founder of the Chisti *silsila* in India, and then the shrine of the saint, annually or sometimes twice and thrice visited by Akbar for fifteen year to Ajmer, to implore the saint's spirit to bless him with further victories and sons, and to offer thanksgiving for his conquests and fulfillment of his vows.[35] As Akbar invented the *Pagosht* regulation, Abul Fazl informs that 'he made an excellent rule which protects the animal, guards the stores, teaches equity, reveals the excellent and stimulates the lazy man. Experienced people saw their wisdom increased, and such as inquired into this secret obtained their desires.'[36]

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[30] Abdul Qadir Badaoni, *Muntakhab-ut-Tawarikh*, Eng. translations by G. S. Ranking, W.H. Lowe & W.Haig, Delhi: Atlantic Publishers, [1898-1925], 1990,vol. II, pp. 315-331, 388.

[31] Ahmad, Aziz, *Studies in Islamic Culture*, p. 175 cited in Rizvi, S.A.A., *Religious and Intellectual History of the Muslims in Akbar's Reign with special reference to Abu'l Fazl* [*1556-1605*], New Delhi: Munshiram Manoharlal Publishers, 1975.

[32] *Ain-i Akbari*, trans. Jarret, vol.III, p. 424.

[33] *Muntakhab-ut-Tawarikh*, *op.cit*., vol. II, p. 30.

[34] *Akbarnama, op.cit.,* vol. I, p. 236.

[35] Rizvi, S.A.A., *Religious and Intellectual History, op.cit.,* p. 68.

[36] *Ain-i Akbari*, trans. Blochmann, *op.cit*., vol. I, p. 227.

Badaoni describes the conversation of Akbar and *Ulamas*, 'Beef was interdicted and to touch beef was considered defiling. The reason of this was that, from his youth, H.M. had been in company with Hindu libertines, and had thus learnt to look upon a cow—which in their opinion is one of the reasons why the world still exists—as something holy. Besides, the Emperor was subject to the influence of the numerous Hindu princesses of the Harem, who had gained so great an ascendancy over him as to make him forswear beef, garlic, onions, and the wearing of a beard, which things H.M. still avoids…'[37] In opinion to the Islam, pigs and dogs were no longer looked upon as unclean. A large number of these animals were kept in the harem, and in the vaults of the castle, and to inspect them daily was considered a religious exercise. .. it was believed that the dog had ten virtues, and that a man, if he possesses one of them, was a saint, and was also quoted as a proof. The flesh of a wild boar and the tiger was also permitted, because the courage which these two animals possess would be transferred to anyone who fed on such meat.'[38]

Jahangir too has recorded in his *Memoirs* that, 'In accordance with the regulation of my revered father, I ordered that each year from the 18th of Rabiu-l-awwal, which is my birthday, for a number of days corresponding to the years of my life, they should not slaughter animals (for food). Two days in each week were also forbidden, one of them Thursday, the day of my accession, and the other Sunday, the day of my father's birth. He held this day in great esteem on this account, and because it was the day which the Creation began. Therefore it was one of the days on which there was no killing in his dominions'.[39] Jahangir ordered that on Sundays and Thursdays no animals should be killed. He inform that he himself would not eat meat on Sundays, 'because of the respect my revered father had for that day in not being inclined to eat flesh on it, and in forbidding the killing of any animals for the reason that on the night of Sunday his own honoured birth had taken place. He used to say it was better on that day all animals should be free from the calamity of those of a butcherly disposition. Thursday is the day of my accession. On that day also I ordered that animals should

[37] Ibid.,p. 202.
[38] Ibid., p. 204, *Muntakhab-ut-Tawarikh*, *op.cit*., vol. p. 331.
[39] *Tuzuk-i-Jahangiri*, *op.cit*., vol. I, p. 9.

not be killed, so that whilst sporting I should not shoot an arrow or a gun at wild animals.'[40]

Tavernier also informs that the *banians* of Multan, 'have a special law which permits them on certain days to eat fowls.'[41] About habits and manners of Aurangzeb the writer of *Mir-at-i Alam*, Bakhtawar Khan writes, 'from the dawn of his understanding he was always refrained from prohibited meats and practices, and from his great holiness adopted nothing but that which is pure and lawful.'[42] Bernier, Manucci and Thevenot recorded that 'when Brahmans requested Jahangir to ban on the slaughter of animals, on account of the scarcity of cattle' and offered money to Aurangzeb, 'a considerable sum of money to ensure his compliance. They urged that the neglected and ruinous condition of many tracts of country during the last fifty or sixty years was attributable to the paucity and dearness of oxen. Perhaps the first legislators in the Indies hoped that the interdiction of animal food would produce a beneficial effect upon the character of the people, and they might be brought to exercise less cruelty toward one another when required by a positive precept to treat the brute creation with humanity.' [43]

In contrast animal were used by the Mughals for amusement[44] purposes. There were many incidents when state organized these events, and prized the winner- as elephant, camel, deer, buffalos fights were recorded by many chronicles, even the birds fighting was also in trend such as cock, falcon. The emperors had their pet and tamed animals; they kept under keen maintenances.

Jahangir by virtue of his observations, investigations and experiments emerges to be an acknowledged naturalist ever sat on a throne.[45] Some characteristics were common

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[40] Ibid., p.185

[41] Tavernier, Jean Baptiste*, Travels in India,* Eng translation by V. Ball, Delhi: Low price publications, 2007, vol. II, p. 73.

[42] Elliot,H.M. and J.Dowson, *The History of India as told by its own Historians, Mir-at-I Alam by Bakhtawar Khan,* New Delhi: Low Price Publication, vol. VII, [1867-77], 2014, p. 157.

[43] Francois Bernier, Travels in the Mogul Empire AD 1656-1668, translated by Archibald Constable, second edition revised by Vincent A. Smith, Atlantic publishers, New Delhi, 1990, pp.326-327, *Niccolao Manucci , Mogul India*
(1653-1708), Eng. translation by William Irvine, Delhi: Low price publications,[1907-08], 2010, vol. I, pp.151-52 Thevenot, Surenderanath Sen,(ed.), *Indian Travels of Thevenot and Careri*, Delhi: National Achieves of India, 1949, p. 23.

[44] *Ain-i Akbari*, trans. Blochmann, *op.cit*., vol. I, pp. 228-232.

[45] Koch, Ebba, ' Jahangir as Francis Bacon's Ideal of the King as an Observer and Investigator of Natue', *Journal of the Royal Asiatic Society*, CUP,Vol.19, part. 3, July 2009, p.294.

to both father and the son--- the love of hunting and other sports, the painstaking administration of justice.[46] 'His interest in zoology emanated from a pervasive aesthetic bent of mind. Often enough his narratives are characterized by an overtone of admiration for the beauty he found in his subject. Nor does he hesitate to express his feeling of repulsion for an ugly looking animal.'[47] In the period of Jahangir the talented artists of the Imperial workshops painted a wide range of subjects under his directions. Studies of animal, flowers and other natural motifs were painted on account of their intrinsic interest of the patron and his immediate circle.[48] Hunting was his passion, and he himself gave account the number and types of various beasts and animals, which were killed by him. In the tradition where hunting was perhaps the most consistent passion of Mughal kings, many miniatures recorded Jahagir's passion for hunting and painting. Europeans present at the court in the countryside often witnessed him and attested to Jahangir's addiction to hunting and to the obessiveness with which he pursued his kills. Although hunting was Jahangir's passion, but he left hunting when his grandson Shuja fell ill, he took vow, at Allahabad that at the age of fifty he would give up shooting with guns and bullets and would injure no living beings with his own hand. Jahangir describes about the vow of Akbar at the time of his birth, 'as that day was a Friday, for the purpose of my safety he made a vow that during his life he would not hunt with cheetahs on a Friday. Till the end of his life he remained firm in this determination and I also in obedience to him until now have never hunted with cheetahs on a Friday.'[49] Jahangir reiterated the vow later that year on the occasion of Prince Shuja, his grandson's illness promising in return for the life of Shuja the gift of the lives of many animals.[50]Jahangir was at last ready to activate the vow earnest, stating clearly that it was only the renunciation of shooting and all injury too creature but not of hunting per se (that is, not of the chase or capture) that was at the centre of his vow. For the next few years, Jahangir adhered more or less

[46] Thomas Roe,[1926],*The Embassy of Sir Thomas Roe [1615-19] as narrated in his Journal* & *Correspondence*, W. Foster, Delhi: Munshiram Manoharlal Publications, 1990. p.xxxi. Husaini, Khwaza Kamgar, *Ma'asir-i-Jahangiri,* edited by Azr Alavi, Delhi: Asia Publishing House Pvt Ltd, 1978, p. 22.

[47] Alvi. M.A., A. Rahmam, Jahangir –the naturalist, New Delhi : National Institute of Sciences of India, 1968, p. 5.

[48] Richards, J.F., *The Mughal Empire*, New Delhi: Cambridge University Press,[1993] 2007, p. 101.

[49] *Tuzuk-i-Jahangiri*, *op.cit*., vol. II, p. 46.

[50] Ibid., p. 45.

consistently to the spirit of the 1618 vow for not to hunt the living creatures. But in 1622 giving in to his unrestrainable addiction to hunting, he took up the gun again.[51]

Shaikh Ahmad Lahori, who was, in the service of Jahangir from his prince -hood, adviced all his followers, 'to follow the rule of universal peace with regard to religion; and not to kill any living creature with own hand. The only exceptions are in battle and the chase.'[52] Pelsaert comments about his consumption of excessively strong drink and opium.[53] As many other historians criticized Jahangir as in *Padshahnama* by Muhammad Amin Qazwini, court historian of Shah Jahan, writes, that though , 'Jahangir took interest in justice and was kind to people, he did not pay much attention to the business and administration of the state. He was inclined more towards hunting and pleasures of life.'[54]

Nonetheless Jahangir's personal observation is very fascinating, to understand his zoological knowledge. As he hunted many times, he recorded every instance, with the detail comments, and if anything he did not like then he left the open question to the reader to develop that time condition related environment. Sometimes his experiments were as unique as he ordered to inspect the stomach of the animals which he killed what the food of the animals is. If by chance I see anything to which I have a dislike I forbear from eating the flesh.'[55]About the white colour birds and albino animals Jahangir writes, 'Of the albino animals that I have seen there are falcons, sparrow- hawks, hawks (s*hikara*) that they call *bigu* in the Persian language, sparrows, crows, partridges, florican, *podna*,(*quail*) and peacocks. Many hawks in aviaries are albinos. I have also seen white flying mice (flying squirrels) and some albinos among the black antelope, which is a species found only in Hindustan. Among the chikara (*gazelle*), which they call *safida* in Persia, I have frequently seen albinos.'[56]

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[51] Ibid., pp. 104, 105, 109, 110, 125, 181-82, 229, 236,

[52] Ibid., p. 61.

[53] Pelsaert, Francisco*, Jahangir's India*, eng. translation by W H Moreland and P Geyl, Delhi: Low Price Publications, [1925], 2011. p.34-35

[54] Minhaj, Mohammad Zafar, 'Padshahnama: Some Reflections of Shahjahan's Reign', *International Journal Humanities & Religion*, 2(6): 2013, pp.134-136.

[55]*Tuzuk-i-Jahangiri*, *op.cit*., vol. II,pp. 219-220.

[56] Ibid.,vol. I, p. 140.

Jahangir, comments about Babur and his *Memoirs,* that Babur informed about the appearance and shapes of several animals, he had never ordered the painters to make pictures of them.[57] He often compares himself with Babur. Jahangir's knowledge was interesting when he tried to pair *markhur* goats with barbery goats, he comments, 'As I had not a female in my establishment to pair with them, it occurred to me that if I could pair them with barbery goats after six months had elapsed each of the latter had a young one at Fathpur, there were four females and three males, very pleasing in appearances, of good shape and good colour. It is notorious that painters cannot draw properly the motions of a kid. I am much delighted with them, and pay attention to bringing together markhur males and well-bred she-goats. I desire to have many young ones from them, and that they may become well known among men. .. Perhaps their flesh would be very pleasant to the taste.'[58] Jahangir used to do it for common people, to improve the flesh quality or breed. About some uncommon animals, near Kabul, he writes, 'At this place they brought to show me a piebald animal like the flying (jumping) mouse, which in the Hindi tongue they call *galahri* (squirrel), and said that mice would not frequent any house in which this animal was. On this account they call this animal the master of mice. As I never seen one before, I ordered my painters to draw a likeness of it. It is larger than a mongoose. On the whole it is very like a civet cat.'[59] He informs about *rang (*a kind of sheep), near Kabul, 'I had never seen a *rang*. It is like a mountain goat, and there is a difference only in its horns. The horns of the *rang* are bent, and those of the goat are straight and convoluted.'[60] Jahangir mentions tiger-bull fighting in the year 1609 and comments, 'they brought a tiger from my private menagerie to fight with a bull. Many people gathered together to see the show, and a band of Jogis (religious mendicants) with them. One of the Jogis was naked, and the tiger, by way of sport, and not with the idea of rage, turned towards him. It threw him on the ground and began to behave as it would to its own female. As no such thing had ever been seen before and was exceedingly strange, this has been recorded.' [61] His observation was so keen once he

[57] Ibid., p. 215.
[58] Ibid., vol. II, pp. 88-89.
[59] Ibid., p. 105.
[60] Ibid., p. 109.
[61] Ibid, vol. I, p. 157. The story is also told in the *Iqbal-nama*, p. 37, where it is said that the tiger was one brought by a calendar as a present. It had the name of La'l Khan and was very tame. It is added that the tiger did
no injury to the jogi with his claws or teeth.

narrates about a large spider. He comments that, 'I saw near Ali Masjid and Gharib – khana a large spider of one and a half *gaz* in length and half strangled it. I delayed a minute to look on at this, and after a moment it died. (the snake).'[62]He also gave reference of a mummy near Kabul and enquired the actually status of that body.[63] He also informs about strange animal brought from Ceylon called *deonak* (devang). 'Its face was exactly like a large bet, and the whole shape was like that of monkey, but it had no tail. Its movements were like those of the black tail less monkey which they call *ban-maunsh* (jungle man) in Hindi language. Its body was like that of a young monkey two or three months old. It appeared that the animal would never grow larger. Its food is milk and it also eats plantains. As the creature appeared very strange, I ordered the artists to take a likeness of it in various kinds of movement. It looked very ugly.'[64] Jahangir writes about fishes and catching with curiosity, 'I have a great liking for fish, and all kinds of good fish are brought for me' Jahangir informs when he was near Ghakkar, he found the net for fishes named as '*bhanwar jal.'* He further mentions that, 'I threw it with my own hand and caught twelve fish, and putting pearls into their noses, let them loose in the water.'[65]

Many Mughal miniatures show the hunting episodes and involvement of Shah Jahan in hunting operations. But usually his interest was in building architecture and garden-planning. Ebba Koch comments, 'even when confined to the miniature format, painting's status was always more controversial than that of architecture and the applied arts, because of the theological injunction against the depiction of human and animal life.'[66]

As Aurangzeb not much involved in hunting and other amusement, his love towards elephant was famous. Jadunath Sarkar comments, 'the ruler was free from vice, stupidity or sloth. His intellectual keenness was proverbial and at the same time he took to business of governing with all the ardour which men usually display in the pursuit of pleasure.'[67] The period of Aurangzeb mostly the era of public disturbance,

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[62] Ibid., p. 117.
[63] Ibid.
[64] Ibid.,p. 143.
[65] Ibid. p. 99.
[66] Koch, Ebba, The Hierarchical Principles of Shah –Jahani Paintings, Meenakshi Khanna, (ed),*Cultural History of Medieval India*, New Delhi: Social Science Press,2007, p. 205.
[67] Sarkar, Jadunath, *A Short History of Aurangzeb*, New Delhi: Orient Blackswan , 2012 [2009], p.2.

as he spent his leisure hours in hunting 'for legal precedents in Arabic works on Jurisprudence'[68]

Even in the offerings Mughals emperors were fond of receiving different types of animals and many other rarities. Many European travellers or ambassadors present them rare animals. However hunting was apart from for amusement purposes, sometimes it was done for requirement of food, sometimes for the welfare of people to save them from the menace of the wild beasts. But hunting was connected with the royal power, as we can see sometimes they caught animals with in large herds for their captivity, but some species faced a lot of repent as cheetah and elephants had great value. But in the nineteenth century, by the gun-wielding British *shikaris* the most interesting feline species is now well and truly extinct in India.[69]

Many incidents and order for charity and alms are recorded by Mughal chronicles. Emperors ordered for the welfare of their subject in different effected *suba* or zones. In the sixth year Jahangir ordered, 'in the large cities of my dominions, like Ahmadabad, Allahabad, Lahore, Delhi, Agra, etc., they should arrange *bulghur-khanas* (places for the distribution of cooked food) for thepoor; thirty *mahals* (districts) had been ordered. Six had already been established, and twenty-four other districts were now ordered.'[70] During the reign of Shah Jahan Inayat Khan mentions, 'No rain had fallen about Balaghat, and more especially at Daulatabad, during the past year (1630).

Sometimes the loss of crops during movements through fields occurred and peasants had to bear the burst. In such situations the State tried to give some relief in the form of tax-relief or by providing additional funds. Mughal emperor from time to time issued order that care should be taken not to incur loss of crops during army movement. 'Near Agra when Jahangir involved in hunting he again ordered that the grain and cultivation should not be trodden down by his men.'[71] Jahangir gave one thousands rupees to Mir Ali Akbar, as the Rabi *fasl* (Spring season) had arrived, for fear any damage should happen to the cultivation of the *ryots* from the passage of the army, and appointed certain men to see what damage had been done to the crops from

[68] Sarkar, Jadunath, *Studies in Mughal India*, Calcutta: Sarkar & Sons, 1919, p. 62.
[69] Habib, Irfan, Man and Environment, New Delhi: Tulika Books, 2010, p. 98; See chapter four.
[70] *Tuzuk-i-Jahangiri*, *op.cit*., vol. I, p. 204.
[71] *Tuzuk-i-Jahangiri*, *op.cit*., vol. I, p.182.

stage to stage and pay compensation to the ryots.[72] In 1657, Inayat Khan describes, 'in the course of its march to that place, [Faizabad] the imperial camp had traveled along both banks of the river Jumna, and the neighboring crops had been very much trampled down in spite of every vigilance and precaution. Accordingly, the monarch of boundless munificence bestowed 30,000 rupees out of his bountiful exchequer on the agriculturalists, as a compensation for the loss they had sustained.'[73]

The Mughal emperors have shown deep interest and amazed to see the water bodies and its multiple uses. Babur amazingly remarks about the hills and mountains that they are the makers of several rivers in Hindustan. Irrigation facilities were present in India since ancient times and the Mughal rulers paid proper heed towards water bodies. Irrigation was done both by natural and artificial means. Important aspect of Indian agriculture was artificial means of irrigation to supplement the natural bounty of the monsoons. The principal means employed for this purposes was to construct wells, tanks and canals. Babur observes the crops in India were all rain-grown, and justified that as the population of Hindustanis is unlimited so it is hard to make a tank or dig well. Thus their dependency on rain is justified by Babur. Akbar made a sincere effort to dig the canals. He ordered that the canal should be deep or wide that throughout the year, it might supply the water. The wells are the most common resource of water storage in India, state appreciating the peculiar environmental conditions extended financial and material support for the construction and maintenance of water appropriation mechanisms. The ruling elite extended support for the construction of wells to encourage the habitation, construction of wells was promoted in the regions with relatively high water-level.

Thus Mughal state, although apparently guided by the 'wishes' of 'emperors', but it was always in the interest of public and environmental perspectives. Nonetheless Mughals emperors themselves were great nature lover and naturalists. Their love towards gardens, flora and fauna; then inquisitive mind to know the mysteries and rarities of the nature led them to care the 'animals' kingdom and preserve the environment. Not only the Mughal emperors but also nobles indulged in the formation and creation of beautiful gardens. Keen interest was shown by the Mughals to develop a strong bondage between man and nature. These gardens were

[72] Ibid.,p. 163.
[73] *Shah Jahan Nama, op.cit.,* p. 537.

not only for the use of the royal families but open for the public use also. The Mughal policies thus were not so much destructive. Several instances witnessed their sensitivity and awareness to make ecological balance. If on one side there are instances of hunting, on the other side, we find several evidences regarding their sensibility as animal preservers. Similarly their awareness towards water management in gardens and innovations in other water bodies such as canals, wells, reservoirs were remarkable.

CHAPTER - 1

INTRODUCTION: NATURE AND LANDSCAPE

Environment with the motive 'Go Green' is the burning question for all human beings and to save the natural resources for the coming generation should be the biggest effort for all human kind. We are in the 21st century and the increasing population using the present natural resources, global warming and the depletion of fossil fuels pose the dual crisis for the sustainability. In the present age the ecological crisis is a challenge for the whole human race. The balance of the environment and the resources are disturbing, it's all because of human interference in the natural world. We all know that the creatures have same rights on the earth, we humans are superior, so the result is that some races of beasts have lost their existence. Environmental conservation has been the subject of concern not only today but through the ages.

The Environment is as much a natural phenomenon as a creation of perception. The plurality of perception towards environment makes our task little difficult. In the recent few decades several studies have been done on the environmental issues. Environment encompasses all the living things (other than humans) and the physical surroundings which we often called nature; while Ecology is a science that is concerned with all the relations of animals and plants to one another and to the outer world. Ecology, in contrast, placed the human species within web of life, dependent on cycles of food, water, minerals, air and on constant interactions with other animals and plants. The environmental problems have received global attention during the last 40 years of the twentieth century. One valuable contribution of environmental history has been turning the attention of historians to topical environmental issues that produce global changes, such as global warming, altering weather patterns, atmospheric pollution and damage to the ozone layer, the depletion of natural resources including forests and fossil fuels, and dangers of radiation spread by nuclear weapons testing the accidents at nuclear power facilities, worldwide deforestation, extinction of species and other threats to biodiversity, waste disposal and other problems of the urban environment, pollution of rivers and oceans, the disappearance of wilderness and the loss of amenities such as natural beauty and

access of recreation, and agents intended to impact the resources and environments of antagonists.[1]

The Indian subcontinent offers a unique opportunity to researchers to examine to the human-nature interactions in different ecological niche, shores, mountains and ranges, deserts. The familiar divisions of India are three major geomorphologic components - the ancient block of Peninsula India, the Himalayas and their associated young fold-mountains east and west, and between these two the Indo-Gangetic Plains. Peninsula is dominated by an open senile topography, witness to vast periods of geological quiescence, while the Himalayas display the most youthful and highly differentiated relief on the face of the Earth, and the Indo-Gangetic Plains present a monotonous a gradational surface of a great extent.[2] More specific, in India it extends from the very dry tracts of Sind and Rajasthan, branching off in eastern and southern directions. Going eastward, while embracing the large medieval capitals of Lahore, Delhi and Agra, it follows the courses of the Yamuna and Ganges rivers and, subsequently, narrows down along the southern banks of the Ganges until it reaches, at the head of the Ganges delta, the fertile and more humid paddy tracts of eastern Bengal. Going southward, it stretches from the extremely arid Thar Desert across the Aravalli Mountains into Malwa.[3] In India there is different type of weather and throughout the year seasons also different winter, autumn, summer and Monsoon. The climate role is very important to understand the real ecology and environment of anywhere.

India is a land of rich diversity. A close examination of the Persian sources of the medieval reveals the region of Ganga-Yamuna *doab* then had a different landscape. During Ala ud din's reign (1296-1316 C.E.) the region between the Delhi and Badaun was densely forested unlike the vast expanse of the agriculture spanning the area today with only sparsely wooded areas in between. Ala ud din had given orders for clearing the forest to make the passage safe for the merchants in the particular and the travelers in general. However, it seems the vanishing act suffered

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[1] Hughes, J. Donald, *What is Environmental History?*, UK: Polity press, 2006, pp. 2-3.

[2] Spate, O.H.K., & Learmonth, A.T.A, *India and Pakistan: Land, people and economy*, New Delhi: Methuen and Company Ltd, 1967, p. 14.

[3] Gommans, Jos, *Mughal warefare Indian Frontiers and High Roads to Empire, 1500-1700,* London: Routledge
Publications, 2002, p. 10.

by the forest here, began in the thirteenth century. Landscape was visualized not only in terms of the kind of agriculture it could sustain, but also in term of the animal the region could harbour. Historical works of ancient, medieval and even British period carried sufficient references to suggest that certain landscapes were defined in terms of the wild animals found there. The moment we think about the Mughal Empire, its great territorial vastness comes to our mind, the sources and chronicles; Persian as well as European Travelogue sources are the basic platform behind the information of present study. These documents can easily cross check with each other to find the right directions. As we know that16th to 18th centuries are the witness of the glorious empire. The Mughal Empire was one of the largest and centralized states in the pre-modern world history. The Empire of the Great Mughal which is particularly called *Mogulistan*, as Thevenot a French traveller, who came in India in 1666 comments, 'is the largest and most powerful Kingdom of the Indies'.[4] The landscape experienced a different kind of change with the beginning of the colonial period. India's biological diversity was scientifically documented by the British. But it is also true that the policies of the colonial rulers greatly altered the character of the Indian landscape.

The present study is an effort to examine the perception of Mughal rulers, nobles and the people towards the nature and environment. The Mughal presided over an Empire of great diversity both ecological and cultural. India is also a land of rich diversity. The moment we think about the Mughal Empire, its great territorial vastness comes to our mind, the sources and chronicles; Persian as well as European Travelogue sources are the basic platform behind the information of present study. These documents can easily cross check with each other to find the right directions. These sources help us in developing ideas on different aspects of Mughal Empire on the concern of physical environment of India. About the boundaries, mountains ranges, climate, demographical information, towns of India and different natural aspects are the base of the present chapter. It will be an effort of the present study to find out the perception of the state, and people of Mughal India about the nature and its concern. Mughal emperors Babur's and Jahangir's *Memoirs* have great value to understand about the geographical scenario of that period, their observations and comments show their vast insight of knowledge.

[4] Thevenot, Surenderanath Sen,(ed.), *Indian Travels of Thevenot and Careri*, Delhi: National Achieves of India,1949, pp. 4-5.

Thevenot, a French traveller, who came in India in 1666 comments, 'In the usual division of the Indies, that Eastern part is called India beyond the Ganges, as the western is named India on the side of Ganges. This later part is best known, and called Indostan, having for its natural limits to the West and East, the Ganges and Indus, which have their sources in the mountains of Zagatay (chagtai mountains : near Transoxiana, Balkn, Badakshan and Kashgar) and Turquestan.'[5]

Sources help us in developing ideas on different aspects of Mughal concerns towards physical environment about the boundaries, mountains ranges, climate, demographical information, towns of India, and several other natural aspects. It will be an effort of the present study to find out the perception of the medieval state vis a vis people towards nature and then concerns. The centralized imperialistic policies influenced the cultural, political, social, religious and economic scenario of India. As the Mughal rulers have their own individual personality and different outlook their interests were different barring certain commonalities. Their personal interests, passions and astonishments particularly about the flora and fauna were noticed by the chroniclers of that period and is a subject of study for the modern scholars. The contours of Mughal state were based on Turko-Mongol and Indo-Persian systems that connected a very interesting phase in Indian history. Though India, specially the Northern India encountered many changes from the early eleventh century, from the early sixteenth century to early eighteenth century, was started a new phase which shows the Mughal royal insignia, kingship, power and absoluteness. Though, like a centralized state which was mainly focused on emperor's wish, there were many notable nobles/ *umra* / elites who played a significant role to take the empire on its zenith. Mughal emperors Babur's and Jahangir's *Memoirs* have great value to understand the geographical scenario of that period, their observations and comments show their vast insights of knowledge towards nature. All the Mughal Emperors, (Babur, Humayun, Akbar, Jahangir, Shahjahan, Aurangzeb) had different personalities and possessed different perception regarding nature, environment and ecology. Many modern historians have commented on Mughal emperor's personalities, personal likes etc. Ahmad Farooque comments that the Mughal emperors were great travellers. Whether campaigning, touring or hunting they moved

[5] Sen, Surenderanath,(ed.), *Indian Travels of Thevenot and Careri*, Delhi: published by National Achieves of India,1949, p. 4.

constantly, with great pomp or grandeur. They travelled with their harem, horses, elephants, camels and an entourage of thousands, making their progress a magnificent spectacle.[6] Plant and animal studies abundantly produced in Mughal ateliers have been read as examples of a growing concern with scientific observation, whereas the more 'stylized' renderings of landscapes and vegetation observable in pictorial idioms from regions beyond the Mughal Empire tend to be interpreted as expressions of tensions between Mughal 'influences' and the pull of a 'traditional' sensibility that eschews the urge to document reality.'[7]

Careri account throws light on the vastness of the Mughal Empire, 'all the country between the rivers Indus and Ganges. It borders on the east with the kingdom of Assam, on the West with Persia, and the Uzbek Tartars, on the South of it is the great Indian Ocean, and some lands held by the Portuguese and other petty Kings; and on the North it reaches to Mount Himalayan, and the country of Chagatai, on the North East of it is the kingdom of Bhutan, so that the length of it from Bengal to Qandahar is no less than six months journey, and its breadth from North to South at least four.'[8]

Babur amazed to see India, and comments, 'It was in the month of Sha'ban (910 AH.-Jan, 1505 AD.), the sun being in Aquarius, that we rode out of Kabul for Hindustan. We took the road by Badam –chashma and jagdalik and reached Adinapur in six marches. Till that time I had never seen a hot country or the Hindustan border-land. In Ningnahar another world came to view, - other grasses, other trees, other animals, other birds, and other manners and customs of clan and horde. We were amazed, and truly there was ground of amaze.'[9] Babur's description of India is picturesque. Geographically it takes a great sweep from Kabul and Kashmir to Bengal and shores of the Great Ocean. He also describes the principal hills and rivers of Northern India. He wonders that there are no canals, as there were in the countries of Central Asia which he had left behind. From north to east and west to south, Babur

[6] Farooque, Ahmad Khair Muhammad, *Roads and Communications in Mughal India*, New Delhi : Idarah-I Adabiyat- i- Delli, 1977, p. 8.

[7] Ali, Daud and Emma J. Flatt, *Garden and Landscape Practices in Pre-colonial India, Histories from the Deccan*, New Delhi: Routledge publication, 2012, Preface by Monica Juneja, pp. xx-xxi.

[8] Careri, *op.cit.,* p. 234.

[9] *Babur Nama* (Memoirs of Babur) Trans . by A.S.Beveridge , p. 229 . Abul Fazl also gives description of this when he gives account of Babur, see *Akbarnama,* Abul Fazl, translated by H. Beveridge, New Delhi: Atlantic Publishers, 1989, [1902], vol. I, p. 234.

informs us the physical geography of India, its river system, its mountains ranges and oceans. He wonders about the vastness of territories of India under the kings. Babur amazed to see India, and comments, he had never seen a hot country or the Hindustan border-land - other grasses, other trees, other animals, other birds, and other manners and customs of clan and horde. If we talk about the vastness of Mughal Empire which was flourished specially under emperor Akbar and the different regions were included by him in the territories of the Mughal Empire and till the period of Aurangzeb it reached its zenith. Almost the whole of India became the territory of Mughal Empire.

Thoughts on Environmental Studies

In the recent few decades lots of studies have been done on the environmental issues. Environment encompasses all the living things (other than human) and the physical surroundings which we often called nature while 'environmentalism is the advocacy of the preservation or improvement of the natural environment, especially the social and political movement to control environmental pollution. In the social science, the term refers to any theory that emphasizes the importance of environmental factors in the development of culture and society'[10]. However there is no universally accepted definition of environmental history. In general terms it is a history that tries to explain why our environment is like it is and how humanity has influenced its current condition, as well as commanding on the problems and opportunities of tomorrow.[11] Environmental history is a kind of history that seeks understanding of human beings as they have lived, worked and thought in relationship to the nature through the changes brought by time.[12]

Donald Worster, a leading American environmental historian commenting on the emergence of environmental history as distinct discipline and said that it is "part of a revisionist effort to make the discipline far more inclusive in its narratives than it has traditionally been."[13]

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[10] *Britannica,Ready Referance Encyclopedia*,2009, p. 255.

[11] Dovers, Stephan, *Australian environmental history : essays and cases*, Melbourne: Oxford University Press, 1994, p. 4.

[12] Macneill, J.R., 'Observation on Nature and Culture of the Environment History and Theory', *Environment History*, 42, Dec, 2003, pp.1-43.

[13] Worster, Donald, *Nature 's Economy: A History of Ecological Ideas*, UK: Cambridge University Press, 2011.

Environmental history is the historically documented part of the story of life and death, not of human individuals, but of societies and species, both others and our own, in terms of their relationships with the world about them. Its intellectual origins as a self-conscious of enquiry can probably be traced to the encounter of seventeenth and eighteenth century western Europeans.[14] Modern western history writing begins with political, legal and constitutional history; moves to economic history in the mid-nineteenth century; shifts to social and cultural history in the mid-twentieth century; and culminates in environmental history in the late twentieth century. Environmental history as a separate subject actually arose in North America and in Europe as an offshoot of the post-war wave of Environmentalism which first made it felt as mass movement in the 1960[s]. A systematic exploration in this direction started with the establishment of *Annals* School in France. It was here that the trend was initiated of investing history in the wider context of the prevailing environment conditions. Similarly, movement against the pollution provided space to environmental concerns in history writing in America. Brian Fay comments only in the past twenty-five or so historians have methodically pursued a systematic exploration of this interchange, in the process establishing a distinct branch of history: environmental history.[15]

J.F. Richards remarks that it is possible to tell this story simply as a tragedy that continues into the present day a familiar story to all who hold deep concerns about the state of the world's natural environment. Environmentalists and environmental historians viewed forest clearing as unfortunate and mourn the loss of wide expanses of forest cover. They showed deep concern towards the state of natural environment. They deplore the killing off a large carnivores and other wildlife. They see sedentary cultivation and grazing as fundamentally negative activities that invariably lead to have eroded soils and depauperate landscapes. For these environmentalists and historians, each case simply adds more proof of human callousness and greed and the dismaying ecological costs of these tendencies.[16]

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[14] Grove, R.H., *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1860,* New Delhi: Cambridge University Press, 1995, p. 17.

[15] Fay, Brian, ' Environmental History: Nature at work', *History and Theory, Theme Issue, Environment and History*, Vol. 42, No, 4, December 2003, p. 1

[16] Richards, J.F., *The Unending Frontier: An Environmental History of the Early Modern World,* London: University of California Press, 2001, pp.10-11.

Environmental history seeks understanding of human beings as they have lived, worked and thought in relationship to the nature through the changes brought by time. One valuable contribution of environmental history has to turn the attention of historians to topical environmental issues that produce global changes, such as global warming, altering weather patterns, atmospheric pollution and damage to the ozone layer, the depletion of natural resources including forests and facile fuels, the dangers of radiation spread by nuclear weapons testing and nuclear accidents, worldwide deforestation, extinction of species and other threats to biodiversity, pollution of rivers and oceans, the disappearances of wilderness and the environmental effects of warfare. Environmental historians have analyzed the influences of environmental factors on human societies, the changes in the natural environment caused by human actions and the effects of those changes in turn on human history, and the history of human thought about the world of nature and its workings. Geology, climate, plants and animal species of the area are critical examined by them. As Hughes says that 'Political expressions of environmental policy' are also very important thrust in environmental history.

The Greek historians Herodotus and Thucydides made references to environmental impact and developing theory of environmental influences on history. Plato was aware of many environmental problems, and including advice concerning them. Cicero, a Roman historian, praised the ability of human beings to transform nature, including agriculture, domestication of, animals, building, mining, forestry, and irrigation, by means of our hands we endeavor to create as it were a second world within the world of nature. Ibn Khaldun's, the great Islamic philosopher of history, works contain many references to the influences of the environment on human history. He has described various climatic zones of the earth. In India, the ancient times, the nature was worshipped by the Aryans, the Vedas have their own logics to conserve the nature, the god and goddess, and the methods of all the religions are based on the nature and the relation with the flora and fauna.

South Asia has its own environmental issues, the recent writings on environment concerns in India have tended to concentrate on the exploitative nature of British colonialism. India has developed a flourishing environmental history after 1980. Most of Indian writings especially that environmental history emphasis

thoroughly that it is the history of social struggle. The colonial policies were termed as the major cause of environmental degradation, especially forest wealth. The modern environmental historians have tried to study environmental history through varied angles. The systematic beginning of environmental history writing in India is associated with Ramchandra Guha[17] who opened up new areas in historical interpretation. Guha showed colonial rule represented an ecological watershed and the forest policies of the British developed a new phase in the study of environment.

Another pioneer work is Ramchandra Guha and Madhav Gadgil's *This Fissured Land* written in 1992. The authors suggested that in pre-colonial India, resource utilization was in harmony with nature and resource sharing among various strata of the society was very cordial. A romanticized image of human-environment interaction in the Indian context was thus portrayed by Guha and Gadgil.[18]

On the Pre-colonial period also we have some major works on the environmental concerns and issues. Francis Zimmerman[19] and Roger Jeffery[20] explored the suggestive ecological references from the ancient texts where animals are classified in two groups. Aloka Parasher Sen[21] has tried 'understand how, the state [Mauryan] perceived the forest dwellers and sought to subordinate and assimilate them. Geography and the perceived existence of the hostile tribes defined the frontiers of the empire and both had to be mastered for the expansion and integration of the state.[22] Ranabir Chakravarti has highlighted the role of hydraulic management in the process of settlement in ancient India.[23]

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[17] Guha,Ramchandra, *The Uniquiet Woods: Ecological Change and Peasant Resistance in Western Himalaya*, Delhi: Oxford University Press, 1989, [ed.], *Social Ecology*, New Delhi: Oxford University Press, 1994.

[18] Guha, Ramachandra& Madhav Gadgil, *This Fissured Land: An Ecological History of India*; New Delhi: Oxford University Press, 1992.

[19] Zimmerman, Francis, *The Jungle and the Aroma of Meats: Ecological Themes in Hindu Medicine*, Delhi: Motilal Banarsidass Publishers,1989.

[20] Jeffery, Roger (ed.) *The Social Construction of Indian Forests*, New Delhi: Manohar publications, 1998.

[21] Sen, Aloka Parasher, 'Of Tribes, hunters and barbarians: Forest dwellers in the Mauryan Period', *Studies in History*, 14, 2, 1998, pp. 173-91.

[22] Ray, R., *Ancient Settlements Patterns in Eastern India*, Calcutta: Pear Publishers, 1987, Murthy, M.L.K., 'Environment, Royal Policy and Social Formations in the Eastern Ghats, South India', *Indian History Congress,* Delhi, 1993, pp. 615-631, Bhattarchaya, D.K, Ecology and Social Formation in Ancient Period, Delhi, 1990.

[23] Chakravarti, Ranabir, 'The Creation and Expansion of Settlements and Management of Hydraulic Resources in Ancient India' *Nature and the Orient*, *op.cit*., pp.87-105.

Sumit Guha[24] has tried to bridge the gap between pre-British and British period. He also avoided the illusionary divide between forest and agriculture and notions of ethnicity in the wider context of environment. He pointed out that the large areas of Western Plateau outside the rain drenched Konkan coast were rendered treeless even during the heydays of the Marathas. In the process a thorny forest region was transformed into seasonal grass-land, the ecology was re-shaped in major ways.

Nandini Sinha[25] work shows that the forested and hill regions were integrated into wider imperial systems of South Asia. Moreover the panorama of economic activities in any sub-region was far more diverse than is often realized. There were no clear-cut stages or phases like hunter-gatherer, herder, settled cultivators, artisan and city dweller.

Ranajit Guha[26] has tried to analyzed history in terms of 'evolutionary' time scale where succession from primitive to tribal to chieftaincy to state has been a unidirectional and mutually contradictory process.

David Arnold and Ramchandra Guha's edited work[27] *Nature, Culture, Imperialism* presents fourteen scholars' studies of forest use, pastoralism, agricultural systems, water management, and even the regulation of urban pollution in pre-colonial and colonial India, ranged those elements of nature climate, topography, animal and insect life, vegetation and soils. Neeladri Bhattacharya's exposition of the declining fortunes of herdsmen under British rule in the Punjab. He describes several varieties of pastoralism which linked the varying grassland regions and market regions of the Punjab with its northwestern mountain hinterland as far as Afghanistan.

Richard Grove's Green Imperialism[28] about the Imperial policies and the concerns especially on its hitherto unexplained colonial and global aspects. Grove,

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[24] Guha, Sumit, *Environment and Ethnicity in India, 1200-1991*, UK: Cambridge University Press, 1999.
[25] Sinha, Nandini, *State Formations in Rajasthan: Mewar during the seventh-fifteenth centuries*, Delhi: Manohar Publishers, 2002.
[26] Guha, Ranajit, *History at the limit of World History*, New Delhi: Oxford University Press, 2003.
[27] Arnold ,David & Ramchandra Guha, *Nature, Culture, Imperialism: Essays on the Environmental History of South Asia*, Delhi: Oxford University Press, 1999.
[28] Grove, H. Richard, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1860*, USA: Cambridge University Press, 1995.

Damodaran and Sangwan's[29] edited work on environmental history deals the pre-colonial south Asia and modern period of history. The work of Deepak Kumar, Vinita Damodaran, and Rohan D'Souza[30] provides multi-layered analysis of the environmental impacts under the colonial rule. Presenting detailed case studies from across the Indian subcontinent, it discusses different aspects of Empire-environment encounters like imagination of environment; politics of natural resource management; irrigation and flood control projects; cultural negotiations; and forest and ecological changes.

However Ajay Skaria's[31] writings deserve serious consideration as there the notion of wild has been seen in terms of opposition to civilized. The relationship between tribal people and the state has also been located in terms of interaction between civilized and primitive. He highlights the general negligence of marginal areas and mourns the lack of importance given to traditional issues.

K. Sivaramakrishnan[32] tries to locate the issue within the context of the debate that ensued with the attempt to formulate Private Forest Bill between 1865 and 1878. Underplay of various social, economic and environmental concerns made the whole debate so complex that ultimately the bill could not be formatted. Ravi Rajan,[33]clearly pointed out internal divisions in colonial policy by examining the two crucial deliberations at the Empire Forestry Conference on colonial agro-ecological policy concerns, shifting cultivation and soil erosion during 1920-1950. Ajit Menon,[34] suggests that the process of colonization depends both on the state's ability to take over large areas of land and the ability of local communities to shape the state's initiatives to at least some extent. Archana Prasad,[35] believes that the debate over

[29] Grove, H. Richard, Vineeta Damodaran & Satpal Sangwan,[ed.], *Nature & The Orient*, Delhi: Oxford University Press, 1998.

[30] Kumar, Deepak, Vinita Damodaran, & Rohan D'Souza *The British Empire and the Natural World: Environmental Encounters in South Asia,* New Delhi: Oxford University Press, 2011.

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

[32] Sivaramakrishnan, K., 'Conservation and production in Private Forests: Bengal, 1864-1914, *Studies in History*, Vol. 14, No. 2 n.s., 1998, pp. 237-264.

[33] Rajan S. Ravi, 'Foresters and the Politics of colonial agro ecology: The case of shifting cultivation and soil erosion, 1920-1950', *Studies in History*, Vol. 14, No. 2, n.s, 1998, pp. 217-236.

[34] Menon, Ajit, 'Colonial Construction of 'Agrarian fields' and 'forests' in the Kolli Hills', *The Indian Economic and Social History Review*, 41, 3, 2004, pp. 315-337.

[35] Prasad, Archana, Against Ecological Romanticism Verrier Elwin and the Making of an Anti-Modern Tribal Identity, Delhi: 2003.

conservation of environment could be traced to the literary traditions of romanticism where nature in its pristine form was aspired. The environment was to conserve and protect it in its natural conditions.

Vasant Saberwal,[36] argues that there is growing recognition within the academic ecological community of the complexities of ecosystem functioning and the limits to our predictive and explanatory capabilities with regard to large scale ecological phenomenon. His explanation brings it out that the concerns for conservation evolved over a long period of time along with the growth in the scientific knowledge in support of its claims by the state.

Similarly Mahesh Rangarajan,[37] has also analysed how and why certain types of animals were directly targeted and consequently became extinct. He also examines pre-colonial systems of forest and management and the state control over forests and the emergence or development of conservations after the arrival of British. Apparently, the very simple process of agricultural expansion has resulted in the gradual erosion of space for big animals. The shrinkage of the hunting area forced the animals to move in the closer proximity of the humans resulting in violent encounters. He also emphasizes that previous rulers had rarely intervened in woods and pastures, mainly to assert monopolies over valuable animals like elephant. About Elephant importantly Thomas R. Trautmann and Raman Sukumar's [38] works are also very informative from the early phase to present. They give a whole structure of elephant use by different ages, habitation in the various zones and the present condition. Divyabhanusinh[39] situated animal kingdom in the wildness. He attempts to trace the history of Cheetah in India, its origin, spatial distribution, attitude towards the animal, gradual erosion of space for the big animal and finally the extinction of the specie. It is an important contribution that helps in a comprehension of complex relationships

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[36] Saberwal, Vasant, 'Science and the Desiccationst Discourse of the 20th Century,' in *Environment and History* 4, 3 1997, pp.309-43.

[37] Rangarajan, Mahesh, *Fencing the Forest, Conservation and Ecological Change in India's Central Provinces 1860- 1914*, New Delhi: Oxford University Press, 1996,India's *wildlife History : an introduction*, Delhi: Permanent Black, 2001, Vasant Kabir Saberwal and M Rangarajan,(ed.), *Battles over Nature, Science and the politics of conservation*, Permanent Black,Delhi,2003, Rangarajan, (ed.) *Environmental issues in India : A Reader*, New Delhi: Pearson Longman, 2007, Rangarajan and K. Sivaramakrishnan(ed.), *Shifting Ground, People, animals and mobility in India's Environmental history*, Delhi: Oxford University Press, 2014.

[38] Sukumar, Raman, *The Story of Asia's Elephant*, Mumbai: Marg Foundation, 2011.

[39] Divyabhanusinh, *The End of a Trail,* New Delhi: Oxford University Press,1999, *The Story of Asia's Lion*, Mark Publication,2005.

between fauna and the society, especially the explanation that the extinction of the animal was caused by the side effect of the larger historical process and a direct process of elimination of the species as it was for other 'big games'.

Thus in general studies have highlighted the problems with the British policies with regard to the forest management where monoculture has been a major issue and the exploitation of natural resources for distant elite who was least concerned with the social impact of such policies, a matter of great In other words, the nature of political intervention influences the nature of colonial discourse on ethnicity, environment and resource exploitation.

As we talk about the medieval India we discover a general dearth of scholars focusing on environment and on man-environment interaction[40] respectively located on the fringe of environmental history. Harbans Mukhia in his '*Was there Feudalism in Indian History*?'[41] explores influences of environmental factors on human settlement and social formations. Irfan Habib[42], the pioneer of Mughal study writing, he gave a new dimension to the new approaches of history writing. The latest work of Irfan Habib – *Man and Environment* in the series of *People's History of India,* in his section on Medieval India he has focused chiefly on the environmental issues like physical environment, riverine system, etc. He has also deliberated upon various fields of environmental concerns like famine, epidemic, population, agriculture, animal husbandry, forest and wild life. However, there is hardly anything on the state concerns, perceptions and attitudes towards environment. He deals with ecological history of India from pre-historic to colonial period to find the new ranges of ecological phenomenon which includes climate and human relations with flora and fauna. Mohammad Azhar Ansari[43] effort to bring all the medieval sources in a new vision with prime information about the Indian geographical aspect is a key work for the environmental knowledge of medieval India.

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[40] Raychaudhuri, Tapan & Irfan Habib, *Cambridge Economic History of India*: *c. 1200-c. 1750,*Vol. I, New Delhi: Cambridge University Press, 1982.

[41] Mukhia, Harbans, 'Was there Feudalism in Indian History?' *The Journal of Peasant Studies*, vol. 8, no. 3,1981, pp. 273-310.

[42] Habib, Irfan, *The Agrarian System of Mughal India 1556–1707*, New Delhi: Oxford University Press,[1963]1999, *An Atlas of the Mughal Empire: Political and Economic Maps With Detailed Notes*, Bibliography & Index, New Delhi: Oxford University Press, 1982, *Man and Environment*, New Delhi: Tulika Books, 2010.

[43] Ansari, Mohammad Azhar, *Geographical Glimpses of Medieval India*, 3 vols., Delhi: Idrah-I Adabiyat -I Delli, 2009.

David Moose[44] comments on the water policy of the village community in south India. His work helps to know the water distribution and examined the interplay of developmental politics, to explain the level and process of state intervention. The role of community based programmes to tackle contentious issues like management and allocation of 'common property resources' like water bodies, etc. have also been examined. H.C Verma,[45] throws light on the various sources of water like ground water and surface water, which were used for irrigation and other purposes. He defines about the water management for harvesting. Tripta Wahi[46] also examines utility of the well water and canal for irrigation in the medieval state, from the thirteenth to seventeenth century, sought to promote in Punjab.

Shireen Moosvi's[47] work *Man and Environment in Mughal Era*, is valuable study on the environmental aspects of the Mughal. Her study is focused on the nature and environmental contours in a different perspective to understand the Mughal period. Chetan Singh[48] contributes the relationship between environment and society in Western Himalaya and provides a contrasting case for the pre-colonial era in his study of the environmental impact of Mughal administration in north India. Similarly, Mayank Kumar[49] has also attempted to examine the interaction between environment and society in medieval Rajasthan.

Thus various specific themes and related ecological aspects concerned historians a lot, but on the Mughal Empire the concern shifted from political and economic to social, the perception towards nature and environment has been left untouched. The aim of the present study is to find out the perception of people, European travellers, nobles, emperors and the state towards nature and environment.

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[44] Moose, David, *The Rule of Water*: Statecraft, Ecology and Collective Action in South India, New Delhi: Oxford University Press, 2003.

[45] Verma, H.C., *Harvesting Water and Rationalization of agriculture in North Medieval India* (*Thirteenth- Sixteenth Centuries*), New Delhi: Anamika Publishers, 2001.

[46] Wahi,Tripta, ' Water Resouces and Agricultural Landscape: Pre-colonial Punjab' in Indu Banga ed. *Five Punjabi Centuries: Polity, Economy, Society and Culture, c. 1500-1990,* Delhi : Manohar, 1997.

[47] Moosvi, Shireen, *Man and Nature in Mughal Era*, Recording the Progress of Indian History: Symposia Papers of the Indian 1992-2010, (ed.) by Saiyid Zaheer Husain Jafri, New Delhi, 2012, pp. 27-54. 'Ecology, Population Distribution and Settlement Pattern in Mughal', *Man and Environment*, XIV, (I), 1989, pp. 109-116.,

[48] Singh,Chetan, *Natural Premises Ecology and Peasant life in the Western Himalayas 1800-1959*, Delhi: Oxford University Press,1998.

[49] Kumar, Mayank, *Monsoon Ecologies: Irrigation, Agricultural and Settlement Pattern in Rajasthan During the Pre-Colonial Period*, New Delhi: Manohar Publishers, 2013.

Medieval sources help us to understand different aspects of Indian geography, history and culture. Though none of the contemporary works specifically deal with environmental history as much, contemporary chronicle do touch upon various aspects related to medieval environment. Barani's *Tarikh-i-Firozshahi*[50] is of great value to understand the development and reforms of that time. The irrigation, agricultural land, cutting of the forests do find place in Barani's discussions. In the medieval period role of rivers as a mean of transport was very important. Thus rivers formed part of chief economic activities. Delhi Sultans played significant role in the expansion of irrigation works. In Barani's and Shams Siraj Afif's works, *Tarikh i-Firoz Shai*[51] detail of Firoz Shah Tuglaq's irrigation reforms are available which throw valuable light of how stream and rivers were exploited and made use of for irrigation projects by the state.

I have used all available translations. However my lack of knowledge of Persian led me to leave some sources which are not yet translated. Babur's (1526-30) memoirs *Tuzuk- i Baburi* (*Baburnama*[52] in English translation) is a remarkable encyclopedia on the environmental history. It contains information on Hindustan, its boundaries and a full description of its fruits, trees, birds, beasts, fishes with such minute observation as would make no contemptible figure in a modern work of natural history. Zain Khan's *Tabakat-i Babur*;[53] which is largely an abridged version of Babur's Memoires provides some interesting information on the theme. Gulbadan Begum's *Humayun-Nama*[54], Jauhar Aftabchi's[55] *Tezkereh al-Vakia,*and *Qanun-Humayuni* (also known as *Humayun Nama*) of Khwandamir[56] also are significant sources for Humayun's period.

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[50] Barani, Zia-ud-din, *Tarikh-i-Firuz Shahi,* Ishtiyaq Ahmad Zilli, Delhi: Primus Book, 2015, S. A. A. Rizvi, *Adi Turk Kalin Bharat; Tughlaq Kalin Bharat*, part I&II, Aligarh, 1956; Elliot H.M.& J. Dowson, *History Of India As Told By Its Own Historians,* vol. III, Calcutta, 1867-77, reprint, Allahabad, 1972.

[51] Shams Siraj Afif, *Tarikh i-Firoz Shai,* translation by S.A.A. Rizvi, *Tughlaq Kalin Bharat,* part I & II, Aligarh, 1956, Jauhri, R.C., *Medieval India in transition A first hand account*, New Delhi: Sandeep Prakashan, 2001.

[52] Zahiru'd Din Muhammad Babur,*Baburnama*, Eng. translation by A. S. Beveridge, Delhi: Low Price Publication, [1921], 2010.

[53] Shaikh Zain Khwafi, *Tabaqat-i Baburi*, Eng. translated by Sayed Hasan Askari,Delhi: Idarah-I Adabiyat-i Delli, 2009.

[54] *Gulbadan Begum*, *Humayun Nama* ,Eng. translation by A.S. Beveridge, Delhi : Low price Publications, [1902] [1867-73], 2006.

[55] *Jouhar, The Tezkereh Al Vakiat,or the private memories of the Mogul Emperor Humayun*, Eng. translated by Major Charles Stewat, Delhi: idarah-I Adabiyat-I Delli, 2009.

[56] Khwandamir, *Qanun-i –Humayuni*, Eng. translation by Baini Prashad, Calcutta, The Asiatic Society , [1940], 1996.

The work of Abul Fazl's[57] *Akbar Nama* and *Ain-i Akbari*[58] are so much important account about the Indian geography, climate, and economic details of every province. *Ain* is so much significant source and remains the base of economic study even for the British. *Ain-i Akbari* is the encyclopedia of the Mughal Empire and immense important to know the environmental and geographical periphery of Mughal India. Badaoni's[59] *Muntakhabu al- Tawarikh*, Nizam al-Din Ahmad's *Tabaqat-i Akbari*[60], Muhammad Arif Qandhari's *Tarikh-i-Akbari*[61] are also important sources of the period of Akbar. These sources are helpful for the comparative and to fill the chronological gaps of the Mughal period. Muhammad Qasim Hindu Shah Farishta[62], *History of the Rise of the Mahomedan power in India till the year A.D. 1612* gives regional history as well about the Mughal power.

Jahangir,(1605-27) son of Akbar, by himself was a very interesting person as his grandfather recorded his autobiography, Jahangir's *Tuzuk-I Jahangiri*[63] is a valuable account. Jahangir, like his great grandfather, was a great naturalist. His autobiography though primary is a historical document of his reign; nonetheless his botanical and zoological interests have great value. He gives a complete environmental outlook in his *Memoirs*. *Jahangir –The Naturalist*, an important monograph on Jahangir by M.A. Alvi and A. Rahman is very informative source to know Jahangir's broad spectrum as a naturalist.[64]

For Shahjahan's period Inayat Khan's *Shah Jahan Nama,*[65] Abdul Hamid Lahori's *Badshah,nama* and *Anwar-i Suhali,* for the period of Aurangzeb Ishwaradas

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[57] *Abul Fazl*, *Akbar Nama*, eng. translation by H.Beveridge, 3 vols., New Delhi: Atlantic Publishers, [1873-87], 1989.

[58] *Abul Fazl, Ain-i Akbari,* eng. translation by H.Blochmann, & H.S. Jarrett, revised by J.N.Sarkar,3 vols.,Delhi: Oriental Books Reprint Co.,[1949],1978.

[59] Abdul Qadir Badaoni*, Muntakhab-ut-Tawarikh*, Eng. translations by G. S. Ranking, W.H. Lowe & W.Haig, 3 vols., Delhi: Atlantic Publishers, [1898-1925], 1990.

[60] Nizamuddin Ahmad, *Tabaqat-i-Akbari* ,Eng. translation by B.De,3 vols, , [1913-36], Calcutta

[61] Muhammad Arif Qandhari, *Tarikh-i-Akbari* ,Eng. translation by Tasneem Ahmad, forwarded by Irfan Habib, Delhi: Pragati publications, 1993.

[62] Muhammad Qasim Hindu Shah Farishta, *History of the Rise of the Mahomedan power in India till the year A.D. 1612* , Eng. translated by John Briggs ,4 vols., New Delhi: Atlantic Publishers, 1989.

[63] *Jahangir*, *Tuzuk-i-Jahangiri*, Eng. translation by A. Rogers & ed. by H. Beveridge, 2 vols., Delhi: Low Price Publishers,[1909-14], 2006.

[64]Alvi ,M.A.& A. Rahman, *Jahangir –The Naturalist,* New Delhi: National Institute of Sciences of India,1968.

[65] Inayat, Khan,*The Shah Jahan Nama*, edited by W. E. Begley and Z.A. Desai, Delhi: Oxford University Press,1990.

Nagar's *Fatuhat-i- Alamgiri*[66] Saqi Must'ad Khan's, *Maasir-I- Alamgiri,*[67] Muhammad Kazim's *Alamgirnama,* Khafi Khan's *Muntakhab-ul Lubab*, Saiyid Ashraf Khan Husaini, *Raqim-i-Karaim (Episodes of Aurangzeb)*[68], Inayatullah Khan Kashmiri's *Kalimat-i –Taiyibat*[69](collection of Aurangzeb's orders), are useful historical texts. *Khulasatu-t Tawarikh* of Sujan Rai Bhandari, which J.N. Sarkar[70] has translated the with the topographic, statistics information, are valuable sources to construct medieval history of the medieval period. The series of Elliot & J. Dowson's titled as *The History of India as told by its own Historians*[71] is immense important as it clubbed all Persian sources of Muslim Period. Though nothing much is directly discussed on environments, they often throw light on emperor's hunting operations, their attitude towards animals, punishment, etc. These Persian sources give information about the holistic activities of the Mughal Empire. There are many aspects to judge the information of these sources about the nature and environment. Firstly the emperor's vision and views were very important.

India's natural resources attracted European merchants who were eager to gain trading rights or simply make their fortunes, as well as various Catholic orders hoping to gather souls into their flock. Thus, Europeans from a number of countries including Portugal, England, Netherland, and parts of modern Italy visited India during the sixteenth and seventeenth centuries; some of these travellers had actual contact with the Mughal court; while others, had to rely on the gossip and general observation of more common folk. Diaries, letters, and even journals were kept by many Europeans,

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[66] Ishwaradas,Nagar, *Fatuhat-i- Alamgiri*, translated and edited by Tasneem Ahmad, Delhi: Idarah-I Adabiyat-I Delli, [1978] reprinted 2009.

[67] Saqi Must'ad, Khan, *Maasir-I- Alamgiri: A History of the Emperor Aurangzib- 'Alamgir (reign 1658-1707 A.D.),* translated into English and annotated by Sir Jadu Nath Sarkar, Calcutta: The Asiatic Society, [1947], 1990.

[68] Saiyid Ashraf Khan Husaini, *Raqim-i-Karaim Episodes of Aurangzeb*, edited by S.M Azizuddin Husain, Delhi : Idarah-I Adabiyat-I Delli,2009.

[69] Inayatullah Khan, *Kashmiri, Kalimat-i –Taiyibat (collection of Aurangzeb's orders),*Edited by S.M. Azizuddin Husain, Delhi: Idarah-I Adabiyat-i Delli, 1982.

[70] Sujan Rai Bhandari & Rai Chaturman , *Khulasatu-t Tawarikh & Chahar Gulshan,translated by J. N. Sarkar, India of Aurangzib,* Calcutta: Sanyal & Co.1901.

[71] Elliot, H.M. and J. Dowson, *The History of India as told by its own Historians,* 8 vols., New Delhi: Low Price Publication, [1867-77], 2014.

some simply wishing to record their daily transactions and others hoping to make in the burgeoning body of travel literature that was quickly become popular in Europe. [72]

The description of India was made interesting by seventeenth-century European travellers. Although Akbar's empire was first described in detail by Jesuit missionaries in the 1580s, the Mughal theme effectively belongs to a number of well-educated travellers of the seventeenth century. Some worked for the English or Dutch East India companies, although the majority was largely independent observers, mostly French.[73] European traveller's *Commentary of Father Monseratte*[74], Fr. Pierre Du Jarric*'s Akbar and the Jesuits: An account of the Jesuit Missions to the court of Akbar,*[75] Francisco Pelsaert's *Jahangir's India*[76], Thomas Roe's *The Embassy of Sir Thomas Roe*[77] *[1615-19],* Francois Bernier[78], *Travels in the Mogul Empire AD 1656-1668,* Jean Baptiste Tavernier's[79], *Travels in India*, Niccolao Manucci[80]'s *Mogul India(1653-1708*), Peter Mundy's *Travel*[81], Dr. John Frayer[82],J. Ovington[83]'s *A voyage to Surat*, in the year 1689 and *The Travels of Pietro Della Valle in India,*[84] *and* Thevenot and Careri[85]

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[72] Asher, B. Catherine, Cynthia Talbot, *India Before Europe*, UK: Cambridge University Press, 2006, pp. 205-206.

[73] Rubies, Joun-Pau, *Travel and Ethnology in the Renaissance ,South India Through European Eyes, 1250-1625*, UK: Cambridge University Press, 2000, p. 1.

[74] Father A. Monserrate, *Commentary on his journey to the court of Akbar*, eng. translation by J.S. Hoyland, annotated by S. N. Banerjee, Cuttak: Mission Press, 1922.

[75] Fr. Pierre Du Jarric*, Akbar and the Jesuits: An account of the Jesuit Missions to the court of Akbar,* translated with introduction and notes by C H Payne, New Delhi : Tulsi Publications,1976.

[76] Pelsaert, Francisco*, Jahangir's India*, eng. translation by W H Moreland and P Geyl, Delhi: Low price publications, [1925], 2011.

[77] Thomas Roe,[1926]*,The Embassy of Sir Thomas Roe [1615-19] as narrated in his Journal* & *Correspondence*, W. Foster, Delhi: Munshiram Manoharlal Publications, 1990.

[78] Francois Bernier, Travels in the Mogul Empire AD 1656-1668, translated by Archibald Constable, second edition revised by Vincent A. Smith, Atlantic publishers, New Delhi, 1990.

[79] Tavernier, Jean Baptiste*, Travels in India,* 2 vols.*,* Eng translation by V. Ball, Delhi: Low price publications, 2007.

