From the Genesis to the "Escape Velocity": First Educational Sojourn from Calcutta Medical College (CMC)

Abstract

A common culture of medicine became the hallmark of European empires throughout the world since the beginning of the 19th century. The first Asian/Indian modern medical institution CMC, as we all probably know, was on 28 January, 1835, though classes did not actually start before June 1835. It heralded the new era of "hospital medicine" in India from its inception. This era which can be briefly summarised as autopsy, bedside teaching and statistics gathered from the morbid anatomy of deceased patients. The genesis of the College was preceded by a "period nativity"/"gestation phase" principally through the functioning of the Native Medical Institution (NMI – 1822-1835) – the first English medical school of India. At the beginning, the teachers were confronted with the task of combating a strong national prejudice against the study of anatomy or dissection. Following rigorous remodelling in syllabi and mode of teaching, CMC was the first college not only in India but beyond Euro-American borders as well to have been recognized by the University College, London, the Royal College of Surgeons and the Worthy Society of Apothecaries. CMC gained the momentum to reach the '*escape velocity*' to be in a position to send their most illustrious students to England for higher European medical education.

Keywords: Hospital medicine, Calcutta Medical College, First educational sojourn, "escape velocity", Bentinck

Introductory Remarks

Prior to the overarching presence of modern medicine, or otherwise internationally regarded as "hospital medicine", Rosenberg observes, "Both physician and educated layman shared a similar view of the manner in which the body functioned, and the nature of available therapeutic modalities reinforced that view."[1] Moreover, as Rosenberg argues, "…. as this world changed and provided data and procedures increasingly relevant to the world of clinical medicine, it gradually undercut that structure of cognitive framework and personal interaction which characterized therapeutics at the end of the century."[2] What Rosenberg wanted to argue about is fairly described in an important textbook of internal medicine, suggesting that we are in an era of "bio-medicalization" or "techno-medicine":

> The hospital is an intimidating environment for most individuals. Hospitalized patients find themselves surrounded by air jets, button, and glaring lights; invaded

[1] Charles Rosenberg, 'The Therapeutic Revolution: Medicine, Meaning, and Social Change in Nineteenth-Century America'. Perspectives in Biology and Medicine, Vol. 20, No. 4, Summer 1977, p. 497 (485-506).

[2] Ibid, p. 497. For a nice and detailed analysis of medicine and patronage system in 18th-century England see, N. D. Jewson. 'Medical knowledge and the patronage system in 18th century England'. Sociology, Vol. 8, No. 3, 1974, pp. 369-85. Jewson comments, "Perhaps the most immediately striking feature of the 18th century pathology was the general lack of agreement about the causes of illness and the effectiveness of therapies.", ibid, p. 171.

> by tubes and wires; and beset by the numerous members of the health care team – hospitalists, specialists, nurses, nurses' aides, physician's assistants, social workers, technologists, physical therapists, medical students, house officers, attending and consulting physicians, and many others. They may be transported to special laboratories and imaging facilities replete with blinking lights, strange sounds, and unfamiliar personnel; they may be left unattended at times; and they may be obligated to share a room with other patients who have their own health problems. It is little wonder that patients may lose their sense of reality.[3]

In such a milieu, the doctor is often the only tenuous link between the patient and the outside world and "may make a stressful situation more tolerable."[4] S/he becomes both a scientific person and a healer. Roy MacLeod argues, "Medicine, in its conceptual, professional and political dimension, is both shaping and shaped by the cultural circumstances that surround it, and that give it at any time its particular character."[5] A common culture of medicine — sustained by the image of science as the universal agent of progress, and scientific medicine as its instrument—became the hallmark of European empires throughout the world.[6] The success of western medicine was facilitated by the expansion of hospitals to the non-European world. It seems to be echoed in the voice of Mahendralal Sircar (Sarkar), "If there is anything for which we are under the great obligation to the British Government it is perhaps the establishment of Hospitals and Medical Schools in this country."[7]

However, while it is still possible to conceive of the dissemination of Western medicine through the institution of the hospital, as Mark Harrison points out, "this process did not represent a uniform trend towards medical modernity, but sometimes accommodation with local, non-Western modernities and traditions".[8] Additionally, "Colonial hospitals were also centres of therapeutic innovation, subjecting to systematic trial a range of botanical and chemical remedies either pioneered in the colonies, or adopted from indigenous traditions."[9] In this enterprise, it had to negotiate between metropolitan "push" and peripheral "pull" on the one hand, and 'its own colonial dynamic' on the other. It is with this problematic in mind that I will study the institution of the CMC in this article.

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[3] Dennis L. Kasper, Anthony S. Fauci, Stephen L. Hauser, Dan L. Longo, J. Larry Jameson and Joseph Losacalzo, (eds.), *Harrison's Principles of Internal Medicine*, 19th edition, Vol. 1, New York, Chicago: McGraw Hill Education, 2016, p. 5.

[4] Ibid.

[5] Roy MacLeod. 'Introduction', in Roy MacLeod (ed.), *Disease, Medicine and Empire: Perspectives on Western Medicine and the Experience of European Expansion*, London, New York: Routledge, 1988), p. 1 (1-18).

[6] Ibid, p. 3.

[7] Mahendralal Sarkar. 'The Calcutta Medical College, part I', Calcutta Journal of Medicine, Vol. 6, No. 3 & 4, March & April 1873, p. 125 (123-128). For a brief introduction, Mahendralal was a graduate from the CMC. In his later life he was a strong advocate of homeopathy and abandoned allopathy practice to embrace the former. Again, more importantly, he was the founder of the first scientific research institute – Indian Association for the Cultivation of Science – to do basic researches in non-biological sciences.

[8] Mark Harrison, 'Introduction', in Mark Harrison, Margaret Jones and Helen Sweet (eds.), *From Western Medicine to Global Medicine: The Hospital Beyond the West* (eds.), New Delhi: Orient BlackSwan, 2009, p. 2-3 (1-31).

[9] Ibid, p. 9.

