Dear Baldy Center/SUNY Buffalo Law School readers,

This paper represents a first draft of a chapter in my forthcoming book. The working title of the book is "Fear of the False: Forensic Science and Trickery in Colonial India." The project explores notions of truth and trust in the context of empire, and sits at the intersection of the history of law, science, and medicine. It focuses on attempts to manipulate forensic science in British India between the mid-nineteenth and -twentieth century. Emerging during the 1850s, the new "forensic science for India" addressed a key anxiety of the colonial state: the idea that perjury, forgery, fabricated evidence, and false charges by colonized subjects were rife. But the fake and the false were also threats from within—when forensic experts (including Britons) gave questionable expert opinions in return for bribes or to avoid prosecution themselves. Part 1 of the book examines the work of forensic science in detecting dissimulation by colonized subjects. I will examine the planting of poisons and animal blood, and may also look at opium smuggling and self-inflicted wounding. Part 2 looks at the ways corrupt officials and experts threatened to unravel the credibility claims of forensic science. This paper will become a chapter in part 2 of the book. I look forward to your comments!

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Corruption and Forensic Experts in Colonial India

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In 1880, the Chemical Examiner of Punjab submitted his toxicology lab's first annual report.[1] The chemical examiners were military physicians who ran a network of regional laboratories across British India. They tested samples for various state bodies, including

[1] An earlier version of this research was presented at the Center for South Asian Studies, University of Michigan (Ann Arbor, 17 Feb. 2017). I thank participants, particularly Farina Mir, Matthew S. Hull, and Vikramaditya Khanna, for useful feedback. Shelfmarks beginning with IOR indicate India Office Records at the British Library (BL) in London. NAI stands for the National Archives of India in Delhi. *TI* stands for *Times of India.* ILR stands for various regional series of the *Indian Law Reports.* The term "South Asian" describes affiliation with the region that today includes India, Pakistan, Afghanistan, Bangladesh, Sri Lanka, Bhutan, Nepal, and the Maldives. For the colonial period (1757-1947), "Indian" refers to British India, the territory that would later split into India, Pakistan, and Bangladesh. British Burma (what is today Myanmar) was also administratively part of British India during the colonial period. This paper uses the broader terms "South Asian" and "European" as well as the more specific labels of "Indian," "Burmese," and "Briton."

Customs and Excise and the criminal courts. Between the 1870s and Indian independence in 1947, the chemical examiners' hundreds of annual regional reports ran into the thousands of pages. They contained meticulous summaries of the testing of millions of samples of human and animal organs, bloodstains, excreta, soil, food, stomach contents, clothing, bedding, weapons, and cooking utensils. These reports created an astonishing archive on poisoning, bacteriology, serology, chemical warfare, and explosives during the Raj. Among them, the 1879 Punjab report stood out.[2] In a classic instance of "colonial summarizing," the Punjab Chemical Examiner provided an overview, perhaps unrivalled in the archive of colonial forensics, of how medico-legal systems worked in British India.

The Punjab Chemical Examiner, a Scottish physician named William Center, noted that the chemical examiners and civil surgeons did not function like experts in the imperial metropole. Center described English trials for murder by poisoning:

> all the scientific witnesses, medical and chemical, give their evidence personally as to the facts they have observed, and state the opinions they have formed from them, with their reasons. All these can be cross-examined, and the opinions of other experts may be called in."[3]

The Indian model of the scientific expert was different. First, chemical examiners did not have to appear in court to be cross-examined on the findings contained in their written certificates. Materials collected by the police and the district civil surgeon were sent to the regional chemical examiner, who tested the substances and issued "certificates" for use in the criminal courts. Second, for neither chemical examiners nor civil surgeons were there opportunities to call in other experts who might offer alternative views. Chemical

[2] *Report of the Chemical Examiner to Government, Punjab, for the year 1879* (Lahore: Government Civil Secretariat Press, 1880), 17-18 (IOR/V/24/418) (BL).
[3] Ibid., 13.

examiners and civil surgeons acted essentially as court-appointed experts, a model that Center found more similar to the German courts' medical "referee" than to anything in English law.[4] Like some others in Anglophone forensic circles before the Great War, Center suggested that the German model of the single, authoritative, court-appointed expert was superior to the messy English courtroom tussle between partisan experts.[5]

The Indian criminal courtroom distanced itself from the adversarial principle for scientific experts. Center approved: "scientific men" doubted that the adversarial method was as appropriate for science as for law. The Indian (and German) model avoided the paralysis and frustration so frequent in common-law "battle of the experts" scenarios where experts from opposing sides contradicted each other, leaving judge and jury helpless as scientific laypeople.[6] However, Center failed to mention that the Indian model also concentrated power in forensic experts, enabling corruption.