[80] *Manucci Niccolao*, *Mogul India (1653-1708*), 4 vols., eng. Translation by William Irvine, Delhi: Low price publications,[1907-08], 2010.

[81] Peter Mundy, *Travels in Asia, 1630-34,* (ed.), R.C. Temple, London: Hakluyt Society, 1914.

[82] John Fryer*, A New Account of East India and Persia Being Nine Years' Travels 1672-1681*, ed. by W. Crooke, London, I909-15.

[83] J. Ovington, A voyage to Surat in the year 1689, edited by H.G. Rawlinson, Oxford University Press,.

[84] *The Travels of Pietro Della Valle in India*, edited with a life of the author an introduction and notes by Edward Grey, 2 vols., New Delhi: Asian Educational Services, 1991.

[85] *Indian Travels of Thevenot and Careri,* ed. by Surendranath Sen , Asian Educational Services, Delhi: Published by The National Archives of India, 1949.

Chapterisation

The present study is basically an effort to find some perceptions of the Mughal State towards the nature, environment and ecology from 1526 to 1720. As the area under jurisdiction of Mughals is too vast for a deep study therefore certain themes are selected. As water bodies, animal world, horticulture and garden, health and environmental aspects are trying to cover. The focus of this study is limited to Northern western India and Central India including the suba of Bengal. Due to different geographic and environmental conditions the area under Rajputana has been left.

The Chapterization of the present work is divided in the five parts; the first chapter is an introductory part where nature and landscapes are discussed that give the idea of area of state, land and the natural sites which reflect the vastness of the empire. It also carries the historographical structure of the work so far done on environmental history as such.

The second chapter is on the theme of water, which is the base of life on the earth. An attempt is made to find out the role of water in the Mughal Empire. As we know about the geographical diversity of the Indian sub-continents; the perception of Mughal rulers towards water, particularly rain water harvesting; the importance of reservoirs, irrigation methods, canal system, river water use and transportation methods with the state intervention is highlighted. The perception towards water and its religious value among the masses in different modes is also being discussed.

In the third chapter forests gardens and horticulture are discussed. Mughals emperors were very keen to find and develops new breeds of fruits and trees. The horticulture technology was innovatively developed during this period. Babur, who mentions about various fruits of Central Asia and compares all these with Indian fruits, and plants. Mughal gardens and their role to maintain the environmental balance is also analysed. The foundation of the gardens became a trend in this period. Mughal rulers themselves established various gardens in the different part of the empire. The focus of this chapter is to see how the rulers, people and noble's awareness pertaining fruits, plants and their uses.

In the fourth chapter the focus is on the animal world of the Mughal Empire. There were different types of animals in the royal stables, the methods and different technologies were used in the Mughal period to improve the breeds of animals. Elephants, horses, camels were important for state use, particularly for military purposes. Hunting was also very much practical. There were number of beasts which were hunted by the Mughal rulers and the nobles. The taming of different animals with various techniques and the ateliers maintenance also discussed in the chapter.

The theme of the fifth chapter is on health and environment. The role of environment is very much important to increase any type of disease, the unhealthy environment create such an unhealthy atmosphere which affect the human being and all the creatures. In the Mughal period we can find the sources which inform us, the travellers' accounts are very important for the study of health and nature.

In conclusion perception of Mughal rulers have been defined all over. Their overview about environment from available sources is culled out in this chapter. How appropriate, is there any sensitivity in Mughals regarding environment is tried to find.

CHAPTER - 2

STATE POWER AND WATER RESOURCES

Water is an important component of ecology and the source of life. The water landscapes and river systems are very important for flora and fauna, settlement patterns, economic development as well as formed important component of cultural and social life. The circulation of water, commonly called the hydrological cycle, affects all the societies. It is increasingly realized that the movements of water in the earth's crust, on its surface and in the air, are exceedingly complex, and that they vary greatly both in the length of the path travelled and in the time it takes. That is why the amount of rain and snowfall, their seasonal occurrence, duration and intra-annual variation, and the flow and nature of water bodies of all kinds in the landscape vary and affected societies in highly different manners.[1] The water is always on move, one area to another and human society try to control it. Human water relations, ideas about water and water control, its religious/spiritual significance, including notions about purity, and other conceptualizations of water that have developed over time in different human/ water contests.'[2] Rains influence specific areas and its development, sometimes exceeding rains revert in floods, river capture, stream migration, dyke collapse, etc. while its scarcity result in total ruin. Agricultural settlements and irrigation patterns highly depend on the availability of the water. Water is such an issue which continued to remain very sensitive from the early period of civilizations, for religious, economic and social life of the humans. It is also given importance symbolically as purifying substance; as we see historically it has been part of rituals associated with human life, birth, marriage, and death, beyond certain level it symbolizes purity and devotion. Drinking water was obtained from rivers, springs and artificial wells, for agriculture irrigation is required, and for navigation the role of rivers was equally very significant.

The worship of water in different forms from the early period to till now is a symbol of sensitivity and conservation. Increased population led to the new

[1] Tvedt, Terje, 'Water Systems environmental History and the deconstruction of Nature', *Environment and History*, UK: The White Horse Press, 16, 2010, p. 147.
[2] Ibid, p. 148.

developments of tanks, dams, canals to produce large scale agriculture to subsist the rapid growth of human population. In the sacred books of Hindus emphasis is rampant on water and its importance. In *Manu Smritis* (*The Laws of Manu* c. 200-100 BCE), Manu provides indication of water law of the time: 'The breaker of a dam or a pool, let him punish by long immersion under water, or by keen corporal suffering; or the offender shall repair it, but must pay the highest, he who shall take away the water or an ancient pool, must be condemned to pay'[3] Those who could were obligated to develop water works for the benefit of others, Kings should protect public waters and collects fees for crossing waters. The evolution of Indian water law reveals how intricately water law is linked not only with the social, religious, and economic developments, but also with the rise and fall of the rules. It is unlikely that either ongoing water law reform or the interlinking of rivers will provide comprehensive solutions of existing problems.[4]

There are many studies related to distribution of the water. The increasing population and water supply, lack or rather deflation of natural resources and many more of political issues also affects the water management system in present India. Lots of conflicts between various states are in the limelight, as water is the necessity for all and the urbanization and geographical changes in the rivers or streams also going to create more problems for upcoming generation. Presently, the drinking water is also a big problem. Due to changes in climatic conditions the resources also turned in different mode, lacking in rainfall, scarcity often creates an environmental hizard.

David Mosse comments in his famous work *The Rule of Water* that the 'relationship between water and society is as complex a historical, sociological and regional problem as any that can imagined. It has provided the centerpiece for social theories of civilization and state, community and collective action, and culture and common property.'[5] Guha and Gadgil put forth relationship between the climate change and irrigation by tanks. They remark, 'it could come about through an improvement in climate, or by the introduction of new technologies, such as irrigation

[3] Jones , William, *Institutes of Hindu Law or, The Ordinances of Menu*, Reprinted for J. Sewel, Cornhill & J. Debrett London: Piccadilly, 1796, p. 282.

[4] Cullet, Phillippe, Joyeeta Gupta, ' Evolution of water law and policy in India,' Joseph W. Dellapenna & Joyeeta Gupta(ed.), *The Evolution of the Law and Politics of Water*, Dordrecht: Springer Academic Publishers, 2009, International Environmental Law Research Centre, pp. 159-174.

[5] Mosse, David, *The Rule of Water Statecraft, Ecology and collective action in South India*, 2003, New Delhi: Oxford University Press, p. 1.

tanks, which would lead to a rise in agricultural productivity and production. The improved tank irrigation management centered on the temple that permitted the agricultural colonization of large areas of Tamilnadu under the Cholas from CE 900 to 1200. Interestingly, the priestly castes of Hinduism again spearheaded the spread of this new technology, with land grants to Brahmans accompanying the establishment of new tanks.'[6] Mosse argues that water is a productive and symbolic resource, 'it is integral to the historical making or regionally specific institutions. Flows of water across an extensive drainage system, between villages and into rice fields are a part of the construction of social identities and political domains. The connections and interdependencies of hydrology interweave with those of caste-class and kinship, business and politics, and generate distinctive patterns of co-operation and conflict. And at a more micro-level, water flows within village irrigation systems make intricate connections between field-plots and households. Water flows have not only shaped social and political institutions, they have also legitimized them. Medieval kings and chiefs controlled and gifted water flows, creating landscapes which inscribed their rule into the hydrology and thus naturalized it.'[7]

Village water traditions were ideological followed by all caste with the interests of cultivation and other purposes. The local water management on small level looks after by the different classes or institutions of village, caste and religion for the benefits of better water supply for irrigation also. There existed social connection of water bodies, simply an exploitable productive resource or a physical input for agriculture. It is also a medium through which a variety of social relations have been structured. The focus of the present chapter is on the uses of water by different public institutions and the relations of state and society rather than economic output of water as supplement to agricultural production. The ideology of water specifically cultural and symbolic has a different value in medieval period. Village ponds along with village temples till now the public institutions as well as show the social relations, status and prestige. However, it has a different scenario also, state power and state community relations. In the Indian medieval society villages had their own methods to protect water resources and related matters. Common water bodies were managed by the village community for their particular community. Bonding

[6] Gadgil, Madhav, Ramchandra Guha, *This Fissured land: An Ecological History of India*, 1992, New Delhi: Oxford University Press, pp. 106-107.
[7] Mosse, David, *op.cit*., p. 4.

between water resources and humans is extremely important because of the value aspect of water.

Apart from river water, artificial water reservoirs of massive proportions, and also step wells constructed on a great scale in most part of the country. Water could also become an instrument of conflict, while its conservation brought to surface the rigid sociological and community problems related to the use of water.[8] water does not change in character by being appropriated by society and humans and water will always, ultimately, escape humans 's efforts at taking control over it, since it is always on the move from one place to another and from one physical state to another. It undermines the conventional boundary between society and nature with consequences for how one understands nature-society distinctions and relations in general. The waters in a river may be polluted and wetland be destroyed, but the water itself will always reappear, after its 'journey' through society as a social good, as clean natural water.'[9] Water from all kinds of sources 'ground and surface waters through rivers, wells, step-wells, reservoirs, tanks, dams, streams and canals on a regular basis to irrigate the fields.'[10] Sumit Guha suggests that the human-nature relationship in early India were marked by fluidity and a state of flux. There was a longer process of continuous interaction among communities of several ecological niches like riverine plains, deserts, forests, mountains.[11]

The main source of water in India is its rivers, as it is a country of rivers. There are 12 major rivers with the total catchment area of 252.8 million hectare. Rivers are significant for the religious perspective, commercial use and for irrigation and water supply. Rivers in the northern India have frequently changed their courses, due to heavy floods as medieval records informs. Indus, Ganges, Yamuna, Kosi, all shifted, as due to ecological situation of that particular region, in the process many wild species have been lost slowly. 'Rivers changed their courses; rich alluvial soils were formed or swept away, the average annual rainfall of whole regions increased or

[8] Sharma, Yogesh, 'The Circuit of life: Water and water Reservoirs in Pre- Modern India', *Studies in History*, New Delhi: Sage Publications, 25, 1, 2009, pp. 69-108.
[9] Tvedt, Terje, *op.cit*., p. 150.
[10] Verma, H.C., *Harvesting Water and Rationalization of agriculture in North Medieval India* (*Thirteenth- Sixteenth Centuries*), 2001, New Delhi: Anamika Publishers, p. 11.
[11] Guha, Sumit, *Environment & The Ethnicity in india [1200-1991],* Delhi: Cambridge University Press,1999, p. 7.

decreased, and the balance of plant and animal populations altered.'[12] Slow but steady these changes on various points are of serious consequences for ecology, the river bend changed, rich flora and fauna is also disappeared. 'The surface of India receives an average rainfall of 118 cm. according to an estimate the annual yield of water in all rivers of the country is 1, 858,100 million cubic meters in which more than one third (33.77%) is contributed by Brahmaputra, followed by Ganga (25. 2%), Godavari (6.4), Indus (4.3%), Mahanadi (3.6%), Krishna (3.4 %), Narmada (2.9 %) and others. The Indian drainage system may be broadly divided into the sea. The Bay of Bengal Drainage, the Arabian Sea Drainage. These are separated from each other through the Delhi ridge (the Satluj- Yamuna divide).'[13] About 85% of the available water is used for agriculture purposes, 8% for domestic purposes and rest for other purposes. The ground water situation in different parts of the country is as varied as the surface water situation. In the high relief areas of the northern and north-eastern regions occupied by the Himalayan ranges, the various hill ranges of Rajasthan, the central and southern Indian regions, the presence of very steep slope conditions and geologic structure offer extremely high run off and thus very little scope for rain-water to find favorable conditions of storage and circulation as ground water.

The rivers in India are truly speaking not only the life-line of masses but also for wild life. The rivers play a vital role in the lives of Indian people. Indian agriculture largely based on Monsoon which is always uncertain in nature; there is severe problem of lack of 'irrigation in one region and water logging in others. Damage to crops due to drought and pitiable drainage facility could be managed. Depleting and decreasing status of water resources may be one of the most critical resource issues and challenges of the 21st century.'[14]

The Mughal emperors have shown deep interest and amazed to see the water bodies and its multiple uses. Babur comments on the presence of water bodies in largely that, 'a place in which to settle, they need not dig water-courses or construct dams because their crops are all rain-grown, and as the population of Hindustanis is

[12] Bridget, Allchin, 'Early Man and Environment in South Asia', [ed.], Grove, H. Richard, Vineeta Damodaran & Satpal Sangwan, *Nature & The Orient*, Delhi: Oxford University Press, 1998, pp. 29-50.
[13] Tiwari, R.C, *Geography of India*, Allahabad: Prayag Pustak Bhawan, 2006, p. 185.
[14] Mehta, Dharmendra, Naveen K. Mehta, 'Interlinking of Rivers in India: Issues and challenges, *Geo-Eco-Marina*, 19, 2013, pp 131-143.

unlimited, it swarms in. They make a tank or dig well.'[15] Babur himself was a great observer, comments in his *Memoirs* about the rivers of India:

> Many rivers rise in these mountains and flow through Hindustan. Six rise north of Sihrind, namely Sind, Bahat (Jilam), Chan-ab [sic], Rawi , Bias, and Sutluj; all meet near Multan, flow westwards under the name of Sind, pass through the Tatta country and fall into the 'Uman(-sea). Besides these six there are others, such as Jun (Jumna), Gang (Ganges), Rahap (Rapti ?), Gumati, Gagar (Ghaggar), Siru, Gandak, and many more ; all unite with the Gang –darya, flow east under its name, pass through the Bengal country , and are poured into the great ocean. They all rise in the Sawalak –parbat. Many rivers rise in the Hindustan hills, as, for instance, Chambal, Banas, Bitwi, and Sun (Son).There is no snow whatever on these mountains. Their waters also join the Gang- darya.[16]

As the sources of rivers Babur amazingly remarks about the hills and mountains, 'they are the makers, in Hindustan, of several rivers.'[17] He complained that except their large rivers and their standing-waters which flow in ravines or hollows (there are no waters). There are no running waters in their gardens or residences (*imaratlar*).[18] Thus on the one hand he was amazed to see the overflowing rivers; he equally felt that there was no 'running' water either. Babur's presumption was that there was not properly management of water supply, neither for the drinking nor for the irrigation. His overview for the water sources was that however there was a lot of water in the rivers but lack of proper management was the cause of scarcity of water in the region. About India, Father Pierre Du Jarric writes, 'The country is, for the most part, fruitful, producing the needs of life in abundance; for between the two famous rivers, the Indus and the Ganges, which wind over the greater portion of it, wearing it like a garden, there are nine others which empty themselves into these two; namely the Tapti, the Narbada, the Chambal and the Jamuna flowing into the Ganges, and the Sutlej, the Beas, the Ravi, the Chenab and the Jhilam, flowing into the Indus, which the people call the Sarhind. From this we can judge the fertility of this region, and of the wealth of great Moghul.'[19] Clearly, Du Jarric highlights the importance of the supply of the river water to Lahore-Multan *subas* which was abundant in water

[15] Zahiru'd Din Muhammad Babur, *Baburnama*, eng. translation by A. S. Beveridge, Delhi: Low Price Publication, [1921], 2010, p. 488.
[16] Ibid., p. 485.
[17] Ibid., p. 486.
[18] Ibid., p. 519.
[19] Fr. Pierre Du Jarric, *Akbar and the Jesuits: An account of the Jesuit Missions to the court of Akbar,* translated with introduction and notes by C .H. Payne, New Delhi: Tulsi Publications, 1976, p. 5.

resources. Abul Fazl appears more accurate and a graphic account is given by him. He mentions that about the six principal rivers which all flow from the northern mountains, that 'the Sutlej the ancient name of which is *Shattudar* and whose source is in the *Kahlor* hills. The *Biah* (Beas) was actually called *Bipasha*. Its source is named *Biahkund* in the *kullu* mountains. The Ravi, the ancient *Irawati*, rises in the *Bhadral* hills. The *Chenab*, anciently *Chanarbhaga* from the summit of the *Kishtawar* range issue two sweet water streams, the one called *Chandar*, the other *Bhaga* which unite near Khatwar. The Bihat (*Jhelum*), anciently called *Bidasta* has its rise in a lake in the *paraganah* of *Ver* in Kashmir, flows through Srinagar and enters Hindustan.'[20]

Babur's noble Zain Khan praises the water of Indus, like 'the mirror.'[21] Abul Fazl records that, the source of Indus is between Kashmir and Kashghar, while others locate it in China.[22]About Indus Father Monserrate writes, 'The Indus is the greatest of all the Indian rivers for it receives from its very source a great body of water gathered from the melting snows of the Himalaya, or Caspian mountains… From the middle of June to the middle of August the Indus is so much swollen, not by rain-water but by the melting snows, that its mighty body of thereafter divides the sea (or so it is said) and sweet water may be drawn up out of the ocean to a distance of forty miles from the shore. The common people of this region generally call the Indus the *Nilabhus*, which means in Persian 'blue water.' The river is so deep that its water is of a blue colour, running with great force and rapidity.'[23] Monserrate observation about Indus river is so accurate, he rather compares the flow of water-force with elephant can ford it.

Even Abul Fazl gives more details about the area between the rivers which he call *doab.*[24] Akbar gave different name to these areas between two rivers. Later on revenue was also collected from these *Sarkars* according to measurement. The lands of these *Doabs* were considered as more fertilized due to having harvesting or irrigation facilities from the water of rivers, hence revenue was also collected

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[20] Abul Fazl*, Ain-I Akbari,* H.S. Jarrett, revised by J. N. Sarkar, vol. II, Delhi: Oriental Books Reprint Co.,[1949],1978, pp. 315-316.
[21] Shaikh Zain Khwafi, *Tabaqat-i Baburi*, translated by Sayed Hasan Askari, Delhi: Idarah-I Adabiyat-i Delli, 2009*,* p. 26.
[22] *Ain-i Akbari,* trans. Jarrett, *op.cit*., vol.II,pp. 315-316.
[23] Father A. Monserrate, *Commentary on his journey to the court of Akbar*, eng. translation by J.S. Hoyland, annotated by S. N. Banerjee, Cuttak: Mission Press, 1922, p.122.
[24] Water of two rivers and land between these two rivers indicates as *doab.*

heavily from these regions. Name to the land was also recognized on the basis of the adjoining rivers. Abul Fazl gives full detail about these *doabs* and their name; as *Beth Jalandhar* to the valley between the *Biah* and the Satlaj; of *Bari*, to that valley between the *Biah* and the *Ravi*; of *Rechna* to the land between the *Ravi* and the *Chenab*; of *Jenhat* to the valley of the *Chenab* and the *Bihat*, and *Sindh Sagar* to the land between *Bihat* and *Sindh*. Further he elaborated the distance between these rivers' as such, the distance between *Satlaj* and the *Biah* is 50 kos, *Biah-Ravi* 17 kos, *Ravi -Chenab* 30 kos, Chenab -Bihat 20 kos, Bihat-Sindh 68 kos.[25]

Indus River has its sources in the skirts of the mountains of Kashmir, and runs from the western side of those mountains, into the country of Mansura. Its courses are from north to south, the end turning to the east. Thevenot mentions that however, all the rivers have their sources in the mountains of the North, and make up the Indus, that for a long way, goes by the name of Sindh, into which they fall; and that's the reason why this river is sometime called *Indu* and sometimes Sindy.[26] The river Sindh (Indus) separates Hindustan from Kabul and serves as the boundary of the Punjab. The Indus and its major tributaries to build up their beds frequently change their course making for an unstable situation. The Sutlej and Beas have relatively firm channels through the Sutlej has shifted from its close proximity to Ludhiana in the sixteenth and seventeenth centuries down to their present junction. Until the seventeenth centuries, the united stream redivided into two separate rivers; and the Beas which run at a great distance to the north of the Sutlej and turn to re-join the Sutlej only after reaching a point directly south of Multan. The separate channels of the two rivers were crossed by armies in the eighth and fourteenth century, ran past Multan, and met the Chenab at a point to its south.[27]

As some seasonal rivers as about Ghaggar Babur describes about it, when he marched towards Karnal, opposite Sirhind dismounted on the bank of the torrent (inappropriate for the lower course of Ghaggar, may be due to Babur's visit to its upper course described immediately below, however he uses the word *rud* to describe the empty bed of a mountain-stream as well as the swift water sometimes

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[25] *Ain-i Akbari,* trans. Jarrett, *op.cit*., vol. II pp. 315-316.

[26] Thevenot, *Indian Travels of Thevenot and Careri*, (ed.),Sen, Surenderanath, Delhi: published by National Achieves of India, 1949, p. 85.

[27] Raychaudhuri, Tapan & Irfan Habib, *Cambridge Economic History of India*: *c. 1200-c. 1750*, Vol. I, New Delhi: Cambridge University Press, 1982, p. 4.

filling that bed.) of Baanur and Sanur , 'great rivers apart, one running water there is in Hindustan, is this; (Perhaps the meaning is that the one (chief ?) irrigation stream apart from great rivers, is the Ghaggar. The bed of the Ghaggar is undefined and the water is consumed for irrigation.) They call it the water of Kakar (Ghaggar).'[28] The great shifts of rivers affected the economy also, especially in the more arid western zone.

But Ganges appears to be the life-line, Ibn Battuta mentions Ganges as 'a river of Paradise.'[29] Ganges is basically the holiest river among the Hindus and its water has great significance in their lives. The origin of Ganges is from the Himalayas. Hindus believe that it descended from heaven, and after descending on the hill of Kailas, it leaves the latter and reaches the country of China. Abul Fazl informs in the *Ain*, about the Ganges, 'its sources cannot be traced. The Hindu sages say that it flows down from the hair of *Mahadeva's* head. Rising in the mountains towards the north, it passes through the province of Delhi, and imperial Agra, and Allahabad and Behar into the province of Bengal, and near Qazihattah in the *Sarkar* of Barbakabad, it divides into two streams. One of these, flowing east-wards, falls into the sea at the port of Chittagong. At the parting of the waters, it takes the name of *Padmawati* and pursues a southern course. It is divided into three streams; one the *Saraswati*; the second is the *Jamuna* and the third the Ganges, called collectively in the Hindi language *Tribeni*[30] and held in high veneration. The third stream after spreading into a thousand channels joins the sea at Satgaon Hugli. The *Saraswat*i and the Jamuna unite with it. In praise of this stream the Hindu sages have written volumes. From its source to its mouth it is considered sacred, but some spots have a peculiar sanctity. It s water carried as an offering of price to far distant places. Believing it to be a wave of the primeval river; they hold its worship to be an adoration of the Supreme Being, but this is no part of the ancient tradition. Its sweetness, lightness and wholesomeness attest its essential virtues. Added to this, it may be kept in a vessel for years without undergoing change. Another river is Brahmaputra. It flows from China to Kuch and

[28] *Baburnama*, *op.cit*., p. 465.
[29] Ibn Battuta, *The Rehela*, translated by Mahdi Husain, 1976, Baroda: Oriental Institute p. 195.
[30] Sujan Rai, *Khulasatu-t Tawarikh,* translated by J. N. Sarkar, *India of Aurangzib, (Topography, Statistics, and Roads compared with the India of Akbar with extracts from The Khulasatu-t Tawarikh and the Chahar Gulshan*),Patna: Sanyal & Co.1901, p. 27.

thence through the Sarkar of Bazuha and fertilizing the country, falls into the sea.'[31] The Ganges having received an infinite number of Brooks and Rivers from the North, East and West, discharges itself by several mouths into the Gulf of Bengal, at the height of three and twenty degrees, or there about; and the Gulf reaches from the eighth degree of Latitude to the two and twentieth, it being eight hundred leagues over.'[32]About the river of Bihar Abul Fazl informs that its chief rivers are the Ganges and the Son. Whatever of wood or leather and the like falls into the Son becomes petrified. The head springs of these three rivers, the Son, the Narbada and the Johila, bubble up from a single reed-bed in the neighborhood of Mandla. The Son is pleasant to the taste, wholesome and cool; flowing in a northerly direction, it joins the Ganges near Maner. The Gandak flows from the north and unites with the Ganges near Hajipur. The Punpun flows also from the south and joins the Ganges near Patna.[33] In the Gangetic basin,1595, the Sarju river still met the Ghaghara river at Awadh, having already taken the waters of the Kauriala. In Bengal, the Tista did not flow into the Brahmputra river made a large bend eastwards after its entry into Bengal; this channel carried its main stream well to the east of Decca.[34]

River Yamuna (Jamuna) has a great value also; it played a prominent role in spatially organizing the complex gardens which in later years would come to line the river. 'Riverfront development became popular quite early during Babur's reign. The Yamuna provided a spatial linkage upstream with Delhi, and downstream with Banaras, Allahabad, Etawah and Ghazipur. Agra history is intimately connected with the river travel. The river served a complex, mix of functions including commerce, festivals, military transportation, and water supply for gardens and residences.'[35] Tavernier writes that 'The Jamuna is a fine river with large boats upon it, and, after passing Agra, it loses its name in the Ganges at Allahabad. The Emperor keeps many small brigantines at Jahanabad for pleasure, and they are highly decorated after the manner of the country.[36] Thevenot describes about the river Yamuna, that 'it has source in the mountains to the North of Delhi, from whence descending towards this

[31] *Ain-i Akbari*, Jarrett, *op.cit*., vol. II, p. 133
[32] *Thevenot*, *op.cit*., pp. 96-97, *Khulasatu-t Tawarikh , op.cit*, p. 22.
[33] *Ain-i Akbari*, trans. Jarrett, *op.cit*., vol. II, p. 163.
[34] Raychaudhuri, Tapan & Irfan Habib, *op.cit*., p. 4.
[35] Wescoat, James, 'Early Water Systems in Mughal India', *Environmental Design*: *Journal of the Islamic Environmental Design Research Centre*, 1985, pp. 50-57.
[36] Tavernier, Jean- Baptiste, *Travels In India*, translated by V. Ball, edited by William Crooke , vol. I, Delhi: Low Price Publications, 2007, p. 84.

town, and receiving several rivulets in its course, it makes a very considerable river. It runs by Agra, and having traversed several countries, falls into the Ganges at the great town of Allahabad. The chief rivers that water Agra are the Yamna, Banganga, Chambal, Sengar river and a great many smaller.'[37]

The source of this river is also in the mountains of Kashmir, on the south side. It runs from north to south, and passes into the land of Hind. Its waters are used for agriculture and gardening. Agriculture in these parts is generally dependent on the rain. In the neighbourhood of Multan it joins the Sind, and falls into the Bahru-l akhzar.'[38] About the position of Jamuna in Delhi, as Khulasat informs, 'Jamuna flowing eastwards, aquires dignity and glory by kissing the feet on this fort, and goes onwards with a hundred kinds of splendor. The river, after emerging from the hill and adding reaches the foot of the city of Shah Jahanabad. Fifteen leagues from this place, it reaches the feet of the towns of Mathura, Gokul, and Sri Vrindavan. Then it arrives at the capital Agra. In this town also there are Imperial and baronial palaces on the bank of the river. Issuing thence, it flows by the fortified town of Etawah, then the city of Kalpi. Next it comes to the city of Akbarpur, the birth-place of Birbal. The river Chambal unites with the Jumna near Akbarpur, and the river Berwah, Dhasan (tributary of the Betwa) and others –which come from the direction of Gondwana— fall into the Jumna apart from each other, it unites at the foot of the fort of Allahabad.'[39]

Jahangir informs about Malwa, that, 'There are five rivers in it in addition to streams, canals, and springs, namely, the Godavari. The name seems to be wrong. Jahangir is evidently copying from the *Ain*, and the rivers mentioned there are the Narbada, Sipra, Kalisindh, Betwa and the Kodi (Godi), Bhima, Kalisindh, Nira, Narbada.[40]

Water is an important component for irrigating the fields for agriculture. Irrigation facilities were present in India since ancient times and the Mughal rulers paid heed to it sincerely. Irrigation was done both by natural and artificial means.

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[37] *Thevenot, op.cit.,* p. 46, p. 57.

[38] Das, Ganesh, *Char Bagh-i-Punjab Early Nineteenth Century Panjab,* translated and edited by J.S. Grewal and Indu Banga, Amritsar: Published by GNDU, 1975, p.36-37.

[39] *Khulasatu-t Tawarikh*, *op.cit*., pp.4, 17-18.

[40] Jahangir, *Tuzuk-i-Jahangiri*, eng. translation by A. Rogers & ed. by H. Beveridge, vol. I, Delhi: Low Price Publications, [1909-14], 2006, p. 349.

Kharif crops largely depended upon monsoon, but for *Rabi* artificial means of irrigation were required. There were lots of water bodies used by the people and the State for irrigation as wells, step-wells, tanks, reservoirs, ponds, lakes. As important aspect of Indian agriculture was artificial means of irrigation to supplement the natural bounty of the monsoons. The principal means employed for this purposes has been the construction of wells, tanks and canals.'[41] Babur observes that 'need not dig water-courses or construct dams because their crops are all rain-grown, and as the population of Hindustanis is unlimited, it swarms in, they make a tank or dig well.'[42] Being the agro-based economy India depends largely on the monsoons which is till today the backbone of the agricultural development.[43]

About the raining season of India observation of Babur is very interesting, he comments, 'its air in the Rains is very fine. Sometimes it rains 10, 15 or 20 times a day; torrents pour down all at once and rivers flow where no water had been. While it rains and through the Rains, the air is remarkably fine, not to be surpassed for healthiness and charm. The fault is that the air becomes very soft and damp. A bow of those (Transoxanian) countries after going through the Rains in Hindustan. May not be drawn even; it is ruined; not only the bow, everything is affected , armour, book, cloth, and utensils all; a house even does not last long. Not only in the Rains but also in the cold and hot seasons, the airs are excellent; at these times, however, the north-west wind constantly gets up laden with dust and earth. It gets up in great strength every year in the heats, under the Bull and Twins when the Rains are near; so strong and carrying so much dust and earth that there is seeing one another. People call this wind Darkener of the sky (H.*andhi*). The weather is hot under the Bull and Twins, but not intolerably so, not so hot as Balkh and Qandahar and not for half so long.'[44] Babur compares Indian climate with Balkh and Qandahar. As the extreme rain cause of **floods** annually in India, affects the crop and revenue collection. Rivers become overflow and create a very huge destruction. Zamindars used their own resources in the form of construction of embankments and *bund.* Many European travellers refer to the annual floods in India. Manucci gives his observation related to rain and famines

[41] Habib, Irfan, *The Agrarian System of Mughal India 1556-1707*, New Delhi: Oxford University Press, [1963] 2005, p. 28.
[42] *Baburnama*, *op.cit*., pp. 487-488.
[43] Kumar, Mayank, *Monsoon Ecologies: irrigation, agriculture and settlement patterns in Rajasthan during the Pre- Colonial Period*, New Delhi: Manohar publications, 2013, p. 16.
[44] *Baburnama*, *op.cit.,* pp.519-20.

after the death of Aurangzeb, 'The rains have been so prodigious that they have washed away all the roads, devastated the country, and ruined the inhabitants. This latter place all their hopes upon a good harvest and this have been entirely lost to them by the tempests destroying all the grain. A famine has been produced in the royal army. This famine, joined to the difficulty, not to say the impossibility, there was of advancing by reason of those disorders and the occurrence of a most terrible pestilence, caused the loss on this occasion of more than half of the army. The distress has been so great that there were men who, unable to carry their wives with them without exposing them to public view, have been so inhuman as to prefer killing them to enduring that affront. Even the king's own household felt the sad effects of this tempest, and several ladies held very dear by the king perished, the king himself having some difficulty in escaping.[45]

Traditional water harvesting systems have been another area of investigation. Babur gives his observation, 'except for the rivers and here and there standing - waters, there is little "running –water". So much so is this that towns and countries subsist on the water of wells or on such as collects in tanks during the rains.[46] Babur complained about the lack of running water in northern Indian, during his early entrance of north-west frontier, he quotes, 'the greater part of the Hindustan country is situated on level land. Many though its towns and cultivated lands are, it nowhere has running water. Rivers and, in some places, standing-waters are its "running –waters" (*aqar –sular*). Even where, as for some towns, it is practicable to convey water by digging channels (*ariq*), this is not done. For not doing it there may be several reasons, one being that water is not at all a necessity in cultivating crops and orchards. Autumn crops grow by the downpour of the rains themselves; and strange it is that spring crops grow even when no rain falls. To young trees water is made to flow by means of buckets or a wheel. They are given water constantly during two or three years; after which they need no more. Some vegetables are watered constantly.'[47] Zain Khan and Babur informs about the presence of the running water in Jaswan valley (Dun, Jugla). Zain Khan comments, 'although in India such swiftly flowing waters are of rare occurrences, yet in the Julga they are in abundance and in general

[45] Manucci, Niccolao, *Mogul India (1653-1708)*, translated with Introduction and Notes by William Irvine, vol. III, Delhi: Low Price Publications, [1907-8], 2010, p. 403.
[46] *Baburnama*, *op.cit*., p. 487.
[47] Ibid., p. 486, Zain Khan*, op.cit*. p. 157.

use.'[48]About the running water Pietro Della Valle also comments that the 'running waters and springs, there are scarce any, especially in the more in-land parts remote from Sea.'[49]

Canal irrigation was a common and simple device practiced by the Indians since very early days. These canals were in fact narrow and shallow cuts made through the river banks. 'During floods the water of these rivers rise above their level and the excess water is carried to the fields through these cuts. Also there was a limit to this system, for 'irrigation under an inundation canal is restricted to the lower land and such canals reach their maximum development where the rivers of the Punjab coverage to form the lower Indus or the older alluvium of the Doab.'[50] Yogesh Sharma reasons out that, 'in upper India and the Indus basin, greater use was made of canals rather than tanks, since the Himalayan glaciers were able to feed extensive riverine systems, which could support networks of canals irrigation.'[51] According to Tripta Wahi the agricultural activity was 'a gamble of rainfall, and the medieval state, from the thirteenth to seventeenth century, sought to promote canal irrigation in Punjab, but the most extensive system of canal irrigation was laid out in the nineteenth century by the British to enhance the agricultural productivity.'[52] The Tughlaq Sultans were the first to introduce and promoted the digging of canals. A number of canals were constructed by the encouragement of Firuz Shah Tuglaq.[53] He constructed a thirty *kos* long canal from Khizrabad to Safidun which later fallen into disuse and Akbar re-excavated which was named after Salim Sheikhum: later Shahjahan excavated it and brought the canal water to his newly constructed capital Shahjahanabad.[54] Further a new channel from Safidun to Delhi, 30 *'kos'* in length was excavated duringj the reign of Shah Jahan.

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[48] *Baburnama*, *op.cit*., p. 462, Zain Khan, *op.cit*., p. 62.
[49] Pietro Della Valle, *The Travels of Pietro Della Valle in India*, edited by Edward Grey, New Delhi: Asian Educational Service, [1892,London], 1991, vol. I, p. 32.
[50] Ibid., p. 23.
[51] Sharma, Yogesh, *op.cit*., p. 70
[52] Wahi,Tripta, ' Water Resources and Agricultural Landscape: Pre-colonial Punjab' in Indu Banga ed. *Five Punjabi Centuries: Polity, Economy, Society and Culture, c. 1500-1990,* Delhi : Manohar, 1997, pp-267-284.
[53] See Singh, Abha, 'Irrigating Haryana: The Pre-Modern History of Western Yamuna Canal' in Irfan Habib,(ed.), *Medieval India, 1, Researches in the History of India 1200-1750*, Delhi: Oxford University Press, 1992, pp. 50-61.
[54] Ibid.

Abul Fazl writes, 'Sultan Firoz who brought the waters of the Jamuna to it by means of cutting. A holy devotee predicted his accession to the throne and at his request the canal was made. Strange to say, it enters a pool named Bhadra near the town of Sirsa, and there loses itself. Wonderful stories are related regarding it. There are few rivers in this district, and wells have to be dug to a considerable depth.'[55] By the sixteenth century Firoz Shah's canal silted up and repaired by Shihabuddin Khan the Governor of Delhi in 1560, which Lt. Yule remarks on the Western Jamuna Canals,[56] A canal Act of Emperor Akbar,1570, later to order to excavate a canal [*Sheku –Ni*] in the boundary of Kaithal, 'my desire, purer them water, is to supply the wants of the poor; and the water of life in my heart is larger than the sea.' It *sanad* of Akbar did not describe in *Ain,* Badauni[57] gives that the name of the canal was given after Jahangir, whom Akbar always called Shaiku Baba. Akbar ordered that the canal should be deep or wide that throughout the year, it might supply the water to Hansi and Hisar, wherever necessary bunds were to built, and the *shiqdars*, *chaudharis*, *muqaddams* and the peasants of all the *parganas* were required to give the necessary assistance, including labour.[58] Badaoni informs that Mulla Nuru-d-din Muhammad-i Tarkhan, was the builder of the canal and 'the cause of large additions to the cultivated area, and a great increase in the prosperity of the people.'[59] There were two masonry bridges over it, Monserrate[60] also describes about the Karnal bridge and the Safedon bridge was also belong to that period, since Shahjahan's Nahr-i Bihisht did not run past Safedon.[61] The later phase in the reign of Shahjahan, the canal war re-paired again at the order of Shahjahan by the renowned Makramat Khan, and called *Fayz Nahr*. Inayat Khan also describe about the canal of Akbar, which we don't find in the chronicles of Akbar. The construction of the canal under the supervision of Ghairat Khan, then Illawardhi Khan, and finally completed by Mukramat Khan in 1647-50. The account of canal:

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[55] *Ain-i-Akbari*, Jarrett*, op.cit*.,vol. II, p. 285.
[56] Yule, Lieut., 'A Canal Act of Emperor Akbar, with notes and remarks on the History of the Western Jumna Canal', *Journal of the Asaitic Society of Bengal*, Calcutta, vol. XV, issue-171, 1846, pp. 213-23.
[57] Badaoni, Abdul Qadir, *Muntakhab-ut-Tawarikh*, eng. translations by G. S. Ranking, Delhi: Atlantic Publishers, vol. II, [1898-1925], 1990, p. 390, vol.III, p. 274.
[58] Singh, Abha, *op.cit*. p. 54.
[59] Badauni, *op.cit.,* vol.III, p. 274.
[60] Monserrate, *op.cit.,* p. 98.
[61] Singh, Abha, *op.cit*., p. 55.

> 'During the reign of Sultan Firoz Shah Tuglaq at Delhi, he had caused a canal to be made, which branched off from the river Jumna in the vicinity of *pargana* Khizrabad, whence he brought it in a channel 30 imperial *kos* long to the confines of *pargana* safidun, which was his hunting seat and which had only a scanty supply of water. After the Sulatn's death, however, the canal became silted up in the course of time. Subsequently during the reign of the late Emperor Akbar, whilst Shihab al-Din Ahmad Khan held the government of Delhi, the canal was put in repair and set flowing again, with a view to irrigating the places in the governor's jagir; hence it was called *Nahr-i-Shihab* (Stream of Shihab) . However, for want of repairs, it again stopped flowing. At the time of Sublime attention was turned to the building of this fort and palace of Shahjahanabad, it was commanded that the aforesaid canal from Khizrabad to Safidun should be repaired, and that a new channel should be excavated from the latter spot to the regal residence, which is a distance of another 30 imperial kos. After the canal had been thus prolonged, it was designated as the *Nahr-i-Bihisht* (Stream of Paradise).[62]

A royal canal which has been cut from the hill of Sirmur, adds to the splendor of the streets and markets of the city and confers bounty on the citizens. Entering grand houses, it keeps tanks and reservoirs full to brim and gardens fresh; or issuing from fountains it forms a wonderful spectacle. From this place branches off a royal canal, which may be styled one-half of the river Jumna. It runs up to the metropolis Shah-Jahanabad; it does good to the crops of many *parganahs*, confers freshness on the gardens in the suburbs and bazaar, and enhances the splendour of the imperial palaces.'[63] During the reign of Aurangzeb it was again obstructed, but has now again been repaired and enlarged by the English. Shahjahan 's Western Yamuna Canal gave a new concern for the people and welfare by the state, with the rulers sensitivity for their subjects. The canals from Yamuna, Sutlej and Ghaggar watered the areas of Hissar in Haryana. In Sind and Punjab, the canals were relatively smaller but contributed to growth of agriculture.

Ali Mardan Khan proposed to the Emperor that the waters of the Ravi be brought from Rajpot (Present day Madhpur in India) to Lahore. Shah Jahan approved, and within two years, a canal named Shah Nahar (Royal Canal) over 100 miles long was completed. The complex water storage, system of aqueducts and hydraulic devised by Mughal architects and engineers, to provide water supply on a large scale

[62] Khan, Inayat, *The Shah Jahan Nama*, ed. by W. E. Begley & Z. A. Desai, Delhi: Oxford University Press, 1990, p. 407.
[63] *Khulast-ut Tawarik, op.cit.,* p. 4.

in the flat terrain of the Punjab simulating the undulating and dramatic sites of the Kashmir is a tribute to their ingenuity and skill.

Once the canal was completed, a royal edict was issued in 1641 to commence on the Shalimar garden on a spot 'so delightfully adapted to the purpose that it was universally commended.' Inayat Khan informs, 1639, ' In these days, 'Ali Mardan Khan represented to His Majesty that there was an engineer in his service who possesses eminent skill in the art of constructing canals, and that he had proposed to undertake the excavation of one that would supply water to the suburbs of the capital. Accordingly, one lakh of rupees, which was the sun estimated for the project, was delivered over to the said Khan; whereupon the engineer commenced excavations for the canal at a point where the river flowing to Lahore breaks through the hills into the level country, and which is about 50 imperial *kos* distant from the city.[64] June 1641, the canal which Ali Mardan Khan's servant had undertaken to bring close to the capital Lahore, had been excavated under his direction and now reached the environs of the city of Lahore.[65] Thus Shahjahan's Ravi Canal which was planned to bring water from the river's upper reaches to Lahore. Only after the third attempt, involving the abandonment of all but a short stretch of the original canal, was success achieved in bringing it to Lahore.[66] According to estimates worked out by historians, extension of cultivation almost doubled from 16th to the beginning of 20th century AD. State initiatives played significantly a major role behind these constructions as nobles also involved in theses welfares.

Wells

In India it is lift irrigation which is common sight everywhere and known to the Indians since ancient times. Watering of crops through well is generally known as *motasthala*.[67] The role of state in augmenting systems of water harvesting for agrarian production has been examined by H.C. Verma for thirteenth to sixteenth centuries. H.C. Verma argues that through the canal system and Persian wheel *rahat, saqia* a very limited agricultural zone could be irrigated, 'but these systems not only [brought] some major alteration occurred in the agricultural cropping pattern, it also

[64] *Shahjahan Nama*, *op.cit.*, p. 262.
[65] Ibid., p. 277.
[66] Habib, Irfan, *Technology in Medieval India c. 650-1750*, New Delhi: Tulika Books, 2008, p. 15.
[67] Verma, H.C*., op.cit.,* p. 11.

brought about appreciable transformation in the economic and social life of the people in the irrigational agricultural zones. The need of proper utilization of water resources on regular basis for irrigation, through not very encouraging in terms of its general availability to the common users, has thus been the serious concern of the government and the general mass of the peasants for generating surplus produce.'[68] State's role was especially significant for supplying water sources. Through canals sometimes it was also under some personal interest of the specific emperors. Irfan Habib comments, 'one problem that pre-modern canal builders faced arose out of the lack of detailed contour survey maps. The builders followed the observable lines of natural drainage. Carrying a canal at such a high level enables convenient distribution into sub-canals for irrigation.'[69] Irfan Habib observes, 'before the middle of last century, the underground water was so close to the surface in most river basins that it could be reached, at least in the rainy season, by digging large holes ('*kachcha*' wells) in the ground. As the brick wells appear in Indus Civilization.'[70] A.J. Qaisar suggests that Mughal paintings reveal only those irrigational devices which were oriented toward drawing water from wells. 'Water supply to the fields from canals or tanks has not been represented. These wells were more often than not masonry ones with raised walls and enclosures or platforms, the latter being octagonal or squarish. Both bricks and stones were used to construct wells.'[71]

Babur complains about the lack of running water, accordingly dig out Persian wheels all over. He comments that 'it kept coming to my mind that waters should be made to floe by means of wheels erected wherever I might settle down, also that grounds should be laid out in an orderly and symmetrical way.'[72] In upper India particularly in the Gangetic plains, water wells were used commonly and most extensively. The profusion of water wells in important cities, in a region where the water table was high, emerges from the account of Thevenot while he referring the city of Agra, 'there are above eight hundred baths [wells] in the town.'[73] The role of state, nobles or elite class, personal interest, individual funds, and merchants

[68] Verma, H.C., *op.cit.*, p. 9.
[69] Habib, Irfan, *Technology in Medieval India, op.cit.,* p.15.
[70] Habib, Irfan, *Technology in Medieval India, op.cit.,* pp. 8-9.
[71] Qaiser, A.J., 'Agricultural technology depicted in Mughal Paintings', B.L. Bhadani, (ed.) *Medieval India 3, Researches in the History of India*, New Delhi: Manohar Publications, 2012, p. 82.
[72] *Baburnama, op.cit*., pp. 531-532.
[73] *Khulasat ut-Tawarik, op.cit.,* p. 48.

encouraged a massive level development to enhance the irrigation facility in India. As many sources depicted the individual rulers, nobles, local chiefs and private individual constructed many wells at their own cost. The wells are the most common resource of water storage in India, state appreciating the peculiar environmental conditions extended financial and material support for the construction and maintenance of water appropriation mechanisms. 'The ruling elite extended support for the construction of wells to encourage the habitation, construction of wells was promoted in the regions with relatively high water-level.'[74] Babur also informs about the well irrigation he writes, 'In Agra, Chandwar, Biana and those parts, again, people water with a bucket; this is a laborious and filthy way. At the well–edge they set up a fork of wood, having a roller adjusted between the forks, tie a rope to a large bucket, put the rope over the roller, and tie its other end to the bullock. One person must drive the bullock, another empty the bucket. Every time the bullock turns after having drawn the bucket out of the well, that rope lies on the bullock-track, in pollution of urine and dung, before it descends again into the well. To some crops needing water, men and women carry it by repeated efforts in pitchers.'[75] The water for drinking purposes may not be used by this medium because it polluted with dung or urine of bullock. Wells were dug also temporarily on the vantage points of the cultivable lands and went out of the use once the crops were harvested. Some wells were dug in town to fulfilling the needs of the people for drinking water. Babur writes about the Urwah Valley, 'along the sides of the two Urwa lakes 20 or 30 wells have been dug, with water from which useful vegetables, flowers and trees are grown.'[76] On account of these tedious methods used by the Indians when Babur enters Agra he saw the drawback and lack of 'continuous' flow of water for irrigation. Obviously he had working of Persian wheel in his 'homeland' at the back of his mind which he found absent in the Agra region. However west of Yamuna towards Punjab by that time Persian wheel was very much in use in India. The natural factors [rainfall, streams and rivers] that influenced both agriculture and irrigation methods in the Panjab and had thus the most significant bearing upon the limited options with regard to the Persian wheel device.

[74] Kumar,Mayank, ' Ecology and Traditional Systems of Water Management,' in Mahesh Rangarajan, (ed.) *Environmental issues in India : A Reader*, New Delhi: Pearson Longman, 2007, 82.
[75] *Baburnama*, *op.cit.*, p. 487 .
[76] Ibid., p. 612.

Apart from depending upon the rains and the natural flow of the rivers, the agriculturists in the Mughal Punjab utilized artificial means of irrigation their fields. Irrigation from wells was commonly practiced. The utilization of well-water for irrigation depended upon the depth of the sub-soil water-table which differed from place to place. 'While in some parts of the Punjab the sub-soil water was fairly near the land surface, these were many areas where it could be found only at a great depth. In accordance with this difference in the water-table a variety of water-lifting mechanisms, such as the *dhenkli*, the *charas* and the Persian-wheel were utilized. In the north-eastern submontane where the subsoil water was easily accessible the *dhenkli* (a lever pole with a large watering vessel at one end) could be effectively utilized.'[77] The apparatus, however, was manually operated and, therefore, likely to have been used only small plots primarily by vegetables growers. It was the Persian-wheel which, in terms of the prevailing level of technological development, enabled the effective application of animal power.

H.C. Verma argues that, 'the *rahat* is much improved irrigation technology used for raising in greater volume. It is time-saving device and consumes less energy than is required of the *mhote* or *charas*. It raises water more rapidly through less height, for the vertical wheels equipped with buckets like a dredger are driven with cog wheels.'[78] Irfan Habib comments about the existence of Persian wheel in India, he suggests that it was a device imported from the Arab world to India in the twelfth century in the Indus Basin and asserts that the people in ancient India knew of a device known as *noria* and not the Persian wheel. 'By the sixteenth century, it became the principal source of water-lift in the Panjab and Haryana. The wooden Persian wheel with pots on the rope-chain continued to be widely in use in the Indus basin till the late nineteenth century, with the cumbersome lantern gearing being replaced by toothed wheels.'[79] Babur informs about the Persian wheel in 'the area of Lahore and Dipalpur region and those parts, people water by means of a wheel. They make two circles of ropes long enough to suit the depth of the well, fix strips of wood between them, and on these fasten pitchers. The ropes with the wood and attached pitchers are put over the well-wheel. At one end of the wheels – axle a second wheel is fixed, and

[77] Singh, Chetan, 'Polity,Economy and Society under the Mughals', Banga, Indu, (ed.), *op.cit*., p. 46.
[78] Verma, H.C., *op.cit*., p. 14.
[79] Habib, Irfan, *Technology in Medieval India op.cit*., p. 13, Habib, Irfan, *Man and Environment the ecological History of India*, New Delhi: Tulika Books, 2010, p. 89.

close (*qash*) to it another on an upright axle. This last wheel the bullock turns; its teeth catch in the teeth of the second, and thus the wheel with the pitchers is turned. A through is set where the water empties from the pitchers and from this the water is conveyed everywhere.'[80] He also found this device working in Agra, Bayana, Multan and some other parts of the Panjab.[81]

The gardens built by the Mughal emperors were provided with well laid Persian wheel devices to monitor the continuous water supply. About the water lifting system of *Nur–manzil* garden near Agra, Jahangir comments, 'Pleasant reservoirs have been constructed, and outside the gate a large well has been made, from which 32 pairs of bullocks continually draw water. The canal passes through the garden, and pours water into the reservoirs. Beside this, there are other wells, the water of which is distributed to the reservoirs and plots. The beauty increased by all kinds of fountains and cascades and there is a tank in the exact middle of the garden which is filled by rain water. If by chance its water should fail in the extreme heat, they supplement it by water from the wells, so that it may always be full to the brim. Nearly Rs. 150,000 have been spent up to now on this garden, and it is still unfinished, and large sums will be expended in making avenues and lying down plants. It has also been settled that the middle garden shall be newly walled round and the channels for the coming and going of the water shall be made so strong that it may always remain full of water and the water shall not leak out in any water, and no damage accrue. It is possible that before it is complete nearly 200,000 will have been spent on it.'[82]

In the Punjab cultivation depends upon irrigation from wells; old machines make water wheels 'which require 360 large and small pieces of wood and more than 100 small pots. So skillful their mechanism that a pair of oxen can turn such a wheel at every revolution of which many hundred *maunds* of water come out of the well in the pots and benefit cultivation.'[83] Abul Fazl describes about the cultivation of Rohtas, 'there were abundant springs of good water, and through the fort is on the top of a hill which neighbours the sky, and on the sides of which well-water is found at a

[80] *Baburnama*, *op.cit*., p.486, p. 531.
[81] Ibid., pp.532-33.
[82] *Tuzuk-i- Jahangiri, op.cit.,* vol.II, p. 76.
[83] *Khulast ut- Tawarikh , op.cit.,* p. 110.

great depth, yet inside the fort sweet water pours out on a little digging.'[84] About Rohtas Abul Fazl writes that it contains many springs, and wherever the soil is excavated to the depth of three or four yards, water is visible. In the rainy season many lakes are formed, and more than two hundred waterfalls gladden the eye and ear. The climate is remarkably healthy.[85] Large numbers of wells have to be dug in order to irrigate the soil, for at this time it is beginning to lose its productive power. Provided the rains are seasonable, and the cold is not excessive, there is a year of plenty, not merely of food, but in the trade in all sorts of commodities.[86]

Then for lifting water from wells Interesting descriptions are given by Babur, Abul Fazl and Sujan Rai Bhandari. In certain parts of the Punjab where deeper wells had to be dug and order to obtain water it was the *charas* or the rope-and–leather-bucket system which was a more viable method of lifting water for irrigation.

Reservoirs, step-wells, tanks and lakes as use the sources of water for conservation for drinking and irrigation. Step-wells were a common sites in cities, town and along highways all over India, especially Rajasthan, Gujarat, Bengal and some parts of the Deccan. The step well is popularly known as *baoli* or *baori*. These *baolis* were thus big and small rectangular tanks which were used for domestic water as well as irrigation of the fields.[87] Water tank was a symbol of community involvement, and considerable care was taken to keep it clean, at the end of the seasonal cycle. 'The onset of the monsoons served to replenish and store water for the next annual circuit. No wonder the failure of the monsoons adversely impacted on society by creating water shortage, its impact on agriculture also, and then it was necessary to store it in large quantities, for more planning, season after season.'[88]

In Agra when Babur faced many problems he himself manufactured a large chambered well (*wain* familiar Indian name is *baoli*) in the fort of Agra, 'measuring 10 by 10 (*gaz*) a large well with a flight of steps,This well was begun before the *Char-bagh*, they were busy digging it in the true rains(*Sawan-Bhadon*); it fell in several

[84] Abul Fazl, Akbarnama, translated by H. Beveridge, vol. III, New Delhi: Atlantic Publishers, [1921], 1989,p.146.
[85] *Ain-i-Akbari*, *op.cit*., Jarrett, vol. II, p. 163, p. 165, *Khulast ut-Tawarikh, op.cit.,* p. 39.
[86] Francisco Pelsaert*, Jahangir 's India*, translated from the Dutch by W.H. Moreland and P. Geyl, Delhi: Low Price Publications, [1925] 2011, pp. 48-49.
[87] Verma, H.C*. op.cit*., p. 20
[88] Sharma, Yogesh, *op.cit*., p. 74.

times and buried the hired workmen; It is a complete *wain*, having a three-storied house in it. The lowest storey consists of three rooms, each of which opens on the descending steps, at intervals of three steps from one another. When the water is at its lowest, it is one step below the bottom chamber; when it rises in the rains, it sometimes goes into the top storey. In the middle storey an inner chamber has been excavated which connects with the domed building in which the bullock turns the well-wheel. The top storey is a single room, reached from two sides by 5 or 6 steps which lead down to it from the enclosure overlooked from the well-head. Facing the right-hand way down is the stone inscribed with the date of completion. At the side of this well is another the bottom of which may be at half the depth of the first, and into which water comes from the first one when the bullock turns the wheel in the domed building afore-mentioned. This second well also is fitted with a wheel, by means of which water is carried along the ramparts to the high-garden.'[89]

About Chanderi Babur comments, 'having much running water round about it. Its citadel is on a hill and inside it has a tank cut of the solid rock. There is another large tank at the end of the *du-tahi* by assaulting which the fort was taken. In front of the fort are three large tanks made by former governors who threw dams across and made tanks round about it; their ground lies high.'[90] Babur writes about Gwalior, 'that place Dhulpur is at the end of a beaked hill, its beak being of solid red building stone. I had ordered the hill cut down to the ground level and that if there remained a sufficient height, a house was to be cut out in it, if not, it was to be leveled and a tank (*hauz*) cut out in its top. As it was not found high enough for a house, Ustad Shah Muhammad the stone-cutter was ordered to level it and cut out an octagonal, roofed tank. North of this tank the ground is thick with trees, mangoes, jamun, and all sorts of trees; amongst them I had ordered a well made, 10 by 10; it was almost ready; its water goes to the afore-named tank. To the north of this tank Sultan Sikander's dam is flung across; on it house have been built, and above it the waters of the rains gather into a great lake. On the east of this lake is a garden; I ordered a seat and four-pillared platform to be cut in the solid rock on that same side.'[91] Gulbadan Begum also corroborates Babur's construction a tank at Dholpur, 'He ordered a tank made in

[89] *Baburnama*, *op.cit*., p. 533, Zain Khan, *op.cit*., p. 157, Gulbadan Begum, *Humuyn Nama*, translated with introduction and notes by Annette Beveridge, Delhi: Low price publication,[1902], 2006, p. 98.
[90] *Baburnama*, *op.cit*., p.597.
[91] Ibid., pp. 606-7.