The Period of Genesis

The foundation of the CMC, as we all probably know, was on 28 January, 1835, though classes did not actually start before June 1835.[10] "In pursuance of the Regulations of the College, as defined in the Government Order of January 28, 1835 (*Govt. G.O. No. 28 of 28th Jan., 1835*) **a preliminary examination** was held on the 1st May, at the residence of J. C. C. Sutherland, Esq. Secretary to the Committee of Public Instruction, for the purpose of selecting the students on the foundation."[11] Further, "On this occasion **about a hundred candidates** presented themselves; the majority being Hindu youths of various denominations. The greater part of these lads had received their education at Mr. Hare's school, the Hindu College, and the Scotch Assembly School the remainder had been instructed at the minor academical Institutions in the city. The examination was conducted chiefly by Mr. Sutherland, and the acquirements of the candidates were severally tested in the elementary branches of English knowledge, in Arithmetic, and in Bengalee ... **twenty-five** were selected as stipendiary students."[12] Initially, ONLY 25% of the aspiring candidates who appeared for admission into CMC were selected. The way the students were selected initially may be viewed as a **proto-entrance examination** of today's India. Though, within a few months, more students got selected. It can be understood that in the early years of its foundation the CMC was regarded as a "great experiment", not an entirely finished task, for "the progress of European medical science in India"[13].

To emphasize here that the genesis of the College was preceded by a "period nativity" or "gestation phase" principally through the functioning of the Native Medical Institution (NMI – 1822-1835) – the first English medical school of India.

Notably, Eric Stokes reminds us – "It was in that year (1818) that the orator of the new liberalism, the young Macaulay, shook off his father's toryism and avowed himself a Radical. It was in the same year that James Mill published his great *History of India,* and became a candidate for high office in the Company's Home Government."[14] All these phenomena taken together led to a condition where Macaulay was backed by the great bulk of Calcutta mercantile community in its fight for English education. It was the period gestating the formation of semi-modern Indian state. In tandem, changes occurred in education policy – a constituent part of which was medical education.

Medical education historically became one of the most productive imperialist networks through which benefits of imperialism could be visible. In England, there were circumstances in which social resentment and political radicalism could flourish; during the 1830s and 1840s a British revolution seemed a real possibility.

[10] It becomes evident from the "incomplete" first annual report of the College by its first principle Mountford Joseph (MJ) Bramley, which has been discussed below along with references.

[11] *General Committee of Public Instruction of the Presidency of Fort William in Bengal, for the Year 1836* (hereafter *GCPI*), Calcutta: Baptist Mission Press, 1837, p. 63.

[12] *GCPI*, 1836, p. 63.

[13] Ibid, p. 67.

[14] Eric Stokes, *The English Utilitarians and India*, Oxford: Clarendon Press, 1959, p. xvi.

It is interesting to note that in 1828 Montgomery Martin, laid the project and plan for a new medical college before Viceroy Lord Bentinck. The plan was rejected "at the time by the Supreme Government, lest Hindoo prejudices should be offended".[15] Quite a few years later, in an article in the *Lancet* it was commented – "it was not till after the Act of 1833, which infused fresh vigour into both the Home and Foreign divisions of our oriental administration, that medical and general education began to experience something like the attention it deserved."[16] So Montgomery Martins' plan in 1828 did not materialize.

CMC had its beginning in a convincingly humble way. The premises previously occupied by the Petty-Court Jail, an Arrangement old house situated in the rear of the Hindu College, were converted for starting to the use of the newly started Medical College. The books and the apparatus of the abolished Native Medical Institution were made over. Along with, Pandit Madhusudhan Gupta, who was a Baidya Professor at the Sanskrit College, was transferred, with two assistants, from the College.

It is noteworthy that the founding band of workers (professors) commenced their labours of teaching at the CMC on the 20th February 1835. There were neither Library, Museum, Hospital nor "Philosophical" apparatus. Anatomical preparations were however soon procured from England (including two skeletons which were purchased through Messrs. Bathgate and Co. of Calcutta at a cost of Rs. 1,500) and the services of one Mr. Evans were secured as Curator to the newly established museum. Besides these difficulties, the teachers were confronted with the task of combating a strong national prejudice against the study of anatomy or dissection. This prejudice was so deep-rooted among the greater part of the community, that their contemporaries laughed at the attempt to introduce it, with scorn "as a vain chimera."

The making of a new medical pedagogy as well as the emergence of a new gentry of students, getting extricated themselves from ubiquitous presence of theology, grew out of long-drawn socio-economic and political struggle in England and Europe. But, unlike UCL, abandonment of religious teachings in the CMC had nothing to do with historical developments as happened in Europe. In India in the 1830s it was actually a truncated representation of secularism emanating from colonial anxieties – not to interfere with religious beliefs of colonial subjects. The colonial authority almost always maintained a policy of equidistance and religious neutrality. The first cadaveric dissection seems to transform colonial medical *anxiety* to *secular self-confidence*.

As we know, CMC was the first Indian (also the first Asian) medical college imparting modern medical teaching in line with advanced European training, occasionally with a refraction and mutation in the method of teaching suited to the local needs. A local-global divide was apparent since its beginning. However, historically more important is the fact that

[15] Robert Montgomery Martin, *Statistics of the Colonies of the British Empire in West Indies, South America, North America, Asia, Austral-Asia, Africa, and Europe*, London: Wm. Allen & Co., 1839, p. 305.

[16] 'Sketch of an Indian physician', The Lancet London, Vol.1, 1855, p. 48 (48-49).

when CMC was established in 1835, a new era of "hospital medicine" had evolved at the international level, what I have detailed below.[17]

Jacyna comments, "Ackerknecht offered a classification of the major stages in the history of Western medicine that proved to be remarkably influential."[18] The hall marks of hospital medicine were bedside examination and teaching, autopsy after death to corroborate symptoms of the living patient with morbid pathology and statistical gathering of patient and disease data to predict the future course of a disease. The French experience of the rise of hospital medicine heralded the closing hour of medical medievalism. It was no longer possible to practice without examination. "Surgeons, used to extirpating the lesions of the disease, and physicians, used to administering systemic medicaments, all suddenly now needed a blanket system that could unite heretofore disparate perspectives on the 'seats and causes of disease'."[19] Next it evolved into the phase "laboratory medicine". According to Ackerknecht, "a new medicine, "laboratory medicine", made its appearance in Paris under the leadership of Louis Pasteur, Claude Bernard, and the Société de Biologie."[20] To emphasize, though hospital medicine transcended into laboratory medicine, it was NEVER at the cost of hospital medicine. Both phases were overlapping – one supervening the other.