This paper explores the phenomenon of corrupt forensic experts (particularly Europeans) in the Indian courtroom. It begins by considering the significance of corrupt British experts vis-à-vis foundational colonial beliefs about British rule in India. It explores the threat posed by these figures to race-and class-based narratives about corruption in India, on the one hand, and on the other, the way their existence undermined the new forensic science for India, which presented itself as a solution to the problem of "native mendacity." The paper focuses on allegations against two European forensic experts who

[4] Ibid., 13-14.
[5] Ibid.,13-14.
[6] The battle of the experts occurred in civil suits in India. For an instance between medical experts on the efficacy of illicit oral abortifacients in 1920s Bombay, see the Parsi Chief Matrimonial Court case of *T. v. T.* in Mitra Sharafi, "Abortion in Raj-era South Asia: A Medico-Legal History" (forthcoming).

were probably corrupt: W. S. Newman (1893) and C. V. Falvy (1939). These two figures showed how risky the Indian model could be. Yet both were dealt with quietly by the colonial state. Allegations of corruption were processed differently when the experts were Indian, a contrast visible in the proceedings against Indian physicians J. K. Banerji (1933) and K. D. Mehta (1940). Finally, the paper situates the Indian model of the expert within the larger legal landscape. Like the Judicial Committee of the Privy Council's "no dissents" rule, the Indian model of the expert seemed designed to convey a simple, uncomplicated message. The avoidance of English adversarialism allowed the expert to present a less "embarrassing" version of western science to a colonial audience, in other words. Restricting diversity of opinion and accountability reflected the anxieties of colonial rule, and made expert misconduct harder to spot.

Discourses of Corruption and Forensic Science

The possibility that European experts might be corrupt threatened a number of foundational assumptions of the Raj. First, the figure of the corrupt white expert destabilized race- and class-based representations of corruption. As Jonathan Saha has shown for British Burma, the corrupt South Asian was a colonial stereotype, and an anti-corruption ethic was used rhetorically to justify British rule.[7] There was also class-related element to these colonial stereotypes. A longstanding discourse about "Oriental despots" portrayed Indian rulers as decadent, cruel, capricious, and corrupt.[8] This stereotype about

[7] Jonathan Saha, *Law, Disorder and the Colonial State: Corruption in Burma c.1900* (New York: Palgrave Macmillan, 2013). See also Robert Travers, *Ideology and Empire in Eighteenth-Century India* (Cambridge University Press, 2007), 194, 199.

[8] For example, see Francis Buchanan, *A Journey from Madras through the countries of Mysore, Canada, and Malabar* (London: Hon. Directors of the East India Company, 1807), II, 551, noted in Santhosh Abraham, "The Making of Colonial Law, Discipline and Corruption in British India," *Journal of Indian Law and Society* 2 (2010), 80.

elite corruption might have played a role in British decisions to intervene in the internal affairs of the princely states.[9] In the medico-legal world, though, it was the lower-ranked official who was classically untrustworthy. Race and class intersected in the figure of the low-level functionary, typically South Asian, who accepted bribes or interfered with public processes for private gain. Rank-and-file Indian policemen were associated with corruption, most of all. Both popular depictions and occasional inquiries into lower level police corruption abounded during the Raj.[10]

Fear of low-level corruption by Indian actors shaped the way medico-legal processes were designed. In particular, this anxiety figured prominently into the methods used for the collection and transportation of forensic evidence from the local civil surgeon's office (where it would have been collected from the crime scene) to the regional chemical examiner's lab. By the 1930s, there was one chemical examiner's laboratory in the presidency capital cities of Calcutta, Madras, and Bombay, and an additional lab in each of Peshawar, Lahore, Karachi, Allahabad, and Rangoon. Each state toxicologist's lab did all of the testing for a physical territory and population often two to three times those of England. Human and animal viscera had to be transported over long distances, in other words, raising chain-of-custody concerns. Given the large volume of forensic samples flowing into each toxicology lab, these samples had to travel unescorted, and without illegitimate interference from workers in the civil surgeon's or chemical examiner's employ, the postal service, or the railways.