Dholpur, ten by ten, out of a single mass of rock, and used to say, 'When it is finished, I will fill it with wine,' But as he had given up wine before the fight with Rana Sanga, he filled it with lemonade.'[92]

Monseratte informs about the water management of Fathpur Sikri, that a huge tank of two miles long and half a mile wide was constructed as per order of Akbar and a dam also built to stop rain water.[93] Badaoni also comments, that 'Emperor Akbar ordered all the soldiers that they should divide a large reservoir, which was in front of the city, among themselves, and excavate it, and fill it up water; and he himself, with good fortune as his companion, went round it, and named it the *shukr talao*, the tank of thanks giving.'[94] Thevenot describes that at Fathepur Sikri, a huge lake formed by constructing a dam across the valley of the *Khari Nadi*. It supplied water to the city and fed many irrigation canals. The dam however burst while Akbar was still alive which supplied the whole town with water, and was the more necessary that all the springs there about are salt; and the wholesome waters were one of the chief causes that obliged the Great Mughal to settle elsewhere.[95] As the tank of Fathepur Sikri was major source for the water supply to the whole city. Iqtidar Alam Khan also describes the Guru ka Tal a sixteenth century structure, 'which was originally designed to harness the flood-waters flowing the high grounds in its south-west towards Yamuna.'[96] State role was major to make such a huge constructions not only out of their own personal interest but also the benefit of the people also. Jahangir writes [1618] , 'I came to the Barah, as the garden and well which had been built by the order of Jahangir's mother in the *pargana* of Jusat was on road, I went to inspect them. Certainly the baoli (step well) was a grand building, and had been built exceedingly well. I ascertained from the officials that a sum of Rs. 20,000 had been expended on this well.'[97] European travllers amazed to see the tanks as a resources used by the Indians in the different part of the country, during their travel they give a informative account as they seen, Edward Terry who was attached to the embassy of Sir Thomas Roe noted during his travels across Gujarat, Malwa and Rajputana, he

[92] Gulbadan Begum, *Humuyn Nama, op.cit*., p. 98.
[93] Monserrate*, op.cit*., p. 31.
[94] Badaoni, *op.cit*., vol. II, p. 137.
[95] *Thevenot, op.cit.* p. 56.
[96] Khan, Iqtidar Alam, 'Location, Structure and functioning of a Pre-Modern Water- work: A study of Guru ka Tal, *Proceedings of Indian History Congress,* Karnataka session, 1988, Delhi: 1989, p. 228.
[97] *Tuzuk-i-Jahangiri*, *op.cit.,* vol. II, p. 64.

took the water resources, 'they have many ponds which they call *tanques*, some of them are more than a mile or two in compass, made round or square, girt about with faire stone walls, within which are steps of well squared stone which encompass the water, for men every way to go down and take it.'[98] Even Thevenot and Monserrate also give such accounts, Thevenot informs about Petland, a town in Baroda state, having first past the Gulf of River of Mahi, he found two great *Tanquiez* and these T*anquiez* are standing ponds or reservations of rain-water, there are many of them in the Indies, and commonly there is great care taken in looking after them, because wells being rare in that country, there is an extreme need of these public reservoirs, by reason of the continual thirst which the heat causes in all animals there, and some of them are as big as lakes or large ponds.[99] Thevenot describes about the reservatory of water at Surat , 'this tanquie was made at the charges of a rich *baniya* named Gopi, who built it for the public; and here to fore all the water that was drank in Surat came from this reservatory, for the five wells which at present supply the whole town, were not found out till long after it was built.'[100] Thevenot who travelled in Gujarat stated that 'wells being rare in that country, there is an extensive public reservatories.'[101] By the large, evidence from contemporaries indicates that greater reliance was placed upon the community water tanks to satisfy the requirements of the 'populace, particularly in urban areas.'[102] Thevenot describes about the extraordinary well in the city Ahmadabad, 'the figure of it is an oblong square; it is covered with seven arches of freestone that much adorn it: there are six spaces betwixt the arches to let light in, and they are called, the mouths of the well. It is four fathom broad, and about four and twenty long. At each end there is stair case two foot broad to go down to it, with six stories or landings supported by place of four fathom extent, and these galleries and pilasters are of freestone: sixteen pilasters support each galleries, and the mouths of the well are about the same length and breadth that the galleries are: the figure of third mouth differs from the rest, because it is an octagonal, and has near it a little turning stair-case that leads down to the well; the water of it rises from a spring, and it was up to the middle of the fourth story. The Indians say, that this well was made at the charges of a nurse of a King of Gujarat, and that it cost thirty millions; but Thevenot

[98] Foster, Willam, *Early Travels in India 1583-1619*, Delhi: Low Price Publications, [1921] 1999, p. 300.
[99] *Thevenot, op.cit.,* p. 10.
[100] Ibid., p. 35.
[101] Ibid., p. 10.
[102] Sharma, Yogesh, *op.cit*., p. 71.

discovered no work about it that required so great expenses.' [103] Thevenot further describes about a well at Surat, which was built by a *baniya* for the convenience of travellers, 'it is of an oblong square figure, like the well of Ahmadabad.'[104]

In the province of a Daulatabad, Thevenot mentions about a stately *tanquie* at the town of Ambar, ' it is square, and on three sides faced with free-stone, with fair steps to go down to it. In the middle of the fourth side there is a divan, that runs out into the water about two fathom; it is covered with stone, and supported by sixteen pillars a fathom high.' [105] Thevenot also writes about one more reservatory of Chitanagar, 'from the highest place I went to, I could not discover the length of it. In that reservatory, there is another little *tanquie*, seven or eight fathom square, and walled in this water bring below the house, there is a large pair of stairs to go down to it; and about an hundred and fifty paces forward, in the great reservatory opposite to the house.'[106]

Lakes/*jhils* are generally natural but at times some artificial sources of water were created. The famous artificial lakes at Pushkar, Sabhar, Pohkaran etc which were constructed largely for religious (Pushker) and at times for specific economic motive (Sambhar and Pokhara) . The natural lakes were different as they were part of an ecological structure of wetlands, which were supported by seasonal rainfall, rivers and streams. Natural lakes too attracted habitation and settlement in their vicinity. By the large in India natural lakes were not numerous, consequently greater dependence had to be placed on artificial reservoirs.[107]

Babur was enamoured by the natural lakes of the Indian subcontinents. He provides graphicaccount of the Gwaliar water fall converging into a lake 'I went to see a waterfall 6 kurohs (12 m.) to the south-east of Gwalior. Less than that must have been ridden; close to the Mid-day Prayer we reached a fall where sufficient water for one mill was coming down a slope and *arghamchi* high. Below the fall there is large lake; above it the water comes flowing through solid rock; there is solid rock also

[103] *Thevenot, op.cit.,* p. 16.
[104] Ibid., p. 34.
[105] Ibid., p. 108.
[106] Ibid., p. 112.
[107] Sharma, Yogesh, *op.cit*., p. 74.

below the fall. A lake forms wherever the water falls.'[108] Babur mentions at Bhira that at '*Kalda-kahar* is some 20 miles north of Bhira, a level land shut in amongst the Jud mountains. In the middle of it is a lake some six miles round, the in-gatherings of rain from all sides. On the north of this lake lies an excellent meadow; on the hill-skirt to the west of it there is a spring (*chashma*) having its sources in the height overlooking the lake. The place being suitable I have made a garden there, called the *Bagh-i-safa*, as will be told later ; it is a very charming place with good air.'[109] Pietro Della Valle Italian traveller when visited Surat, he observed that there are no natural lakes in India, and about the vastness of the Surat lake, he informs that people of this area use water from it throughout the year. Jahangir ordered to measure the circumference of the lake of Fathpur which he measured that it was 7 *kos* in circumference. As Fathpur has little water, and what there is bad, this well yields a sufficient supply for the whole year for the members of the family (of Salim Chisti) and for the dervishes who are the caretakers of the mosque.[110]

About the various springs and lakes of Kashmir and its beauty medieval provides graphic accounts once after Akbar's imperial control over Kashmir it became part of the Mughal empire. About the lake of Kashmir Jesuits missionaries informs that, 'about three leagues from the town there is a lake of sweet water which, through not more than two leagues in circuit and a half a league broad, is so deep that large vessels can float upon it. [111] Jahangir mention that 'the source of the Bihat [Jhelam] is a spring in Kashmir called vir-nag, as there are celebrated natural springs on the southern side of Kashmir which are among the most romantic spots in the country, the best of them being the spring of Vernag, it occurred to the royal mind that he should make an excursion into these regions and proceed to the capital of Lahore by that route.'[112] It is an octagonal reservoir about 20 yards by 20. Near it is the remains of a place of worship for recluses; cells cut out of the rock and numerous caves. The water is exceedingly pure. The waters from the spring Vir-nag and of the other streams and *nullahs* that join from right and left form the river Bihat, which passes through the heart of the city. Its breadth in most places is not more than a

[108] *Baburnama*, *op.cit* Ibid., p. 614.
[109] Ibid. p. 381.
[110] Pietro Della Valle*, The Travels of Pietro Della Valle in India*, 2 vols., edited by Edward Grey, New Delhi: Asian Educational Service, [1892,London], 1991, vol. II, p. 66, p. 72.
[111] Fr. Pierre Du Jarric*, Akbar and the Jesuits, op.cit.,* p. 76.
[112] *Tuzuk-i-Jahangiri*, *op.cit.*, vol. I, p. 92, *Shahjahan Nama*, *op.cit*., p. 125.

bowshot. No one drinks its water, because of its heaviness and indigestibility. All the people of Kashmir drink the water of a lake that is near the city, and is called Dall. The river Bihat enters this lake and flows through to the Panjab by the Baramula Pass, Pakli, and Dantir.'[113] Jahangir informs in 1620, near Virnag, 'the water of the reservoir was so that, notwithstanding its 4 *gaz* of depth, if a pea had fallen into it, it could have been seen. Of the trimness of the canal and the verdure of the grass and that grew below the fountain, what can one write? Various sorts of plants and sweet – smelling herbs grew there in profusion, and among them was seen a stem (*buta*) which had exactly the appearance of the variegated tail of peacock. ..I gave an order that plane-trees should be planted on both sides, on the banks of the canal. ..on the road I passed by a spring which call *Andha Nag* (Anantnag, Blind fountain) it is well known that the fish in this fountains are blind. I delayed a while near this spring, and threw in a net and caught twelve of the fish. Of these three were blind and nine had eyes. Evidently the water of this spring has the erect of making them blind. Certainly this is not devoid of strangeness.'[114]

Jahangir's inquisitiveness was exceptional. He always tried to go into the details of the things and attempted to create something new to know more depth he ordered to measure it depth, 'a gain of poppy-seed is visible until it touches the bottom. I ordered them to measure it. There were many fish to be seen in it. As I had heard that it was unfathomable, I ordered them to throw in a cord was measured in *gaz* it became evident that the depth was not more than once and a half the height of a man. After my accession I ordered them to build the sides of the spring round with stone, and they made a garden round it with a canal**.**[115] Jahangir describes about a waterfall near Baramulla, which was so beautiful that Jahangir writes that, 'I delayed a moment at it, and filled my eye and heart with gazing on it from a high spot.'[116] Jahangir describes the beauty of a spring of Achval, the water of this is more plentiful than that of the other and it has a fine waterfall.'[117] Abul Fazl remarks that water is known for its refreshing qualities. The sick that drink of it and preserve in a course of

[113] *Tuzuk-i-Jahangiri*, *op.cit*, vol. I, pp. 92-93.
[114] *Ibid.,*vol. II, p. 174.
[115] Ibid.
[116] Ibid, vol. II, p. 134.
[117] Ibid, p. 173.

its waters, recover their health.[118] Describing the Wular lake Jahangir mention that its breadth are more than three or four *kos* while he says its depth is endless. It is called Zain-lanka, and in making it they exerted themselves greatly: 'The springs of this lake are very deep. The first time they brought a large quantity of stone in boats and poured it on the place where now the building stands it had no result. At last they sank some thousands of boats with stones, and with great labour recovered a piece of ground 100 *gaz* by 100 *gaz* out of the water.'[119] Pelsaert informs about the reservoirs which was made by Jahangir from an inland lake; but the water of neither of them appears to be sweet healthy, and the inhabitants boil it before they drink it, while the King and the chief nobles have their water carried 3 or 4 *kos*, King Jahangir began the construction of a wooden aqueduct, to bring good water from a distance of 10 or 12 *kos* into the fort, but, realizing that it could be easily poisoned by enemies or malcontents, he abandoned it after having spent fully 10,000 rupees.[120] Inayat Khan describes the reservoir emperor Jahangir had caused this tank to be constructed before he ascended the throne. The water in it is transparent to such a degree, that notwithstanding its depth, every little pebble at the bottom can be distinctly discerned; and the different varieties of fish that it contains exceed the power of computation.[121] Near Ghakkar country Jahangir informs, 'in the valley near this station there was a stream flowing, the waters of which were collected in a pool. As this halting place was not devoid of freshness I alighted there for a time, and I asked the Ghakkars the depth of the pool. They gave me no precise answer, but said they had heard from their fathers that there were alligators in the pool which wounded animals that came there, and on that account no one had the boldness to go in. I ordered them to throw in a sheep. It swam scross the pool and came out. I then ordered a *farrash* to go in, and he also came out safe. It thus became clear that there was no foundation for what the Ghakkars had said the pool was an arrow's flight in width.'[122] He further mentions that, 'one kos to the east of this station there is a waterfall over which the stream rushes with great force. There is no fall like it on the way to Kabul. On the way to Kashmir there are two or three like it.[123] The celebrated place at that station is a spring

[118] *Ain-i-Akbari*, *op.cit*., Jarrett, vol. II, p. 359.
[119] *Tuzuk -i -Jahangiri*, *op.cit*., vol. I, p. 94.
[120] Pelsaert, *op.cit*., p. 33-34.
[121] *Shahjahan Nama*, *op.cit*., pp. 137-38.
[122] *Tuzuk -i -Jahangiri*, *op.cit*. vol. I, p. 98.
[123] Ibid., p. 99.

which flows from the foot of a little hill, exceedingly clear, sweet, and nice, as witness this couplet of Amir Khusrau:-

> "In the bottom of the water, from its clearness, a blind man
> Can count the sand-grains in the heart of the night."

Jahangir records that 'Kwaja Shamsu-d-din Muhammad Khwafi, who was for long employed as Vizier by my revered father, had made a reservoir there, into which is led the water from the spring, which flows from the foot of a little hill, exceedingly clear, and nice and thence is used in cultivation and in gardens.' [124] Jahangir informs that 'I went with the band of courtiers who had not seen it to look at the reservoir in the house of Hakim Ali like one that had been made at Lahore in the time of my father. The reservoir is 6 gaz by 6 gaz.' [125]

Aesthetic Use

Water was used for beautification also. The water flows can be modify according to the need. Water was required for tree plantation and many more usages, but as the water streams were not properly managed, when Babur innovated the *char-bagh* system, he corporate running water channels into the concrete of garden layout. He and his successors thus played a major innovative role in maintaining beautiful gardens. Jahangir comments about a building Kaliyadaha of Ujjain, which was built by Nasiru –d-din, some of Ghiyasu-d-din, son of Sultan Mahmud Khalji, who was ruler of Malwa that 'They say that the heat overcame him so much that he passed his time in the water. He made this building in the middle of the river, and divided its waters into canals, and brought the water on all sides, as well as inside and outside, of the house, and made large and small reservoirs suited to the place. It is a very pleasant and enjoyable place, and one of the noted habitations of Hindustan.' [126] Jahangir writes, when he proceeds towards Gujarat on, 'a hill valley in which there was a waterfall near the camp. At this season it had but little water, but as for two or three days they had dammed the watercourse and about the time of my reaching the place, let it loose, it flowed over very well. Its height might be 20 gaz. It separates at the top

[124] Ibid., p. 100, Elliot & Dowson,*The History Of India as told by its own Historians*, vol. VI; Allahabad: kitab Mahal, 1972, p. 311.
[125] *Tuzuk- i- Jahangiri, op.cit.,* vol. II, p. 152.
[126] Ibid., vol. I, p. 354.

of the hill and flows down. In this way it is a great boon (*ghanimat*) on the road.'[127] Jahangir mentions about *kankriya* tank that Qutbu-d-din Muhammad, grandson of Sultan Ahmad, the founder of the city of Ahmadabad, made this tank, and placed round it steps of stone and cement. In the middle of the tank he constructed a little garden and some buildings. At the time when the host of prosperity was about to proceed towards Ahmadabad, Safi Khan, bakhshi of Gujarat, repaired at the expense of government what was broken down and in ruins, and clearing out the little garden erected a new building in it. Certainly it is a place exceedingly enjoyable and pleasant. On the side where the causeway is, Nizamu-d-din Ahmad, who was for a while bakhshi of Gujarat in my father's time, had made a garden on the bank of the tank. At this time a representation was made to me that 'Abdu-llah Khan, in consequence of a dispute that he had with Abid, son of Nizamu-d-din Ahmad, cut down the trees of this garden. Jahangir then show the justice and he demoted this officer from the *mansab* and deduct the penalty money from his j*agir*.[128]

Shah Jahan wish to select some pleasant site on the banks of the rivers, distinguished by its genial climate, where he might find a splendid fort and delightful edifices. In accordance with the promptings of his noble nature, he envisioned that streams of water should be made to flow through the proposed fort and that its terraces should overlook the river. [April 1639] 'The new fort was ultimately completed on 18 April 1648 during the twenty first year of His Majesty's reign, at an outlay of 60 lakhs of rupees, and after taking 9 years, 2 months, and some days in building.'[129] As we talk about the Mughal capital Shahjahanbad in 18th century as informs in *Khulasat-Ul-Tawarikh*, 'flowing canals, large tanks, spacious reservoirs of water, lofty fountains.'[130] About the availability of water in Delhi, Sujan Rai praises, 'freshness is like a slave-child of this place. Around it is a broad ditch of pure water, so very clear that a grain of sand in it is visible in a dark night, and so very deep that its fishes rival the fish supporting the universe.—

[127] Ibid., p. 403.
[128] Ibid., pp. 420-421.
[129] *Shahjahan Nama*, *op.cit*., pp. 406-7.
[130] *Khulasat ut-Tawarikh, op.cit.,* p. 3.

[Verses]: At the bottom of its water, --so great is its purity; --
A blind man can count the fine sands at midnight.
Its depth is so great
That the earth seems to have disappeared from its bottom.[131]

The water of lakes at times was unpalatable. Abul Fazl writes about the tank of Jannatabad, an ancient city of Bengal, and former capital known as Lakhnauti, Humayun changes its name, 'there is a lake called Chhatipatia in which are many islands. Were the dam that confines it to break, the city would be under water. About a *kos* to the north of the fort, is a large building and a reservoir, monuments of great antiquity. From time immemorial, its water has been considered to be of a poisonous character. The place was called *Piyasbari* (abode of thirst), and criminals condemned to death, who in a short time perished from the effects of this brackish water.'[132] Akbar banned this practice.

Navigation

Rivers were the chief sources of transportation. Peter Mundy, Tavernier, Bernier, Thevenot, Ovington's account are full of information on riverine of the Mughal empire. Manrique observes that the stone and masonry bridges are the major achievements of Mughal engineering, as the smaller streams, and rivers being served by bridges of boats and ferries.[133] Journeys along the water routes generally got affected in the rainy season.

Ritual Relevance

The 'rivers' and 'water 'occupied special place in the ritualistic tradition among the Indians in the medieval period. According to Indian religious texts water of the rivers was considered holy and taking bath during certain days or at the time of eclipses was the way to find *moksha*. There are examples of sacred ponds attached to temples in many parts of India. Some of these have been responsible for the protection of certain endangered species of turtles, crocodiles, and the rare fresh water

[131] Ibid, p. 4.
[132] *Ain-i-Akbari*, trans. Jarrett, *op.cit*., vol. II, p. 135, Ghulam Husain Zaidpuri, *Riyaz-us Salatin*, in Mohammad Azhar Ansari, *Geographical Glimpses of Medieval India*, vol.III, New Delhi: Idrah –I Adabiyat I Delli, 2009, p. 59.
[133] Manrique, *Travels of Fray Sebastien Manrique*, *1629-43*,edited by Luard and Hosten, London: Hakluyt Society, 1926, vol. II, pp. 298.

sponge. It was the matter of amazement for the European to see such types of activity as Bernier, Tavernier Manucci and Fryer give an eye-witness account of solar-eclipses which were of great value for Hindus specially. The Jesuit father Dn Jarric comments, 'on the 10th of July in the year 1600, there was an eclipse of the sun at noon. This was a great source of profit to the Brahmanas on account of the offerings they extracted from poor and ignorant people, persuading them that the sun and moon were fighting against each other, and that there would not be peace between these luminaries until vast offerings had been made to them. The people also went to bathe in the river, thinking thereby to clean themselves of their sins'[134] Mughal rulers also followed these rituals, and gave alms to poor people. Jahangir writes, 'on Saturday, the 13th, when four *gharis* of day were left, the moon began to be eclipsed. By degrees the whole of its body was obscured, and it continued till five *gharis* of night had passed. In order to avert the bad omen of this I had myself weighted against gold, silver, cloth and grain, and gave away in alms all kind of animals, such as elephants, horses etc., and among the deserving poor.'[135] It shows Jahagir in spite of being extremely rational personality was also superstitious. The sun eclipse in the fifth year 1610, he writes, 'on the 28th an eclipse (of sun) took place, in order to do away with unluckiness of which I weighed myself against gold and silver; it came to 1,800 *tolas* of gold and 4,900 rupees. This along with several kinds of vegetables and sorts of animals such as elephants and horses and cattle, I ordered to be divided among deserving people who were unprovided for and helpless poor of the city of Agra and other cities in the neighbourhood.'[136] In the year 1615 on Sunday, the 9th there was an eclipse of the sun when twelve *gharis* of the day had passed. It began from the west, and four out of five parts of the sun were eclipsed in the knot of the dragon, all kinds of metals , animals and vegetables were given to fakirs and the poor people in need.[137] It is extremely interesting that Mughals also followed and rather believed in the ritualistic tradition of India.

Bernier describes that he witnessed two solar eclipses, which it is scarcely possible, one he saw from France in the year 1654, the other from Delhi in 1666. The eclipse of 1666 is also indelibly imprinted by the ridiculous errors and strange

[134] *Fr. Pierre Du Jarric, Akbar and the Jesuits, op.cit.,* pp.135-136.
[135] *Tuzuk- i -Jahangiri, op.cit*., vol. I, p. 160.
[136] Ibid., p.183
[137] Ibid., p. 282.

superstitions of the Indians. He saw on the terrace of his house, situated on the banks of Yamuna, the Indians who were in the river water up to their waist:

> Their eyes riveted to the skies, watching the commencement of the eclipse, in order to plunge and wash themselves at the very instant.…Persons of rank or wealth, such as Rajas (Gentile sovereign princes, and generally courtiers in the service and pay of the king), *Serrafs* or money-changers, bankers, jewelers, and other rich merchants, crossed from the opposite side of the river with their families, plunged the whole body under water several times in quick succession ; after which they stood in the river, lifted their eyes and hands toward the sun, muttered and prayed with seeming devotion, The deluded people continues to plunge, mutter, pray, and perform their silly tricks until the end of the eclipse. On retiring they threw pieces of silver at a great distance into the *Gemna,* and gave alms to the *Brahmens*, who failed not to be present at this absurd ceremony. I remarked that every individual on coming out of the water put on new clothes placed on the sand for that purpose, and that several of the most devout left their old garments as presents for the *Brahmens.*[138]

These ceremonies can be seen in throughout India till now. Tavernier on July 2, 1666 and Marshall on November, 1671 at Hajipur, Patna, Manucci and Fryer also witnessed the solar and lunar eclipses and informs that people came from Central Asia also.[139] Manucci comments that Hindu believes that planets and eclipses are their own mythology not scientific, and beliefs that when the snake *shesnag* swallows the sun, that planet is in eclipse, and when it is the moon he swallows, the moon eclipses.'[140] About Allahabad which was and is still one of the very religious places for the Hindus because of *Tribeni* (three braids of hair), or 'the union of three rivers; Ganga, Yamuna and Saraswati), a detail description have given by Abul Fazal . Abul Fazl also informs 'Saraswati flows near Thanesar for which the Hindus have great veneration, his place is very ancient and most holy for worship, indeed, as the king of holy places. In winter, when the Sun enters the Sign of Capricorn (which is they call *Makar*), crowds of people assembles together from all sides of the world, staying here for one month, daily engage in ceremonial ablutions. They also pay a certain sum per head to the imperial government. As they consider it meritorious to dissolve the combination

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[138] Bernier, Francois, *Travels in the Mogul Empire AD 1656-1668,* translated by Archibald Constable, edited and revised by V.A. Smith, New Delhi: Atlantic Publishers, 1990, pp. 301-2.

[139] Tavernier, *op.cit*., p. vol. II, p. 247, John Marshall, *John Marshall in India-Notes and Observations in Bengal 1668- 72*, ed. by Shafaat Ahmade Khan, London,1927, pp.141-42,John Fryer, *A New Account of East India and Persia: Being Nine Years Travels, 1672-81*, ed. by William Crooke, London: Hakluyt Society, 1912, vol. I p. 67, Manucci, *op.cit.*, vol.III, pp. 142-43.

[140] Manucci, *op.cit*., vol.III, p. 31.

of elements (the human body) here, many men in former times used to place themselves in the road in the hope of final redemption and obtaining of their desires in the next world. This practice was forbidden in the time of Shah Jahan. As Banaras also has very religious value, aged men and disappointed devotees come here with the desire of dying and surrendering their lives to the Creator of life. There is a place near on the bank of the Ganges, every time that Jupiter enters the Sign of Leo, a hillock becomes visible in the middle of the river and remain so far a month; and many people worship God.' [141] Thevenot narrates that near Allahabad Indians throw themselves stark naked into the Ganges to be purified, and they have their beards and hair.[142]

Manucci writes about the Ganges water, that '*baniyas* have great veneration for the river Gangs. They say that by bathing your body in it you attain redemption and become delivered from your sins. The same end is gained for those whose are thrown into that river. For this reason, after burning the dead man's body, as is the custom, the ashes of great nobles are carried from great distance followed by a great concourse, with much ceremonial and expenditure, to be thrown into the said river. The *baniyas* carry this Ganges water in brass vessels through the kingdom far and near for delivery to their reward. Many Hindu princes hold it a religious duty to drink such water. To this intent they send camels, which daily go and come, even if it be a two or three months' journey. There is another piece of foolishness they have – that is to say, when a man is near death they carry him to the bank of the said river, and finish off by killing him by dint of its waters. It happens often that out of devotion men die on the banks of this river, as I have seen, and the Hindus who pass by throw the body into it. This will suffice for an account of a people who do not deserve the name of man, who are to be found in great in the Mogul kingdom. [143]In the religious perspective, the role of rivers remain very much strong specially in Hinduism, Thevenot also describes about death ritual of *baniya* in Surat, comments, ' they burn their dead bodies is by the river-side, beyond the burying- places; and when they may be carried away by the Tapty, because they look upon it is sacred river. They believe

[141] *Ain-i-Akbari*, Jarrett, *op.cit.*, vol. II, p. 169, p. 286, *Khulasat ut-Tawarikh, op.cit.,* pp. 27-29.
[142] *Thevenot, op.cit.,* p. 93.
[143] Niccolao Manucci, *op.cit.*, Vol. I, pp. 152-53.

that it contributes much to the salvation of the soul of the deceased, to burn his body immediately after his death…'[144]

Hindus looked upon the dissolution of the elementary body at this place as a cause of redemption in the next world. Thence it passes to Badri, Rishikesh and then Haridwar. 'Although according to the holy books the river Ganges should be worshipped from its origin to its ends, yet Haridwar, which is as described the most holy place on its banks. Every year, on the day when the Sun enters the sign of Aries—which is called *Baisakhi*—people from every side assemble here. Especially in the year when Jupiter enters the sign of Aquarius (*Kumbh*)—which happens one every 12 years vast numbers of people assemble here from remote distances. They consider bathing, giving alms and shaving the hair and beard at this place, as acts of merit, and throwing of the bones of the dead into the Ganges [as the means of] salvation of the decreased. Its water is carried to distant places as a valuable present. It is most wonderful fact that if the water is kept in a pot even for a year, it does not acquire a bad smell or change its colour. Undoubtedly its water which is pleasant to the taste, free from impurity like the heart of the pious, and full of grace like the souls of God's chosen ones equals in purity and sweetness the water *Kausa*r (the river of nectar in Paradise) and rivals in delicacy and agreeableness the water of *Salsabil* (a fountain of pure water in Paradise) its perfect purity makes it suitable to men of all constitutions. Many benefits are derives from it ; that is to say, it confers health and recovery on the sickly, and the benefits of medicine in the case of long-standing diseases. It causes stoutness and cheerfulness in the healthy. It gives purity to the unclean stomach and brightness to the internal heat; it increases the appetite and stimulates the sexual energy. It makes the amber-colored face look like the ruby, and the saffron-complexioned face purple. This is the reason why the king of Hindustan and the great nobles wherever they may be, drink the water of the Ganges.'[145] Clearly this speaks in multitude the common masses deep faith as 'river of life' in the Ganges. The ritual and religious perspective of Ganges is very much among the Indians as from the emergence and to its end, 'the inhabitants of its banks are all men of wicked professions, quarrelsome, thieves, highway robbers, shedders of blood, oppressors of men. As on bathing in this river, sins become detached from

[144] Thevenot, *op.cit.,* p. 34.
[145] *Khulast ut-Tawarikh*, *op.cit*., pp. 4, 18-20.

the bodies of men, so these sins certainly by transmigration born again on its banks in the form of men, and become the cause of such wicked deeds.'[146]

Bernier further describes about the observances in the Indus, in the Ganges, and in the other rivers and *Talabs* (or tanks of the Indies), but above all in that one at Thanesar, Abul Fazl also describes about Kurukshetra that during the solar eclipses people come from different places and baths here [147] which has great value among the people till now (presently in Kurukshetra district of Haryana) assembled from all parts of the empire; 'its waters being considered on the day of an eclipse more holy and meritorious than those of any other. The Great *Mogol*, though a *Mahometan*, permits these ancient and superstitious practices; not wishing, or not daring, to disturb the Gentiles in the free exercise of their religion. But the ceremony I have described is not performed until a certain number of *Brahmens,* as deputies from their fellows, have presented the King with a *lecque* of *roupies*, equal of about fifty thousand crowns; in return for which he begs their acceptance only of a few vests and an old elephant.[148] About the large tank of Thanesar (Kurukshetra) Surjan Rai informs its religious value, as 'in Hindu –book it is called the Navel of the Earth, and it is held that the creation of earthly being began here, they consider it an act of great merit to bathe in its tank. Although it is meritorious at all times to bathe in it, yet on the day of the Solar eclipse large numbers of people, high and low great and small, male and female assemble here from all parts of the country and from remote distances. There are many tanks reservoirs and wells in the out-skirts of the city and in many other places.'[149]

The author of *Khulasat* and *Chahar Gulshan* give detail accounts of the religious baths shrines of Indians. Water plays a significant role in different aspects, as in the religious setup it became holy and the things change as sacred and ritualistic. The gathering around rivers, wells, ponds and reservoirs shows people's faith and sensitivity for water and its sources. In the Vedic Age Indra, the king of heaven was considered as the lord of rain. 'Many diseases are cured by bath, such as disorder of the brain, heaviness of the limbs, yawning caused by crop-sickness, and dullness of

[146] Ibid., p. 22.
[147] *Ain-i-Akbari*, Jarrett, *op.cit*., vol. II, p. 133, p. 286.
[148] Bernier, *op.cit*., pp. 302-3
[149] *Khulast ut-Tawarikh, op.cit.,* p. 15.

the system, many kinds of happiness are gained in it, such as cheerfulness of spirit, freshness of the brain, liveliness of the heart, and purity of the body.' :

In it water and fire work together;
Air and dust are away from its door.
In it there is a sky named *Hammam* (bath)
The Moon and the Sun are called the *gul* and *jam* (rose and cup)
In this world, from the temperateness of its constitution,
The elements have been [harmoniously] blended together.[150]

Jahangir comments about the Pushkar lake of Ajmer, which is one of the established praying place of the Hindus.[151] Nobody can form a guess as its depth. 'It is an old place of worship. In the books of the Hindus it is regarded as the guide of holy place; it is held that if a man baths in and walks round all other holy places on the face of the earth, but does not come to bathe in this lake, he gains no merit.'[152]In the Awadh province there is large sacred tanks to 'Brahma in Nimkhar.(a town in Sitapur district, numerous tanks and temples) Within it the water boils and there is such an eddy that once cannot sink in it. Whatever is thrown into it, is cast out. It is regarded as a great shrine. In the neighbourhood there is a tank, the source of a good stream, one yard broad and four fingers deep, that mixes with the river Gomti. Brahmans versed in the Vedas read charms and perform worship here. By the power of the All-Powerful the figure of Mahadeva suddenly becomes manifest on the sand, and men wonder at it; it quickly disappears. If anybody throws rice and other things into it, no trace of them remains.'[153]

Drinking value of **Water**

There were the different categories of water—as sea water, river water, well water, tank water, and different aspects of purity and unpurity of it. 'The essential purposes were to find readily available water in huge quantities, which was good and wholesome, and could be stored over long periods.'[154] Babur comments about the water of Betwa as best for drinking purposes that it has a small river (*daryacha*), Betwa by name; which may be some 3 kurohs (6 m.) from Chanderi itself; its water is

[150] Ibid., p. 4.
[151] *Tuzuk- i -Jahangiri, op.cit*., vol. I, p. 254.
[152] *Khulast ut-Tawarikh*, *op.cit*., 1901, p. 58.
[153] Ibid., p. 33.
[154] Sharma, Yogesh, *op.cit.,* p. 72.

noted in Hindustan as excellent and pleasant drinking. It is a perfect little river (*darya-ghina*). In its bed lie piece after piece of sloping rock (*qiader*)fit for making houses.'[155] Gulbadan Begum informs that Humayun and his troops were faced very miserable time in Umerkot. 'it was extremely hot, horses and other quadrupeds kept sinking to the knees in the sand..thirsty and hungry. All through that night the Emperor went on, and at dawn a watering-place was found. For three days the horses had not drunk. They found no water. On the fourth, they came to some very deep wells, the water of which was extraordinarily red. Emperor halted and alighted near one of the wells; as each bucket came out of the wells into reach, people flung themselves on it; the ropes broke, and five or six persons fell into the wells with the buckets. Many perished from thirst. When the Emperor saw men flinging themselves into the wells from thirst, he let anyone drink from his own water-bottle. When everyone had drunk his fill, they marched. After a day and a night they reached a large tank. The horses and camels went into the water and drank so much that many died. Beyond this place water was found at every stage on the way to Umrkot, which is a beautiful place with many tanks.'[156]

Jauher Aftabchy writes, about scarcity of water in India when they marched towards Ouch, and suffered a great hardships on the route and at village of Mow, which is the boundary of the Bhiker district, Humayun water bottle get empty. He therefore asked his humble servant 'Jouher Aftabchy "if he had any water in the Ewer?" his humble servant replied, "there was water;" the King said, "pour it into the bottle." Although the water I had was for purification, I poured it into the bottle, and said, "what a horrid country this is where one cannot procure water!' [157] Water harvesting system and management was basically depend on the availability of water resources as Jahangir gives accounts of Ahmadabad, 'Its water is very bad and unpalatable, and the river, which is by the side of the city, is always dry except in the rainy season. Its wells are mostly salt and bitter, and the tanks in the neighbourhood of the city have become like buttermilk from weathermen's soap. The upper classes that have some property have made reservoirs in their houses, which they fill with

[155] *Baburnama*, *op.cit*., p. 597.
[156] Gulbadan Begum, *Humuyn Nama, op.cit*., p. 156-157, Jauhar Aftabchy, *Tezkereh Al Vakiat or Private Memoirs of the Mughal Emperor Humayun*, translated by Major Charles Stewart, Delhi : Idrah-i Adabiyat-i Delhi, 2009, p. 43.
[157] Jouher Aftabchy, *op.cit*., p. 35.

rainwater in the rainy season, and they drink that water until the next year. The evils of water of which the air never penetrates, and which has no way for the vapour to come out by, are evident.'[158] In Kashmir foreigners usually suffer from the flux, and many to die of it; the cause must be the water, and also the quantity of fruit which is available.[159] The Mughals used to drink Ganges water in their routine life, as the whenever the rulers on the campaign, that time also the water arranged for him specially. As many European travellers recorded many instances about the Mughal emperors, Bernier writes, 'the Mogul Emperors were great connoisseurs in the matter of good water', Abul Fazl informs regarding the department of state, the *Abdar khanah*, which had to do with the supply and cooling of drinking water, also with the supply of ice, then brought in the form of frozen snow of life " the water of immortality", and has committed the care of this department to proper persons. He does not drink Ganges water. Some trustworthy persons are stationed on the banks of that river, who dispatch the water in sealed jars. When the Court was at the capital Agra and in Fathepur the water came from the district of Sarun, but now that his Majesty is in the Panjab, the water is brought from Hardwar. For the cooking of the food, rain water or water taken from the Jamnah and Chenab is used, mixed with a little Ganges water. On the journeys and hunting parties his Majesty, from his predilection for good water, appoints experienced men as water-tasters. [160] Thevenot informs, 'the great Mughal drinks commonly of the water of the Ganges, because it is much lighter than other waters; and yet I have met with those who are affirm that it cause fluxes; and that the Europeans (who are forced to drink it) boil it first.[161]

Bernier informs that It is a matter of considerable satisfaction to me think that I shall not be exposed to any of these inconveniences and dangers, as my *Nawab* has with my marked kindness ordered that a new loaf of his own household bread, and a *sourai* of Ganges water (with which, like every person attached to the court, he has laden several camels) should be presented to me every morning. A *sourai* is that tin flagon of water, covered with red cloth, which a servant carries before his master's horse. It commonly holds a quart, but mine a purposely made a contain two, a device

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[158] *Tuzuk- i -Jahangiri, op.cit*., vol. II, p. 13.
[159] Francisco Pelsaert*, op.cit*.,p.34-35.
[160] Bernier, *op.cit*., p. 221, *Ain i- Akbari*, translated by H. Blochmann, vol. I, New Delhi: Oriental Books Co., [1927], 1977, pp. 57-59, John Ovington, *A Voyage to Surat in the Year 1689*,ed.,H.G. Rawlinson,London: Oxford University Press, 1929, p. 208.
[161] *Thevenot, op.cit.,* pp. 96-97.

which I hope may succeed. This flagon keeps the water very cool, provided the cloth which covers it be always moist. The servant who bears it in his hand should also continue in motion and agitate the air ; or it should be exposed to the wind, which is usually done by putting the flagon on three neat little sticks arranged so that it may not touch the ground. The moisture of the cloth, the agitation of the air, or exposure to the wind, is absolutely necessary to keep the water fresh, as if this moisture, or rather the water which has been imbibed by the cloth, arrested the little bodies, or fiery particles, existing in the air at the same time that it affords a passage to the nitrous or other particles which impede motion in the water and produce cold, in the same manner as glass arrests water, and allows light to pass through it, in consequence of the contexture and particular disposition which exists between the minute particles of water and those of light. It is only in the field that this tin flagon is used. When at home, we put the water into jars made of a certain porous earth, which are covered with a wet cloth ; and; if exposed to the wind, these jars keep the water much cooler than the flagon.

Other Uses

Saltpetre was used by the Mughals to keep the water cool. Abul fazl further describes about Saltpetre, which in gunpowder produces the explosive heat, is used by his Majesty as a means for cooling water, and is thus a source of joy for great small. Saltpetre is a saline earth. They fill with it a perforated vessel, and pour some water over it, and collecting what drops through, they boil it, and let it crystallize. One ser of water is then put into a goglet of pewter, or silver, or any other such metal, and the mouth closed. ..[162] The higher sort of people make use of saltpeter, whether in town or with the army. 'They pour the water, or any other liquid they may wish to cool, into a tin flagon, round and long-necked, as I have seen English glass bottles. The flagon is then stirred, for the space of seven or eight minutes, in water into which three or four handfuls of saltpeter have been thrown. The liquid thus becomes very cold and is by no means unwholesome, as I apprehended, though at first it sometimes affects the bowls.'[163]

[162] *Ain –i Akbari,* trans. Blochmann, *op.cit*., vol. I, p. 58.
[163] Bernier,*op.cit*., p.355

About the use of ice Abul Fazl writes, 'since the thirteenth year 1586, of the Divine Era, when the imperial standards were erected in the Panjab, snow and ice have come into use. Ice brought by land and water, by post carriages or bearers, from the district of Panhan, in the northern mountains, about forty five kos from Lahore. The dealers derive a considerable profit, two or three sers of ice being sold per rupee. The greatest profit is derived when the ice is brought by water, next when by carriages, and least when by bearers. The inhabitants of the mountains bring it in loads, and sell it in piles containing from 25 to 30 sers, at the rate of 5 dams. ..Out of the ten boats employed for the transport of ice, one arrives daily at the capital, each being manned by four boatmen. The ice bundles contain from six to twelve sers, according to the temperature. .. all ranks use ice in summer; the nobles use it throughout the whole year.' [164]

Manucci described that, 'We halted four days in Sironj, and then went on our way across inaccessible mountains, with numerous beautiful trees and traversed by crystal streams whose waters are most wholesome, doing no harm to those who drink them fasting; rather are they beneficial and most palatable.[165]

Salt from Sambhar lake manufacturing in the Suba Ajmer, as there is a 'large lake four kos in length and one kos in breadth. Its water is extremely briny. Within the lake there are many tracts of land like peddy fields. After loosening the soil with the spade, they fill it to the brim with the water of this lake. In 15 or 16 days, during the land absorbs the water, all these tracts of land become full of salt. Having dug it with the spade and thrown it up on the banks, they sprinkle water; the earth becomes separated from it, and pure salt comes out. It becomes blue, red, or white, several lacs of rupees worth are annually sold. The Imperial Government levied a tax on it.'[166]

At times salinity or other minerals adulterates the water that often result in 'myth creates' of certain water bodies. In the Bihar *Suba* there is place Tirhut which is known as a centre of learning of Hindus, 'it's climate is excellent. The curd of this

[164] *Ain –i Akbari,* trans. Blochmann, *op.cit*., vol. I, p. 58.
[165] Manucci, *op.cit*., vol. I., p. 67.
[166] *Khulasat ut-Tawarikh, op.cit.,* p. 59.

place remains unchanged and pleasant to the taste for one month. If any milkman adulterates his milk with water, some calamity from the invisible world visits him.'[167]

About the river Gandak, which comes from the northern mountains and mingles with the Ganges at Hajipur; whosoever drinks its water gets the goiter, which gradually becomes as big as the coconut, and is called *joghod* (*ghogha*) –especailly in the case of children.

The Karamnau, having come from the southern mountains, falls into the Ganges at the fort of Chausa. Its water is considered bad; at the time of crossing this river, people take care that no drop of its water may touch their body. The Punpun river also have several small countless streams. The Karamnasa flowing from the south unites with the Ganges near Chausa. Its waters are regarded with aversion. (Its name signifies 'the ruin of religious merit. No person of any caste will drink its waters. The reason of its impurity is said to be that a Brahman having been murdered by a Raja of the Solar line, a saint purified him of his sins by collecting water from all the streams of the world and washing him in their waters which were collected in the spring from which the Karamnasa now issues.)

About the beliefs of Ujjain a famous city of the *suba* Malwa, as Sipra river as regarded here very sacred and Abul Fazl relates the wonderfully that the river flows in waves of milk. The people prepare vessels and make use of it, and such an occurrence brings good fortune to the reigning monarch.'[168]Jahangir also comments on Sipra river that ' the belief of the Hindus is that once in some year at an uncertain time the water of this river turns into milk. In the reign of my revered father, at the time when he had sent Abu-l-Fazl to set in order the affairs of my brother Shah Murad, he sent a report from that city that a large body of Hindus and Musalmans had borne testimony that some days previously at night this river had become milk, so that people who took water from it that night found in the morning their pots full of milk. As this

[167] Ibid., p. 37.
[168] *Ain- i Akbari*, trans. Jarrett, *op.cit*., vol. ii, p. 207, Mohammad Saleh Kamboh, *Amal-I Saleh*, in Mohammad Azhar
Ansari, *Geographical Glimpses of Medieval India*, vol. III, New Delhi: Idrah –I Adabiyat I Delli, p. 16.

obtained currency it has been recorded, but my intelligence will in no way agree to it.'[169]

Thevenot describes that the water of Tapty is always brackish at Surat, and therefore the inhabitants make no use of it, neither for drink nor watering of their grounds, but only for washing their bodies, which they do every morning as all the other Indians do. They make use of well-water to drink, and itself is but little, for at high-water to drink, and it is brought skins(borrachoes) upon oxen. This river of itself is but little, for at high waster it is no broader than half of the river of Seine at Paris. Nevertheless it swells so in the winter-time by the rain-water, that it furiously overflows, and makes great havoc. It has its source in a place called deep *kund,* in the mountains of Deccan, ten leagues from Burhanpur. It passes by that town, and before it discharge itself into the Sea, it waters several countries and washes many towns, as last of all it does Surat. At low water, it runs to Bar; but when it flows the sea commonly advances two leagues over that Bar, and so receive the water of the Tapty.[170]

Different sources of water in turn require different scales, dimensions and mechanisms for the creation and usage of irrigation facilities. By their very nature they need different kinds of mobilization of resources, labour inputs, organizing structures, and mechanisms of usage and control. While canals deal with running surface water and cover large areas, the wells are field-specific mode of irrigation. The role of the state and society individually and in interdependence and interaction is distinct in each of these two modes of irrigation and yet there is commonality in terms of rights to water, labour appropriation and socio-economic and political consequences both for the state and the society. The development of irrigation and water transport system also encouraged by the Mughal state. It played a positive role in the productivity in agriculture and restored the prosperity of these areas which were under pathetic conditions. Canal development led a main role to improve the soil-moisture and productivity. Several towns and villages were established for the settlements, as not only for the administrative purposes, but for public welfare also. There is centrality of irrigation both for the agrarian production as also for the structures and mechanisms of appropriation of the surplus produce. The state itself

[169] *Tuzuk- i –Jahangiri, op.cit.,* vol. I, p. 355.
[170] *Thevenot, op.cit.,* p. 37.

was deeply involved in creating and controlling irrigation facilities. Indeed the water rights defined the nature of the state. Somehow scarcity and superfluity of rain are different climatic conditions. Rivers are the main stream of life in India in different aspects wherever some myths and prejudices relates with water till now in Indian society. Mughal period gives us a picture that water management system which depends on various bodies as state and public level involvement was strongly involved.

The religious notion for water is too deep in the routes of Indian society, from the beginning to end of life, water is the base. Instead of the diversity of religions in India, water has given special value in all scenarios. Since the time of the Babur, immense importance has been given to the water by the Mughals in India. The unlimited sources of the water available in India were used in a systematical way. Persian wheel played significant role in getting irrigation facilities. Akbar and Shahjahan gave proper attention towards the formation of the canals and wells. A special overview was shown towards the public requirements, to facilitate the needs of common people by developing the various water bodies under the Mughal state. A descriptive information on the rivers, water bodies and importance of rivers found in Mughal sources, through a ample light on the keen interest of the Mughal rulers towards water and its uses.

CHAPTER - 3

FORESTS, GARDENS AND HORTICULTURE

Natural resources are crucial for the development of civilizations; men-nature relationship is the axis of it. The uses of the resources by humans and searching more fresh for the benefit for the economic enhancement are recorded in the different ages of history. Men and civilizations developed day by day. The uses of land, clearances of forests and the agricultural developments are basically not area, or a phase, it is the witness of centuries. Development and needs are basically reasons behind these signs. 'Agriculture history would seem to occupy a place close to the centre of gravity of environmental history from near the beginning, since humanity has been practicing agriculture for more than ten thousand years, and for at least the latter half of that period agriculture has provided that vast preponderance of the food that humans have drawn from nature.'[1] Rising human numbers put increasing pressure on the land. Human settlements and sedentary cultivation expanded at the expense of forests, woodlands, wetlands, and savannas. Almost invariably such expansion caused a reduction in the quantity and diversity of vegetation or, to put it in other terms, a reduction in biomass and biodiversity. Agriculture was and will continues to be the single most important means by which humans change the world's lands and its ecosystem.[2]

Forests

Forest, the prime source of medicinal, herbs, woods and foods are the main resources of human development. The forest of Bengal, Agra Allahabad, Sind, Lahore, the Western and Eastern Ghats supplied the raw material. The need of the land for the crop and agriculture, the environmental aspects basically, many environmentalist and environmental historians viewed forest clearing as unfortunate and mourn the loss of wide expanses of forest cover. The beginning of agriculture was an event of far reaching consequences. It was also an event that had demarcated a

[1] Hughes, Donald, *What is Environmental History?,* UK: 2006, p. 49.
[2] Richards, J.F., *The Unending Frontier: An Environmental History of the early modern World*, London: University of California Press, 2003, p. 4.

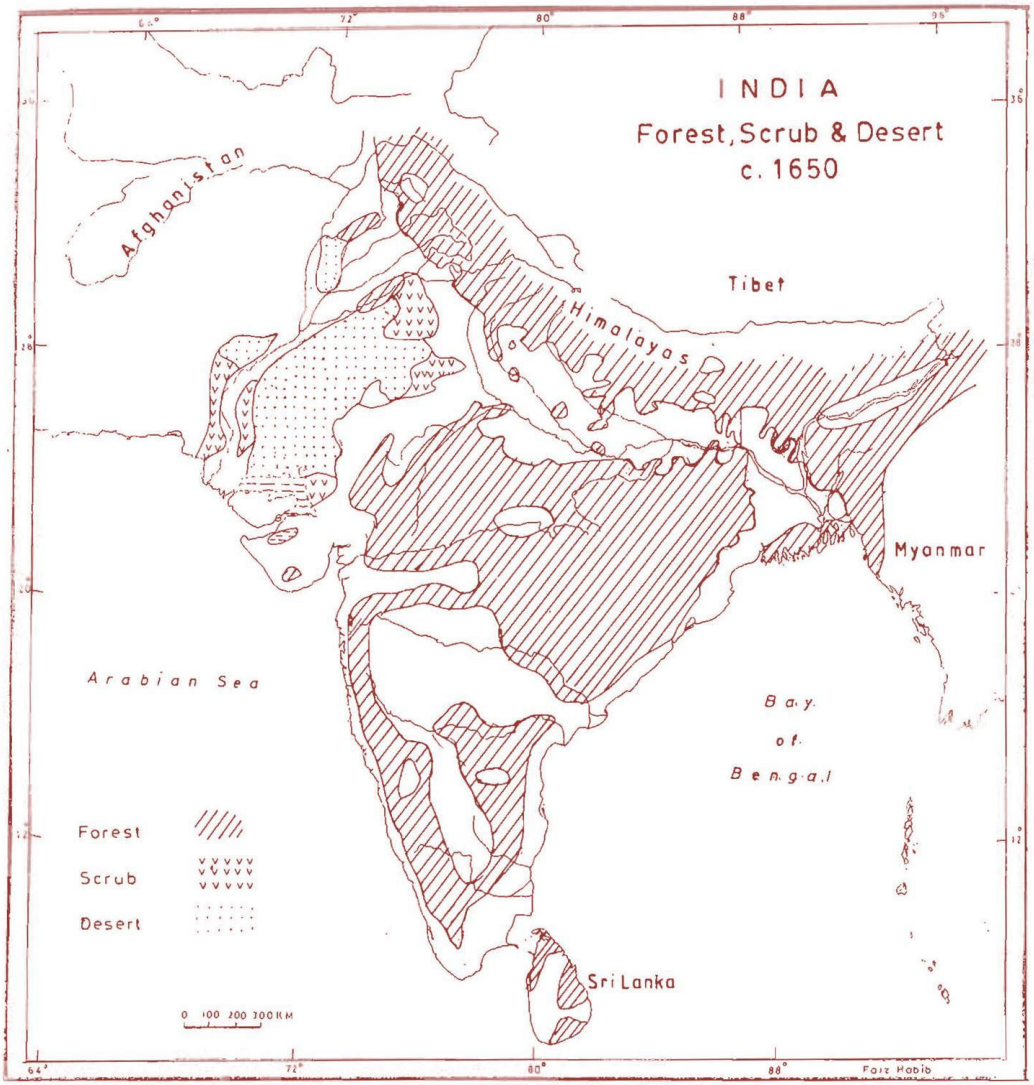
definite shift in human relationship with environment. Man bonding with nature forest/*Vana* is also depicted by early historical sources. Trees have been attributed a place of reverence in Indian tradition. The plants and trees are revered as *Vriksha Devta*. Romila Thaper observably comments, the Indian past provides us with multiple perceptions of the forest and those who live there. We cannot say that the Indian tradition insisted on the conservation of forests, there was little comprehension of ecology and that forests were devastated.[3] The religious practices are around the sacred plants and trees. Tree-plantation is the most focused work which is accepted globally. There are many reference of tree valuable, the cutting of a green tree has been prohibited and is a punishable offence.

The possibilities of agriculture, it spread and regional variations in early India were depended on geography to a considerable extent. The Indian Sub-Continent has been witnessed to a very long period of human activity. During the course of this activity the vegetation cover present in the earliest time has been considerably modified. Over several millennia of human activity involving clearance and degradation of this forest cover, today only about one fifth of the total area of India is regarded as under the forest, treated as the protected forest. Half of the protected forest area has been designated as the reserved forest where all kinds of degrading activities are prohibited. Every period in history has had, therefore, its forest line and desert frontier, besides its political and military boundaries.

Before Mughal period it is hard to find the exact extent of forests on the India's map. There is comparatively good evidences for the extensive of forests in Mughal times.[4] Babur noted that there were extensive thorn forests in many parts of the plains, which sheltered peasants resisting the tax-collectors.[5] However the geography of forest cover during these centuries largely depends on the statistical information on extent of cultivation in the *Ain-i Akbari,*[6] with the provincial area

[3] Thapar, Romila, 'Perceiving the Forest: Early India', *Studies in History*, 17, vol. xvii, Number 1, New Delhi: Sage Publications, 2001, pp.1-16.
[4] Habib Irfan, *An Atlas of the Empire,* 1986 [1982] Delhi: Oxford University Press, see sheets 4 B,7 B,8 B, 9 B,10 B, 11 B, 12 B.
[5] Zahiru'd Din Muhammad Babur, *Baburnama*, eng. translation by A. S. Beveridge, Delhi: Low Price Publication, 1972, [1921], p. 488.
[6] Abu'l-Fazl 'Allami *, The Ain-i Akbari,* Translated from the original Persian by Blochmann, 1977 [1873], New Delhi: Oriental Books, vol. I,& Col. H.S. Jarrett, second edition corrected and further annotated by Jadunath Sarkar, New Delhi: Oriental Books, 1978, [1891], vol. II & III, Beames, J., 'On

under the Akbar and other documents. Though the boundaries of Mughal Empire did not remain same and several changes also came under Aurangzeb. *Khulasat ut-Tawarikh* and *Chahar Gulshan* provides the statistical data on the village-wise areas of each *sarkar* during the Aurangzeb reign.[7] These sources still suggest presence of a large area covered with forests under the Mughals till eighteenth century.[8]



Courtesy: Irfan Habib, *Man and Environment*

During the medieval period though the demand for forest produce increased, land was abundantly available. Moreland observes that 'no hint of the existence of

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the Geography of India in the Reign of Akbar', *Journal of Asiatic Society Bengal*, LIII, 1884, pp. 215-32, for *Awadh*; LIV,1885, pp. 162-82.

[7] *Khulasat ut- Tawarikh* & *Chahar Gulshan,* translated by J. N. Sarkar, *India of Aurangzib, Topography, Statistics, and Roads compared with the India of Akbar with extracts from The Khulast u-Tawarikh and the Chahar Gulshan*, Calcutta: Sanyal & Co., 1901.

[8] Habib Irfan, *An Atlas of the Empire,* see sheets 4 B,7 B,8 B, 9 B, 10 B, 11 B, 12 B.

anything comparable to the methods of conservation and scientific exploitation which have been introduced. A general idea about the condition of forests in the time of Akbar, if draw on knowledge of the state of unregulated forests in India at the present day, and allow for the difference in the means of transport: inaccessible forests can have yielded no income, and inaccessibility was more common than now.'[9]

The northern hill region, Terai lies in the south of the outer foothills of the Himalayas, the Siwalik Hills and north of the Indo-Gangetic plains of the Ganges–Brahmaputra and their tributaries. It is also likely that owing to a larger extent of forest, rivers rising in the Siwaliks and the Terai might have had a steadier supply of water than is the case today when deforestation enforces a quick drainage of water and loss of moisture in the sub-montane tract. This brings us to the subject of ecological environment. How rapidly forest has retreated in the northern plains. Mughal *suba* Bengal. Sundanbans, Chittagong, Sylhet were dense forested and covered with trees in wider area.[10] In Bihar the Terai forest was an undisturbed sway, some areas under the hills in Nepal were apparently under forest covers. Large tracts have been cleared that lay then is wilderness, but there have been clearing too in the past which in late nineteenth century were overrun by the jungle.[11]

The provinces of Allahabad and Awadh were covered with both sides of Ganges, the stretching deep into Baghelkhand and the lower portions of Ganges-Yamuna Doab and Ganges-Ghaghara Doab. Till the sixteenth-eighteenth centuries, there was a large forest cover in the region of Awadh. The Terai forest spread between the city of Gorakhpur and the Himalayan range. Tavernier comments that it would appear that all was forest north of the town Gorakhpur.[12] Francis Buchanan has estimated [1807-11] that out of the total area of 7438 sq. miles in the district of Awadh, about 1450 sq. miles as covered with forest.[13] The forest remained its old domain up till the beginning of the nineteenth century, when at last, a general process

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[9] Moreland, W.H., *India at the Death of Akbar an Economic Study*, Delhi: Atma Ram & Sons, 1962, pp. 134-135.
[10] *Ain-i Akbari* , H. Blochmann , *op.cit*., vol. I, p. 391.
[11] Beames, J., *Awadh*; LIV, p. 177.
[12] Jean Baptiste Tavernier, *Travels in India*, Eng translation by V. Ball, Delhi: Low price publications, reprinted, 2007, vol. II, p. 205.
[13] Buchanan, Francis, *Districts Reports*,(*1807-11*), edited by Mantgomery Martin, *The History*, *Antiquities*, *Topography*, *and Statists of Eastern India's*, vol. II, London: H. Allen & Co., 1838, p. 512.

of heavy reclamation began in this region.[14] Sleeman has listed twenty four belts of forests in the kingdom of Awadh,[1850] it was computed that just about 882 ½ sq. miles of area were covered by such forests.[15] Clearly during the small spam of 40 years forest depletion in the region amounted to approximately 40 percent. In order to increase revenue and to remove the *zamindars* hideouts the clearing of the forests for the purpose of cultivation was generally encouraged by the government. The destruction of the forest, adversely affected the produce and the wild life. It may be assumed, that by 1885-86 such extensive tracts of forest comprising about half a million acres had come under cultivation.[16] Across the Ghaghara to the south, a dense forest existed along the Tons River in the eastern parts of the Azamgarh district records Abdul Fazl, where there are now no traces of any jungle, informs Beveridge.[17]

There were extensive forests, again between Jaunpur and Allahabad and stretches of forest lay too between Allahabad Banaras as recorded by Finch and Peter Mundy.[18] The Agra *suba* comprised the central Doab and a large block of territory with river Yamuna and Chambal river. Pelsaert, who writes that in Agra region there was shortage of firewood and woods were sold by weight,[19] was not quite appropriate, as the zone near Yamuna and Chambal might have forests and still maintained for wilderness.

The *suba* Delhi was divided in three distinct geographical zones as Upper Doab, Haryana tract and Rohilkhand. The Doab in the thirteenth century almost certainly had pockets of jungle and forests, connected with the Yamuna and Ganges, forests extended along the Aravalli out spurs southwest of Delhi, Doab, Badaun, (Katehr, modern Rohilkhand). By the seventeenth century the Doab was well cleared;

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[14] Cited in Irfan Habib, p. 12, Mufti Ghulam Hazarat in his Persian memoir of the Gorakhpur district, written in on before 1810, says that the city of Gorakhpur was surrounded on two sides by forest.

[15] Sleeman, W.H., *A Journey through the Kingdom of Oudh during 1849-50*, vol. II, London: William Clowes & Sons, 1858, pp. 279-87.

[16] Jafri, S.Z.H., *Studies in the Anatomy of a Transformation Awadh from Mughal to Colonial Rule*, New Delhi: Gyan Publishing House, 1998, p. 28.

[17] *Abul Fazl*, *Akbarnama*, eng. translation by H. Beveridge, New Delhi: Atlantic Publishers, [1873-87], 1989, vol. III, pp. 266-67.

[18] Finch, Early Travels, p. 177, Mundy, Peter, *Travels in Asia, 1630-34,* II, (ed.), R.C. Temple, London: Hakluyt Society, 1914, vol. II, pp.110, 119

[19] Pelsaert, Francisco*, Jahangir's India*, eng. translation by W H Moreland and P Geyl, Delhi: Low price publications, [1925], 2011, p. 48.

and extensive deforestation took place in Katehr.[20] North- west in the Delhi province, there seems to have been a ring of forest, which, by early twentieth century, has been totally disappeared. The Rampur territory was apparently well cleared, but in upper hills in Nainital the dense forest were still have existence till the eighteenth century.[21] The role of canal irrigation was also behind the extension of cultivated land in this region.

The Lahore *suba* covered the northern portion of the Panjab in its strict geographical sense. In the region of Dipalpur *sarkar,* area got created by the uncontrolled river as wasteland, when in flood the Indus basin created large stretches of jungle. The most noticeable forest belt was the Lakhi jungle around Dipalpur, situated between the two arms of the Sutlej-Beas Rivers. It has now been obliterated by the canal colonies.[22] Gujarat *suba* was not covered so much with forest, but we get references of elephants in the region in the seventeenth century around the territorial area of the forests of Rajpipla.[23] Malwa and Khandesh, along the large tracts of Narmada land were very much fertile.[24] The great central Indian forest seem to have covered most of the area to the East, while throwing an extension along with Narmada River, but particularly to the South of it.[25] The chronicles of the Mughal period records the forest tract of the area with the evidences of wild life. Mughal Empire imposed taxes upon agricultural production; considerable official effort was directed towards increasing revenue by extending the area under cultivation. Peasants were encouraged to bring more and more land under the plough. In the Mughal and the British rule, it was the tendency of local officers, but it would have been to classify only that waste as cultivable which stood on the margin of existing cultivation rather than what might be cultivable. Demand of timber, woods, bamboos, and pasture land increased rapidly depended on the demographic variations.

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[20]Habib, Irfan, *Man and Environment the Ecological History of India*, New Delhi: Tulika Books, 2010, p.94.

[21] Elliot, H., *Memoirs of the History, Folklore, and Distribution of the Races of the North Western Provinces of India,* vol. II, London: Trubner & Co.,1869, p. 138.

[22] Raychoudhuri, Tapan, & Irfan Habib, (ed.) *The Cambridge Economic History of India, c. 1200- c.1750*, vol. I, Cambridge: Cambridge University Press, 1982, pp. 4-5.

[23] Khan, Inayat, *The Shah JahanNama*, edited by W. E. Begley and Z.A. Desai, Delhi: Oxford University Press,1990, p. 301,

[24] *Abul Fazl, Ain-i Akbari,* Translated from the original Persian by H. Blochmann, 1977 [1873], New Delhi: Oriental Books, vol. I, p. 455, Tavernier, *op.cit*., vol. I, p. 47, Mundy, *op.cit.,* pp. 54-57.

[25] Habib, *An Atlas of the Empire*, *op.cit*., sheet 9 B, p. 38.

Clearing the forests for escape from the wild animals was also main aspect for human settlements. With the advent of the colonial rule an element developed as exploitation of forests that altered of a man-forest relationship. Demand of Indian teak and commercialization of forest production became the centre of profit. The present geographical scenario of forests is the matter of debate among the modern scholars. The forest policy of the British was based on imperial policy of exploitation. Mahesh Rangarajan describes that forestry regulation in pre-British India was nothing and Mughals also encouraged clearing in a number of forests.[26] While Guha and Gadgil argued that Mughal state claimed only the surplus from grain production in agriculture. The Mughals did not tax horticulture, sheep-raising or fisheries. Nor did they tax forest holdings. The state had no direct claims over lands other than hunting preserves.[27] Sumit Guha Kingship would of course, be available to only a few, and the remaining pastoralists would gradually integrate themselves into the renewed agrarian political and natural environment. In the semi-arid and arid tracts that occupy the greatest part of the Indian sub-continent, herdsmen would have to move from monsoon grazing on the seasonal grasses of the open lands to the foliage and herbage of the forest tracts.[28] The herdsmen also known as *banjaras* and traders also, played significant role in socio-cultural compositions. The clearance of jungle also for in warfare, as recorded in Persian chronicle about Gujarat, that a Mughal official made such successful efforts to subdue the rebel Haj that the latter came out of the forest in person ' with chopper and axe in hand for cutting the jungle.'[29] Richard Grove, Satpal Sangwan and Vineeta Damodaran, emphasizes that it is an open question, however, as to whether the continuation of supposed customary land uses would have been more successful than the Company forest departments and their post-1857 successors in arresting deforestation for timber and arable cultivation.[30]

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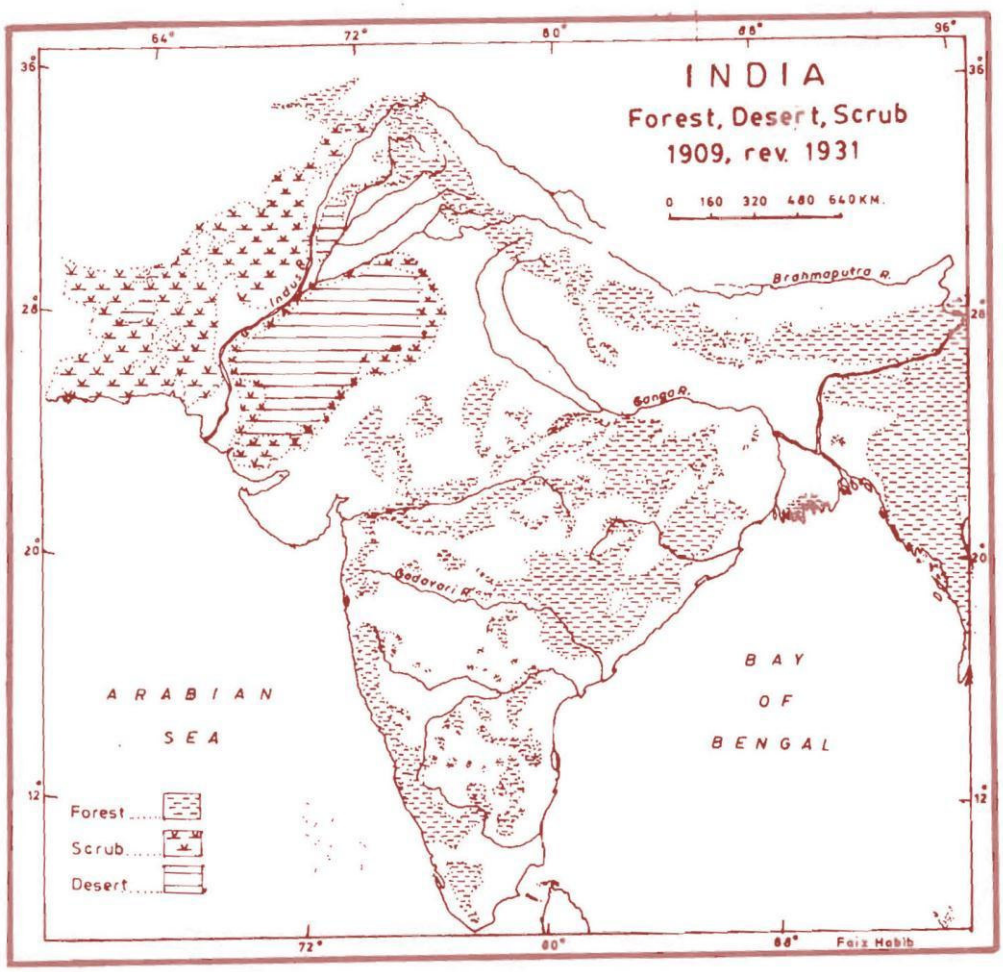
[26] Rangarajan, Mahesh, *Fencing the Forest: Conservation and Ecological Change in India, Central Provinces,1860-1914*, New York: Oxford University Press, 1996.

