



ISSN: 1309 4173 (Online) 1309 - 4688 (Print)
Volume 4 Issue 4, p. 35-63, November 2012

The Natural History of Indian Serpents: Dr. Patrick Russell, Colonial Medicine and the British Empire*

*Hindistan Yılanlarının Doğal Tarihi: Dr. Patrick Russell, Koloni Eczacılığı ve İngiliz
İmparatorluğu*

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Abstract

Dr. Patrick Russell, born and brought up in Edinburgh, Scotland, a true product of the Scottish Enlightenment, introduced an original discipline—natural history of serpents—in eighteenth-century British India. He was also indefatigable in his study of Indian botany and ichthyology. Russell's brief Indian career, particularly his endeavour in snakology, suggests that the diffusion of modern natural history and knowledge of Western medicine was an intricate process, not confined to any particular epistemological domain. This paper has sought to profile the emergence of Western medical-zoology by individual research, as a constituent of natural history science concerning particularly the snake-poisoning in a colonial empire. The article also critiques the concept of 'Orientalist' strategy to dominate the colonised world through knowledge through European knowledge in India.

Key Words: Patrick Russell, British India, colonial medicine, Orientalism.

Öz

İskoçya'nın Edinburgh şehrinde doğup büyüyen, İskoç Aydınlanmasının önde gelenlerinden Dr. Patrick Russell onsekizinci yüzyıl İngiliz Hindistan'ında zorluklar içinde yeni bir disiplin oluşturdu: yılanların doğal tarihi. Ayrıca Russell Hindistan'da botanik ve balıklar üzerinde yorulmaksızın bilimsel çalışmalar yürüttü. Russell'in kısa Hindistan kariyeri, özellikle yılanlar üzerine çalışmalarını göstermektedir ki modern doğa tarihi ile Batı tıp bilgisinin birleşimi herhangi bir disiplinin dar kapsamına sığmayan geniş bir süreçtir. Bu makale Batı veterinerliğinin doğal bilim tarihi alanında bir meslek olarak ortaya çıkışını koloni imparatorluğunda özellikle yılan zehirlerinin sebep olduğu hastalıklara bakarak incelemektedir. Ayrıca makale Oryantalizmin bilgi yoluyla hakimiyet kurma stratejisini Avrupalıların Hindistan'daki faaliyetlerini inceleyerek eleştirmektedir.

* Author's note: An early version of this paper was delivered at the UGC National Workshop on "Nature Transformed: Ecology, Environment and Conservation in Global and South Asian History", in February 2011, organized by the Department of History, Jadavpur University, Kolkata, India. I would like to thank ICHR for their financial support and Barbara J. Hawgood, Prof. Mark Harrison, Dr. Pratik Chakrabarti, Prof. Deepak Kumar, Prof. Ranjan Chakrabarti and Prof. Anantanarayanan Raman for their help, comments and encouragement. I am indebted to my supervisor Dr. Sudeshna Banerjee for her genial guidance to me and my final thanks go to the anonymous reviewers of the History Studies for their comments and suggestions.

Anahtar Kelimeler: Patrick Russell, İngiliz Hindistan, koloni tıbbi, Oryantalizm

Introduction

The natural history of snakes in colonial India began in the late eighteenth century under the auspices of a Scottish physician and the Fellow of the Royal Society of London (FRS), Dr. Patrick Russell (1727-1805), who was bestowed with great honour for his deep naturalist's persona in the field of zoology.¹ His seminal work, a voluminous tome, entitled *An Account of Indian Serpents, Collected on the Coast of Coromandel* was published in 1796,² through which its author appeared as the first English East India Company (EEIC) personnel to systematize the medical-zoological knowledge about Indian vipers and created a precedent for his followers. Importantly, Russell also played a crucial role in Company's earlier herbal exploration³ and ventured to collect, study, and illustrate fishes known to inhabit the seas and fresh waters of India, particularly of Vizagapatam coast (now Vishakhapatnam).⁴ This single evidence of private enthusiasm manifested the ingenious interest of the Company practitioners in all developments related to the knowledge of nature. Indeed, colonial natural history and scientific policy of the EEIC owed much to these individuals' avocation in this period.⁵ Most of these colonial doctors, who spent best part of their lives in India investing their intellect simultaneously in several fields, were men of high perfection and left splendid records of their pioneering works in various branches of natural history. Indubitably, their multifarious

¹ On the bicentenary of Patrick Russell's death, B. Vijayaraghavan designated him as the 'Father of Indian Ophiology' in B. Vijayaraghavan, *Snake Studies: India*, CSPT Occasional Papers 1 (Chennai: The Chennai Snake Park Trust, 2005), 1. Another scholar, Indraneil Das, called him as 'the first Western herpetologist in India' in Indraneil Das, "Herpetology of an Antique Land: The History of Herpetological Explorations and Knowledge in India and South Asia," *Bonner zoologische Beiträge* 52 (2004): 215-229, 218. Moreover, Russell was also distinguished as 'Father of Indian Zoology' for his admirable piece of work on Indian snakes and fishes. See B. L. Jain, "Development of Life Sciences in India in 18th-19th Century," *Indian Journal of History of Science* 17 (1982): 114-131, 123.

² Patrick Russell, *An Account of Indian Serpents, Collected on the Coast of Coromandel; Containing Descriptions and Drawings of Each Species; together with Experiments and Remarks on their Several Poison* (London: W. Bulmer & Co. Shakspeare Press, 1796). It was altogether a two-volume, five-part work. In 1801 and 1802, the first and second parts of the second volume appeared and after author's death, the third and fourth parts of the same volume were published in 1807 and 1809 respectively.

³ See Patrick Russell, "Preface" to *Plants of the Coast of Coromandel; Selected from Drawings and Descriptions Presented to the Hon. Court of Directors of the East India Company*, vol. 1, by William Roxburgh (London: W. Bulmer and Co. Shakspeare Printing Office, 1795), i-vi. Also, see Satpal Sangwan, "Natural History in Colonial Context: Profit or Pursuit? British Botanical Enterprise in India 1778-1820," in *Science and Empires: Historical Studies about Scientific Development and European Expansion*, ed. Patrick Petitjean, Catherine Jami and Anne M. Moulin (Dordrecht: Kluwer Academic Publishers, 1992), 281-298, 284-286.

⁴ See Patrick Russell, *Descriptions and Figures of Two Hundred Fishes; Collected at Vizagapatam on the Coast of Coromandel*, 2 vols. (London: W. Bulmer & Co. Shakspeare Press, 1803).

⁵ The early phase of colonial science has been often characterised as 'highly individualistic'. See, for instance, Deepak Kumar, *Science and the Raj: A Study of British India* (New Delhi: Oxford University Press, 2006), 64-65; Pratik Chakrabarti, *Western Science in Modern India: Metropolitan Methods, Colonial Practices* (Delhi: Permanent Black, 2004), 33-34.

exercises gradually fabricated a suitable platform for further development and transmutation of natural history to full-fledged 'scientific speciality' and helped to a considerable degree to attain certain new scientific and medical priorities for the British Indian Empire.

The nexus between the physicians and natural history science was a familiar phenomenon in Europe which sufficiently enhanced both natural history and medicine.⁶ This tradition was adopted and tactfully implemented in the newly possessed territory of India for the purpose of 'command.' As the EEIC began its transition from a commercial entity to a territorial authority, a shrewd awareness became increasingly pertinent among the colonizers that knowledge about colony would result in a greater control over it and provide a rigid establishment of the power that the colonial authorities cultured. On 4 October 1784, while corresponding with Nathaniel Smith, Chairman of the Court of Directors of the EEIC, Governor General of India Warren Hastings wrote: "Every accumulation of knowledge, and especially such as is obtained by social communication with people over whom we exercise a dominion founded on the right of conquest, is useful to the state."⁷ Such ideas inevitably led to directed schemes of natural historical inquiry in this period. Cultivation of species' diversity and richness was robustly increased and practitioners with their own medical training and perceptions became excitingly interested in collecting, collocating and redefining maximum possible information about India, her people and natural resources which, as they realized, would effectively ensure the making of their new colonial empire.

But the story of transplantation and assimilation of modern scientific and medical knowledge across diverse cultures, from any one society to another, was fairly complex and simultaneously pluralistic and eighteenth-century India was squarely posited within this paradigm. In this country surgeon-naturalists had found a vast new field—a 'social laboratory' or 'testing ground'—in which they pursued their naturalistic studies and examined novel ideas⁸ and consequently Western 'cultures of natural history' were extended to this non-Western colony. But significantly, in addition to their assigned duties and responsibilities for the Empire, colonial practitioners variedly employed and also modified the Western notion of natural history as well as medicine. Their research in the colony encompassed both synthesis and antithesis of various scientific ideas, in this embryonic stage.

It is against this backdrop that the study of clinical management of snake-bites including selection, identification and classification of snakes occupied a significant place in 'scientific colonization'⁹ of India which until recently escaped attention of medical

⁶ See Harold J. Cook, "Physicians and Natural History," in *Cultures of Natural History*, ed. Nicholas Jardine, James A. Secord and Emma C. Spary (Cambridge: Cambridge University Press, 1996), 91-105.

⁷ Warren Hastings, "To Nathaniel Smith, Esquire," in *The Bhāgvat-Gēētā, or Dialogues of Krēṣhṇā and Ārjōṅ; in Eighteen Lectures; with Notes*, trans. Charles Wilkins (London: C. Nourse, 1785), 5-16, 13.