[9] I thank John McLeod for his thoughts on this point.
[10] See William Gould, *Bureaucracy, Community and Influence in India: Society and the State, 1930s-1960s* (London: Routledge, 2011).

Between 1880 and 1908, colonial officials debated how to best send forensic samples to state toxicology labs by post and rail. Occasionally, a packet of human or animal body parts burst open en route, spilling its rotten, stinking contents and causing a health risk to postal and railway workers.[11] "Nearly every day bottles of putrid viscera are arriving," complained one chemical examiner. Others wrote of the "overpowering stench" that emanated from such packets as they were transported, and of the occasional "explosion" of these packets. In one case, a parcel was so offensive that it was buried by postal officers. In another, a packet containing a human stomach was turned away by the local post-master.[12] These episodes prompted officials to reassess both their preservation and transportation methods. Alcohol had been used as the standard preservative for body parts and fluids, but other substances including a mercury-based compound and "methylated spirits" (a step up from the cheap "bazaar alcohol" that was standard) were proposed. From the Chemical Examiner's Department in Calcutta, Chunilal Bose suggested using a simple salt solution.[13] He had conducted experiments comparing alcohol and saline. Even after months, the samples preserved in salt solution fared better. "The odour was perfectly sweet if not agreeable," reported Bose.[14] However, other officials claimed there was a problem with salt; it related to the risk of corruption by the local civil surgeon's low-

[11] For example, see "Issue of instructions for the careful packing of human and other viscera sent through the Post Office or by rail to the Chemical Examiner for analysis," Home: Judicial, Proc. No. 157-68, Dec. 1897, part A (NAI).
[12] "No.R/1121. From Surgeon-Major L. A. Waddell, Chemical Examiner to Government of Bengal. To the Inspector-General of Civil Hospitals, Bengal. Calcutta, 29 Oct. 1896," 4 in "Preservative Medicine (common salt) to be used in packing viscera in certain cases," Home: Medical, Proc. No. 157 (May 1897) (NAI).
[13] Chunilal Bose would go on to become one of the earliest Indian Assistant Examiners. [clarify]
[14] "Memorandum on the use of a saturated solution of common salt as a preservative for viscera sent for chemical examination by Assistant Surgeon Chuni Lal Bose, Additional Chemical Examiner to Government, Bengal," 6 in "Preservative Medicine."

level staff. These workers, always South Asian, would have done the initial packing of the forensic evidence, particularly in cases of suspected cattle poisoning.

The poisoning of cows was a crime with complex inter-caste valences in the Hindu-majority regions of India.[15] For upper caste Hindus, eating beef and killing cows was sacrilegious and ritually polluting. Among certain lower caste populations and *dalits* (formerly known as untouchables), though, leather work was the dominant occupation. These communities were permitted to work with the dead carcasses they found but were prohibited from killing cows. Accusations of cattle poisoning—making killing look like illness to use the bodies for leather—was a common allegation against lower caste communities like Chamars, who were often the targets of retaliatory violence. The trouble with using salt as a preservative, wrote one Surgeon-Captain J. F. Evans, was that lower-status workers might know how to mix arsenic into the salt, particularly if they were members of the communities commonly accused of cattle poisoning. Using salt as a preservative would give these workers the opportunity to frame rivals by contaminating a clean carcass with poison:[16]

> There is the risk in cattle cases that the duty of preparing and adding the preservative agent may be deputed to a low paid subordinate or to a menial, and as the practice of mingling arsenic with salt for criminal purposes is very generally known (especially to Domes and Chamars), it is just possible that an opportunity

[15] See Ramnarayan S. Rawat, *Reconsidering Untouchability: Chamars and Dalit History in North India* (Bloomington: Indiana University Press, 2011). There were far fewer cattle poisoning cases in majority-Muslim regions (like northwestern India) and in Buddhist-majority areas (like Burma). However, elephant poisoning cases occurred in Burma, where the animals were used for teak logging. For example, the Chemical Examiner for Burma found white arsenic in the stomach contents of two elephants from government timber yards in Rangoon in 1901. [*Report of the Chemical Examiner, Burma for the year 1901* (Rangoon: Superintendent, Government Printing, Burma, 1902), 1.]

