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Review Article

Glimpses of Indian Medicine through European Travelers' Accounts, with Special Emphasis on Anatomical and Surgical Knowledge: 17th to 19th Century

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Abstract

While discussing travelers' accounts related to Indian medical knowledge, especially anatomy and surgery, we need to take into account very briefly the salient features of medicine in India. By the time it was predominantly expressed through Āyurveda. In their own models of explanations, Āyurveda and other systems of healing in India like Unani and Siddha deal with organs inside the body and their activities inside the body which can be termed from modern vocabulary as physiological ones. These, taken together led to the origin and causation of diseases, the development and course of diseases inside the body (termed as prognosis) and treatment following these processes. Unlike European medicine, Āyurveda represented Indian subjectivity to a great extent. As keenly observed by Zimmermann, bereft of knowledge of modern and actual anatomy and physiology, ecology formed an integral part of diagnosis of disease without having any idea of organ localization of disease as a result of which, as observed by Zimmermann, a biogeography was absorbed into therapeutics, and a discourse on the world (equivalent to natural history) was contained within a discourse on man (which connotes medicine).

In the accounts of travelers and other persons of various interests from other countries, there are abundant descriptions of medical science, as they observed it during the period they in this country, and such impressions, if properly compiled, may provide "unbiased" testimony to the progress of the scientific crafts at the time. Travelers' accounts are a good source mainly for two reasons – (1) to underscore the trajectory of Indian medical knowledge or Āyurveda across the ages, and (2) to gain some insight related to the decline and marginalization of surgical practice to the sects of the people belonging to the lower castes.

It becomes also a moot question how to reconcile the fact of utter lack of anatomical knowledge with surgical excellence in some branches of surgery like rhinoplasty, lithotomy, couching cataract etc. It should be noted that the post-16th century travellers came at a period when post-Vesalian anatomical knowledge and post-Harverian physiology began to be firmly entrenched in European medical education and universities.

Keywords: Travelers' Accounts; Medicine; Surgery; Indian Knowledge; Epistemology; 17th to 19th Century; Dissection; Medical Education; Calcutta Medical College (CMC)

On 19 November 1946, Albert Camus wrote that consecutive three centuries – 17th, 18th and 19th – characteristically represented the century of mathematics, the century of physical sciences and the century of biology respectively. He described the 20th century as the century of fear, though, according to him, fear was not a science. Moreover, he warned that science itself was of being to the point of negating itself – the phenomenon which, according to him, was intimately involved with "perfected technology" and it could lead the entire world with whole-scale destruction [1].

One or two things may be considered here. First, Camus designates a special characteristic to a particular century experienced by Europe. The impact of mathematics on medicine is probably best depicted through Newton's impact on medicine for a short period in a way that Newton's mathematical physics, which far surpassed Borelli's in sophistication, and, also, inspired Pitcairne in his search for a mathematical medicine both by its method and by its conclusions [2]. Second, he stresses the importance of "its perfected technology". In our research work under the project, we shall come see the changes in perception throughout the spectrum of different travelers from he 17th to 19th centuries, as well as their perception of superiority arising out European technological excellence.

Introducing the Theme and Problem Identification

While discussing travelers' accounts related to Indian medical knowledge, especially anatomy and surgery, we need to take into account very briefly the salient features of medicine in India, predominantly expressed through Āyurveda. In their own models of explanations, Āyurveda and other systems of healing in India like Unani and Siddha deal with organs inside the body and their activities inside the body which can be termed from modern vocabulary as physiological ones. These, taken together led to the origin and causation of diseases, the development and course of diseases inside the body (termed as prognosis) and treatment following these processes. Our discussion will be limited to Āyurveda only owing to paucity of my knowledge of other systems of healing.

Āyurveda cannot be equated to any modern medical discipline (as we understand it to be equivalent to medicine today). It literally means the "knowledge (veda) of the life span (āyus)". Following Āyurvedic texts, as stated in the Caraka-Saṃhitā, any mortal being on earth should have optimal span of life i.e., one hundred years [3]. According to Das, Āyurveda, besides dealing with different philosophical systems, has to principally deal with medical issues and is intimately related to medical intervention. Thus it may be justifiable to designate it as 'medicine' from modern perspective if it is taken as an semblance and not as an exact equivalent of what one normally understands as medicine in the modern Western sense [4]. Here lies one of the basic problematics of relativizing Āyurveda with modern medicine. It first happened through travelers' accounts and, gradually, crystallized over centuries to all-powerful European superiority. P. V. Sharma skillfully describes how Indian medicine got reflected in the writings ancient travelers coming to India [5].

Unlike European medicine, Āyurveda represented Indian subjectivity/selfhood to a great extent [6]. As keenly observed by Zimmermann, bereft of knowledge of modern and actual anatomy and physiology, ecology formed an integral part of diagnosis of disease without having any idea of organ localization of disease as a result of which, as observed by Zimmermann, a biogeography was absorbed into practical therapeutics, and a discourse on the world (equivalent to natural history) was contained within a discourse on man (which connotes medicine) [7].

Fabrega notes, "The emergence and achievement of Ayurveda contributed to mental and physical health positively through its provision of a body of theory and practice that improved wellbeing in a general sense" [8]. We can deduce that at the level of epistemology there arose a kind of tension between indigenous way of conceptualization and preserving one's body and health in keeping within ecological factors on the one hand, and medicalization of body and life by modern medicine, as being constantly argued until now, on the other. Again, accurate anatomy-based surgical knowledge was integrally combined with anatomo-clinical and medical excellence.

The Āyurvedic notion of the identity of body and its nature can be logically derived from the Indian world view of the time of composition of the classical saṃhitā-s. Which addresses an "underlying unity in the apparent multiformity of creation and strives for a transcendence of dualities, oppositions ad contradictions" [9].

All these factors become relevant against the context that during the period 17th to 19th century travel writings specificities of Indian

healing practices have been never a concern for the travelers. The Indian medical craft was reconstituted and represented only through its medical and surgical values per se. In a relentless process, subjectivity did not find any voice to make it audible. Though beyond the scope of the present paper, it seems to be an important issue which, in its own merit. It can later be taken into account of.

For all practical purposes, surgical practices in scholastic medicine in India came into complete disuse by 600 A.D. To mention, the preparation of the cadaver for the acquisition of medical and anatomical knowledge is mentioned only once in the whole corpus of Āyurveda (Suśruta-Saṃhitā, Śā, 5.47-51). Moreover, the process adopted for exposing various parts and layers of the dead body is not through dissection, but avagharṣaṇa (scraping/rubbing off the layers of the body by grass or bamboo). Despite this, regarding rhinoplasty in India, at least two observations from eminent Eurpean surgeons may be adduced here. George Mason noted, "The operation was known and practiced at a very early period of surgery in India by the Brahmins…From India the Sicilian surgeons in all probability received their ideas on the art of restoring noses, and the earliest record we possess on this subject is the report of a Neapolitan bishop in 1442, on an operation of rhinoplasty, performed by Branca" [10].

At a later date, John Davis commented that long before European plastic surgery was attempted, certain members of the "Tilemaker caste" in Indian subcontinent shwed wonderful results in such operations "with pedunculated flaps from the cheek and later from the forehead, in the reconstruction of amputated noses". This was known as the Indian Method. They are presumed to have used an unknown substance for the adhesion, "to which was ascribed special healing power" [11] resulting in the so called 'Ancient Indian Method'.

It is worth noting that while in the former account rhinoplasty is understood as a practice of the Brahmins, in the latter one, it is taken as a wonderful craft by the "Tilemaker caste". In David Allen's observation, to put it into our terms, was that Indians' imperfect knowledge of anatomy did not to become skilled in surgery. Indians' practice of medicine was generally bound within to the same families for generations after generations in a way the father communicated to his sons his knowledge and his skill and son [12].

Will Durant provides an unverified account of trepanning the skull of a Hindu king by two surgeons in 927 A.D. The king was also subjected to anesthesia for the operation. It is known that they administered a drug called Sammohini [13].

In the accounts of travelers and other persons of various interests from other countries, there are abundant descriptions of medical science, as they observed it during the period they in this country, and such impressions, if properly compiled, may provide "unbiased" testimony to the progress of the scientific crafts at the time. Travelers' accounts are a valuable source mainly for two specific reasons – (1) to understand the vicissitudes and matrix of Indian medical knowledge or Āyurveda across the ages, and (2) to gain insight and in-depth analysis related to the downswing and marginalization of surgical practice to the sects of the people belonging to the lower castes of Indian society.

Our concern, following this very brief preliminary discussion, revolves around a few questions – (1) whether this decline was noted in travelers' accounts of India, (2) how the travelers sojourning to India understood Indian medical knowledge spanning the period from the 17th to the 19th century, and, finally, (3) if there exists any divergence with European knowledge system when compared to Indian medical knowledge system, especially at the level of epistemology.

It becomes also a intriguing issue as to how to accommodate the utter lack of anatomical knowledge in Indian subcontinent on the one hand, and surgical excellence in some specific branches of surgery like rhinoplasty, lithotomy, couching cataract etc on the other. To notice, post-16th century European travelers stayed at an important phase of history when dissection-based post-Vesalian anatomical knowledge and the experimental post-Harverian physiology was firmly assimilated in European medical pedagogy and taught in the universities.

The primary problem related to these travel accounts becomes obvious from the fact that nearly all the travelers coming in India remained as guests and a major part of them was employed in Indian majestic chanceries. As a result, they have told very occasionally, barring a few, especially on medical and surgical practices prevailing at those periods in India. Hence it is difficult area to sift their medical perception and put it against Indian medical and surgical perspective from so many pages they have written.

Methodologies used in the study

17th century may be regarded as a point in a chain of events at which an important change in the travelers' accounts occurred. Detail reasons have been documented below. All these travel accounts perhaps started from Boullaye-le-Gouz's Les Voyages et Observations and, subsequently, there appeared a considerable number of travel accounts even, occasionally, by learned and trained European physicians of repute.

For my present paper encompassing a vast period ranging from the 17th to the 19th century, I have, for obvious reasons, limited my paper specifically to careful readings of the accounts of five most eminent travelers of the 17th century. Same strategy has been adopted for other centuries too.