⁸ The concept of British India as a 'social laboratory' or 'testing ground' has been thematised in Roy M. MacLeod, "Scientific Advice for British India: Imperial Perceptions and Administrative Goals, 1898-1923," *Modern Asian Studies* 9 (1975): 343-384; see also Russell Dionne and Roy MacLeod, "Science and Policy in British India, 1858-1914: Perspectives on a Persisting Belief," in *Social History of Science in Colonial India*, ed. S. Irfan. Habib and Dhruv Raina (New Delhi: Oxford University Press, 2009), 159-195.

⁹ This term coined in Nathan Reingold and Marc Rothenberg, ed. *Scientific Colonialism: A Cross-Cultural Comparison* (Washington, D.C.: Smithsonian Institution Press, 1987).

historians.¹⁰ And while divulging the elementary trait of this ‘new’ medical-zoological discipline, this paper has basically sought to profile the emergence of colonial medicine as a constituent of natural history science, by individual gusto and keenness, emphasizing particularly on the study of the disease of snake-poisoning in British India.

Scottish Sojourn in British India

One of the significant characters of physician-naturalists, practicing in late eighteenth-century India under the ambit of the EEIC, was their intercultural and cross-national blending. Many German, Danish, Irish and Scottish medical men, who had obtained their formal degrees from European universities or institutions and joined the EEIC’s overseas services for coveted career and exaltation of their talent, alongside their English counterparts, collectively played a major role in reinforcing the nexus among commerce, medicine and imperial power. These mostly non-English practitioners embarked every Asia bound voyage to look after the sick aboard ships and on land and emerged as powerful political and cultural ‘interlocutors’ in this country.¹¹ They introduced a specific corporate culture in eighteenth-century India and their strong presence in the EEIC’s medical or similar services in three Presidencies of Bengal, Bombay (now Mumbai) and Madras (now Chennai), actually manifested the cosmopolitan character of colonial medical system.

The majority of the EEIC’s recruits in the provincial medical department or as professional naturalists in this time gained their medical degrees from the universities of Scotland, mainly from Edinburgh. “Many of these were men from the so-called ‘Celtic Fringe’ or were religious Dissenters blocked from entry into the universities of Oxford and Cambridge”¹² and received their rudiments from Edinburgh, then famous as ‘Hotbed of Genius.’¹³ Scottish Enlightenment masterly generated a speciality in medical training¹⁴ and the EEIC utilized this scientific achievement fully to its advantage. According to Kapil Raj:

The Company had to turn mainly to Scotland to recruit its specialized employees. Indeed, in Scotland’s more egalitarian Presbyterian tradition, many more

¹⁰ Only few scholarships drew their attention to the medical history of snake-antidote in the context of colonial India. See Mark Harrison, “Medicine and Orientalism: Perspectives on Europe’s Encounter with Indian Medical Systems,” in *Health, Medicine and Empire: Perspectives on Colonial India*, ed. Biswamoy Pati and Mark Harrison (New Delhi: Orient Longman, 2006), 37-87; Mark Harrison, *Medicine in an Age of Commerce and Empire: Britain and Its Tropical Colonies 1660-1830* (New York: Oxford University Press, 2010), 121-172; and Pratik Chakrabarti, “‘Neither of meate nor drinke, but what the Doctor alloweth’: Medicine Amidst War and Commerce in 18th-century Madras,” *Bulletin of the History of Medicine* 80 (2006): 1-38.

¹¹ Anil Kumar, *Medicine and the Raj: British Medical Policy in India, 1835-1911* (New Delhi: Sage, 1998), 10; Deepak Kumar, “Social History of Medicine: Some Issues and Concerns,” in *Disease and Medicine in India: A Historical Overview*, ed. Deepak Kumar (New Delhi: Tulika, 2001), xi-xxii, xvii.

¹² Harrison, *Medicine in an Age*, 5-6.

¹³ Paul Wood, “The Scientific Revolution in Scotland,” in *The Scientific Revolution in National Context*, ed. Roy Porter and Mikuláš Teich (Cambridge: Cambridge University Press, 1992), 263-287, 264.

¹⁴ See Helen M. Dingwall, *A History of Scottish Medicine: Themes and Influences* (Edinburgh: Edinburgh University Press, 2003), 108-149; also see Wood, “The Scientific Revolution.”

went to university than in England and at a much earlier age...Scotland did not have the capacity to absorb its qualified workforce, which consequently emigrated to England and beyond. A large number were absorbed into the Company's ever expanding services overseas, to occupy positions as engineers, soldiers, veterinarians, diplomats, doctors, and naturalists. Indeed, it was predominantly the Scots who manned the highly successful operational, scientific, and technological aspects of its activity in India.¹⁵

In fact, after enactment of the Act of Union in 1707, with the formation of the new Kingdom of Great Britain, the scope in the British Empire created new opportunities for the Scots to migrate.¹⁶ As revealed in a near contemporary statistics, of the 3023 entrants to the Indian Medical Service between 1804 and 1896 as many as 919 were Scotsmen.¹⁷ Really, there were many prominent Scottish sojourners in the scientific and medical services of the EEIC who broke new ground¹⁸ and provided a receptive environment in India to accommodate ideas for scientific and medical activities beneficial to the Company. Scottish natural historian Patrick Russell is one of them who eventually became the premier player in the field of Indian natural history of serpents. However, before going deep into Russell's achievements as a natural historian of serpents we must have a glance at his early life to conceive his overwhelming influence in Indian scenario.

The Making of Dr. Patrick Russell

Patrick Russell,¹⁹ born in a well-heeled family in Edinburgh on 6 February 1727, was the fifth son of John Russell, a renowned solicitor of Braidshaw in Midlothian and his third

¹⁵ Kapil Raj, *Relocating Modern Science: Circulation and the Construction of Scientific Knowledge in South Asia and Europe, Seventeenth to Nineteenth Centuries* (Delhi: Permanent Black, 2006), 110-111.

¹⁶ For Scottish migration to British India and their imperial activities, see G. J. Bryant, "Scots in India in the 18th Century," *The Scottish Historical Review* 64 (1985): 22-41; Martha McLaren, *British India and British Scotland, 1780-1830: Career-building, Empire-building, and a Scottish School of Thought on Indian Governance* (Akron: University of Akron Press, 2001); Andrew Mackillop, "Europeans, Britons, and Scots: Scottish Sojourning Networks and Identities in Asia, c.1700-1815," in *A Global Clan: Scottish Migrant Networks and Identities Since the 18th Century*, ed. Angela McCarthy (London and New York: Tauris Academic Studies, 2006), 19-47.

¹⁷ Dirom G. Crawford, *Roll of the Indian Medical Service 1615-1930* (London: W. Thacker and Co., 1930), 649.

¹⁸ Such as, Colonel Robert Kyd, who founded 'The Hon'ble Company's Botanic Garden, Calcutta' in 1787, was the oldest and largest botanical garden in India; William Roxburgh, gained the title 'Father of Indian Botany' for his extensive endeavour; Colin Mackenzie, produced many of the first accurate maps of India; Francis Hamilton-Buchanan was also among the pioneers of large-scale topographical surveys; and John McClelland, was appointed in 1836 as the secretary of the 'Coal Committee', the forerunner of the Geological Survey of India.

¹⁹ The principal source of biographical material about Patrick Russell has been the affectionate *Memoir* which was written by a certain individual and added posthumously to the first part of the second volume of *An Account of Indian Serpent*. See Anonymous, "Memoir of the Life and Writings of Patrick Russell, M.D. F.R.S.," in *A Continuation of an Account of Indian Serpent; Containing Descriptions and Figures, from Specimens and Drawings, Transmitted from Various Parts of India* by Patrick Russell (London: W. Bulmer & Co. Shakspeare Press, 1801), ix-xv; also reprinted in *The European Magazine*

wife Mary, daughter of the Reverend Anderson, minister of West Calder.²⁰ With his three brothers and three half-brothers, Russell flourished in a perfect socio-cultural milieu for future mediciner.²¹ One of his close relatives, his half-brother's uncle Francis, was an eminent medical practitioner in the city²² and his half-brother Alexander Russell, was not only a reputed physician serving the British factory of the Levant Company in Aleppo (now Halab) in Syria, but also one of those six medical students who instituted the Students' Medical Society of Edinburgh University in the autumn of the year 1734.²³ That small medical body progressively developed into the Royal Medical Society of Edinburgh in which the majority of active members including Patrick Russell were undergraduates.²⁴ Russell received the rudiments of his classical education in Roman and Greek at the Edinburgh high school and studied medicine at the Edinburgh University from where he qualified as Doctor of Medicine.²⁵

After completing his study of medicine, which he later described as 'experimental physic',²⁶ Russell, in 1750, joined his half-brother Alexander Russell, twelve years his senior, in Aleppo. For three years he continued as a medical trainee under the guidance of his older brother and simultaneously learned colloquial language and acquainted himself with prevalent

and London Review 59 (1811): 3-8. For recent biographical sketches, see Barbara J. Hawgood, "The Life and Viper of Dr Patrick Russell MD FRS (1727-1805): Physician and Naturalist," *Toxicon* 32 (1994): 1295-1304; G. S. Boulger and Mark Harrison, "Patrick Russell (1727-1805)," in *Oxford Dictionary of National Biography: From the Earliest Times to the Year 2000*, vol. 48, ed. H. C. G. Matthew and Brian Harrison, (New York: Oxford University Press, 2004), 328-329; and Anantanarayanan Raman, "Patrick Russell and Natural History of the Coromandel," *Journal of the Bombay Natural History Society* 107 (2010): 116-121.