Questions Related to Our Understanding

Now the questions may be arranged as follows:

(1) Was the College a 'gift' of British imperialism or colonial administration to Indian people?
(2) Was it an outcome of the ongoing economic, political, social, psychological and administrative changes in England itself?
(3) What was the exact purpose(s) of establishing the College?
(4) Was it that after certain period, when the College was solidly moored on its ground, the College itself gained an 'escape velocity' to reach at its height without further colonial intervention? Such an 'escape velocity' was needed for the first educational sojourn (in Indian context) to England for higher medical studies.
(5) When the College was established medicine was in the era of 'hospital medicine' which can be briefly summarised as autopsy, bedside teaching and statistics gathered from the morbid anatomy of deceased patients. Regular performance of anatomical dissection – later on to identify organ localization of disease – traversed its long and

[17] For a rather brief yet useful study in Indian perspective see, Jayanta Bhattacharya, 'The genesis of hospital medicine in India: The Calcutta Medical College (CMC) and the emergence of a new medical epistemology', Indian Economic and Social History Review, Vo. 51, No. 2, pp. 231-264. For an insightful detailed account at the international level see, Erwin H. Ackerknecht, *Medicine at the Paris Hospital 1794-1848*, Baltimore: Johns Hopkins Press, 1967.

[18] Stephen Jacyna, 'Medicine in Transformation, 1800-1849', in W. F. Bynum, Anne Hardy, Stephen Jacyna, Christopher Lawrence, E. M. (Tilli) Tansey (authors), *The Western Medical Tradition: 1800 to 2000*, Cambridge, New York: Cambridge University Press, 2006, p. 53 (11-110).

[19] Russel C. Maulitz, 'The pathological tradition', in W. F. Bynum and Roy Porter (eds.), *Companion Encyclopedia of the History of Medicine*, Vol. I, London: Routledge, 1993, p. 178 (169-191).

[20] Ackerknecht, *Medicine at the Paris Hospital*, p. xiii.

steady advancements from Andrea Vesalius (16th century) to William Hunter (the famous promulgator of "necessary inhumanity") to Paolo Morgagni to Xavier Bichat (the famous maxim for his student – "dissect in anatomy, experiment in physiology, follow the disease and make the necropsy in medicine; this is the three-fold path, without which there can be no anatomist, no physiologist, no physician."). Such a trajectory took about 3 centuries to attain its full shape in Europe in the aftermath of the French Revolution and, primarily, at the Paris Hospital.[21]

But in India it was made to happen only passing through a 'gestation phase' of 13 years in the Native Medical Institution (1822-1835). In this sense, it was implanted on Indian environment, not growing out of its socio-historical, scientific or political developments. It may be regarded as a kind of "cultural shock" to Indian populace in general.

Stock Taking

"Native doctors" were appointed in British army since the middle of the 18th century, as the East India Company (EIC) was constantly engaged in warfare for its territorial expansion. Additionally, considering the vastness of the Indian subcontinent it became almost a 'must' for them to find assistants to British surgeons for dressing and wound-care – "Each European regiment had one Surgeon and three Mates, each company of artillery one Mate, each battalion of sepoys had three **native doctors**, with one Surgeon and two Mates on the staff of the whole seven battalions of the brigade."[22] But these "native doctors" were altogether different from "Native Doctors" undergoing rigorous training at the Native Medical Institution – "In Bengal G.O. of 13th Sept., 1833, was published a scheme for the training of a certain number of the best *native doctors in the army to form a superior class*, with the designation of Sub-Assistant Surgeon".[23]

It points to the fact that *"economy of education"* was most crucial to the profit-making EIC. What they did for education was basically to minimize expenses for bringing trained doctors from England. It will be more evident from an example of military training. A high-placed military official W. J Moore referred Colonel Hodgson to make it clear that "the British soldier who now serves in Bengal one year encounters as much risk of life as in three such battles as Waterloo."[24] Moreover, "The loss many hundreds of soldiers, each of whom has

[21] Arturo Castiglioni, *A History of Medicine*, 2nd edn. New York: Alfred Knopf, 1947. For Indian perspective see, Pratik Ckarabarti, *Bacteriology in British India: Laboratory Medicine and the Tropics*, Rochester: University of Rochester Press, 2012. An insightful recent addition, Deepak Kumar, *Science and Society in Modern India*, New Delhi: Cambridge University Press, 2023. Three more important additions for prospective readers – Thomas Neville Bonner, *Becoming a Physician: Medical Education in Great Britain, France, Germany, and the United States, 1750-1945*, New York, Oxford: Oxford University Press, 1995; Andrew Cunningham and Peery Williams, (eds.), *The Laboratory Revolution in Medicine*, Cambridge: Cambridge University Press, 1992; and Klaas van Berkel and Ernst Homburg (eds.), *The Laboratory Revolution and the Creation of the Modern University, 1830-1940*, Amsterdam: Amsterdam University Press, 2023.

[22] D. G. Crawford, *A History of the Indian Medical Service, 1600-1913*, in 2 volumes, Vol. 1, London: W. Thacker & Co., 1914, p. 202.

[23] Ibid, Vol. 2, p. 113.

[24] W. J. Moore, *Health in the tropics; or, sanitary art applied to Europeans in India*, London: John Churchill, 1867, p. 13.

cost the state £100 to train to his duty, has resulted from the neglect of sanitary regulations, and it may be added, a long depreciation of the medical department."[25] Hence it is irrelevant to talk about as a 'gift' from the colonial authority to Indian people. It came out of hard and stark necessity to economize the cost producing a fully trained doctor in India at a lower cost – the "economy of education".

In the parliamentary battle of 1813, as Eric Stokes argues, the free-traders had stripped the East India Company of its commercial monopoly over India. "Free trade was its solid foundation. Evangelicalism had provided its programme of social reform, its force of character, and its missionary zeal."[26] He also reminds – "It was in that year (1818) that the orator of the new liberalism, the young Macaulay, shook off his father's toryism and avowed himself a Radical. It was in the same year that James Mill published his great *History of India*, and became a candidate for high office in the Company's Home Government."[27] Further, "Substantially it represents the *permanent Liberal attitude to India*".[28]

It resulted in the foundation of the CMC primarily with 2 teachers M. J. Bramley as the principal and H. H. Goodeve as his assistant. On 5th August, 1835, W.B. O'Shaughnessy – the inventor of intravenous saline for cholera patients – joined them. Thus at the beginning there were 3 teachers at CMC. More teachers from the IMS (Indian Medical Service) joined later on.[29] At its initial days they had no textbooks, syllabi or any teaching materials for the students. They had to start from scratch.