Among the most eminent accounts of the 17th century belong (1) Francois Bernier's Travels in the Mughal Empire (1670, trans. Archibald Constable in 1891, and later second revised edition by Vincent A. Smith in 1916); (2) Jean Baptiste Tavernier's Travels in India (1676; trans. V Ball in 2 volumes in 1889); (3) Niccolao Manucci's travel accounts Storia Da Mogor or Mogul India 1653-1708, Vol. I-IV (trans. William Irvine in 1907); (4) John Fryer's (an English physician and traveler as well who visited India from 1673 to 1682) A New Account of East-India and Persia, in Eight Letters. Being Nine Years Travels, Begun 1672. And Finished 1681 (1698); and (5) John Ovington's (an English priest known for his travel narrative) A Voyage to Suratt, In the Year 1689 (1696).

We have studied the accounts both synchronically and diachronically. Texts have been studied against the backdrop of the prevailing contexts of Europe and India. Besides description of disease, they also described about surgical practices and scanty or near-absent anatomical knowledge of Indian physicians, as narrated in their texts. In addition to these texts, pioneering studies of recent scholars like M. N. Pearson, Donald F. Lach and Michael Adas and others have been taken into account of in my research work.

Discussion and Findings

Garcia da Orta noted that the Portuguese were not much eager to know anything about the things in the countries they visited. If they knew a product, as observed by da Orta, they did not seek to learn from what tree it came, and if they see it they did not compare it with one of the trees of their own country and "nor ask about its fruits, nor what it is like" [14]. He also lamented that the Portuguese "only procure a knowledge of how best to dispose of their merchandize…" [15] and nothing else.

John Huyghen von Linschoten says of the Indian physicians, "These Heathen phisitions (sic) doe not onely (sic) cure there owne (sic) nations [and countrymen (sic)] but the Portingales (sic) also, for the Viceroy himself (sic), the Archbishop, and all the Monkes and Friers doe put more trust in them then in their own countrimen (sic), whereby they get great [store of] money, and are much honoured and esteemed" [16].

During the time, European medicine was still highly doctrinal and presumably inferior to its Āyurvedic counterpart in terms of therapeutic efficacy. Only surgeons enjoyed any professional respect from the Mughal emperors. European medicine cannot be regarded with esteem even in the second half of the 18th century. One example may suffice. In the month of September, 1767, Jagat Set, one of those best accomplice of the British and playing a heinous role in the overthrow of Siraj-ud-Daulah, the last Nawab of Bengal in the year 1757, complained in a letter of his shoulder being "disjointed" having slipped on plain ground, and that he could not use his arm. So, he asked for some medicine to an unidentified British official to have it for recovery. In response to this "Medicine for Jagat Set" (entry number 494) was sent. The medicines (purportedly to be British) sent for his cure were, very funnily,"oil and extract of horn and other medicines … for the cure of Juggut Seat's (sic) arm dislocated by his foot slipping" [17].

But this happy marriage of exchange between European and Indian knowledge did not last long. Adas observes – "As Bernier's account perhaps best illustrates, early European ambivalence toward Indian scientific learning had turned decidedly negative by the last of of the seventeenth century … By the seventeenth century the better informed travelers were clearly beware of this flurry of innovation and the advantages it had given Europe in scientific exploration and in the production" [18]. During the sixteenth century this flow was gradually reversed. As Donald Lach observes, in Europe confidence grew with the passage of time that Europeans were braver, more efficient, and better organized than the observed people of Asia. Moreover, "the Europeans saw nothing practical to borrow from them…" [19].

Pre-sixteenth century European travelers, as argued by some historians, viewed their Christian belief, rather than their superiority of knowledge of the natural world, as "the key source of their distinctiveness from and superiority to non-Western peoples" [20]. Post-seventeenth century European surgery attained new prestige. This new prestige "seems to have split over into the beginnings of western medical ideas into India" [21]. Pearson notes – "Only with the Industrial Revolution late in did a disparity in terms of power appear between Europe. But the Industrial Revolution was things, fundamental scientific advances in Europe, various learned societies which sprang up in seventeenth century. Thus the seeds of later subsequent dominance must be found in scientific not least in the medical sphere, from before the culmination of the Industrial Revolution" [22].

Let us now briefly discuss the travel accounts of European of different centuries related to our study.

17th-Century Travelers

Francois Bernier (1625 – 1688), as we would find, stands apart amongst these travelers. Bernier became a Doctor of Medicine from the great institute of Montpellier. When he was a student there path-breaking anatomical and physiological experiments were being conducted by stalwarts like Pecquet. He says, "I made a grand display of professional skill…and declared I was the most eminent physician in the world…" [23] Tavernier confirms his reputation in his Travels in India (Vol. 1). One of the wives of Dārā Shikoh was attacked with erysipelas which was quickly relieved by Bernier. In this case other native physicians failed to find a cure. He makes some acute observations on Indian mode of treatment and medical texts. He further noted that on medicine Indians had a great number of writings collected small books which were rather "collections of recipes than regular treatises. The most ancient and the most esteemed is written in verse (actually in mnemonic verses for quick and easy memorization)" [24]. He notes, "Their practice differs essentially from ours, and that it is grounded on the following acknowledged principles: a patient with a fever requires no great nourishment; the sovereign remedy for sickness is abstinence; nothing is worse for a sick body than meat broth, for it soon corrupts in the stomach of one afflicted with fever…" [25] We would note that in Bernier's perception Indian medicine is based principally on diets and health regimes. Surgical practices were better avoided. In his own words – "a patient should be bled only on extraordinary occasions, and where the necessity is most obvious as when there is reason to apprehend a brain fever, or when an inflammation of the chest, liver, or kidneys, has taken place" [26].

He sarcastically commented that whether these modes of treatment were judicious or not, he left the matter to their learned physicians to decide. Moreover, according to his text, he was only to remark that these methods were successful in Hindoustan, and "that the Mogol and Mahometan 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" [27].

Evidently, he makes the Indian case open to learned European physicians and makes his second move to judge their methods in the light of scientific experiments going on in Europe. According to Bernier, Indian people or "Gentiles" (his coinage) did not understand anything at all of anatomy. Moreover, as he observes – "They never open the body either of man or beast, and those in our household always ran away, with amazement and horror". He provides an example like this one – when he 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" [28]. But, quite interestingly, Indian onlookers affirmed, as written by Bernier, that the number of veins in the human body was five thousand, neither more nor less. Bernier jocularly commented that it seemed like just as if they had carefully reckoned them [29].

From these observations, it becomes apparent to the modern readers that Indian medical practices were ruefully lacking anatomical knowledge of the body on the one hand, and adhering to the unquestionable authority of the scriptures. "The Immoveable or Immutable has sent to them four books, to which they name of beids (Vedas) … because according to them, these books comprehend all the sciences" [30]. He became weary of explaining the recent discoveries of Harvey and Pecquet in anatomy and the philosophy of Gassendi.

Being a learned and trained physician and finishing his studies in the dynamic scientific atmosphere of France, he was keen to address the problems philosophically. In another important observation, he noted that in such noiseless and quotidian life their time glided away; no one aspired for any improvement in their unremarkable existence. Additionally, they seemed to be completely wherein he

happened to be born. Thus, the embroiderer "brings up his son as an embroiderer, the son of a goldsmith becomes a goldsmith, and a physician of the city educates his son for a physician. No one marries but in his own trade or profession (endogamous marriage in modern terms); and this custom is observed almost as rigidly by Mahometans as by the Gentiles means higher class of Hindu population), to whom it is expressly enjoined by their law" [31]. He adds, "no circumstance can happen below, which is not written above" [32]. In Benares, "the Athens of India", he found "no colleges or regular classes, as in our universities, but resembles rather the schools of the ancients…" [33].

With all these analyses, Bernier looks into the problem of modern academic institutions in India. No other traveler of the 17th century has made such a an insightful observation. As Bernier noted, a profound and universal ignorance was the natural consequence of such a state of society as he had endeavored to describe. His ardent question was: was it possible to establish in Hindoustan academies and colleges properly endowed? Where should they seek for founders or, should they be lastly, where were the scholars to be found? Where were the individuals whose property was sufficient to support their children at college? or, if such individuals existed, who would venture to display so clear a proof of wealth? [34]. Finally, he relates education with employment, "Lastly, if any persons should be tempted to commit this great imprudence, yet where are the benefices, the employments, the offices of trust and dignity, that require ability and science and are calculated to excite the emulation and the hopes of the young student?" [35]. It can be extrapolated that no proper scientific education or academia that can pursue medical or surgical training is inconceivable at that period in India.

Jean Baptiste Tavernier (1605 – July 1689) was a traveler and also a trader by profession. The reasons for superiority of European surgeons can be palpably traced from his writings. We find the name of Pitre de Lan who was asked for bleeding the King "as his physicians had directed" [36]. He then bled the King under the tongue in four places. He did it so skillfully that on measuring the blood by weight with the basins, he measured that he had drawn eight ounces of blood exactly [37]. This particular act of bleeding coming out accurate anatomical knowledge was lacking in Indian physicians "because, as for surgery, the people of the land (here India) understand nothing about it". He makes an altogether different but interesting observation. In his opinion that all the countries (now states of present day India) they had passed through, like Carnatic (Karnataka) and the Kingdoms of Golkonda and Bijapur, to quote him – "there are hardly any physicians except those in the services of the Kings and Princes" [38]. For the common people seasonal collection of useful herbs was a necessity and common practice.. When the rains fell it was the season for collecting plants, old mothers of families was seen going out in the mornings from the towns and villages to collect simples which they know to be proper for the diseases which occur in a family [39]. Moreover, he notices that in so-called good towns there were generally a few people – not more than one or two men – who had some knowledge of medicine. They first felt the pulse of the patient, and when giving medicine, for which they took "only the value of two farthings, they mumble some words between their teeth" [40]. The "mumble some words" phrase denotes that some extra-natural power was invoked for natural remedy.

We come understand a few things – (1) Indian people, especially physicians, are deficient in surgical knowledge; (2) local people are not usually cared for by any learned physician and they almost solely depend on domestic medicine prepared by the mothers; and (3) after feeling pulse and during the act of giving medicine to the patient some incomprehensible words are mumbled. The last act adds some supernatural connotation to the whole procedure.