²⁰ Anon., "Memoir of the Life," ix.

²¹ All six brothers of Patrick Russell who survived to manhood became illustrious in their fields: John was a founder member of the Royal Society of Edinburgh and writer to the signet, William was the secretary of the Levant Company and FRS, Alexander was a reputed surgeon-naturalist of the Levant Company in Aleppo and author of the *Natural History of Aleppo and Part Adjacent* and became FRS, David was a well-known Edinburgh lawyer, Claud a chief administrator in the EEIC in Madras, and Balfour was a degree holder in medicine and appointed as physician to the factory of Algiers, but died before he could reach his destination.

²² See John C. Lettsom, "Memoirs of Alexander Russell, MD," in *Memoirs of John Fothergill, M.D. &c.*, ed. John C. Lettsom (London: C. Dilly, 1786), 241-259, 242.

²³ See John Fothergill, "An Essay on the Character of the Late Alexander Russell, M.D. F.R.S.," in *A Complete Collection of the Medical and Philosophical Works of John Fothergill*, ed. John Fothergill (London: John Walker, 1781), 633-661, 645-648; John C. Lettsom, "Memoirs of John Fothergill, M.D. F.R.S. &c.," in *Memoir of John Fothergill*, ed. Lettsom, 1-205, 142-145; Richard H. Fox, *Dr. John Fothergill and His Friends: Chapters in Eighteenth Century Life* (London: Macmillan and Co., Limited, 1919), 15 and 118.

²⁴ Cuthbert E. Dukes, "London Medical Societies in the 18th Century," *Proceedings of the Royal Society of Medicine* 53 (1960): 699-706, 699-700; Hawgood, "The Life and Viper", 1295-1296; and Barbara J. Hawgood, "Alexander Russell (1715-1768) and Patrick Russell (1727-1805): Physicians and Natural Historians of Aleppo," *Journal of Medical Biography* 9 (2001): 1-6, 1.

²⁵ Anon., "Memoir of the Life," ix.

²⁶ See Maurits H. van den Boogert, "Patrick Russell and the Republic of Letters in Aleppo" in *The Republic of Letters and the Levant*, ed. Alastair Hamilton, Maurits H. van den Boogert and Bart Westerweel (Leiden: Brill Academic Publishers, 2005), 226.

customs of the local people.²⁷ Gradually he developed keen interest in the local flora and fauna following his brother's naturalistic vision.²⁸ In 1753 when Alexander Russell left Aleppo for London, Russell succeeded him as physician to the British factory and worked there for the next eighteen years. He was so much revered there that the Pasha conferred him the privilege of wearing a turban, "a signal mark of distinction to an European, and one which is seldom conferred."²⁹

In Aleppo Russell actually assumed a dual character. As an assigned doctor, he treated patients from all ranks, religions and nationalities,³⁰ sought to understand the nature of epidemic of plague which recurrently occurred in 1760, 1761 and 1762,³¹ concerned himself about the method of inoculation practiced in Arabia³² and also as a truly amateur natural historian developed a fascination for 'living nature' of Aleppo. His consummate skill and keen interest in natural history of Aleppo encouraged him later to edit a revised, enlarged and illustrated version of his brother's canonical work on the region and twenty-six years after Alexander Russell's death, the second edition of his book, *The Natural History of Aleppo*, originally published in 1756 (dated MDCCCLVI in error), appeared in 1794.³³ However, in 1771, after a residence of about twenty one years, he resolved to leave Aleppo, travelling overland to Edinburgh. Though Russell had intended to practice in Edinburgh, on the counsel of Dr. John Fothergill,³⁴ and "on account of the wider sphere it offered for professional exertion"³⁵ he moved to London, remained there till the latter end of the year 1781. In the mean time Russell was elected as FRS on 27 November 1777.³⁶ Thus empowered with modern

²⁷ Anon., "Memoir of the Life," x.

²⁸ For Russell brothers' natural historical activities particularly in Aleppo, see Hawgood, "Alexander Russell," 1-6; Janet C. M. Starkey, "No Myopic Mirage: Alexander and Patrick Russell in Aleppo," *History and Anthropology* 13 (2002): 257-273; and van den Boogert, "Patrick Russell," 223-264.

²⁹ Anon., "Memoir of the Life", x.

³⁰ *Ibid.*, x.

³¹ See Patrick Russell, *A Treatise of the Plague: Containing an Historical Journal, and Medical Account, of the Plague, at Aleppo, in the Years 1760, 1761 and 1762. Also, Remarks on Quarantines, Lazarettos, and the Administration of Police in Times of Pestilence. To which is Added, an Appendix, Containing Cases of the Plague; and an Account of the Weather, during the Pestilential Season*, 2 vols. (London: G. G. and J. Robinson, 1791).

³² See Patrick Russell and Alexander Russell, "An Account of Inoculation in Arabia, in a Letter from Dr. Patrick Russell, Physician, at Aleppo, to Alexander Russell, M.D. F.R.S. Preceded by a Letter from Dr. Al. Russell, to the Earl of Morton. P.R.S.," *Philosophical Transactions of the Royal Society of London* 58 (1768): 140-150.

³³ Alexander Russell, *The Natural History of Aleppo: Containing a Description of the City, and the Principal Natural Production in its Neighbourhood. Together with an Account of the Climate, Inhabitants, and Diseases; Particularly of the Plague*, 2 vols. ed. Patrick Russell (London: G. G. and J. Robinson, 1794).

³⁴ John Fothergill was a Quaker, studied medicine at the Edinburgh University and later became a highly successful London practitioner and naturalist. He had intimate friendship with Patrick Russell, as well as with his elder brother Alexander Russell.

³⁵ Anon., "Memoir of the Life," xi.

³⁶ The Royal Society Library and Information Services, "List of Fellows of the Royal Society 1660-2007," last modified July 2007, accessed Aug. 2011 <http://royalsociety.org/uploadedFiles/Royal_Society_Content/aboutus/fellowship/Fellows16602007.pdf>

medical education and enhanced by rich experience abroad, Russell become appropriate to the ensuing expedition to India. In this context Russell wrote about himself: “The universal inclination to contribute assistance which he experienced abroad, he regards as a strong ground of confidence; the propitious disposition of the Direction (of the Court of the Directors of the EEIC) at home, as a still stronger.”³⁷ Indeed, his pioneering work on Indian viper in the next eight years under the domain of the Company Raj elevated him to an esteemed position in the metropolitan scientific realm.

Promoting Snakology for the Empire

As early as in 1781, Russell reached Vizagapatam, a newly possessed coastal district of Madras Province in India, at the age of fifty five to look after his ailing brother Claud Russell, who was appointed there a bit earlier as the chief administrator of the EEIC.³⁸ Upon arrival, Russell began an assiduous study of local flora and fauna which had been explored very little earlier.³⁹ His interest in the natural history of the area led the Government of Madras appointing him in 1785 as the Company’s ‘Botanist or Naturalist’ in the Carnatic.⁴⁰ In this post Russell succeeded Dr. John Gerard Koenig,⁴¹ on his death, at the request of the Government of Madras and “Fortunately for science, the Doctor accepted the offer, through the persuasion of his brother, Mr. Claud Russell.”⁴²

In Aleppo, however, Russell had little occasion to study serpents, but in India, where snakes and snake-bite incidents both were very common, he spent substantial time in snakological research taking full advantage of his new assignment and authority. Actually Russell was encouraged with enlarged possibilities of scientific endeavour in colonial employ where physicians had more opportunities than in Europe, to expose themselves to a huge variety of disease environment and different medical traditions. As a company servant and surgeon-naturalist, he was chiefly concerned with the ‘terror’ of the disease of snake-poisoning, eagerly searched for a way to differentiate venomous snakes from the other varieties and vigorously tried to pursue a perfect remedy for snake envenomation. In his version:

The terror occasioned by those numerous reptiles, is immoderately aggravated by the indiscriminate apprehension of all being poisonous. To distinguish, therefore, those that are really so, from such (by far the greater number,) as are harmless,

³⁷ Russell, *An Account*, viii. parenthesis added.

³⁸ Anon., “Memoir of the Life,” xi.

³⁹ See Russell, “Preface,” i-iv.

⁴⁰ Anon., “Memoir of the Life,” xi.

⁴¹ John Gerard Koenig (Johann Gerhard König) born in the duchy of Courland, studied medicine in Uppsala, Sweden, and became a disciple of one of the greatest naturalists of all time Carolus Linnaeus (Carl von Linné). In 1768, he joined the Moravian Mission in Tranquebar, and in quest of some financial aid he accepted the post of Naturalist to the Nabob of Arcot in 1774. After some years he was transferred to the Company in 1778 as their first Naturalist and Botanist, the post held by him until his death. The plant genus *Koenigia Icelandica* was named after him by Linnaeus, as was a species of curry-leaf tree *Murraya koenigii*. He met Patrick Russell in June 1782 at Tranquebar and remained in constant communication.