[27] Guha, Ramachandra& Madhav Gadgil, *This Fissured Land: An Ecological History of India*; New Delhi: Oxford University Press, 1992.

[28] Guha, Sumit, *Environment and Ethnicity in India, 1200-1991*, Cambridge: Cambridge University Press, 1999, p.47.

[29] Z.A. Desai, 'A recently Discovered Inscription of Aurangzeb from Gujarat', in K. V. Ramesh,& S. P. Tewari, (ed.) *Indian History and Epigraphy*, Delhi: Agam Kala Prakashan, 1990, p. 22-23.

[30] Grove, H. Richard, Vineeta Damodaran & Satpal Sangwan,[ed.], *Nature & The Orient*, Delhi: Oxford University Press, 1998.



Courtesy: Irfan Habib*, Man and Environment*

British exported Indian teak which was the major source of supply for the ship-building industry and it was exported to England also. Railways also required forest wood not only for tracks & wagons but also for fuel supply to expand the network in India. All the created an extraordinary force for destruction especially in the sub-Himalayan forests of Garhwal and Kumaon. The conversationa criticize the British policy.

As for Mughal state, though they rulers were not governed so much by environmental concerns and awareness towards ecology nonetheless the deforestation was not at that massive seal, as happened under the British. Besides, the traditional methods for forest conservation and the relation between socio-economic were also used which maintained the balance and forests were, thus largely sustainable.

The maintenance of sacred groves can be considered to be an outstanding example of a traditional practice that has contributed to forest conservation. Pipal and

Banyan trees, were traditionally worshiped from the early times that suggests that they were never cut. More than a hundred such species of trees/plants in India are considered sacred by various communities and religious faiths. Such traditional cultural attitudes, though based on religious faith, have made significant contribution in the protection and propagation of various species of trees and plants in India.Abul Fazl describes when he was in Deccan, 'a wonderful old *nim* tree in the fort of Shahgarha. Its trunk had two branches, one sweet and the other bitter. The first was good for preserving health and in leprosy etc.,' its both portions were send to court.'[31]

About the religious trees of India, travellers amazingly give their observations. Italian traveller Pietro Della Valle informs and even compares *Ber* with the Persian *Lul*, and gives reference of Indian Goddess Parvati wife of Mahadev. Thevenot and Careri describes the value of Banyan tree among the Hindus.[32]Jahangir 's observation and remarks are important to know about those certain things which he saw as rare or he recorded, as banyan tree, [33] tamarind tree, [34] shajaru-i-haya, [35] '[the plant of modesty,*chui-mui*] in 1620, Kashmir he observed a tree, 'in the village Rawalpur, 2

[31] *Akbarnama*, *op.cit*., vol. III, p. 1139.

[32] Pietro Della Velle, *The Travels of Pietro Della Valle in India*, edited with a life of the author an introduction and notes by Edward Grey, vol. I,New Delhi: Asian Educational Services, 1991, p. 35, Thevenot and Careri, Sen, Surenderanath,(ed.), *Indian Travels of Thevenot and Careri*, Delhi: published by National Achieves of India, 1949, p. 36, p. 164.

[33] Jahangir, *The Tuzuk-i- Jahangiri or Memoirs of Jahangir*, translated by Rogers Alexander and edited by Henery Beveridge, 2006 [1909-1914], New Delhi: Low Price Publications, vol. I, p. 351, Jahangir saw a garden of mango tree where nearly hundred trees of mangoes and a banyan tree were exceedingly large in Malwa. He ordered to measure its length, breadth, and height branch was 74 cubits, the circumference of its trunk was 44 ½ cubits and breadth 175 ½ measured, and it was recorded unusual. *Khulast ut-Tawarikh, op.cit.,* p. 27. In Allahabad a banyan tree was in the fort, called '*Akhay Bar* that was imperishable. It is narrated in Hindu books that this tree has been always there and will remain undestroyed till the end of the world. Jahangir commended to cut down it and a cauldron of iron firmly placed over [the stump.] But by the will of God, the tree again raised its head from under this iron and grew high.'

[34] *Tuzuk-i- Jahangiri, op.cit,* vol. I, pp. 353-54. About the tamarind tree in the *suba* Malwa, Jahangir comments that original tree had one trunk; and then he further gives all the details about its growth, as he writes, 'when it had grown 10 and other 9 ½ gaz. The distance between two branches was 4½ gaz. From the ground to the place where the branches and leaves came to an end, there were on the side of the large branch 16 *gaz*, and on the other branch 15½ gaz. From the place whence the branches and green leaves began to the top of the tree was 2 ½ gaz, and the circumferences was 2 ¾ gaz. He ordered to make a c*habutara* round it of the height of 3 gaz. As the trunk was very straight and well shaped, he ordered to depict it in the illustrations of the *Jahangir-nama*.

[35] Ibid., p. 444. Jahangir gives reference a very sensitive plant in the province of Gujarat, on the bank Mahi, he writes, 'I noticed a plant which at approach of the finger or the end of a stick contracts its leaves. After a while it opens them out again. Its leaves resemble those of the tamarind and it is called in Arabic *Shajaru-i-haya*, the plant of modesty.' In Hindi it is called *Lajvanti*. *Laj* means modesty. It is certainly not void of strangeness. They also call it *naghza*k, and say that it also grows on dry land.

½ koss from the city towards Hindustan, there was a plane-tree, burnt in the inside. Twenty –five years before this, when I myself was riding on a horse, with five other saddled horses and two eunuchs, we went inside it. When I had hanced to mention this people were surprised. This time I again ordered some of the men to go inside, and what I had in my mind came to pass in the same manner. It has been noted in the *Akbarnama* that my father took thirty four people inside and made them stand close to each other.'[36]

Forests essentially are the provider of wood. Good quality of timber such as teak, *sal* and *anjeli* wood were available in abundance in India. *Ain-i Akbari* gives information about seventy two types of timber with their qualities in the chapter on building construction.[37] Pelsaert mentions, firewood wood very dear and was sold by weight, 60 Ib. for from 12 to 18 pice (or 5 strivers) making a serious expense for a large household it seems that it is highly exaggerated and inflated price.[38] It appears that Pelsaert's observation is connected with those towns where supply of fire wood was scarce because of transport difficulties.[39] Abul Fazl mentions the consumption of firewood in the royal kitchen was 150,000 *mans*.[40] Abul Fazl mentions different kinds of woods and records that *khanjak* wood had been found to be the heaviest and *Safidar* was the lightest wood.[41] Jahangir encamped at Surkhab, Jagdalak and comments, 'at this stage I saw many ballut trees (oak or chestnut), which are the best wood for burning.[42]

Gardens

Trees were associated with the important socio-economic activities in Mughal India and used more prominently than previous centuries. Indian gardening, like every other Indian art, is closely interwoven with the history of the country, where not only the general design but each flower and tree originally had its symbolic meaning and method of arrangement, to the life and traditions of their builders. In early period there were not so much gardens found in India as residential gardens, mansions,

[36] *Tuzuk-i- Jahangiri, op.cit,* vol. II, p. 154.
[37] *Ain-i Akbari*, *op.cit*., vol. I, p. 387.
[38] Palsaert, *op.cit.*, p. 48.
[39] Mohammed, Jigar, *op.cit*., p. 331.
[40] *Ain-i Akbari*, *op.cit*., vol. I, p. 159.
[41] *Ibid.,* pp. 237-239.
[42] *Tuzuk-i- Jahangiri, op.cit,* vol. II, p. 104.

orchards on royal land. Nevertheless, the role of gardens in poetical representation always suggests that gardens played a significant role in many senses. In the Vedic period there were lots of plants that had medicinal and food value. Besides, trees also sewed purpose of beautification. Buddhist sources depicted gardens as an important factor. Garden (*baagh, bagiche*) give a connection and closeness with nature with its aesthetic taste. Trees and plants and all the greenery show the peaceful environment with healthy atmosphere. Man cannot bound the nature but the beautification of different taste with different decorative planning are recorded in history. It is a growth and beauty deeply affected the imagination of the people, rulers and reflection of their concern about the closeness with nature and environment. C.M. Villiers writes, 'gardening in its artistic sense, for gardening in a horticulture sense still flourishes in India. Horticulture is not an art all, but only the science of improving form and flavour, scent and colour, and is quite apart from the garden craft which afterwards can in combination and arrangement make use of such knowledge with artistic skill.[43] James Wescoat describes the phenomena of garden for Mughal in early sixteenth century as 'position for territorial control, loci of intense territorial experience, as to enjoy a famous landscape or to take refuge when defeated, emblems or market cities, new garden helped define and support the geography of political action, spatial metaphors for a well ordered territory. These territorial dimensions of garden design represent a rudimentary type of geographic science.[44] Daud Ali underlines the importance of garden spaces a reflected in the history. He comments, 'Running alongside this understanding of gardens as real places, on the other hand, on the garden as a 'represented' space- in painting, poetry, and historical narrative. Gardens formed parts of imagined landscapes, ideal cities, and heavenly realms. The models for these larger-than-life gardens were the gardens constructed by kings and nobles, to be sure, and their wondrous and fantastic elements were often reproduced in actual garden spaces.'[45] The ruler best known for his love of gardens before Babar, was

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[43] Villiers, Stuart, *Gardens of the Great Mughals*, New Delhi: Asian Educational Services, [1913], 2007, p.25.
Villiers, Stuart, 'Indian Water Gardens', *Journal Of the Royal Asiatic Society of Arts*, vol. 62, No. 3203, April, 1914, pp. 447-467.

[44] Wescoat, James, Jr., ' *Mughal gardens and geographic Sciences, then and now*', (ed.) *Gardens in the Time of the Great Muslim Empires: Theory and Design*, Attilio Petruccioli, Leiden; New York: E.J. Brill, 1997, p. 187.

[45] Ali, Daud & Emma J. Flatt (ed.) *Garden and Landscape practices in Pre-colonial India*, New Delhi: Routledge 2012, p.13, Ali, Daud, 'Gardens in Early Indian Court Life', *Studies in History*, New Delhi: Sage Publications, 19, 2, 2003, p. 221.

Sultan Firoz Shah (1351A.D.) Contemporary historians have left a good record of his work. Sultan Firoz developed more than 1200 gardens in and around Delhi. True, the gardens may have been mainly fruit orchards,

The concept of '*Bostan*' (fruit orchard) and the '*Gulistan*' (flower garden) was an Islamic concept. Four kinds of gardens can see throughout the Mughal period as-gardens attached to palaces, gardens which serve as substitute royal residences, for the emperor to put at when on journey, funerary gardens surrounding purpose –built mausoleum and pleasure gardens with the *baradari* in the middles, the commonest category.[46] Mughal chronicles gives evidences regarding the types of plants, trees, fruit trees, flowers, techniques for the sowing, watering, propagation, grafting, and cultivation of plants. Delhi Sultanate witnessed huge foundations of buildings, forts and gardens especially innovative interest of Firoz Shah Tuglaq is not working. Father Monserrate describes about the public work of Firoz Shah Tughlaq that, he ordered that throughout his dominions, at intervals of every two miles resting-places should be built, in which a shady tree should be planted, a well dug whence man and beast might get water, He also planted trees in a long avenue on both sides of the roads, wherever there was room, in order that tired wayfarers might find shelter.[47]

The Mughal artists showed special preference for Persian flora such as cypress, chinar, almond triangular shaped tree on the hillocks, flowering as well as grassy tuffs, blossoming shrubs, grassy fields, etc., are all borrowed from Persian paintings to emphasize the decorative aspect of landscape composition.[48] The great love of the Mughals for creating gardens gave the painter a chance to study and paint various species of flowers. To these paintings he brings botanical expertise as well as an elevating sense of color and rhythm. These flowers studies were made in large during the reigns of Jahangir and Shah Jahan.[49] The flowers miniature by Ustad

[46] Dickie, James, '*The Mughal Garden: Gateway to Paradise*', *Muqarnas*, vol. III, 1985,p.135.
[47] Father A. Monserrate, *Commentary on his journey to the court of Akbar*, eng. translation by J.S. Hoyland, annotated by S. N. Banerjee, Cuttak: Mission Press, 1922, pp. 96-97.
[48] Srivastava, Ashok Kumar, *Mughal Painting*, New Delhi: Munshiram Manoharlal Publications, 2000, p.38
[49] Brijbhushan, Jamila, *The World of Indian Miniatures*, Kodansha International Ltd: Japan, 1979, p. 111.

Mansur especially Tulip and many other types are of great value for the observation of Mughal natural perspective.[50]

The tree plantation was beneficial for the welfare of the people. The state managed the maintenance of all the gardens and plants, either it was for their personal use or for public uses, every record was maintained by the state officials. Babur referred to his own activities as landscape, gardener. Babur lay out and improved many of the gardens round Kabul, some of which he describes at length in his *Memoirs* the *bagh-i Vafa* (the garden of fidelity) being mentioned by him more than once. 'I brought plantains and planted them here. They grew and thrived. The year before I had also planted sugar-cane in it, this throve remarkably well. I sent some of them to Badakhshan and Bokhara. In it on an elevated site, and enjoys running water, and the climate in the winter season is temperate. In the garden there is a small hillock, from which a stream of water, sufficient to drive a mill, incessantly flows into the garden below. The four fold plot of the garden is situated on this eminence. On the south-west park of this garden is a reservoir of water twenty feet square, which is wholly planted round with orange trees; there are likewise pomegranates.'[51] Babur also wants to take these orange plants to Lemghan, 'I desired them to save about twenty orange trees around the piece of water for my use.'[52] It was his efforts and interest to plant such those fruits which were not possible to grow in the climate of Kabul.

Babur complained about India that, 'there are no walls to the orchards (*baghat*), and most places are on the dead level plain.'[53] Babur interoperated a general critique of Indian culture. Babur's occupation of Agra was followed by the immediate at measurement of land on the bank of the Jumna for the construction of a *chahar bagh*.[54] He uses the term, '*chahar bagh*' or its abbreviated, designated a cross-axial four-part garden . Ebba Koch defines that three types of Mughal *chahar bagh*- cross

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[50] Verma, S.P.*, Interpreting Mughal Painting Essays on Art, Society and Culture,* New Delhi: Oxford University Press, 2009.,pp.44-48, Das, Ashok Kumar, *Mughal Painting During Jahangir's Time*, Calcutta: The Asiatic Society, 1976, p. 66.

[51] *Baburnama*, *op.cit*., p. 414.

[52] Ibid.

[53] *Baburnama , op.cit*., p. 487.

[54] Choudhary, K.N., 'Some Reflections on the Town and Country in Mughal India', *Modern Asian Studies*, Vol. 12, No. 1, Cambridge University Press, 1978, pp. 77-96

axial –tomb of Humayun, Delhi (1562-71), terraced- Shalimar garden, Kashmir (1620-34) waterfront- Lal Mahal, Bari, Rajasthan(1637)[55]

Babur describes, 'with this object in view, we crossed the Yamuna-water to look at garden-grounds a few days after entering Agra. Those grounds were so bad and unattractive that we traversed them with a hundred disgusts and repulsions. So ugly and displeasing were they, which the idea of making a *char-bagh* in them passed from my mind. As there was no other land near Agra, that same ground was taken in hand a few days later. Then in that charmless and disorderly Hind, plots of garden were seen laid out with order and symmetry, with suitable borders and parterres in every corner, and in every border rose and narcissus in perfect arrangement.'[56] Abul Fazl observes, 'formerly people planted their gardens without order, but since Babur's arrival in India, more methodical arrangement of garden was done and travellers nowadays admire the beauty of the palaces and their murmuring fountains.' [57] Basically running water was the theme of Babur's gardens; Babur was fond of laying out gardens and making experiments in horticulture. His love of flowers and gardens would seem to have been as much a national as personal characteristics. He has been described a "Prince of Gardeners". Not only did he plan and supervise gardens, he took delight in working with shovel and watching the results of his experiments from day to day and season to season.[58]

Jahangir writes in his *memoirs,* about Babur, when he came to Agra, 'he established on the east side of the Jamuna, on improved land, a garden (*chahar bagh*) which few places equal in beauty. He gave it the name of *Gul-afshan* (flower-scatterer) and erected in it a small building of cut red stone, and having completed a mosque on one side of it he intended to make a lofty building, but time failed him and his design was never carried into execution.'[59] *Chahar bagh* by Babur had redefined Mughal gardens and its architecture for the successors to come, only to make India magnificent by filling empty places up with trees, plants and more of everything

[55] Koch, Ebba, ' My garden is Hindustan: The Mughal Padshah's Realization of a political Metaphor', (ed.) *Middle East Garden Traditions: Unity and Diversity: Questions, Methods and Resources in a Multicultural Perspective*, Michel Conan , Washington, 2007, pp. 158-75, Koch, Ebba, 'Mughal Palace Gardens from Babur to Shah Jahan (1526-1648)', *Muqarnas* , 14 ,1997, pp. 143–65

[56] *Baburnama* , *op.cit.*, pp. 532,580, 581, 606-7, 683.

[57] *Ain-i Akbari*, *op.cit*., vol. I, p. 93.

[58] Tripathi, R.P., *Rise and fall of the Mughal Empire*, Allahabad: Central Book Depot, 1985, p. 56.

[59] *Tuzuk-i-Jahangiri, op.cit.,* vol. I, p.5.

green. Babur`s Indian gardens can be identified with any certainty, in consideration with gardens of Mughal architecture. One is in Agra, today addressed as the *Ram Bagh*,[60] His *Memoirs* reveal a deep personal involvement with the cultivation of plants and flowers for his own gardens. In short, Babur knew all potential plantings for his garden and he had demonstrated himself as the ultimate master and creator of each garden. Babur and his Mughal plan of garden architecture was such that he had issued orders of regular, symmetrical gardens and orchards which needed to be laid out in all large cities. Such four-part, ordered Mughal gardens and its architectural plan, represented a Timurid tradition.

Khawandmir writes about the floating garden of Humayun, which was his new invention into the river in Delhi, 'the capital of the government of Delhi to the capital city of Agra with his many nobles and ministers and all his courtiers and principal officers, a market arranged was carried floating on the water like blowing breeze, and every person could obtain whatever he wanted of various kinds of foods, drinks, dresses, clothes, ammunitions and weapons of war in that market. By this wonderful contrivance every convenience was secured for the passengers. And similarly the royal gardeners, according to the orders of this manifestations of divine favour (the king), placed wooden planks on several of the boats, and spreading earth on them made them suitable for horticulture. They made fine orchards, on the borders of which grew fruit trees and flowering plants, and all kind of vegetables, tulips and jasmine were seen growing and flourshing in the river.'[61]

Humayun's tomb, built during Akbar's reign is the earliest example of Mughal garden mausoleums. Akbar annexed Valley of Kashmir, which, with its enclosing mountains, flowing water, and rich vegetation with numerous settings for dramatic water landscapes. However, there is not so much related information about the Mughal garden in Abul Fazl's work, we find easily the various *suba* and the geography, crops, fruits and flowers, but surprisingly the major gardens of Delhi and Lahore also neglected. Abul Fazl writes about the beauty of Kashmir, 'The country is enchanting, and might be fittingly called a garden of perpetual spring surrounding a citadel terraced to the skies, and deservedly appropriate to be either the delight of the

[60] Dickie, James,*op.cit.*, p. 129.
[61] Khwandmir, *Qanun-I-Humauni* (also known as Humayunama) , Translated with explanatory notes by Baini Prashad, Calcutta: The Asiatic Society , [1940], 1996, Calcutta, p.41

wording or the retired abode of the recluse. Its streams are sweet to the taste, its waterfalls music to the ear, and its climate is invigorating.To enumerate its flora would be impossible.'[62]About the Fatehpur Sikri, Jahangir comments that 'lucky for Akbar, hilly and full of wild beasts, became a city containing all kinds of gardens.'[63] He also inform about the garden which was made by Babur in Agra, 'in the gardens the trees as cypress, pine, chinar, white poplar, sandal tree are now in the gardens of India, which were never be there before.'[64] Father Monserrate comments and thanks to Humayun, 'They are planted down the middle with beautiful green trees which cast a grateful shade, lovely parks and the many residential districts on both sides of the Yamuna, which passes close by the city on the east. The parks and gardens are filled with a rich profusion of fruit and flowers.'[65] Abul Fazl describes about Akbar's interest in horticulture, 'H.M looks upon fruits as one of the greatest gifts of the Creator, and pays much attention to them. The horticulturalists of Iran and Turan have therefore, settled here, and the cultivation of trees is in a flourishing state.'[66] Jahangir, who was great naturalist, his account is full of details about the trees, plants and fruiteries of India; he also exempted tax from the orchard land. He comments, 'God be praised that this age-enduring State no tax has ever been levied on the fruit of trees, and is not levied now. In the whole of the dominion neither a dam nor one grain (*habba*) on this account enters the public treasury, or is collected by the State. Moreover, there is an order that whoever makes a garden on arable land, its produce is exempted.'[67] The Mughal rulers showed their sensitivity towards plants. Once when a thief cut down some *champa* trees from the garden above the bench alongside the river Sabarmati, Jahangir ordered, 'both of his thumbs to be cut off a earning to others.'[68] He laid out some beautiful gardens. An interesting piece of information given by him pertains to the availability of mangoes and the preservation of other fruits until long after the close of seasons. He compares the fruits and grains of various regions and notes down and records average weights of some of the

[62] *Ain-i Akbari*, *op.cit*., vol. II, p. 352.
[63] *Tuzuk-i-Jahangiri, op.cit.,* vol. I, p. 2.
[64] Ibid., pp. 7-8.
[65] Monserrate, *op.cit*., pp. 97-98.
[66] *Ain-i Akbari*, *op.cit*., vol. I, p.64.
[67] *Tuzuk-i-Jahangiri*, *op.cit*., vol. II, p. 52.
[68] Ibid., vol. I, p. 432.

specimens.[69] Jahangir ordered to plant the trees on both sides from Agra to as far as the River of Attock (Indus), and made a same avenue from Agra to Bengal.[70] Thevenot also describes about the Province or town of Delhi and Lahore, 'the road betwixt these two town is very pleasant; it is that famous highway one hundred fifty leagues in length, which King Jahangir planted with trees, and which reaches not only from Agra to Delhi, but even as far as Lahore, the Rivers that are in it render it extremely fertile, it yields all that is necessary for life; and the great walk of trees [which begins at Agra] reaches as far as Lahore, that lovely alley is very pleasant, because Ash trees(where with it is planted) have long and thick branches which extend on all sides, and cover the whole way.'[71]

With the advent of Babur, the history of garden-design in India may be said to begin; and throughout his memoirs, there are repeated references to flowers and gardens. The mobility of the Mughal royal court was reinforced by the dynasty's inherited cultural affinity for a life lived out of doors in a natural settings—or at least in a carefully modified and artfully constructed natural settings.[72] Mughal gardens and their architecture possess a splendid and fragrant proud history. Gardens in Mughal architecture redefine the advent of overspreading gardens, slender streams flowing by all through the middle of the garden, the rare arrival of flora from the Persian landscape, the rainbow-tinted flowering of exceptional flowers dispersing their scent and fragrance in the nearby lands, the pastures of exotic-ness.[73]

Jahangir comments about the gardens of Kabul that, 'I perambulated seven of the famous gardens of Kabul. First of all I walked round the Shahr-ara (city adorning) which was made by Shahr-banu (Babur's sister) Begam, daughter of Mirza Abu Said. From time to time it has been added to, and there was not a garden like it for sweetness in Kabul. It has all sorts of fruits and grapes, and its softness is such that put one's sandalled feet on it would be far from propriety or good manners, then the Mehtab (moonlight) garden, then the garden that Bika Begam, grandmother of my father, had made, then passed through the Urta-bagh (middle garden), then a garden

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[69] Alvi. M.A., A. Rahmam, *Jahangir –the Naturalist,* New Delhi: National Institute of Sciences of India, 1968, p. 6.
[70] *Tuzuk-i-Jahangiri, op.cit.* Vol. II, p. 100.
[71] Thevenot*, op.cit.,* p. 57, p. 85.
[72] Balabanlilar, Lisa, *Imperial Identity in the Mughal Empire*, New Delhi: Viva Books, 2013, p. 75.
[73] Villiers, *Gardens of the Great Mughals , op.cit*., p. 23.

that Maryam –makhani, my own grandmother, had prepared, then the Surat-khana garden, which has a large chinar-tree, the like of which there is not in the other gardens of Kabul. Then having seen the *chahar bagh*, which is the largest of the city gardens. There was abundance of cherries on the trees, each of which looked as it were round ruby hanging like globes on the branches.' Jahangir ordered that a stream that flows from the *guzargah* to be delivered into the middle of the ground so that a garden might be made such that in beauty and sweetness there should not be in the inhabited world another like it and named *Jahan-ara* (world-adorning).[74]

In Agra in 1619, Jahangir had discovered much delight in witnessing the *Gul Afshan* garden, probably the same garden later owned by Nur Jahan and renamed the *Nur Afshan Bagh*. Huge sums of money and a smooth cash flow was guaranteed by him who was so much dedicated and ardent to the aesthetic side of life that Mughal garden architecture truly was ably carried forward after the arrival of Babur. During Jahangir's region gardens in Mughal architecture had received its much awaited impetus and interest, which were thoroughly bestowed with affluence and architectural manipulations. About the garden of *Gul-afshan* Jahangir observes, 'of the buildings that overlooked the river none that I saw were without the charm of verdure and flowing water. These verses of Anwari appeared appropriate to the place:

'Tis a day of mirth and jollity,
A daily market of flowers and odours;
The earth-heaps are suffered with ambergris,
The zephyr sheds rose-water from his skirt,
from contact with the morning breeze the pool
Is roughened and pointed, like the edge of a file.'[75]

Just like his son Shah Jahan, Jahangir also had too much favoured to give birth to gardens in the verdant scenario of Kashmir. Jahangir did pay special attention to gardens in the valley south of Srinagar, in Kashmir. The emperor was a professed lover of the natural streams and springs there and so had added to them canals, fountains and buildings to produce `terraced gardens` - a type of Mughal architectural specialty with regards to gardens, which would seen profusely during Shah Jahan`s times. Another outstanding instance of garden architecture during Jahangir's region is Ram Das Kachhwaha`s *Macchi Bhavan* garden which is in the similar direction in Kashmir. Yet another site in Kashmir most often mentioned by Jahangir is the spring

[74] *Tuzuk-i-Jahangiri, op.cit.* vol. I,p. 106.
[75] Ibid., p. 95.

at Vernag, approximately 10 km north of Achibal. While much of the garden and surrounding pavilions have disappeared today, the tank, with low walls containing arched apertures and blind arched niches, still exists as do descendants of the large fish that swim in the lucid waters, producing a spectacle of royal splendour. 'Running water was the essential feature of these gardens. Even the city palace had its fountain and inner court planted with shrubs and flowers for the special use of the ladies of the zenana.'[76] Jahangir describes about the gardens of all the places where he went. He addresses the gardens of Gujarat as, the 'Garden of Victory'.[77]

The dynasty's greatest patron of architecture, Shah Jahan (1628–58) reconstructed the palaces at Agra and Lahore and constructed a mausoleum at Agra, called Taj Mahal. Bernier observes during his visit to Taj Mahal that, 'to the left and right of that dome on the lower surface you observe several garden walks covered with trees and many parterres of flowers… Between the end of the principal walk and this dome is an open and pretty large space, which I call a water parterre, because the stones on which you walk, cut and figured in various forms, represent the borders of box in our parterres.'[78] Many of these had indeed also served as the setting for major structural works, for example the tomb of Mumtaz Mahal, legendary today as the Taj Mahal, or Jahangir`s tomb in Lahore. Palaces of Shah Jahan also had incorporated gardens into their layout. Other gardens of Mughal architecture, however, were developed independently of tombs and palaces. Royal structures had enhanced these gardens, but they were not the sole reason for the gardens` existence. Most of the gardens Shah Jahan had built or renovated were situated between Agra and Kabul. As a prince, Shah Jahan also had grounded some garden pavilions in Ambala. Upon his accession the emperor had bestowed the garden to Jahanara, his eldest and favourite daughter. The climate and natural beauty of Kashmir had made the region the Mughal seat of rest and leisure. Indeed, Shah Jahan was also a man who had acclaimed Kashmir and Srinagar to serve as the idyllic places for accomplishing Mughal architectural garden as masterpieces. Shah Jahan had enjoyed the numerous Mughal gardens there - some imperially sponsored, others built by princes and high-ranking officials. Amongst those he had praised were the one at Avantipur constructed by

[76] Villiers, *Gardens of the Great Mughals , op.cit*., p. 28.
[77] *Tuzuk-i-Jahangiri, op.cit.,* vol. I, p. 429, p. 434.
[78] Bernier, Francois, *Travels in the Mogul Empire AD 1656-1668,* translated by Archibald Constable, second edition revised by Vincent A. Smith, New Delhi, 1990. p. 296.

Dara Shukoh, Asaf Khan`s Nishat Bagh and Nur Jahan`s *Bagh-i Nur Afza* - all located within the Srinagar Valley. But the most impressive of all are Shah Jahan`s own gardens in Kashmir, especially the world famous Shalimar garden. 'In the city Kashmir, along both banks of the stream, handsome houses and agreeable gardens have been constructed. All the dwellings and buildings of this enchanting valley, with the exception of those belonging to the Emperor, the illustrious Princes and nobles, and also some of the opulent inhabitants of the country, are formed entirely of timber and planks. They construct their houses three and four stories high, one above the other, the surmount them with trussed roofs covered with wooden shingles and over the plant the bulbs of the lala chugasu, one of the finest species of tulip, which thrives abundantly in Kashmir and bears a gorgeous flower. In spring therefore, all the roofs look green and flourishing and as all the tulips are then in bloom, the view as you pass the street is exquisitely picturesque, and no other country can boost od such a singular spectacle.[79]

Inayat Khan describes in his *Shah Jahan Nama*, 'it can be said of the Pir Panjal, which is one of the most remarkable spots in Kashmir for its unrivaled luxuriance and amazement to the spectator, both for its beauty and for its difficulty and ruggedness of ascent. It is famous throughout the world, and every author who has seen and visited the delightful valley of Kashmir has filled a volume with descriptions of it in verse and prose.'[80]

Kashmir also possesses charming gardens and pleasing parks, 'the best of which is the *Bagh-i- Farah Bakhsh* constructed by His Majesty's command during the late Emperor Jahangir's reign, to which allusion has been already made in Prologue. This garden is irrigated by a canal resembling the *Kausar*, the nectar-flowing river of Paradise. It is 10 yards wide, but as it circulates among the beds, it is contracted to a breadth of three. After flowing through the villa in the middle of the garden, and after supplying countless reservoirs and fountains, it expands as it glides through the picturesque domains for another 1,000 yards. It passes lovely avenues of plane and poplar trees gracing both banks, until its waters are eventually merged in the Dal. Next to this garden comes *Bagh-i-Nishat*, which Yamin al Daula constructed on the hill slopes of Bhak with elevated terraces overlooking the Dal lake. The names of the

[79] *Shahjahan Nama*, *op.cit*., p. 125.
[80] Ibid.

other celebrated gardens are as follows: *Bagh-i-Nur Afzai* in the imperial palaces; *Bagh-i-Bahara*; *Bagh-i- Aishabad*; *Bagh-i-Jahanara*; *Bagh-i-Nur Fishan*, commonly called *Nur Bagh*, which is situated on the banks of the Behat; *Bagh-i-Shahabad*, generally styled Karna; *Bagh-i-Murad*; the three gardens Bagh-i-Nasim, *Bagh-i-Afzalabad*, and *Bagh-i-Saifabad*, which stand continuous to each other on the margin of the lake; and finally *Bagh-i- Illahi*, which is watered by the canal Lajma Kul that flows through the populous quarters of the city. In the midst of this garden, by the side of this canal, stands a huge and ancient plane tree (chinar) whose trunk even eight stalwart men could not encircle in their embrace, as it measures 14 yards in circumference. Besides these, there is *Bagh-i-Zafarabad*, which was laid out by my father Zafar Khan on the margin of the lake Jadibil overlooking the environment of the *Idgah*. It cost three lakhs of rupees, and was constructed during the 12 years that held the government of Kashmir. The *Bagh-i- Husnabad* was also planted by the author's father. Other notable gardens include those of the chamberlain of the seraglio. Firoz Khan *Khwajasara*; include those of Yaqub Khan, the second ruler of Kashmir; those of the eunuch Khidmat Khan, and also the *Bagh-i-Safa* by the lake of Safapur, the waters of which are transparently clear that one can see down to the bottom notwithstanding their depth.'[81]

Shah Jahan issued an order directing that the royal architects and other able and engineers in this field should choose a site for planning a garden in the vicinity of Lahore, or the banks of the canal which was excavated by the servants of Ali Mardan Khan. The proposed garden was to contain of having a number of reservoirs, canals, fountains, and cascades constructed within it on different terraces. Accordingly, a spot was selected which was so delightfully adapted to the purpose that it was universally commended. And in a lucky moment, on 12 June 1641, skillful artificers commenced its construction.[82] On 29 September 1646, the *Bagh-i-Safa* [Kabul] acquired new freshness by the auspicious arrival. A sublime *farman* was issued for the planting of a new garden at locality Nimla, which is a most charming spot; and for the construction of a canal four yards wide, by which the stream near that town could be made to flow through the grounds and summer houses.[83] A few year before this[1650], in conformity to the ever –obeyed *farman*, a royal garden had been founded outside

[81] Ibid., pp. 126-27.
[82] Ibid., p. 277.
[83] Ibid., p. 364.

Shahjahanabad at a distance of two and one-half ordinary kos from the precincts of the palace, on a plot of ground in the locality called Badli. This garden had been bestowed by His Majesty as a gift on his consort Akbarabadi Mahal and is now designated Aizzabad. In these days, after a lapse of four years and an outlay of 10 lakhs of rupees, the garden was now completed together with its *serai*, which had formerly been erected of sun-dried bricks, but was subsequently rebuilt with baked bricks and mortar at the Lady's own expense.'[84]

Thevenot describes about the garden of Mughal princess Jahanara, 'it is a plot of trees of several kinds as mango, Palms,… and many other planted in a straight line. There are in it a great many very fair straight walks, and especially the four which make a cross over the garden, and have in the middle a small canal of water that is drawn by oxen out of a well. In the middle of the garden there is a building with four fronts, each corner; and before every one of these divans there is square Bason full of water, from whence flow the little brooks which run through the chief walks. After the entire garden is well contrived, it is nothing to the brilliance of ours.'[85]

Different Mughal nobles were also involved in laying down various types of fruits, trees etc. brought from other countries, rulers promoted those also who brought new things and new invention related to garden-drafting. The entire *Umara* class was infected by it, and the reasons with which they justified the competitive building of magnificent gardens, houses, and tombs appeared to the cautious and rational instincts of Pelsaert as most vain and trivial. But he admitted that the existence of these aristocratic buildings and gardens and their exquisite beauty enhanced the civic attractions of Agra.[86] Every noble and rich man made one or more of these gardens, with running water, fountains, and cool, airy pavilions in which to take refuge from the stifling summer heat of the great white city palaces. The urge to build was not confined to the Emperors alone. These adventures, however, were for the court alone; the most people a garden close to the city walls took the place of hill stations and summer resorts. (*Jitbagh* 'garden of victory' to the south of the lake at Sarkhej, laid out in 1584 by Abdur Rahim Khan- Khanan in commemoration of his victory over

[84] Ibid.,p. 451.
[85] Thevenot, *op.cit.,* pp. 35-36.
[86] Pelsaert, *op.cit*., p. 5.

Sultan Muzaffar III,) the Nagina garden.[87] Thevenot also describe about this garden, in this village *Gitbag*, there is a pretty handsome 'Garden of the Kings', and saw many monkeyes and peacocks there.[88]

Thevenot describes about the gardens of Ahmadabad, 'there you may see many large gardens, a very spacious reservatory, that hath in the middle a lovely garden fourscore paces square, into which one enters by a bridge four hundred passages long, and at the end of the garden there are pretty convenient lodgings, and are so full of trees, that when one looks upon that town from a high place, it seems to be a forest of green trees, most of the houses being hit by them; and the Kings garden, 'the *Shahi bagh*', a garden palace constructed by Shah Jahan, while viceroy of Gujarat,very large, shut in by a great wall with ditches full of water, with a beautiful house having very rich rooms) which is without the town and by the river side, contains all the kinds that grow in the Indies. There are long walks of trees planted in the straight line. It is very spacious, or rather, it is made up of a great many gardens raised Amphitheatre-wise; and the uppermost there is a Terrace-walk, from whence one may see village at several leagues distance. This garden being of a very great extent, its long walks yielded a very agreeable prospect. They have in the middle beds of flowers, which are not above a fathom and a half in breadth, but which reaches from one end of the garden to the other. In the centre of four walks which makes a cross, there is a pavilion covered with green tiles. Thither go all the young people of the town to take the fresh air upon the banks of tank full of water underneath.'[89] He is also full of praise of the town of Cambay which he claims is beautified with a great many fair of public gardens.[90]

Thevenot describes about the garden of Aurangabad, 'there are a great trees growing in the streets, and the gardens are pleasant, and well cultivated, affording the refreshment of fruit, grapes and grass-plants.'[91]

Mughal gardens were spread in a wide geographical area from east boundaries of India to Kashmir and Lahore in west.However, this interest in arts gradually

[87] *Tuzuk-i-Jahangiri, op.cit.,* vol. I, p. 435.
[88] Thevenot*, op.cit.,* p. 10.
[89] *Thevenot, op.cit.,* pp.14-15.
[90] Ibid., p. 18.
[91] Ibid., p. 104.

disappeared with a gradual increase of Islamic orthodoxy in Mughals' court. Aurangzeb's gardens at Aurang-abad in the Deccan are two of the last examples of the Mughal landscape architecture. Babur, who had inherited this habit from Timur, designed his gardens in a way that they could be filled by army tents. Such capability made him and his architects to reduce the density of planted areas (to increase void spaces) in their gardens. This trend changed after the 17th century as the result of the increasing power of Mughals and getting settled in subcontinent.

Horticulture-

There were different types of fruit produced in India. Kabul, Qandhar, Kashmir were the main producers while Delhi, Agra were the main market for the different types of fruits and vegetables. The demands of central Asians fruits were very much. After the advent of Europeans, many new plants and fruits were also introduced. As the climatic conditions and the availability of monsoon, production of various fruits was basically depended up on geographical climate and condition. Mughal rulers and nobles were very much interested about the various types of breed of fruits. They managed their gardens with lots of verity of fruits. Under the Mughal orchard there were different types of fruits, flowers and trees. The production of these orchards was by definition not meant for the market. These products were not taxed. The king presented plants, to the nobles who had to be grown under proper attention and periodically reported to him on their progress.

Babur gives a detail account of flora of India and he compared the breed of Indian fruits with Central Asian.[92] He comments about the land and its fertility that is full of produce. Abul Fazl informs about sixty types of fruits, dry fruits, and different types of vegetables also with the season cultivation of India in the *Ain*. He comments, 'the fruits of Hindustan are either sweet, or subacid,or sour; each kind is numerous. Some fruits also taste well when dry; others used when cooked.'[93] He also mentioned about the rates of fruits which were very cheap for example the price of mangoes was 40 *dams* (rupee one), 80 to 100 *dams* of one *man* pomegranates, 6 *dam* for dates per *ser*.[94] May be these fruits rates used for royal palace , the cheap prices indicate the

[92] *BaburNama*, *op.cit*, pp. 504-515 see the detail about the fruits, trees, vegetables and flowers.
[93] *Ain-i Akbari*, *op.cit*., vol. I, p. 68.
[94] Ibid., pp. 69-71

availability of the large quantities of the fruits. The salaries of the *mansabdars* show that they could consume as much as they wished. However, the common people collected fruits from their own trees. It seems that the commercialization of the fruit was not meant for the common people.[95] Monserrate writes about the fruit production of Mughal India, 'This empire is very beautiful and healthy, although in many places not well provided with fruit trees. On account of the diversity of the climate in different parts it produces many and various types of crop.[96] The runners brought oranges from Bengal, mangoes from Gujarat and peaches from Kabul.[97] Jahangir inform that apples were sent by Mahabat Khan from Bangash by runners (*dak-chokis*);[98]mangoes while were specially sent from Deccan by *dak-chokis;* Shahjahan received pomegranates and the fruits by the runners of *dak-chokis.*[99] By *dak chawkis* officials Shahjaha melons, mangoes, and even pearls and other valuable articles.[100] The record of variety of Indian fruits is available in all the Mughal and European chronicles. The important thing was in the Mughal period that they promoted rare fruits which were not produced in India. The gardens of Mughals created a new drafting or mushrooming techniques in the Indian horticulture. After the Europeans intervened, some new things added in the Indian horticulture production. During the course of the sixteenth and seventeenth centuries, a number of fruits were introduced in India through outside agencies. The Portuguese introduced pineapple, papaya and cashew nut, etc. Cherry was brought from Kabul. *Leechi* and guava were also introduced during this period. A wide range of new vegetables were also produced by the medieval peasants. Potato, Chilies and tomato were introduced during the late medieval period.[101] It was an exceedingly common practice in India to offer betel leaf by way of politeness, chiefly among the great men who, when anyone pays them to visit, offer betel at the time of leaving as a mark of goodwill, and of the estimation in

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[95] Mohammed, Jigar, 'Use of Botanical Products in India during the 16th & 17th Centuries, *Proceedings of IHC*, , 57th Session , Madras, 1996, p. 330.
[96] Monserrate, *op.cit*.,pp. 211-12
[97] *Tuzuk-i-Jahangiri, op.cit.,* vol. I, p. 423, 398, vol. II, p. 170.
[98] Ibid., vol. II, p. 101.
[99] Farooque, A.K. M., *Roads and communications in Mughal India,* New Delhi: Idrah-i-Adabiyat-Delli, 1977, p. 131.
[100] Ibid., p. 132.
[101] *Ibn Battuta, Travels in Asia and Africa 1325- 1354,* translated and selected by H.A.R. Gibb, New Delhi : Low Price Publications, 2012, p. 114, Thevenot, *op.cit*., p. 205.

which they hold the person who is visiting them. It would be a great price of rudeness to refuse it.[102]

Portuguese took Pineapple from Brazil and introduced it into India by 1550.[103] However Abul Fazl informs that, 'Pine-apples are also called *kathal-i safari* or travelling jackfruits, because young plants , put into a vessel, may be taken on travels and will yield fruits. [104] Jahangir comments, about the massive production of pineapples in the garden of Babur in Agra. He named the "flower Scatterer," thousands of pine-apples were produced yearly. Jahangir also informs about the cultivation of pineapple, which was grown in the Frank ports, is of excessive fragrance and fine flavour. Many thousands are produced every year now in *Gul-afshan* garden at Agra. Jahangir inspected the garden of *Gul-afshan* which is on the bank of the Jamuna, 1619, 'on the way rain fell heavily and filled the mead with freshness and greenness. Pineapples had arrived at perfection, and I made a thorough inspection.'[105] Thevenot says that *ananas* grows exceeding in Delhi.'[106] and describes those of Bengal are as big as Melons, and some of them resemble them also.[107] Manucci informs, 'it looks like a large pine-cone of Europe, and it has a corrugated rind. It is necessary to slice off this rind somewhat thickly to get rid of some natural depressions it has in it. The distilled juice of this fruit is useful for dissolving stones in the kidneys and bladder, as I have found by experiment. The plant on which the fruit forms is a cubit in height; it grows up like an ear of corn, each plant yielding no more than fruit. In no part of India have I seen them in such quantities as in Bengal, where they were large and fine. The reason for this is that it is a low- lying and humid country.'[108]

Another important fruit was apricot which was described many times by the chronicles, Jahangir observes, about apricots of Kabul, 'The *zard-alu paywandi* is good, is abundant. There is especially a tree in the *Shahr-ara* garden, Mirza Muhammad Hakim, my uncle, planted and is known as *Mirzai*. The apricots of this

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[102] Manucci, *op.cit.*, vol. II, p. 61
[103] Collingham, L.,*Curry: a Tale of Cooks and Conquerors*. Oxford: Oxford University Press, 2007.
[104] *Ain-i Akbari*, *op.cit.*, vol. I, p. 73.
[105] *Tuzuk-i-Jahangiri, op.cit.,* vol. II, p.95.
[106] Thevenot, *op.cit.,* p. 68.
[107] Ibid., p. 96.
[108] Manucci, *op.cit.*, vol. III, p. -73

tree are quite unlike the apricots of other trees'.[109] There was a tree in the *Shahr-ara* garden at Kabul, called *Mirzai*, but in Kashmir there are trees equal to this in the gardens. [110]

The observation of Jahangir about peaches is very interesting; his inquisitiveness is very helpful to find some rarities towards the ecology. He comments about a peach from *Istalif* , "as big as an owl's head" I had not seen a peach of such a size, and ordered it to be weighted, and it came to 63 Akbari rupees, or 60 t*olas*. When I cut it in the half its stone also came into two pieces and its substance was sweet. I had in Kabul never eaten better fruit from any tree.' [111]

Cheery was introduced in India in the time of Jahangir as he informs in 1620, 'In Akbar's time there were no *shah alu* (cherries), Muhammad Quli Afshar brought them from Kabul and planted them, and there are now ten or fifteen fruit-bearing trees.'[112] 'I ordered that from now on (1620) Ashkin should be called *khushkun*. It groves commonly in Badakhshan and Khurasan. There the people call it *as biijamad* . One that was the largest of all weighed half a *misqa*l.'[113] Akbar entitled it as Shah-alu. 'As I was much inclined to eat them, as much as I had not obtained them, I ate them with great zest as a relish to wine.[114]

There are many types of grapes which were produced in Mughal India, that had varied tastes. Abul Fazl informs about the various kinds of grapes.There were many good sorts of grapes, especially the *sahibi* and *kishmishi*. In the district of Dahr (Malwa), which is one of the nodded places of Malwa, the vine grapes twice in the year, in the beginning of Pisces and in the beginning of Leo, but the grapes of Pices are the sweeter. Its husbandmen and artificers are not without arms.[115] Jahangir also

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[109] *Tuzuk-i-Jahangiri, op.cit.,* vol. I, p. 102, p. 116.
[110] Ibid., vol. II, p. 146.
[111] Ibid., vol. I, pp. 116-119.
[112] Ibid., vol. II, p. 145.
[113] Ibid.
[114] Ibid., vol. I, p. 102.
[115] *Ain-i Akbari, op.cit*., vol. I , p. 68, Abul Fazl also describes May-June, (*khurdad*) to July-August (*Amurdad*) whilst the markets are stocked with Kashmir grapes during August-September (*Shahriwar*), *Tuzuk-i-Jahangiri, op.cit.,* vol. I, p. 349, Alvi and Rahman, *op.cit*., p. 118. Pisces and Leo-when the sun enters the zodiacal signs of Pisces and Leo, implaying the months of *Isfandarmuz*, 12th of Illahi Akbari year corresponding to Feb. 19th to March 20th and Amurdad, 5th Illahi month, corresponding to July 24 to August 23 respectively. The times of fruitarian of the grap therefore are approximately third quarter of Feburary and the last quarter of July.

described about the Kabul grapes such *fakhri, husaini* and amazingly noted, 'the tongue of this suppliant at the throne of God fails in gratitude for the favours by which, notwithstanding a distance of three months, grapes from Kabul arrive quite fresh in the Deccan.' [116]

Mango which is the most demanding fruit from the very early period, Babur gives detail account and observation for mango, Fairest fruit of Hindustan. Mangoes when good are very good, mainly of Bengal and Gujarat as growing handsome (*khub)*.'[117] Abul Fazl describes also a very informative accounts about the production especially Bengal, Gujarat, Malwa, Khandesh and the Deccan, and taste, colour of mango. He describes that in the Punjab mangoes were produce rarely, but after Akbar efforts the cultivation increased. He comments, 'a young tree will bear fruit after four years. They put milk and treacle round about the tree, which makes the fruits sweeter. Some trees yield in one year a rich harvest, and less in the next one; others yield for one year no fruit. If a half-ripe mango, together with its stalk to a length of about two fingers, be taken from the tree, and the broken end of its stalk be closed with warm wax, and kept in butter, or honey, the fruit will retain its taste for two or three months, whilst the colour will remain even for a year.'[118] The preservation of the fruit was excellent. Jahangir informs that the bakhshi of Burhanpur had sent some mangoes, one of which I ordered to be weighed; it came to 52 ½ tolas.'[119] Jahangir mentions about mangoes of Muqarrab Khan garden in the *pargana* of Kairana, (district Muzaffarnagar) which is the native place of his ancestors, and looked after the mangoes there in such a manner as to prolong the season for more than two months, and sent them every day fresh into the special fruit store-house.[120] It apperars that Muqarrab Khan, knew some method of preserving mangoes on the tree that's why it could last for more than two months after the season.[121] Manucci describes many types of mangoes which were produced in Goa : '*Niculao Aflonso, Malaiasses*(? *Malacca), Carreira branca* (white *Carreira*), *Carreira Vermehla* (red Carreira) of Conde, of *Joani Parreira*, *Babia* (large and round), of *Arap,* of *Porta,* of *Secreta,* of

[116] *Tuzuk-i-Jahangiri, op.cit.,* vol. I p. 360, p. 404, p. 435.
[117] *BaburNama* , op.cit., pp. 503-504.
[118] *Ain-i Akbari*, *op.cit*., vol. I , p. 72.
[119] *Tuzuk-i-Jahangiri, op.cit.,* vol. I, p. 145, p. 377 Alvi,&Rahman, *op.cit*. p. 115.
[120] *Tuzuk-i-Jahangiri, op.cit.,* vol. I, p. 332.
[121] Alvi & Rahman, *op.cit.* p. 116.

*Mainat*o, of our *Lady of Agua de Lupe*. [122] Particularly Mughal rulers love for mangoes was very popular as Aurangzeb replied a letter to his son Prince Mahammad Aazam Shah Bahadur, about mangoes, 'I was much pleased with the '*dali'* of mangoes sent by you to the old father. You have requested me to suggest names for the unknown mangoes. When you yourself are very cleaver, why do you give trouble to (your) old father ? however I have named them ' *Sudha-ras*' and '*Rasna-vilas'*.[123]

Babur was also very much happy to see Indian oranges, he describes many citrus fruits of India, he writes, 'the Bajaur orange was about as large as a quince, very juicy and more acid than other oranges. Khwaja Kalan once said to me,''We counted the orange gathered from a single tree of this sort in Bajaur and it mounted up to 7,000." it had been always in my mind that the word *naranj* was an Arabic form; it would seem to be really so, since every-one in Bajaur and Sawad says (P.) *narangi*. The *sangtara* is another fruit resembling the orange (*naranj*). It is like the citron(*turunj*) in colour and form, but has both ends of its skin level; also it is not rough and is somewhat the smaller fruit.'[124] Abul Fazl comments about orange as the best fruit of Hindustan. [125] Jahangir informs, 'Oranges came from Bengal to Ahmadabad, though that place is 1,000 *kos* distant most of them arrived quite fresh. As this is a very delicate and pleasant fruit, runners bring by post as much as in necessary for private consumption, and pass it from hand to hand. Jahangir comments, 'my tongue fails me in giving thanks to Allah for this.

"Thankfulness for Thy favours is one of Thy favours."[126]

Musk-melon and water melons were equally very popular fruits. Abul Fazl informs that the musk-melons come in the season in Hindustan in the month of March-April and plenty in April-May. They were delicious, tender, opening, sweet smelling, especially the kinds called *nashpati*, *babasaykhi*, *alisheri*, *alcha*, *barg-i-nay*, *dud-i-chiragh*, etc. They continue in imported from in different seasons throughout the year from Kabul, Qandhar and Kashmir also.[127] There are different types of detail

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[122] Manucci, *op.cit*, vol. III, pp. 170-71.
[123] *Ruka'at-i-Alamgiri or Letters of Aurangzeb*, translated by Jamshid H. Bilimoria, Delhi: Idrah-I Adrabiyat-I Delli, [1972] 2009, p. 12. p. 28, p. 60.
[124] *BaburNama*, *op.cit*., p. 505.
[125] *Ain-i Akbari*, *op.cit*., vol. I , p. 73.
[126] *Tuzuk-i-Jahangiri, op.cit.,* vol. I, p. 423.
[127] *Ain-i Akbari*, *op.cit*., vol. I , p. 68.

account of the Indian fruit and their usage in the accounts as pomegranates from Persia, [128] Figs of Malwa, Burhanpur,[129] Saffron cultivated in Kashmir very massive level[130] The usages of coconut-tee[131] the palm tree, [132] Sugar-cane [133] vinegar[134] *tari*[135] for various purposes also given by the sources in detail.

Flowers

Mughal chronicles also provides detail accounts of various types of flowers and their usage. Marching through the mountains of Ghurbend in Afghanistan Babur observes that: "The ground is richly diversified by various kinds of tulips. I once directed them to be counted, and they brought in thirty two or thirty three different sorts of tulips. There is one species which has a scent in some degree like a rose, and which I termed *laleh-gul-bui*, the rose scented tulip." The last flower, which Babur mistook for a tulip, is really the double red poppy.[136] Babur writes, 'Rahim-dad has planted a great numbers of flowers in his garden (*bagicha*) many being beautiful red oleanders.[137] One wonders if the red-flowered oleanders flourished, "the particularly fine red *kanirs*" which Babur found in a garden at Gwalior and transplanted with such care to new gardens at Agra.[138] Abul Fazl also provides a list of flowers with their beauty and season in very detail manner. He mentions around fifty five names of flowers.[139] Jahangir's information about the flowers of India is very interesting. His observation about the flowers fragrance, colour, tree, even about the leaf, leaf size, was very accurate. He writes about many flowers as *champa*, *chambeli, keora,*

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[128] *Tuzuk-i-Jahangiri, op.cit.,* vol. I, p. 270.
[129] Ibid., p. 349, p. 413.
[130] Ibid., pp. 92-93. About saffron Jahangir accuracy is correct, he detailed that when the saffron stem is four fingers breadth from the dry ground, its flowers shoot out, of the colour of the iris with four petals, and in the middle are four threads (*risha*) of an orange colour like that of the flower, and the length of a finger-joint.
[131] *Babur Nama* , *op.cit.*, pp. 509-10, *Ain-i Akbari*, *op.cit*., vol. I , p. 75, *Ralph Fitch, England's Pioneer is India & Burma,* by J. Horton. Ryley, London: University of California, 1899, p. 60, Thevenot, *op.cit*., p. 24, Careri, *op.cit*., p. 200.
[132] *BaburNama, op.cit*., p. 508, Careri, *op.cit*.,p. 208.
[133] *Ain-i Akbari*, *op.cit*., vol. I, p. 73. Abul Fazl describes the cultivation of sugarcane., Thevenot, *op.cit*., p. 36
[134] Ibid., Abul Fazl also describe the other value of the vinegar as sometimes used in drugs and perfumes, as ambergris, camphor etc. They also let meat dissolve in it. This beverage, when strained many be used, but it is mostly employed for the preparation of *arrack*. Thevenot, *op.cit.,* p. 23.
[135] Thevenot, *op.cit.,* p. 24.
[136] Villiers, *Gardens of the Great Mughals , op.cit*., p. 35.
[137] *BaburN ama* , *op.cit*.,p. 610.
[138] Villiers, *Gardens of the Great Mughals , op.cit*., p. 68.
[139] *Ain-i Akbari*, *op.cit*., vol. I, p. 82.

(kewra, pandanus) mulsari, ketaki, oleander flower*,* red roses, tulip*, Jafri,* poppy, marsh-mallow flowers, *kanwal* etc, and about the flower-oil.

Mughal nature studies belong to the genre of miniature painting, small pictures painted by various painters and the naturalistic portrayal of trees, plants, and animals that can be observed even in the formative stage must be ascribed to both Akbar's personal preferences for naturalistic representation of nature. 'Floral paintings and the practice of mounting miniatures with decorative borders especially developed during Jahangir's reign.[140] The flowers that were seen in the territories of Kashmir were beyond all calculation. Those that *nadiru-l-asri*, Ustad Mansur has painted were more than hundred.'[141]



Tulip Painted by Mansur.

[140] *Tuzuk-i-Jahangiri, op.cit.,* vol. I, pp. 5-7, p. 97, p. 362, p. 386, p. 413, vol. II, p. 124, p.145, See also Asok Kumar Das, *Mughal Painting during Jahangrir's time*, Calcutta: The Asiatic Society, 1978. Shrivastava, Ashok Kumar, *op.cit*., p. 33.

[141] *Tuzuk-i-Jahangiri, op.cit.,* vol. II, p. 145.

Abul Fazl gives a detail account about the process of making of perfumes and their rates.[142] Jahangir comments that *itr* was the discovery through the efforts of the mother of Nur Jahan Begam.[143] Jahangir's botanical knowledge also very vast, he gives information about various types of flowers and its fragrances, like *chambel*i (Jessamine), and its sweet scented oils. He also discussed about the trees as 'the cypress (*sarw*), the pine (*devdar,sanubar)*, the *chanar* (Platanus orientalis), the white poplar (*safidar, Populus alba*), sandal tree and the *bid mulla* (willow), which they had formerly never thought of in Hindustan, but are now plentiful.' [144] Jahangir's experiments and creativity produced informative atmosphere in Mughal natural history. The efforts of the Mughal state to create an ecological awareness among the masses with the interest of rulers inquisitress thus highlighted in the policy of the state.

[142] Ibid., pp.78-87.
[143] *Tuzuk-i-Jahangiri, op.cit.,* vol. I, pp. 270-71.
[144] Ibid. p. 145.

CHAPTER - 4

STATE ENVIRONMENT AND ANIMAL KINGDOM

Animals were the backbone of medieval society and polity. The changing scenario from the hunter-gathers to agricultural or society, animals play significant role in our development as transportation, army, domestic works, entertainment and many more uses. One gets graphic account on Indian wild-life in contemporary chronicles' accounts particularly about elephant, lion, tiger, *cheetah*, rhinoceros, deer, *nilgau*, alligator, etc. Babur was a keen observer of animals and their behaviour. Babur provides graphic accounts of different types of beasts with curiosity which he did not saw ever particularly rhino, elephant and many breeds of birds. Jahangir, who was a great naturalist, also gives detail information about the fauna of India. His scientific approach towards birds and animals is amazing. The common thread connects both the monarchs was their keen interest in nature.

Elephant

Elephant was very much at home in India, and the natural breeding grounds were the moist and thick jungles of the east and south India. It had a very important role in Indian political, social, cultural and religious scenario. The chronicles and memoirs provide rich data pertaining to elephants. Abul Fazl gives a full section on elephants in *Akbarnama* and *Ain-i Akbari*. During Akbar's reign elephant assumed so much importance that even minute details on their size, behaviour etc. were given by Abul Fazl. Connecting the relationship of Delhi Sultans and Mughal emperors vis-à-vis elephants Raman Sukumar writes, 'As with the Delhi sultans, the Mughals continued the tradition of maintaining large numbers of elephants in their armies. The engagement of Mughals with the elephant also changed qualitatively compared to earlier Muslim rulers; the Mughal learnt and used the Indian art of capturing elephants. Some of them developed personal bonds with their animals; individual animals had names and distinct characters in the Mughal accounts.'[1]

[1] Sukumar, Raman, *The Story of Asia's Elephant*, 2011, Mumbai: Marg Foundation, p. 187.

Thomas R. Trautmann comparing the Mughal period distribution of wild elephants with the eight elephants forests of the *Arthasastra*, comments that they, 'retreated from the Indus valley and the upper Deccan but are well represented across Central India; indeed the great Central Indian Forest, now so fragmented and degraded, was a continuous range of wild elephants, from sea to sea. In addition, the Mughal sources register the great South Indian wild elephant range, and that of Sri Lanka. Looking back in time to the *Arthasastra* and excluding the Indus valley and upper Deccan, the range is virtually unchanged well over a thousand-plus years of kings capturing wild elephants for warfare without visible reduction in their number. Looking forward in time, however to the Elephant Task Force Report of the present, it becomes clear that the drastic shrinkage of habitat happens over the colonial and national periods of India's history.'[2] Through elephant are now removed from their natural habitats. In the Mughal territories elephants were found in Hardwar, Kumayun range, Gorakhpur, Agra, Allahabad, Malwa, Madhya Pradesh, Chhattisgarh, Gujarat, Bengal, Bihar, Orissa, Assam and Deccan. Outside the Mughal territories there were other areas also that were not the part of Mughal Empire, as deep South where elephants were found.

Babur informs that the elephants were found in Kalpi, Karrah and Manikpur.[3] However, Erskine, writing in 1826, finds total absence of elephants in these areas. He comments that, 'The improvement of Hindustan since Baber's time must be prodigious…. A wild elephant near Karrah (Currab), Manikpur, or Kalpi, is a thing, at the present day, totally unknown. May not their familiar existence in these countries, down to Baber's days, be considered as rather hostile to the accounts given of the superabundant? Interestingly, population of Hindustan in remote times?'[4]Abul Fazl also does not mention presence of elephants in Karrah, Manikpur (*suba* Allahabad) and Kalpi (*suba* Agra) regions, instead he informs that elephants were found in *suba* Agra in the forests of *sarkar* Bayanwan (Payanwan), *sarka*r Narwar, as far as Barar; in the *suba* Allahabad in the confines of Pannah, (*Bhath*) Ghora, and Ratanpur and

[2] Trautmann, Thomas R., *Elephants and Kings: An Environmental History*, Chicago: The University of Chicago press, 2015, p. 17.
[3] Zahiru'd-din Muhammad Babur, *BaburNama* (*Memoirs of Babur*), Translated by A.S. Beveridge, 2006, [1921] Delhi: Low Price Publications, vol. II, p. 488.
[4] Erskine William and Late John Leyden , *Memoris of Zehir-ed-Din Muhammed Baber, Emperor of Hindustan* (written by himself in the Jaghatai Turki), London: Longman, 1826, p. 398.

Nandanpur, Surguja (presently there is wild life sanctuary) and Bastar,[5] (presently in Chattisgarh) Kalinjar and Chunar[6]. Writing in the early 20th century Blochmann remarks that wild elephants have nowadays disappeared from all the places mentioned by Abul Fazl.[7] Tavernier identified elephants in the region of Gorakhpur.[8] During Shah Jahan's reign elephants were captured from Hardwar[9] and Kumayun. In *suba* Malwa, Abul Fazl documents that elephants were found in *sarkar* Handia, (Uchhod, Santwas Handia) *sarkar* Chanderi, *sarkar* Bijagarh, *sarkar* Raisen, (Raisen and Hoshangabad) *sarkar* Garha [presently in Jabalpur district], (Garha and Hararia.)[10] The most of Great Central Forest boundaries which spread in the regions of Malwa, Bihar and Orissa was infested with wild elephants. Elephants were also found in *suba* Bihar, in the neighbourhood of Rohtas and Jharkhand;[11] and in *suba* Bengal in *sarkar* Mahmudabad and in *sarkar* Khalifatabad,[12] Orissa,[13] *sarkar* Satgaon and in the south-east tract of Arakan[14] (Rakhang). The elephants from Pannah (present Bundelkhand) were recorded by Abul Fazl as the best.[15] Gujarat was another region where elephants were found during the medieval period. In *sarkar* Champaner, (Dohad)[16]*sarkar* Nandurbar, (Sultanpur) and Rajpipla Hills[17]in *suba* Gujarat elephant hunting is recorded in the reigns of Jahangir and Shah Jahan. However, Irfan Habib comments that wild elephants previously used to be caught in Dohad and Rajpipla territories; but as 'passes were closed to them (by human settlements) they were now no longer

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[5] Abu'l-Fazl 'Allami*, The Ain-i Akbari,* Translated from the original Persian by H. Blochmann, 1977 [1873], New Delhi: Oriental Books, vol. I, p. 129.