Moreover, according Gorman, "At a time when a chemical laboratory in an American medical school was rare, this course with lectures and laboratory work was the equal of any in a European medical institution. Most importantly, the students were just as capable and enthusiastic about chemistry as they were about anatomy, and the testimony of outside examiners gives ample proof as to the rigor of the examinations."[30] O'Shaughnessy instilled new scientific spirit and inventive impetus that his students formed a "Chemical Demonstration Society" in Calcutta in 1837.[31] This society was the first ever such scientific society in colonial India. O'Shaughnessy was also the international pioneer introducing medical use of Indian hemp to the world.[32]

CMC's first principal MJ Bramley, in his incomplete annual report (owing to his early demise at the age of 33 only), detailed about huge interest and experimental spree following O'Shaughnessy's chemistry classes in 1836 – "Strict examination of the pupils was held at the close of these tentative lectures, and the result shewed, that while the popular department of

[25] Ibid, p. 6.

[26] Stokes, *The English Utilitarians*, p. xiv.

[27] Ibid, p. xvi.

[28] Ibid, p. 46.

[29] For comprehensive discussion see, DG Crawford, *A History of the Indian Medical Service*, Vol. 2, chapter XLIII, London: W. Thacker &Co., 1914.

[30] Mel Gorman, 'Introduction of Western Science into Colonial India: Role of the Calcutta Medical College', Proceedings of the American Philosophical Society, Vol. 132, No. 3, Sep., 1988, p. 287 (276-298).

[31] *Calcutta Monthly Journal*, Third Series, 1837, Vol. 3: 433.

[32] WB O'Shaughnessy, 'On the Preparation of Indian Hemp, or Gunjah', Provincial Medical Journal, Vol. 5, No. 123, 1843, pp. 363-369.

chemistry was followed *with delight*, the more elaborate details were minutely studied, and thoroughly and readily understood ; several of the young men moreover *evinced a strong desire to become experimentalists themselves*, and were known to purchase at (to them) enormous expence (sic), various tests and articles of apparatus with which they repeated at their homes the experiments they witnessed in the lecture room"[33].

Bentinck, Bentham and the Beginning of CMC

Bentinck represented this liberal attitude, though constrained and limited, for Indian perspective.[34] Bentinck "indeed subscribed in 1826 for two shares in the newly founded University College, London…"[35] Bentinck reached Calcutta at a time when the strife between the monopolist EIC and the rising Bengali mercantile community advocating for free trade and other issues "were a matter of lively debate both there and, because of the coming need to renew the company's Charter at home."[36] To add, Bentinck had also a copy of *Panopticon* of Bentham in his possession. Bentham wrote, "While writing, it has occurred to me to add a copy of a work Panopticon; the rather because, at the desire of Mr. Mill, it is in the hands of your new Governor-general, Lord William Bentinck…"[37] Moreover, Bentinck, as told by Bentham, said to Bentham – "I am going to British India; but I shall not be Governor-General. It is you that will be Governor- General."[38] So some scholars have coined the term "liberal imperialist" for Bentinck.

To emphasize, most likely as a result of these cumulative events, Percival Spear urges us to look to England rather than to India for the decisive changes in Indian educational policy. "The two sources of these ideas", writes Spear, "were, briefly, Evangelical and the Utilitarian."[39] Unlike Euro-American state formation, modern Indian state did not evolve over a few centuries. When the British power conquered Indian territory it was a conglomeration of a great number of feudal princely states that sustained by paying taxes to the central British authority. William Bentinck had his brief stint in Calcutta from 1828 to 1835. During his rule, he played a key role in the transformation of Indian administrative, educational, tax patterns and, to an extent, social ambience of Calcutta. Bentinck was a Whig in politics.

Singer and Holloway emphasizes that the "distinctive feature of University College Medical School and of its sister foundation attached to King's College was that they were specially equipped to teach the ancillary sciences for they employed full time professors of these subjects."[40] All these happenings in England had their profound influence in shaping the

[33] *GCPI*, 1836, p. 59.

[34] For a nice discussion on Bentinck against international and Indian perspective see, John Rosselli, *Lord William Bentinck: The Making of a Liberal Imperialist, 1774-1839*, Berkeley, Los Angeles: University of California Press, 1974.

[35] Ibid, p. 85.

[36] Ibid, p. 185.

[37] *The Works of Jeremy Bentham*, (ed.) John Bowring, Vol. 10, Edinburgh: William Tait, 1843, p. 591.

[38] Ibid, p. 577.

[39] Percival Spear, 'Bentinck and Education', in Thomas R. Metcalf (ed.), *Modern India: An Interpretive Anthology*, New Delhi: Sterling Publishers Pvt. Ltd., 1994, p. 245 (241-260).

[40] Charles Singer and S. W. F. Holloway, 'Early medical Education in England in Relation to the Pre-History of London University', Medical History, Vol. 4, No. 1, January 1960, p. 7 (1-17).

mode of clinical training and curricula of the CMC.

Interestingly, like the UCL, when the Medical College Hospital was completed in 1852–53 it was built in Corinthian style. In 1834, Bentinck wrote to his friend Peter Auber, "Be assured that we progress here as elsewhere. The mind of this country is receiving a new impulse and excitement, and we must keep pace with it. Three thousand boys are learning English at this moment in Calcutta and the same desire for knowledge is universally spreading."[41] In an assured note, he continued, "My firm opinion on the contrary is that no dominion in the world is *more secure* against internal *insurrection*."[42]

Against this perspective CMC was founded on 28th January, 1835. At a later period it was jubilantly noted – "The Medical College has thus been the nursery of our medical men. It has fed all the dispensaries in the Mofussil. It alumni are also to be found in the army, in charge of jails, in private practice, in railway stations, on board steamers and passenger ships, in the employment of zemindars and planters, and in depots and shops ... the College is no longer an *experiment*, but an accomplished and *beneficial triumph*.[43]

Moreover, during the days of its inception, truly inquisitive, original and scientific-minded scientist-doctors like W. B. O'Shaughnessy and H. H. Goodeve precisely dwelt on their efforts, "as teachers in a new and experimental institution". They worked hard to structure the best curricula for CMC students form materials "drawn from attentive examination of all the British and foreign professional journals".[44] They tried sincerely to bring the level of medical education imparted at the CMC at par with European medical schools. They jointly stated their desire in a plain way for the recognition of their endeavour in homeland – "It must not be said of us in Europe, that expatriation has not rendered us inefficient in the advancement of our profession. We will rather strive to excite among our brethren of the fatherland some surprise, that amidst the many impediments which beset us here, we will pursue with unabated zeal the various useful and enobling branches of our truly philanthropic art."[45]

Early Days of Experimental Spirit

William Brooke O'Shaughnessy was one of the first three teachers of the Calcutta Medical College, the first Asian college for modern medical education, of India. O'Shaughnessy was a rare genius to discovered intravenous saline as the therapy for cholera patients.[46] He was also the first scientist to introduce the medical use of cannabis to the world. With very meagre instruments in the laboratory of the College of the time, he instilled original scientific

[41] C. H. Philips, (ed.), *The Correspondence of Lord William Cavendish Bentinck: Governor General of India 1828-1835*, Vol. II, Oxford: Oxford University Press, 1977, p. 1279.