⁴² Anon., “Memoir of the Life,” xi.

becomes a matter next in importance to the discovery of a remedy against their poison.⁴³

He added:

The poisonous serpents, nevertheless, are the principal subjects of experiment, as from the effects of their poison on brutes, probable conjectures may be formed concerning their effects on the human species; and it is also probable that the same remedies may be nearly of equal service to both. But an object, of all others the most important, was to collect a medical account of the disease, arising from the poison of serpents, as it appears in the human subject; and of the most effectual remedies employed in the cure.⁴⁴

This and similar medical consideration, suggested the idea of collecting, classifying and depicting the serpents inhabited in the coast of Coromandel and elsewhere. And the whole venture was truly concerned about the colonizers' problem of living in India. Thence, when Russell's *An Account of Indian Serpents* was effectually published, its aim and intention were clearly stated by the author as: "The following work, intended principally for the use and benefit of the Company's establishments in India."⁴⁵ More specifically he picked and choose its target readers as: "The descriptions being calculated less for the professed naturalist, than for the service of gentlemen in India, not conversant in such matters, a few preliminary explanations will not be deemed impertinent."⁴⁶ Really, the protection of the settlers' life against fatal 'exotic' disease like snake-poisoning was extremely vital for the process of colonization, especially in India where the ruling race was a minor group holding huge imperial responsibility. In this respect Russell served enormously.

Russell quickly realized that to order the snaky terrain suitably for the colonizers systematic study of its snakes was essential. According to him articulated scientific knowledge about Indian vipers was not available at that point of time. He felt helpless as he could neither get much prior labours of others, nor could collect enough auxiliary information "which was not vague and imperfect."⁴⁷ So, "scattered information" had to be orchestrated as he wrote:

Yet, it is not to be supposed that a subject of such interesting importance in that country, has been altogether neglected. There are many of the gentlemen long resident abroad, who recollect (however imperfectly,) circumstances attending accidents, which happened within their own knowledge; and I heard, when in India, of several who had formerly dedicated some leisure hours to experiments on serpents. But it is to be lamented that the scattered information has never been collected; and that the result of experiments, together with accidental discoveries, have not been recorded in a manner to preserve them for the benefit of posterity.⁴⁸

In fact, Russell was surprised and also repined for the lack of systematic "medical history of serpent" in a country "where the object in view is more peculiarly interesting, and

⁴³ Russell, *An Account*, v.

⁴⁴ *Ibid.*, vi.

⁴⁵ *Ibid.*, ix.

⁴⁶ *Ibid.*, vi.

⁴⁷ *Ibid.*, 67.

⁴⁸ *Ibid.*, v.

where subjects for experiment are easily procured”⁴⁹ and where such accounts “might have reasonably been expected.”⁵⁰ He wished that “the medical gentlemen in India would in future bestow more attention on this subject than appears to have been done hitherto.”⁵¹ So, when Russell made an effort to accumulate snakological information and published the collection as a folio edition, he consciously set himself as the foremost among early medical-zoologists in India who had contributed to structural ‘improvement’ in the system of knowing to the fullest expectation of the Empire.⁵² Predominantly, the motive behind this intension of improvement was to consolidate British possession of its territories and make them more useful for the strategic and commercial needs of the motherland.⁵³

Naturally, Russell got the favour of his patron agency because, “While he paid due attention to the description and nomenclature of plants and of animals, he never failed to attend also to their peculiar habits, and to the useful purposes, if any, to which they might be applied.”⁵⁴ The EEIC quickly and clearly perceived that the whole physical basis of their authority largely depended on such exclusive natural history knowledge of the area they conquered and wished to keep in prolonged possession.⁵⁵ Colonial authority not only acknowledged the importance of Russell’s work whether it dealt with plants, fishes or poisonous serpents, but also supported his every such proceeding with all possible financial aids. For example, in the end of the year 1787, to distinguish a poisonous from a harmless serpent, and thereby relieve the anxious doubts and fears of many who might happen to be bitten, Russell wrote a short version, illustrated with figures, on the peculiar organs to be observed in the mouth of a poisonous serpent. These descriptions and images were financed by Madras Government for publication, and all the subordinate settlements and military stations received copies of these for general information.⁵⁶ The same policy was followed when Russell presented his elaborate project *An Account of Indian Serpents* to the Court of Directors of the EEIC which was published by their order.⁵⁷ Actually, during the colonial period, it was an extraordinary tactics of the Company to patronize the profession of physicians with grant for printing their medical manuscripts and as this aid was not confined to any particular nationality of Europe a scope of cosmopolitanism might have persisted.

However, the EEIC was not a ‘liberal patron of science’ and there must be a definite goal behind its encouragement to Russell. Evidently, proper medical knowledge about Indian vipers and its venom would help save life of Company’s servants working in India from the pernicious effect of envenomation, an essential requirement for the EEIC to continue their profitable endeavour. As stated by the memoirist of Russell, “The discrimination of noxious from harmless serpents, was a service done, not merely to science in general, but to every

⁴⁹ Ibid., 67.

⁵⁰ Ibid., 77.

⁵¹ Ibid., 77.

⁵² Ibid., viii.

⁵³ This point is forcefully made in Richard Drayton, *Nature’s Government: Science, Imperial Britain, and the ‘Improvement’ of the World* (New Delhi: Orient Longman, 2005).

⁵⁴ Anon., “Memoir of the Life,” xv.

⁵⁵ Kumar, *Science and the Raj*, 32.

⁵⁶ See Anon., “Memoir of the Life,” xi-xii.

⁵⁷ See Russell, *An Account*, title page.

individual who has occasion to visit tropical climates.”⁵⁸ Therefore, for the sake of visiting colonizers’ subsistence in this snaky torrid zone, the articulation between natural history of serpents and colonial power was conceived in a typical fashionable way. The quest for natural history in India was thus always a consequence of the “unceremonious marriage” between colonial exploitation and the gentlemen amateurism during the age of imperial exploration.⁵⁹

Risky Ordeals with Snakes

Treatment of snake-bite victims by Russell got him interested in Indian vipers. Although Russell made substantial field researches with serpents, he was completely aware of the personal risk involved in it and also of the repulsive character of the study of natural history of snakes. He indicated that such cultivation:

offers no attractive allurements; and that those who, from other avocations, can only spare transient attention to subjects of Natural History, are more likely to prefer objects less disgusting, and experiments accompanied with less cruelty, and personal danger. Even the eager and resolute Naturalist has to contend with many difficulties in this path of research.⁶⁰

According to Russell, the gentleman engaged in such unpleasant occupation “cannot, at once, divest himself of the abhorrence, next to innate, of these reptiles; nor can he soon acquire a dexterity in handling them, with that calmness requisite for his own safety.”⁶¹ He warned his subsequent fellow practitioners not to work with any ‘casual curiosity’ and in effect, advocated that the medical-zoologist should be personally passionate, boldly systematic and imperturbably professional in his approach. These were, as if, the essential qualities of a bona fide natural historian, experimenting with snakes, not only for avoiding lethal accident, but also for continuing prolonged pursuit of knowledge on behalf of medicine and the Empire. Thus Russell delicately tried to model the colonial snakologists in terms of a special scientific culture till then unprecedented in the field of natural history of serpents in India and with his subservient disposition towards the backer agency he appropriately fitted himself in his own rigid framework. This denoted that Western medicine emerged in the colony not only as a means of mercantile exploitation but also as a strong cultural force.

Russell examined live snakes, described and made colourful sketches of them, obtained indigenous knowledge about their behaviour and Telugu (main South Indian dialect) name of each. To ascertain the envenoming power of snakes he used to introduce live animals, chiefly dogs and chickens, directly into the snake’s cages and observed signs and symptoms of poisoning.⁶² His prime experiments involved major Indian vipers capable of causing medically significant envenomation with life threatening symptoms. From his multifarious experiments he noted that the first symptom of poisoning was pain and paralysis of the bitten part⁶³ and that

⁵⁸ Anon., “Memoir of the Life,” xv.

⁵⁹ Sangwan, “Natural History,” 282.

⁶⁰ Russell, *An Account*, v.

⁶¹ *Ibid.*, v.

⁶² *Ibid.*, 84-88.

⁶³ His several experiments and observations showed that repeatedly.

biting of a noxious snake having removed its fangs produced no symptom of poisoning.⁶⁴ Russell learnt how to 'milk' a venomous serpent and artificially introduced milked venom to animals for investigation and after doing so repeatedly,⁶⁵ he arrived at the theory that: "artificial insertion of poison is less secure of taking effect than the bite of the animal; but the consequent symptoms are exactly the same, and the event, with respect to the smaller animals, not less fatal."⁶⁶ He also meticulously studied the physical character of venom including its colour, taste and consistency⁶⁷ and was first to assure that: "a bite of the most pernicious snake dose not constantly prove fatal; and that even the tenderer animals, sometimes without the use of remedies, recover, in instances where the symptoms were very formidable."⁶⁸ This type of medical observation certainly, to some extent, revived colonizers' mental strength and removed constant fear about the disease of snake-poisoning.

Of course, such extensive toxicological study with venom of the serpent was quite novel at that point of time. Though Italian physiologist, naturalist and renowned experimentalists in toxinology Abbé Felice Fontana, working in Tuscany on the venom of the European vipers, made great progress in this line and was distinguished as 'Founder of Modern Toxinology',⁶⁹ he seldom met with an instance where envenomation proved lethal to human being. In Fontana's hypothesis a single bite could never be mortal to an adult; he had seen a dozen cases himself and had heard of fifty more, only two of which ended fatally.⁷⁰ Interestingly, he alleged that some very timid, delicate and nervous people actually died out of fear rather than from the disease of snake-poisoning. As he emphatically wrote: "We know, that death itself may be brought on by very violent affections of the mind, without any internal disease. Why may not people, who are bit, die from a disease, produced entirely by fear, and who would not otherwise have died from any complaint produced by the venom?"⁷¹ But the disease environment encountered by Russell in India was entirely different and immensely perilous. Russell's own realization:

The case is widely different in respect to the poisons of the Cobra de Capello, and some other Indian serpents. That man is subjected to their deleterious power, is a fact confirmed every year by too many fatal accidents; and the experiments...put it beyond all doubt, that the stronger animals, who resist the poison of the viper, rapidly give up life, to the single bite of a Cobra de Capello.⁷²

⁶⁴ Russell, *An Account*, 88.