Niccolao Manucci (1639–1717) was a self-trained physician. He worked in the Royal court of Mughals. He worked in the service of various kings like Dara Shikoh and Shah Alam. His major work is Storia do Mogor or Mogul India, 1653-1708, translated in English in four volumes. He carefully noted, "The ordinary diseases of this country are mort-de-chien (cholera) – that is, colic of the bowels with vomiting and laxity – and this complaint is the death of many. The best remedy is to burn with a red-hot iron the middle of the heel until the heat is felt, and by this the pain is allayed and the discharge and vomiting stopped" [41].

Other complaints, what Manucci described, were spleen (? Splenic disease or enlargement), the itch, and fevers. He concluded that for this was the reason owing to which the residents of Goa "have bad complexions, although they have abundance of food, principally fruits" [42]. The Governor of the city where Manucci was staying had been suffering from fistula. He further comments

–"None of the Europeans living in the fort knew the proper treatment, nor was there any Mahomedan surgeon who would venture to deal with the case" [43]. Within a short period the patient was cured by Manucci. He also took recourse to chicaneries. to conceal his incompetence as a physician [44].

He describes the method of making enemas in an indigenous way. According to him, this procedure consisted of concocted of mallows, wild leafy vegetables, and some other herbs, with a trifle of bran, black sugar, salt, olive oil, and Canna fistula. In his own words – "I sent out for these things, and made a concoction. But the greatest difficulty was to get the instrument. For this I sent and got a cow's udder, and for the tube I took a piece of cane from a huqqah snake, through which the Mahomedans draw their tobacco. I managed to put these together in a manner that would serve. I placed the concoction into the udder, and fastened the tube to it" [45]. He successfully bled a princess and bled her regularly twice a year [46]. In his opinion, the issue should be comprehended that before a European can acquire the office of physician among these princes he had to show the proof of his dexterity (among others) for a long period, for they (Europeans) were extremely untrustworthy and nice in such matters.

Additionally, as Manucci writes, "Every month the princesses and the ladies have themselves bled, which is done in the way I have above described. It is just the same when they want themselves bled in the foot, or have any wound or fistula dressed" [47]. He provides a long list of Persian physicians appointed at the Royal court. They cured hot complaints with cooling remedies. However, few of them, he comments, "know anything about, or can cure, the stone, paralysis, apoplexy, dropsy, anaemia, malignant fevers, or other complaints. They follow the ancient books of medicine, which say a great deal, but tell very little" [48].

Manucci was probably the first traveler to inform the European world outside India about Indian rhinoplasty. When the campaign against Bijapur started in 1670 (?1686) he found that if the Bijapur people caught any unwanted persons having their loyalty to the Moguls would cut off their noses instead of killing them" [49]. But, according to Manucci's vivid description, the surgeons of that region cut the skin of the forehead above the eyebrows, and made it fall down over the wounds on the nose. "In a short time the wounds heal up, some obstacle being placed beneath to allow of respiration" [50]. He saw many such persons with repaired noses, and these persons were not much disfigured as they would appear without any nose at all. The only mark they bore between their eyebrows the scar of the incision.

It transpires from this description that this act of rhinoplasty was a common practice in vogue as he saw many persons with such noses. The question arises: how to reconcile the two facts – utter lack of anatomical knowledge on the one hand, and such excellence in such sophisticated surgery on the other.

John Fryer (1650-1733) matriculated from Trinity College in Cambridge in 1664 and, later, graduated Bachelor of Medicine in 1671. Later after his arrival in India, he was appointed as "a Chyrurgeon for Surat". As we have seen before, Europeans would use Indian doctors for their medical complaints. Fryer provides narrative of a Brahmin doctor who was practicing at Surat. He used to come every day and felt every person's pulse supposed to be working in the factory. He often made use of for a particular powder for agues, which, according to Fryer, "works as infallibly as the Peruvian Bark; it is a preparation of Natural Cinnaber" [51].

He also makes us know that midwifery was regarded with esteem among the wealthy and idle people only; the poorer people, while they did hard labor or sowing plants, go away as if to do meet their needs, and, subsequently, deliver their child. The delivered baby was placed in a small piece of cloth or hammock, and returned to work again [52]. It reminds us of similar rural Chinese practice of delivering a child, as depicted in Pearl S. Buck's The Good Earth.

He disrespectfully narrates the state of Indian medicine. "Their Philosophers maintain an Aristotelian Vacuity; nor are they quite ignorant of Medicks, though Anatomy is not approved, wherein they lean too much on Tradition, being able to give a very slender account of the Rational Part thereof" [53]. He describes the acts shown by a (Bengal) juggler. "I was promised to see a Fellow that cast up his Tripes by his Mouth, Stomach and all, shewing them to the Beholders…the first of which by Suction or drawing his Breath, so contracted his lower Belly (abdomen), that it had nothing left to support it, but fell flat to his Loins, the Midriff being forced into Thorax, and the muscles of the Abdomen as clearly marked out by the stiff Tendons of the Linea Alba, as by the most accurate Dissection could be made apparent, he moving each Row like living Columns by turns" [54]. He explains thus – while all the inner contents of his abdomen were moved upwards, all respiratory

wind was expelled, only the voluntary Motion of force of the body "acted upon the Nerves (the Mind or Sole commanding them) while the Vital or Natural are compelled to the contrary". Fryer's actual term was "Animal Spirit" which had connotation of humoral legacy which was combined with modern anatomical description.

We should take note of anatomical terms and details by a Cambridge-trained surgeon. What was natural act of jugglery of an Indian undergoes verbal dissection through his observation. " After this I saw another Fellow of a good Habit of Body, that had taught himself by use to depress his Sternum, with the Serratus Posticus Inferior, Sacre lumbus, and Triangular Muscles, so that the Cartilaginous Substances of the Ribs], which Anatomists separate for Dissection of the Thorax, and throw it back over the Face…" [55] By such verbal autopsies sheer ignorance of native population is more poignantly laid bare and scientific authority and, in tandem, superiority of European knowledge is placed at the topmost rung of civilization.

He finds diseases, as narrated in his Accounts, reigning according to the seasons and enumerates afflictions by cough, catarrh, tumours of the mouth and throat, intermittent fevers, small pox, rheumatism, inflammation of the eyes, fluxes, apoplexies and all distempers of the brain as well as stomach [56]. According to him – "To Cup they use Ventosoes, without Sacrifications. They have good Escaroticks and Vesicatories, made by a certain Nut" [57]. In his commentary, Indian people were unskilled in anatomical knowledge. Even, according to him, those belonging to the group of people called Moors who followed the Arabians, thought it unlawful to dissect human bodies. He observes – "whereupon Phlebotomy is not understood, they being ignorant how the Veins lye…Chirurgery is in as bad a plight, Amputation being an horrid thing…" [58].

After such self-evident observations, he provides interesting information. "The Dutch never permit the Natives to be taught any Eminent Art whereby they may become their competitors" [59].

John Ovington (1653-1731) was an English priest who took the road of exile along with the king Jacques (1689) and was hired as a chaplain in the East India Company. He tells us, "In either a Disease, or any unlucky Casualties should happen to any in the Factory, the President has provided an Indian Doctor of Physick, and n English Surgeon to take care of them" [60]. To cure some types swelling of the body (?tumour) a particular kind of medicine is repeated "for three or four Days, the Humours sensibly assuaged, and in that time were all drawn off by so powerful a Purgation…the Swelling abated, and his skin fell, and hung loose about him like a Garment" [61]. The common distemper that destroyed the most in India was, according to him, was fevers. Though, to emphasize, it is never specified which sort of fever he was talking about. He states, "It has been Cur'd by a Red-hot Iron clapt to the Heel of him that is sick, so close that it renders him uneasie by its nearness, whereby it leaves a Scar behind it" [62]. He mentions of indigenous remedy, "And nothing contributes more to the Recovery of the benumb'd (sic) Limbs, than frequenting the Humhums (?), which are here in great plenty" [63]. Again, "The general Ease and Cure which the White Powder in India gives to Feavers, makes that a very common and acceptable Receipt there; and it has, without very good Success, been administered in England, sent from thence by the Indian Physicians" [64]. He compares superior Chinese pulse reading to the Indian ones [65].

Moreover, he mentions positively of Indian mode curing in case of snake bites [66]. He is of high opinion of the use of coconuts for many a cure. "It cures the Bloody Flux, the Pestilence, and Malignant Fevers, Pysons, Falling Sickness, Palsey, Convulsions, and Frightful Tremors of the Spirits…" [67].

Conclusion

The 17th century ushered in paradigmatic shift in European perception of Indian medicine. The days of simples, herbs and drugs ended. The new kind of dissection and autopsy-based knowledge of anatomy and animal-centered physiological experiments laid the stone of European medicine on a strong base. It generated a new vector of knowledge against which indigenous societal methods and practices began to be judged, assayed and, in some cases, assimilated as well when it became a necessity for European medical practice and knowledge world. To emphasize, European medicine of that period gained its superiority from surgical excellence. Medical therapeutics, especially at this far off torrid zone, was rather inferior to the Indian ones. Their medicine had yet to see the advent of Hospital medicine in the Paris hospitals of the late 18th century. Fryer made a valuable comment, "But I believe rather we are here, as Exotick Plants brought home to us, not agreeable to the Soil…" [68]. How these Exotic Plants made possible their hegemony over Indian medical knowledge systems will be gradually revealed in subsequent accounts of the travelers

of the 18th and 19th centuries. We would also come to learn that these maneuvers did also signal "the invasion of an epistemological space" [69].

18th-Century travelers

Francois Bernier (earned the degree of M.D and was an important faculty of an eminent French medical school) did provide some thoughtful observations of medical knowledge prevailing in India in seventeenth century. He found that a profound and universal ignorance was the natural consequence of such a state of society "as I have endeavoured to describe. Is it possible to establish in Hindoustan academies and colleges properly endowed? Where shall we seek for founders? or, should they be found, where are the scholars? Where the individuals whose property is sufficient to support their children at college? or, if such individuals exist, who would venture to display so clear a proof of wealth? Lastly, if any persons should be tempted to commit this great imprudence, yet where are the benefices, the employments, the offices of trust and dignity, that require ability and science and are calculated to excite the emulation and the hopes of the young student?" [70].