[42] Ibid, p. 1280. [Emphasis added]

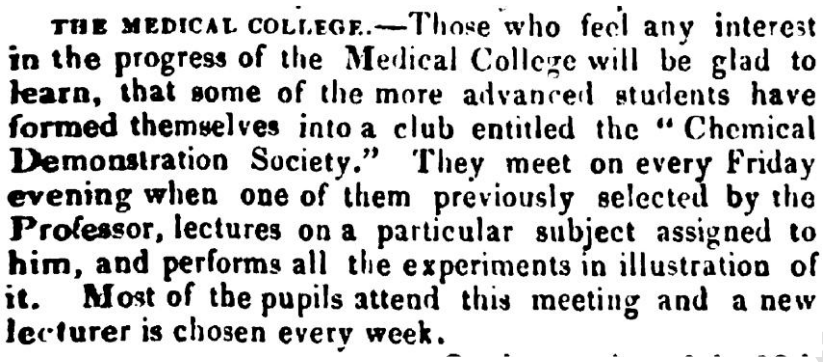
[43] 'Hindu Medicine and Medical Education', *Calcutta Review*, Vol. 42, No. 83, 1866, p. 120-121 (106-125).

[44] 'The Quarterly Journal of the Calcutta Medical and Physical Society', Calcutta Monthly Journal, Third Series, III, 1837, p. 16.

[45] Ibid, p. 16.

[46] WB O'Shaughnessy, 'Proposal of a New Method of Treating the Blue Epidemic Cholera by the Injection of Highly-Oxygenised Salts into the Venous System', Lancet, Vol. 17, No. 422, 1831, pp. 366-371.

inquiries into his students to such an extent that some of them formed the "Chemical Demonstration Society" in Calcutta – first ever any such society in India.[47]



THE MEDICAL COLLEGE.—Those who feel any interest in the progress of the Medical College will be glad to learn, that some of the more advanced students have formed themselves into a club entitled the "Chemical Demonstration Society." They meet on every Friday evening when one of them previously selected by the Professor, lectures on a particular subject assigned to him, and performs all the experiments in illustration of it. Most of the pupils attend this meeting and a new lecturer is chosen every week.

What a diligent and student-oriented task of infusing original scientific inquires O'Shaughnessy had taken up in the 1830s is evident from his "Introductory Lecture" before the students and large audience gathered at the College on March 17, 1836:

> In this system I may add, I *imitate with slight modifications* the plan pursued in the Schools of Chemistry of the Universities of Edinburgh and London. I say with slight modifications, for I am aware that it is usual in most schools to commence with heat and light, and thence to proceed at once to electricity and magnetism, and last of all, to the simple substances ... In this section I shall follow the system adopted in the *Ecole Praque* of Paris, the beneficial workings of which I have myself witnessed. These courses will occupy about five months, and next year will, I trust, be followed by one for general students and tradesmen exclusively on the chemistry of the arts, and in which they have the benefit of visiting the many manufactories about Calcutta; and another for the most distinguished of the medical pupils on the minute details of analysis on the peculiar plan followed by Rose, the professor of chemistry at Berlin.[48]

O'Shaughnessy's endeavour instilled among his students "evinced a strong desire to become experimentalists themselves, and were known to purchase at (to them) enormous expence (sic), various tests and articles of apparatus with which **they repeated at their home the experiments they witnessed in the lecture rooms**"[49]

Goodeve, in his lectures in 1848, remarked, "in less than two years from the foundation of the college, practical anatomy has completely become a portion of the necessary studies of the Hindu medical students as amongst their brethren in Europe and America. The practice of dissection has since advanced so rapidly that the magnificent rooms erected four years since, in which upwards of 500 bodies were dissected and operated upon in the course of last year,

[47] 'The Medical College', Calcutta Monthly Journal, Third Series, Vol. 3, 1837, p. 433.

[48] WB O'Shaughnessy, 'Lectures on General Chemistry and Natural Philosophy', Calcutta Monthly Journal, Third Series, Vol. 2, 1836, p. 17 (8-18).

[49] *GCPI*, 1836, p. 59.

now amounting to upwards of 250 youths of all…religions, and castes…as the more homogeneous frequenters of an European school."[50]

Another account reads thus, "it appears that the number of native students attending the surgical class amounted to 3,952, out of which great number 3,589 were present at all the lectures during the season; in the anatomical and physiological class 3,844 entered, out of which 3,430 attended every lecture… from the month of November, 1846, to that of March, 1847, being a period of only five months, nearly 500 bodies had been dissected by the native students; - an astonishing number, when the prejudice to be overcome is considered…"[51] Think of the scenario!

Lancet also reported about the College in euphoric tone:

> It is deserving of mention, that from the month of November, 1846, to that of March, 1847, - being a period of only five months, nearly 500 bodies had been dissected by the native students – an astonishing number, when the prejudices to be overcome are considered: and that the dissections and studies altogether at this college are properly conducted is evidenced by the fact, that the Hindoo students sent over to this country by the Government Council of Education, under the able superintendence of Dr. Goodeve, underwent a very rigid examination at the College of Surgeons, by the Court of Examiners, at the termination of which they were complimented by the president for their great proficiency, underwent a very rigid examination at the College of Surgeons, by the Court of Examiners, at the termination of which they were complimented by the president for their great proficiency... [52]

Report on the Reforms of the CMC

In his letter to G. A. Bushby, Secretary to Government, General Department, on 17 July, 1841, T. A. Wise, Secretary, General Committee of Public Instruction, wrote at length about how to improve general status of education at CMC and make it more modern compatible with at least the provincial schools of medical education in Europe. Wise wrote, "its defects, however, are sufficiently obvious, seeing that whatever short-comings might become observable, no individual had the power of modifying them..."[53] So the question of overhauling the system itself came to importance. He carefully mentioned, "In its importance to the Native population, not only as a Hospital, but as a School of instruction, the probable benefits of Midwifery practice and Courses of Lectures cannot be too highly esteemed ... qualifying themselves to become Nurses and Midwives in the community, and thus be saving much of the human life ... It would also afford livelihood to persons so instructed..."[54]

[50] *Centenary, Medical College, Bengal*, Calcutta: Medical College, 1935, p. 14.