⁶⁵ *Ibid.*, 86-88.

⁶⁶ *Ibid.*, 67.

⁶⁷ *Ibid.*, 86-87.

⁶⁸ *Ibid.*, 66.

⁶⁹ See Barbara J. Hawgood, "Abbé Felice Fontana (1730–1805): Founder of Modern Toxinology," *Toxicon* 33 (1995), 591-601.

⁷⁰ See Russell, *An Account*, 77; Samuel Cooper, *A Dictionary of Practical Surgery: Comprehending All the Most Interesting Improvements, from the Earliest Times Down to the Present Period; an Account of the Instruments and Remedies Employed in Surgery; the Etymology and Signification of the Principal Terms; and Numerous References to Ancient and Modern Works, Forming a "Catalogue Raisonné" of Surgical Literature* (London: Longman, 1825), 1226.

⁷¹ Quoted in Cooper, *A Dictionary*, 1226.

⁷² Russell, *An Account*, 77.

In India generality of victims died of the pernicious effect of venom, not from the violent effect of mental alarm. Therefore, snakological exploration in India was not a 'pastime, or pleasurable occupation', rather Russell painstakingly inducted an original discipline through his deep medical and cultural persona. His intention and working condition were utterly different from those of a naturalist performing in the various parts of Europe and his enterprise produced many new facts and realities up till then unacquainted and unattained by metropolitan medical specialists.

In course of his research, one particular species that received Russell's special attention was known in the local Telugu dialect as Katuka Rekula Poda, whose venom was shown experimentally by him to be nearly as fatal as that of Cobra de Capello or Indian Cobra. In his observation:

It is not less commonly met with, in a wild state, than the Cobra de Capello; but from its not being, like Cobra and some other snakes, exhibited as a public show, it is not so universally known, either among the natives, or Europeans. Nevertheless it is doubtful whether its poison is not equally deleterious with that of the Cobra de Capello: it may at least claim a second place.⁷³

As far as zoogeography is concerned, this snake is most common in India, widely distributed throughout the country and distinguished by various local names in colloquial languages.⁷⁴ This viper is responsible for most of the snake-bite deaths within its habitat and one of the most feared snakes in this country. Russell was the first to introduce this species to the Western scientific realm and as a mark of respect to this foremost effort this snake was named after him as Russell's viper, now called *Daboia russelii*.⁷⁵

In the same vein, Russell himself, with due obligation, entitled a type, called by the local people Erutaley Nagam, after the Danish missionary of Tranquebar Christoph Samuel John who sent him the specimen, as *Boa Johnii*.⁷⁶ As a consequence of introducing such European names, all age-old existing indigenous nomenclatures of these snakes were made to vanish and they were uprooted from their innate cultures and acclimatized to Western epistemology as well as colonial rule. This Western scientific ability of categorically naming

⁷³ Russell, *An Account*, 11.

⁷⁴ See J. C. Daniel, *The Book of Indian Reptiles and Amphibians* (Mumbai: Bombay Natural History Society & Oxford University Press, 2002), 148-151.

⁷⁵ In their publication *Naturalist's Miscellany* (viii, 1797), George Shaw, Assistant Keeper of the British (Natural History) Museum, and Frederick Polydore Nodder described and named Katuka Rekula Poda as the Russelian snake (*Coluber russelii*). Over the next century this snake was given several names. In *The Thanatophidia of India* (1871), Sir Joseph Fayrer used the name *Daboia russelii*. In 1890, George Albert Boulenger, Keeper of the British (Natural History) Museum entered the name of *Vipera russelli* in *Fauna of British India* and in this form it appeared in the *Catalogue of Snakes in the British Museum* (1896). Several sub-species of Russell's viper have now been described, and it is fitting that the viper bears the name of Russell. For a brief account of naming, see Hawgood, "The Life and Viper," 1303. It is very much mentionable here that, in a similar vein, a particular species of Oarfish, caught in Vizagapatam in 1788, described in Russell's ichthyological collection and illustrated on plate 40, named for him as *Regalecus russelli*. This fish for its longish size, slender forms and sinuous motion often regarded as sea snakes. See David S. Jordan, *A Guide to the Study of Fishes*, vol. 2 (New York: Henry Holt and Company, 1905), 472-473.

⁷⁶ Russell, *A Continuation*, 18-19.

the varieties, which historians have called ‘linguistic imperialism’,⁷⁷ enabled the colonizers to efficiently cope with the problem of rising numbers of species they were coming across and gave them credence to penetrate deeply into the natural world of the colony. But this was not all.

A unique aspect of Russell’s work was his preference for local vernacular names of the serpents, over their scientific ones. Russell perhaps did not feel cosy with the bi-nomenclature introduced by the great Swedish taxonomist Carolus Linnaeus⁷⁸ and his practical experience in the colony prevented him from totally rejecting ‘other’ epistemology. It is worth mentioning here that, the Scottish academics were among the first to adopt Linnaean system in their practice;⁷⁹ but Russell, particularly in this case, presented a different precedent. Perhaps working in a colony, separated from the overwhelming influence of the home community, gave him an impetus to build up new ideas and identities. Obviously, Western medical-zoology provided Russell with effective mechanisms to administer the tricky situation, but his close contact with indigenous practices often stimulated him to reject much of what he had learned in his home country. His research was never a purblind simulation of the metropolitan method. We have some more instances.

Desperate to find a way for identification of poisonous snakes Russell came to the conclusion that the differential criterion laid in the different dentitions of the snakes. He noted that: “The poisonous serpents are sufficiently distinguished by their fangs...But the want of a row of teeth in the upper jaw, found in that of all harmless serpents, serves also as a criterion, even where the fangs have purposely been eradicated, or lost by accident.”⁸⁰ He had experimentally shown that all innocuous serpents invariably had three rows of common teeth in the upper jaw; one exterior termed ‘marginal’, and two interior termed ‘palatal’. In the case of a venomous species this marginal row was lacking and replaced by one or two fangs, however palatal rows are common in all serpents. Nevertheless, this distinguishing mark could not effectively identify each and every venomous snake like poisonous Boa, “in which three ordinary teeth are found placed singularly in the upper jaw.”⁸¹ According to Barbara J. Hawgood English naturalist John Ray, in 1693, had pointed to this distinguishing criterion of different dentitions but Linnaeus had not duly considered it in his methodological arrangement of the serpents.⁸² Thus Russell’s experiments resituated, after centuries, an effective European system of identification and classification, neglected by another dominant European method, in its own position. This indicated how prevalent Western knowledge was reconstituted as a result of its encounter with colonial experience and more significantly, how individuals committed to medicine in the colony conducted their studies and fabricated their modes of research with full ingenuity and personal choice.

⁷⁷ See Londa L. Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge and Massachusetts: Harvard University Press, 2004), 194-225.

⁷⁸ Linnaeus’ brilliant binomial system of nomenclature, in which each organism is represented first by its generic name followed by the name of its species, was first presented fully in the *Species Plantarum* (1753) and the tenth edition of the *Systema Naturae* (1758). It is still used in botany and zoology, and will probably continue to be used for the indefinite future.

⁷⁹ See Wood, “The Scientific Revolution,” 275.

⁸⁰ Russell, *An Account*, vii.

⁸¹ Russell, *An Account*, vii.

⁸² Hawgood, “The Life and Viper”, 1300.

Russell's enthusiastic attempt to classify Indian snakes also met with certain difficulties. In *Systema Naturae*, Linnaeus epitomized the system of scientific classification of natural world into classes depending on structural resemblances and differences⁸³ thereby stimulating the study of natural history in Europe and overseas.⁸⁴ In India, 'Linnaean ideal voyager' Koenig, introduced for the first time his preceptor's method of classification and binomial nomenclature for plants.⁸⁵ His boon companion Russell⁸⁶ also used Linnaean systematic of the presence or absence of abdominal and of sub-caudal scuta (plate-like scales) to identify and classify the 43 snakes collected by him in his first fascicule into three genera. He wrote: "Serpents, according to Linnæan arrangement, are placed in the second order of amphibious animals; but of the six genera of which that class consists, three only are to be found in the present collection, viz. the Boa, Coluber, and Anguis."⁸⁷ The Boa had scuta on the under part of the tail and on the belly; the Coluber had abdominal scuta and sub-caudal squamæ on the under part of the tail; the Anguis had neither scuta nor scutellæ, being covered with uniform scales in general.⁸⁸ Though Russell followed Linnaean methodology, he was not fully comfortable with it. In depicting a variety, called by the 'native' as double headed snake, he wrote: "The tail is so much longer than that of the Anguis Meleagris of Linnæus, that I am in doubt whether it can be referred to that species."⁸⁹ In an another observation after experiment with a species called by the Indians as Wanna Pam similar to Linnaean *Coluber Stolatus*, he noted: "The C. Stolatus of Linnæus, is marked poisonous; but that is a mistake... The present subject has a marginal row of teeth above, but no fangs."⁹⁰ Russell's idea of classification here involved the criterion of dentitions of the snakes which effectively filled up the lacuna in Linnaean theory. Also as pointed out by Barbara J. Hawgood "Of the 43 snakes in Russell's first collection, only six could be identified from the Linnaean *Systema Naturae*, including colubrids *Naja* and *Mycterizans*. Three of the four serpents that Russell classified in the family Boidae proved to be venomous."⁹¹ The eighteenth century did, indeed, witness developments in Western science of systematics in many fields, including medical-zoology and certainly, this kind of peripheral application extended and ameliorated metropolitan notion of taxonomy. As Samuel Miller (1769-1850) argued:

⁸³ The tenth edition of *Systema Naturae* is the epoch-making work as in this the binomial nomenclature for the whole animal kingdom was introduced for the first time. The work was also greatly enlarged, and the classification greatly improved. In its Linnaean class Amphibia contained four orders and the snakes formed the second order Serpentes, which included six sub-orders Crotalus (rattlesnakes), Boa (boas), Coluber (racers, vipers & cobras), Anguis (slowworms & worm snakes), Amphisbaena (worm lizards) and Caecilia (caecilians).