He also noted the lack of entrepreneurship in India in the sense that "few are the men who will voluntarily endure labour, and incur danger, for another person's benefit…" [71]. Bernier's time period or the 17th century may perhaps be seen to end in what Mary Louise Pratt calls as "contact zones" – social spaces where disparate cultures meet, clash, and grapple with each other, often in highly asymmetrical relations in an asymmetrically over detrmeined space [72]. It gave way to new form of ideology which created global imaginings above and beyond commerce. As argued by Lach, notably since most of Asia's fundamental crafts and mathematical ideas were familiar to Europe before the beginning of the 16th century. Moreover, the Europeans of the sixteenth century and beyond the period focused on products rather than devices or ideas [73]. This particular process acquired complete shape in the eighteenth century with the making of domestic subjects. In this entire trajectory travelers' accounts were of considerable importance. The British East India Company, which had created its own Indian agents, began to navigate its ships with all vigor.

As I wrote elsewhere, after the 17th century, every British merchant ship of more than 500 tons bound for transoceanic destination had to carry at least one regular surgeon and an assistant surgeon. Originally the ship's surgeon had also been the ship's barber [74].

1735, in more than one ways, is a turning point in the history of science and, especially, for European scientific attitude.

First one to mention was the publication of Carl Linnaeus's Systema Naturae (The System of Nature). In this work, the Swedish naturalist made a classification designed to make categories all plant forms on the planet, whether known or unknown to Europeans. The second most important was the setting in motion of Europe's first time ever great international scientific expedition throughout the world, a combined endeavor intended to determine one and for all the exact shape of the earth. In the second half of the eighteenth century, even if the expedition was not primarily scientific, or the traveler a scientist, natural history formed a key element in it [75].

Voltaire wrote to Cideville in his letter on 16 April 1735, "Everybody has begun to play at being the geometer and the physicist. People meddle with reasoning. Sentiment, imagination, and graces have been banished….It is not that I am annoyed that Philosophy is being cultivated, but I do not wish it to be a tyrant excluding all others" [76]. This particular of Voltaire perhaps is expresses quintessential reasoning to the beginning of the onset of an era of scientific travel and interior exploration and reshaping that in turn makes it apparent that there were scientific shifts in Europe's conception of itself and its planetary relations.

Travelers' accounts of the 18th century

Quentin Crauford noted, "The study of medicine is followed in Hindoustan, by persons who devote themselves entirely to that profession…They consult the pulse with much attention, and, perhaps aided by the great sensibility of their touch, they discern with exactness the least variation in its motion" [77]. Though he appreciated that there was the practice of pulse examination among Indians, but their aversion to surgical procedures was also expressed in his comments, "In all bilious cases they prescribe copious purging, but are at all times averse to bleeding, or vomiting. In feverish complaints, they chiefly trust for a cure to extreme abstinence, and large draughts of cangi, or light gruel made of rice" [78]. Regarding the prevalence of venereal diseases in India, his observation was, "it is fair, therefore to conclude, that the Hindoos

were afflicted with it long before we became acquainted with them" [79]. In his observation it was clearly stated that the Hindus possessed a considerable knowledge of chemistry [80].

Pierre Sonnerat (1748-1814) was a French scientist by passion and did not have admiration about medical knowledge of Indians One of the reasons of Sonnerat's lack of appreciation of Indian medical knowledge, I suppose, may be that out of the understanding that "eighteenth century would prove to be the age of surgeon in Europe … Physicians became interested in surgery, and it began to be taught at the universities" [81]. It is known and accepted by almost everyone thet France was at the pinnacle of her development during the period under consideration. Sonnerat was, by following the trend of the time, a naturalist in his inquisitive thinking. He shared his national superiority. He commented that the knowledge of Indians in medicine was confined only "to the preparation and use of some simples" [82]. In his observation, "All diseases are difficult to cure in India, not only from the method of treatment…Credulous to excess, the Indian imagines he cannot be cured without the assistance of medicine" [83]. In his observation Indian pulse examination was of the same manner as that of the Chinese. To his analysis, anything belonging to surgery was unknown to the Indians. He compared Indians with the Egyptians who had never opened a corps, for the study of the nature of the human body, and to discover the cure of disorders [84].

It becomes evident from this above-mentioned statement that the Indians were completely bereft of the knowledge of anatomical dissection and, also, the knowledge of pathological anatomy. These two fields and areas were the gold standard of European excellence of surgery and, consequently, having influenced medicine. Bernier ruefully lamented about the absence of proper academia in modern sense. Sonnerat's observations additionally foregrounded it. To him Indians placed all their confidence in a peculiar knowledge system in the sense that who often had been a washerman, weaver, or blacksmith, three months ago turned to be physician. Sarcastically, he comments that the Indians were almost all physicians – from their infancy they were instructed in the knowledge of some simples and different receipts "handed down from father to son [85]. He further points to Indian's lamentable deficiency of surgical knowledge, "They administer few remedies inwardly…They are ignorant of the use of glysters; and the invincible dread they have of blood is always an obstacle to their being bled. If a European surgeon was to bleed them, the fear attending the operation would produce an effect quite different from what was expected" [86].

He talks about quartan ague which, to his analysis, was the result of "the great quantity of nitre which the earth of this country contains, and which makes the air very cold in certain seasons". He did chemical analysis on his own that led him to conclude, "I am persuaded that volatile alkali may be given with success". His knowledge of chemistry was reinforced by anatomical dissection and, subsequently, pathological findings, "These obstructions extend from the pit of the stomach to the left hypochondria, and sometimes as hard as a stone" [87]. To Sonnerat, Indians had their own speculative thinking and, suffice to say, erroneous knowledge. This led Sonnerat to comment, "The Indian physician could not save a single person" [88].

As to the dreaded disease smallpox, he observes, "The Indians do not make use of inoculation; neither do they distinguish the confluent small pox from the refluent; but treat them both in the same manner" [89]. To mention, though he had sense of superiority with regard to European medicine, and, especially, surgery, though his medical theory was basically based on Hippocrateo-Galenic humoral theory. According to him, Indian faulty practice to treat smallpox "turns the humours back, checks the perspiration, forms a collection of matter, considerable scars, fluxes and coughs, which often lead to consumption" [90]. To his modern European eye, the Indian mode of child-birth, which was performed with so much ease in India, was attended with dangerous consequences and the sick person, following his account, died on the eighth or ninth day [91]. Handful of the Indian treatments gain his favorable appreciation –"For the hemorrhoidal flux they use with success lard mixed with rice, which they call Ponnmei" [92]. Further, "In lieu of our eau de luce, they use the milk of Cali, and to recover a person from fainting, they rub the corner of the eye…who most commonly loses his sight" [93]. Finally, he remarks, "This is nearly all the knowledge, or rather the prejudices, of the Indians in physic, and the general remedies, or poisons, they use" [94].

Here it is profitable to remember what Roy Porter had to say, "Early-modern times brought Harvey's and other brilliant breakthroughs in anatomy and physiology, but achievements proved more impressive on paper than in bedside practice…and mortality rate soared" [95]. European travelers sojourning to India did have the sense of superiority of civilizational scale related anatomical and physiological knowledge, but in the field of therapeutics they

were unsettled with the crude reality of inclement tropical climate. Indian medical cum botanical knowledge was of great importance in those days of the prevailing empirical therapeutics. Amateur and professional naturalists of he eighteenth century were advised to write regular diaries. They also collected biological (botanical + zoological) for academy's (Royal Swedish Academy of Science, established in 1739) naturalia cabinet. Linnaeus's medico-botanical tradition flourished in England in the eighteenth century through the agency of Linnean Society of London, Royal Societies of Edinburgh and London, and Society of Arts, London [96]. The plants and drugs of Asia had awakened the interest of European naturalists, merchants, and travelers long before opening the sea route to India [97]. As Arnold observes, "There was never in any developed sense, an 'Oriental medicine' or 'Oriental botany,' but the increasingly colonized tropics spawned a growing number of scientific specialties – in botany and zoology, in medicine and hygiene…" [98].

At variance with Sonnerat, Claude-Francois Lambert (1705-1765), another traveler of Sonnerat's own country France, wrote quite a length about Indian physicians, What he said was the Indian physicians cured the fevers which begin with shivering, and made the patient take three large pills of ginger, cumin and black pepper, before the paroxysm [99]. He also noted that the physicians were more reserved than those of Europe in the use of sulfur, which they corrected with butter. Moreover, they with all success employed against all fevers, and corrected henbane with cow's urine, and orpiment corrected in lemon juice. In his observation, a physician was not admitted to prescribe to a patient, till he found out his disorder, and the humour which predominated in the patient, which he easily came to know by feeling the pulse [100].

Comparing these observations minutely, one would find some differences between an Indian and a European physician. Though the Indian practice was more reserved in the use of speaking, they excelled in diagnosis by feeling pulse – a lack supposed to be a characteristic of European way of practice. With regard to Indian surgical methodss, he noted, "An obstruction of spleen, which has no other specific but the practice of the Indian devotees. They make a small incision over the spleen, and then insert a long needle between the fifth and skin. From this incision, by sucking thro' a horn pipe, they obtain a certain pingunous matter which resembles pus" [101]. He gave reference to another unique practice of the Indian physician. It read thus: most of India's physicians followed a custom of throwing a drop of oil into the patient's urine and if it spreaded, they said that this is a mark that the patient was too hot internally, and, again on the contrary, if it remained whole, it was a sign that he was defective in heat [102]. Categorically, he mentioned that he common people have very simple remedies" [103]. To note that the way with the aid of which the surgical procedures were applied to relieve the patient of splenic abscesses and make a drain was of no lesser competence and excellence. Interestingly, only Lambert, among so many European travelers, has specifically noted this procedure in his travel accounts. Readers should keep in mind that there is evidence of regional variation regarding different treatment procedures followed by Indian physicians. The kind of practice more prevalent in Malabar might not be valid in Bengal.