[51] 'Flourishing State of Medical College of Bengal', London Medical Gazette or Journal of Practical Medicine, New Series, Vol. 5, 1847, pp. 126-127.

[52] *Lancet*, in two volumes, Vol. II, 1847, p. 187.

[53] *General Report on the Late General Committee Public Instruction, for 1840-41 & 1841-42*, Calcutta: William Rushton & Co.: 1842, Appendix No. X, p. lxxi. [Hereafter *GRPI*, 1840-1841 7 1841-1842]

[54] Ibid, p. lxxxv.

In the above-mentioned letter of T. A. Wise it was specifically mentioned – "The *night residence* of the Clinical Clerks has been duly provided for in quarters lately occupied by Ceylon students."[55] The "Printed Rules of the Clinical Clerks and Assistants of the Hospital" clearly stated that "the eighteen senior Students will each in turn, for one day, take the night duties of the Hospital being provided with a room and lights."[56]

Interestingly, it was noted that the "Women admitted into the Midwifery Hospital are, at present, of a very inferior class, chiefly Hindoos and Mohamedans ... one respectable European Female has entered the wards and been safely delivered; she was lodged in a separate room, and secluded from the visits of pupils."[57] The question of *race* looms large in this reporting – the respectable European lady is lodged separately and not allowed to be examined by Indian students of the CMC.

To note, a new *social psyche* to assimilate the new knowledge was in the making. Briefly speaking, it led to a number of emerging characteristics.

First, when the students were acquiring knowledge in English and learning new medical terms and idioms of expression they came to associate themselves with a new kind of *auditory* as well as *verbal acculturation*. When they were exploring into the inside or the third dimension of the body it resulted in an altogether new *visual* as well as *psychological acculturation*. Learning how the bodily organs function through definite dynamics or hands-on training in chemistry classes bolstered this process. Gradually they became citizens of new epistemological praxis and medical cosmology as well.[58]

Second, the new *visual acculturation* through dissection, surgery, post-mortem examinations and others was not only a kind of acculturation. More importantly, it remoulded "philosophy of observation" resulting in clinical gaze *a la* Foucault. "The space of *configuration* of the disease and the space of *localization* of the illness in the body have been superimposed, in medical experience, for only a relatively short period of time—the period that coincides with nineteenth-century medicine and the privileges accorded to pathological anatomy. This is the period that marks the suzerainty of the gaze."[59] Moreover, "The clinical gaze has the paradoxical ability to hear a language as soon as it perceives a spectacle. In the clinic, what is manifested is originally what is spoken."[60]

The students began to learn accurately the third dimension, instead of two-dimensional bodies which were graphically portrayed so far. The gaze extended from the surface to the interiors. To mention, in the "Speech of the Right Hon'ble the Earl of Auckland, at the Medical College, February 10th, 1842", it was mentioned – "he looked on this College as the most *important* and the most interesting of all the Institutions which had been founded by the Government for purposes of education ... and the happy results of the instruction imparted at

[55] Ibid, p. lxxiv.

[56] Ibid, p. lxxiii.

[57] Ibid.

[58] For insightful discussion on this issue, see, N. D. Jewson, 'The disappearance of the sick-man from medical cosmology, 1770-1870', International Journal of Epidemiology, Vol.38, No. 3, June 2009, pp. 622-33.

[59] Michel Foucault, *The Birth of the Clinic: An Archaeology of Medical Perception*, London: Tavistock, 1976, pp. 3-4.

[60] Ibid, p. 108. (Emphasis in original)

it would be felt and acknowledged even beyond the limits of our own Empire."[61] Such was importance of the CMC to the highest colonial authority. But little was done towards the end of making a genre of new researchers and scientists.

CMC, increasingly modeled on the UCL, was making its syllabus, unlike UCL, more dependent on the *French system* which laid more emphasis on pathological anatomy and clinical learning than on laboratory activities. The UCL tried in the 1830s to join the theoretical study of science to the practical work of the clinic, as was already underway in Germany. But there was resistance from the more orthodox section of society – "Likewise in Britain, when the new University of London tried in the 1830s to join the theoretical study of science to the practical work of the clinic, as was done in Germany, the hospital teachers at St. Bartholomew's objected strenuously that the new school was superior "in no respect" and that it was "much inferior" to others in its practical instruction."[62] But we shall see later that the German experience was referred to while proposing for residential education at the CMC.

Under the heading "Remodelling of the system of education", it was decided that –

> The means of instruction, dissecting-rooms, museums, library, laboratory, &c. are such as fairly to entitle it to rank with any of the provincial schools of Great Britain, or the second class schools of medicine, in the Capitals of England, Scotland or Ireland. The chief and insuperable drawbacks to its present recognition, are the divisions of the courses of lectures, and the time occupied by some of them: it being a rule of most European Colleges, that no single Professor shall teach two distinct branches of medical science, except in the cases of Anatomy and Physiology, and Materia Medica with Medical Jurisprudence, and that none of the systematic courses of lectures shall consist of less than 70 lectures or demonstrations upon each subject ... It is deemed of great importance that every course of lectures should be of the nature and duration, adopted as the standard of the Royal College of Surgeons ... would aid in placing the Medical College of Bengal upon a proper footing, as compared with similar Institutions in Europe.[63]

Three important issues are to be noticed here – (1) the mention of 'laboratory', (2) remodelling the system of education to be made at par with "any of the provincial schools of Great Britain, or the second class schools of medicine, in the Capitals of England, Scotland or Ireland", and (3) following European colleges "no single Professor shall teach two distinct branches of medical science, except in Anatomy and Physiology, and Materia Medica with Medical Jurisprudence". It was also stated that "the College Council beg to recommend, that the present Professor of Chemistry and Materia Medica, be directed to give annually a course of lectures upon those parts of Medical Jurisprudence, not treated in the toxicological

[61] *GRPI*, 1840-41 & 1841-42, Appendix No. XII, p. xciv. [Italics added]

[62] Thomas Neville Bonner, *Becoming a Physician: Medical Education in Britain, France, Germany, and the United States, 1750-1945*, New York: Oxford University Press, 1995, p. 144.