[16] On the framing of adversaries through the planting of animal blood, see Mitra Sharafi, "The Imperial Serologist and Punitive Self-Harm: Bloodstains and Legal Pluralism in British India" in Ian Burney, Neil Pemberton and Chris Hamlin, eds., *Locating Forensic Cultures* (Baltimore: Johns Hopkins Press, forthcoming).

> might be taken of paying off an old grudge by adding the arsenic to the preservative agent and thereby making conviction all the more secure.[17]

Higher-ups seem to feel that the way around this issue was to require a sample of the salt to be sent separately.[18] (None seems to have considered the possibility of this sample also containing contaminated salt.) Distrust of menial staff also accounted for the rule that the local civil surgeon, and not his subordinates, should send the parcels to the post office and be held personally responsible for the evidence sent.[19]

Colonial administrators also worried that workers in the postal service and railroads might tamper with evidence as it passed through their hands. Officials agreed, for instance, that no description of the contents should be given on the outside of these parcels, even though this meant that the packets could then not be insured.[20] This position was striking for its disregard of religious sensitivities: many Indian workers objected to handling dead matter, which was polluting. It was better not to let them know what was inside, agreed British officials.[21] They seemed oblivious to the lessons of 1857, when the Indian Mutiny or Great Rebellion erupted in response to rumors that Indian soldiers were

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[17] "No.959, Motihari, 9 Dec. 1896. From Surgeon-Captain J. F. Evans, MB, Officiating Civil Surgeon, Champaran. To Inspector-General of Civil Hospitals, Bengal," 8 in "Preservative Medicine," Proc. No.159 (NAI).

[18] "To obviate any danger of the solution of salt being tampered with, a separate sample of the solution should in every case be sent to the Chemical Examiner by the officer dispatching the *viscus,* and a second sample should be retained in a sealed bottle in his office." ("Extract from the Proceedings of the Government of India, in the Home Department (Medical), Simla, 14 May 1897," 2 in "Home Department Resolution modifying rule 2 of the Rules for the preservation of human viscera transmitted by post for chemical examination," Finance and Commerce, Proc. No.338-39, May 1897 (NAI).

[19] "6. Despatching officers will be held personally responsible that these instructions are carefully collowed. Whenever practicable, such parcels should be packed under the immediate supervision of the District Civil Surgeon. 7. At all stations where there is a Civil Surgeon the parcels shall invariably be sent to the Post Office by that officer and not by a subordinate officer…" ["Rules for preserving and packing human and other viscera for transmission to the Chemical Examiners for analysis," 29 in "Revised rules for the preservation and transmission of human and other viscera to the Chemical Examiners for analysis," Home: Medical, Proc. No.64-78, August 1898 (NAI).]

[20] General correspondence, "Revised rules," 5.

[21] "Note No.7152," 4 in "Transmission by post of packages containing human or other viscera to the Chemical Examiner for analysis," Home: Judicial, Proc.No. 263-72 (Jan. 1880) (NAI).

being exposed surreptitiously to polluting substances, namely beef and pork fat in rifle cartridges that they had to tear open with their teeth.