⁸⁴ See Lisbet Koerner, "Carl Linnaeus in His Time and Place," in *Cultures of Natural History*, ed. Jardine *et al.*, 145-162.

⁸⁵ Jain, "Development of Life," 116; Richard Axelby, "Calcutta Botanic Garden and the Colonial Re-ordering of the Indian Environment," *Archives of Natural History* 35 (2008), 150-163, 152; Srabani Sen, "The Asiatic Society and the Science in India, 1784-1947," in *Science and Modern India: An Institutional History, c. 1784-1947*, ed. Uma Das Gupta (New Delhi: PHISPC and Pearson Longman, 2011), 27-68, 28.

⁸⁶ On the amity between Russell and Koenig, see Russell, "Preface," i-v.

⁸⁷ Russell, *An Account*, vi.

⁸⁸ *Ibid.*, vi-vii.

⁸⁹ *Ibid.*, 48.

⁹⁰ *Ibid.*, 15.

⁹¹ Hawgood, "The Life and Viper," 1300.

That department of zoology which includes the *Amphibia*, or the *third* Linnæan class, has also been greatly extended and improved during the eighteenth century. Beside Linnæus, this class was treated, with much ability, by Mr. Catesby, an English gentleman, who resided for some time in America. Next to him, Dr. Garden, who spent time a number of years in South Carolina, communicated much new light with respect to the animals generally, and especially the *Amphibia*, of the new world. Dr. Russell's great work on *Serpents* of the Coromandel Coast in a production of the highest excellence in its kind, the progress of natural history.⁹²

Russell, therefore, had been equated with the 'highest excellence' of the metropolis namely Linnaeus. And at the same time Miller's version duly recognized the immensely important contribution of the colony in improving Western science and medicine.

Quest for an Alternative

Russell was persistently searching for an effective remedy for snake-poisoning in all possible ways, which led him to experiment with a widely used 'native' antidote for the bite of venomous serpents and rabid animals, indigenously known by the name of 'Tanjore pill'. This 'country' or 'bazaar' medicine,⁹³ "sanctioned by unquestionable authority, as much used with perfect safety, and often with success"⁹⁴ was first brought to Western knowledge by a German missionary interlocutor Christian Frederick Schwartz, who was working in the service of the Danish settlement of Tranquebar, and the pill was subsequently subjected to several experiments under the ambit of the Medical Board of Madras.⁹⁵ An unnamed 'native' medicine-man, probably a Brahmin,⁹⁶ actually taught the doctors of Madras hospital how to administer the snake pill to patients bitten by serpents.⁹⁷ After apparent success Tanjore medicine were distributed to different settlements, with directions to the medical gentlemen, to report their effect, as occasions should occur.⁹⁸ It was William Duffin, surgeon of the garrison of Vellore and later Chief Surgeon at Fort St. George in Madras, who first drew Russell's attention towards this Indian remedy. In a letter dated January 1788, Duffin acquainted him:

Having lately seen your public memoir on the subject of snakes, I take the liberty of sending you the formula of a remedy which has been used with success in the bites of all poisonous animals, even of mad dogs. I procured it through the medium of the Rev. Mr. Swartz, who had influence with a native of Tanjore, to impart it for a pecuniary consideration.

⁹² Samuel Miller, *A Brief Retrospect of the Eighteenth Century: A Sketch of the Revolutions and Improvements in Science, Arts, and Literature, during that Period*, vol. 1 (London: S. Hamilton, 1805), 153-154.

⁹³ For the use of these terms and an account of Tanjore pill as 'country' or 'bazaar' medicine, see Chakrabarti, "Neither of meate nor drinke", 8-28.

⁹⁴ Russell, *An Account*, 67.

⁹⁵ Chakrabarti, "Neither of meate nor drinke", 19-20; Harrison, *Medicine in an Age*, 134.

⁹⁶ Anon., "Memoir of the Life," xii.

⁹⁷ Chakrabarti, "Neither of meate nor drinke", 19; Harrison, *Medicine in an Age*, 134.

⁹⁸ Anon., "Memoir of the Life," xii.

The deleterious quality of the arsenic was not the only objection to using it; for I was also given to understand, that two of the other ingredients, the velli-navi and the neri-visham, were poisonous roots; and the third, the nervalam, was a drastic purge. All these three are found in every bazaar in this part of the country, but, on account of their poisonous qualities, cannot be purchased without the knowledge of an officer of the police. They are indigenous on the Malabar coast, and used in composition, by the native practitioners, in a variety of diseases, besides those from animal poisons.

I was assured by Mr. Swartz, that, to his knowledge, the medicine had been used repeatedly; that no alarming symptoms occurred from it; and that it never failed in effecting a cure, when given in time, before the poison had affected the whole system.⁹⁹

Duffin assured Russell about the efficaciousness of the pill by giving the histories in details of two cases of the disease of snake-poisoning, in which he himself had successfully administered Tanjore medicine, intimated him about its compositions and added that “the cases being attended by no alarming symptoms. The pills generally occasioned a nausea and purging, but seldom in a violent degree.”¹⁰⁰ Duffin also favoured Russell with another reference, communicated to him by assistant surgeon to the third regiment of cavalry in the cantonment near Arcot, Mr. James Ramsay, where the result of application was somewhat alike.¹⁰¹

All these correspondences positively illustrated the colonizers’ arduous inquiry about Indian remedy and their dependence on local bazaar informants and ‘native’ practitioners for acquiring the exact ingredients for its preparation and medication. This acute interest in the pill was driven by administrative and military need. As European medicine was not sufficiently and regularly exported to India without being damaged in transit,¹⁰² Company surgeons sought to find out a local alternative mainly for the healing of the growing number of Indians—‘Dubash’, ‘Havildar’, ‘Sepoy’, and ‘Gentoo’ boy or man¹⁰³—working in British troops and settlements who were the principle victims of envenomation and preferred to be treated by indigenous medicine. Some times it was also being used for Europeans in the colonies such as Peter Francis, a private soldier of the third regiment.¹⁰⁴ But beside this, most significantly, European had a great want for a useful drug because during the multitude of experiments made in their homeland, the all celebrated internal Western remedies usually recommended against venomous bites, sufficiently confirmed their inefficaciousness.¹⁰⁵ Sir Everard Home, FRS and Surgeon at St George’s Hospital, confessed that none of the reputed antidotes had any effect in curing the disease.¹⁰⁶ The only remedy established in Europe by Fontana’s experiments as

⁹⁹ Quoted in Russell, *An Account*, 74.

¹⁰⁰ *Ibid.*, 74.

¹⁰¹ *Ibid.*, 79.

¹⁰² See, Chakrabarti, “‘Neither of meate nor drinke’,” 6-12.

¹⁰³ See Russell, *An Account*, 78-82.

¹⁰⁴ *Ibid.*, 78.

¹⁰⁵ *Ibid.*, 67.

¹⁰⁶ See Everard Home, “The Case of a Man, Who Died in Consequence of the Bite of a Rattle-snake; with an Account of the Effect Produced by the Poison,” *Philosophical Transactions of the Royal Society of London* 100 (1810): 75-88, 88; also see Cooper, *A Dictionary*, 1228.

effectual, under certain limitations, were amputation and ligature.¹⁰⁷ But without any physical mortification and mutilation, Tanjore medicine initially promised a cure for a major disease in India and thus search for this substitute became both a universal therapeutic urge and compulsion for the colonial authority.