[6] Abu'l-Fazl 'Allami *, The Ain-i Akbari,* Translated from the original Persian by Col. H.S. Jarrett, second edition corrected and further annotated by Jadunath Sarkar, New Delhi: Oriental Books, 1978, [1891], vol. II, p. 170.

[7] *Ain-i Akbari* , H. Blochmann , *op.cit*., vol. I, p. 129.

[8] Jean Baptiste Tavernier by *Travels in India*, translated by V. Ball and William Crooke , 2007 [1889], New Delhi : Low Price Publications, vol. II, p. 262.

[9] Inayat Khan, *The Shah Jahan Nama,* [nineteenth Century Manuscript translation of A. R. Fuller], edited and completed by W. E. Begley and Z. A. Desai, 1990, Delhi: Oxford University Press, p. 301. For elephant in Kumayun region see Habib Irfan, *An Atlas of the Empire,* 1986 [1982] Delhi: Oxford University Press, sheet 8B , p. 32.

[10] Ain -*i Akbari*, trans. H. Blochmann, *op.cit*., vol. I, p. 129.

[11] Ibid., p. 130.

[12] *Ain-i Akbari*, trans. Jarrett, *op.cit*., vol. II, p. 135.

[13] Ibid., p. 138. [Though Orissa was an individual territory subdivided in Five *sarkars* (Jalesar, Bhadrak, Cuttak, Kaling Dandpat and Raja Mahandrah) nonetheless it formed paid or *suba* Bengal.]

[14] Ibid., p. 132.

[15] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 130.

[16] Jahangir, *The Tuzuk-i- Jahangiri or Memoirs of Jahangir*, translated by Rogers Alexander and edited by Henery Beveridge, 2006 [1909-1914], New Delhi: Low Price Publications, vol. II, pp. 4-5.

[17] *ShahJahan Nama*, *op.cit*., p. 48.

found there.'[18] In Assam also elephants abounded in Kajliban forest and there were four and five other localities where wild elephants could be caught and says that if desired, 500 to 600 elephants could be captured annually in such localities.[19] In the Deccan, *suba* Berar *sarkar* Kherla and *sarkar* Ramgir[20] were the areas where wild elephants could be traced.

About the disappearance of elephants Raman Sukumar states, 'An important development for elephants at the height of Mughal power was that, for all practical purposes, the wild elephant populations of central India, with the exception of the region of Orissa and Bihar-Jharkhand, were wiped out. A part of this population in the present day states of Gujarat, Maharashtra, southern Uttar Pradesh, Madhya Pradesh, and Chhattisgarh, in any case, would have been rather isolated by Mughal times, an all that the Mughal probably did was to deliver the final blow.'[21] Thus he blames Mughals for their disappearance. But it appears that further agricultural expansion and large scale clearances during the nineteenth century were largely responsible for their disappearance. Tavernier's testimony suggests till late seventeenth century they very much abound the region.

Elephant resembles an intelligent human, and never hurts the female, 'through she is the cause of his captivity.'[22] Female –elephants, when mourning the loss of a young one, will often abstain from food and drink; they sometimes even die from grief. Tavernier praises Asian elephants though 'the smallest, but the most courageous of all.'[23]

Babur describes the size, power and understanding of the elephant very beautifully,

> The elephant is an immense animal and very sagacious. If people speak to it, it understands; if they command anything from it, it does it. Its value is according to its size; it is sold by measures (*qarilab*); the larger it is, the higher its price. People rumour it is

[18] Habib, *An Atlas of the Empire*, *op.cit*., sheet 7 B, p. 26.
[19] Ibid., see sheet 13 B, p. 53.
[20] *Ain-i Akbari*, trans. Jarrett, *op.cit*., vol. II, pp. 237-38.
[21] Sukumar, *op.cit*., p. 209.
[22] *Ain-i Akbari*, trans. H. Blochmann , vol. I, p. 124.
[23] Tavernier, *op.cit*., vol. I, p. 219.

> heard of in some islands as 10 *qari*[24] high, but in this tract it is not seen above 4 or 5. It has two great teeth (tusks) in its upper jaw, one on each side of its trunk; by setting these against walls and trees, it brings them down; with these it fights and does whatever hard tasks fall to it. People call these ivory (‘*aj,var.ghaj*); they are highly valued by Hindustanis. The elephant has no hair.[25] It is much relied on by Hindustanis, accompanying every troop of their armies. It has some useful qualities:-it crosses great rivers with ease, carrying a mass of baggage, and three or four have gone dragging without trouble the cart of the mortar (*qazan*) it takes four or five hundred men to haul. But its stomach is large; one elephant eats the corn (bughuz) of two strings (qitar) of camels.[26]

However, it was Akbar, who appears to have special love for elephants and paid attention towards their maintenance. Akbar’s atelier had elephants in large numbers, there were one hundred and one elephants selected for use of Akbar. He himself was an expert in controlling wild elephants. It was mainly his expertise and affection towards elephants that he could control even the wildest elephants. Abul Fazl informs that Akbar ‘mounted on every kind of elephant, from first to last class, making them, notwithstanding their almost supernatural strength, obedient to his command.’[27]

Abul Fazl mentions detailed Sanskrit treatises on the diseases of the elephants, their causes and proper remedies.[28]

Monserrate comments on elephant’s nature that, ‘Their keepers say that elephants live to two hundred years of age, reach full maturity at fifty, maintain their full strength for a hundred years, and grow old after they are over one hundred and fifty, dying at about two hundred. But they are very liable to diseases and especially to fever. If they are exposed to severe cold, or become ill of ague, they waste away and die in twenty four hours.’[29] Tavernier also comments about the age of elephant, ‘that such an elephant has been in the charge of their father, grandfather, and great-grandfather, and by estimating the time that these people may have lived, it is found

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[24] *Babur Nama, op.cit*., p. 489. The *Qari* seems to approach more nearly to a yard than a *gaz* of 24 inches.

[25] Ibid., Beveridge comments, that as Erskine notes, its skin is scattered with thin hair. [p. 399], details such as this one stir the question, for whom was Babur writing? Not for Hindustan where what he writes is patent; hardly in Kabul; perhaps for Transoxania.

[26] Ibid., pp. 488-89.

[27] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 138.

[28] Ibid., pp. 123-131.

[29] Father A. Monserrate, *Commentary on his journey to the court of Akbar*, English translation by J.S. Hoyland, annotated by S. N. Banerjee, 1922, Cuttak: Orissa Mission Press, p. 86.

that an elephant's age sometimes amounts to 120 or 130 years.'[30] Presently scientists say that average life span of an elephant is 60 years.

Montserrat's observation about elephant is quite interesting, as he writes, 'The elephant sleeps with his trunk in his mouth. He is afraid of ants and still more of mice. He is as fond of water as a buffalo or a pig or any other such animal.'[31] He further informs that 'The males go so violently mad for about three months of every year that sometimes they kill even their keepers; they are most useful for fighting during this period. When the time of madness is past, if they have to be enraged again on account of an impending battle, this is affected by giving them cat's flesh to eat mixed with their other food? They are kept quiet and harmless at home by the company of female elephants: for all their rage abates as soon they see a female.[32]

Niccolao Manucci mentions that elephants live in herds, where there are one hundred and fifty, two hundred, and up to three hundred. …After delivery, they remain in that jungle for some days until the young one can travel; at its birth it is the size of a calf three months old. The mother runs her trunk over it until it is cleansed and quite dry, then she helps it up with her trunk. If feeds by passing between the legs of its mother to her teats, stretches out its little trunk along the mother stomach, and sucks the milk with its mouth. In this way it is reared for two years, and the third year the mother becomes pregnant again. The infant elephant grows four inches every year, but it grows no more when it gets to twelve feet; and usually they reach one hundred years of age.'[33] He praises that, 'these animals are most grateful, and recognize any benefit done them; they also feel an injury, and when the opportunity arises take a cruel revenge. This have I seen suffered by many an elephant-driver for the ill-treatment he had been guilty of, some because of stealing their food and not giving them their full rations, others for having without cause struck and abused them.'[34]

Thevenot compares the Indian elephant with Ceylone, 'there are several sorts of elephants at Delhi, as well as rest in the Indies; but those of Ceylone are preferred before all others, because they are stouter, though they be the least, and the Indians

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[30] Tavernier, *op.cit*., vol. I, p. 223-24.
[31] Monserrate, *op.cit*., p. 87.
[32] Ibid., p. 83.
[33] Niccolao Manucci , *Mogul India (1653-1708)* English translation by William Irvine, 2010 [1907-8], Delhi : Low Price publications, vol. III, pp. 72-73.
[34] Ibid., *op.cit*., vol. III, p. 80.

say that all other elephants stand in awe of them. Strong elephant can carry forty men, those of the country Golconda, Siam, Cochin and Sumatra, are indeed, less esteemed than the elephants of Ceylon, but they are much stronger, and surer footed in the mountains; and that is the reason, why the great men provide themselves of those, rather than the elephants of Ceylon... But it is very chargeable to feed them and that besides the flesh they give them to eat and the strong- waters they drink, it costs very much expensive.[35]

Elephants need very much concentration; the maintenance of elephant was very much expensive. It required lots of work force. Abul Fazl informs that under the hands of 'an experienced keeper it will much improve, so that its value in a short time may rise from one hundred to ten thousand rupees.'[36] Akbar made sevenfold division based upon experience: 1. *Mast* (full blood) 2. *Shergir* (tiger-seizing) 3. *Sada* (plain) 4. *Manjhola* (middlemost) 5. *Karha* 6. Phandurkiya, and 7. *Mokal.* Each class is divided into three subdivisions large, middle and young ones. A certain quantity of food has been fixed for each class. Even the female elephants have been divided into four classes as large ones; middle sized ones, small ones, *mokals*. The first two classes are divided into three, the third into four; the fourth into nine divisions. [37] Each elephant requires three *bhois* in the rutting season, and two, when cool. Their monthly wages were fixed by Akbar himself. For each elephant there was four *Meths*, in the *halqas*, female elephants are bur rarely told off to accompany big males ones; but for each *khasa* elephant there were three and sometimes even more appointed….[38]

Abul Fazl provides details about the diet of the elephants of different types; there were many servants in the royal stables according to classification of the list. As there were five and a half servants for *Mast* elephants, for every *Shergir* there were five servants, for every *Sada* there were four and a half servants, for every *Manjhola* there were four servants, for every *Karha* there are three and a half servants, for every *Phandurkiya* there were two servants and for every *Mokal* there were two servants. According to female elephant classification there were servants provided by the State.

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[35] Thevenot, Sen, Surenderanath,(ed.), *Indian Travels of Thevenot and Careri*, 1949, Delhi: published by National India, pp. 63-64. Thevenot gives every detail account about the diet of elephant and about the tame elephant's characteristics.
[36] *Ain –i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 128.
[37] Ibid., p. 131.
[38] *Ibid.,* pp. 137-138.

The servants were as *Mahawat, Bhoi*, and *Meths*. Their monthly salary was fixed. Even a *Faujdar* was appointed by Akbar on every troop of ten, twenty and thirty elephants. Abul Fazl gives detail account, 'It was the duty of *Faujdar* to look after the condition and training of the elephants; he teaches them to be bold, and to stand firm at the sight of fire and at the noise of artillery; and he is responsible for their behavior in these respects.'[39]

There were verities of harness for elephant. *Dharma* was a large chain, made of iron, gold or silver. But Akbar ordered to discontinue its usage because it was injurious for the chest of the elephant. The *Andu* was a chain, with which both forefeet were tied, as its annoys the elephants, Akbar ordered to discontinue it as well. Another were *Beri, Baland Gaddh beri, the dulthi,* (rope) *the kanar* (a small pointed spike) *the dor, (thick rope) the gadela, (cushion), the gudauti,* (a chain of brass attach it near tail which prevents from getting injured). The *Loh langer* was a chain, suitable for an elephant. It was good to stop the animal. 'It was useful invention, which had saved many lives and protected huts and walls, was likewise due to His Majesty.'[40] Except these a very long list is given by Abul Fazl like ornamental trappings which is impossible to describe, even the cotton and woolen (*kambal*) clothes were annually allotted and the quality of cloth was depend on the classification and kind of elephants.[41]

The fodder which was provided to the elephants was well calculated, as per the size and quality of elephants.[42] Abul Fazl writes that 'formerly the classification of

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[39] Ibid., pp. 132-133-134. As *Ain* informs, "*Faujdar* is raised to the dignity of a *Sadi* (a commander of one hundred) or higher, he has twenty five elephants assigned to himself, the other *Faujdar*s, as *Bistis* (commanders of twenty) and *Dahbashis* (commanders of ten) being under his orders." Abul Fazl gives full description about the salary of these officers. Akbar put several *halqas* in charge of every grandee, and required him to look after them. The fodder also is now supplied by the government. A clerk also appointed, who was in charge of the correspondence and expenditure, and followed the orders of the emperor. He also parades the elephants in the order.

[40] Ibid., vol. I, p. 134.

[41] Ibid., Vol. I, pp. 134-138. Abul Fazl informs that a sum of 12 *dams* was annually subtracted from the servants; but they get the worn out articles,

[42] Ibid., pp. 131-32, The fodder for male elephants: *Mast* elephants: large one gets daily 2 *mans* 24 *sers*; middle sized, 2 *mans* ,19 *sers*; small one, 2 *mans* 14 *sers*. *Shergirs* : large ones, 2 mans 9 *sers,* middle-sized ones 2 *mans* 4 *sers*, small one 1 *man* 29 *sers*. *Sadas*: large ones 1 *man*, 34 *sers*, middle-sized ones 1 *man*, 29 *sers*, small ones, 1 *man*, 24 *sers. Manjholas*: large ones 1 *man*, 22 *sers*, middle-sized ones 1 man 20 sers, small ones 1 *man* 18 *sers*. *Karhas*: large ones 1 *man*, 14 sers, middle-sized ones 1 *man*, 9 *sers*, small ones, 1 *man*, 4 *sers*. *Phanudurkiyas*: large ones 1 *man*, middle sized ones 36 *sers*, small ones 32 *sers*; *Mokals*: large ones 26 *sers*, middle-sized ones 24 sers, third class 22 sers,

the elephants was never attended to; hence in feeding them a large quantity of the stores was wasted. But when H.M. soon after lifting the veil commenced to care for the happiness of his subjects, this matter was properly inquired into, and wise regulations were issued for guidance.'[43] Except these Abul Fazl also gives detail about the fodder classification of female elephants also.'[44] Which seems comparatively much less than the male counterpart.

The allowance of food was same in quantity but was differing in quality of other elephants in comparison to royal elephants. The royal elephants (*khasa*) were in special care and maintenance. Most of them also get 5 *sers* of sugar, 4 *sers* of *ghi*, and half a *man* of rice with chilies, cloves, etc; and some have one and a half *man* of milk in addition to their grain. In the sugar-cane season, each elephant gets daily, for two months, 300 sugar canes, more or less. [45] To each of the hundred and one elephants that were set apart for the Emperor Akbar's own riding, the daily allowance of food was two hundred pounds in weight. Most of them, in addition, had ten pounds of sugar, besides rice, pepper, and milk in the sugar-cane season, each elephant had daily three hundred canes."[46] Careri writes about the Mughal elephants and comments that 'it is also a vast expanse to maintain so great a number of elephants; for every one of them eats at least 140 pounds of corn every day, besides leaves, green canes, sugar and pepper , so that the King allows 7 rupees a day for everyone.'[47] Thus, Mughal emperors kept huge elephant retinue.

Tavernier observation about the royal elephants and their fodder that 'the number of elephants in the Emperor's service had 500, called elephants of the household, because they are employed only to carry the women and the tents with all the rest of the baggage, and for war only 80 or at most 90 the most courageous of the latter has to be supported by the eldest son of the Emperor, is allotted both for food and all other necessary expenses, 500 rupees a month, which amount to 750 livers. Some have only 50, others but 40, others 30, others 30 rupees ; but the elephants,

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fourth class, 20 *sers*, fifth class 18 *sers*, sixth class 16 sers, seventh class, 14 sers, eight class 12 sers, ninth class 10 *sers*, tenth class, 8 *sers*.

[43] Ibid.,

[44] Ibid., p. 132.

[45] Ibid., p. 137.

[46] *The Elephant principally Viewed in relation to men*, London: Printed by William Clowes and Sons, 1844,p. 26

[47] *Careri*, *op.cit*., p. 219.

which have 100 or 200 or 300 or 400 rupees a month have under them their horsemen to support, who share this pay, besides two, three, and up to six young elephants, who have to fan them during the great heat of the day. All these elephants do not remain in the town, as the majority go every morning to the country, where those who tend them take them into the jungles, where they eat branches of trees, sugar-canes, and millet, from which the poor peasants suffer much loss. This is profitable to those who tend these animals, because the more they eat in the country, the less food they consume in the town- the saving going into the pockets of the keepers.'[48] Tavernier's account suggests that much more than Rs-7 a day appears to spent a *khasa* elephants. Further for battle field only a a section (around twenty percent) were used, the courageous ones, rest were used as beast of burden for entertainment or distribution as royal insignia etc.

Nonetheless, elephants were most formulate. There were strick punishments on any sort of negligence. Akbar issued a fixed list of fines to prevent laziness and to ensue attentiveness. Abul Fazl described the punishment spelled out by Akbar on crime against elephants in the *Ain*:

a) On the death of a male and female *khasa* elephant the *Bhois* were fined three months wages.

b) If any part of harness is lost, the *Bhois* and *Mets* were fined two thirds of the value of the article; but in the case of a saddlecloth, the full price.

c) When a female elephant dies from starvation, or through want of care, the *Bhois* have to pay the cost price of the animal.

d) Elephant drivers have a drug which causes an artificial heat; but it often endangers the life of the beast. If a driver mixes drugs with the food of an elephant to make the animal hot, and it dies in consequences thereof, he is liable to capital punishment. Or to have a hand cut off, or to be sold as a slave. If it was a *khasa* elephant, the *Bhois* lose three months pay and are further suspended for one year.

[48] Tavernier, *op.cit.*, vol. I, pp. 223-24.

e) Two experienced men were appointed to inquire into the fitness of leanness of the *khasa* elephants. If elephants are found by them out of flesh to the extent of a quarter, according to the scale fixed by *pagosht* Regulation , the grandees in charge are fined, and the *bhois* are likewise liable to lose a month's wages.

f) In the case of *halqa* elephants, *Ahadis* are told off to examine them, and submit a report to Akbar.

g) If an elephant dies, the *Mahawat* and *Bhoi* are fined three months wages.

h) If part of an elephant's tusk is broken, and injury reaches as far as the kali—this is a place at the root of the tusks, which on being injured is apt to fester, when the tusks get hollow and become useless—a fine amounting one-eighth of the price of the elephant is exacted, the *darogha* paying two-thirds, and the *Faujdar* one third.

i) Should the injury not reach as far as the kali, the fine is only one-half of the one percent has become usual; in the case of *khasa* elephants.[49]

Akbar inspected personally the stable regularly and dispatched weekly his officer who was in charge. If the animal eat less and in case of sickness, then the action was taken by the officer according to the situation against the (watcher) who was submit his report daily .

Other than the imperial stable, there were many stables owned by nobles, princes, and zamindars. Divyahanusinh comments, 'the low figure of elephants used in warfare is not surprising, in 1526, Ibrahim Lodi is reputed to have put 1,000 in the field at Panipat. However, he lost to Babur's deadly muskets. By the time of Shah Jahan, small canons which could be easily manhandled on the battlefield had become an established instrument of war. The elephant's role in warfare had diminished, through they were used as draft animals by the army and they continued to be so used

[49] *Ain - i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 139.

by the East India Company and the British Indian Empire up to the 1870s and beyond.'[50]

There were around hundred one elephants in the royal stable of Akbar. Tavernier observes that 'the majority of those who have written accounts of India say boldly that the Great Mogul keeps 3,000 or 4,000 elephants. [51] Shireen Moosvi in her 'Call of the Elephant' have calculated that there were 5,000 elephants with the Mughal in 1595, while their courtiers had another 28,00. Her estimate for the total captive population in the empire is about 17,000. According to another scholar the number of elephants in the Mughal stables was 12,000 with 40,000 in the empire during Jahangir's reign between 1605 and 1627.[52]

Raman Sukumar comments on such large number of Mughals elephants that, 'Part of the confusion lies in the fact that only a fraction, usually less than one third, of the total numbers held would be suited for direct use to war. It is also not clear whether the higher figure of 40,000 refers to the total numbers of tame and wild elephants estimated to be present with the kingdom. Nevertheless, it is not an impossible figure even if refers only to tame elephants. Over-exploitation of the wild population, combined with the high longevity of elephants, could have resulted in a large domestic stroke for at least a short period. Statistics of elephant captures during the nineteenth and twentieth centuries support much a possibility.'[53]

Elephants were usually employed in army, but also they were of great advantage in the royal visits, long marches etc. Whenever the emperor used to go Kashmir, the long journey could be possible due to the elephants. Bernier gives full description of Aurangzeb's journey towards Kashmir [1664] with his whole *harem*

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[50] Divyabhanusinh, 'Lions, Cheetahs and Others in the Mughal Landscape,' (ed.) Mahesh Rangarajan & K. Sivaramakrishnan, *Shifting Ground people, animals, and mobility in India's Environmental History*, New Delhi: Oxford University Press, 2014, p. 101.

[51] Tavernier, *op.cit*., vol. I, pp. 223-24.

[52] Moosvi, Shireen, Elephants in Medieval Indian History', WWF Seminar at Indian Museum Calcutta, 1998, cited in Sukumar, Raman, *The Living Elephants: Evolutionary Ecology, Behaviour, and Conservation,* Oxford: Oxford University Press, 2003, p. 76-77. Sukumar, Raman, *The Asian Elephants*, *op.cit.*, 2011, p. 200.

[53] Sukumar, Raman, *The Asian Elephants*, *op.cit*., p. 6.

and all officers, a huge *kafila* and Bernier describes very interesting incidents about the journey. [54]

The elephant forces of the Mughals were effectively 'deployed in several battles including those in which their opponents had good numbers of war-elephants too.'[55] In the battles the number of elephant were used as in the first battle of Panipat[1526] by Ibraham Lodi. Babur himself quotes about 1000 war elephants were used by Ibrahim Lodi.[56] In the second battle of Panipat [1556] Hemu had a larget number of elephants in his contingent. Abul Fazl describes interesting details about the elephants of Hemu, specially Hawaii.[57] In Akbar's expeditions with north, then towards Bihar and Bengal, the role of war-elephant was important than in Rajasthan, Gujarat, Kashmir, Orissa, Sindh and Deccan. His elephants played a significant role in these conquests. Jahangir's observation was very important however, his passion towards elephants was not so much as that of his father. Shah Jahan also maintained the tradition. But it was Aurangzeb who had some matching engagements with elephants like Akbar.[58] Even after 1707 the role of elephant continued to prominent portion and in the battle of Jajau, south of Agra, which was fought between Shah Alam and Muhammad Azam Shah [1707] elephant's presence was decisive.

Father Monserrate informs that elephants were used for entertainments: 'The Indians train elephants to fight. They are taught to carry baggage as well as to fight, though the baggage is mainly carried by the females. Most of the males are trained for battle and are furnished with defensive armour, which they also use for offensive purposes, though indeed they are quite as dangerous without this armour. Some are trained to carry guns on their backs.'[59]Abul Fazl also describes that the elephant can be taught various feasts. 'He learns to remember such melodies as can only be remembered by people-acquainted with music; he will move his limbs to keep time and exhibit his skill in various ways.'[60]

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[54] Bernier, Francois*, Travels in the Mogul Empire AD 1656-1668,* translated by Archibald Constable, edited and revised by V.A. Smith, New Delhi: Atlantic Publishers, 1990, pp. 350 -428.
[55] Sukumar, *The story of Asia's Elephant*, *op.cit*., p. 196.
[56] *Baburnama*, op.cit., p. 463.
[57] Abul Fazl, *Akbar Nama*, Translated by H. Beveridge, New Delhi: Atlantic Publishers, vol.II, 1989, p. 64.
[58] Sarkar, J.N, *Studies in Mughal India*, Calcutta: M.C. Sarkar & Sons, 1919,p. 5,
[59]Monserrate*, op.cit*., p. 83.
[60]*Ain -i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 124.

Abul Fazl gives full detail if King's *khasa* elephant won in the combat and informs that a few elephants appointed for fighting, some are always ready at the palace. Abul Fazl narrates that when a fight was over, if the combatants were *khasa* elephants, the *bhois* receive 250 *dams* as a present; but if combatants were other elephants, then the *bhois* used to get 200 *dams*.[61] The rider were also given full compensation. In the event of their death their pay would continue to their widows, and that their sons were generally appointed to the same position. Bernier also faced the situation for safety of his life, and flight from the place of fighting.[62]

Tavernier writes about Agra that between palace and river Yamuna there is a large square for elephant fighting, 'they have purposely selected this spot near water. If they don't because the elephant being excited by his victory, they would not be able to pacify him for long time if they did not urge him into the river, to effect which it is necessary to use artifice, by attaching to the end of a hand pike fuses and petards, which are set on fire to driver him into the water; and when he is two or three feet deep in it he forthwith becomes appeased.'[63]

Monserrate provides interesting observation about elephant training in the royal stables. He comments that, 'They can tie and untie knots, push anything, lift it, put it down again, turn it over. They can cast nooses, and unfasten them: gather up tiny straws and coins. They can even be taught to dance. In short they are ready to do anything that they are told by their keepers. Elephants are first submitted to training when they are ten. Those that are being trained to fight are fed by impious barbarians on human flesh, in order to make them more savage against man. Criminals are crushed to death beneath their feet.'[64]

Elephants were equally effectively used in hunting operations by the Mughals. Abul Fazl informs that the first elephant which Akbar rode was called *Dilsankar* and the first mast elephant which he rode was called *Damudar*. The first *mast* elephant which he mounted upon and engaged in battle with another mast elephant was called *Jhalpa*. He would lead it against mast elephants, and without exaggeration ' he rode more than a hundred times on mast, elephants which had killed their drivers and were

[61] *Ain –i Akbari*, trans. H. Blochmann*, op.cit.,* vol. I, p. 139.
[62] Bernier, *op.cit*.,pp. 277-278.
[63] Tavernier, *op.cit*., vol. I, p.86
[64] Monserrate, *op.cit*., p. 84

men-slayers, and were capable of smiting a city or perturbing and army, and engaged them in fighting.'[65]

In Jahangir's stable there were many famous elephants as *Ran rawat, Panchi* Gaj, *Fauj- sangar*. It was very much in trend to give gifts to the emperors as per his likings as offerings like animals elephants, camels, horses, Arabian dogs, hunting animals (hawks?).[66]A white baby elephant which was given to Jahangir by a merchant named Khwaja Nizam, dispatched the animal to the court and Shahjahan very much pleased by it.[67]

Thevenot describes the affection of Shah Jahan about an elephant which was died in Burhanpur. He informs that 'the statue of an elephant, (reddish shining stone, the black parts of it are in the water, and it leans to the left side; the elephant died in that place, fighting before Shah Jahan) which was built by him who loved the beast very much.'[68] Manucci also mentions about an elephant and his attachment even he recognized him in also when he was passing through the city.[69]

To keep the elephant was royal prerogative. However as state privilege they were awarded the privilege to keep the elephants. Accordingly, there were various *zamindars*/*jagirdars* and officers in the Mughal state who had their own elephants and also awarded by the emperor on some occasions of rare feats. It was a thing of honour that an elephant was presented by the King to a noble. Elephants were also very important aspects as a part of tribute of respect and as a gift by the officers to King. When the nobles or particularly imperial nobles presented or captured elephants as war-booty, it was considered also a matter of proud, and that noble/officer honoured by the king. Manucci writes about the love and observance of Mahawat Khan towards elephants, 'He was governor of Gujarat, he kept many elephants. Among them were some very choices, large, and handsome. [70]

About a special elephant of the king of Golconda which was liked by Aurangzeb, Manucci gives mentions that, 'Among the many elephants owned by the

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[65] *Akbarnama*, *op.cit*. vol. II, p. 91.
[66] *Tuzuk-i- Jahangiri*, *op.cit*., vol. I, p. 323.
[67] *Shahjahan Nama*, *op.cit*., p. 33.
[68] Thevenot*, op.cit.,* p. 100.
[69] Ibid.
[70] Manucci, *op.cit*., vol. III, pp. 80-81

King of Golconda, he had one very lofty and superb animal, which the king valued most highly. This elephant formed a great affection for a young girl who lived close to its stable; and every time the elephant was fed with various kinds of grain, cooked food, and sugarcane, it threw a portion with its trunk to the girl. On reaching the Mogul's court the king was told of the affair, and he granted pay for the girl and her parents. The girl when she grew up drove this elephant and it obeyed her without hesitation.'[71]

Abul Fazl states that the experienced people of Hindustan put the value of 'a good elephant equal to five hundred horses; and they believe that when guided by a few bold men armed with matchlocks, such an elephant alone is worth double that number.'[72] Abul Fazl describes the price of an elephant 'varies from a *lak* to one hundred rupees; elephants worth five thousand and ten thousand rupees, are pretty common.'[73], and some elephants have four tusks. With a view to usefulness as also to ornament, they have to cut the tusks annually; with others after two or three years; but they do not like to cut then when an elephant is ten and eighty years old. White spots on the forehead are considered lucky, whilst a thick neck is looked upon as a sign of beauty. Long hairs on and about the ears point to good origin.'[74] Somehow the traditions of Hindus were also followed by the Muslim State regarding the elephants shape and size. Abul Fazl describes very interesting information that elephant like a man, lives one hundred and fifty years, and even about the wild elephants and their herds, their nature he gives very much detail account. As he comments, 'many examples are on record of the extraordinary cleverness of elephants; in some cases it is difficult to believe them.'[75]

Abul Fazl informs that in the *Subah* of Malwa, Garha is abounding with forests in which numerous wild elephants were found. The cultivators pay the revenue in *mohurs* and elephants.'[76] They paid tax in the form of elephants. Jahangir gives account that Amanat Khan presented two elephants tusks; they were very large, one of

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[71] Manucci, *op.cit*., vol. III, pp. 148-49.
[72] *Ain-i Akbari, op.cit,* vol. I,, p. 124.
[73] Ibid., pp. 124-25.
[74]Ibid., p. 127.
[75] Ibid., p. 130.
[76] *Abu'l-Fazl 'Allami, Ain-i Akbari,* Translated from the original Persian by Col. H.S. Jarrett, second edition corrected and further annotated by Jadunath Sarkar, New Delhi: Atlantic Publishers, 1989, Vol. II, p. 207.

them being 3 cubits 8 *tassu* (finger- breadths) in length and 16 *tassu* in circumference; it weighted 3 *maunds* 2 *sers*, or 24 ½ Iraq *maunds*.[77] In the year 1619, ruler of Golconda, Qutub-l-Mulk offered two large and five elephants to Jahangir. About one elephant, whose named *Dad-i-Ilahi* by Jahangir mentioned that, 'In truth he is a grand elephant, and lacks nothing of size, beauty, and dignity. As he looked well to my eye, I mounted him into the courtyard of the palace. His value was fixed at 80,000.'[78]

The natural breeding grounds for the elephant were the moist and thick jungles of the east and south. In general, one may say that the elephant is sensitive to cold and dry areas, as well as to a rapid change of climate, when it becomes liable to diseases. [79]Abul Fazl informs that before Akbar, 'people did not breed elephants, and thought it, unlucky',[80] He boasts that "by the command of His Majesty, they now breed a very superior class of elephants, which has removed the old prejudice in the minds of men."[81] Abul Fazl's claim suggests that probably prior to Akbar wild elephant were simply captured and tamed and no breeding was probably done while they were in captivity. It appears that the credit to 'breed' elephants in captivity goes to Akbar who through breeding succeeded in developing many 'cross' breeds. Jahangir also informs about a female elephant in the private elephant stud gave birth to a young one in his presence. He ordered them to ascertain the period of their gestation; at last it became evident that for a female young one it was 18 months and 19 months. In opposition to the birth of a human being, which is in most cases by a head delivery, young elephants are born with their feet first.[82]

The beginning of the musters is made with elephants. The *khasa* elephants with their furniture and ornaments were brought before the ruler namely, ten on the first day every solar month. After this, the *Halqa* elephants were mustered, according to their number. On Tuesdays from ten to twenty were mustered. The *Bitikchi*, during their muster, must be ready to answer any questions as to the name of each animal (there are more than five thousand elephants, each having different name. Akbar knew to which section most of the elephants belong—ten elephants form a section of ten

[77] *Tuzuk-i- Jahangiri*, *op.cit*., vol. I, p. 423.
[78] Ibid., vol. II, p. 79.
[79] Gommans, Jos, *Mughal warefare Indian, op.cit.,* p. 121.
[80] *Ain-i Akbari, op.cit.*, vol. I, p. 126.
[81] Ibid.
[82] *Tuzuk-i- Jahangiri*, *op.cit*., Vol. I, p. 265.

(*dahai*), and were in charge of an experienced person); as to how each elephant came into the possession of Akbar; the price; the quantity of food; the age of the animal; where it was born; the period of heat, and the duration of that state each time; the date when an elephant was made *khasa*; its promotion in the *halqas*; the time when the tusks were cut; how many times Akbar has mounted it; how many times it was brought for riding out; the time of last muster; the condition of the keepers; the name of the Amir in charge. For all other elephants eight things are to be reported, as the change of its name (?), the repetition of it; its price; how it came into the possession of the emperor; whether it had plain furniture or not; which rank the *Faujdar* had assigned to it. The rule is, that every *Faujdar* divided his elephants into four classes, separating those that were best from those that were worst, whether they were in remain with him or whether he had to give some to other *Faujdars*.[83]

Abul Fazl describes the uses and kinds and classes of elephants, with colour of skin "the pomp of a King and to the success of a conqueror; and is of the greatest use for the army."[84] Bernier gives description of Delhi and Agra, the capital cities of the Mughal Empire in 1663 and observed the royal ceremony after the royal horses passed before the throne of emperor, the elephants come next that, 'their filthy hides having been well washed and painted as black ink, with two large red streaks from the top of the head down to the trunk, where they meet. The elephants are covered with embroidered cloth; a couple of silver bells are suspended to the two ends of a massive silver chain placed over their back, and white cow-tail from Great Tibet, of large, hang from the ears like immense whiskers. Two small elephants, superbly caparisoned, walk close to these colossal creatures, like slaves appointed to their service. As if proud of his gorgeous attire and of the magnificence that surrounds him, every elephant moves with the solemn and dignified step; and when in front of the throne, the driver, who is seated on his shoulder, pricks him with a pointed iron, animates and speaks to him, until the animal bends one knee, lifts his trunk on high and roar aloud, which the people consider as the elephant's mode of performing the *taslim* or usual reverence.'[85]

[83] Ibid., p. 223.
[84] Ibid., p. 124.
[85] Bernier, *op.cit.*, pp.261-62.

Mughal emperors showed their personal interest in elephants. As Babur questioned, when in northwest [of the jungle near Birgram] saw a rhino and 'wondered that how a rhino and an elephant would behave if brought face to face'[86] in the hope of watching a fight, but rhino refused to confront the elephant. Father Monseratte also observes that 'It is hard to say what a dread elephants have of the rhinoceros, although it is a much smaller beast. Moreover the rhinoceros has an insolent contempt for the elephant. When an elephant sees a rhinoceros, he trembles, cringes, bends down, hides his trunk in his mouth, and humbly retreats until the rhinoceros has passed by. For the rhinoceros attacks from beneath and buries the sharp horn on his nose in his opponent's belly. Meanwhile the elephant can do him no harm.'[87]

A British writes comments that 'the elephant of Hindustan has certainly not degenerated in size for several centuries; for the Emperor Baber (a contemporary of our Henry VII.) observes, "they say that in some islands the elephants grow to the height of ten *gaz* (about twenty feet). I have never, in these countries, seen one above four or five *gaz*." (eight or ten feet). That the Hindus had a tolerably definite notion of the medium height of an elephant, as we have of that of a cow or a horse, may be collected from another passage in the same amusing book, where the writer, describing a cavity in a rock, says, "it was as high as an elephant."[88]

Monserrate writes about Akbar's concern about elephant that, 'he takes as much pains to see that these herds of elephants in the forests are proper fed, as if they were droves of cattle. Every now and then he orders them to be brought before him, both that he may exhibit them as a spectacle, and that he may choose out the best of them. For the members of a herd who number about twenty, vary considerably, according to their age, in their size and the length of their tusks. Those are regarded as the best which have low hind quarters and strong legs and necks.'[89]

About Aurangzeb's inquisitiveness Manucci comments that, 'the first days of his reign there was no attempt to disguise his intention of correcting the insolence of the elephant-drivers. These men bring daily some highly-decorated elephants to court for parade, and others to fight together, as is the custom in the Mogul country.

[86] *Babur Nama*, *op.cit*., p. 451.
[87] Monserrate, *op.cit*., p. 84.
[88] *The elephant*, *op.cit*., p. 36.
[89] Monserrate, *op.cit*., p. 84.

Sometimes they cause the elephants to be enraged, when they rush through the city killing people and destroying shops and *bazars*. First and foremost they attack the shops of those to whom they are ill-affected, and cause the destruction of all their contents. Aurangzeb made inquiries from the elephant- drivers whether perchance the elephants became savage of themselves, or whether they were made mad. Thinking they would please the king, and he would raise their pay, the drivers replied that they made the elephants mad themselves, giving them certain drugs for the purpose. The king then ordained that writing should be demanded from each driver, in which he bound himself to pay with his own life any deaths caused by the elephant, and from his pay reimburse any damage done in the city. [90] Thus elephant were highly valued and received very much attention by the State, monarch and people. The efforts for the maintenance of royal elephants were practised till the later Mughal period also.

The Big Cats

Lions

The Indian wild life has different types of beasts, but the role of big cats as tiger/lion; leopard/cheetah/panther have special value and concentration because of their existence now-days. As they all belong to the *Panthera genus* –'the name given to the big cats that have a special roar, made possible by the vibration of the thickened vocal folds just below the vocal cords in the larynx.'[91] The common usage of names for 'these four big cats during Mughal times did little to make things clearer. The following table shows how confusing this could be sometimes particularly as Urdu terms came, in the later Mughals:[92]

English	**Arabic**	**Persian**	**Urdu**
Lion	*asad*	*sher*	*babar-sher/ babar*
Tiger	*namr*	*babar* /sher	*sher*
Leopard	*namr*	*palang*	*cheeta*
Cheetah	*fahd*	*yuz palang*	*cheeta*

Thapar suggests that 'it is that references to tigers and lions together had by now become a literary convention while describing a forest. There is however no

[90] Manucci, *op.cit*., vol. II, pp. 6-7.
[91] Thapar Valmik, *The Tiger in time*, New Delhi: Aleph Book Company, 2013, p. 3.
[92] Thapar Valmik, Romila Thapar and Yusuf Ansari, *Exotic Aliens: The lions and the Cheetah in India*, New Delhi: Aleph Book Company, 2013, p. 96.

suggestion that tigers and lions may have occupied different ecological habitats, as lions in grasslands and tigers in tropical forests.'[93] As lion/tiger use symbolically a sign of power, in the Mughal period we find many instances of their hunting, but the killing or hunting of them was done exclusively by the royalty as king's, nobles. Some European travellers also depicted the information about the lion's existence in Mughal period.[94] Allsen comments, 'hunting lion was a mechanism by which a proper balance was struck between the menace of nature and its essential nurturing function. Because this was a vital spiritual and political matter, royal lion hunting became highly ritualized, that is to say, minutely stage-managed, even to the extent of breeding.'[95]

Historically the significance of lion is very much symbolic, from the period of Harappa to Vedic literature there are many evidence which shows the importance of lion. As a symbol of power which show the muscularity, royalty. 'Lion's association with deities in India, both male and female'[96] is very interesting and the use of lion in architectural structure of religious monuments in different religions with different aspects is also very much significant. Yusuf Ansari comments that Mughals also considered the killing of a lion auspicious, and it's escape from a hunt was believed to be a bad omen.[97] Babur in his *Memoirs* and even the chronicles of Humayun, Gulbadan Begum and Jauhar are silent about wild lions. However Akbar's special focus was basically on cheetah which has been described later in this chapter. There were many artist of Mughal period who have illustrated lions as a symbol like in one painting Akbar is shown with a lion and the lamb. As written in the Old Testament, 'the lion shall lie down with the lamb' in the other Jahangir with the pet lion, as he boasted 100 lions, tamed and perfectly trained.[98]

Bernier who gives information about lion hunting comments about habitats of wild lion in India, 'all the diversions of the field of the hunting of the lion is not only the most perilous ….Except in Kathiawar, lions are now never met in any part of

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[93] Ibid., p. 38.
[94] Tavernier, *op.cit*., vol. I, p. 378.
[95] Allsen, T.T., *The Royal Hunt in Eurasian History*, Philadelphia: University of Pennsylvania Press, 2006,p. 135.
[96] Thapar Valmik, *Exotic Aliens, op.cit.,* p. 53.
[97] Thapar Valmik, Romila Thapar and Yusuf Ansari, *op.cit*., p. 78.
[98] Ibid., p. 9, p. 89.

India.'[99] Careri informs about the tigers presence, while he describes about the animals of Daman, but not lion.[100] Thapar correlates the existence of lion in India, and emerged a question about their presence, 'the lion here appear to have been bred in hunting grounds as they seem tame enough to be jumped on and beaten to death and wonders whether these descriptions from seventeenth-century India reflect the connections between the Africans and their lions as they existed in Africa at that time.'[101] In the later phase of nineteenth centuries, animal traders flourished, there were many famous traders who just caught the animals and export them. 'Indian royalty continued to import the tame and release lions into their game parks from which some inevitably escaped and their apparent tame less continued to astound observers.'[102] By the end of the nineteenth century, this species of lion started declining, and presently only a very few lions remained in the confines of Gir, which are strictly preserved. The rapid hunt of lions in the 18th-19th century is resulted that in the near extinction of lions India.

Tiger

As 'royal' beasts and 'kings and masters of the jungle,' tiger had been closely associated historically with Indian and other Southeast Asian rulers.[103] Thaper comments that 'more than one billion people live in twenty first century in India. It also boasts nearly half the world's tiger population, half the world's Asiatic elephant population, and an array of other living creatures. One might argue that these animal populations might not have survived at all if these people had not maintained a core belief in nature's power.'[104] Tiger is considered one of the world's most dangerous carnivore and a big hunter. 'Though endangered across its range, there is little doubt that the species has made its last stand in India and its neighbouring countries: Nepal, Bhutan, Bangladesh and Burma. Though much of history, the carnivore has been conflict with humans and even more so with the cattle so vital for drought power.

[99] Bernier, *op.cit.,* p. 378.
[100] Careri, *op.cit*., p. 161.
[101] Thapar Valmik, Romila Thapar and Yusuf Ansari, *op.cit*., p. 131.
[102] Ibid., p. 153.
[103] Wessing, Robert, *The Soul of Ambiguity: The Tiger in Southeast Asia*, De Kalb, IL: Centre for Southeast
Asian Studies, 1986, p. 27.
[104] Ibid., p. 13.

Tiger could also be seen not as a threat to human survival, but as an economic resource for a variety of medicinal purposes.'[105]

The Tigers were very well known to the Mughals, as Babur comments when he hunted it and mentions that his predators also involved in the hunting of tiger. All the Mughal emperors used to hunt of tigers and the royal hunt organized specially for the amusement. The travellers and the Mughal chronicles have given detailed accounts of various hunts and the existence of tigers in different regions of India particularly in Northern and Central India. Many British accounts refers to presence of lions and tigers till the late nineteenth centuries and about their hunts. Jahangir observes that 'milk of tigress great use for brightening eyes.'[106]

After the European encounter, 'the hunter flourished –wiping out almost seventy to eighty thousand tigers between 1875 and 1925 alone but at the same time, the first attempts at conservation attempts.[107] Joseph Sramek comments that 'the British hunted tigers largely with the aim of dominating India's natural environment and the importance of their reliance upon the local knowledge of Indian subordinates in order to conduct successful hunts. Furthermore, in drawing attention to one of the zoological dimensions of colonialism's impact upon India's environment.'[108]

Cheetah

There can be no doubt, that the *cheetah*[109] (*yuz*) is the swiftest mammal on earth. They can run up to 70 miles (113 km) per hour.[110] The cheetah is extinct in India. The history of *cheetah* in Asia also is on decline and there is no recovery. The

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[105] Elvin, Mark, *The Retreat of Elephants, an Environmental History of China*, New Haven: Yale University Press,
2004, p. 310.

[106] *Tuzuk-i- Jahangiri*, *op.cit*., vol. I, p. 240.

[107] Ibid. p. 19. Rangarajan Mahesh, India's *wildlife History : an introduction*, Delhi: Permanent Black, 2001, p.38.

[108] Sramek Joseph, 'Face Him like a Briton: Tiger Hunting, Imperialism and British Masculinity in Colonial India 1800-1875,' *Victorian Studies*, Vol. 48, No.4, Indiana University Press, 2006, p. 662.

[109] See also Akhtar, Ehsan, 'The Cheetah and the Mughals,' *IHC: Proceedings, 57th Session*, 1996, Madrass, pp. 381-386, Akhtar, Ehsan, 'Zoological interest of the Mughal (with special reference to the Cheetah and the Rhinoceros', *Essays in Medieval Indian History and Culture, Medieval India: 2,* (ed.), by Shahabuddin Iraqi, New Delhi: Manohar Publishers, 2008, pp. 158-159, Khan, Enayatullah, 'Akbar and his Cheetah,' *IHC: Proceedings, 73rd Session, 2012*, pp. 461-469.

[110] Silverman Buffy, *Can you tell a Cheetah from a leopard?*, U.S.A: Learner Publication Company, 2012, p.29.

cheetah's is often confused as leopard (*palang*), and really it is tough work to find difference between two animals. Though often confused with the leopard, there are major differences between them. The cheetahs have dark lines near their eyes. The lines stretch to the sides of the mouth, and help cheetahs to see in the bright sun. The leopards are Nocturnal animal that hunt at night, so leopards have huge eyes that help to see in dark. The leopard's spots are grouped into rose shape and the cheetahs spots are shaped like ovals. The cheetah's head is small as compare to leopards.[111] 'The *cheetah* prefers for its habitat grasslands and deserts, low rugged hills bordering on wasteland, and lands with tall grass.'[112] 'A few centuries ago *cheetahs* roamed from the Indian subcontinent to the shores of the Red Sea and throughout much of Africa. As fleet of foot as they are, though, they couldn't outrun the long reach of humanity. Today the Asiatic *cheetah*, the elegant subspecies that once graced the royal courts of India, Persia, and Arabia, is all but extinct.'[113]

Irfan Habib[114] shown various locations of cheetah in the medieval period in his *Atlas.* They were to be found modern in west Punjab in the Lakhi Forest on the northern banks of Sutlej; of Sunam, Bhatinda, Bhatnair and Pattan in Punjab, Fathpur, Jhunjhunu, Nagaur, Merta, Jodhpur, Jaisalmer, Amrarsar in Rajasthan[115] and across the Chambal River from Sumanli in present day Madhya Pradesh. In Gujarat, they were caught at Bari (Bedi) Bandar near Jamnagar, Palanpur[116] and the environs of Ahmadabad. During Jahangir's time cheetahs were also caught from Mughal Hunting grounds some 90 km north-west of Orchha and in Central India.[117]

Divyabhanusinh comments, that 'it is not surprising that the Mughals found cheetahs of these regions more suitable for their purposes as not only were they more adept at tackling larger prey but also because they were creature of the open grasslands. They were ideally suited for the swift, long chase in the hot climate of the

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[111] Ibid.

[112] R. Spies, Joseph, *Big Cats: And Other Animals : Their Beauty, Dignity and Survival*, USA: Lifetime Books, [1988] 1998, p. 41.

[113] Roff Smith, 'Cheetahs on the Edge', *Journal of the National Geographic Society*, vol. 22. No. 5, 2012, p. 112.

[114] Habib, *An Atlas of the Empire*, *op.cit*., see sheet 4B,6B,7B and 8B.

[115] *Ain-i Akbari*, trans. H. Blochmann, *op.cit*., vol. I, p. 297.

[116] Ibid.

[117] Divyabhanusinh, 'Records of Two Unique Observations of the Indian Cheetah in *Tuzuk-i- Jahangiri*,' *Journal Bombay Natural History society*, vol. 84, 1987, p. 269.

plains frequented by the imperial cavalcades.'[118] These areas were largely abounded by cheetah, and they were caught from these areas and then send to the royal custody or elite class. In the nineteenth and in the early phase of twentieth century, the scenario towards the maintenance of this wonderful beast had been changed and the killing or hunting took place rather than to save its existence. And the result is that it has been extinct from the Indian sub-continent.

The *Ain-i Akbari* does not mention the physical characteristics of cheetah but there are many Mughal painters who beautifully picturized the physical appearance and nature of this amazing animal. Divyabhanusinh comments, 'the cheetah was trained by man to course a curious relationship developed over centuries and a vast body of knowledge grew in the art of training and coursing with cheetahs. No other feline was documented in such great detail in the past, and yet the cheetah's life in the wilds of India was to some extent enigmatic as that was one aspect of its existence which escaped being recorded for posterity. A collar of precious stones and the beating of a drum when, it was taken out to hunt, a sign of high rank, was the elevation attained by a cheetah at the Mughal court. Yet it was interference by man with its life, habitat and prey and spelt the doom of this cat, the ultimate royal pet. If this story arouses some interest in the cheetah's protection where it still exits, if it creates some interest for its reintroduction in India, it would have served its purpose.'[119]

Abul Fazl writes, 'when leopard wild, select three places. In one part of the country they hunt; in another part they rest and sleep; and in a third district they play and amuse themselves. They mostly sleep on the top of a hill. The shade of a tree is sufficient for the leopard. He rubs himself against the trunk. Round about the tree they deposit their excrements, which are called in Hindi *akhar.*'[120] Akbar even often travel long distances to catch any of new one. Abul Fazl describes the qualities of cheetah as a wonderful animal, about its skill and cunning. 'Thus he will raise up the dust with

[118] Divyabhanusinh, 'Lions, Cheetahs, and others in the Mughal landscape,' Mahesh Rangarajan and K. Sivaramakrishnan, (ed.) *Shifting Grounds, op.cit.,* p. 97.
[119] Divyabhanusinh, *The End of a Trail: The Cheetah in India,* New Delhi: Oxford University Press, 1999, pp. 2-3.
[120] *Ain-i Akbari*, trans. H. Blochmann , *op.cit*., vol. I, p. 296.

his forefeet and hind legs, in order to conceal himself; or he will lie down so flat, that you cannot distinguish him from the surface of the ground.'[121]

There are many historical records of the appearances of cheetah in the medieval times, and its ultimate extinction. Hunting with cheetahs was recorded by many painters of Mughal court, the miniature paintings gives us details of cheetah and their role in the court life. Babur, who gives account of different animals and birds of India, but he surprisingly did not describe any evidence of cheetah. As Humayun was not so much involved in the routine life in India, although when he was in Persia, even then, no episode of cheetah is be given by the chronicles of his period. It was Akbar and his love towards this beast that we get information on proper catching of cheetah, its maintenance. Jahangir had the true natural knowledge of the flora and fauna, thus he timely carryed his father's traditions. Shah Jahan and Aurangzeb also followed the same, but Akbar's interests had a special place towards cheetah. After the death of Aurangzeb, when the Mughal Empire started to disintegrate, and the provincial polities emerged, the cheetah faced the changing scenario, and the hunting of cheetah emerged rapidly leading to its sharp decline.

Abul Fazl describes when Akbar first saw a cheetah in 1555 that 'this was the first time that he conceived an inclination for hunting with *cita* and the first place where he saw the sport. For Wali Beg, the father of the Khan Jahan [Husain Kuli] presented as *peshkash* a *cita* which had come into his hands from the Afghans at the battle of Maciwara which was called *fatehbaz* (the gamester of victory)…the keeper of this *cita* was called Dundu and on account of his good qualities, he received the title of Fateh Khan.'[122] After this, hunting with tame cheetah of the antelope became the favorite time past sport of Akbar and he started a proper department for the maintenance of the royal cheetahs.

In the royal stable cheetahs were under the great care. There were two hundred keepers in charge for the *khasa* cheetahs. Three men were appointed for such cheetah as sit on horses when taken to the hunting ground, and only two for such cheetahs as sit on carts and on *doolies*. The wages of keepers were also according to their work, because they have to look after those cattle which draw the cheetah's carts. Each

[121] Ibid., p. 299.
[122] *Akbar Nama*, *op.cit*., vo. I, pp. 629-30.

cheetah had a name which indicates some of his quality. Every 10 form a set were divided, the three first set were *khasa*, and two other sets. The best one titled as *Samand-manik*, and got all the pomp and a large drum was beaten by the servants for him.[123]

Abdul Fazl informs of eight classes of cheetahs and their distribution of food was accordingly their rank:

I class	5 *ser* of meat every day,
II class	4 ½ *s*er
III class	4 ser
IV class	3 ¾ *s*er
V class	3 ½ *s*er
VI class	3 ¼ *s*er
VII class	3 *s*er
VIII class	2 ¾ *s*er

The meat was given in a lump; and as on Sundays no animals were killed, double the daily portion was given on Saturdays. Except this four *sers* of butter and one-tenth of a *ser* of brimstone was annually given as ointment.[124]

Catching antelopes with tame cheetah was the main sport of the Mughal rulers. Cheetah were caught mainly and then tamed for the hunting pleasure. Their role also was to show the royalty, as the emperors maintained them as their pet. That's why the demand of *cheetah* or its use as tribute to emperor was a trend of medieval period. The cheetah was a symbol of royal monopoly.

Father Pierre Du Jarric observes about the trained cheetah, that 'often Akbar used to hunt the wild animals that abound in these regions. For this purpose he employed panthers [cheetah] instead of hunting dogs; for in this country panthers are trained to chase as we train dogs.'[125] Ali Muhammad Khan's *Mirat-i-Ahmadi* also informs that the *daroga* of Gujarat had to ensure that sufficient number of trainers to catch, tame, and train cheetah were available, and the main huntsman issued the order about all the instruction from Delhi.[126] Thevenot who visited Ahmadabad in the early period of Aurangzeb also gives information about use of cheetah for hunting in

[123] *Ain-i Akbari*, trans. H. Blochmann, *op.cit*., vol. I, pp. 298-99.
[124] Ibid., p. 298.
[125] *Fr. Pierre Du Jarric, Akbar and the Jesuits, op.cit.,* p. 10.
[126] Ali Muhammad Khan, *Mirat-i-Ahmadi* , translated by M.F. Lokhandwala, Oriental Institute, Baroda,1965, p. 130

Ahmadabad and about taming cheetahs for catching the antelopes. He says that 'there are a great many forest where they take panthers for hunting, and the governor of the town causes them to be taught, and that he may send them to the King.' [127]

Jahangir gives very interesting information about pairing of cheetah and tigers. He informs, 'It is an established fact that cheetahs in unaccustomed places do not pair off with a female, for my revered father once collected together 1,000 cheetahs. He was very desirous that they should pair, but this in no way came off. He had many times coupled male and female cheetahs together in gardens but there, too, it did not come off. At this time a male cheetah, having slipped its collar, went to a female and paired with it, and after two and a half months three young ones were born and grew up. This has been recorded because it appeared strange. As cheetahs did not pair with cheetahs, (still less) had it ever been heard in former times (?) that tigers mated in captivity. It had never happened that a wild tiger after its capture had paired.'[128] Cheetah breeding in the captivity was a really a rare event, Jahangir's information is very significant. Though we do not have any date in this regard but this could be one of the major reason of the so called declined in the population of Cheetahs during the Mughal period.

Akbar was keenly interested to train the cheetah; he focused on the new methods of training and to become the wild one as his 'pet.' It was Akbar; only, his particularity about the training of cheetah and his love to maintain cheetah that he paid very much attention towards their taming. As Abul Fazl writes, 'in former time people managed to train a newly caught cheetah for the chase in the space of three months, or if they exerted themselves, in two months. From the attention which H.M. pays to this animal, are now trained in an excellent manner in the short space of eighteen days. Old and active keepers were surprised at such results, and extolled the charm of H.M.'s knowledge.'[129] Before Mughal period cheetahs did not allowed to remain loose till the close of the day, because people afraid to them, due to Akbar's keenness and management of training, taming they become very domestic and obedient. And even 'they kept blindfolded [hooded] except at the time of chase; but

[127] *Thevenot, op.cit.,* p. 16.
[128] *Tuzuk-i- Jahangiri*, *op.cit*., vol. I, p. 240
[129] *Ain-i Akbari*, trans. H. Blochmann, *op.cit*., vol. I, p. 297.

nowadays they kept without covers for their heads.'[130] Abul Fazl describes the story of a wild leopard, which was not trained but in front of Akbar he shows that he is pet of him and brought a prey on a mere hint of Akbar. Abul Fazl describes the love and concentration for leopard, 'a leopard once followed the imperial suite without collar or chain, and like a sensible human being, obeyed every command.'[131]

Cheetahs were the great concerns of rulers, as Akbar had some favorite also; he kept their names, as *Mandankali*, Daulat Khan, *Dilrang*. Some were very special to him. Cheetah also had a place as a good omen as in 1573, as Abul Fazl informs, when Akbar marched against Ibrahim Husain, near Merta, at the end of the day his joyous spirit was inclined to hunt. Just then a black buck showed itself, and H.M. said, "If a swift *cita* catch this deer it will be a sign that Muhammad Husain M. will come into our hands." With this idea he loosed the *cita*, and the deer was caught, and the prey of joy came into the net.[132] A cheetah (*cita-i-khas*) called *Chitr Najan* [*citaranga*, spotted] honoured, and a drum should be beaten in front of that for the achievement of hunting antelopes.[133] Jahangir had the bent of scientific mind, he always mentions every different thing in his records as there is only one record of white cheetah, and it's very interesting that he gives all the white birds (*albino*) which he saw ever. About comments, 'the white cheetah he informs, 'Raja Bir Singh Deo brought a white Cheetah to show, I had never seen a white cheetah. Its spots which are (usually) black were of a blue colour, and the whiteness of the body was also inclined to bluishness.'[134] It was only evidence regarding white cheetah ever.

Rhino

The great one-horned Indian rhinoceros (*genda*) once existed across the entire northern part of the Indian subcontinent from Pakistan to the Indian-Burmese border, and including parts of Nepal and Bhutan. It may have also existed in Myanmar, southern China and Indochina. However, the species now exists in a few small

[130] Ibid., p. 300.
[131] Ibid, p. 297.
[132] *Akbar Nama, op.cit*., vol.III, p. 64.
[133] Ibid, vol.II, *op.cit*., p. 539.
[134] *Tuzuk-i- Jahangiri*, *op.cit*., vol. I, p. 140.

population units generally situated in north-eastern India and in Nepal.[135] Rhino are herbivorous animals. Though they have high digestive capacity, they prefer nutritious leafy, material.[136] Alberuni informs that the banks of river Ganges have been the home of the rhino. He gives physical features of the rhino, 'It is of the build of a buffalo, has a black scaly skin, and dewlaps hanging down under the chin. It has three yellow hoofs on each foot, the biggest one forward, the others on both sides. The tail is not long; the eyes lie low, farther down the cheek than is the case with all other animals. On the top of the nose there is a single horn which is bent upwards. The Brahmins have the privilege of eating the flesh of the *genda*. I have myself witnessed how an elephant coming across a young genda was attacked by it. The *genda* wounded with its horn a forefoot of the elephant, and threw it down on its face.'[137] Ibn Battuta also saw rhinoceros on the way Sind to Multan in 1333 CE, while crossing the river Indus, and he defined it and compared it with elephant, and observes, 'It was a huge black animal with a large head of inordinate bulk and stoutness. This is why it is said that the rhinoceros is all head and no body. It is smaller than an elephant, but its head is several times bigger than that of elephant.'[138] Both Alberuni and Ibn Battuta compares rhino with elephant and give reference about the elephant –rhino fighting, as same thing Babur also describes in his memoirs. Babur when crossed the river Indus in 1519 CE, he saw a rhino near Bhira first time. He gives detail account of rhinoceros,

> This also is a large animal, equal in bulk to perhaps three buffaloes. The opinion current in those countries (Tramontana) that it can lift an elephant on its horn seems mistaken. It has a single horn more than nine inches (*qarish*) long; out of one large horn were made a drinking –vessel and a dice-box, leaving over [the thickness of] 3 or 4 hands. The rhinoceros hide is very thick; an arrow shot from a stiff bow, drawn with full strength right up to the arm-pit, if it pierce at all, might penetrate 4 inches (*ailik,*hands). From the sides (*qash*) of its fore and hind legs, folds hang which from a distance look like housing thrown over it. It resembles the horse more than it does any other

[135] Foose, Thomas J. and Nicovan Strien, (ed.), *Status Survey and Conservation Action Plan* : *Asian Rhinos*, International Union for Conservation of Nature and Natural Resources: Gland, Switzerland, and Cambridge, UK, 1997, p. 8.
[136] *Babur Nama*, *op.cit*., p. 490.
[137] *Alberuni's India, an account of the religion, philosophy, literature, geography, chronology, astronomy, customs,*
laws and astrology of India of India about A.D.1030, translated by Dr. Edward Sachau, London: Printed by
Ballantyne, Hanson and Co., 1910, p. 204.
[138] Ibn Battuta, *The Rehela*, translated by Mahdi Husain, Baroda: Oriental Institute, 1976, pp. 5-6.