[63] *General Report on Public Instruction, in the Lower Province of the Bengal Presidency, for* 1844-45, Calcutta: Sanders and Cones, pp. 101-102. Italics added. [Hereafter *GRPI*, 1844-45]

department of the Materia Medica lectures, and that his designation *be changed* to that of "Professor of Materia Medica and Medical Jurisprudence."[64]

> In accordance with the arrangements above sanctioned, and in compliance with the *Regulations of the Royal College of Surgeons*, the following was the extent and divisions of the courses of lectures, "to be hereafter given in the College during each Session:
>
> —
>
> **Anatomy** and **Physiology** —120 lectures, viz. three lectures a week during the hot, and four during the cold weather, from the 1st of November to the 15th of March inclusive.
>
> **Demonstrations** and **Dissections**.—-The latter from the 15th of October to the 15th of March inclusive; the former by three demonstrations a week, during the entire Session, viz. from the 15th of June in one year to the 15th of March of the succeeding year.
>
> **Surgery** — The course to commence on the 15th of June, and consist of not less than 70 lectures.
>
> **Theory** and **Practice of Medicine** – Same as above
>
> **Chemistry** and **Practical Pharmacy** – Ditto
>
> **Materia Medica** and **Therapeutics** – Ditto
>
> **Midwifery** with **practical illustrations** – Ditto
>
> **Botany** – Ditto
>
> **Medical Jurisprudence**.—The toxicological portion to be given with the regular course of Matera Medica; upon the remainder, one lecture a week from the 15th of October to the 15th of March inclusive.
>
> In addition to the above every pupil will be required to compound medicines in the College Dispensary for at least six months, under the charge and direction of the *House Surgeon* and Apothecary, who has been authorized to grant certificates of proficiency for the same."[65]

"Escape Velocity" and the First Educational Sojourn

Following all these changes and remodelling, CMC was the first college not only in India but beyond Euro-American borders as well to have been recognized by the University College, London, the Royal College of Surgeons and the Worthy Society of Apothecaries. CMC gained the momentum to reach the '*escape velocity*' to be in a position to send their most illustrious students to England for higher European medical education.

Four of the best students of the CMC sailed for their sojourn to England by the ship Bentinck on 8th March, 1845. The background happenings and vicissitudes in the management of monetary questions related to their journey should be mentioned in a detailed way.

> "One of the most important gratifying occurrences of the past year, has been the munificent offer of Dwarkanath Tagore, to take to England and educate at his own expense, *two pupils* of the Medical College. This proposal was first communicated to

[64] Ibid, p. 101.

[65] Ibid, p. 102.

> Dr. Mouat, who announced it to the assembled school, and pointed out the great advantages that would resu.lt to any one bold enough to break through the trammels of caste, and profit by the opportunity offered of visiting Europe. Upon this, and almost immediately after the address referred to, three students volunteered unconditionally to go, viz. *Bholanath Bose*, *Surjee Coomar Chuckerhutty*, and *Dwarakanatlh Bose* – a fact so highly creditable to their spirit and anxiety to profit by the liberality of their distinguished countryman, as to deserve special record. Subsequently to this, Professor Groodeve offered to proceed to Europe in charge of the pupils who might be selected, to superintend their education, and to pay from his own funds the expense of an additional student, on condition of certain benefits being extended to him by Government, for making so great a sacrifice as the preceding, if agreed to, would entail upon him ... The advantages of the scheme will be great, *both as exhibiting the nature and extent of the medical education* which can be given to the pupils in Calcutta, and also of *elevating* them in the estimation of the Native community, should any of them return with European Diplomas, which they are fully qualified and able to obtain .... Dr. Goodeve succeeded in raising an additional sum of 7,500 rupees for a fourth student, 4,000 of which were munificently presented by his Highness the Nuwab Nazim of Bengal."[66]

The fourth student was Gopal Chandra Seal. As we see from this description, truly speaking, government had borne *only the cost of single student*. Rest three were financed by Dwarakanath, Nawab Nazim of Bengal and Dr. Goodeve. Such was the extreme parsimony practised by the East India Company – the "economy of education". In most cases government was only the granting authority. But a great part of any institution was actually borne by local people and public subscription. It was also jubilantly reported – "The four pupils who accompanied the Professor and started in the *Steamer Bentinck* on the 8th March, were *Bholanath Bose*, a pupil of Lord Auckland's School at Barrackpore, who was supported at the Medical College by His Lordship for five years, and was considered by the late Mr. Grifiith, the most promising botanical pupil in the school — *Gopaul Chunder Seal* — *Dwarkanath Bose*, a Native Christian, educated in the General Assembly's Institution, and employed for some tune as assistant in the museum — together with *Surjee Cooviar Cliucherhutty*, a Brahmin, native of Commillah, a junior pupil and a lad of much spirit and promise."[67]

[66] *GRPI*, 1844-45, pp. 118-119. [Italics in original]

[67] Ibid, p. 119.

(Four Indian medical students in London in 1845. L to R Bholanath Bose, Gopal Chunder Seal, Dwarkanath Bose, Soorjee Coomer Chuckerbutty)

According to Gorman, this educational sojourn had three-fold effects – (1) it showed convincingly that Indians could master science and medicine on a level with Europeans; (2) having attained their degrees from the UCL (University College London) and the Royal College of Surgeons, they served as disseminators of modern science and became role models for future Indian students; (3) their example set the stage for a veritable flood of Indian students to England for study in all fields which continues to this day. To emphasize, they studied under the famous Thomas Graham – the innovator of Graham's Law in chemistry.[68] More elaborately Gorman describes the entire stage in the following manner:

> "The choice of this institution bears mention. It s medical school was widely regarded as the most progressive and innovative in Europe, and consequently attracted the highest calibre of students in England and from abroad. The faculty of the Calcutta Medical College were well aware of this high standing, and constantly sought to imitate its best features. It never occurred to them to choose one of the lesser schools of London or the province, so confident were they of their students that they selected deliberately the toughest competition. Most English men would not have expected these Indians from a disease-ridden, superstitious frontier outpost to have the slightest chance of success. Even one acquainted with the faculty, curriculum, and standards of the Calcutta Medical College would have been satisfied to have these students pass with average records at University College. They were far from home without social support from family or friends and they were studying in a foreign language. They could easily have been overwhelmed by the accomplishments of their classmates and the prestige of the faculty, but results proved that any such negative expectations were groundless. They not only passed, but did so with distinction, winning gold and silver medals and certificates of honor in various subjects from anatomy, botany, and chemistry to