Lambert is predecessor to Sonnerat. Lambert's somewhat respectful attitude for Indian medical knowledge is missing in Sonnerat's account. Regarding Indian treatment, Lambert, unlike Sonnerat, noted, "They cure panaris, or whitlow, very easily, by means of toasted leaves of a species of lily which grows at Bengal, applying them twice a day to the part affected, and at the end of thirty days the pus was formed [104]. They treated erysipelas of the head with leeches, and in order made them fasten, irritated them, by handling them with their fingers dipped in mouldy bran [105]. In fevers, he did not fail to mention the practice of venesection in Bengal, "they order the patient to smell to the whole flowers of white chamomile, two hours before the paroxysm, gently rubbing the forehead, temples, the parts of the arms wherein venecsection is performed, the wrists, the palms and backs of the hands, the navel, the loins, the hams, the feet and the region of the heart, with a bag full of the beans of the country bruis'd; for they do not use those of Europe" [106].

John Henry Grose, not a medical personality, noted that Indian physicians, for bloody fluxes, suggested a very simple, but as they pretend a most infallible remedy, which followed a strict abstinence from everything but rice stewed dry, and that was excellent against that "acrimony which preys on the entrails, and breeds the disorder" [107]. He also mentions of "actual cautery applied to the soles of the feet" for the treatment of the violent disorder "mordechin" (it means cholera) [108]. In his observation, "Chronical disorders, such as the gout, rheumatism, stone, consumption, &c. are rarely known in those parts, and none of the distempers, more particular

to them, are so frequent or general as to form a just objection to the venturing into that climate" [109]. He had shown his respect for indigenous remedies used by the local people. To add, they generally used myrobolans in purging, and had the highest regard of their effects, either as a preventive, or a medicine itself [110]. In his work finished in two volumes, readers will find frequent mentions of hospitals in India, which were at that time in regular operation for European soldiers [111].

Unlike European hospitals, Indian hospitals had its own distinctive characteristics, as observed by M. Niebuhr, a captain of engineers in the service of the King of Denmark. He made a thoughtful observation regarding the use of use of hospitals in India that in Surat there was no hospital for human beings, "but an extensive establishment of this nature for sick or maimed animals… The charitable Indians keep a physician of purpose for these animals" [112]. He noticed another fact of importance, "The son may not quit his native cast, but may choose among the employments which are practised by that cast" [113].

Kapil Raj provides observations from L'Empereur, "The fakirs who have the best remedies come every winter to bathe in the Ganges. By giving something and speaking to them in [Hindustani], directly without interpreters, they let you into their secrets. It was a fakir who thus taught me great remedy for epilepsy" [114].

In 1771, Olof Torren, a priest and amateur naturalist as most of the voyagers at that period used to be, observed, "fevers frequently attack Europeans". In his further observation – the French at first suffered a loss of a huge number by this disorder, and were at last (following their own account) had sought the help of the physicians of India, who rejected the use of bleeding and, also, of tamarinds in agues. He finally remarked in this context that tamarinds were not half so much in use in East India as in Europe [115]. He also noted that "friction", "rubbing of the body", were used among the ancient people, which to him was of immensely rational from modern physiological point of view in the sense that it had promoted the circulation of blood [116].

In the same book, Mr. John Frederick, President of the Royal Academy of Sciences, opined that he believed, it was an undisputable truth, and that the advantage or disadvantage of travel into foreign countries depends principally on the inclination and abilities of the travelers" [117]. He added, "we can boast of those travelers, whose sole view has been to improve their knowledge by fresh experience". Such observations are of great importance pertaining to travelers' accounts, as becomes evident from this address. Additionally, he noted that the public was thankful in acknowledging the courage of the European doctors (mentioned above) the way they had brought into play amidst too many difficulties for the enhancement of knowledge; and reckoned the same doctors among the little number of travelers "who have opened a field, (which before had never been attended to) and in a country too whose natural history has lain till this time in greatest obscurity" [118].

In 1755, Edward Ives, a marine surgeon by profession and a traveler as well, had written about India, He found that India, besides having large timber-trees of different kinds, abounded also with a great variety of local shrubs, and juicy plants and a commendable beginning for a collection of curious shells could be done on the shores of this island. In an interesting observation, seeming to be related to ecology, he let his readers know that "they are now much more scarce all over India, than they were formerly" [119]. We must notice the fact that even about three centuries ago Indian biodiversity was already in decline to an extent.

Ives specifically noted, "The skill of their physical people is very mean…In fevers …they used pepper…he told us they had, and brought us a large book, made up of a number of leaves of the Palmita tree…man was divided into two or three hundred thousand parts; ten thousand of which were made up of veins; ten thousand of nerves; seventeen thousand of blood; a certain number of bones, choler, lymph, &c. &c. &c. And all this was laid down without from or order, either of history, disease or treatment" [120]. In his observation, "this to be all the written account they have of physic" and "which they never study, but like the other casts, the son of a doctor is a doctor also, and so he will continue to be from generation to generation" [121].

Though Ives dismissed the basics of Indian physic (medicine), still he had to admit the skill and craft of the Indian barber, "His manner of operation is still more extraordinary, for he beats up a lather on your head, not in the basin, which is no bigger than a tea-cup; and shaves you earlier than ever I experienced from any of the profession in England" [122].

He refers to hospitalization of European soldiers as and when necessary [123]. Sometimes the number of patients hospitalized

was more than 600 [124]. In the treatment fluxes, there were different modes of treatment, not a universal one. "In all diseases at Bengal, the lancet is cautiously to be used" [125]. In his hospital, there was a distinction made between the bilious and putrid flux. Fluxes were treated by administering first a vomit, then rhubarb, and lastly ipecacuanha in small doses. Mercury was the only resort as medical therapy and, specifically, the use of it was by then known which provided a patient any chance for his life, "since without his undergoing a salivation, an abscess of the liver is almost sure to take place, and which in the end proves fatal" [126]. Interestingly, though post-mortem examination was regularly done for European soldiers it was almost never done in case of Indians [127].

Edward Terry, Chaplain to the Right Hon. Sir Thomas Row reveals before us an important issue what he thought to be of importance in such terms that in India there are those which pretend to having much skill in physic and therapeutics, though (for aught I could ever there observe) the people make very little use of their knowledge. He further adds, "they fearing more Medicum quam morbum; and therefore do believe the physician to be the more dangerous disease" [128]. Though, to note, this work was originally published in 1655.

Fra Paolino da San Bartolomeo (in Italian: Paulinus of St. Batholomew) was well conversant in many languages like German, Latin, Greek, Hebrew, Hungarian, Italian, Portuguese, English, Sanskrit, and some local of India as well. He was even a teacher of Asian languages for seven years at the College of Propaganda Fide in Rome and, in the year 1776, he was sent to Malabar in India. He, among his other jobs, devoted himself to learn Sanskrit. He seems to be one of the first scholars to identify the similarity between Sanskrit and Indo-European languages. When he was writing his travel accounts of the period ranging from 1776 to 1789 he was also a member of the Academy of Velitri, and erstwhile Professor of the Oriental Languages in the Propaganda of Rome. At the beginning of his writing he seems to have concluded that the Indians were by nature well qualified for study; and that Indian dialect facilitated, to a great extent, to acquiring the European languages in a good way [129].

Any recognition of this kind was totally absent from the other travelers' accounts. One of the reasons behind it might be he was a Renaissance person having interest in various disciplines of knowledge or, to put it otherwise, a polymath. He did not confine himself only to natural sciences and his particular bent of cognitive capacities made him more sensitive to the study of disparate cognitive fields of human beings. In his observation, "The intelligent reader will readily observe that the Indian have made much more progress in botany than in mineralogy; because they prepare the greater of their medicine from vegetables" [130]. He further added that the Indians never took an emetic or purgative without having the physician prescribed such medications for them by which too violent effects of the medicine could be checked, and they abhorred surgical procedures like phlebotomy, and employed only cupping; but, as Bartolomeo cautioned us, this even very seldom [131]. He did understand the incompatibly of the two medical knowledge systems in the two different climates – "The method and prescriptions of Van Swieten and Tissot are therefore almost impracticable in those climates" [132].

Without any hesitation, he seems to have praised Indian medical writings in his own understanding that India alone contained more medical writings, perhaps than were to be found in all the rest of the world [133]. He noted that as printing had never been introduced here, all scribes are employed in copying manuscripts, and particularly such as related to the promotion of human life, like medical and botanical subjects. As he continued: there were even boys who possessed an comprehensive knowledge of botany; and this was surprising, as, from their earliest years, they were made acquainted with the nature of plants, and their different properties [134].

He was solemn when he asked – "Did the religion of the Indians allow them to dissect and study anatomy, they would certainly attain to great proficiency in medicine; but as these are strictly forbidden, it may be readily conceived that the above sciences can make little progress" [135].

He seems to appear more emphatic when he observes that he had seen instances of Malabar physicians curing patients who had been totally given up by the Europeans. And, the Malabar physicians, in general, were superior to most Europeans in the knowledge of simple. as he found [136]. He made mention of a local medicine made from herbs Veppa, which produced good results in tertian fevers. Specifically, "Tertian fever" was a horror for the Europeans. He found, that the nettle Cuditova, as the Brahmans said, was an excellent remedy to purify and it thinned the blood, to expel the gout, leprosy, and malignant fevers, and, also, Ulatunwera, the root

of the Ulam, was an excellent remedy for the jaundice. It cleansed the urinary passage when obstructed by slimy accumulations and cured the Gonorrohaea benigna [137].

At variance with another travelers' account, he was categorical to have mentioned, "The venereal disease is very little known in the interior parts of India. As the Indians noticeably paid attention to cleanliness, and, as he observed, both the sexes – male and female – live with the greatest temperance, used easily digestible food, had uninterrupted perspiration. They wash their parts of sex three times a-day, and adhered to other strict regulation found to be necessary by the nature of the climate. As a result, the dreaded disease could not been make any remarkable progress in the inland provinces [138]. He seems to be very logical in his argument which is absent in Crauford's account. Bartolomeo mentioned of 34 diseases prevalent in Malabar region. About 40 species of different plants of the region were discovered and categorized by him. He let know his readers that it extracted from him immense labor to collect those numerous catalogues of simples, and to add their Malabar, Latin, and Portuguese names, respectively. But it would perhaps enable those fond of botany to form some ideas of the knowledge of the Indian knowledge and the vast storehouse of local herbs in that branch of science [139].