> animal. As the horse has a small stomach (appetite?), so has the rhinoceros; as in the horse a piece of bone (pastern?) grows in place of small bones (*T.ashuq, Fr.osselets* (Zenker), knuckles), so one grows in the rhinoceros; as in the horse's hand (*ailik*, Pers. *dast*) there is kumuk (or *gumuk*, a *tibia*, or marrow), so there is in the rhinoceros. It is more ferocious than the elephant and cannot be made obedient and submissive… It strikes powerfully with its horn; men and horses enough have been horned in those hunts.[139]

When Babur visited India the north-western region was full of rhinoceros. He noted that 'there are masses of it in the Peshawar and Hashnagar, so too between the Sind-river and the jungles of the Bhira country. Masses there are also on the banks of the Saru-river in Hindustan. Some were killed in Peshawar and Hashnagar jungles in our moves on Hindustan.'[140]

Abul Fazl adds presence of rhino in Kumaun and Sambhal *sarkar* in *suba* Delhi. He writes, 'A part of the northern mountains of this Subah is called Kumaon. There is game in plenty in the *sarkar* of Sambhal, where the rhinoceros is found. It is an animal like a small elephant, without a trunk, and having a horn on its snout with which it attacks animals.'[141] Tavernier informs the friendliness of rhino with humans. He also comments that often they preferred to eat millet shrubs. In December, 1665 records Tavernier, 'I came to a caravansarai called Cherourabad, 12 coss. Half-way you pass Gianabad (west to Kara) a small town near which, about a quarter of a league on this side, you pass a field of millet, where I saw a rhinoceros eating stalks of this millet, which a small boy nine or ten years old presented to him. On my approaching he gave me some stalks of millet, and immediately the rhinoceros came to me, opening his mouth four or five times; I placed some on it, and when he had eaten them he continued to open his mouth so that I might give him more.'[142]

Thus it appears that rhinos during the medieval period largely abounds the north-western passes in India to eastwards along the Gangetic plain to Assam, through Bihar, Bengal and the Sunderbans. However, at present the rhinoceros is restricted to a few reserves in Assam and West Bengal.[143]

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[139] *Babur Nama*, *op.cit*., pp. 489-90.
[140] Ibid., p. 490.
[141] *Ain-i Akbari*, trans. Jarrett, *op.cit*., vol. II, p. 285.
[142] Tavernier, *op.cit*., vol. I, pp. 93-94.
[143] *Rhinoceros unicornis, Indian Rhinoceros,* The IUCN Red List of Threatened Species, 2008, p. 2.

Rhino skin was used to make military arms. Abul Fazl informs that 'from its skin shields are made, from the horn, finger-guards for bow-strings and the like.'[144] Rhinoceros's horn is used as 'an aphrodisiac as well as for curing fever, headache, and hearts and liver troubles in India and China and far East countries.'[145]

Though it is difficult to conclude where rhino did population actually declined. Even in the nineteenth century, rhino were still having disappeared from much of northern India. Apart from climatic, biotic and temperature changes, mounting demographic pressure forced the animal to make way for human settlements and cultivation. However, the decline of rhino population was caused by habitat destruction and fragmentation for extension of agriculture and later, tea gardens; poaching of rhino for horns which are much in demand in the Middle East, and other parts believed to have medicinal value.[146] Habitat destruction aided hunting and sounded the death knell, pushing the animal to the verge of near extinction.[147]

Deer

Deer is most common animal of Indian subcontinent. There are many types of deer/antelopes in India, as Sambhar, Barasingha, Chausingha, Leaf deer, Sangai, Chital, Serow, Goral, Hog deer, Musk deer, Barking deer, Black Buck, Chinkara, Nilgai, Himalayan Tahr, Kashmiri Stag, Nilgiri Stag, Markhor, Ibex and Tibetan antelope etc. Indian Subcontinent is the last remaining habitats in Asia for different types of deer, but many of them are in danger nowadays can be seen in zoo or reserves only due to large amount of hunting and catching. Deer was commonly seen in the Mughal painting as landscapes and hunting scenes. Even then it was a pleasure to catch or hunt deer with the trained animals. Common people also very well knew with different species of Indian deer.

Deer commonly hunted from the early period in India. Deer was tamed and trained in the Mughal period[148] - hog deer[149], *gini*-cow[150] (ram), Sambhar,[151] *nila*-

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[144] *Ain-i Akbari*, trans. Jarrett, *op.cit*., vol. II, p. 285.
[145] Akhtar, M. Ehsan, 'Zoological interest of the Mughal,' Medieval India: 2, *op.cit*., p. 157.
[146] Krishna, Nanditha, *Sacred animals of India*, 2010, New Delhi: Penguin Books limited, p. 204.
[147] Bose, Shibani, 'From Eminence to Near Extinction The Journey of the Greater One- Horned Rhino', Mahesh Rangarajan and K. Sivaramakrishnan, (ed.) *Shifting Grounds, op.cit.,* 80.
[148] *Ain-i Akbari*, trans. Blochmann, *op.cit*., vol. I, p. 302, *Tuzuk-i- Jahangiri*, *op.cit*., vol. I & II, Thevenot, *op.cit*, pp. 54-55,Manucci, *op.cit*., vol.III, p. 82.

gau[152] (blue-bull) This is most common and largest Indian antelope, and can be seen throughout India. Mughal chronicles and European travelogues describes about various instances related to deer, as Black deer is one of the beautiful antelope of India, which is threatened nowadays. The black antelope has two long horns and for beauty and swiftness is unrivalled among his kind. Babur comments, 'Its back is black, its belly white, its horns longer than the huna's, but more crooked. A Hindustani calls it *kalahara*, a word which may have been originally *kalaharan*, black –buck, and which has been softened in pronunciation to *kalaahara*. The doe is light-coloured.'[153] Manucci observes about Indian black antelope that, 'they are wild, and when over twelve years old the lower half of the body becomes white, and from the horns to the tail the upper half of the body is black. The horns are three palms in length, and twisted like a rope, the points being very sharp. They run with such velocity that no horse can overtake them. The changes of colour referred to occur in the male; the female remains all her life the same colour.'[154]

Another very much important deer is musk-deer which is specially to be found in the hill region, especially Kashmir, is also in danger now. The musk deer is an animal of the upper Himalayan ranges and is not to be found below 8,000 feet level. Musk was used as rarest article supplied outside. Abul Fazl writes about the *Subah* of Delhi, 'A part of the northern mountains of this Subah is called Kumaon musk-deer found here also.'[155] About a musk deer in Kashmir, [1620] Jahangir informs, 'I had not tasted its flesh, I ordered to be cooked; it appeared very tasteless and bad for food. The flesh of no other wild animal is so inferior. The musk-bag when fresh has no scent, but when it is left for some days and becomes dry, it is sweet-scented. The female has no musk-bag.'[156] Tavernier,[157] Thevenot[158] and Careri[159] give detail account about musk deer. People used to hunt them for musk as well as for food. As their musk exported outside India, Thevenot describes that, 'It yields most excellent

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[149] *Babur Nama*, *op.cit*., p. 491.
[150] Ibid.
[151] Thevenot, *op.cit.,* pp. 54-55
[152] Babur Nama , *op.cit*., p. 490.
[153] Ibid., p. 491.
[154] Manucci, op.cit., vol. III, p . 81.
[155] *Ain-i Akbari*, trans. Jarrett, *op.cit,* vol. II, p. 285.
[156] *Tuzuk-i- Jahangiri*, *op.cit,* vol. II, p. 151.
[157] Tavernier, *op.cit*., vol. II, pp.112-13 , 114.
[158] Thevenot, *op.cit*., p. 72.
[159] Careri, *op.cit*., p. 253.

musk; for at the belly it has a bladder full of corrupt blood, and that blood makes the musk, or is rather the musk itself. They take it from it, and immediately cover the place where the bladder is cut, with leather, to hinder the scent from evaporating. But after this operation is made, the beast is not live long.'[160] Tavernier amazingly comments that, 'when the peasants wish to adulterate it, they insert some of the liver and the bloods of the slaughtered animal mixed together, instead of the musk which they have withdrawn. This mixture generates in the bladders certain small worms which eat the good musk; so that when one opens them he finds that much has gone bad. Other peasants, when they have cut the bladder and have drawn as much musk as they can without its appearing to be excessive, put in its place small piece of lead to make up the weight. The merchants who buy it and transport it into foreign countries prefer this fraud to the other, because it does not generate these little worms. The odour from the skin of this animal, which I took to Paris, was so strong that it was impossible to keep the skin in the house, it is true that in the months of February and March, after these animals have suffered from famine in their own country on account of the snow, which falls in abundance to 10 or 12 feet, they come south to 44 and 45, to eat the corn and new rice, and it is at this time that the peasants entrap them, in snares which they set, and kill them with arrows and blows of sticks.'[161] The hunting of the musk deer, for the trade by the people, was at extensive levels, and European travellers give many examples for this trade of musk which was very much in demand.

Akbar maintained deer-studs also, and 'the deer-born in captivity are employed as hunting-deer.'[162] Manucci also observes about the breeding of the deer.[163] It is interesting that after the victory of Bengal when Akbar proceeded towards the capital Agra he ordered 'that for the comfort of the travelers he issued an order that every *kos* of the way from Agra to Ajmer a pillar (*minar*) should be set up, and be adorned with deer horns so that those who had lost their way might have a mark, and that strength might to be fatigued.'[164] Badaoni informs that, 'even so many hundreds of thousands of stage's horns which the Emperor had killed during the

[160] Thevenot, *op.cit*., p. 72.
[161] Tavernier, *op.cit*., vol. II, p. 115.
[162] *Ain-i Akbari*, trans. Blochmann, *op.cit*., vol. I, p. 302.
[163] Manucci, *op.cit*., vol. III, p . 81.
[164] *Akbarnama*, *op.cit*., vol. III, p. 156, , p. ,Mohammad Arif Qandhari , *Tarikh-i-Akbari*, An Annotated Translation with introduction by Tasneem Ahmad, Forwarded by Irfan Habib, p. 226

course of his life were placed on these pillers as a memorial to the world. And Mil-shakh 981/1573-74, 'Mile-horn' gives the date.'[165] However significance of putting horns on deer's as each *kos minar* is difficult to explain, unless we accept Abul Fazl's explanation, that it was done for beautification only, but Badaoni observation shows that hunting of deer was such an extensive level, as very common for amusement. Jahangir also got erected a *mina*r at Jahagirpura, which was his hunting place, in Lahore, in the *Dil- Amiz* garden he ordered to erect a *minar* at the head of the grave of an antelope called *Mansara*j, (gravestone in the shape of an antelope) 'which was without equal in fights with tame antelopes and in hunting wild ones. On a stone of that *minar* was carved this prose composition, written by Mulla Muhammad Husain of Kashmir, who was the chief elegant writers of the day: "In this enchanting place an antelope came into the world-holding (*jahan-giri*) net of the God-knowing ruler Nuru-d-din Jahangir *Padshah*. In the space of one month, having overcome his desert fierceness, he became the head of the special antelopes."[166] Jahangir shown his sensitivity about that particular antelope, and later he banned further killing of it, 'no person should hunt the deer of this plain and that their flesh should be to Hindus and Muhammadans as is the flesh of cows and pigs.'[167]

Jahangir observated about certain things which really amazed him as he comments, female antelope 'in milk was brought that allowed itself to be milked with ease, and gave every day four *sers* of milk. I had never seen or heard of anything of the kind before. The milk of antelope, of the cow, and the buffalo in no way differs.'[168]

Horse

Horse is very sensible, faithful and intelligent animal. As horses remain very important part of the cavalry, and the good breed of horses always required. Horse was one of the primary sources of the royalty. In all Mughal battle scenes depicted in the miniatures, there were always horses in the battle field. In the Indian sub-continent horses were very common, 'but the ecological conditions for horse breeding in India

[165] Badaoni, *op.cit*., vol. II, p. 176.
[166] *Tuzuk-i- Jahangiri*, *op.cit,* vol. I, pp. 90-91, Elliot & Dowson, *The History Of India as told by its own Historians*, *op.cit.,* vol. VI, p. 309.
[167] *Tuzuk-i- Jahangiri*, *op.cit,* vol. I, pp. 90-
[168] Ibid., p. 148.

were far from ideal.'[169] From the establishment of Mughal Empire in India, the role of horses as cavalry has its own valuable records, as we know behind the Babur's success there was a big role of his cavalry, due to good breed of Central Asia. Horses formed a very important part of Mughal army as well as they were employed in other works also, even officers received honours from emperors in the form of horses and it was also in trend to present good breed horses to emperor as *peshkash*. Akbar was very much fond of good breed horses. Merchants brought to the court horses from various parts of the world. There were twelve thousand horses in Mughal royal stables during the period of Akbar and there were some horses, who always kept ready from the different stables for usage as like in the royal camp and 'courier, *Rahwar.*'[170] Abul Fazl comments that the life of a horse in India was in general thirty years.[171]

In the Mughal period horses were imported from 'Iraq-i Arab and Iraq-i Ajam, from Turkey, Turkestan, Badakhshan, Sirwan, Qirghiz, Tibet, Kashmir, Turan and Iran'[172] In Cutch 'there is excellent breed of horses believed to be of Arabian race.'[173] Abul Fazl further informs that ' it is said that a long time ago an Arab ship was wrecked and driven to the shore of Cutch; and that it had seven choice horses, from which, according to the general belief, the breed of that country originated. In the Punjab, horses are bred resembling Iraqis, especially between the Indus and Bahat (Jhelum); they go by the name of *Sanuji*; so also in the district of Pati Haibatpur, Bajwaral, Thira, in the *suba* Agra, *Mewat*, and in the *suba* of *Ajmir*, where the horses have the name of *pachwariya*. In the northern mountainous district of Hindustan, a kind of small but strong horse is bred, which are called *Gut*; and in the confine of Bengal, near Kuch [Bihar] another kind of horses occurs which rank between the gut and Turkish horses, and are called *tangham,* they are strong and powerful.'[174] Thevenot says that, 'besides the country breed, which the Mughal make use of, and which are very good horses; they have others also from the country of the Uzbeks, Arabia, and Persia, those of Arabia being most esteemed, and the loveliest of all are

[169] Gommans Jos, *Mughal Warfare*, *op.cit*., p. 111.
[170] *Ain-i Akbari*, trans. Blochmann, *op.cit*., vol. I, p. 149.
[171] Ibid.
[172] Ibid., p. 140.
[173] *Ain-i Akbari*, trans. Jarrett, *op.cit,* vol. II, p. 256.
[174] *Ain- i Akbari*, trans. Blochmann, *op.cit*., vol. I, p. 140., Habib, Irfan, *op.cit*., see sheet, 4B, 5B, cavalry horses bred in Panjab and reckoned equal to Iraq horse.

constantly reserved for the King.'[175] Gommans analysed that, 'the best breeding grounds of India were to be found in relatively cool areas with modest levels of rainfall and as horses require an almost continuous supply of fresh water, always near rivers and streams. All these features were more or less present at all the important breeding grounds of the Punjab as well as the Marathas studs along the Bhima River in the Deccan.'[176]

Until the nineteenth century, India did not produce oats, the main fodder crop of Europe, while barely, the main horse feed in Arabia, was also in short supply. Not surprisingly, the Indian methods of feeding horses raised feelings of bewilderment on the part of Middle Eastern and European visitors.[177] Thevenot and Tavernier confirm that Indian horse-keepers must have faced real problems when feeding the huge numbers of incoming horses from Arabia, Iraq and Central Asia. Tavernier informs that it was difficult to obtain barley, the stable diet of horses 'from Chakenicouze to Kabul, 40 *kos*. In these 40 *kos* of road there are only three poor villages, where bread and barley for the horses can seldom be obtained, and the safest plan therefore is to carry a supply with you.'[178] However *khasa* horses were well cared and well fed. Abul Fazl gives full description of the diet of *khasa* horse in the *Ain*, which was allowed to them, seven and a half *sers* in winter they gave boiled peas or vetch; in summer, grain. The daily allowance includes two *sers* of flour and one and a half *sers* of sugar. In winter, before the horse got fresh grass, they gave a half a *ser* of *ghi.* Two *dams* were daily allowed for hay; but hay was not given, when fresh grass was available. (*Kharid* was green wheat or (not oats) before the ear was well formed; it is cut and used as fodder.) About three *bighas* of land will yield sufficient fodder for a horse. When, instead of sugar, the horses get molasses, the season of fresh grass comes; they gave no grain for the first three days, but allow afterwards six *sers* of grain and two *sers* of molasses per *dam*. In other Iraqi and Turki stables, they gave seven and a half *sers* of grain. During the cool six months of the year, they gave the grain boiled, an allowance of one *dam* being given for boiling one *man* of it. The horses also got once a week a quarter ser of salt. When *ghi* and fresh grass were given, each horse, provided its price be above thirty-one muhars, got also one *ser* of sugar; whilst such

[175] Thevenot, *op.cit.,* vol.I, pp. 62-63. He gives all the detail diet for the royal horses.
[176] Gommans, *Mughal Warfare*, *op.cit*. p. 113.
[177] Ibid., p. 112.
[178] Tavernier, *op.cit*, vol. I, pp. 75, 83-84.

as were worth from twenty one to thirty muhars, only got half a ser. Horses of less value got no sugar at all. Before green grass was given, horses of a value from twenty one to upwards of one hundred muhars, goet one *man* and ten sers of *ghi*; such as were worth from eleven to twenty muhars thirty *sers*; but horses up to ten muhars get neither *ghi*, brown sugar, nor green oats. Salt is given at the daily rate one fifteenth of *dam*, through it was mostly given in a lump. Iraqi and Turki horses which belong to the court were daily allowed two d. for grass; but such of them as were in the country only one and a half. In winter, each horse got a *bigha* of fresh oats, the price of which, at court, was 240 *d*., and in the country 200 *d*. At the time of fresh oats, each horse got two mans of molasses, the same quantity being subtracted from the allowances of grain.[179]

Akbar himself acquainted every minutest detail and regulations and he was very much sensitive for the comfort and care of this animal. He appointed many officers for the care and maintenance, for *Amin-i Karwansara*, an officer for the supervision, a writer to maintain record of horses. Abul Fazl observes that 'after a short time Hindustan ranked higher in this respect than Arabia, whilst many Indian horses cannot be distinguished from Arabs or from the Iraqi breed.'[180] Experienced officers, attached to the Imperial officers, for the calculation of the amount required, and then estimated which in due course was paid. When a horse became sick, every necessary expense was paid on the certificate of the horse doctor.[181]

There were two classes of horses: first *khasa* and second those who were not *khasa*. Abul Fazl gives detail accounts that 'the *khasa* horses were divided in six stables, each containing forty choice horses of Arabia and Persia; the stables of the princes; the stables of the Turkish courier horses; the stables of horses bred in the Imperial studs. They have each a name, but did not exceed the number thirty. His Majesty rides upon of the six stables. The second class horses were three kinds, *si-aspa*, *bist-aspa*, *dah-aspa*, belong to the stables of thirty, twenty, and ten and so on.'[182] The grandees and other officers and senior *Ahdis* were in charge of the royal stables. Whenever Akbar used to mounts on horses he always give something as a

[179] *Ain-i Akbari*, trans. Blochmann, *op.cit*., vol. I, p. 141.
[180] Ibid., p. 140.
[181] Ibid.
[182] Ibid., p. 141.

donations, 'with a view of increasing the zeal and desire for improvement among the servants.'[183] A long chain of officers were appointed by Akbar for the maintenance of horses. Abdul Fazl listed as many as nineteen officers performing various duties to take care of the horses which it speaks of the importance Mughal emperor had given to horses.[184]

There were many strict punishments against any type of carelessness towards to the royal horses. The officers were strictly followed the rules of maintenance, but if in any case then Abul Fazl informs, 'when a *khasa* horse died, the *Darogha* had to pay one rupee, and the *Mirdaha* ten d., upon every *muhar* the cost price; and the

[183] Ibid., p. 150.

[184] Ibid., pp.145-47. 1.The *Atbegi* was in charge of all horses belonging to the government. He directed all officers charged with the management of the horses. This office was one of the highest of the State, and was only held by grandees of high rank. 2.The *Darogha*, was one appointed for each stable. This post may be held by officers of the rank of commander of five thousand down to Senior *Ahadis*. 3.The *Mushrif*, or accountant kept the roll of the horses, manages all payments and fines, observed that orders were carried out, and prepared the estimate of the stores required for this department. He was chosen from among the grandees. 4.The *Dida-war*, or inspector. His duty was occasionally to inspect the horses before they were mustered by H.M; he also determined the rank and the condition of the horses. His reports are taken down by the *Mushrif*. The office may be held by the *Mansabdars* or *Ahadis.* 5.The *Akhtachis* looked after the harness, and have the horses saddled. Most of them received their pay on the list of the *Ahadis*. 6.The *Chabuksuwar* rides the horses, and compares their speed with the road, which is likewise taken down by the *Mushrif*. He received the pay of an *Ahadi*. 7.The Hadda was given to a class of Rajputs, who teach horses the elementary steps. Some of them get their pay on the list of the Ahadis. 8. The *Mirdaha* was an experienced groom placed over ten servants. He got the pay of an *Ahadi*; but in other *khasa* stables, he only got 170 *d*., in the country bred stables, 160 *d.*, in the other *si-aspi* stables, 140 *d*.; in the *bist-aspi* stables, 100 *d*.; and in the *dah-aspi* stables, 30 *d*. Besides he had to look after two horses. 9.The *Baytar*, or horse-doctor, gets the pay of an Ahadi. 10. The *Naqib*, or watchers as some active, intelligent men are retained for supervision. They report the condition of each the stable to the Daroghas and the Mushrif, and it is their duty to have the cattle in readiness. The two head Naqibs and Ahadis, and they have thirty people under them, who receive from 100 to 120 *d*.11.The *Sa,is* or groom , there is one groom for every two horses. In the *chihil-aspi* stables, each groom gets 170 d., in the stables of the eldest prince, 138 d.; in the stables of the other princes, and in the courier horse stables, 136; in the country bred stables, 126 d., in the other *si-aspi* stables, 106 d.; in the *bist aspi* stables, 103 *d*.; and in the other *dah-aspi* stables, 100 *d*.12.The *Jilawdar* and the *Payk*(a runner), their monthly salary from 1,200 to 120 d., according to their speed and manner of service. Some of them will run from fifty to one hundred *kos* a day.13.The *Naslband* or farrier, some of them are Ahadis, some foot soldiers. They receive 160 *d*. 14.The *Zindar*, or saddle holder, has the same rank and pay as the preceding. In the khasa, stable of forty horses, one saddle is allowed for every two horses.15.The *Abkash*, or water-carrier, three are allowed in the stables of forty; two in stables of thirty, and only one in other stables. The monthly pay is 100 d..16. The *Farrash* (who dusts the furniture), there is one in every khasa stable. His pay is 130 d. 17. A *Sipandsoz* is only allowed in the stables of forty horses; his pay is 100 d. 18. The *Khakrub*, or sweeper, in a stable of forty, there are two; in those of thirty and twenty, one. Their monthly pay is 65 d. 19. The *Bargir*: Akbar appointed some other officers, 'from the regard which he pays to difference in rank, believe many fit for cavalry service, though he would not trust them with the keeping of a horse. For these he has told off separate stables, with particular *Daroghas* and *Mushrifs*. When their services are required, they are furnished with a horse on a written order of the *Bitakchi* (writer); but they have not to trouble themselves about the keeping of the horse. A man so mounted is called a *Bargirsuwar*.

grooms lose one-fourth of their monthly wages. When a horse was stolen, or injured, H.M. determined the fine, as it was not uniform in each case. In the other stables they exacted from the *Darogha* for a single horse that died, one rupee upon every *muhar*; for two horses, two rupees upon every *muhar*; and from the Mirdaha and the grooms the above proportions. But now they take on rupee upon every *muhar* for one or three horses that die; and two upon every *muhar* for four horses; and three upon every *muhar* for five. If the mouth of a horse gets injured, the Mirdaha is fined ten dams upon every *muhar*, which fine he recovers from the other grooms.'[185] All sorts of decorative stuffs were employed to adorn the horses. There were many ornaments, jewels and trappings for the imperial *khasa* horses, which are described by Abul Fazl. There was different division for the other stables according to their rank and price.

Though India was not a good breeding ground for horses and Mughals had the best breed of horses from different areas. Abul Fazl describes the observation of Akbar towards horses, ' Khizr Khwaja presented Akbar a Iraqi horse called *Hairan*. It had not it's like for spirit and swiftness, and was also unequalled for viciousness.[186] Jahangir praised a Kachhi horse which was presented to him by Dilawar Khan.[187] Some Arab horses were submitted by a merchant came from Bandar Surat .[188] About the Turkey horse which was sent by Aazam to Aurangzeb, he comments, 'you sent this time has a good appearance and nature he is better than the first one. I have named him *Sabuk-sair* (of a light walk)'[189] However, Jahangir praises Central Indian breeds in high or less. The good breed horses were the matter of astonishment for the rulers as well, nobles and trades wished to bring superior quality of horses for the emperors especially.

Abul Fazl informs that there were highly experienced men appointed by the state to take care of the breeding of horses. 'Only throughout the Indian extensions of the Arid Zone, stretching from Sind, the Punjab and Rajasthan into the dry shadow-zone of the Western Ghats and into the Deccan, could good warhorses be produced. But even here, horse breeding still to a considerable degree relied on the regular input

[185] Ibid., pp. 148-149.
[186] *Akbarnama*, *op.cit*., vol. II, pp. 92-93.
[187] *Tuzuk-i- Jahangiri*, *op.cit,* vol. I , p. 439.
[188] Shah Jahannama, *op.cit*., p. 265.
[189] *Ruka'at-i-Alamgiri* or (Letters of Aurangzeb), translated by Jamshid H. Bilimoria, Delhi: Idrah-I Adrabiyat-I Delli, [1972], 2009, p. 62.

of foreign breeds from Arabia, Iran and Central Asia. But what circumstances made India so much India so much less suitable for horse breeding than its neighboring areas in the west and northwest.'[190] Hayland, Equas comments, 'it appears that India's main drawback was the lack of extensive grazing areas, as well as the lack of suitable green and dry fodder crops. Although horses can do without hard feed such as all kinds of grain, they cannot dispense with grass or hay.'[191]

Horses were extremely high period exactly. Horse trade was important not only for those horses were delivered for army purposes but also the taxes could be raised. The price of horse basically depends on the breed as 'their price varies from 500 *muhars* to 2 rupees.'[192] 'Before the musters, experienced officers fix the prices, which were generally enhanced at the time of the parades. Horses above thirty *muhars*, had their value fixed in the presence of the emperor. A cash keeper attached to the State-hall was entrusted with money, so that horse-dealers had not to wait long for payment of their claims. From foresight, and on account of the large profits of the horse-dealers, Akbar enforced a tax of three rupees for every *Iraqi* , *Mujannas* and Arab, imported from Kabul to Persia; two and a half for every Turkish and Arabian horse imported from Qandhar; and two from Kabul horses, and Indian Arab bred.'[193] Manucci informs, 'horse-dealers had to pay 25 per cent of the value of their horses on crossing the Indus.'[194]

In the period of Akbar new branding system started to stop further fraud and corruption, 'horses were for some time marked with the word *nazr*, sight.'[195] The branding rules were revived in the year 1573, when Shahbaz Khan was Mir Bakshi. The regulations of *dagh* system were followed from the rules of Aladudin Khalzi and Sher Shah Suri. Abul Fazl describes that 'every horse that was received by government had the mark burnt on the right cheek; and those that were returned, on the left side. Sometimes, in the case of Iraqi and *Mujannas* horses, they branded the price is numerals on the right cheek; and in the case of Turki and Arab horses, on the left. Nowadays the horses of every stable are distinguished by their price in

[190] Gommans, Jos, *Mughal Warfare*, *op.cit*., p. 112.
[191] Equus, A. Hyland, *The Horse in the Roman World*, London, 1990, H.Hayes, *A Guide to training and Horse Mangement in India*, Calcutta, 1878, p. 29.
[192] *Ain-i Akbari*, trans. Blochmann, *op.cit*., vol. I, p. 150.
[193] Ibid., p. 225.
[194] Manucci, *op.cit*., vol. II, p. 366.
[195] *Ain- i Akbari*, trans. Blochmann, *op.cit*., vol. I, p. 147,

numerals.'[196] The inspection of horses was based on their rank and division of stables. Twenty horses were musters daily. On Sundays horses were the first which were mustered. Abul Fazl writes, 'they begin with the stables of forty; then come the stables of the princes; then the *khasa* courier horses; then the country-bred, and all other stables. When the ten-muhr horses have been inspected, they bring the Guts, *Qisraqs*, the horses on which the hunting leopards ride, and the *Bargir* horses. The place of the horses at the musters, was determined by their value, and in the case of horses of the same value, the precedence was determined by the time of service. Before the musters, the horses were inspected by clever officers, who again fix their value, and divided them into three classes. When the rank of a horse had been put higher or lower, it was placed among his proper class-fellows. Those horses which belong to the third classes, form separate stables, and were given away as presents. If horses had their value raised, they were given over to such keepers as brought to the musters either the full complement of their horses, or at least a complement not more deficient than by two. Incomplete stables were daily filled up during the musters; or if not filled up, they were put in charge of separate keepers. Several horses were also kept in waiting at Court, one from each of the sixty to the forty-muhr stables, and one more from each of the thirty to the ten-*muhar* stables. They were given away as presents or as parts of salaries. The precedence at musters of bazaar-horses was fixed according to the price. When horses had been bought they were marked with a peculiar brand, so that there might be no fraudulent exchange.'[197]

Beasts of Burden: Camels

Camels remain important through the ages in our society, known very well as 'ship of the desert' with the ability to cover long distances without food or drinking water. Depending on the temperature, a camel can live without water for about one week to one month. In very hot weather, they can live about a week, and in cool weather, about a month. India was once proud of having the third largest camel population in the world, after Somalia and Sudan.[198] Ecologists emphasize that camel

[196] Ibid., pp. 147-148, Badaoni , *op.cit*., vol. II, pp. 173, 190.
[197] *Ain-i Akbari*, trans. Blochmann, *op.cit*., vol. I, pp. 224-225.
[198] Kohler-Rollefson, I., 'The camel in Rajasthan: Agricultural biodiversity under threat', *Saving the Camel and Peoples,' Livelihoods Building a Multi-Stakeholder Platform for the Conservation of the Camel in Rajasthan*, International Conference, Rajasthan: Lokhit Pashu-Palak Sansthan, 23-25 November, 2004, p. 7.

grazing has very little, if any, 'damaging effect on desert vegetation and does not contribute to desertification, for its foraging habits are optimally suited to areas with a low carrying capacity.'[199] In the Mughal period camels were numerous in Sind, Ajmer, Jodhpur, Nagor, Bikaner, Jaisalmer, Bhatinda, and Bhatnir; the best were bred in the *suba* of Gujarat, near Cutch.[200] But in Sind was the greatest abundance; many inhabitants owned ten thousand camels and upwards. The swiftest camels were those of Ajmer; the best for burden were bred in Thatta.[201] In the *sarkar* of Thatta, Abul Fazl informs, camels were numerous and of a good breed.

Thus camels largely abound in the Great Indian Desert region (Thar). Since Rajputana territories I am keeping outside the bound of my study, here I am not focusing on camel and its importance in the Rajputana region.[202] Further our information on camels is almost exclusively derived for Abul Fazl 's account. The Mughals were also very much depended on the dromedary. Abul Fazl gives details on camels and its maintenance in royal stables. Jos Gommans comments, 'the dromedary endlessly carrying the court's belongings and its provisions from one place to other. Within the southern Arid Zone of the Middle East, Iran and northwest India may be considered by far the most efficient beast of burden. It could also carry relatively heavy loads (150-200 kg) at a speed of about 30 km a day. Unloaded it could travel for many days at double that speed.'[203]

Abul Fazl mentions the age of camel above twenty-four years.[204] Abul Fazl describes that Akbar showed his great interest for this curiously shaped animal, 'it is of great use for the three branches of the government, and well known to the emperor for its patience under burdens, and for its contentment with little food, it has received ever care at the hands of His Majesty. The quality of the country breed improved very much, and Indian camels soon surpassed those of Iran and Turan.'[205] Abul Fazl

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[199] Kohler-Rollefson, I., 'Camel pastoralism: An indigenous arid land exploitation strategy,' *Journal of Camel Practice and Research*, Camel Publishing House, 1, 1994, pp.1–6.
[200] *Ain -i Akbari*, trans. Jarrett, *op.cit*., vol. II , p. 256.
[201] *Ain-i Akbari*, trans. H. Blochmann, *op.cit*., vol. I, p. 151, Habib, *An Atlas of the Empire*, *op.cit*., sheet 4 B,5 B, 6 B,7B.
[202] For further reading see (Camel and its importance, Kohler- Rollefson, Richard W. Bulliet, Ilse kohler-Rollefson, Nitin Goyal, 'Dynamics of Camel Management in Desert: A Study Based on Archival Sources of Bikaner State', RHC 30th session in Udaipur, 2015.)
[203] Gommans, Jos, *Mughal warfare, op.cit.*, p.126.
[204] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 156.
[205] Ibid., p.151.

statement suggests that Mughal probably kept royal stud farms where high quality camel breeding must have been experimented to improve the quality of camels.

Indian dromedaries are all one humped. Richard Bulliet informs that new breed of one-humped camel was developed that could resist the colder conditions of Iran and Southern Central Asia. These developments in Khorasan took place well into the Islamic period. Thus it appears that Indian dromedaries, mainly those from Baluchistan and Rajasthan, had a fairly late start on the Indian sub-continent.'[206] Mughal accounts describe different breeds of camels. Abul Fazl informs that 'the female camels (*Arwanas*) are more important and department depends on them. The male of two humps goes by the name of *Bughur*. The young ones of camels are called *nar* (male) and *maya* (female)'[207], but Akbar gave to the *nar* the name of *bughdi* and to the female that *jammaza*. The *bughdi* camel was better for both fighting and to carry burden, and the *jammaza* (female) excels in swiftness. 'The Indian camel called *lok*, and its female, come close to them in swiftness, and even surpass them. The offspring of a *bughur* and a *jammaza* goes by the name of *ghurd*; the female is called *maya ghurd*. If a *bughdi*, or a *lok*, couples with a *jammaza*, the young one is called *bughdi*, or a *lok* respectively. But is *bughdi* or a *lok* couples with an *arwana*, the young male is name after its sire and the young female after its dam. The *lok* is considered superior to the *ghurd* and *maya ghurd*.'[208] *Botas* and *Dumbalas* were the names given to young camels. Thus, Akbar not only maintained the good breed of Indian camels, he also experimented cross-breeding and in turn succeeded in developing even much superior breed.

Abul Fazl also describes the prices of camels: ' a *bughdi* -5 to 12 *muhars*; a *jammaza* –3 to 10 *muhars*; a *bughur* --- from 4 to 7; a *maya bughur* – 3 to 5, a *ghurad* –3 to 8 *muhars*; a *maya ghurd* and a *lok* –3 to 7 *muhars*; a *mongrel lok* –8 to 9 *muhars*; a country-bred, or *Baluci lok* –3 to 8 *muhars*, and an *arwana* – 2 to 4 muhars.'[209]

[206] Bulliet, Richard W., *The camel and the wheel*, New York: Colombia University press, 1990, pp. 141-175.
[207] *Ain-i Akbari* ,trans. H. Blochmann, *op.cit*., vol. I, p. 151.
[208] Ibid.
[209] Ibid., p. 156.

Abul Fazl records quality of food to be supplied to the camels of the royal stables. He mentions that, 'at the age of two and a half, or three years- a *bughdi* gets 2 *ser*. of grain when three and a half to four years old – 5 *s*., up to seven years – 9 *s*., at eight years -10 *s*. Similarly in the case of *bughurs*, *jammazas*, *ghurds*, *maya ghurds*, and *loks*, up to four years of age; but from the fourth to the seventh year, they get 7 *s*.; and at the age of eight years 7 ½ *s*., at the rate of 28 *dams* per *ser*. As the ser has now 30 *dams*, a corresponding deduction is made in the allowance…Camels on duty inside the town are daily allowed grass at the rate of 2 *d.* per head; and those outside the town, 1 ½ *d*. During the four rainy months, and on the march, no allowance is given, the drivers taking the camels to the meadows to graze.'[210] When *bughdis* were in heat, they ate less. Hence also concession was made. If they got lean the quantity supplied was to be raised to 10 *ser*. When the rutting season was over, the *Daroghas* gave out a corresponding extra allowance of grain to make up for the former deficiency. If they made a definite entry into their day-book, and gave out more food, they were held indemnified according to the *Pagosht* rule; and similarly in all other cases, note was taken of the deductions according to that rule.[211] Thus in Akbar's atelier it appears not only just the animals were kept instead of minute eye was kept on their activities, food pattern etc. Basic rules for fodder etc. were laid out.

Abul Fazl records that for oiling etc. on New Year's day state issued to pay for shearing, oiling and anointing of camels to camel driver, for oil etc. for each *Bughd*i and J*ammaza* 3 ¾ *sers* of sesame oil were annually allowed, viz., three *sers* for anointing, and ¾ *ser* for injection into the nose. So also ¾ *ser* of brimstone, and 6 ½ *ser* of butter-milk. For other kinds of camels the allowance were 5/8 *ser* of brimstone, 6 ½ ser of butter milk, and ¾ *ser* of grease for injecting into the nose-holes. Formerly these operations were repeated three times, but now only once, a year.[212]

For the *khasa* camels the articles used for harnessing were,'an *Afsar* (head stall); a *Dum-afsar* (crupper); a *Mahar kathi* (furniture resembling a horse-saddle, but rather longer—an invention of Akbar); a *kuchi* (which serves as a saddle-cloth); a *Qatarchi*; a *Sarbchi*; a *Tang* (a girth); a *Sartang* (a head-strap); a *Shebband* (a lion-strap); a *Jalajil* (a breast rope adorned with shells or bells); a *Gardanband* (a neck-

[210] Ibid., p. 152.
[211] Ibid.
[212] Ibid., pp.154-155.

strap); three *Chadars* (or coverings) made or broadcloth, or variegated canvas, or wax cloth. The value of the jewels, inlaid work, trimmings, and silk, used for adorning the above articles, goes beyond description.'[213] Abul Fazl gives detail rates of the furniture requires for camels and its types. Different type of camels received furniture according to their ranks. The furniture renewed once in three years, but not so the iron bands and the wood work. The record was maintained of the renewal of furniture.The cost of articles had been 'uniformly computed and fixed by contract with the camel drivers.' Akbar renewed the rules in 1598 when it was brought to Akbar's notice that camel rides often were at loss on account of fluctuations in prices. Accordingly Akbar modified it and instead of paying 'fixed' prices he allowed the payment to be made as per market prices.[214]There was well maintained system of the arrangement of the troop of camels. The camels were organized into 4 *qatars*. Each *qatar* was under a *sarban* (driver). Different *qatars* were paid according with *qatar*. 'The first class got 400 *dam*; the second, 349 *d*.; the third, 280 *d.*; the fourth, 280 *d*. The *qatars* were of three kinds: Every five *qatars* were in charge of an experienced man called *Bisropanji,* or commander of twenty-five, [a Yabu horse, and has four drivers under him. *Panjahi* or commander of fifty a horse and has nine drivers under him. Every hundred qatars are in charge of a *Panjsadi*, or commander of five hundred. Ten *qatars* are under his personal superintendence. Each Pansadi has placed under a grandee of the court. A writer also has been appointed and several foot soldiers have been selected to inquire from time to time into the condition of the camels, so there may be no neglect. Besides twice a year some people adorned with the jewel of insight inspect the camels as to their leanness and fatness at the beginning of the rains and at the time of the annual muster. If a camel lost, the *sarban* is fined the full value; so also *Panjahi* and the *Pansadi*. If a camel gets lame or blind, he is fined the fourth part of the price.'[215]

About the inspection of the camels which was daily inspected of country-bred camels, Abul Fazl mentions that '*pansadis* (officers in charge of five hundred camels) come first who are oldest. The head Daroga has the permission to parade before H.M. a *qatar* of excellent *Bughdis* and *Jammazas*. Then come the *Bughdis*, and after them to *Jammazas*, the *Ghurds*, the *Loks*, and all other camels. The commencement of the

[213] Ibid., pp. 153-154.
[214] Ibid., p. 154.
[215] Ibid., p. 155.

muster takes place on Friday, on which day double the usual number marches past. The precedence of camels is determined by their value.'[216]

Jos Gommans argues that 'although Akbar's army maintained 6 to 7,000 camels of its own, in case of campaigns a great deal more had to be hired from Baluchi and *Raibari* nomadic breeders and transporters. Probably thanks to their crucial role as transporters, some of these tribes had achieved a considerable political standing.'[217] Other camel breeders may achieve position but the *Raibari* appears to be the chosen one for the royal stud farm. Abul Fazl also mentions that 'it was the class of Hindus who taught the country-bred *lok* camel so step as to pass over great distances in short time. Although from the capital to the frontiers of the empire, in every direction, relay horse were stationed, and swift runners had been posted at the distance of every five *kos*, a few of these camel riders were kept at the palace in readiness. Each *Raibari* was also put in charge of fifty stud *arwanas*, to which for the purpose of breeding, one *baghur* and two *loks* were attached. The males got the usual allowance of grain, but nothing for grass. The fifty *arwanas* get no allowance for grass and grain.'[218] However, it is difficult to explain why they were not ….made for *arwanas*. This can only be explained if we presume that *Raibari*s who were made incharge of the stud farm were actually enrolled in the royal service as *mansabdars* and in their salaries of the *mansabdars* as is pointed out by Shireen Moosvi.

The camel was not only used as a beast of burden but it also provided milk, meat, wool, leather, and fuel from dried manure. G.S.L. Devra also comments, 'the term *qatar* is used for the caravan of camels, almost all the routes of Western Rajasthan connecting the towns of Multan and Sind were called as camel-routes (*katar*).[219] Akbar regulated the burden to be carried by the camels according to their rank. As first class *bughdi*, not more than 10 *mans*; a second class do., 8 *mans*, superior *jammazas*, *loks*, etc., 8 *mans*; a second class do., 6 *mans*.[220]

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[216] Ibid., pp. 225-26.
[217] Gommans, Jos, *Mughal Warfare*, *op.cit*., p. 127.
[218] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, pp. 155-156.
[219] Devra, G.S.L., 'A study of the trade-relations between Rajasthan and Sindh/ Multan (1600-1800 A.D.),' *Proceedings of IHC, 39th Session*, Osmania University, Aligarh: published by Casin History, 1978, vol. I, p. 589.
[220] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 156.

Moreover these beasts of burden at times move extremely fast, Gommans comments, 'unloaded it could travel for many days at double that speed'[221], as in the Gujarat campaign in 1573, Akbar's she-camels were supposed to have made their speed 200 km a day. Abul Fazl comments, 'His Majesty, on the day 23 August 1573, mounted on a swift and softly she-camel. "A camel swifter than an arrow" and taking the reins of victory in his hand.'[222] When 1589-90, Akbar summoned to Khwaza Nizam-ud-Din Ahmad to present in the royal court, 'then he with his camel-corps traversed 600 *kos* in twelve days, and reached Lahore in the beginning of new year's feast. As it was a wonderful spectacle, an order was issued that all the camel riders should appear before H.M. After that Khwaza received countless favours from the King, and his rank and influence increased.'[223] The camels were even very important on the battlefield. Bernier mentions that Aurangzeb took two or three hundred camel guns with him on his expedition to Kashmir the in 1663.[224]

Camel's milk was also used for drinking purposes. Jahangir mentions that Asad Khan had a Persian camel in milk. Jahangir liked its milk very much, and compares its milk with cow and buffalo's milk. He also comments that there was no comparison in sweetness and flavour with the milk of this camel. 'I ordered them to give the same kind of food to some other female camels, that it might become clear whether the purity was in consequence of eating good food, or whether it was due to natural sweetness of this particular camel's milk.'[225] Abul Fazl informs that 'formerly state used to extract a fourth part of the wool sheared every *bughdi* and *jammaza* , each camel being assessed to yield four *sers* of wool. This H.M. has remitted, and in lieu thereof has ordered the drivers to provide their camels with *dum-afsars* wooden pegs.' [226]

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[221] Gommans, Jos, *Mughal Warfare*, *op.cit*., p. 126.
[222] *Akbarnama*, *op.cit*., vol. III, p. 64.
[223] Shah Nawaj Khan and His son Abul Hayy, *The Maathir-ul-Umara*, Translated by H. Beveridge and revised annotated & completed by Baini Prasad, Patna: Janki Prakashan, vol. II, part. I,[1952] 1979, p. 396.
[224] Bernier, *op.cit*., p. 217, Tavernier, *op.cit*., vol. II, p. 211.
[225] *Tuzuk-i- Jahangiri*, *op.cit,* vol. II, p. 46.
[226] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 156.

Beasts of Burden: Ox and Mule

There are number of references of common miscellaneous animals which still abound are recorded in the Mughal chronicles. Ox was the foremost among the most common domestic animal in India, and before the development of means of transportation and technology, it was the main medium for the common men to royal families to carry heavy burden**.** Abul Fazl describes, 'thus becomes an excellent assistant for the three branches of the government. Gujarat cattle will travel 80 kos (124 miles) in 24 hours, and surpass even swift horses. Nor do they dung while running. They kneel down at the time of being loaded.'[227] There was also a species of oxen, records Abul Fazl, called '*gaini*, small like horses, but very beautiful.'[228] Thevenot and Tavernier provide extensive details on Indian oxen, about its size, colour, diet and many more things. They informs that the ordinary oxen were less than ours, baffles and those of Bengal were the dearest, because they were very courageous, and were not afraid of lions.[229] Though every part of the empire produces cattle of various kinds, the Gujarat oxen considered as the best but good cattle can be found in Bengal and South also. Ox on account of its multi: farious uses were highly prized. Abul Fazl records that, 'sometimes a pair of Gujarat oxen is sold 100 *muhars*. The usual price is 20 and 10 *muhurs*.[230]

Akbar divided oxen in different classes and put each to the charge of a merciful keeper. Abul Fazl informs that 'one hundred choice cattle were selected as *khasa* and called *kotal*. They were kept in readiness for any service, and forty of them were taken unladen on hunting expeditions. Fifty-one others nearly as good were called half-*kotal*, fifty one more, and quarter-*kotal*. Any deficiency was the first class is made up from the second, and that of the middle from the third. But these three form the ox stables for Akbar's used.'[231] There were 50 to 100 numbers of cattle in the sections and the rank was fixed of every animal, Abul Fazl describes that 'a

[227] Ibid., p. 157
[228] Ibid., p. 158.
[229] Tavernier, *op.cit.,* vol. II, p. 43, Thevenot, op.cit., pp. 62, 72-73.
[230] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 157.
[231] Ibid.

similar proceeding is adopted for each section, when selected for drawing wagons and travelling carriages, or for fetching water.'[232]

Different categories of officers were appointed by the State, and there were the provisions of fines also when the cattle were harmed: 'if a horn of an ox was broken, or the animal got blind, the *Darogha* was fined one-fourth of the price, or even more, according to the extent of the injury. The drivers were not subject to the regulation, if, however, an ox died, they had to buy another.'[233]The inspection of every working cattle by experienced person once in a year, who estimate their fitness, and those cattle were unemployed inspected in every six months.[234] Abul Fazl describes full detail of the food which allowed to the *khasa* class 'daily 6 ¼ *s.* of grain and 1 ½ *d.* of grass. The whole stable got daily 1 *man* 19 *s*. of molasses, which was distributed by the *Darogha*.'[235]

Milk Animals

Mule is very much important for the category of the beast of burden. It is a mixture of horse and ass. Abul Fazl comments, 'the mule possesses the strength of a horse and the patience of an ass, and though it has not the intelligence of the former it has not the stupidity of the latter. It never forgets the road which it has once travelled. It is the best animal for carrying burdens and travelling over uneven ground, and it has a very soft step.'[236] Asses were also used and employed to carry burden. Abul Fazl writes that Akbar was very much keenly interested to improve the breed of the mules. Akbar had a byoung ass coupled with a mare, and they produced a very fine mule. Mules were only bred in Hindustan in Pakhali (in the Sarkar Attock and Kashmir) and its neighbourhood. Mules were chiefly imported from Iraq-I Arab and Iraq-I Ajam. Very superior mules were often sold at Rs. 1,000 per head.'[237] Jahangir comments about the Kashmiri mules, 'their mules were small and were not fit for heavy loads.'[238] There was proper care and allowances for the mules of the royal stables and divided in the various categories and ranks also. Abul Fazl gives full records of the

[232] Ibid.
[233] Ibid., p. 159.
[234] Ibid., p. 160.
[235] Ibid., p. 157.
[236] Ibid., p. 160.
[237] Ibid. p. 161.
[238] *Tuzuk-i- Jahangiri*, *op.cit,* vol. II, p. 127.

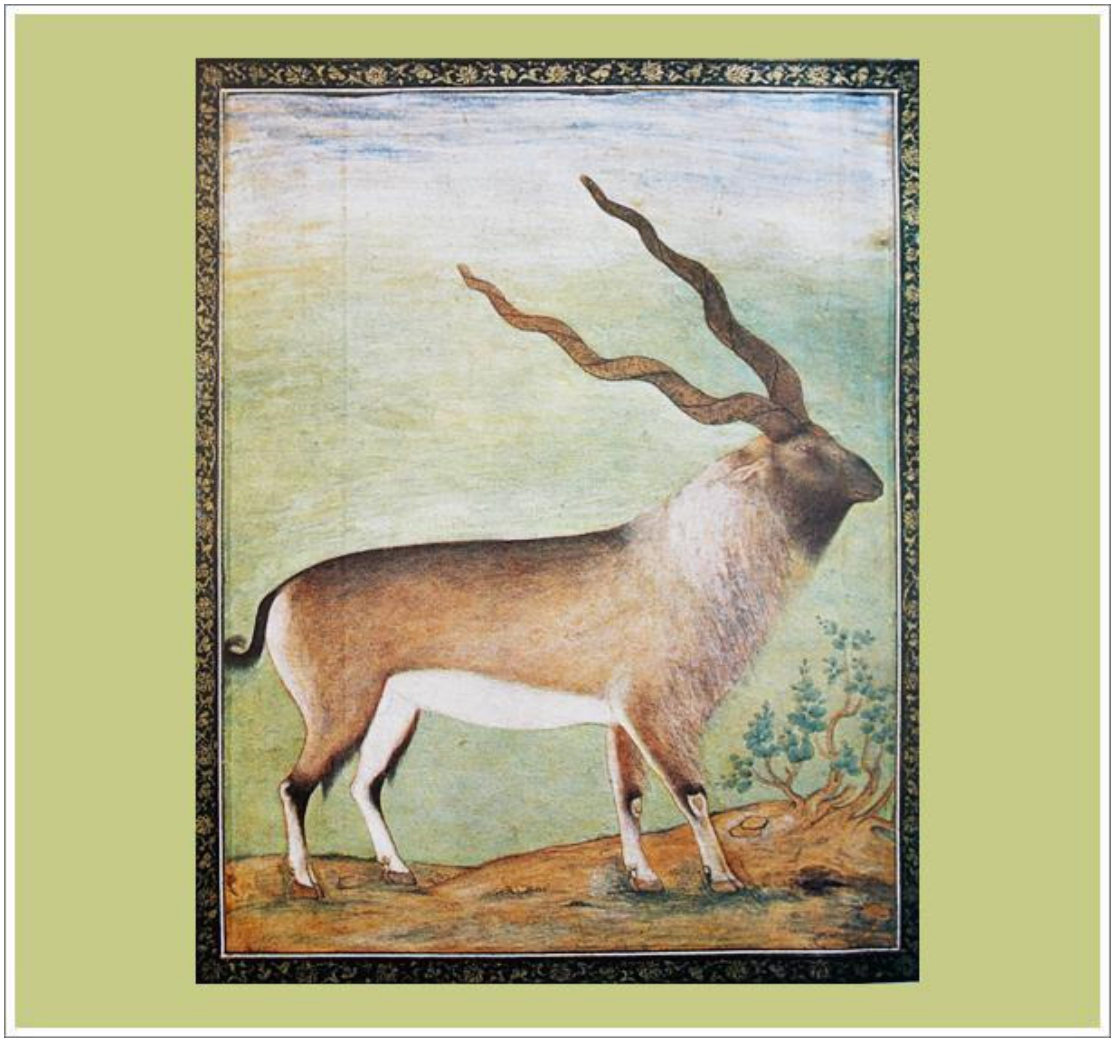
furniture which was allot to the mules keeper for according to the *qatar* and their rank. All the articles were recorded by the officers and the keepers. Inspection for the fitness of mules was done by the different experienced persons twice a year and the mules paraded before Akbar once a year. There were also fines if the mule gets blind or lame. [239]

Cow has a special place In India, as throughout the India it occupies auspicious place. In the Mughal period cow had its own value. Separate royal stables were also maintained known as *gaw-khana*. Thevenot says that 'Indians respect a lot to the Cow. They prefer her before other animals only because she furnishes them more food, by means of her milk.'[240] The buffaloes of Punjab were the best and there were different sections of milch-cows and buffaloes in the royal stables maintained by good battery of servants. The *milch*-cows and buffaloes had grain given them in proportion to the quantity of milk they gave.[241]

Jahangir mentions about a rang (a kind of sheep) that 'It was like a mountain goat, and there is a difference only in its horns. The horns of therang are bent, and those of goat were straight and convoluted.[242] Jahangir informs that 'the rang goats (ibex), which they brought from the country of Bhakkar (Sind) and the hill-country of the Garmsir (in Afghanistan) were very handsome, and had but little wool, and those that are met with in these hills, on account of the excessive cold and snow, are covered with hair and ugly. The Kashmaris call the rang *kapal*.[243] Thevenot amazingly describes about the sheep of Aurangabad, 'they have sheep there without horns, that are so strong, as that being bridled and saddled, they will carry children of ten years of age up and down, wheresoever's they please.'[244]

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[239] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 162.
[240] Thevenot*, op.cit.,* p. 91.
[241] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 157.
[242] *Ibid.,* vol. I, p. 109.
[243] Ibid., vol. II, p. 151.
[244] Thevenot*, op.cit.,* p. 104.



Courtesy by Victoria and Albert Museum, London.

Miscellaneous Animals and Birds

Wild Buffalo

The wild buffalo/Asian buffalo is also a common in the Indian sub-continent. Presently in India they could be exclusive traced mostly in Assam. The population of this beast is on the constantly of decline. It is larger than domestic buffalo. By the way of hunting, degradation of wetlands, diseases and many more Buffalo factors were behind their reduction. Babur describes about it that 'It is much larger than the (domestic) buffalo and its horns do not turn back in the same way. It is mightily destructive and ferocious animal.'[245] Abul Fazl while narrating the animal hunting of the *subah* of Oudh mentions that here 'wild buffaloes are numerous. When the plains are inundated the animals take to the high ground where the people find sport in

[245] *Babur Nama , op.cit.*,p. 492.

hunting them. Some of the animals remain all day in the water and only at night approach the dry ground and breathe in freedom.'[246] May be these were yaks which were gifted by an officer to Jahangir, he mentioned that 'two *qutas* oxen, out of the offerings of the *Zamindar* of Tibet, were brought before me. In form and appearance they closely resemble the buffalo. All the limbs are covered with wool which properly belongs to animals in a cold country.'[247]



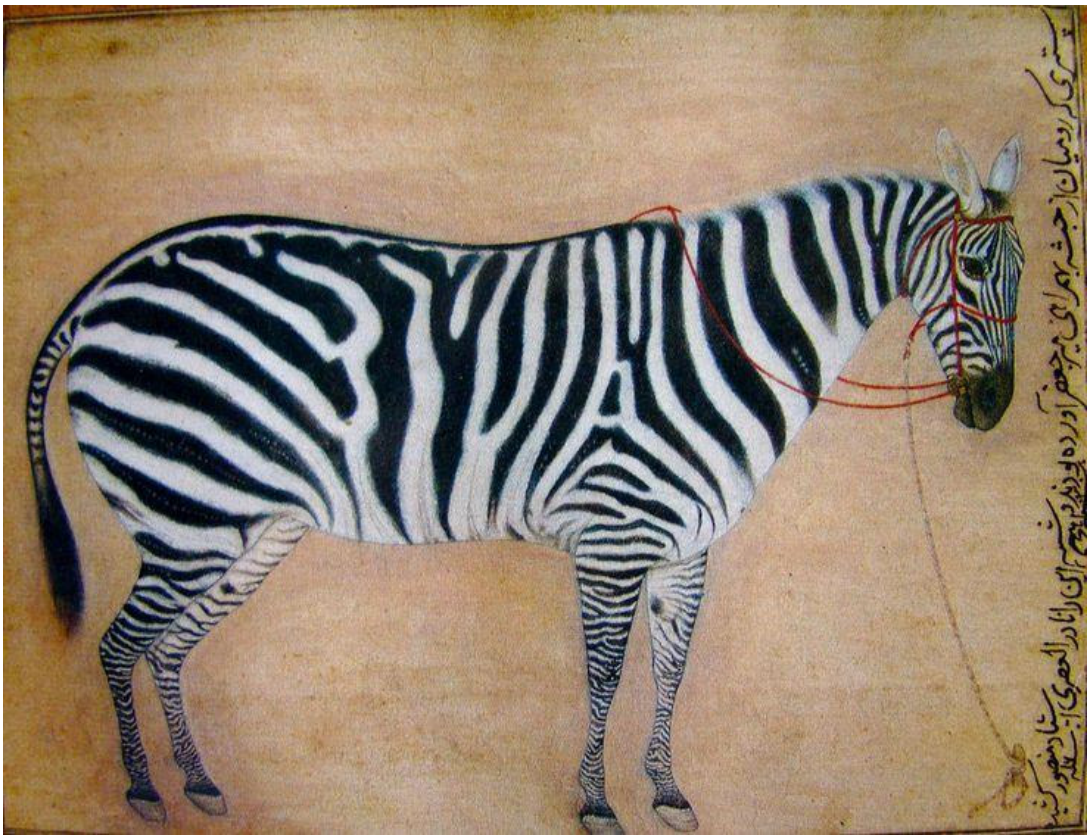
Buffalo Fighting

Zebra

Zebra are original inhabitants of Africa. Its first reference comes from Jahangir's reign in the context of the gifts sent by Shah Abbas's compared zebra with lion 'in 1621, Mukarram Khan, governor of Orissa, sent by way of offering, a wild ass (apparently a zebra) exceedingly strange in appearance, exactly like a lion. From the tip of the nose to the end of the tail, and from the point of the ear to the top of the hoof, black markings, large or small, suitable to their position, were seen on it. Round the eyes there was exceedingly fine black line. One might say the painter of fate, with a strange brush, had left it on the page of the world. As it was strange, some people

[246] *Ain-i Akbari,* trans. Jarrett, *op.cit*., vol. II,p. 182.
[247] *Tuzuk-i- Jahangiri*, *op.cit,* vol. II, p. 151.

imagined that it had been coloured. After minute inquiry into the truth, it became known that the Lord of the world was the creator thereof. As it was a rarity, it was included among the royal gifts sent to Shah 'Abbas'[248] We find miniature of this creature and its very interesting that Jahangir's period was basically.



Courtesy by Victoria and Albert Museum, London.

Akbar was also fond of dogs for its excellent qualities, and 'imports dogs from all countries. Excellent dogs come from Kabul especially the Hazara district [north of Rawal Pindi]. They even ornament dogs, and give them names. khasa dogs get daily 2 ser of meat; other gets 1 ¼ ser. There is one keeper for every two Tazi (hunting) dogs; their wages are 100 dam per *mensem*.'[249] Abul Fazl describes about a dog of Akbar 1564 that 'it was a bitch and called Mahuwa (beloved?). It was in the palace at the time leaving Agra. It showed signs of distress and sadness from the day of the this horrible occurrence, and before the news came it had refrained from eating and drinking and remained so far seven days. Such loyalty and fidelity did it show![250]

[248] Ibid., p. 201.
[249] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 301.
[250] *Akbarnama*, *op.cit*., vol. II, p. 314.

Monkey is another very common animal which can be seen everywhere in India. Our records provide interesting information of the variety and variegated image of the animal. Babur mentions that, monkey (*maimun*) Hindustani calls it bander. Of this too there are many kinds, one being what people take to those countries. The jugglers (*luli*) teach them tricks. The kind is in the mountains of *Nur-dara*, in the skirt-hills of *Safid-koh* neighbouring on Khaibar, and from there downwards all through Hindustan. It is not found higher up. Its hair is yellow, its face white, its tail not very long.---Another kind, not found in Bajaur, Sawad and those countries (Tramontana). Its tail is very long, its hair whitish, its face quite black. It is in the mountains and jungles of Hindustan.----Yet another kind is distinguished (*bula dur*), quite black in hair, face and limbs.'[251] Jahangir mentions of a young *langur* and a goat and their affection. [252] Monkey is described with curiosity by European travellers as make of Hindu ritual practice. Monserrate,[253] Tavernier[254] and Thevenot[255] give detail account about the 'money' worship in India especially by the *baniyas*. However, monkey's ritualistic eminence is looked by Monserrate as ignorance of Indian masses per se. He writes that, 'the monkeys paid honour and worship to their patron Hanuman. The ignorance of these poor people, and pray to God that His light may illumine their minds. I purposely pass over the stories about *Ganesha* is called the door-keeper of the gods, has an elephant's face and trunk, and a protruding belly, and is said to have been born from the sweat of a goddess (if such expressions may be allowed I also pass over *Mahadev* and the huge hodgepodge of other deities who are worshipped by these miserable people, and whose statues and idols are placed in their temples."[256]

Monserrate and Thevenot complains that due to Indian heat many reptiles scorpio, chameleon, snake etc usually hit the people and usually by the home remedies indians cure the problem. European see snakes being worshipped and were astonished about such proctors of the Indian society.[257] Jahangir in 1624 mentions 'it was 2 ½ yards and its girth equal to three cubits. He had swallowed half a hare, and

[251] *BaburNama*, *op.cit*., p. 492.
[252] *Tuzuk-i- Jahangiri*, *op.cit,* vol. II, p. 445.
[253] Monserrate, *op.cit*., p. 94.
[254] Tavernier, *op.cit*., vol. I, pp. 64-65.
[255] *Thevenot, op.cit.,* pp. 18, 104.
[256] Monserrate, *op.cit*., p. 95.
[257] Ibid., p. 20, Thevenot, *op.cit*., p. 72.

was in the act of swallowing the other half. When the huntsmen picked him up and brought him to me, the here fell out of his mouth. I ordered them to put it into its mouth again, but they could not do it, however much they extorted themselves; but by using great violence the corner of his mouth was torn to pieces. After this I ordered them to open its belly. Thereupon another entire hare came out. They call this kind of snake *chital* (python) in Hindustan, and it grows so large that it swallows a hog-deer entire.'[258]

Birds

Birds have a special role in our ecology and environment. There are thousands of different types of bird found in India. As for the beauty of nature birds are a symbol of creativity, the different colours, size, shape, voice and their origin is a matter of curiosity. Due to hunting or killing or catching for own amusements purposes by humans, some birds species are either altogether extinguished or in danger zone. Babur have curiously described the birds of Hindustan and its various; Humayun's love towards birds is also noticed by that period chronicles. Jauhar Aftabchi writes about Humayun's observation about a bird which flew into the tent, the doors of which were immediately closed, and the bird caught; Humayun then took a pair of scissors and cut some of the feathers off the animal; he then sent for a painter, and had a picture taken of the bird, and afterwards ordered it to be released.[259]Jahangir also confirms the incident: 'The beautiful Mogul School of painting owns its birth to Humayun. Humayun's love of nature and art is illustrated by an incident during his wanderings in Sind. One day a beautiful bird flew into his tent the doors of which were immediately closed, and the bird caught; His Majesty then took a pair of scissors and cut some of the feathers off the animal; he then sent for a painter, and had a picture taken off the bird, and afterwards ordered to be released.[260] Akbar also had choicest birds as Abul Fazl describes, 'animals of all kinds from Persia, Turkestan, and Kashmir whether game or other, have been brought together to the wonderment of beholders.'[261] But the most interesting information comes from Jahangir's account

[258] *Tuzuk-i- Jahangiri*, *op.cit,* vol. II, pp. 275, 297.
[259] Jouher Aftabchy, *Tezkereh Al Vakiat* or *Private Memoirs of the Mughal Emperor Humayun,* translated by Major Charles Stewart, Delhi : Idrah-i Adabiyat-i Delhi, 2009, p. 43.
[260] Aftabchy, Jouher, *op.cit*., p. 43., Burke, S.M., *op.cit*., p. 27.
[261] *Ain-i Akbari,* trans. Jarrett, *op.cit*., vol. II, p. 316.

who was a great naturalistic. In his *Memoirs* he provides details on the habits of birds, colour and even he often compared them with other breeds.