Packing and sealing procedures also aimed to prevent postal and railway workers from tampering with evidence in transit. Circa 1900, samples were put into special glass bottles with stoppers, both of which bore etched serial numbers. The lip of the bottle was sealed with bee's or candle wax, then the stopper was tied down "with bladder or leather" and sealed again with the same wax. A seal was stamped at multiple points on all wax. All stamps had to be identical and made by the same device, earlier the office seal of the officer sending the parcel and later a special medico-legal seal. "The device must in no case be that of a current coin or merely a series of straight, curved, or crossed lines" or consist of "undecipherable vernacular impressions." After sealing, the jar would be turned upside down and left for a few minutes to ensure that there were no leaks. It was then packed into an unmarked tin or wooden box stuffed with raw cotton. By 1908, only the civil surgeon at the point of origin and the chemical examiner at the destination point had a key to these boxes[22] Chemical examiners like Center (with whom this paper began) preferred the samples to be double-boxed—packed into a tin box, "well soldered," then packed into a larger wooden box.[23] Once at the Chemical Examiner's lab, the bottles were kept under lock and key, using padlocks sent directly from England "and not unpacked in India before coming into use in this office." The keys were stored in a special iron key box. The key to

[22] "Rules for preserving and packing human and other viscera," 29; and "No.514-422, from P. W. Monie, Under Secretary to the Government of India, to Chief Secretary to the Government of Madras and others. Simla, 14 May 1908," 13-14 (NAI).
[23] "No.107. Lahore, 20 Aug. 1879. From W. Center, Chemical Examiner to Government of Punjab. To Secretary to Government of Punjab. Lahore, 20 Aug. 1879," 7 in "Transmission by post of packages containing human or other viscera to the Chemical Examiner for analysis," Home: Judicial, Proc. No.270, Jan.1880 (NAI).

this box were always in the possession of the chemical examiner.[24] The doors and windows of the lab were also lined with iron bars.[25] All measures were taken to ensure that no one interfered with the medical evidence between when it was sent and when it was analyzed by the chemical examiner, in other words. But none of these safeguards would help if the civil surgeon or chemical examiner himself acted improperly. The possibility that senior British experts could be corrupt turned racial and class-based stereotypes upside down, making the inordinate attention paid to low-level worker interference in the transportation of forensic evidence seem misplaced.

The possibility of corrupt white experts upended another narrative, too. Their existence undermined the aspirational claims to credibility made for the field of forensic science for India, a new body of knowledge and institutions that proliferated at the turn of the twentieth century.[26] Colonial administrators worried that British India's legal system was being manipulated by the colonized population. British lawyers and judges were convinced that perjury, forgery, fabricated evidence and false charges were common among Indians.[27] Because of this obsession with native mendacity, the new field of forensic science for India inaugurated by the publication of Norman Chevers' *Manual of Medical*

[24] For corruption-related concerns when a Chemical Examiner left an almirah (or cabinet) unlocked at the lab, see statement to the Chief Secretary to Government from Surgeon-Major T. H. Pope, Acting Chemical Examiner, (Madras, 7 Dec. 1891), No.1032, 10 in "Memorial from Newman."
[25] "No.514-422, from P. W. Monie," 14.
[26] Although "medical jurisprudence" or "forensic medicine" were the terms most commonly used during the period in question, this paper uses the slightly broader term, "forensic science" in order to address fields such as graphology (handwriting analysis), dactylography (fingerprinting), ballistics, and the study of explosives alongside more medical fields like forensic serology and toxicology.
[27] See Elizabeth Kolsky, *Colonial Justice in British India: White Violence and the Rule of Law* (Cambridge: Cambridge University Press, 2010), 108-19, 217-18; Bhavani Raman, *Document Raj: Writing and Scribes in Early Colonial South India* (Chicago: University of Chicago Press, 2012), 137-60; and Wendie Ellen Schneider, *Engines of Truth: Producing Veracity in the Victorian Courtroom* (New Haven: Yale University Press, 2015), 103-42.

Jurisprudence for Bengal and the North-western Provinces (1856) held special promise. A wave of treatises followed, creating a forensic science adapted specifically to India's distinctive social, cultural, religious, botanical, and zoological landscape.[28] The more the legal system could rely upon lab tests and scientific experts, the less it would have to depend upon South Asian witness testimony and potentially forged documents. If native mendacity was the problem, forensic science would be the solution. As a leading treatise put it, forensic science mattered in India because "expert medical testimony, important in every country, is especially so in the East, where it is often the only trustworthy evidence on which hangs the liberty or the life of a human being."[29] Between the 1890s and 1910s, the colonial state added to the chemical examiners' labs by creating a wave of new forensic positions and institutions, including two fingerprinting bureaus, the Government Examiner of Questioned Documents, the Chief Inspector of Explosives, and the Imperial Serologist.[30] However, the fake and the false were also threats from within—through acts of misconduct, including negligence and corruption. When forensic experts tampered with evidence or gave suspicious expert witness testimony out of carelessness or for bribes, to secure convictions or acquittals, or to avoid prosecution themselves, they undermined the claims made by forensic science as a solution to deception in the courtroom.[31]