Thomas Pennant is well known for his account on Indian rhinoplasty. He emphatically told that he must by no means omit one branch of European surgery, that has of late been practiced with great success by a Poonah artist, who had quite lately had revived the Taliacotian art, which differed only in the material, for he did not apply to the "brawny parts of porter's, &c". to restore the mutilated patient. He was not a messenger of the process, but he was about told that it was by cutting the skin and muscles of the forehead on three sides, and drawing it over the deficient part. If the bridge of the nose was injured, he presumed that it must be restored by some ingenious invention [140].

There is also another debatable version of Pennant's narrative, "This art is practised by the Koomas, a caste of Hindoos. Some religious ceremonies are first performed. Betel and arrack are put into the patient's hands, and he is then laid on his back, his arms stretched along his sides, on the ground, and he is ordered, on no pretence whatever, to use his arms during the operation; and they impress him with this idea, that it cannot be successful unless he complies strictly with this injunction" [141].

Whatever is the debatable issue, Pennant narrated significantly the details of the famous Cowasjee's surgery, who underwent rhinopalsty or reconstruction of the nose, In his observation, tt could sneeze without any hazard, distinguished good from bad smells, bore the most provoking lug, or being well blown without danger of falling into the handkerchief. It will last the life of the wearer [142]. He also described many Indian plants and the way they were utilized by the "English dispensary" and Carl Linnaeus. He mentioned of Amarkosha too, which "contained a vocabulary of about 200 vegetables" [143].

J. Z. Holwell, F. R. S, observed that the Eastern Practitioners, with great modesty, arraigned the European practice of Phlebotomy and Cathartics in any stage of the disease (read smallpox here) [144]. Holwell, comparing Jennerian inoculation with traditional Indian variolation, and he finally appealed, "If the foregoing Essay on the Eastern mode of treating the Small Pox, throws any new and beneficial lights upon this cruel and destructive disease, or leads to support and confirm the present successful and happy method of Inoculation…into regular and universal practice, the cool regimen and free admission of Air…I shall, in either case, think the small time and trouble bestowed in putting these facts together most amply recommended" [145].

Notably, in the period of the second half of the eighteenth century, Holwell who like other medical officers was primarily a surgeon, could not dismiss the efficacy of the Indian method of 'inoculation'. His appeal to the members of the Royal College of Physicians, London was to take this fact being practiced in India should be taken into account for their judicious appraisal. In sharp contrast to Holwell, Sonnerat proclaimed that the Indians "do not make use of inoculation". The question comes up – was it out of his sense of racial superiority, or blind faith of European's superior knowledge of anatomical knowledge and surgery? We do not have a conclusive answer to such complexity.

Conclusion

The systemic categorization of nature and conquering natural world of foreign countries, along with exploring into disease patterns was a European project of a new kind – "planetary consciousness among Europeans" [146]. This process of superior systematization was to affirm even more powerfully the authority of print capitalism as many historians argue. It will be even more evident from Bartolomeo's accounts. Travel writings of the

previous centuries moved away from its previous mode of journey.

If one carefully studies the inquisitive studies on the quotidian habits, local custom, existence of so many languages, differences in governance, mythology, ancient and modern geography, various local ceremonies, local religious practices and religious beliefs, mathematics, astronomy, medicine, physics, natural history, commerce, one should certainly, I believe, realize that all these factors, including those of arts and sciences, got congealed into new domination and steadfastly ascending into the generation of a new kind of secular social hierarchy. Such experience was unthought of in India before colonial conquest. To express it otherwise, quantification of every natural phenomenon superseded nearly all qualitative facets of human universe. In the field of medicine, it can be obviously experienced in the usage of new diagnostic technologies. Dr. Brown attempted to measure disease into medical numbers, and he envisioned a thermometer calibrated upon a single Scale arising from zero to 80 degrees. "The device of a single axis objectified illness into something quantifiable, and pointed to a therapeutics dependent upon dosage size" [147].

Poignantly, along with this keeping these facts in mind, the anatomy of the stomach and regular practice of dissection did not automatically open up the door to cures – hardly any eighteenth-century scientific advancement helped to heal the sick in a direct way, and the cure of the sick remained insignificant. Out of all these happenings, the conqueror British had to grapple with assorted therapeutic practice. It is precisely reflected in Pringle's comments – "Another inconvenience…common to all antimonials, is the difficulty of making it to standard" [148]. To mention, in Forster's A Vocabulary, in Two Parts, English and Bongalee, and Vice Versa, published as late as 1799, there is no instance of using words which can make sense of dissection or anatomy [149].

Along with the formation of institutions of new genre which also included laws, rule of commerce, economy, education, curricula, and social milieu, European powers finally emerged successful to infallibly reengineer also botanical as well as medical knowledge of India from its matrix. The medical department of the British was established in Bengal around 1764 to render medical services to the troops and servants of the Company. At that time, it consisted of 4 head surgeons, 8 assistant surgeons, and 28 surgeon's mates. In 1785, medical departments were set up in Bengal, Madras, and Bombay presidencies with 234 surgeons. The medical departments pertained to both military as well as civil medical services. On 29 May 1786, a Hospital Board was formed for the administration of all European hospitals which consisted of the Surgeon General and Physician General, who were in the staff of the Commander-in-Chief of the Royal Indian Army. In the year 1796, hospital boards were rechristened as medical boards to administer to the affairs of the civil section of the medical departments. On 24 June 1796, the Hospital Board was transformed into the new Medical Board consisting of two members.

The history of medicine in India was now on a new domain all set for an irrevocably different journey previously unthought-of. We would find those accounts in the writings of the nineteenth century travelers.

A few characteristics of 19th-Century accounts

The systematizing of natural world, exploration into foreign natural world and understanding new disease patterns is a product of European project of a new kind – "planetary consciousness among Europeans" [150]. This particular process of systematization was to profess even more vigorously the authority of print capitalism and print itself. With regard to the previous centuries, travel writings of the 19th century took a different trajectory.

Medicine brought forth autopsy and pathological examination as regular practices. But these achievements and developments of the eighteenth-century scientific advance was hardly of any use to heal the sick directly. Arnold notes, "Western medicine remained a highly imperfect, empirical science, and for all the pride individual doctors showed in their own skills and nostrums, it was all too evident that when confronted with cholera or dysentery their medicine chests lacked convincing cures. Even vaccination, a medical technology that largely worked, could not be scientifically explained in the absence of a more developed understanding of immunology" [151].

In the year 1807, James Johnson made a prescription of "unique" combination of medicines for a so called "liver patient". Interestingly, it contained four grains of calomel, and half a grain, or a grain of opium, to be taken in a little jelly, crumb of bread, or any other convenient vehicle, and repeated every four hours until it sensibly affects the mouth [152]. Also for dysentery he did not hesitate to use the almost exactly identical medications which

prescribed the early and liberal use of mercury combined with opium, and a small quantity of antimonial powder, so as to induce ptyalism as soon as possible [153].

An important issue may be of consideration at this juncture. Favorable social psyche in support of Western medical practice was, as it seems to be, a resultant of overall science-oriented education beginning in India during the period of the late 18th and early 19th century [154].

John Mack., Marshman, Ward, Carrey, Dinwiddie, Stephen Hislop and Serampore missionaries were pioneers to popularize general scientific education. Medical education had to overcome two particular problems. First, prior to the arrival of European powers in general and the British in particular, India had its own living system of healing grounded on substantial theoretical premise and its own way of empirical results. Second, after the fortification of the British Empire and its ideology and social philosophy, medical education was strongly based on autopsy and cadaveric dissection (heralding the new era of "hospital medicine") which was of much social abhorrence among Indian population. Moreover, in its transformation from the much lauded eponym of "art of healing" to the advanced "biomedical cure", Western medicine was compelled to incorporate advances in basic sciences and laboratory experiments which ushered in the phase of "laboratory medicine". Hence, as a result, Western medicine was not easily introduced here. Travel writings of the 19th century did bear these characteristics in some way or other.

During early colonial moments the British began to assemble the indigenous knowledge world in such a way that indigenous medicine was equated with literature and the arts "considering it to be a part of local tradition distinct from universal science" [155]. It is compatible with the evolution of the concept and the final shaping of the meaning of science in Europe. Science came into English in C14. "But from Mc17 certain change became evident. In particular there was the distinction from art" [156].

With all these specific characteristics Western medicine in colonial India had to struggle with so many intersecting therapeutic practices and, as a sequel, standardization of all these therapeutic processes. Pringle commented, as noted before, "Another inconvenience attends this medicine, common to all antimonials; which is the difficulty of making it to a standard" [157]. All agog with his experimental spirit of the century, Dr. Wade hinted at epistemological mutation of medicine in the colony. When he discussed about fevers, Wade's observation was that Doctor Pasly, at Madras, was probably the first who ventured to confide in his own observation, and to deviate from the destructive practice of the times [158]. While comparing his experiences of medical practice in Bengal to those "nosological writers" of England, he affirmatively expressed, "a comparison of a large collection of cases, which have occurred in Bengal, and on board a ship…will prove to the satisfaction of every person". Moreover, if his judgment was proven to be unbiased by prejudices, should acquire at the university "or in the shop, or by the respect which is due in a certain degree to great names" [159].

It was for the first time in the medical history in India that records of individual cases the patients began to be noted and preserved. In Indian medical tradition and texts, patients did not have any individual entity in his (an unwaveringly male gaze in classical texts of Caraka and Suṣruta), they were socially embedded entities. We cannot find any individual patient's disease history excepting a few such cases in Buddhist medicine. But in the new British medical practice introduced in India almost every surgeon had charge of 700 patients. They would keep a regular diary of cases [160].