Courtesy of Institute of people of Asia, Leningrod.

Both Babur[262] and Jahangir[263] give us information of Indian as well as some foreign, birds out of which some has been extinct now, specially Dodo. It can be seen in the Mughal miniature and in the references of European traveller Peter Mundy. It is on the record that two Dodos were evidently brought from Mauritius. Peter Mundy described about it in 1628, the last living example was seen between 1681.[264] Jahangir's miniature series is mostly based on different types of birds pictures. Ustad Mansur Khan, an expert to draw the pictures of animals and birds, whose miniatures are very important source to understand the ecology of different birds. The Mughal chronicles and travellers'[265] accounts are the basic platform of the information. Salim Ali comments that 'some of the accounts they have left behind of the habits and behaviour of the birds that came under their personal observation are so apt that they could scarcely be bettered for incisiveness and scientific accuracy today. What is more creditable about these royal naturalists is that they do not rely on mere hearsay but make a clear distinction in their writings between their personal observations and what has been reported to them by others.'[266]

The Mughal emperors kept falcons for the amusement. A separate department was established for the maintenance of different types of birds. Abul Fazl writes that Akbar trained '*baz* (the female goshawk, the jurra being the male), *shahin*, *shunqar* and *burkat* (golden eagle) falcons and makes them perform wonderful deeds, H.M. prefers the *basha* (the female of the common English sparrow-hawk, the male being called bashin) to which class of hawks he gives various names.'[267] Jahangir informs about the bird falcons that about hundred hawks and falcons were caught annually from Kashmir. Jahangir writes that Shahjahan had great pleasure in *durna* hunting with the falcon.[268]

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[262] *Babur Nama*, *op.cit*, pp. 494-500. Babur gives detail about: peacock, parrot, *sharak*, luja, *koel* , partridge*, kanjal*,
wild –fowl, Indian Bustard, florican, sand-grouse, *saras*, *lag-lag*, *gharm-pai*, *Shah-murg*, *summaj*, magpie, bat, *papiha*, *mynah*, *baya*, falcons, pigeons and many more with the description of their colour, qualities.

[263] *Tuzuk-i- Jahangiri*, *op.cit,* vol. I, pp. 215-216, vol. I, pp. 138, 168,

[264] Peter Mundy, *Travels in Asia, 1630-34,* (ed.), R.C. Temple, London: Hakluyt Society, 1914. p. 173.

[265] Tavernier, vol. I, p. 57, Thevenot, p. 54-55, Fr. Pierre Du Jarric*, Akbar and the Jesuits*, op.cit.,p. 76.

[266] Ali, Salim, *Birds Study in India: Its History and its importance*, New Delhi: Indian Council for Cultural Relations, 1979, p. 21. Also see article of Salim Ali, 'Mughal emperors of India as naturalists', *Journal Bombay Natural History Society*, vol. xxxii, pp. 42-63.

[267] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 304.

[268] *Tuzuk-i- Jahangiri*, *op.cit,* vol. II, pp.11,60, 138*, Shahjahan Nama*, *op.cit*., p. 276.



Tavernier comments on the general dislike of the Hindus towards the killing of birds, 'However, you must be careful not to kill a bird, or any other animal, in the country of Rajas, where the idolaters are the masters ; it is not dangerous in the parts of India were the rulers of the country are Musalmans, as they permit sport to be without restriction. It happened one day that a rich merchant of Persia, when passing by the territory of the Raja of Dantivar, either out of bravado or from not knowing the customs of the country shot a peacock on the road. The Banyans, in raged by an act which is regarded among them as a horrible sacrilege, seized the merchant themselves and also the money he had with him, which amounted to 300,000 rupees and ting him to a tree whipped him during three days so severely that the poor men died of it.'[269]

Jahangir was keen observer of bird's behaviours. He mentions his experiment about the pairing of saras and shows his eagerness to understand the bird's behavior.

[269] Tavernier, *op.cit*., vol. I, p. 57.

He recorded many stories about the love of saras to its partner. He elaborates experiments the manner of egg hatching by female and male saras turn by turn. He was keenly to know about the basic nature of saras. [270]

Pigeon is very common bird which can be seen very easily everywhere in India. Different colour pigeons are very much popular from the very early phase of our culture. In the medieval period the role of pigeon was varied and very different. They were in communications and amusements. Abul Fazl gives detail account and records about Akbar's passion about pigeon-flying (*ishqbazi,[*love-play]; the art of pigeon plying). The pigeons were presented by various countries such as Iran and Turan and the merchants also brought various rare breeds from different parts of the world. *Khasa* pigeons had different names according to their colour, quality beauty as Akbar invented as 'Magasi (flea-bitten); zirihi (steelblue); amiri (?); zamiri (a colour between zirihi and amiri)'[271]It is therefore from higher motives that he pays so much attention to this amusement.'[272] M. Farqooque comments, 'the Mughal used carrier pigeons. According to medieval poet and writers, both in Persian and Urdu, pigeons offered a convenient method of communicating with one's beloved, and friends. The *kabutar-inamdar* (the messenger pigeon) plays a significant part in medieval Indian literature.'[273] There were more than twenty thousand pigeons were in the royal stud and five hundred of them were *khasa*. Akbar carefully observed the good breed and value of the bird as Abul Fazl noticed.[274] Akbar focused to breed them with the best one. Father Monserrate was fascinated by the antics of the palace he writes, 'it will seem little short of miraculous when I affirm that when sent out, they dance, turn somersaults all together in the air, fly in orderly, rhythm, and return to their starting point, all at the sound of the whistle. They are bidden to perch on the roof, to conceal themselves within their nesting places, or to dart out of them again; and conceal themselves within their nesting places, or to dart out of them again; and they do everything just as they are told.'[275] Jahangir appointed pigeon fanciers to

[270] *Tuzuk-i- Jahangiri*, *op.cit,* vol. II, pp.16-17, 23-24., 39, 42.
[271] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, pp. 313-314.
[272] Ibid., p. 310.
[273] Farooque, A.K. M., *Roads and communications in Mughal India,*New Delhi: Idrah-i-Adabiyat-Delli, 1977, p. 141.
[274] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, pp. 312-313.
[275] Monserrate, *op.cit*., pp. 149,154,198, 200.

teach the pigeons to let them fly from Mandu and train the pigeons.[276] Pelsaert found that 'Jahangir kept pigeons also carry letters in time of need, great urgency or during a siege.'[277] Manucci also informs that nobles also kept pigeons to carry messages.[278]

Jahangir comments that it was impossible to get the wild birds breed in captivity and in the time of Akbar the great efforts were made, but couldn't managed. Then he ordered, 'of the wild birds which they call tadru (pheasant) till now it has never been heard that they breed in captivity. I ordered them to keep some male and female, in one place, and by degrees they bred. I ordered them to place the eggs under hens, and in a space of two years sixty or seventy young were produced a fifty or sixty grew up. Whoever heard of this matter were astonished. It was said that in the Wilayat (Persia) the people there had made great efforts, but no eggs were produced and no young one were obtained.'[279]

Hunting

Hunting (*shikar*) as a royal activity from the ancient times upto Independence remains part of pleasure. Till the 20th century hunting by the British and royal families has been documented and it was the most favourite pastime. However, many times local people also involved in hunting or catching. There are various motives behind the killing of an animal, depending upon the requirements of the time. Presently on the light of the extinction of rare species, which are now under conservation of heavy laws and efforts of various governments to save them, it is a matter of sensitivity now. Some animals and birds have been extinct completely from the earth, and some are now on the verge of extinction. There are some other interesting and important aspects of medieval Indian society which changed our geographical scenario. Hunting is one of them. Hunting from ages considered as part of tribal people. Nonetheless hunting remains the part of amusement. Our literature is full of such examples.

The major aspect related to hunting was pleasure. However, at times it was exploited as a tool to manage the administrative work through the expedition with hunting. There is huge list of the animals, which were hunted by the Mughals. The

[276] *Tuzuk-i- Jahangiri*, *op.cit,* vol. I, p. 387.
[277] Pelsaert, *op.cit*., p. 58.
[278] Manucci, *op.cit*., vol. II, p. 467.
[279] *Tuzuk-i- Jahangiri*, *op.cit,* vol. I, p. 217.

Mughal Emperors were fond of hunting, tigers, leopards, lions, elephants, antelopes, rhino, and many more wild beasts and birds. Even they used different methods to hunt. Hunting implied knowledge about animals. Some animals trained especially for hunting purposes as cheetah, deer, buffalos, and some birds specially falcons. 'All these Mughal emperors received gifts of 'animals of the chase' and other beasts presented to them by vassals, defeated rebels and foreign dignitaries. What were these 'animals of the chase', these *janwar-i-shikar*, which keep turning up without scholars making more than a cursory attempt at finding them in the records of the Mughals?'[280] The Mughals who were descendents of Chenghiz Khan, were fond of hunting *(shikar)* and followed the rules framed by their ancestors. [281]

Various theories and views have been put by scholars on human- nature relations during Mughal times. Jos Gommans explains reasons behind Mughal hunting practices that, 'away from the tight ritual of the court, the excitement of hunting created a more convivial atmosphere, reminiscent of one in Babur's erstwhile war-band, in which new relations of friendship and loyalty could be forged… notwithstanding the fact that prescriptions of Islam and *adab* could warn against the unnecessary or excessive killing of the game, hunting remained one of the cornerstones of sixteenth- and seventeenth –century Mughal rule.'[282] Lisa Balabanlilar comments that 'in addition to the Mughals a natural landscape within which to demonstrate loyalty to their Timurid legacy, the regular movements of the royal court offered the nobility the opportunity to satisfy their passion for the hunt, which did almost daily. The passion for hunting found near universal justification at the Timurid-Mughal court as a royal duty, an act of arbitration between the ruler and the forces of nature that only the King was competent to control.'[283] In the origin myths of the pre-modern world it is the model rulers and cultural heroes who hold the wild in check, allowing the land to be cultivated and agriculture to flourish; the royal hunt was seen as the first line of defense against the encroachment of a threatening nature. In the ancient tradition, the 'rulers had to interact with the wilderness, placate, contain and appropriate its raw power,' whereby the King gained religious merit and

[280] Thapar Valmik, Romila Thapar and Yusuf Ansari, *op.cit*., p. 93.
[281] Ansari, M.A., 'The hunt of the great Mughals', *Islamic Culture,* Vol. XXXIU, No. 1, Hyderabad, January, 1959, p. 1.
[282] Gommans, Jos, *Mughal warefare, op.cit.,* pp.110-111.
[283] Balabanlilar, Lisa, *Imperial Identity in the Mughal Empire*, New Delhi: Viva Books, 2013, p. 84.

the hunting ground became a ceremonial seat of royalty.'[284] In Mughal India the hunt remained, just as for earlier Central Asian Turks and Mongols, a vehicle for display of imperial dominance over nature, proof of the King's ability to tame the wild, to identify and successfully mobilize resources, to publicize his superior administrative skills, and an open-air theatre in which bravery could be publicly tested and appreciated.[285] Thomas Pennant observes, 'Akbar hunted the lion, the elephant, and the *yuz,* or hunting leopard, but more to show his imperial courage, and his skill in shooting with the fusil or bow, than from any pleasure he had in the discipline of the pack.'[286] Thapar comments that it would have been impossible for anyone to question the courage of a man who fought a lion or a tiger, even in a controlled environment. Akbar is supposed to have, as a young man, killed a tiger on foot.'[287]

As Abul Fazl tried to justify the hunting of Akbar that it was basically a part of Akbar's administrative policies, he comments, and 'He lifts up such as are oppressed and punishes the oppressors. On account of these higher reasons His Majesty indulges in the chase, and shows himself quite enamoured of it. Short-sighted and shallow observers think that His Majesty has no other object in view but hunting; but the wise and experienced now that he pursues higher aims.'[288] Sometimes Abul Fazl used to say the hunting march of Akbar, 'spread the shadow of his justice over city.'[289] Abul Fazl writes about Hunting that 'Superficial worldly observes see in killing an animal a sort of pleasure, and in their ignorance stride about, as if senseless, on the field of their passions. But deep inquires see in hunting a means of acquisition of knowledge, and the temple of their worship derives from it a peculiar luster. This is the case with His Majesty. He always makes hunting a means of increasing his knowledge, and besides, uses hunting parties as occasions to inquire, without having first given notice of his coming, into the condition of the people and the army.'[290]

Jahangir extolled his own role as imperial exterminator, describing explicit invitations from his subjects to have the emperor rid them of a tiger or lion which

[284] Allsen, Thomas, *The Royal Hunt in Eurasian History*, *op.cit*.,p. 181.
[285] Balabanlilar, Lisa, *Imperial Identity in the Mughal Empire*, *op.cit*., p. 85.
[286] Thomson, Pennant, *The View of Hindoostan*, vol. II London: Henery Hughs, 1798, p.75.
[287] Thapar, Valmik, *Exotic aliens*, *op.cit*., p. 126.
[288] Ibid., p. 293.
[289] Akbarnama, *op.cit*., vol. III, p. 328.
[290] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 292.

threatened their village and portrait his hunting trips as a 'disinterested service to his subjects.' [291] Pelsaert refers to the pleasures of the game of hunting, refers to Jahangir's interest in lion hunting, and says that the Emperor, while young preferred shooting to all other forms of sport.[292] Apart from the justification of public service, hunting served personal and political purposes. Shah Jahan fled plague-ridden Akbarabad and spent his time waiting for the disease to leave the region while hunting across the countryside. Aurangzeb suggests to his son **'**Hunting is the business of idle persons. It is very reprehensible for one to be absorbed in worldly affairs, and to disregard religious matters.'[293] He further writes a letter to Mahammad Aazam, ' it seems that you passed one month in shooting cranes near the river Tali, (a river in Khandesh in Berar). Though hunting is an occupation which gives pleasure and delicious food, yet it is more pleasant when indulged in after being disengaged from the execution of important affairs, to do which is your bounden duty..'[294] So the Mughal emperor's taste and motives behind their hunting or killing animals are depends on their own personal thoughts also, as we see the personality traits of Akbar changed after 1578, related to killing of any creature. Jahangir was also not involved in hunting from 1618-1622, and Aurangzeb was also not so much interested in hunting, may be his reason were largely motivated by his religious concern.

Imperial Hunting Grounds

In the northern and central part of India there were many imperial hunting grounds, which were preserved by the state for their own pleasure. William Jardin comments that 'by many of the Indian sovereigns, beasts of prey were kept to be hunted or to be tamed, were placed near the throne upon occasions of pomp---they were also much more frequently employed as the executions of criminals….'[295] The Mughal Emperors were very much interested in a special kind of large scale enclosed hunting known as *qamargah* (Hunting ground) and such pleasant hunts were frequently arranged for them, in which the important nobles of the state and,

[291] *Tuzuk-i- Jahangiri*, *op.cit,* vol. I, p.312.
[292] Pelsaert ,*op.cit*., p. 51.
[293] *Ruka'at-i-Alamgiri*, (*Letters of Aurangzeb*,) *op.cit*., p. 15.
[294] *Ibid.,* p. 34
[295] William Jardin on Baron Cuvier's work *Lions, Tigers*, London: H.G.Bohn, pp. 62, 66.

sometimes, even the commoners (male and female both) also participated.[296] During the reign of Mughals we find so many *qamargahs* (hunting grounds) that were situated at Bari, Hisar, Sunnam, Bhatindah, Bhatnir, Nagaur, Narwar near Gwalior, Palam near Delhi, Sheikhupura/Jahangirpur near Lahore, Girjik and Nandina, Jalalabad and Sahara. Jahangir built several country houses and hunting lodges. The most outstanding hunting ground was Shaikhupura near Lahore.[297]

Akbar appears to have institutionalized hunting. There was separate staff for hunting department and to organize the imperial hunt was their major task. They were to report about animals and their movements, then distribution and sometimes they also used to take help of the tribal people. It was basically depended upon the emperor's wish whether he wants to catch only or to kill the beast. Abul Fazl informs that when Akbar starts hunting 'active *Qarawals* [men employed by the Mir Shikar,[298]… surrounded the hunting ground, the *Qur*, remaining at a distance of about five *kos* from it. Near the *Qur* the grandees and other people await the arrival of His Majesty. The men who look after the things sit down and watch. About a yard behind them the *Mir Tuzak* stands ready for service, and about a *kos* and one-half behind them stand some of the *Khidmatiyya* and other servants of His Majesty… At about the same distance there a vigilant officer with some of His Majesty's servants. He advances very slowly and guards the private hunting ground. Behind them an experienced officer is stationed to superintend the whole. Several near servants off His Majesty have admission to this place; but generally only such are allowed to come as are required to render services at chase.'[299] Jahangir loved hunting and cared little whether there were 'many or few' attendants or whether it was 'rainy or windy.'[300] Basically the flesh of hunted animals was distributed among the members of royal family or nobles for their consumption and sometimes it was distributed among the poor like charity. Jahangir, after the killings for his own curiosity, measured every

[296] Ojha, P.N., *North Indian Social Life during Mughal Period,* Delhi, 1975, p. 57.
[297] Ansari, M.A., The hunt of the great Mughals' *op.cit*., pp. 13-14. Habib, Irfan, *The Atlas of Mughal Empire, op.cit.,* see sheets, 4 B, 6 B, 8 B,
[298] Ibid., Ansari comments mostly a nobleman was appointed to the post of Qarawals Baigi(chief huntsmen)During the time of Akbar *Mir Shikar* is mentioned by Abul Fazl but from later accounts it is gathered that *Qrawal Baigi* was a higher post than the Mir Shikar. Usually a prominent nobleman was made *Qarawal Baigi*. Men like Allahwardi Khan were appointed Qarawal Baigi in the reign of Shahjahan.
[299] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 293.
[300] *Tuzuk-i- Jahangiri*, *op.cit,* vol. I, p.312.

rare beast and recorded as rarity in his Memoirs. There are many references of this kind in his account. Jahangir gives account of a gunner name Ustad Shah-quli, a wonderful gunner [301]

Manucci also details out the method of hunting under the Mughals. He elaborates, 'The hunter gets near with great difficulty, the sentinels being very vigilant. On the least suspicion, one of them, stretching out its neck, cries in a low voice, while the other sentries reply in the same way. By great care the hunter arrives closer, when, suspicion being further aroused, they cry again, a little louder than the first time. In the same manner the others reply, and increase their efforts to discover what is wrong. When they perceive there is some danger they cry aloud, so that all the flock awakes, and with a long run they make off with loud cries.'[302]

Mughals employed different methods to catch various prey. As it was royal privilege to hunt lion and tiger. No one killed them unless permission was granted by the King before.[303] Basically we donot find so much about tiger and lion hunt in the chronicles of Babur and Humayun. Babur describes that he hunted tiger in 1519, near Bhira, on March, 25, and 'ordered to be skinned.'[304] Akbar and his successors were involved in this sport very enthusiastically; even Jahangir recorded every details of the sport. Aurangzeb in the starting phase, there are some incidents could be noted but largely, hunting was not at all a favourite past time of Aurangjeb instead his hunting marches were largely motivated to keep watch on recalcitrants.

There were many method of tiger hunting. At times for tiger iron cages with open door were prepared and they put goat in, poisoned arrow and bow, tied a sheep to a place in a road frequented by tigers putting round the sheep on the ground small blades of grass covered with glue, and an intrepid experienced hunter gets on the back of a male buffalo and makes it attack the tiger. The buffalo will quickly catch the tiger on its horns, and toss it violently upwards, so that it dies. It is impossible to describe the excitement of this manner of hunting the tiger. One dies not know what to admire more, the courage of the rider, or his skill in standing firm on the slippery back of the

[301] Ibid., p. 307.
[302] Manucci, *op.cit*., vol. I, p.
[303] Pelsaert, *op.cit.,* p. 52, Bernier, *op.cit*., pp. 378-379.
[304] *BaburNama*, *op.cit*., p. 393.

buffalo.'[305] They were especially killed with bows and arrows or matchlocks. Abul Fazl comments, 'His Majesty, from his straightforwardness, dislikes having recourse to such tricks, and prefers with bows or matchlocks openly to attack this brute, which destroys so many lives.'[306] The Mughals also kept tamed and trained elephants for the hunts and taught not to be scared of lions and tigers. 'To teach them, they take a tiger-skin or lion-skin, and stuff it with straw. Then, just as if it were alive, they move it here and there by a rope. The driver encourages the elephant, and urges him towards the dummy, which with feet and trunk he tears to pieces.'[307] Manucci gives references about the hunting of tiger especially with buffalos and other methods in the period of Shah Jahan, but riding on elephants, a this way of hunting had much more risk for the hunters. Once it happened to King Shahjahan that a badly wounded tiger bounded up and hung on with its claws fixed in the elephant's head. [308] Accordingly Shahjahan gave orders for the head of the elephants to be protected in future down to the end of the trunk with a covering of thick leather, studded with sharp nails.[309]

The Mughals mostly shot the beast while mounted on the back of an elephant. The encounter with the tiger or Mughal emperors were noted and described by the chronicles. Akbar killed many times tiger protection from then menace. Akbar specially went to kill the tiger, near Narwar, in May1561: 'this was the first beast of prey which H.M. personally attacked. Its cubs were killed by the swords and arrows of a number of brave men who were in attendance on the sublime stirrup. '[310] On the way of returning Agra, through Mewat, the emperor passed through jungles, which were the home of lions and lions were hunted, one lion attacked and Adil Muhammad got wounded, and died later in Agra. Once in district Basi when Akbar came to know about a man-eater tiger, he mounted on the elephant Nahir khan, and killed that tiger stroked his claws on the elephant's forehead in the district Bari. Near Toda also, Akbar killed a tiger, by the *qamargah* hunt and saved the life of a man. In another instance Akbar killed a tiger, as there were many tigers between Ranthbhor and

[305] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 294.
[306] Ibid.
[307] Valerie Berinstain, *Mughal India: Splendours of the Peacock Throne*, trans Paul G. Bahn London: Thames and Hudson, 1998, p. 46.
[308] Manucci, *op.cit*., vol. I, pp. 184-85.
[309] Ibid, p. 185.
[310] *Akbarnama, op.cit*., vol. II, pp. 222-223, 294, *Tabaqat-i Akbati*, op.cit., vol. II, pp. 255, 278, 525.

Ajmer. A man urged help to save his life to him. [311] Jahangir also killed two tiger near Panipat and Karnal which was a menace 'to wayfarers' by a manner of *qamargah* with a gun.[312] As per Jahangir's order, Shah Jahan shot a tiger, 'a man-killer tiger that had taken to eating men's flesh, and the people of God were afflicted by it' near Ahmadabad. [313]

Hunt for pleasure and to show their superiority upon the beast and to others. Jahangir comments, 'although on these two days. Viz. Sunday and Thursday, I do not shoot, it occurred to me that as it is a noxious animal it ought to be done away with. I proceeded towards him, and when I arrived at the place it was sitting under the shade of a tree. Seeing its mouth, which was half open, from the back of the elephant I fired my gun. It had been killed thereby.[314]

Though generally male tigers were killed. However we also find that hunting of tigress was also done. Jahangir mentioned in his, tenth year, [1615] 'though it is an established custom of mine only to hunt male tigers yet, in consideration that no other tiger might be obtained before his departure,' Jahangir wanted to shoot in her eye, and remembered God, 'Almighty did not allow me to be ashamed before that prince Karan, and, as I had agreed, I shot her in the eye.'[315]

Apart from emperor even royal Mughal women were also involved in hunting. Nur Jahan shot a tiger in 1619, 'the huntsmen represented that neighbourhood a tiger that greatly troubled and injured the ryots and wayfarers, Nur-Jahan B. so hit the tiger with one shot that it was immediately killed.'[316] It was recorded that hunting of tiger was for amusement and for the safety of people. Nobles also involved in the hunting games and sometimes they were injured also. The attendants and *Ahdis* were also rewarded, after the success of Jahangir who had shown bravery and gone in to the tigers, and increased their monthly pay.[317]

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[311] Ibid., pp. 482-83.
[312] *Tuzuk-i- Jahangiri*, *op.cit,* vol. I, p. 136.
[313] Ibid., vol. II, p. 39.
[314] Ibid., p. 363.
[315] Ibid., p. 287.
[316] Ibid., p. 105.
[317] Ibid., vol. I p.166

Lion

Bernier describes the manner of lion hunting, 'but of all the diversions of the field the hunting of the lion is not only the most perilous , but is peculiarly royal ; for, except by special permission, the King and Princes are the only persons who engage in the sport. As a preliminary step. Accordingly the termination of the hunt is attended with much grave ceremony. The King being seated in the general assembly of the *Omrahs,* the dead lion is brought before him, and when the carcass has been accurately measured and minutely examined, it is recorded in the royal archives that such a King on such a day slew a lion of size and of such a skin, whose teeth were of such a length, and whose claws were of such dimensions, and so on down to the minutest details. Let me just add a word on the subject of the opium given to ass. On the principal huntsmen assures me that it is a tale of the vulgar, and that the lion is sufficiently disposed to sleep without it when he was eaten to satiety."[318] Tavernier informs near Sidhpur about the description how people tamed lions, 'four or five lions appeared which they brought to train, and they told me it generally took five or six months, and they do it in this way. They tie the lions, at twelve paces distance from each other, by their hind feet, to a cord attached to a large wooden post firmly planted in the ground, and they have another about the neck which the lion master holds in his hand. These posts are planted in a straight line, and upon another parallel one, from fifteen to twenty paces distant, they stretch another cord of the length of the space which the lions occupy, when arranged as above. These two cords which hold the lion fastened by his two hind feet permit him to rush up to this long cord, which serves as a limit to those outside it, beyond which they ought not to venture to pass when harassing and irritating the lions by throwing small stones or little bits of wood at them. A number of people come to this spectacle, and when the provoked lion jumps towards the cord, he has another round his neck which the master holds in his hand, and with which he pulls him back.[319] Thus tamed lion was in the practices of Gujarat by the people used it as profession, where presently lion are still can see in the forest reservoirs of Gir. [Gujarat]

[318] Bernier, *op.cit*., pp. 377, 78,379
[319] Tavernier, *op.cit*., vol. I, pp. 64-66.

Cheetah Catching and Hunting

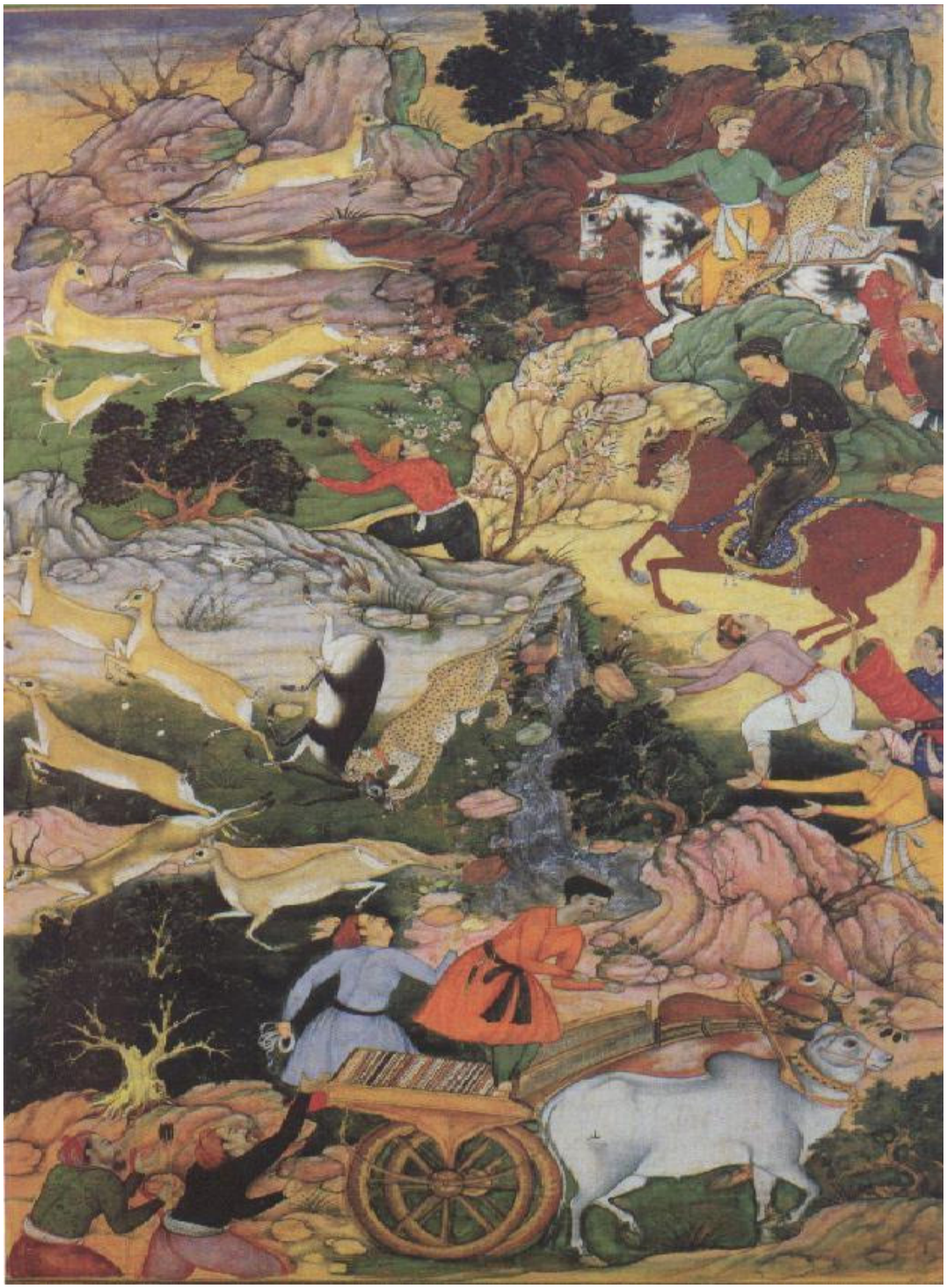
Akbar was very much fond of cheetahs as he had many tamed cheetah in his captivity. There were many methods used to catch *cheetah.* He writes that 'hunters used to make deep holes and cover them with grass. These pits were called *odi*. The leopard on coming near them, fell down to the bottom; but they often broke their feet or legs, or managed by jumping to get out again. Nor could you catch more than one in each pit,' but Akbar invented a new method, which was a good effort 'a pit only two or three *gaz* deep, and constructed a peculiar trapdoor, which closes when the *cheetah* falls into the hole. The animal is thus never hurt. Sometimes more than one goes into the trap.' [320]

Another method was elaborated, by tiring the animal. It is interesting that *cheetah* was hunted after making it tire [forced to run, which tired it]. Other was 'to fasten nooses to the foot of the tree, when it comes to scratch itself, it gets entangles.'[321] Abul Fazl narrates that once seven *cheetah* were caught, 'at the time of their heat, which takes place in winter, a female leopard had been walking about on the field, and six male leopard were after her. She fell into the pit, and her male companions, unwilling to let her off, dropped in one after the other—a nice scene, indeed.'[322] Thevenot gives information about use of cheetah for hunting in Ahmadabad, he says that due to heavy forest area, they take panthers for hunting, and the governor of the town causes them to be taught, and that he may send them to the King.[323] Thevenot also describes about tame leopard for catching the antelopes.

It was very popular game of the Mughals to catch the antelopes or to hunt the antelopes with the help of tamed cheetah. There were many methods which were followed by the trained huntsman to create more interest in this sport. In *uparghati* the hunters let off the leopard to the right from the place where the deer was seen. The cheetah swiftly seizes it with his claws. By *righni* cheetah saw the deer from a distance then the collar took off, when the cheetah with perfect skill, will dash off, jumping from ambush till he caught the deer. By *muhari* leopard was put in an

[320] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 296
[321] Ibid.
[322] Ibid.
[323] Thevenot, *op.cit*., p. 16.

ambush, having the wind towards him. The cart is then taken away to the opposite direction. The perplexes the deer, when the leopard will suddenly make his way near it and catch it.'[324]



Akbar hunting with Trained Chitah.

[324] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 299.

Akbar invented a new method called *chatrmandal* for hunting deer with cheetah, 'the hunters lie in ambush near a place frequented by deer, and commence the chase from this place as if it was a qamargah hunt (in which drivers are used). The *cheetahs* are then let off in all directions, and many deer are thus caught.'[325] Abul Fazl also informs that these efforts of Akbar bore fruits and now cheetah could hunted twelve deer while the earlier catch were only three.

It was a method of amusement, that to apply bet on cheetah to bring more and more deer. 'If a cheetah brought twenty deer, his *doriya* (the man who holds the chain to which the cheetah was fastened) got five rupees from his equals. The grandee in charge of *khasa* cheetahs got one *muhar* from each bet, by which he made a good deal of money. 'As often the grandee laid before H.M. twenty pair of deer horns, (as the deer horns were used to built several minarets between Ajmer to Agra) he takes an *ashrafi* from each of his equals…every one shown his zeal in trying to get as many deer as possible. The skin of the deer was often given to poor people as part of money presents.'[326]

Deer Hunt

Deer hunting was also favorite game, sometimes deer were caught for taming and sometimes killed by the other animals who trained for catching deer. Instead there were also some other methods to catch deer. Bernier comments, 'large numbers of antelopes, very much resembling our fawns in shape ; that they move generally in herds ; and that every herd, which is never composed of more than five or six.'[327] Akbar introduced new method for deer hunting, 'more than two hundred may at the same time go deer hunting. They drive slowly about forty cattle towards a place where deer are; the hunters are thus conceded and when arrived enjoy the chase.'[328] By put tiny net over deers horns, it was off let against wild deer, so out of fear deer will fight with them. During the struggle, the horn, or the foot, or the ear of the wild deer will get entangled in the net; The deer thus caught passes through a course of instruction, and gets tame. If the net should break, or the deer get tired during the

[325] Ibid.
[326] Ibid., p. 300.
[327] Bernier, *op.cit*., p. 377.
[328] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 302

struggle, it will return to the keeper, who either puts a new net on it, or sends out a fresh deer. Sometimes it happens that a wild deer will carry on the struggle from morning till evening, defeating as many as four tamed deer; but at last it will succumb to the fifth.[329]



Deer Hunting

[329] Ibid.

Manucci informs 'In the Mogul country all the great lords keep these animals in domestication; they are used for fighting, and also to hunt others of the same sort. When used for this purpose, they fix ropes on their horns, and let them loose where there are a considerable number of the wild herds. The male of the herd advances in a rage to repel the intruder, and they begin to fight. In this fight the wild deer gets entangled by the rope, and the hunters capture him and tame him, so that he may serve in the same way to catch others. The females are also used to capture others. When the hunter finds that he cannot reach such animals with his matchlock, he hides himself, and lets loose one of these females in the plain with a slender string attached to its neck. This is done in sight of other deer, who come at once in search of her. At this time the hunter pulls the cord, and the male follows the captured female at the will of the hunter, who then kills with an easy shot. The hunters are so dexterous in this process that when the king goes to the chase they draw the animals under this coercion to the very muzzle of the matchlock. To this intent they raise a shelter of green branches in which are some little holes. This is planted into the ground at the most convenient place. In this way the great men amuse themselves with shooting undergoing much labour , as I have myself experienced many times. [330]

Babur mentions the method of hunting deer, 'hang a stone as large as a ball on one of its feet, so as to keep it from getting far away after it has brought about the capture of a deer', and set it opposite wild deer when these are seen. 'The two deer strike with their horns and push one another backwards and forwards, during which the wild one's horns become entangled in the net that is fast to the tame one's. If the wild one would run away, the tame one does not go; it is impeded also by the stone on its foot. People take many deer in this way; after capture they tame them and use them in their turn to take others; they also set them to fight at home; the deer fight well.[331] These carried nets on their horns 'in which the wild deer that came to attack them became entangled, upon which they were seized.'[332] The keepers will also bend forward and allow the trained deer to jump on them from behind. Wild deer, on seeing this, will think that they are in the act of copulation, and come near to fight. This way of hunting is disapproved of by H.M. who uses female deer as a means of making

[330] Manucci, *op.cit.*, vol. III, p . 81.
[331] *BaburNama, op.cit.,*vol. I, p. 134.
[332] *Fr. Pierre Du Jarric, Akbar and the Jesuits,* op.cit., pp. 10-11.

wild deer fight.'[333] The methods were popular for hunting deer in that time, was *thangi*, *baukara*, *dadawan, ajara* etc. By the different techniques the deer hunting was in the process, after deer killing they used his skin, horns and flesh for their own purposes. I shall, in the first place, describe the manner in which they chase antelopes with tame leopards.

'When used for this purpose, they fix ropes on their horns, and let them loose where there are a considerable number of the wild herds. The male of the herd advances in a rage to repel the intruder, and they begin to fight. In this fight the wild deer gets entangled by the rope, and the hunters capture him and tame him, so that he may serve in the same way to catch others. The females are also used to capture others. When the hunter finds that he cannot reach such animals with his matchlock, he hides himself, and let's loose one of these females in the plain with a slender string attached to its neck. This is done in sight of other deer, which come at once in search of her. At this time the hunter pulls the cord, and the male follows the captured female at the will of the hunter, who then kills with an easy shot. The hunters are so dexterous in this process that when the king goes to the chase they draw the animals under this coercion to the very muzzle of the matchlock. To this intent they raise a shelter of green branches in which are some little holes. This is planted into the ground at the most convenient place. In this way the great men amuse themselves with shooting undergoing much labour, as I have myself experienced many times.'[334]

Elephant Catching

The hunting or catching of elephant was very risky sport. Mughals had many elephants, they were very important to them. Elephants were also an important form of economic wealth, fetching a high price owing to military and aristocratic demands in the Mughal period also. They used several modes of hunting. Babur informs that as many as 30-40 villages in the region Karrah and Manikpur (west Allahabad along the Ganges) were involved to capturing and training of elephants. Elephant catches had to be reported to the *Diwan's* office, accordingly they need to pay some amount in the

[333] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 302
[334] Manucci, *op.cit*., vol. III, p . 81.

form of tax and 'people answerable (*jawab birurlar*) for them to the exchequer.'[335] Akbar hunted elephants in Narwar, Gwalior, Garha, Chunar with the various methods.

By the method of *kheda,* 'deep *khad* (pitt) *chor-kheda* take a tame female elephant to the grazing place of wild elephants, deep pit is constructed in a place frequented by an elephant, which is covered up with grass.. Then they starved and kept without water, when they soon get tame. *Bar*, dig a ditch round the resting-place of elephants, leaving only one road open, before which they put up a door, which is fastened with ropes. .. then elephant tired, and tame female are then brought to the place, by whose means the wild elephants are caught. They soon get tame.'[336] Abul Fazl also describes the method which was introduced by Akbar, 'a wild herd of elephants is surrounded on three sides by drivers, one side alone being left open. At its several female elephants are stationed. From all sides, male elephants will approach to cover the females. The latter then go gradually into an enclosure, whither the males follow.'[337] Jahangir also used this method of catching elephants.

Elephant catching was a very interesting sport for the Mughal rulers also, Jahangir describes that he had never had any elephant hunting in his life.[338] In 1618 Jahangir with the intention of elephant hunting near Dohad[339] (Gujarat) with the manner of *qamargah*, outside the jungle, on a tree, they had prepared a wooden platform for Jahangir even a full planning was done by the emperors and his servants. As the grazing place of the elephants is in a hilly country, with elevations and depressions, a passage is obtained is with difficulty by one on foot. Before this, a large body of horse and foot had surrounded the jungle after the manner of *qamargah*. There were many method can be used for the catching of elephants were in fashion but Jahangir describes very well his qamargah hunting for elephant.

In Gujarat further 69 elephants had been caught, Jahangir ordered them to beware not to take old or small elephants; but with this exception they should catch all they saw, male or female.[340] 185 elephants had been caught, male and female: of these

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[335] *BaburNama*, *op.cit*., vol. II, pp. 488-89.
[336] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, pp. 295-96, Monserrate, *op.cit.,* p. 84,Thevenot, *op.cit*.,pp. 64-65, Manucci, *op.cit*., vol. III, p. 72.
[337] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, pp. 295-96.
[338] *Tuzuk-I-Jahangiri, op. cit.,*Vol. I, p. 401,
[339] *Mirat –I Ahmadi*, *op.cit*., p.
[340] *Tuzuk-i- Jahangiri*, *op.cit,* vol. II, p. 12.

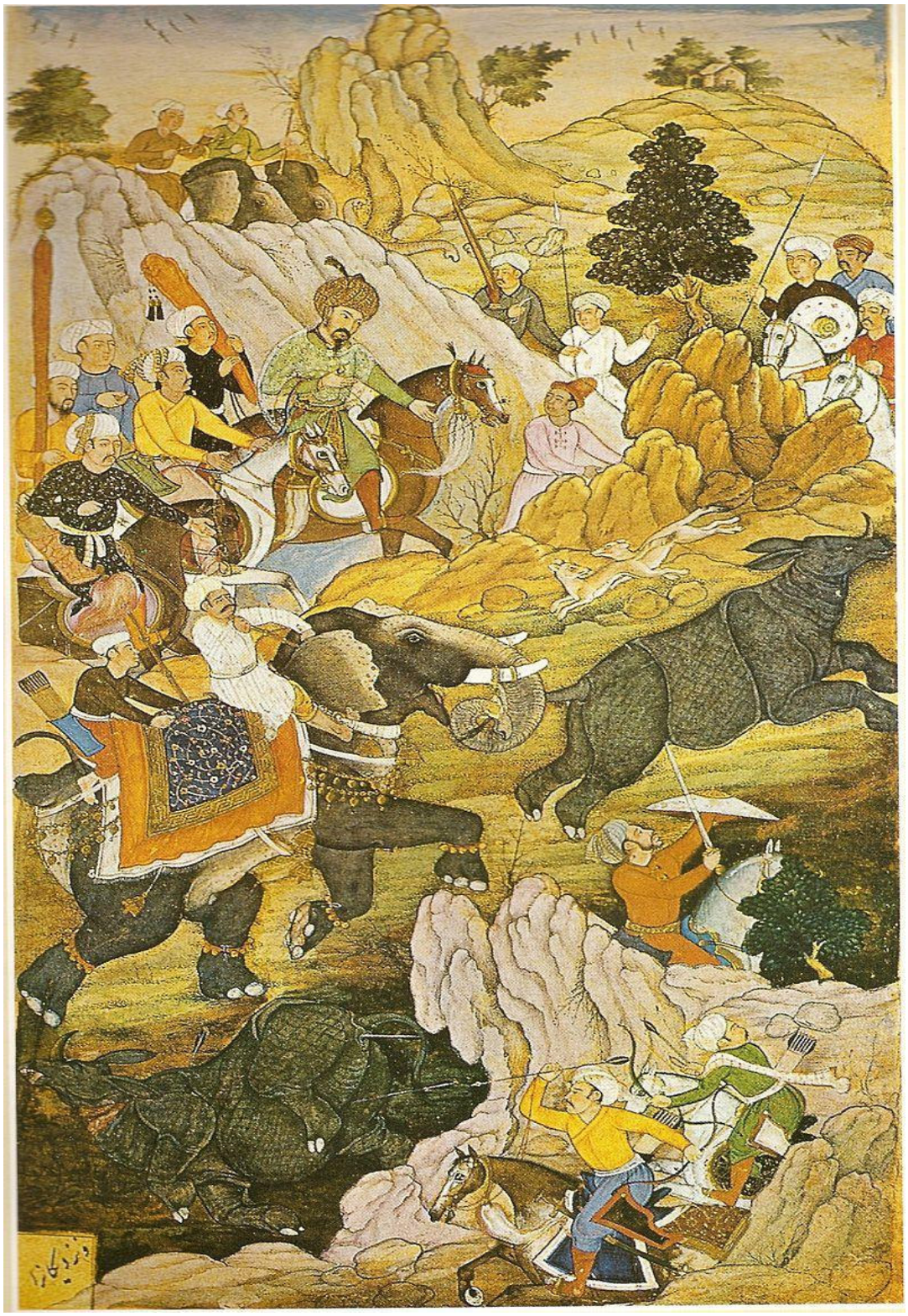
73 were males and 112 females. 'out of these, 47 males and 75 females, or 122, the imperial huntsmen and faujdar had secured, while the huntsmen and elephant-drivers of my son, Shah-Jahan, had taken 26 males and 37 females, or 63 altogether.'[341] we find that the nobles were actively participated in the hunting of elephants, 'some elephants were captured by huntsman Jamal Khan near Sultanpur and Rajpipla, two dependencies of Gujarat, had started for court with 130 of them. In these days (16 December 1630), the 70 that had remained alive were presented to His Majesty, and their value amounted to one lakh and 30,000 rupees.'[342] In August 1645, news from Bengal that 30 male and 26 female elephants were captured by Allah Yar Khan for the royal stud in the forests there, where they abound.[343]

Rhino Hunting

Babur was fascinated by rhino to the extent that he even attempted to hunt him. Babur hunted rhino many times. He gives description on February 16 in 1519 near Bhira and comments, 'After starting off the camp for the river, I went to hunt rhinoceros on the Sawati side which place people call also *Karg-khana* (Rhino-home). A few were discovered but the jungle was dense and they did not come out of it. When one with a calf came into the open and betook itself to flight, many arrows were shot at it and it rushed into the near jungle; the jungle was fired but that same rhino was not had. Another calf was killed as it lay, scorched by the fire, writhing and palpitating. Each person took a share of the spoil.'[344]

In December,1525 while passing through jungles near Bigram Babur also hunted rhino. He writes, 'the people had been stationed near-about it. We betook ourselves, loose rein, to the place, formed a ring round the jungle, made a noise, and brought the rhino out, when it took its way across the plain. Humayun and those come with him from the side (Tramontana), who had never seen one before, were much entertained. It was pursued for two miles; many arrows were shot at it; it was brought down without having made a good set at men or horse. Two others were killed.' Babur amaze mentions in astonishment that he after visualized rhino-hunting fight but

[341] Ibid., p. 24.
[342] *ShahJahanNama*, *op.cit*., p. 48.
[343] Ibid., p. 327.
[344] *BaburNama* , vol. I, *op.cit*., p. 378.



Rhino Hunt by Babur.

when, ‘one came out right in front of some elephants the mahouts were bringing along; it did not face them when mahouts drove them towards it, but got off in another

direction.'[345] Babur's comment clearly indicates that the two did not see each other as rivals and peacefully co-existed. Except Babur's enthusiasm to hunt rhinos, we do not get any reference of rhino hunting throughout the Mughal period.

It seems to be reasonable to assume that much of the aridity of today in Sindh is due to the drastic changes in the courses of the rivers of the region. Today we do not meet those thick marshes there that had Rhino living in it as late as the 16th century. This may again be the reason for the disappearance of Rhino from eastern U.P. where Akbar faced it in one of his visits to the region.[346]

Wild buffaloes were also used for hunting purposes. To catch them distinct methods were used. Abdul Fazl records, 'at a place where buffaloes sleep, a rope is laid in the ground; but the end forming a loop is left outside. Another long rope is attached to it. To this they tie a female buffalo that wants the male. A courageous active man lies in ambush. As soon as a wild male buffalo comes to the spot, and covers the female, the hunter makes use of the opportunity, and fastens the foot of the male; but it frequently happens that the man loses courage, and has to pay for the attempt with his life. Another mode of catching them is to go near the ponds which they frequent. They put snares the ponds; and sitting on tame buffaloes the hunters go into the water with spears in their hands. Some buffaloes are then killed with spears; others are caught in the snares. A similar method may be adopted when buffaloes are attacked in their jungle pastures.'[347]

Falcons were also used in the Mughal period for the purposes of hunting. It was the game of amusement Abul Fazl describes that '*Mir Shikar* (bird-catcher or assistant falconer) according to their ranks , with suitable presents. There are also fixed donations, if the falcons bring down the game alive or dead, attention is paid to the skill which it exhibited and to the size of the quarry.'[348] Water fowl was also catched for amusement and there were different methods to catch them, even in

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[345] *Ibid.,* p. 451.

[346] Ansari, Mohammad Azhar, Geographical Glimpses of Medieval India, introduction by Jaweed Ashraf, Tasneem
Ahmad, Vol.II, Delhi: Idarah-iAdabiyat- i- Delli, 1989,p.xx.

[347] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 304.

[348] Ibid., p. 306.

'Kashmir they teach *baz* falcons to catch the bird, except those Durraj (black partridge), Bodnas(quail)'[349]

There were many other birds which were caught by people and the nobles and the royal families for the different purposes. Nur jahan here shot with a gun a *qarisha* (?), the like of which for size and beauty of colour had never been seen. Jahangir ordered them to weigh it, and it came to 19 tolas and 5 mashas, in the aforesaid village is the commencement of the subah of Malwa.[350] A *qarisha*(?) was shot by Jahangir.[351]

Thus Mughal hunt or catch animals for various purposes. Sometimes an elephant was basically used by royalty that's why, it was the matter of concern for the State to control the elephant for royal use. Their killing was not noted in any record, but their maintenance and taming the wild was the big question for the state. Similarly Tiger's hunting basically to show the royal insignia as well as it was done for their personal interest. Many miniature of Mughal period recorded the cheetah hunts. But we did not find any record of killing cheetah except once Jahangir killed cheetah during his extensive hunting activity in Ajmer. The hunting episodes basically recorded by all Mughal chronicles, but especially the changing outlook of Akbar noted. As from the beginning of his reign he was continuously involved in hunting, even hunting with cheetah was his favourite game, after the expansionist policy particularly after 1579, we found very few episodes of Akbar's hunting. As Abul Fazl narrates, 'H.M. remained standing where he was, and looked furiously at the tiger. The brute cowered [This is one of Akbar's miracles] down before that divine glace, and turned right about trembling all over. In a short time it was killed. The feats of H.M. are too numerous to be imagined; much less can a Hindustani, as I am, describe them in dignified style. He slays lion, but would not hurt any ant. .. He girds himself for the fray; but the lion drops his claws from fear.'[352] Abul Fazl writes about the feats of Akbar, 'He slays lions, but not hurt an ant. He girds himself for the fray; but the lion drops his claws from fear.'[353] 'The spiritual and temporal King, who made

[349] *Ibid.,* p. 307.
[350] *Tuzuk-i- Jahangiri*, *op.cit,* vol. I, p.348.
[351] *Ibid.,*p. 405
[352] *Ain-i Akbari,* trans. H. Blochmann, *op.cit*., vol. I, p. 294.
[353] Ibid.,p. 294.

hunting a means of inquiring into such matters'[354] In 1574, Abul Fazl justifies the hunting of Akbar, proceed towards capital and he passed from stage to stage, occupied in appearance with the service of administering justice, and the enjoyment of hunting, while in reality he was per pending the divine mysteries, and imparting to society the gifts of seclusion.[355] After the spiritual inclination of Akbar during *qamargah* hunt, 1579, near Bhira and 'a high order was issued that qamargah hunt should be stopped; and the game that had been collected should be allowed to escape. .. an auspicious order was issued that a building should be erected and a garden planted at the spot.'[356] Observation of Akbar in some manner was too much rare, when the establishment of the empire starts, Akbar tried to extend control in such areas which had also a large number of wild beasts. In some cases hunting was for pleasure, some for political ambitions, and some for the cause for the people.

About his hunting operation Jahangir records that 'I accordingly gave orders to the news-writers, the hunt- accountants and huntsmen, and others employed in this service to make enquiries and tell me of all the animals that had been killed in hunting. It was shown that from the commencement of my 12th year, which was in 988(1580), up to end of this year, which is in the 11th year after my accession and my 50th lunar year, 28, 532 head of game had been taken in my presence. Of these 17, 167 animals I killed myself with my gun or otherwise, viz: Quadrupeds 3, 203; viz., tigers, 86; bears , cheetahs, foxes, otters (*udbilao*), and hyaenas, 9; blue-bulls, 889; *mhaka*, a species of antelope, male and female, *chinkara*, *chital,* mountain goats etc., 1,670; rams (*quj*) and red deer, 215; wolves. 64; wild buffaloes, 36; pigs, 90; rang, 26; mountain sheep, 22, *arghali*, 32, wild asses, 6; hares, 23. Birds 13,964; viz, pigeons, 10,348, lagar-jhagar (a species of hawk), 3; eagles, 2; qaliwaj (*qhaliwaj*, kite),23; owls, 39, *qautan.,* 9 (gold finch?), 12 , kites (mice-eaters), 5; sparrows, 41; doves, 25; owls (bum), 30; ducks, gease, cranes, etc., 150; crows, 3, 276. Aquatic animals, 10 magar machha, that is , crocodile (*nahang*).'[357]

Jahangir had passion for hunting. Though his account and his scientific bent of mind are the important source for natural history, but his sensitivity towards the beast

[354] *Akbarnama*, *op.cit*., vol. II, p. 252., *Tabaqat-i Akabri*, op.cit., vol. II, p. 454.
[355] *Akbarnama, op.cit*., vol. III, p. 152.
[356] *Tabaqat-i-Akbari, op.cit,* vol. II, p. 512, *Akbarnama*, *op.cit*., vol. III, p. 345. Badaoni, *op.cit*, vol. II, p. 261.
[357] *Tuzuk-i- Jahangiri*, *op.cit,* vol. I, p. 369.

we can see with the rare animal. Mostly of his engagements pertaining to hunting are recorded by him in his *memoirs.* European travellers also recorded his aptitude towards hunting. Roe once record that two attendants, one carrying a big fish in his hand and the other curd, stood at the foot of the stairs. 'His Majesty first dipped his fingers into the curd and then touched the fish, thus inviting good luck of his journey.'[358] Manucci also records about Jahangir, 'The king came out to inspect this work of his, and went from Lahore as for Agra. One night, being in his tent drinking his liquor, he heard the jackals call. These are a breed of small wolves which exist also in Persia, and in India there are a great number. The king asked why these animals were not quiet. The king asked why these animals were not quiet. The courtiers answered that, knowing of the arrival of His Majesty, they craved some protection against the cold. Jahangir there and then ordered that they should be presented with 'serpaos' (*sarapa*, or complete suits) and shawls to wear. The order was carried out.'[359]

Manucci informs about Aurangzeb 'the Emperor's cavalcade was preceded by a small party with a camel, carrying a load of white cloths, which was used to cover the dead bodies of men and animals lying by the side of the road. These were covered and heavy stones were placed on four corners of them lest they be blown up by the gust of the wind. The road was continuously watered by watermen, carrying their water skins on their backs, thus preventing the dust from rising and disturbing the leisurely march of the King.'[360]

Manucci gives very interesting information about the bird hunting, that the Mogul kings have issued decrees that no one may hunt them [the *kuling*] for a desistance of twelve leagues from the cities of Agra, Delhi, and Lahore, the only places excepted being gardens in which pigeons and turtle-doves may be caught. To carry out this decree there are watchmen. For the distance named the *kuling* is preserved for the royal person, that he may with ease hunt these cranes by birds of prey; and although they are so large, they[? The *kuling*] are yet very tasty.[361]

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[358] Roe, Thomas, *op.cit*., p. 323-24.
[359] Manucci, *op.cit.,* vol. I, p.160.
[360] Ibid., vol. II, p. 70.
[361] Ibid., vol. III,p. 85

CHAPTER - 5

HEALTH AND ENVIRONMENT

From the establishment of human civilizations, health is the main issue for the development of any society, regarding the disease and cures, the knowledge and the science improving day by day. The medicines and remedies are in various categories, from the basic knowledge to more scientific, human research and inquisitiveness is ruling on the disease. It is very common in all societies to follow specifically cultural and scientific beliefs to maintain health and preventing the population from such diseases has a long history. Epidemic (a widespread occurrence of an infectious disease in commonly at a particular time) and Endemic (regularly found among particular or in a certain area) are main source behind the new scientific experiments and researches. Public health is based on expanding medicinal knowledge often stimulated by war and natural disasters. Religious, cultural aspects, social beliefs are main approaches also behind the health attentions; even modern society still faces the castigator of old diseases as malaria, cholera, typhus, smallpox, measles and plague, as well as some more prominent homicide as cardiovascular disease, mental depression and trauma, cancer, etc. Early and middle parts of the nineteenth century, the causation of disease were intensely debated.

The relationships between disease and medicine have also been different geographically, and in various culture-traditions and based on natural zones. India is a tropical climatic with wet and dry country. With different climatic zones arise various health issues. Regions and the connections with human races are different through the ages. The environmental problems polluted air, water, heat. Mark Harrison explored the ways in which British saw Indian climate as a constraint upon their imperial ambition. He demonstrates how the reciprocal activities of the climate, race and colonial authority evolved in eighteenth and nineteenth century and laid the foundation of the modern view of Indian climate with relations between the

functioning of the nature, environment and imperialism. [1] As the climate of India, various types of diseases, bacteria, germs and infectious issues are important and so on unsolved till now. A close observation of the history of science and medicine would divulge that varieties of elements assisted the evolution of the subject. Any study of the history of medicine and hygiene under the backdrop of its socio-cultural contexts would be impossible, had discernible and controlling factors not taken into cognizance.[2]

Theories

The *miasma* theory also known as the miasmatic theory, was accepted from ancient times in Europe, India, and China. This theory, holding that disease was the result of environmental emanations or miasmas, went back to Greek and Roman medicine, as the father of medicine, Hippocrates, advanced a theory of environmental determinism, mentions, 'Airs, Waters, Places, he maintained that the health, temperament and energy of people living in a place are governed by its position in relation to solar exposure, prevailing winds, climate, and the quality of water supply.'[3] The theory held that the origin of epidemics was due to a *miasma* and diseases such as cholera or Black Death (*plague*) were caused by *miasma* or pollution in the air or result of 'bad air'. Though miasma theory is typically associated with the spread of disease, some academics in the early nineteenth century suggested that the theory extended to other conditions as well, one could become obese by inhaling the odor of food. The theory was eventually given up by scientists and physicians after 1880. They, instead, accepted the germ theory of disease specific germs, not *miasma*, caused specific diseases. However, the belief that it was the highest urban priority to clean up waste and get rid of odor remained a strong belief in the popular culture. The specific causation of disease (the germ theory) has been a vital part of the development of public health.

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[1] Harrison, Mark, *Climates and Constitutions: Health, Race, Environment and British Imperialism in India 1600-1850*, New York: Oxford University Press, 1999, p. 87.
[2] Rahman, Abdur, M.A. Alvi, S.A. Khan Gori & K.V. Samba Murthy, *Science and Technology in Medieval India*, New Delhi: Indian National Science Academy, 1982.
[3] Hughes, J. Donald, *What is Environmental History ?* , UK: Polity Press, 2006, p. 21.

India witnessed various medical systems as Ayurveda, Arabic and Western. All of these systems are quite close to each other. There were several strands of scientific ideas and practices, including a tradition of empirical, astronomy and medicine with various cosmological and astrological beliefs in India.

Ayurveda

The base of Ayurveda are *Samhitas* of *Charak* and *Sushruta*, and many *Siddhas* (Tamil variant of Ayurveda; *The Siddharas* were saintly and achieved results in medicine through the practice of yoga and related meditational experiments.) had developed knowledge of pulse and methods of diagnosis by eight kinds of clinical examination.[4] According to Ayurveda, health condition depends upon three essential humours or *tridoshas* (*doshas*, literally means defects) in the body namely *vata* (wind), *pitta* (bile) and *kapha* (mucous orphlegm). When these humours /*doshas* are in balance that is in a state of equilibrium one remains healthy. The disruption of the equilibrium or imbalance of these three humours in the body causes diseases/disorders.[5] The medicines which are used in the Ayurvedic system are basically are herbs, plants and natural therapies for the treatment. As Indian medicinal system recognized many plants which were importantly beneficial for different disease, as connected with the nature, environmental concern for this pattern is important. Francis Zimmerman focused on Hindu traditions and presented a new interpretation regarding Ayurveda of Indian medicines, fauna and its jungle, ancient science and potential remedies for the diseases. It offers of a few basic ideas our time has borrowed from Hindu culture: flower power, vegetarianism, non-violence and the comic dimensions of the human body. The jungle was the most crucial environment, medicine in the context of thought and practice associated with the jungle was and still in modern India, a kind of agriculture.[6]

As the belief system in India there are some trends also involved in medical practices as the healing power or karma theory. The idea of healing is particularly with twin god *Aswhin*(horse). Abul Fazl describes in his *Ain*, about the different

[4] Kumar, Deepak & Raj Sekhar Basu, (ed.), *Medical Encounters in British India*, New Delhi: Oxford University Press, 2013, p. 24
[5] Valiathan, M.S., *The Legacy of Caraka*, Chennai: Orient Longman, 2003, pp. 3-4.
[6] Zimmerman, Francis, *The Jungle and the Aroma of Meats: An Ecological Theme in Hindu Medicine*, New Delhi: Motilal Banarsidas Publications, 1999, pp. 2-6

Hindus practices, as *Yoga Sutra* of Patanjali, and different aspects and benefits of meditation.[7] He informs about the *Karma –Vipaka*, (the ripening of actions) which was followed by Hindus, 'the second kind shows the strange effects of actions on health of body and in the production of manifold diseases. Physicians attribute these to constitution, but this science to the results of former conduct. Hindu philosophers diseases under three heads:- 1. Those that can be cured by medicinal treatment; 2. Those that are removal by observing the following courses of procedure; 3. Those that require the application of both. To diagnose each of these, certain symptoms are recognized which are classed under three states: 1. actions deliberately committed in a state of wakefulness; 2. such as are unconsciously done in that condition; 3. those that are effected during sleep. In the first, the sickness is capable of remedy; in the second a remedy can be applied; in the third case, medicinal treatment to some extent restores health, they consider, as originating in intention, and those of the body from inadvertency and error. Volumes have been written on this subject and advice of physicians disregarded as unprofitable.'[8] Abul Fazl describes about the various philosophical causes of diseases such headache, madness, epilepsy, pain in the eyes, blindness, dumbness, colic, stone in the bladder, lameness, fever, asthma, consumption dysentery etc., and for all the cures he comments about the various types of alms and charity to Brahmans and others things.[9] Basically in India, there were many beliefs and rituals were followed and suggested also by the priest. The role of physicians also somehow shows by ritualistic person, as the Hindus sources described by them to the common masses. Some superstitious were normally followed by the people even the kings also. The proper medicines also were in use, but religious involvement and beliefs were basically are the main obstacles slow development of science. Bernier writes about 'the Indians on physic they have a great number of small books which are rather collections of recipe than regular treatises.'[10]

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[7] Abul Fazl, *Ain-i Akbari*, Eng. translated by H.S.Jarrett, revised Second edition by Jadunath Sarkar, vol.III, [1894, 1948], 1978, New Delhi: Oriental Books, pp. 187-198.