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[28] For a sample, see Collis Barry, *Legal Medicine (in India) and Toxicology* (Bombay: Thacker and Co., 1904); W. J. Buchanan, "A Chapter on Medical Jurisprudence in India," 852-82 in Alfred Swaine Taylor, *The Principles and Practices of Medical Jurisprudence* (London: J. & A. Churchill, 1905); H. W. V. Cox, *Medico-Legal Court Companion* (Calcutta: Eastern Law House, 1927); P. Hehir and J. D. B. Gribble, *Outlines of Medical Jurisprudence for India* (Madras: Higginbotham, 1908); L. A. Waddell, *Lyon's Medical Jurisprudence for India* (Calcutta: Thacker Spink and Co., 1909); J. P. Modi, *A Textbook of Medical Jurisprudence and Toxicology* (Calcutta: Butterworth & Co., 1929); and B. M. Sohoni, *A Synopsis of Medical Jurisprudence and Toxicology* (Bombay: D. A. Nankerny and Co., [1922]).

[29] L. A. Waddell, *Lyon's Medical Jurisprudence for India* (Calcutta: Thacker, Spink and Co., 1921), 2.

[30] See R. K. Tewari and K. V. Ravikumar, "History and development of forensic science in India," *Journal of Postgraduate Medicine* 46:4 (2000), 303-8; and Chandak Sengoopta, *Imprint of the Raj: how fingerprinting was born in colonial India* (London: Pan Books, 2004).

[31] On the strange case of medico-legal treatise author Patrick Hehir, see Sharafi, "Abortion" (forthcoming).

Alcohol and Bloodstains in South India

William Samuel Newman had been the Assistant Chemical of Madras for fifteen years when he was dismissed in 1893 for misconduct. Newman had no medical qualifications and was not a member of the Indian Medical Service (IMS), a status that made him more expendable than IMS member, Civil Surgeon Falvey. The allegations against Newman were of two types, the first more comical than the second. The first related to alcohol. The chemical examiners tested substances not only for the criminal courts, but also for Customs. Particularly in port cities like Madras and Calcutta, these labs strained under the enormous volume of samples flowing in from the tax authorities every year.[32] One substance regularly submitted was alcohol. The chemical examiners were testing both for alcohol content and for adulteration, performing both a tax-related and public health service. The volume of alcohol sample sent was larger than what was needed for testing; whatever was extra was supposed to be returned to customs authorities. In Madras, though, the volume coming back to Customs dwindled during the early 1890s.[33] When the Collector of Sea Customs inquired, an Indian colleague of Newman's named Rungaswami Iyengar (himself a tea-totaller) reported that he had seen Newman skim off extra alcohol from the samples. Iyengar had observed Newman instruct servants to pack it in his tiffin box for later. He had even seen Newman drink the extra alcohol in the lab itself.[34] Iyengar said he asked Newman in a friendly way

[32] For example, see cover letter from Inspector-General of Civil Hospitals, Bengal (22 Feb. 1904), 1 in *Report of the Chemical Examiner to Government, Bengal for the year 1903* in "Bengal. Chemical Examiner's Department: Report of the Chemical Examiner's Department, Bengal, 1899-1923" (IOR/V/24/422).
[33] Letter from W. P. Austin, Collector of Sea Customs to the Chemical Examiner, Madras (Madras, 3 Dec. 1891), 7 in "Memorial from Mr. W. S. Newman, late Assistant Chemical Examiner, Madras, appealing against his dismissal" (7 April 1893) (IOR/L/PJ/6/346, file 879).
[34] Letter from T. Rangaswami Aiyangar to H. Allison, Acting Chemical Examiner, Madras (Chemical Examiner's Office, Madras, 30 November 1891), 7; and "Statement made by Mr. Rungaswami Iyengar B.A. in continuation of his report dated 30 November 1891," 8; both in "Memorial from Newman."