However, before drawing any conclusion, Russell at first performed a series of experiments with the unknown articles of Tanjore pill separately and arrived at a preliminary decision that “none of the unknown ingredients appear to be deleterious, the velli-navi excepted.”¹⁰⁸ Then Russell induced himself to prepare, in his own way unlike indigenous method, a mass with all the above ingredients supplied to him by Duffin or collected from local bazaar to form the pill and after preparation administered it in several experiments on sound dogs and chickens. Though Russell dosed the pill with varying successes at different times to patients bitten by mad dogs, he regretted for not having the opportunity of trying the Tanjore medicine on the human beings bitten by serpents.¹⁰⁹ Therefore in case of the disease of snake-poisoning, he was not that sure about its remedial power and cautiously filed his own judgment that its efficacy was “a matter of much more difficult discussion.”¹¹⁰

Interestingly, during the last quarter of the eighteenth century a long debate persisted among British practitioners regarding the effectiveness of this snake-pill and Russell as physician and naturalist of the EEIC also played a solid role in it.¹¹¹ His trials signified that, though there was strong ‘native’ information about the successfulness of the pill, simple adaptation of indigenously procured drug without clinical analyses of its components was not generally encouraged. Colonizers presumably could not fully rely on ‘native’ manufacturability and instead were inclined to depend on their own experimental physic. But it was also a fact that at that point of time Western medicine, as employed in the colony, was not as culturally powerful as to totally denigrate the ‘native’ medical system. As an example, Duffin directly alerted not to ‘hastily condemn’ a remedy, like Tanjore pill, devoid of its full medical and compositional analysis, where experience and ocular demonstration indicated that it might be effective and out of harm’s way.¹¹² In such a situation, though Russell’s experimental inference on the efficaciousness of Tanjore medicine was somewhat ambiguous and inconclusive its use remained under close scrutiny for a long time. Moreover, this whole episode sounded very well in the metropolitan scientific domain and this snake-antidote on a whole appeared as a medicine with considerable success.¹¹³ It was also very crucial that, this peripheral enterprise provided great impetus to the metropolitan experiments with arsenic, the

¹⁰⁷ Russell, *An Account*, 74.

¹⁰⁸ *Ibid.*, 75.

¹⁰⁹ *Ibid.*, 75-76.

¹¹⁰ *Ibid.*, 77.

¹¹¹ See Chakrabarti, “Neither of meate nor drinke’,” 19-22.

¹¹² *Ibid.*, 21-22.

¹¹³ See Thomas Chevalier, “Note by Mr. Chevalier,” on the article of J. P. Ireland, “Some Account of the Effects of Arsenic in Counteracting the Poison of Serpents,” *Medico-Chirurgical Transactions* 2 (1811): 396-404, 403-404. Also see James Forbes, “Oriental Memoirs: Selected and Abridged from a Series of Familiar Letters Written during Seventeen Years Residence in India. Including Observations on Parts of Africa and South America, and a Narrative of Occurrences in four India Voyages,” *The Monthly Magazine*, 16 (1814): 577-618, 582; and Cooper, *A Dictionary*, 1228.

chief ingredient of Tanjore pill.¹¹⁴ Thomas Chevalier, Surgeon Extraordinary to the Prince Regent and Surgeon to the Westminster General Dispensary in London, noted that he was induced to recommend the trial of arsenic from the facts recorded in Russell's *An Account of Indian Serpents*, on the authorities of Duffin and Ramsay.¹¹⁵

Surely, this dynamic of the search for alternatives in the colony, did not however automatically ensure for them a confirmed place in British pharmacopoeias, rather at long last they were often discarded.¹¹⁶ But all these endeavours were clear manifestations of the existence of an alternate space for creativity and vitality in the colonial periphery which might have stimulated similar researches in the metropolis. Also in the wake of such colonial exercise a space for 'native' voice had altogether been created within the sphere of modern medicine, though indirectly but specifically, which could not be deemphasized.

Mechanism of Knowing

It would be worthwhile here to go back to Russell's difficulty in information-gathering. This also had vital connotations for Indian and European linkage. As we know, Russell expressed concern and faced practical problem for the absence of a systematic 'information order' regarding the natural history of serpents and clinical account of snake-bites. Therefore he first meticulously and consciously formulated a typical mechanism for construction and circulation of knowledge to enhance future medical research and provide a solid model of knowledgeable rule. Really, the technology which he applied was an intimate apparatus of 'investigative modalities'¹¹⁷ devised by the colonizers and it was "the procedures by which appropriate knowledge is gathered, its ordering and classification, and then how it is transformed into usable forms such as published reports, statistical returns, histories, gazetteers, legal codes, and encyclopedias."¹¹⁸

For instance, after embracing his new responsibility as botanist and naturalist, with the idea of publication of a fascicule of descriptions and drawings of plants of medicinal and economic promise in mind, Russell proposed to the Governor of Madras that the Company servants, particularly of the medical department, resident at different stations, should be officially requested to transmit all possible information regarding herbage of their localities, accompanied with specimen of each, including leaf, flower and fruit, evidently for the benefit of the Company.¹¹⁹ Through government orders, actually the plan of collecting and collocating all relevant herbaceous information, publishing them as pamphlets or books and then circulating to medical communities across the country and abroad, worked conspicuously. In this respect, Richard H. Grove succinctly pointed out that "Patrick Russell pioneered the use of the infrastructure of the new British civil administration as a means of collecting and collating

¹¹⁴ Cooper, *A Dictionary*, 1228.

¹¹⁵ Chevalier, "Note by Mr.," 403.

¹¹⁶ See for instance, Pratik Chakrabarti, "Empire and Alternatives: *Swietenia febrifuga* and the Cinchona Substitutes," *Medical History*, 54 (2010): 75-94.

¹¹⁷ For a discussion of such colonial and post-colonial modalities, see Bernard S. Cohn, *Colonialism and Its Forms of Knowledge: The British in India* (Princeton, N.J.: Princeton University Press, 1996), 3-15.

¹¹⁸ *Ibid.*, 5.

¹¹⁹ Anon., "Memoir of the Life," xi; see also Russell, "Preface", iv.

systematic data on natural history.”¹²⁰ Russell’s project was duly approbated by the Court of the Directors of the EEIC; but by the time their sanction-letter could reach Madras, Russell had embarked on his return to England.¹²¹ His successor Dr. William Roxburgh creditably completed the project and with a *Preface* written by Russell the first volume of the text appeared in 1795.¹²² The EEIC approved this course of colonial scientific action, only after having a clear cut assurance of its material benefit from eminent scholar and the President of the Royal Society (PRS), Sir Joseph Banks¹²³ who also suggested some alterations in the original scheme of Russell.¹²⁴ However, Russell used this mechanism of first centralizing and then diffusing information initially in his botanical endeavour and continued it in his medical-zoological exploration.

All remarkable snakological experiments and inferences of Russell were made possible mostly because a good number of snake species usually along with their descriptions, drawings and medical history from colonial settlements were brought to him and he could engage himself in miscellaneous experiments with them earning him good reputation as natural historian of serpents. We got some names of the Company personnel employed all over its settlements, who zealously sent their findings to Russell, under the instruction of the Madras Government, extending their helping hands in this colonial project. Russell included all germane portions of these reports in his books and open-heartedly acknowledged the service he had received through this typical methodological arrangement. In his vision:

The successful prosecution of a scheme in its nature so extensive, required more than the exertions of a private individual. Information was to be solicited from those to whom I was a stranger; for I had honour to be known a few only of the gentlemen resident at the different settlements. It was therefore judge advisable, in the first instance, to communicate the design to the Governor of Madras. This being accordingly done in an explanatory Memoir, the design met with entire approbation; the Memoir was ordered to be printed, and, together with the recommendation of the Board, to be transmitted to the several subordinate settlements.

It is but justice, on this occasion, to acknowledge, that the willingness to lend assistance, expressed in return from all quarters, proved a powerful incitement to prosecute my design; while specimens received from different parts, enriched my collection with some that were unknown in the Vizagapatam district.¹²⁵

These evidences of ‘assistance’ explained how the network of information and communities of knowledge were budded and effectively used together to garner maximum knowledge about nature for reinforcing colonial order. This mechanism was totally different from pre-colonial scientific practices where, for instance, Hindu medical knowledge was truly hierarchical, segmentary and deeply embodied in the practices of learned elites like the

¹²⁰ Richard H. Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1860* (Cambridge: Cambridge University Press, 1997), 331.

¹²¹ Russell, “Preface,” iv.

¹²² Roxburgh, *Plants of the Coast of Coromandel*.

¹²³ See Sangwan, “Natural History,” 286.

¹²⁴ Russell, “Preface,” iv.

¹²⁵ Russell, *An Account*, vi.

privileged class of Brahmans who used to control medical 'Shástras'¹²⁶ and in that sense was almost a 'revolution'.¹²⁷

But in building this network of information a wide indigenous stratum consisting of local professionals, who were experts in their own ways, essentially had to be engaged in translating and transmitting knowledge to the Company officials. At every level of inquiry, Russell and other surgeon-naturalists mainly accumulated their information about the character and behaviour of serpents and consequence of their bites from the 'native' informants. In many cases to ascertain whether a species was deleterious or not, Russell had to depend on 'native' knowledge, before arriving at the experimental inference.¹²⁸ We already know that European doctors were educated by Indian practitioners in the administration of Tanjore pill. Therefore colonizers' formalized system of knowing in this period by and large depended on and developed from the age old indigenous knowledge structure. But unfortunately Russell was conspicuously shy of properly acknowledging their services and unlike his European colleagues they remained only as 'native', 'snake-man', 'snake-catcher', 'peasant', 'Gentoo' or 'showman' in his version. About an instance, in the beginning of June 1788 involving such an unnamed 'Gentoo man', Russell mentioned: "He was one whom I retained in my service for the purpose of procuring serpents, and also, as he was very adroit in handling them, for assisting in my experiments."¹²⁹ So, his Indian partners, however skilled they might be, had no distinctive identity or name and were not treated as 'gentlemen' scientists.