For our discussion, the 19th century is marked by some important characteristics. (1) During the first half of the 19th century it was the commercial house East India Company, rather than Her Majesty of England, that reigned India. (2) In the medical practice at hospitals autopsy became a regular practice (though limited only to Europeans serving in India) to such an extent that, as shown by Harrison, "Pathological observations made in military and naval hospitals began to inform new theories of disease causation and course of treatment" [161]. Practitioners working in India had an abundant supply of cadavers. So they were capable of comparing post-mortem findings with the symptoms of a particular disease in the patients while not dead "giving rise to a system of medicine not unlike that which later developed in revolutionary Paris" [162]. (3) Anxiety about the disease was rampant during the period. It was possible that colonialism was making the English vulnerable to "foreignness within" as it was producing spaces and peoples in England whose increasing cultural or social "foreignness" provided tropical diseases with a means of invading English society [163]. (4)

We will find distinct divergences in the evaluation of Indian medical knowledge from earlier appreciation cum accommodation to almost total rejection later as the century advanced from the phase of consolidation to the expansion and acquiring sovereignty of the British Empire. "In the early part of the following century (19th), the rapid expansion of British territory made possible the creation of pharmacopoeia with an all-India reach" [164]. Science became more comprehensively professionalized and institutionalized "in the work of the colonial medical and scientific services, in hospitals, agricultural colleges and research institutes" [165]. And, finally, (5) there was a refraction and, to an extent, mutation in the European/ universal medical knowledge to fit to the "local". Long ago, before the foundation of the CMC, British surgeons like Saunders or Curtis noted, unlike European ones, the difference in disease pattern and post-mortem findings in Indian patients.

Early 19th-Century accounts

As already noted, there was the regular practice of autopsy. Frequently findings from autopsies led surgeons like Charles Curtis to conceive that "European nosology and definitions, would in India, prove but uncertain or fallacious guides; that a stranger in short, with a good deal to unlearn …" [166]. In this case, the knowledge of disease in India dislocated European authority of nosological explanation. He made an interesting separation between "maritime India" and the rest of India. In his own words, "what is here stated, applies only to maritime India only, and not to all the variety of inland country comprehended within the vast peninsula" [167].

In 1804, Rev. William Tennant observed, "though medicine as a science cannot be said to exist among the orientals, many useful observations have occurred in practice, on the effects of various medicines, and their application in different diseases" [168]. He further noted, "The Hindoos are precluded by their religious system from acquiring any considerable knowledge of anatomy; their chirurgical skill is perhaps, therefore, more deficient than their medical practice; yet it is allowed, that they perform some difficult operations in surgery; and they are acquainted with sewing up deep wounds, and capable of practicing, what Hudibras has ludicrously termed the Taliacotian art" [169]. He was possibly pointing towards Indian rhinoplasty, lithotomy and couching. He also pointed out, "There are in all possibility, many medicines which might be useful, were we acquainted with the Hindoo Materia Medica, and the furniture of numerous penzaries, which are open everywhere from Midnapore to Annopsheer" [170]. He found that the "native hospital" of Calcutta was of "so creditable to the humanity and benevolence of the inhabitants of Calcutta" as to be applauded [171].

Out of their much vaunted "scientific" superiority the British gained the confidence which the natives, in every trying occasion, "put in the superior skill of Europeans, amounts itself to a confutation of those persons, who, without any means of knowledge, are constantly holding up their attainments as superior to every thing (sic) known in Europe" [172]. He was in all probability talking of Hakeems and Ayurvedics of the time. Leaving aside their religious proscriptions, he happily observed that "the medical gentlemen in Calcutta are frequently applied to in private by the natives … they generally take their medicines (from English doctors), in spite of their religion" [173].

William Ward made some interesting observations in 1822. We would remember that the Native Medical institution was established in this year. The institutionalization of Western medical education began to take definite shape from this year on. He felt astonished to find that empirics abound in enlightened Europe too. In that case "what can be expected in such a state of medical knowledge as that the Hindoos, but that impostors, sporting with the health of mankind, should abound" [174].

He was outspoken about the anatomical ignorance of Indians. "Their ignorance of anatomy, and, in consequence, of the true doctrine of the circulation of the blood, &c., necessarily places their different remedies among the ingenious guesses of men very imperfectly acquainted with the business in which they are encouraged" [175]. He poised a very trenchant question, "What are medicine and surgery without chemistry and anatomy?" [176].

It may be worth remembering what Tytler, sometime Superintendent of the Native Medical Institution (NMI), taught his students, "no small recommendation for Anatomy … it has a most powerful influence in counteracting prejudices that arise from birth … Before the knife of the anatomist every artificial distinction of society disappears; and if all the individual of the human race are equal in the grave, they are still more so on the dissecting table" [177].

If applied to chemistry Ward noted that in such case, "Though the Hindoos may formerly have had some knowledge of chemistry, yet it appears to have been too slight to enable them to distinguish

the real properties of different substances … Respecting the treatment of fevers, dysentery, and other internal complaints, the Hindoo physicians profess to despise the Europeans … They confess the superiority of Europeans in surgery, however, in all its branches" [176]. Moreover, "They never bleed patient". Quite remarkably he also observed, "The women of the haree cast are employed as midwives; and the doivugnu (sic) brahmans inoculate for the small-pox" [179].

He provided an example of a physician feeling the pulse of his patient and diagnosed him to be suffering from fever [180]. It should be remembered that by that time "fever" was a definite category of diseases, not any symptom. He seems to ask a poignant question consistent with his ideological position, "Are these the "benignant Hindoos?" – a people who have never erected a charity school, an alms-house, or an hospital…" [181]. It can be deduced that having introduced vigorously the basics of modern science and medicine in his treatise, Ward was now telescoping his focus on sheer absence or abominable state of hospitals in India. He put his attention to another important feature of the impact of scientific as well as Western medical education in India – "India, thus enlightened and civilized, would, even in an independent state, contribute more to the real prosperity of Britain as a commercial people, by consuming her manufactures to a vast extent, than she does at present, or ever will do, remaining uncivilized" [182].

In 1832, William Twining, assistant-surgeon of the General Hospital, Calcutta, particularly noted an important surgical practice among people of Bengal – indigenous practice of drainage of splenic abscess or any discharge from the spleen. It was described by Lambert in the preceding century. In Twinning's own words – "Long needles are said to be used by native practitioners, to puncture the spleen: and if they ever penetrated to the diseased organ, and a cure succeeded, it is very probable that the successful event might be ascribable to the peritoneal inflammation excited at the diseased part. I have seen them use needles, but so short, that I am quite certain the surface of the spleen was never touched in any of the operations which I witnessed … it is probable that the use of needles for such purpose, is founded on practical acquaintance of the benefits to be derived from such operation when more effectually done" [183]. Twinnig's description was distinct and different from that provided by Lambert. Twining, as he was a surgeon, furnished explanation of the procedure based on physiological activities, "And it is possible that the benefit which is derived from it, may depend on a degree of local inflammatory action, being followed by an effusion of lymph, which on absorption effects a permanent decrease of the spleen" [184].

He further let his readers know, "Two men now in Hospital, Pereira and Guthrie, have each had the spleen repeatedly and deeply punctured : they are recovering, and 1 think the spleen in each has diminished more rapidly since the operation, than for 3 or 4 weeks previously" [185].

Montgomery Martin was most likely the first medical personality to talk about what we now know as lathyrism as early as 1838. In his observation, "It seems to consist in a weakness and irregular motion of the muscles moving the knees, which are bent and moved with a tremulous irregular motion, somewhat as in the chorea, but not so violent. … It is attributed by some to eating khesari (lathyrus-sativus); but this seems fanciful …" [186]. In areas around Purnea, he found about "150 Jurrahs, or surgeon-barbers, who cup, bleed, and treat sores. The midwives are of the lowest tribes, and merely cut the umbilical cord" [187].

Interestingly, he seems to have noticed some sort of "hybridization" of European inoculation and Indian variolation. In his own words – "I have heard that some Europeans have been silly enough to employ them to repeat their spells, even when a European surgeon had performed the operation" [188]. In the areas surrounding Rajmahal, he observed that about "20 Jurrahs, who evacuate the water of hydrocele, treat sores, and draw blood both by cutting a vein, and by a kind of imperfect cupping. They are by birth barbers" [189].

On the contrary, medicine, as he was keen in his observation, commented that medicine was practiced by Brahmins or Vaidyas or Kayasthas. "Medicine (Baidya-sastra) is taught by several of the pundits, some of whom also, although they grammarians, practice the art" [190]. Perhaps he pointed towards the defilement of European thought by Indian customs as well as revealed that medicine and grammar are intertwined in Indian medical teaching.

Notably, while the scholastic medical practice was with high caste people, surgical procedures were simply relegated to the lowest caste Hindus and Muslims. The separation of medical and surgical practices becomes evident from the large demographic survey conducted by Martin himself. With an important note, Ainslie noticed that in comparison to Hindu vaidyas Hakeems who

possess a great deal of information, and are, "in general, men of polite manners, unassuming, liberal minded and humane" [191].

H. E. Boileau, lieutenant surgeon of the Company, observed in 1835 in Jodhpur of Rajwara, noticed the practice of indigenous medicine. In Boileau's observation we find that it was not, however, to be understood that arithmetic was studied or medicine taught as abstract sciences, for the practical part only appeared to be attended to each [192].

By 1835, Western medicine was in a position to proclaim its dominance over indigenous ones. There was phase of nativity or "gestation period" which was experimented, especially, at the Native Medical Institution, and, more generally, through medical classes at the Sanskrit College and the Madrasa of Calcutta, and, in a similar way, in the School for Native Doctors in Bombay – within the period spanning 1822 to 1835 – Western medical practice was assimilated and widely accepted especially by the upper echelon of Indian society. Boileau assertively tells us that on another occasion, when the Jesulmer Vakeel was laid up with a fever at Jodhpur, "an ordinary dose of calomel and emetic tartar astonished him so that he cleared all the people out of his tent, and assured me solemnly that he was going to die!" [193].

Though there did exist dismissive tone related the condition of Indian surgical practices, there also began changing attitude regarding the use of Indian pharmacopeia too during the mid-19th century. The days of Jones, Ainlslie, O'Shaughnessy or Waring were over. New experiments in the CMC and other institutions were reconstituting British high-handedness of their own pharmacopeia.

In R. H. Irvine seems to be completely dismissive about Indian medical knowledge system when claims that almost all the article which were really efficacious are available in the British Pharmacopoeia. He cited a series of examples which were not unique to India only, they were also available in the British market [194].