[8] Ibid., p. 237.

[9] Ibid., pp. 237-240.

[10] Bernier, Francois, *Travels in the Mogul Empire AD 1656-1668,* translated by Archibald Constable, edited and revised by V.A. Smith, New Delhi: Atlantic Publishers, 1990, p. 328.

Unani

Though the Muslim world learned much from India, the influence of the Greek, Persian and Indian systems of medicines contributed to the evolution what is generally known as '**Unani**' System. Abu Ali B. Sena (Avicenna A.D. 980-1037) the 'Aristotle of Islam' whose *Qanun* or Canon have been treated as the Bible of *Unani* system. *Kitab al-Shifa*, played a role of great importance in the development of Muslim medicine. Ibn Sina's work indeed gave a different perspective and clarified the knowledge of medicine. As the early school of medicines was properly based on Ayurveda system, with the coming of the Arabic culture developed in India, their whole approach was different. 'Pre-Islamic Arab folk medicine, practiced over a large part of present Middle East Asia, was tightly bound up with magic.'[11] By the 8th century, Greek medicine had been translated into Persian and Arabic. In the middle of 10th century an Arab physician Ali Ibn-Sahl al Tabari, described Indian medicine system in his work *Kitab firdaws al-Hikma*, referred the Indian works in Persian and highlighted the significant difference between both.[12] Indian medicine of the Greco-Arabic tradition (*Tibb-i-Yunan*i) was almost identical in its practice with contemporary Persian medicine, there being a continuous influx of physicians from Iran to India.[13] As the climate of India was different from the Arabian countries, their '*Ilm-ul-Tib* (science of medicine) was not sufficient for Indian climatic zone. The Unani medicine was the first to establish that disease was a natural process and that symptoms were the reactions of the body to the diseases. It believed in the Humoral theory which presupposes the presence of four Humors- *Dam* (Blood), *Balghem* (Phlegm), *Safra* (Yellow bile) and *Sauda* (Black bile) in the body. To maintain the correct humoral balance there is a power of self-preservation or adjustment called *Quwwat-e-Modafiva* (Medicatrix naturae) in the body. The medicine used help regard this power and thereby regain the humoral balance and the disease is eradicated. The diagnosis of disease in Unani system of medicine is through *Nabz* (Pulse) and examination of *Baul* (Urine) and *Baraz* (Stool).

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[11] Kumar, Deepak & Raj Sekhar Basu, (ed.), *Medical Encounters in British India*, New Delhi: Oxford University Press, 2013, pp. 3-4.
[12] Ibid.
[13] Habib, Irfan, *Medieval India, The study of Civilization*, New Delhi: National Book Trust, 2007, pp.198-99, Habib, Irfan, 'Inside and outside the systems: change and innovation in medical and surgical practice in Mughal,' (ed.) Deepak Kumar, *Disease and Medicine in India: a Historical Overview,* New Delhi: Tulika Books, 2001, pp. 71-73.

Fusion

Ayurvedic medicines also differ these, 'many herbs and medicines prescribed in *Ilm-ul-Tib* were not available, thus the interaction between Muslim physicians and Hindu practitioners resulted in a synthesis of the two systems and led to the fusion of *Ilm-ul-Tib* and Ayurveda seems to have begun since the thirteenth century.'[14] Through science, of dynamic and syncretic Indo- Muslim culture, the mutual enrichment brought about by a 'creative synthesis' between Hindu *Ayurveda* and *Unani-tibb*, with its Greaeco-Arabic origins, and the apparent absence of rivalry or enmity between its practioners, the *vaids* and *hakims*, have served to exemplify the continuing vitality and fruitful intermingling of scientific traditions in India well into the eighteenth century, through one might equally argue that *Unani* physiology and pharmacology were interacting as much with the Indian environment and the region's rich material medica as with the Ayurvedic system as such. A.L. Basham comments, 'It is true, however, that its practitioners in India have been predominantly Hindus. *Hikmat* was established in India during the centuries of Muslim rule, but it is practiced by both Muslims and Hindus and made use of by people of different religious faiths.'[15]

Western

From the thirteenth century some European practitioners of medicine came through the spice trade, and used as in their treatment. Early Jesuit missionaries also show their interest in Indian medical knowledge. Curiously, the application of China-root in treatment for syphilis (though of doubtful actual value) was hailed as a great new discovery in both India and Europe at the same time (the first half of the sixteenth century).[16] Mark Harrison and Biswamoy Pati give a detailed description of the colonial construct of the public health and the discussion pertaining to it focuses on the two strands in the historiography.[17]

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[14] Siddiqui, Iqtidar Husain, *Composite Culture under the Sultanate of Delhi*, New Delhi: Primus Books, 2012, p. 50.

[15] Basham, A. L., 'Practice of Medicine in Ancient and Medieval India,' (ed.)Charles M. Leslie, *Asia medical system- A Comparative Study,* Delhi: Motilal Banarsidas Publishers, 1976, p. 100.

[16] Habib, Irfan, (ed.), Kumar, Deepak, *Disease and Medicine in India, op.cit.,* pp.71-73.

[17] Harrison Mark & Biswamoy Pati, *The Social History of Health and Medicine in Colonial India*, New York: Routledge, 2009, p. 45.

By this period, the *Ayurvedic* and *Unani* appear to have been reduced to the position of 'Vernacular Sciences' which its practitioners were finding hard to preserve. With the arrival of the English, the French and Italian physician's in Gujarat, a new system of medicine was introduced. However in the initial stage it was they who benefitted more from the Indigenous systems rather than the other way round. During the seventeenth century, there were relatively small numbers of English traders in India, and like the Portuguese and the Dutch before them, they faced a completely new set of health problems in India. They were keen to learn from the local *vaidyas* and *hakıms*, and local remedies and regimens were often adopted. Missionaries were particularly active in both teaching and learning from indigenous practitioners, a task made easier by their mastery of local languages. For their part, the Indians were particularly interested in British surgeons since, in spite of the early evidence of the *Suhsruta Samhita*, surgery had passed almost completely out of practice amongst *vaidyas*. The European physicians were learning the efficacy of the Indian drugs and plants as well as disseminating the knowledge of treatments and procedures like variolation (the obsolete process of inoculating a susceptible person with material taken from a vesicle of a person who has smallpox) and inoculation to their European fellow citizen.

The European medicinal system could get with institutionalized form in the colonial period, when a new direction was given. Nonetheless the issue of debate on public health and till Seventeenth Century the European medicine could hardly make much headway in India and remained in the shadows of the Indigenous systems, the *Ayurvedic* and the *Unani*, there appears to have come a reversal of roles during and after Eighteenth century. The repute of European medicine-men, there does not seem to have been any attempt to adopt any element of European medical practice in the *tibb* tradition, beyond a certain amount of interest in new drugs introduced by Europeans. On the other hand, it is remarkable that the primitive practitioner in the eighteenth century from Turkey to Bengal seems to have been totally ignored in contemporary *Unani* and Ayurvedic texts.[18] However modern hospitals started developing from late Eighteenth and Nineteenth Centuries, there was a growth of

[18] Pearson, M.N., *Towards Superiority: European and Indian Medicine, 1500-1700*, Minneapolis: Associates of the James Ford Belle Library, University of Minnesota, 1989.

modern colleges and hospitals which appear to have become quite popular amongst the Indian masses.

The European system of medicine became in vogue in India through the Portuguese who initially came as ship physicians and surgeons. Many European travelers who set up as medical practitioners in India, during the Mughal Empire were Bernier, Manucci, Ovington, John Fryer, who wrote extensively on India medical system, diseases, health and cures. Physicians such as Manucci and Bernier, who enjoyed the confidence of the ruler and so were able to observe court life at close quarters, even the life of the court ladies. But, as in Europe, folk remedies and supernatural notions coexisted more or less easily in India with this relatively academic medical knowledge. Several European visitors reflected the state of folk medical knowledge in Europe when they commented on popular practice in India.[19]

Seema Alavi explored the influence of Islamic medicine and *Unani* on Indian socio cultural canvas during later medieval times, tradition of Indo-Islamic medicine or *Unani* and the way it worked in a different political backdrop in pre modern time as well. Spanning a period of 400 years, she details the way *Unani* evolved as medical tradition and remained strong in the face of hegemonizing forces of western medicine.[20]

Works

The medieval chronicles basically focused on too much on political matters that's why they did not focus on records such social affairs as hospitals, dispensaries and any other public works.

During the reign of Firoz Shah (1351-88), men of learning, who had specialized in different sciences, including medical were patronized and many books were written. As the *Rahat-ul-Insan* written by Ilyas bin Shahab and *Tib-i-Firuzshahi*. The *Tib-i-Firuzshahi* deals with diseases that birds suffer from and contains

[19] Wear, Andrew, (ed.), *Medicine in Society: Historical Essays,* New York: Cambridge University Press, 1992, p. 2.
[20] Alavi, Seema, *Islam And Healing: Loss And Recovery Of An Indo-Muslim Medical Tradition 1600-1900*, Basingstoke : Palgrave Macmillan, 2008, p. 19.

prescriptions for their treatment.[21] There were two other major works one *Kaffaiah-Mujahidiah* by Mansur bin Muhammad which was presented to Kashmir Sultan Zainul Abidin (1423-72) and second one is *Madan-ul-Shifa –i-Sikandar Shahi* by Masnad-i 'Ali Mian Bhua, the wazir of Sikandar Lodi (1488-1517) which is leaned on the Sanskrit sources and even thought that the Greek system was not suitable for the Indian constitution and climate.[22]

Indo-Persian authors often preferred the writing of new works, or chapters of synthesis, on Indian medicine instead of translating texts from Sanskrit into Persian. Most of this literature consists of general works on Indian medicine, therapeutics, and monographic works on pharmacology, as well as treatises on zoology and veterinary medicine, in particular on the horse. The largest numbers of works on medicine in Sanskrit were probably written during the Mughal period (17th-18th century) while eighteenth century witnessed most of the Persian works on medicine some famous works in this period are *Majum'ah-i-Hakim-ul- Mulk* by Hakim-ul- Mulk Nizamuddin Gilani, *Hudud-ul-Amaraz, Tibb-ul Akbari* by Mohammad Akbar Arzani; *Tibb-i-Aurangzebi* by Durvesh Mohammad Amnabadi.[23]

The subjects of study in all Hindu centers of study were grammar, logic, philosophy, history, poetry, astronomy, astrology, medicine including veterinary science and mathematics also including study of physics and chemistry. Multan was well known as a centre of specialization in astronomy, astrology, medicine and mathematics. Sirhind had an important school of medicine. Monserrate mentions about a medical college with hospital at Sirhind from where doctors were sent out all over the empire.[24]

There were also efforts made by Muslim scholars to learn the traditional knowledge of India. The Mughal emperors also paid full attention towards the development of *Unani* medicinal system and physician's professions also achieved prominence like other professions. While listing *ulema* (scholars) and poets, duly included the physicians of the period. Considerable interest appears to have been

[21] Siddiqui, Iqtidar Husain, *op.cit*., p. 51.
[22] Ibid. pp. 51-52.
[23] Singh, Jagat Vir, '*Indian Medical Science and treatment of diseases as described by the Europeans Travellers of the later 17th Century*,' *IHC Proceedings* , 28th Session Mysore , Aligarh, 1966, pp.287-291.
[24] Father A. Monserrate, *Commentary on his journey to the court of Akbar*, eng. translation by J.S. Hoyland, annotated by S. N. Banerjee, Cuttak: Mission Press, 1922, p.103.

taken in patronizing them.[25] There were a series of doctors associated with the Mughal court that not only dedicated themselves to medical practice, but also wrote medical and pharmacological treatises, beginning with commentaries on the work of Avicenna, which was considered for centuries to be the standard work in both Europe and the East.[26]

It has been generally argued that in medieval India, there were two classes of physicians, One who were working at the royal courts and the other working with the middle classes or *mansabdars*.[27] However, Rezavi mentions that there were three types of physicians in Mughal India. A large number of persons became physicians due to training and interest. He categorized as first, those who joined the service of the king and nobles who were appointed as *mansabdars.* The second category was those who did receive state patronage but were awarded cash salaries, *nazrana* and grants. The third category was that of the *bazar* physicians. The first two were appointed on the basis of their knowledge and experience. The *bazar* physicians, on the other hand those who had their own clinic in the market. These physicians were part of the urban middle classes which was emerging under the Mughals.[28]

An overview of the medical terminology dedicated to Avicenna was provided in Babur's time. When Babur was ill (which was often depicted in Manuscript illustrations), Yusufi-yi Herati wrote a text book, 'On the maintenance of Health.' Babur was himself interested in medical art and brought a number of expert personal physicians in his court. According to Babur, a surgeon in Central Asia could enjoy the rank of a *bakhshi*.[29] The same Yusufi also compiled a work for Humayun, *Riyad al-adwiya*, 'Gardens of Medicines' (1539). One generation later, in 1595, a rhyming tract

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[25] Rezavi, S.A.N, 'Physicians as Professional in Medieval India', in Deepak Kumar (ed.), D*isease and Medicine in India: A Historical Overview, op.cit.,* p. 42.

[26] Schimmel, Annemarie, *The Empire of the Great Mughals: History, Art and Culture,* translated by Corinne Attwood*,* ed. by Burzine K. Waghmar, with a forward by Francis Robinson, London: Reaktion Books, 2004, p.211

[27] Bala, Poonam, 'The Ayurvedic System of Medicine Its Fate in Medieval India', *Bulletin of Indian Institute of History of Medicine*, Hyderabad: Central Council for Research in Indian Medicine and Homeopathy, Vol. XII, 1982, p. 26.

[28] Rezavi, S.A.N., (ed.) Deepak Kumar, *Disease and Medicine in India, op.cit.,* p. 45.

[29] Zahiru'd Din Muhammad Babur, *Baburnama*, eng. translation by A. S. Beveridge, Delhi: Low Price Publication, [1921], 2010 , 1922, p.107

on pharmacology was dedicated to Akbar, to which the ruler himself gave the title *fawa'id al-insan* 'Things Useful to Humanity'[30]

During the reign of Humayun, Persian physicians and surgeons migrated in large numbers to India that consequently led to the development of medical knowledge. It is recorded that surgeons used to perform plastic surgery. Mughal emperors patronized many famous hakims, Abul Fazl,[31] Nizamuddin Ahmad[32] and Badaoni[33] gives references about the physicians of Akbar's reign, as about Hakim-ul-Mulk Nizamuddin Gilani, Hakim Saifu-l-Mulk, Hakim Zanbil, Hakim Misri, Hakim Muzaffar,Hakim Ainu-l-Mulk. Jahangir gives account of a physician Hakim Ali's death who had suffered from wounds in lungs because his servant poisoned his medicines. Jahangir records that 'on Friday, the 5th Muharram, in the year 1018,(1610) Hakim Ali died. He was an unrivalled physician; he had derived much profit from Arabic sciences. He had written a commentary on the Canon (of Avicenna) in the time of my revered father. He had greater diligence than understanding, just as his appearance was better than his disposition, and his acquirements better than his talents;… [34] Abul Qasim under Jahangir, Mir Muhammad Hashim during Aurangzeb's reign and Mir Muhammad Jafar under Muhammad Shah.[35] Physicians were patronized by the rulers and also enjoyed high *mansab*, Under Jahangir a number of these men of medicine rose to high positions and *mansab*. Hakim Mukarrab Khan, 'who in surgery is the most skillful of his time. His ancestors also had been well practiced in this profession,'[36] a physician, surgeon and vetenary who rose to the high rank of 5000/5000 and the governorship of such provinces as Gujarat and Bihar.[37] Jahangir writes about Shaikh Hasan, 'The former chief doctor at the court of Shah 'Abbas, who had also served Akbar. In 1602, Ruknuddin Masih appeared at court, and was active there until the time of Shahjahan.

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[30] Schimmel, Annemarie*, op.cit*., p. 211.
[31] *Ain-i-Akbari*, Blochmann, *op.cit*., vol. I, pp. 470, 490, 542, 544,
[32] Nizamuddin Ahmad, *Tabaqat-i Akbari*, edited by B. De, Vol. II, Calcutta, 1931, pp.483-84.
[33] Badaoni, Abdul Qadir, *Muntakhab-ut-Tawarikh*, eng. translations by G. S. Ranking, Delhi: Atlantic Publishers, vol. III, [1898-1925], 1990, pp. 224-238.
[34] Jahangir, *Tuzuk-i-Jahangiri*, eng. translation by A. Rogers & ed. by H. Beveridge, vol. I, Delhi: Low Price Publications, [1909-14], 2006, vol. I, pp. 124-125,152, 154,
[35] Rezavi, S.A.N., (ed.) Deepak Kumar, *Disease and Medicine in India, op.cit.,* p. 26.
[36] *Tuzuk-i-Jahangiri* , op.cit., vol. I, p. 28.
[37] Rezavi, S.A.N., *'An Aristocratic Physician of the Mughal Empire: Muqarrab Khan'*(ed.) Irfan Habib, *Medieval India*, I*, Researches in the History of India 1250-1750*, New Delhi: Oxford University Press, 1992, pp. 154-67

As well as becoming Shahjahan's favourite doctor, he also composed mystical verse. The pharmacologist Nurddin-i Shirazi, who was a nephew of Akbar's trusted friends Fayzi and Abu'l Fazl, also appeared at the time of Shahjahan. Aurangzeb certainly had his own of doctors.[38]

Apart from remunerating a physician for his services through grant of *mansab* or cash allowances and salaries, they could also be given grants of bureaucratic offices or *madad-i ma'ash* grants. It appears that the personal salary of a Mughal physician could vary between the Rs.300 per month, i.e. Rs. 3600 per annum, and Rs. 100,000 per annum.[39]According to Manucci, the salary of a blood-letter (surgeon) varied between Rs.2 per day and Rs. 700.[40] A large numbers of physicians and individuals who practiced medicine in various branches such as Pharmacy (*Dawa-sazi)*, Surgery (*Jarrahi)*, Physiology *(Manafi-ul-Aaza)*, Anatomy *(Tashrih-ul-Aaza)*, Therapeutics *(Tashkhis-o-Mualijat)*, Optholmology *(Ilm-i-Amraz Chashm)*, Dietetics*(Ilm-ul-Ghiza)*, Phlebotomist or bleeder *(Fassa or Ragzan)* Oculist or eye Doctor *(Kuhhal)* and Bone setters can be noticed during the Mughal period. A number of famous physicians of this period, who were attached to the Royal court and also served the poor and sick, include Hakim Muhammad Amin Shirazi who held a prominent position in the court of Aurangzeb and was a appointed to a suitable rank from the very beginning of his service. Besides physicians there were also many *kamangar* (Bow-makers), *Jarrah* (Barber-Surgeon) who also occupied a place in Mughal India.[41] One of the oldest and most traditional occupations in world medicine had been that of the *Jarrah*, a handy medical practitioner who extracted tooth and performed other non-major operations, besides being beard-trimmer and hair cutter.

Bernier's attitude to Indian medicine was rather neutral, but the following passage shows clearly how much more advanced he considered himself to be in anatomy and so surgery. Bernier was writing as an expert commenting on his peers, in his case the *Unani* practitioners, often Persians, who ministered at court, where he lived. About the Indian physicians Bernier comments,

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[38] Schimmel, Annemarie,[2004] *The Empire of the Great Mughals*, p. 212.
[39] Rezavi, S.A.N., (ed.) Deepak Kumar, *Disease and Medicine in India, op.cit*., p. 45.
[40] Manucci, Niccolao, *Mogul India (1653-1708)*, translated with Introduction and Notes by William Irvine, vol. III, Delhi: Low Price Publications, [1907-8], 2010 p. 205.
[41] Habib, Irfan, (ed.), Kumar, Deepak, *Disease and Medicine in India, op.cit.,* p. 79.

> the most ancient and the most esteemed is return is verse. that *the Mogol* and *Mahometans* physicians, who follow the rules of *Avicenna* and *Averroes*, adopt them no less than do those of the *Gentiles*, especially in regard to abstinence from meat broth. The Mogols, it is true, are rather mare given to the practice of bleeding than the *Gentiles*; for where they apprehend the inflammations just mentioned, they generally bleed once or twice, not in the trifling manner of the modern practitioners of *Goa* and *Paris*, but copiously, like the ancients, taking eighteen or twenty ounces of blood, sometimes even to fainting ; thus frequently subduing the disease at the commencement, according to the advice of *Galen,* and as I have witnessed in several cases. It is not surprising that the *Gentiles* understand nothing of anatomy. They never open the body either of man or beast and, those in our household always ran away, with amazement and horror, whenever I opened a living goat or sheep for the purpose of explaining to my *Agah* the circulation of the blood, and showing him the vessels discovered by Pecquet, through which the *chyle* is conveyed to the right ventricle of the heart. Yet notwithstanding their profound ignorance of the subject, they affirm that the number of veins in the human body is five thousand, neither more nor less; just as if they had carefully reckoned them.[42]

Though Bernier believe that he was convinced that the Europeans were much better on anatomy, this was not necessarily the case for medicine, where he took a pronounced agnostic attitude, making no claim as to whether or not 'these [Indian] modes of treatment be judicious.[43] Dr. Frayer comments, 'They are unskilled in Anatomy, even those of the Moors who follow the Arabian, thinking it unlawful to dissect Human Bodies; whereupon Phlebotomy is not understood, they being ignorant how the veins lye..[44] Niccolao Manucci also throw light on the medical practitioners position, 'It happened that a relation of the envoy fell ill, and imagining that I was a physician, as they suppose all Europeans to be, they called me their house. I knew a few secrets, but I did not give myself out as physician, nor was I bold enough to teach myself medicine at the expense of others' lives. But seeing that these savages had sent for me to their house, I was anxious to see how they lived. I proceeded with great solemnity to the spot. When I had gone in I found the patient on a very dirty bed in a field sweat with the odour of very rotten cheese .'[45] Europeans considered as a

[42] Bernier, *op.cit*., pp. 328-329.
[43] Pearson, M.N., 'The Thin End of the Wedge Medical Relativities as a Paradigm of Early Modern Indian Europe a Relations,' *Modern Asian Studies*, 29, I, UK: 1995, p. 167,
[44] Fryer, John, *A New Account of East India and Persia-1672-1681,* Eds. William Crooke, New Delhi: Asian Educational Services, 1992, vol. I, p. 287.
[45] Manucci, *op.cit*., vol. II, p. 34-35.

physicians in Indian, that time, and mainly somehow their observations also very ample to know the condition of the period of our study, as Manucci 's account is significantly very vast and informative when he tried to start his medical practice in Lahore, he amused and comments, 'I lived in Delhi one year in splendid style, having honorable means of making money. Then by the King's order, Kirat Singh went to Kabul, and I determined to move to Lahore and give myself as a doctor. I could not start this at Delhi, where there were already some Europeans, while in Lahore there was none. I instructed my servants to inform everyone who asked about me that I was a *Farangi* doctor. Through this many came to talk with me, and in return I had no want of words, God having given me a sufficiently mercurial temperament. Thus it began to be noised in Lahore that a Frank doctor had arrived, a man of fine manners, eloquent speech, and great experience. I rejoiced at such a reputation, buy my heart beat fast, for then I had had no experience. It pleased God, our Sovereign Lord, to open the door to me with a case furnished me by his Divine Province.'[46]

Manucci complaints about the Indian physicians, when his practices was going well, 'the Muslim and Hindu surgeons and physicians were very much provoked, for their interests were involved and they lost their practice. However, as they saw they could not injure me directly, they started the rumour that I drank the blood ….[47] There was a dearth of skilled medical practitioners in India and European doctors enjoyed a good reputation among Indians for their medical expertise. In the 1670s two travellers noted other Europeans using local doctors. Dr John Fryer, while generally not impressed with Indian surgical practice, did recognize that for certain problems Indian doctors were useful. A particular Brahmin doctor, or *vaidya,* was used by the English traders in Surat. 'This Brahmin comes every day, and feels every man's pulse in the Factory, and is often made use of for a powder for agues, which works as infallibly as the Peruvian bark; it is a Preparation of Natural *Cinnaber* [that is, a form of mercury].[48] Thevenot writes about the physicians of Kabul, 'this country supplies the rest of the India with many physicians, who are all of the caste of *banias*. Nay, and some of them are very skilful, and have many secrets in medicine; and amongst other

[46] Ibid., p. 167.
[47] Ibid., p. 380.
[48] Fryer, *op.cit.*, vol. I, p. 288.

remedies, they often make use of burning.'[49] Thus the medical practioners and physicians had a great value in the society; rather the physician may be *vaidya*/*hakim* or European.

Hospitals/Public

With the establishment of hospitals over the centuries, in the initial stages it was the *Viharas* which doubled as dispensaries and hospitals. In the medieval period, Muslims institution adopted public utility, 'as in Iran *bimaristans* (hospitals), maintained by the state for the treatments of patients.'[50] Soon after his accession Jahangir ordered the establishment of several hospitals. Under the edicts issued soon after his accession he notes: 'They should found hospitals in the great cities, and appoint physicians for the healing of the sick; whatever the expenditure might be, should be given from the *khalisa* establishment.'[51] *Mirat -i Ahmadi* mentioned about the treatment for travellers who fall ill should be taken to a hospital and his expenses of treatment should be bear by sarkar. During the reign of Shah Jahan a big hospital built on the northern and the southern corners of the Jama Masjid Delhi in 1650A.D. A numbers of hospitals were also established by the Mughal nobles. Thus during the reign of Jahangir Saif Khan opened a *shifakhana* at Jeetalpur.[52] The concept of hospitals also came the from the *Unani* practitioners, as Muhammad Shah (1719-1748) a large hospital was constructed in Delhi.

Another hospital, a *darush shifa*, along with an attached *madarsa was* established at Chiniot, Punjab by Hakim Alimuddin wazir Khan.[53] Another private person, Hakim Muhammad Rafi opened a clinic (*hawaij kada*) for the treatment of the poor.[54] During the reign of Aurangzeb a large number of hospitals were established in the capital and other cities in the kingdom. Besides the state's efforts, Nobles and wealthy person also established a few private hospitals. Nawab Khayr Andish Khan Kanboh had established a big hospital in Etawah wherein he appointed both Unani

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[49] Thevenot, *Indian Travels of Thevenot and Careri*, (ed.),Sen, Surenderanath, Delhi: published by National Achieves of India, 1949, p. 81.
[50] Siddiqui, Iqtidar Husain, *op.cit.*, p. 48.
[51] *Tuzuk-i-Jahangiri* , op.cit., vol. I, p. 9.
[52] Khan, Ali Muhammad, *Mirat-i Ahmadi*, translated by M.F. Lokhandwala, edited by Nawab Ali, Baroda: Oriental Institute, vol. I, Baroda, 1965, p. 162.
[53] Verma, R. L., 'The Growth of Greaco-Arabian Medicine in India', *Indian Journal of History Science,* Delhi: National Institute of Sciences of India, vol. V, no. 2, 1970, p. 358.
[54] Rezavi, S.A.N., (ed.) Irfan Habib, *Medieval India*, *op. cit*., p. 49.

and *Ayurvedic* physicians (*Hakims* and *Vaids*), and free treatment was given to the poor and needy patients.[55]

It was not only the hospital for the human beings but animals and birds were also taken into consideration in this regard. And besides the state's efforts individual's efforts were also significant in it. During the seventeenth century in the region of Cambay, Surat and Ahmadabad, travellers surprisingly noticed the existence of various hospitals for bird, animals and beasts known as *pinjarpol* which were managed by *bania.*[56] Thevenot and Careri found a hospital for Birds at Ahmadabad where oxen, camels, horses and other wounded beasts were lodged. Thevenot describes a hospital for birds in Ahmadabad, as mostly travelers give the detail of it. Thevenot saw in it 'several oxen, camels, horses, and other wounded beasts, who were looked after, and well fed, and which the these Idolaters buy from Christians and Moors, that they may deliver them, from the cruelty of infidels; and there they continue be incurable, but if they recover, they sell them to gentiles and to none else.'[57] Thevenot saw a hospital for sick beasts in Cambay also but he said, 'it has been neglected, and is now fallen to ruin.'[58] Thevenot also describes a hospital for Apes (Monkey) near Matura.[59] John Ovington during the travel of Surat found a large hospital for cows, horses, goats, dogs and other animals. The hospital was managed by *Bannians*.[60] After the recovery, if wild, they were abandoned and if domestic then were given to some pious persons or other who could charitable keep them. In those *pinjrapoles*, there were birds like cocks, peacocks, pigeons, ducks and small birds and beasts like cow claves, goats, oxen, camels, horses, doge, mice, cats, bugs, flies and other vermin's were given treatment for perfect health.[61] The managements of these hospitals were under the supervision of merchant community or *mahajans* of these regions who were mainly follower of Jain and Hindu religion. These hospitals were run by the common funds of the Jain and Hindu merchants, taxed its members and

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[55] Verma, R.L., 'Unani Medicine During the Mughal Reign in India',(ed.) B. Subbarayappa & S.N. Murthy, *Scientific Heritage of India*, Bangalore: The Mythic Society, 1988, p.123.
[56] Valle, Pietro Delia, *The Travels of Pietro Delia Valle in India*, ed. by Edward Grey, London: Haklyut Society, vol. I, 1892, p. 68.
[57] Thevenot, *op.cit.,* p. 16.
[58] Ibid., p. 18.
[59] Ibid., p. 57.
[60] Ovington, John, *A Voyage to Surat in the Year 1689*,ed.,H.G. Rawlinson, London: Oxford University Press, 1929, p.133
[61] Ovington, *op.cit*., p. 133, Pietro Da Velle, *op. cit*., I, pp. 67, 68, 70; Thevenot, *op. cit*., pp.79-88; Tavernier, *op. cit*., I, pp. 77-78.

took a small fixed amount from every member in order to run the *pinjrapole.*[62] These efforts were continued for the next two centuries, but disintegration of the empire and disestablishing the economy has an adverse impact on these establishments. Heber during travelling found an animal hospital for sick and infirm beasts, birds and insects at Broach and the condition of the hospitals was very dirty and neglected place. Though, it was managed by Brahmins of the place.[63] Apart from the official and nobles endeavours in this regard we also hear of private clinics flourishing during the seventeenth and eighteenth centuries.[64]

Climatic perceptions for health

Environmental issues were important aspects; no records of temperature and precipitation have come down to us from any place of India before the closing year of the 18th century. Yet, from general observations recorded, often incidentally in our sources, there do not appear to be any grounds for assuming that conditions were substantially different from those prevailing today for the rulers. But the observation is very important because they know the values of healthy environment, as many travllers comments about the Indian climate and seasons as well the Mughal chronicles also throw ample light the observation of climatic knowledge of the rulers and the court activities also affected.

In Sultanate period observation like 'the air became so intense, that almost all the people fell grievously sick of fevers. It had for a long time occurred to the Sultan to found a town on the banks of the Jamuna, which was to be the residence of the Sultan,..'[65]

When Babur comes he also felt different climate of India and writes, 'three things oppressed us in Hindustan, its heat, its violent winds, its dust. Against all three the bath is a protection.'[66] Mughal movements show a certain seasonal rhythm. Although they did not have specific winter and summer quarters, they generally

[62] Gupta, Ashin Das, *Indian Merchants and the Decline of Surat, 1700-40*, New Delhi: Manohar Publishers, 1994, pp. 79, 80.
[63] Reginald Heber, *Narrative of A Journey Through the Upper Provinces of India from Calcutta to Bombay, 1824- 1825,* New Delhi: Asian Educational Services,1995, vol. III, p.67
[64] Rezavi, S.A.N., (ed.) Deepak Kumar, *Disease and Medicine in India, op.cit*., pp. 50-51.
[65] *Tarikh –I Khan-Jahan Lodi* of Niamatu-Lla, Elliot and Dowson, The History *of India as told by its own Historians*, vol. V, Allahabad: Kitab Mahal, 1975, p. 98.
[66] *Baburnama*, *op.cit*., p. 532.

preferred to stay in the north during the heat of summer, and in the south during winter. For example, the Mughal emperors after Humayun always stayed at Kabul between May and September, which was also the best time to buy warhorses from the northern tribes. Likewise, Kashmir was usually favored during the summer. So ecological circumstances clearly affected the overall rhythm of the Mughal circuit.[67] As the Mughals used to spend their time in cold places usually after the reign of Akbar, Jahangir usually visit Kashmir and observed the weather and climatic aspects of the region'autumn and spring in Kashmir are things worthy to be seen. I witnessed the autumn season, and it appeared to me to be better than what I had heard of it.'[68]

Jahangir comments that great difference appeared in the climates of India. His observation had a scientific approach. About the sickness of climate near Delhi, he comments that 'the air of Agra is warm and dry; physicians say that it depresses the spirits and induce weakness.'[69] Tavernier and Thevenot also describe about the air and heat of Agra. Tavernier comments, 'Agra is in 27 -31 latitude, in a sandy soil; which is the cause of excessive heat of summer,[70] while Thevenot mentions that the environ of this town was one of the chief causes which made King Shah Jahan change the climate, and choose to live at Delhi.[71] The hot climate of Agra did not agree with the Emperor, and as he had only slightly improved in health, he set off for Delhi.[72] It may be seen that the climate of Agra was not favorable to live that time also as the all sources define the heat and wind but not describe any pollution. But when Shah Jahan shifted his capital to Delhi, the sources compares the climate of Agra with Delhi and positively appreciates Delhi. Inayat Khan also gives observation related to the climate of Delhi, 'as the climate of Shahjahnabad –through superior to Akbarabad and most other cities in Hind—used to be extremely hot during the years of scanty rainfall, an order had therefore been issued toward the middle of the twenty-eighth year of this auspicious reign 1654, for the construction of an agreeable summer palace at the above-mentioned place, to which His Majesty could retire during the season of extreme heat. At Shahjahanabad during these days, the heat was becoming oppressive,

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[67] Gommans, Jos, *Mughal warefare Indian Frontiers and High Roads to Empire, 1500-1700,* London: Routledge Publications, 2002, pp. 105-06.
[68] *Tuzuk -i Jahangiri, op.cit*., vol. I, p. 96.
[69] Ibid., p. 3.
[70] Tavernier, *op.cit.*, vol. I, p. 86.
[71] *Thevenot, op.cit.,* pp. 46-49.
[72] *Muntakhabu-l- Lubab,* Khafi Khan , Elliot and Dowson, *op.cit*., vol.VII, p. 335.

and epidemics of disease were greatly on the increase. In fact large numbers were daily traversing the path of dissolution, and even among the attendants of the imperial household, several had already died of this malady.'[73]

Jahangir was highly critical of the air and water of Ahmadabad, 'one should call Ahmadabad 'Gardabad' (abode of dust),'[74] About the heat and its effects on human beings when he was in Ahmadabad, [1618],' In these day, in consequence of the great heat and the corruption of the air, sickness had broken out among the people, and of those in the city and the camp there were few who for two or three days had not been ill. Inflammatory fever or pains in the limbs attacked them, and in the course of two or three days they became exceedingly ill- so much so that even after recovery they remained for a long time weak and languid. They mostly at last recovered, so that but few were in danger of their lives. I heard from old men who resided in this country that thirty years before this the same kind of fever prevailed, and passed away happily. Anyhow, there appeared some deterioration in the climate of Gujarat, and I much regretted having come here.'[75]

O thou, compendium of goodness, by which of thy names shall I call thee?
I had already called Ahmadabad Gardabad (the abode of dust)."
I do not know whether to call it Samumistan (the place of samum)
or Bimaristan (abode of sickness),
or Zaqqum-zar ,(the thorn-bed),
or Jahannamabad (the house of Hell),
for it contains all these varities.[76]

He ordered, 'to hang up a sheep on the bank of the Kankriya tank after taking off its skin, and at the same time one at Mahmudabad ,[Meshva] that the difference of the air might be ascertained. It happened that after seven *gharis* of day had passed in that place (Ahmadabad) they hung up the sheep. When the three *gharis* of day remained it became so changed and putrid that it was difficult to pass near it. They hung up the sheep at Mahmudabad in the morning, and it was altogether unchanged until the evening, and began to be putrid when one and a half watches of night had passed. Briefly in the neighbourhood of Ahmadabad it became putrid in eight sidereal

[73] Khan, Inayat, *The Shah Jahan Nama*, ed. by W. E. Begley & Z. A. Desai, Delhi: Oxford University Press, 1990, p. 535.
[74] *Tuzuk -i Jahangiri, op.cit*., vol. I, p. 411, p. 414.
[75] Ibid. vol. II, p. 10.
[76] Ibid.

hours and in Mahmudabad in fourteen hours.'[77] This observation and experiment of Jahangir was not only really very scientific but also suggestive of the sensitivity of the emperor towards environment and his belief that unhealthy environment had extremely bad impact on the health in general.

About the hot season Ovington comments that ' the air of Surat is so very dry that it licks up the moisture in the pen, before we are able to write it out; and so intensely hot, especially about 3 in the afternoon, that we cannot well endure the standing for any long time upon the grass, that's why we sprinkled the floor with water and employ our peons in fanning of us with *murchals* made of peacock feathers, four or five foot long.[78] Tavernier writes that, 'the great heat of India compels travelers who are not accustomed to it to travel by night, in order to rest by day'[79]Manucci comments about the Delhi climate, when an ambassador came from Balk, 'They soon prayed the king to give them their leave to depart, for they did not find themselves comfortable in that climate, through the great heats and had come on.'[80] Careri informs about the heat and seasons of India that, 'throughout all Hindustan the heat is excessive except near the mountains. We Europeans fare ill there because of the seasons differing from our; because their winter begins in June, and ends in September; though there falls less rain than at Goa. Between Surat and Agra the metropolis of the Mughal dominions, it only rains at one certain time of the year, that is during those three months the Sun is about the tropic of cancer; the other nine months the Sky is so clear, that there is scarce a cloud a cloud to be seen above the horizon.'[81]

Medicines/ Perception/ Diseases

Diseases were common inflected the inhabitants of India, can change over time; indeed, some have suddenly appeared and then mysteriously vanished, such as the English sweating sickness of the sixteenth century. The medicines and remedies in Mughal India basically in the followed some different manner as we discussed about the fusion of *tibb* and Ayurveda, and after the advent of Europeans practioners the

[77] Ibid., p. 33.
[78] Ovington, J., *op.cit*., pp. 82-83.
[79] Tavernier, *op.cit*., vol. I, p. 39.
[80] Manucci, *op.cit*., vol. II, pp. 34-35.
[81] *Careri*, *op.cit*., p. 250.

ideologies had changed. Although natural harbs and remedies were used by the people in all over the empire. But somehow as *hakims* or *vaidhyas* were appointed for the imperial uses and then European physicians also patronized by the State.

Seals found in India's earliest cities of the Indus Valley civilization show plants were regarded les as holy in themselves than as the home of divine spirits with powers beneficial to mankind The scientific approach may have dispelled superstition, but it certainly did not diminish a plant's sacredness in the eyes of the Ayurvedic physician to whom knowledge was sacred, as it was to all Indian thinkers. Indeed, the great Indian philosophers conducted their dialogues in the forest using plants again and again to illustrate concepts of spiritual continuity to their students, because the forest represented the endless self-regeneration of life, or what we would call today an ecosystem, complete in itself. Both *Unani* and Ayurvedic system have also adopted drugs from each other. Muhammad Ali has listed two hundred ten plant drugs of Indian origin added by *Unani* physicians to their materia medica.[82] Indian plants and herbs also used by that time also as for medicine and many remedies as *banyan* , *neem* , lotus, *tulsi*, *plash*, *dhak*, coconut, *bel*, *rudraksh*, *bhang* (Ayurvedic medicine used hemp for the alleviation or migraine headaches and stomach spasm) *pipal*, *jamun*, *brahmi*, satavar, *ashoka*, rendi ,Mulethi, Vasakha, *harad*, *amla*, *kachnar*, *aak*, *amaltas*, *majitah*, *arjun*, *guggal*, *dhatura*, *Ashwgandha*, some spices and fruits were also used as cumin, black peeper, coriander, banana, mango, *karela*, palm, cardamom, *tejpatta*, drumstick, brinjal, *imli*, garlic, ginger, cinnamon, *mahuwa*, *hina*, *sesame*, *supari*, *ritha*, *haldi*, lime, saffron, betel leaf, nile, jasmine, *jiaphal*, *keveda*, clove, *camphor*, *champa*, *khas*, rose, *kadamba*, sandle wood etc. These plants were used commonly as home remedies also, people were aware about these medicinal value. European travellers also noticed some medicinal stones also used by Indians. Pelsaert writes that many drugs which are produced in India, were the regular items for trade of Company. As he himself collected many samples and by druggists, herbalists etc. He recorded that 'borax, spikenard and *sal* ammoniac. Borax (sodium borate) is found in the Eastern mountains, and from a river, which falls into the lake Mansarover. The borax settles like coral in the bed to the river, and is dug out twice a year, and sold without any further treatment or evaporating. The supply is

[82] Ali, M., 'Ayurvedic drugs in Unani Material Medica', *Ancient Science Life,* vol. IX, April 1990, pp, 191-200

very large, sufficient to satisfy the whole world. It is brought to Agra in bales packed in sheepskin, each weighing 4 *maunds*.'[83]

Spikenard, (a herb *jataamaansee*, a costly perfumed ointment much valued in ancient times, the Himalayan plant of the valerian family that produces the rhizome from which spikenard was prepared.) also considered as high value medicine or drug, 'particularly for stiffened limbs; it is rubbed down with oil, smeared on the limb, and allowed to dry; it produces warmth, and expels the cold.'[84]

Jesuit Missionaries also recorded the Indian remedies such 'for a violent headache, they take (as snuff) the powder of pounded pomegranate-shell, with four grains of pepper. To cure a common headache, they tie, in a rag, a composition of sar-armoniac, lime and water, to which the person smells. A giddiness, or vertigo, arising from cold, thick Blood, is removed by drinking Wine, in which some grains of frankincense had been steeped. To cure deafness, arising from an Abundance of cold humours, they sqeeze a Drop of lemmon-juice into the ear. To relive the brain, when oppressed with phlegm, to affected person smells to a rag, filled with black cumin pounded. For the toothache, a Kind of lozengs made with crumbs of bread, with the seed of *stramonia*, laid upon the tooth to deaden the pain. For a person troubled with bloody-flux, mother-wort, or pounded, Wormwood, are applied to the nose. For the heat of the stomach, or spitting of blood, they apply a plaster made of *giraumont*(an Indian Fruit, taste of pumpkin) baked in Oven, and drink the water which runs from it. To cure the cholic, arising from Wind and phlegm, they give the patient four spoonfuls of water, in which were boiled, 'till the water was half consumed, anife, and a little ginger. They also pound a raw onion, with ginger, and apply them on that part of the belly where the pain is felt. For the lientery (a form of diarrhea) they bake a head of garlic in ashes, and give it the patient in his mouth, and sucking its juice. The juice of the cucumber-leaf bruised, purges and vomits. A Stoppage of Urine is cured here by drinking a spoonful of olive or sweet-oil well mixed with the like quantity of water. For Looseness, they parch and burn a spoonful of white cumin, and a little Ginger bruised, and mixed with sugar. Fevers cured, by giving the Patient, before the

[83] Pelsaert, Francisco, *Jahangir's India*, English translated by W.H.Moreland and P Geyl, New Delhi: Low price Publications, 2011 [1925], p. 45.
[84] Ibid., p. 45.

fit came on, three large pills composed of ginger, black cumin, and long pepper.'[85] Physicians of higher castes did not eat meat and other prohibited animals products, but they used animal's products as medicines. Common people, especially women used to collect necessary useful herbs when they were available from the nearby surroundings for use to cure simple ailments. Tavernier writes 'as for the common people, after the rains are fallen and it is time to gather herbs, you shall see every morning the good women of the town going into the field to gather such simples which they known to be roper for such diseases as reign in the family.'[86]

There are some remedies which were adopted that time as fever treatment, the autobiographies of Babur and Jahangir are important sources of information on the way the Mughals treated their own illness. Babur describes a time when he suffered from intermittent fever for twenty five days. He had also fallen ill during his childhood, and miniatures in the *Baburnama* show one servant crushing drugs in a mortar, and another one administering them to him. Elsewhere he writes about some medication derived from barley flour, which was mixed with other medicine, and that the resulting concoction 'tasted quite disgusting'. The treatment of abscesses was also rather unpleasant—pepper was boiled with water in a clay pot, then the afflicted person held the abscess above the steam and bathed it in the hot water.[87]

In the ninth year and Jahangir records how he was laid low with a headache and fever, from which no doctor could give him any relief--- only his beloved wife Nur Jahan knew of an effective remedy for him. He abstained from eating heavy foods, and, contenting himself with a little light food, but at last he ascribed his cure to the spiritual power of Mu'inuddin Chishti, to whom he had prayed for help.....religious treatise....[88] somehow it was like a beliefs. Jahangir writes about own fever, 'I found I had a severe headache, which at last ended in fever. At night I did not drink my usual number of cups, and till morning I rolled about on my couch. After advice of my doctors, I took my usual number of cups on the third night. For three days and two nights I remained fasting. Though I had fever for a day and a night, and

[85] Lockman,J., *Travels of Jesuits*, vol. II, New Delhi: Asian Educational Services,1995,(first published:London,1743), p. 361-62.
[86] Tavernier, op.cit., vol. II, pp.206-7.
[87] *Baburnama, op.cit*., pp. 82, 106-9,169-70, 246, 399, 400, 511, 543, 608, 657, 660. I52]
[88] *Tuzuk -i Jahangiri, op.cit*., vol. I, pp. 266-67

my weakness was such that it appeared as if I had been confined to bed for a long time, I had no appetite left, and had no inclination towards food.'[89]

Jahangir writes that the milk of antelope, was of great use in asthma.[90] Jahangir once suffered from about of diarrhea after eating too much mangoes. He also frequently suffered because of the climate, for instance in Agra, but especially in Gujarat, where he was plagued by fever and vomiting, and his doctors naturally advised him to reduce his consumption of wine and opium. Jahangir apparently also suffered from asthma attacks. He writes 'briefly from excessive rain and the dampness of the air, a difficulty in drawing breadth showed itself on my left side near the heart. This time for some days I took goats milk, and again camel's, milk but I found no profit whatever from them. Hakim Mirza Muhammad was distinguished above all by natural skill and experience.'[91]

Princess Jahanara Begam's health was also cured by a mendicant named Hamun. Humun and slave named Arif prepared an ointment, which entirely healed the sores of the princess in two months, while there was no relief even after treatment for four months by others. Inayat Khan informs, 'Having previously expatiated on the virtues of a plaster composed by the mendicant which had proved very efficacious for burn wounds, the said Muhammad Ali had been directed to produce him at court. As it turned out, this plaster was no sooner applied than it gave relief. .. In gratitude to the indigent Hamun, His Majesty ordered him to be weighed against gold—a man who had always been in want even of his evening meal—and bestowed on him a vast sum of money, with a robe of honor, a horse and a female elephant. ..Although many famous physicians from among the *Farangis*, Mulims, and Hindus had exerted themselves to the best of their ability in concocting plasters, they had produced no lasting beneficial effect; but as the good stars of Hamun and slave Arif of whom mention has been previously made were in the ascendant, their efforts were crowned with success. Both these individuals were accordingly allotted liberal rewards, and the

[89] Ibid., vol. II, pp. 12-13.
[90] Ibid., p. 148.
[91] Ibid., vol. II, pp. 211-214.

aforesaid Muhammad Ali was requited with the title of Khan for bringing the above named Hamunn into royal notice.'[92]

The major divergence between European and Hindu medicine was the routine use of bleeding by Europeans. Pyrard noted that 'Hindus did not use bleeding at all.'[93] In January I542 Francis Xavier, was ill. He ended a letter by writing: 'I would very much like to write at greater length, but sickness does not now permit it. I have been bled seven times today, and I am only passing well.'[94] But in the contradiction of all Jahangir informs, Jahangir described being bled from his left arm, the disease of *khun-para* (congestion of blood) had affected his health. By the advice of the physicians 'on Wednesday, I drew about a *ser* of blood from my left arm.[95]

John Fryer[96] had classified that the diseases of India according to the seasons, in winter season coughs and tumours of mouth and throat, during summers fever, cholera, and inflammation of the eyes and fiery temper of the air were common diseases. The rainy season had dysentery and all distempers of brain and stomach Smallpox spreads better in dry weather, that is, from February to May. Many other diseases also noted by the European tarvellers as paralysis,[97] stone problem,[98] apoplexy,[99] dropsy,[100] anemia,[101] gout,[102] elephantiasis,[103] diarrhea,[104] jaundice,[105] and many more. As for the symptoms and treatment of the various diseases listed by them,then often fail to indicate either the one or the other except in the case of cholera, dysentery, fever and smallpox of which they have noticed, the symptoms and the indigenous treatment.[106]

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[92] *Shahjahan Nama*, *op.cit*., pp. 321-322.
[93] Francois Pyrard de Laval, *The Voyage of Francois Pyrard of Laval to the East Indies*, vol. II (London, I888), p. 13.
[94] Georg Schurhammer, *Francis Xavier: His Life, His Times*, vol. II, India (Rome, 1977), p. 96.
[95] *Tuzuk -i Jahangiri, op.cit*., vol. I, p. 226.
[96] Fryer, *op.cit*., vol. I, pp. 285-6.
[97] Manucci, *op.cit*., vol. II, p. 356.
[98] Bernier, *op.cit.,* p. 254.
[99] Manucci, *op.cit*., vol. II, p. 356.
[100] Ibid, Fryer, *op.cit*., vol. I, pp. 179, 286.
[101] Manucci, *op.cit*., vol. II, p. 356.
[102] Bernier, *op.cit*., p. 254, Fryer, *op.cit*., vol. I, p. 179.
[103] Fryer, *op.cit*., vol. I, pp. 116, 138, Tavernier, *op.cit.*, vol. II, p. 395, Thevenot, *op.cit.,* p. 122.
[104] Manucci, *op.cit*., vol. III, p. 185.
[105] Fryer, *op.cit*., vol. I, p. 179.
[106] Vir Singh, Jagat, op.cit., p. 287.

Bernier discusses different diseases, 'such as dysentery, venereal diseases, Guniea worm plague,(the Guinea- worm , a parasitic worm inhabiting the subcutaneous cellular tissue, so called on account of their prevalence in Guinea as recounted in *Purchas*) and problems created by the scorching conditions, along with their remedies. The gout, the stone, complaints in the kidneys, catarrhs and quartan agues are nearly unknown; and persons who arrive in the country affected with any of these disorders, as was the ease with me, soon experience a complete cure. Even the venereal disease, common as in Hindoustan, is not of so virulent a character, or attended with such injurious consequences, as in other parts of the world.' Bernier describes that Arac is a spirit as harsh and burning as that made from corn in Poland, and the use of it to the least excess occasions nervous and incurable disorders. A wise man will here accustom himself to the pure and fine water, or to the excellent lemonade, which costs little and may be drunk without injury. [107] In his travelogue, Bernier provides insights into the Indian healthcare system in the seventeenth century. He critically analyzed the conditions of the Indian healthcare system during his visit to India and contrasted it with the European system.

Manucci gives a detail and interesting account about an old lady, 'there came to me in the house where I had settled an old woman, who told me that the wife of the *qazi* was very ill and given up by all the Persian and Indian physicians. she requested the favour of my proceeding to the *qazi's* house to see the woman, and decide whether there was any cure; for all the doctors had said that if anyone cured her they would burn all their books and profess themselves disciples of him who cured her. I put several questions about the illness of the woman; I told the messenger to return home and I would follow, saying that, although the complaint seemed mortal, I would see if there was any remedy…entering the house. I felt the patient's pulse. ..I trusted more to several secret experiments I knew, and to my questions. I asked if she had been relieved, and then they told me that for days she did not know what thing a motion was. I told that the only thing was to administer a clyster (anemia) they opposed to this.. I recollected that the enemas administered to me at Goa were concocted of mallows, wild endive, and some other herbs, with a trifle of bran, black sugar, salt, olive oil and Canna fistula (*bhang phistula*), and made concoction. Then made the

[107] Bernier, *op.cit.*, p.253

instrument of the piece of cane from a *huqqah* snake and to teach how to deal with it, then the patient recovered.'[108]

Manucci informs that Shahjahan did not allow his wives to come to delivery, but directed medicines to be administered to cause abortion. He left behind him this evil practice, of which Aurangzeb made use, and also his sons. [109]

Thevenot describes about the disease in Musalipatnam, but there is another more violent distemper that commonly commits greater ravage there. It is called *Akeron*, (mumps) and only seizes children; it is inflammation on the tongue and mouth, proceeding from too great heat; their parents are careful to cool them from time to time with herbs that are good against that disease, for otherwise it seizes the guts, reaches to the fundament, and kills the child.[110]

Cholera was probably the most feared disease, especially on the west coast and in the south. This disease had been endemic in India for at least 2000 years. It became pandemic and spread from Bengal all over the Indian Ocean area and to Europe and America in the second decade of the nineteenth century. Ovington, comments, cause and cure of cholera 'violent vomiting and looseness, and which is caused most frequently by an excess of eating particularly of Fish and Flesh together. It has been cured by a red-hot Iron clap to the heal of him that is sick, so close that it renders him uneasy by its nearness, whereby it leaves a Scar behind it.'[111] Thevenot departed from Hyderabad to Surat, he suffered from cholera. He informs about this disease, 'The first is a bare cholick, but that causes sharp pains; the second, besides the pain causes a looseness. They who are troubled with the third, have violent vomiting with the pains; and the fourth produces all the three symptoms, to wit, vomiting, looseness, and extreme pain; and this last I take to be the cholera morbus. These distempers proceed most commonly from indigestion, and cause sometimes such cutting pains, that they kill a man in four and twenty hours. The remedy which is used in the Indies against it, is to heat a peg of iron about half as big as ones finger red hot, clap it to the sole of the patients heel, and hold it there till he be no longer able to endure it, so that the iron leave a mark behind it. The same must be done to the other

[108] Manucci, *op.cit.*, vol. II, pp. 165-167.
[109] Ibid., p. 185.
[110] Thevenot, *op.cit.*, p. 147.
[111] Ovington, *op.cit.*, pp. 204-5.

heel with the same red iron, and that remedy is commonly so effectual that the pains instantly cease. If the patient be let blood with that burning, his life will be in evident danger; and several people have told me that when they let blood before they burn the heel, the patient infallibly dies, just as many days after he has been let blood, as he was ill before; but blood-letting is not dangerous two days after the operation. There are some who make use of ligatures for this distemper, and bind the patients heal so fast with a swathing-band, as if they had a mind to squeeze out his brains; they do the same with the back, reins, thighs and legs; and when the patient finds no good of this ligature, they think him past cure.'[112] It suggests that same remedy used for the cholera in India throughout the period.

Wine

As the liquor used in different classes in that period, and somehow people also know the side effects of over drinking as we know about the Babur oath before the battle of Khanwa may be it was to show the moral values but the result was positive. Opium was used very much also by the rulers and masses, but somehow the role of state become more prominent to stop all those trends which were taking the masses towards unhealthy temperaments. As usual Jahangir who took vine and opium very regularly but he ordered to be observed as rule of conduct which were for the benefit for his subjects and should be followed by them. About wine he ordered 'they should not make wine or rice-spirit or any kind of intoxicating drug, or sell them.[113] Jahangir ordered on the occasion of great feast of Nauruz, on March 11th or 12th, 1606 that whoever might wish for intoxicating drinks and exhilarating drugs should not be debarred from using them.[114] He also described that he would drink no wine on Friday eve.[115] In the 4th regnal year 1610 Jahangir ordered that '*bang* and *buza* (rice spirit) were injurious, they should not be sold in the bazaars and that gambling should be abolished, and on this subject I issued stringent orders.'[116] Jahangir gives account of drinking habit of own self and gives full details about the quantity of it he took, and suggests to Shah Jahan that, 'though must observe the path of moderation, for wise men do not consider it right to drink to such an extent as to destroy the understanding,

[112] Thevenot*, op.cit.,* p. 151.
[113] *Tuzuk –i Jahangiri*, op.cit., vol. I, p. 9.
[114] Ibid*.,* p. 49.
[115] Ibid., p. 20.
[116] Ibid., p. 157.

and it is necessary that from drinking only profit should be derived.' Bu Ali (Avicenna) who is one of the most learned of hakims and physicians, has written this quatrain-

"Wine is a raging enemy, a prudent friend;
A little is an antidote, but much a snake's poison.
In much there is no little injury,
In a little there is much profit."[117]

Jahangir gives full description and stages of Inayat Khan's death, who was addicted to opium, madly took wine, 'as he was weakly built, he took more than he could digest, and was attacked by the disease of diarrhea, and in this weak state he two or three times fainted. By my order Hakim Rukna applied remedies, but whatever methods were resorted to gave no profit. At the same time a strange hunger came over him, and although the doctor exerted himself in order that he should not eat more than once in twenty four hours. At last he became dropsied, and exceedingly low and weak… I was astonished, 'he was skin drawn over bones.' or rather his bones, too, have dissolved. Though painters have striven much in drawing an emaciated fact, yet I have never seen anything like this, or even approaching to it.'[118] Jahangir was astonished to see the conditions and the result of Inayat khan's irony and himself he comments as couplet :

"If my shadows do not hold my leg
I shall not be able to stand till the Resurrection
Nor, from weakness, does my soul see a refuge
Where it may for a while rest on my lips."[119]

Jahangir ordered to the painters to take his portrait, which was wonderfully changed, then Jahangir self observation regarding death and pain is very philosophic, he talked to himself and comment: " Beware; in your present state do not for a moment forget God, nor despair of His mercy! If death grants you quarter, regard the reprieve as a time for apologizing and amendment."[120]

Bernier writes to say the truth, few persons in these hot climates feel a strong desire for wine, and I have no doubt that the happy ignorance which prevails of many

[117] Ibid., p. 306.
[118] *Ibid.,* vol. II, p. 43.
[119] *Ibid.,* p. 44.
[120] Ibid., p. 44.

distempers is fairly ascribable to the general habits of sobriety among the people, and to the profuse perspiration to which they are perpetually subject.[121]Thevenot describes the punishments for the wine drunker in the Province of Qandhar, he writes, 'the inhabitants are great lovers of wine, but they are prohibited to drink any; and if a Muslim who has drank wine, commit any scandal, he is set upon an ass, with the face to the tail, and led about the town, attended by the officers of the *Qotwal,* who beat a little drum, and they are followed by all the children, who hoop and hallow after them.'[122] As the results of over drunkenness also known but 'It took an expert to diagnose the multifarious symptoms of illness and ailments afflicting the upper classes—one doctor himself died of 'punctured lungs'. However, despite the many attacks of asthma and the frequent bouts of indigestion, the most common cause of death among the nobility was their excessive consumption of drugs and alcohol.'[123]

Tobacco was another thing which used regularly by a large number of people as *Waki'at* which is a little work of Shaikh Faizi informs us about the introduction of tobacco to Akbar, when Faizi went to Bijapur he found some tobacco and when he show it to Akbar he surprised and examined the tobacco, and asked his queries about it. Then Nawab Khan-i Azam replied: "This is tobacco, which is well known in Mecca and Medina, and this doctor has brought it as a medicine." Akbar further asked the qualities of tobacco, then the physician replied that there was no mention of it in his books; but that it was a new invention, and the stems were imported from China, and the European doctors had written much in its praise. The physicians of Akbar's court did not want that Akbar should try it. Faizi wanted to do experiment with it, but the physician replied, "We do not want to follow the Europeans, and adopt a custom, which is not sanctioned by our own wise men; without trial." After a long discussion, Akbar called priest. The priest ascribed many good qualities to it, but no one could persuade the physician; nevertheless, he was a good physician. Faizi further describes, 'as I had brought a large supply of tobacco and pipes, I sent to several of the nobles, while others sent to ask for some indeed, all, without exception, wanted some, and the

[121] Bernier, *op.cit.*, p. 254.
[122] *Thevenot, op.cit.,* p. 79.
[123] Schimmel, Annemarie , *op.cit.*, p. 213.

practice was introduced. After that the merchants began to sell it, so the custom of smoking spread rapidly. His Majesty, however, did not adopt it.'[124]

In the 12th year about tobacco Jahangir comments that 'in consequence of the disturbance that tobacco brings out in most temperaments and constitutions, I had ordered that no one should smoke it. My brother Shah Abbas had also become aware of the mischief arising from it, and had ordered that in Iran no one should venture to smoke. As Khan Alam (Ambassador to Persia) was without control in continual smoking of tobacco, he frequently practiced it. Yadgar Ali Sultan, ambassador of the ruler in Iran, represented to Shah Abbas that Khan Alam could never be a moment without tobacco, and he (Shah Abbas) write this couplet in answer ---

> " The friend's envoy wishes to exhibit tobacco;
> With fidelity's lamp I light up the tobacco-market."
> Khan Alam in answer wrote and sent this verse----
> " I, poor wretch, was miserable at the tobacco notice;
> By the just Shah's favour the tobacco- market becomes brisk."[125]

Historical sources provide some information on epidemics, also the ailments from which the rulers suffered such as plague Jahangir describes the symptoms of plague, the symptoms were that the first day there was headache and fever as much bleeding at the nose. On the second day the patient died. In the house where one person died all the inmates were carried off. Whoever went near the sick person or a dead body was affected in the same way. In one instance the dead body was thrown on the grass, and it chanced that a cow came and ate some of the grass. It died, and some dogs that had eaten its flesh also all died. Things had come to such a pass that from fear of death fathers would not approach their children, and children would not go near their fathers.' [126]

The western medical episteme was radically different from that of Indian physicians; both were humeral but their practices different greatly. Neither of them was able to develop a comprehensive theory of disease causation, but there seems to be a general argument that the Indian diseases were environmentally determined and

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[124] Shaikh Faizi,*Waki'at,* Elliot & Dowson,*The History Of India as told by its own Historians*, Allahabad: Kitab Mahal,
vol. VI, *op.cit.*,1981, pp. 165-167.
[125] *Tuzuk -i Jahangiri, op.cit.*, vol. I, p. 371.
[126] Ibid., p. 442.

should be treated by Indian methods. European however, continued to look at the Indian practices with curiosity. It was observed by many European practitioners that Indian diseases were environmentally determined and should be treated by Indian methods. European however, continued to look at the Indian practices with curiosity. But it is also found that in medieval period physicians served the society with a humanitarian feeling. They were called *parahitas* and *lokopakras* as evident from the inscriptions etc. The kings in turn gifted grants to them in consideration of their services to the society.