Russell often complained that indigenous knowledge about serpents was frequently 'popular error', 'local prejudice' 'improbable' or 'extremely vague' notion and could not stand high on the scale of European experimentalism.¹³⁰ But as stated earlier, Western medicine also was not confident enough to entirely snub the 'native' epistemology in this period. In one observation regarding a snake, locally called as Shiddil, he wrote: "This serpent was also received from Tranquebar, and its bite is held by the natives to be dangerous though not mortal. It produces, as they pretend, a burning heat over the whole body. It certainly has no venomous apparatus."¹³¹ Thus, his conclusion often corroborated the notion of the 'native' physicians. In spite of having ample complaints against and doubts about Indian medical knowledge, there were enough evidences of directly accepting 'native' references without any observational criticism. Furthermore, Russell, a stalwart of Western medicine, frequently interacted with Indian counterparts and exchanged his experiences with them without framing them continually as devoid of understanding 'scientific' medicine. As he recounted:

Several snakemen with whom I conversed, appeared to know nothing of any fangs besides the two on each side, generally emergent from the sacs, and they seemed surprised when shown a number of small subsidiary fangs at bottom. Where these have been left, they become in time, without being suspected, capable of doing mischief;

¹²⁶ See Thomas A. Wise, *Commentary on the Hindu System of Medicine* (Calcutta: Baptist Mission Press, 1845), v-vi.

¹²⁷ This last aspect has been the principal focus of C. A. Bayly, *Empire and Information: Intelligence Gathering and Social Communication in India, 1780-1870* (Cambridge: Cambridge University Press, 1996).

¹²⁸ See Russell, *An Account*, 2, 10, 12, 14, 21, 27 and 33.

¹²⁹ *Ibid.*, 82.

¹³⁰ *Ibid.*, 2, 10, 12, 14, 21, 27 and 33.

¹³¹ Russell, *A Continuation*, 14.

which readily account for the accidents that certainly happen sometime to the professed snakemen.¹³²

This was a potent evidence of reverential confabulation between two differently 'professed' snakologists involving shoulder to shoulder effort in snakological knowledge making. And, it would be out of fact to simply hypothesize that the colonizers were always "negotiated from a vantage point and with a clarity, determination and aggression which his 'native' opponent could hardly match."¹³³

Conclusion

The historical understanding with the emergence of snakology in colonial India, under a private gusto for natural history, leads us to certain inescapable implications. Though our sources were very picky, they offer a comprehensive history of the Scottish involvement in eighteenth-century British India as well as diffusion of Western medicine in non-European areas. An analysis of the career and activities of Dr. Patrick Russell, who was born and brought up in Edinburgh, became a true harbinger of Scottish Enlightenment and meticulously served the British Empire, suggests that the 'spread' of modern medicine was not simple emanation from a pre-existing centre, rather the itineration was very inextricable where scientific knowledge diffused from different dominions and dimensions. It was certainly evident that Russell had ties with eminent English metropolitan patrons of natural history such as Sir Joseph Banks¹³⁴ and like-minded colleagues of the Royal Society such as Sir Everard Home,¹³⁵ but these were partly because of pecuniary and intellectual need for the publication of his project, considered by him as an extension of a broader project of medical professionalism and principally because he was interested to instate his career in London for a brighter prospect. As we know, after returning from Aleppo the only cause for his residence in London was the expectation of a relatively stable income as medical practitioner and such metropolitan contacts undoubtedly facilitated some opportunities for him. But his contact in England was neither able to remove his Scottish medical identity and expertise nor confined his independent natural historical spirit and deemphasized his ingenuity in the colony. As we locate, after his death on 2 July 1805, in obedience to his special instructions "a Botanical Cabinet, consisting chiefly of Indian plants, was transmitted to the University of Edinburgh" as a mark of respect to his Scottish inheritance;¹³⁶ though most of his collections of plants and fishes were placed in

¹³² Russell, *An Account*, 88.

¹³³ Kumar, *Science and the Raj*, 33.

¹³⁴ See Russell, "Preface," iii-v; Sangwan, "Natural History," 284-286.

¹³⁵ See Patrick Russell and Everard Home, "Observations on the Orifices Found in Certain Poisonous Snakes, Situated between the Nostril and the Eye. By Patrick Russell, M.D. F.R.S. with Some Remarks on the Structure of those Orifices; and the Description of a Bag Connected with the Eye, Met with in the Same Snakes. By Everard Home, Esq. F.R.S.," *Philosophical Transactions of the Royal Society of London*, 14 (1804): 70-76; and Patrick Russell and Everard Home, "Remarks on the Voluntary Expansion of the Skin of the Neck, in the Cobra de Capello or Hooded Snake of the East Indies. By Patrick Russell, M.D. F.R.S. with a Description of the Structure of the Parts which Perform that Office. By Everard Home, Esq. F.R.S.," *Philosophical Transactions of the Royal Society of London*, 94 (1804): 346-352.

¹³⁶ Anon., "Memoir of the Life," xiv.

the Company's Museum at Madras¹³⁷ and those of specimens of serpents received from India were deposited in the Company's Museum at the India House.¹³⁸ Therefore, unlike the epoch-making but tremendously criticized typology of George Basalla,¹³⁹ our assumption is that modern medicine was a creation of the clashes, compromises and transactions of England with the countries it came to dominate like Scotland and India where colonial periphery was not a "passive reservoir of data." Moreover, echoing the point made earlier by scholars we can define the colonial periphery like India in terms of its diverse dynamism.¹⁴⁰ Our indices also restate that the vitality of peripheral world depended on a respectful 'dialogue' between Indian and European cultural values and ethos.¹⁴¹ Therefore we can chart modern medicine as an epistemology having emerged and developed principally in the Western world, but its modification and crystallization were actually made beyond this region.

However, our subsequent analysis also strongly indicates that Western medicine was a 'cultural force'¹⁴² and at the same time hegemonic as a 'tool' of imperialism.¹⁴³ But in reality, this view is not absolute. As because modern medicine was not constantly diffused from a single prevalent core in Western Europe and found its place in the rest of the world, its role as a growing systematic knowledge in Europe about the Orient in naturalizing distinctions between rulers and ruled was less assertive.¹⁴⁴ There was neither one fixed locus of power in the West nor any overwhelming attempt was continually made from this power-centre to

¹³⁷ Hawgood, "The Life and Viper," 1302.

¹³⁸ Anon., "Memoir of the Life," xiv.

¹³⁹ George Basalla, "The Spread of Modern Science," *Science* 156 (1967): 611-622. For critiques of Basalla's model, see, in particular, *Scientific Colonialism*, ed. Reingold and Rothenberg; *Science and Empire: Essays in Indian Context*, ed. Deepak Kumar (Delhi: Anamika Prakashan, 1991); *Science and Empire*, ed. Petitjean, et al.; Grove, *Green Imperialism*; and Kumar, *Science and The Raj*.

¹⁴⁰ Roy MacLeod, "On Visiting the "moving metropolis": Reflections on the Architecture of Imperial Science," in *Scientific Colonialism*, ed. Reingold and Rothenberg, 217-249; Grove, *Green Imperialism*; Mark Harrison, "Science and the British Empire," *Isis* 94 (2005): 56-63; Kumar, *Science and The Raj*; and Chakrabarti, "Empire and Alternatives."

¹⁴¹ Scholars now, to different degrees, acknowledge the interplay between Europeans and Indians in the formation of knowledge and institutions in colonial India. See, Eugene F. Irschick, *Dialogue and History: Constructing South India, 1795-1895* (Berkeley, Los Angeles and London: University of California Press, 1994); Bayly, *Empire and Information*; Richard Grove, "Indigenous Knowledge and the Significance of South-West India for Portuguese and Dutch Constructions of Tropical Nature," *Modern Asian Studies* 30 (1996): 121-143; Philip B. Wagner, "Pre-colonial Intellectuals and Production of Colonial Knowledge," *Comparative Studies in Society and History*, 45 (2003): 783-814; Harrison, "Medicine and Orientalism"; and Raj, *Relocating Modern Science*.

¹⁴² See Roy MacLeod, "Introduction" to *Disease, Medicine, and Empire: Perspectives on Western Medicine and the Experience of European Expansion*, ed. Roy MacLeod and Milton Lewis (London and New York: Routledge, 1988), 1-18, 1.

¹⁴³ See Daniel R. Headrick, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century* (New York and Oxford: Oxford University Press, 1981).

¹⁴⁴ For the creation of the Orient as the 'other', see Edward W. Said, *Orientalism: Western Conceptions of the Orient* (New Delhi: Penguin, 2001); also see Edward W. Said, *Culture and Imperialism* (New York: Vintage, 1994). Of the works indebted to Said, the most relevant here are Ronald Inden, *Imagining India* (Oxford: Basil Blackwell, 1990); and *Orientalism and the Postcolonial Predicament: Perspectives on South Asia*, ed. Carol A. Breckenridge and Peter van der Veer (Philadelphia: University of Pennsylvania Press, 1993), especially chapter 1 and 8.

marginalize Orientals as the eternal 'other'. Moreover, as the European medical knowledge about Indian vipers took shape through collaborations and partnerships between Indian and European intellectuals, no matter what preconceptions Russell bore into India, his interaction with indigenous system of medicine fundamentally influenced and coloured his perceptions and accordingly his creation was scarcely one-sided. In eighteenth-century India there were ample evidences of medical pluralism and sense of cosmopolitanism that predominantly opposed the conviction that Western medical epistemology always and essentially a style for "dominating, restructuring, and having authority over the Orient,"¹⁴⁵ though it was concerned about the colonial establishment. One can find many instances of uniform ranking of India and Europe in Russell's account, though there was a sense of medical difference in it. Ultimately his individual endeavour showed that the nature of modern natural history as well as medicine as employed in the colonial periphery was far from monolithic and unidirectional, but contradictory and multi-axial due to existence of various historical forces.

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¹⁴⁵ Said, *Orientalism*, 3.

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