In different parts of Rajwara, Irvine noted, "the Jetties conduct the medical and surgical treatment, aided in the latter by the "barbers" who are "surgeons" by caste and occupation" [195]. To him, medicine was as unscientific as elsewhere in Rajwara [196]. As he was a surgeon, he became surprised to learn that many Europeans in India, as he was told or saw himself, were still held the opinion that native hakims and vaidyas ewre often superior in knowledge to, and were at any rate were in possession of secrets unknown to, regular practitioners (basically meaning European practitioners) [197]. Regarding the superiority of Indian Pharmacopeia he was completely dismissive about the claim made. To him, there was only one instance among article of the native material medica which was considered to possess wonderful general deobstruent and purgative qualities etc., he reminded that the article was myrobalan (Termanalia chebula) which was easily found in the British Pharmacopoeia [198]. From today's perspective, it seems to us that there appeared a hybrid space.

He had his own ambiguities in judgment. It became apparent when he told us that the practice of medicine among Indians was for all practical purposes in the hands of Mahommedan hakims, and Hindoo vaidyas, and, also, among other castes. To him, their knowledge appeared to be at an alarmingly low ebb as their chief reliance was upon charms and signs [199].

While his was such observations of indigenous medical practice he was presumed to have some respect for indigenous surgery which was so far been much ridiculed. His evaluation of the state of Indian surgery was good enough. That was demonstrated in the treatment of incised wounds: union by the first intention was universally accepted among Indians. Moreover, the wound were generally brought accurately together, and some animal paste was applied over the edges: this speedily dried and kept the parts in close contact. It was due to the fact that the gelatinous nature of application also probably tended to promote immediate union [200].

He also noticed that cataract surgery was successfully performed, infrequently, by itinerant oculists, whose employment was inherited. But, as he noted, they were completely ignorant of anatomical knowledge and, as a consequence, operated, as it would be, fearlessly like any charlatan [201]. Of the greater operations of surgery, he found, lithotomy was sometimes performed. In his observation, "the lithotomist is as ignorant as the oculist in regard to anatomy" [202].

The prevailing trend of juxtaposing European surgical superiority and excellence with native surgical ignorance is somewhat dislocated in this observation. The fundamental differentiating point between the two systems was the knowledge of anatomy. Ironically, Indian medical knowledge retaining its superiority for generations turned out to be an object of derision

after "laboratory medicine" and laboratory science flourished and made discovery newer chemical substances applied in the field of medicine. Again, while commenting on fevers, Irvine himself cuts a sorry figure. In his opinion, generally fevers of this district (in which Irvine worked) a considerable degree of depletion was customary to be employed at first, especially when the patient was young and sturdy. The degree of depletion was remarkable in different degrees for different types of fevers like continuous, remittent and intermittent ones [203].

Newer chemical drugs of European pharmacopoeia could not provide an answer to the riddle of the much dreaded Indian fever. He emphasized the governmental function and from accounts it appears that he was actually providing his service as a public servant. Seema Alavi cogently notes that the harnessing of the new medical knowledge to the general well being and public service was perfectly done during the British rule [204]. And the modern concept of "public service" emerged during the time.

Another development was taking place in the writings of the travelers. The strengthening of Western medicine base4d on its infallible institutions like the CMC revamped and reconstructed not only travel writings but generated a new kind of Indian history writing. Sykes claimed that the seeds of knowledge they had thus "sown fructify to a general and luxuriant harvest, that we shall have left a monument with which those of Ashoka, Chundra Goopta, or Shah Jehan, or any Indian potentate sink into insignificance; and their names will fall on men's ear unheeded, while those of Auckland, as protector, and of Goodeve, Mouat, and others, as zealous promoter of scientific Native medical education shall remain embalmed in the memory of a grateful Indian posterity" [205].

In 1844, Stocqeler, wrote, "A visit to the Medical College will well repay the curiosity of the stranger" [206]. In his list of important places to visit in Calcutta was the museum of the CMC. "There are many remarkable examples of tropical diseases of the viscera, ulcerations of the intestines, alterations and derangements of the biliary organs … and some fine preparations of monostrities …" [207]. He jubilantly noted, "the science of medicine is freely taught and the qualified practitioners in the healing art distributed over the country" [208].

Stocqeler's perception was careful about the blessings of European medical knowledge, and, in his opinion, it would gradually extend over the whole of India. Again, as he seemed to be strong in his view, the ignorant, cheating (he used the term 'chicaning') empirics of Indians, who had for so many years served the office of physicians in India, would be superseded by a race of men (here he means the British) who possessed the requisite ability and scientific acquirements to treat disease with a reasonable prospect of success [209].

By the middle of the 19th century the appropriateness of Western medicine attained its strong vigor and full shape, and, needless to say, social acceptance not only at the upper echelons of society but at all levels of Indian society and had extended its various conduits of medical establishments and governance all over India through effective measures like dispensaries and other establishments.

O. R. Bacheler was an American as well as an M.D. He stayed for eleven years in Orissa in the mid-19th century. By that time Bacheler came to realization that every European in India was being looked upon as a superior being (obviously by the scale of civilization) and, as a result, they were supposed to understand more or less of medicine, and "is often called upon to prescribe for the sick" [210]. Through his analysis we come to understand that the reason behind it was the Hindu system of medicine was deficient in its acquirements, and, in many respects, erroneous as it was, and it was not generally understood in a meaningful way even by the majority of native practitioners. Their knowledge does not extend beyond the mere rudiments of the profession [211]. Interestingly enough, in a span of two decades, when Boileau found some quanta of dexterity and excellence in surgery by low-caste Indian people, Bacheler simply banished it to the end of the boundary of knowledge systyem. "Of surgery they understand little. The blacksmith, with his tongs, serves as dentist, and the barber, with his razor, as surgeon; since these are the only persons supposed to have tools adapted to the practice of these professions" [212]. Bacheler's account is not interesting only for derogatory opinions he had about Indian medical knowledge, he also practiced European medicine and surgery in his Mission. These accounts will provide some more aspects of travelers' accounts.

He let his readers know that medicines had been provided to all who have applied for it, and surgical operations were neatly performed "for the last nine years". Moreover, those applicants were usually poor, such as were not able to pay for any medical

advice. He also noted that the pilgrims, on their return from 'Jagarnath', had provided a large number of patients. Not only that many came from "remote parts of the district, as well as from the town and vicinity of Balasore" [213]. In Bacheler's statement, it was found that during the previous year, the number of applicants had increased to a great extent "in consequence, probably, of the introduction of chloroform". A few successful operations under anesthesia seemed to establish the confidence of the people, to such an extent unknown before, "not only in regard to surgical operations, but, also, in the use of European medicines generally" [214].

In 1850, 12 cases were operated under chloroform. It seems quite interesting that in the CMC chloroform was applied by R. O'Shaughnessy within 3 months of its discovery in November 1847 in London. Bacheler applied chloroform in a province far away from Calcutta.

A small medical class was also formed by Bacheler consisting of young students from different regions of the province. Students of that medical school were pursuing a course of study quite diligently. It was hoped "to enable them to practise medicine and surgery with success, according to European principles" [215]. Through all these observations anyone can understand comprehensibly that the model of the later Calcutta Medical College had begun to operate even the district of Puri since the mid-19th century India. Bacheler meticulously noted that in the absence of medical books, a lecture had been delivered daily, which each student had copied out for their future reference and learning. And, according to him these students, when their course was completed, would embrace a sufficient amount of information and knowledge which would enable them to perform the duties of their calling. Moreover, they had delivered great assistance in the small dispensary, most of the labor being devoted to the preparation and dispensing the medicines [216]. He further commented that the Medical Class, which he introduced, hds completed a course of two years study, and each student having taken copious notes of the daily lectures, were capable enough to furnish with a competent guide in the "ordinary diseases of the country. Twelve young men have, at different times, been connected with the class, only six of whom have completed the course" [217].

Concluding Summary

Carefully observing the nuances of travel writings of the 19th century we would find some definite, though sometimes overlapping with one another, trends in the narratives.

First, during the first three decades of the century some amount of acceptance was there for Indian drugs. Though, to say, Indian surgical knowledge was scornfully rejected. Second, a few special surgical practices among the Indian low caste people generated awe within the Britsh. Some of these practices included rhinoplasty, lithotomy, couching for cataract, drainage of splenic and other abscesses. But their lack of anatomical knowledge decidedly made them inferior to Europeans. These practices were gradually assimilated within the technically and organizationally all-powerful European surgical practices. Notably, after the introduction of anesthetics like chloroform and ether in the 1840s, the power and excellence of European surgery was unrivaled. Third, during the later part of the 19th century Indian medical knowledge had lost its reputation in Indian scenario too. Earlier, in Irvine's writings we found the inkling towards this direction.

After many years, in the Rajputana Gazetteer it was specifically documented that there were said to be some "three thousand different kinds of physic to be obtained from the shops of the pansaris, or native druggists; but, of these, only three hundred are believed in; nearly all are imported from other parts of India. Most of the drugs of real efficacy used by native practitioners are to be found in our own pharmacopoeia" [218].

In Indian perspective, the production of any new pharmacopoeia was involved with bringing about a kind of homogeneity amongst so many synonyms of Sanskrit, Arabic, Persian and Tamil names, and, more specifically, their regional variations [219]. Here we can perceive a gradual shift from selective accommodation to full-scale dominance of Western/European medicine during the whole of the 19th century. It is reflected in the travel writings of Irvine, Bacheler, Ward, Twinning and others (not discussed in this paper). Though, to mention, there always were fissures in the endeavor of total hegemony, especially among the lower echelons of the Indian society.

Fourth, as we have seen in the case of Martin and Irvine, there were overlapping or hybrid spaces in disease perception. "Hybrid disease landscapes … upset the stability of colonial disease geography by questioning and displacing European epidemiological certainties and securities" [220].

Fifth, in this advancement of Western medicine from an uncertain position about their own medical supremacy to their determined authoritative position in the arena of medicine, the

Calcutta Medical College (CMC) played the pivotal role. Ballingall designated blood-letting, purging and mercury to be "the most powerful resources of the healing art" [221]. Post-1857 India represents another pattern of travel writings. We have stopped short of that period. That is another account hopefully to be narrated somewhere else.

To mention, in 1928, Montgomery Martin laid the project and plan of an institution and medical college like CMC, which was then declined by Bentinck for the obvious reason that "lest Hindoo prejudices should be offended". Interestingly, it took even less than twenty years since the introduction of modern medical training at the Native Medical Institution; CMC was "in full operation and producing much good" [222]. Against this perspective, travel writings also began to change, as we have seen in the case of Stocqueler.

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