[68] Gorman, 'Introduction of Western Science', p. 290.

zoology. Their academic exploits were noted in the press. Various official reports of University College and the East India Company gave them the highest possible praise. Space does not permit a detailed description of the demanding standards they had to meet for an understanding of the subjects presented to them, but as an example of the quality of the faculty it may be noted that for chemistry Thomas Graham (1805-1869) was their teacher. He is remembered today as the discoverer of Graham's Law, and in his time was the "acknowledged dean of English chemists."[69]

McCully has informed us that after the CMC students' first sojourn to England/Europe for higher education more than 700 students made their journey to England "to complete their education" between the years 1865 and 1885.[70]

Concluding Remarks

Regarding the four most illustrious students of the CMC, they showed their brilliance and merit in University College, London, in the same way as in India. Bholanath Bose stood 3rd for the Botanical examination among more than 70 students. He missed the 2nd position only by two marks. Gopal Chuandra Seal was selected by no other Professor Quain to dissect the subjects for his lecture – a post of considerable honour in the anatomical class. Suraj Coomar Chuckerbutty has by his zeal and attention so completely won the regard and approbation of Dr. Grant, the distinguished Professor of comparative anatomy. Dr. Grant had also presented him with copies of all his own works, and many of the most important treatises on this subject published in this country and in France, moreover he took Chuckerbutty with him to Paris.[71]

Some interesting facts about Bholanath Bose can be enumerated. Auckland had founded Barrackpore School where Bohalanth was student. Auckland himself transferred Bholanath when he was 16 years old, the brightest student of the school, to the CMC in 1840 with a scholarship of Rs. 10 per month.[72] Finishing his education at the UCL, on the eve of departure for Calcutta, Bholanath received a touching letter from Auckland on 13 January 1848 –

"My dear Bholanath,
I will not allow you to leave England without writing a few lines to you to say that I wish you well. I would add too that you have given very great satisfaction to me and to your other friends, by the earnestness with which you have pursued your studies, and by distinctions which have attended your success in them.
I should like you to take away with you some token of remembrance from me, and I will beg you *purchase one* that may be agreeable to you with the enclosed draft.
Yours most truly, &c.,

[69] Ibid, p. 290.
[70] Bruce Tiebout McCully, *English Education and the Origins of Indian Nationalism*, New York: Columbia University Press, 1940, p. 215.
[71] *GRPI*, 1845-46 – Dr, Goodeve's Report, p. 111.
[72] Ramgopal Ghosh, (ed.), *Reminiscences and Anecdotes of Great Men of India, Both Official and Non-official for the Last One hundred Years*, Calcutta: Herald Printing Works, 1894, p. 72.

Auckland"

"With the amount of this draft Dr. Bose bought a gold watch, which according to the terms of the Doctor's will, is to be preserved as an heirloom in the family."[73]

Another phenomenon of importance is that having returned to India SG Chuckerbutty had received a personal letter from no other scientist than Thomas Graham of UCL and other professors of international repute.[74]

XII.—*From* THOMAS GRAHAM, Esq., M.A., F.R.S., *Professor of Chemistry in University College, London.*

I have the pleasure to certify, that at the College examination for honours in Chemistry, of 1846-47, which was conducted as usual by written papers without names, Mr. S. G. Chuckerbutty was placed seventh, the number of students in the class exceeding 150. Such a position may be taken to indicate considerable intelligence, and a very creditable amount of application to the subject. Mr. Chuckerbutty attained at the same time still higher distinction in several other branches of medical study.

From the intercourse which I have enjoyed with Mr. C., I have reason to believe that he is generally well informed in the science of his profession, He is also certainly a young man of excellent judgment and discretion, of conciliatory and gentleman-like manners and of the strictest integrity and honour.

THOMAS GRAHAM,
Professor of Chemistry.

UNIVERSITY COLLEGE, LONDON,
August 21st, 1848.

[73] Ibid, pp. 72-74.

[74] SG Chuckerbutty, *Popular Lectures on Subjects of Indian Interest*, Calcutta: Thomas & Smith, 1870, p. 200-202.

VII.—*From* RICHARD QUAIN, Esq., F.R.S., *Professor of Anatomy in University College, and Surgeon to University College Hospital, London.*

Mr. S. G. Chuckerbutty has for some years been a most attentive Student of his profession, both in the classes of this College and in the Clinical Hospital. He has always manifested the possession of excellent abilities, and has given constant proof of untiring industry. It would be unjust to Mr. Chuckerbutty if I omitted to bear testimony likewise to his general conduct and demeanour. He has invariably been a most exemplary person in all respects, and has, in short, always conducted himself as a Gentleman, as well as a good Student.

R. QUAIN,
Professor of Clinical Surgery,
University College, London.

KEPPEL STREET,
August 10th, 1849.

IX.—*From* ROBERT EDMOND GRANT, M.D., F.R.S., F.L.S.E., *Professor of Comparative Anatomy and Zoology in University College, London.*

I have great pleasure in certifying that I have been most intimately acquainted with Mr. S. G. Chuckerbutty for several years, and that he has been a most diligent, zealous, and successful student at the Medical School and in the Hospital. His private character and conduct are most praiseworthy and exemplary, and he possesses considerable attainments in general science and literature. In the classes of Comparative Anatomy and Zoology, he gained the highest prizes awarded to merit, and showed the possession of very extensive and accurate knowledge of these departments.

ROBERT E., GRANT, M.D.,
Professor of Comparative Anatomy and Zoology,
University College, London, &c.

UNIVERSITY COLLEGE, LONDON,
August 13th, 1849.

XIII.—*From* JAMES MONCRIEF ARNOTT, Esq., F.R.S., *Professor of Surgery in University College, and Surgeon to University College Hospital, London.*

I have very great pleasure in expressing the very favourable opinion I entertain of the abilities and acquirements of Mr. S. G. Chuckerbutty. During the time he has been under my immediate observation at University College and Hospital, I have found him most assiduous in the acquirement of knowledge, and very successful in attaining it. I consider Mr. Chuckerbutty to be a remarkably well-educated person, and highly deserving of the appointment of Assistant-Surgeon in the Honourable the East India Company's service.

JAMES MONCRIEF ARNOTT, F.R.S.,
Surgeon to University College Hospital.

Thus, CMC indelibly changed and set the course of medical education in India, which is still flowing with vigour, energy and innovative ideas even after 190 years of its foundation.