to stop, and he repeated this request to a servant. But Newman persisted. K. Dowlet Roy, a servant at the lab, said he had seen "Chota Sahib" (Newman) take away spirits 50-60 times.[35] Three other lab servants said that Newman brought an empty bottle from home and took it home filled with alcohol.[36]

Newman's response was two-fold. On the one hand, he claimed that his two "inveterate enemies," two Indians at the lab named Goolab Roy and Cunniah Naidoo, had been scheming against him since 1884. They wanted his job. Newman claimed he had also caught Cunniah Naidoo stealing something out of his locked office drawer, having opened it with keys extracted for Newman's coat pocket.[37] Since Newman's dismissal, Goolab Roy had indeed stepped into Newman's post, although he was no more than "a bare manipulist with absolutely no literary or scientific knowledge," in Newman's words. (By contrast, Newman's boss called Roy "an intelligent chemist" who was careful, as "able and practical" as Newman, and "thoroughly versed in medico-legal testing."[38]) Cunniah Naidoo was "an illiterate man" who had entered the Chemical Examiner's office as "a mere laboratory attendant or lascar," and had also been promoted as a result of Newman's dismissal. At a time when Indians were rising through the ranks in many professions across India, the competitive racial dynamics here were hard to miss—as was Newman's gesture toward the

[35] "Statement made by K. Dowlet Roy, Lascar employed under Mr Rungaswamy Iyengar in the spirits obscuration tests," 8 (translated from Hindustani, undated) in "Memorial from Newman."
[36] "Statement made by C. Moonooswamy, Gas lascar in the Chemical Examiner's Office on the subject of Mr. Newman's appropriating spirits sent from the Sea Customs to his own use," 9 (translated from Tamil, undated); and comment by T. H. Pope on lascars Govinden and Ragavelo (from Tamil) in "Memorial from Newman."
[37] W. S. Newman, "Copy of Interrogatories framed in anticipation, not having had the advantage of being confronted when Dr. Pope's statement was taken down," 16 in "Memorial from Newman."
[38] Statement to the Chief Secretary from Pope (7 Dec. 1891), 10.

"native mendacity" trope.[39] But at the same time, Newman admitted that he had been drinking the extra alcohol. Intriguingly, he turned to the idea of corruption as culture, a longtime explanation favored by Britons in associating corruption with Indians.[40] If Newman was guilty of misappropriation of spirits,

> it would equally involve every single individual in the Chemical Examiner's office, except Mr. Rungaswamy Iyengar, from the Chemical Examiner himself downwards, it being a well known fact that from the custom of the office, long prior to my entertainment, samples of articles sent to be tested and retained for obvious reasons were used for the private purposes of the establishment.[41]

Newman drank the alcohol because he thought it was allowed by the culture of the lab.

Not surprisingly, his superiors disagreed with his broad definition of "private purposes of the establishment." Many forensic labs used extraneous materials from one process for another kind of testing. Several decades after Newman's case, for instance, the Imperial Serologist's department in Calcutta needed human blood to make anti-human serum for precipitin testing, which indicated the species of origin of a bloodstain. Human blood was "not a purchaseable commody," but the lab was able to use the extra blood left over from its Wassermann testing of private individuals for syphilis.[42] Forensic labs

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[39] The risk of hostility from British colleagues applied particularly to Indians with training and credentials from Britain. On the rise of Indians in the legal profession, see Sharafi, *Law and Identity,* 98-123; and by A. J. C. Mistry, *Reminiscences of the Office of Messrs Wadia Ghandy and Co.* (Bombay: Commercial Reporter's Press and the "Echo" Press, [1911]), *Forty Years' Reminiscences of the Firm of Messrs. Wadia Ghandy and Co.* (Bombay: the author, 1925), and *Forty Years' Reminiscences of the High Court of Judicature at Bombay* (Bombay: the author, 1925).

[40] See Vinod Pavarala, "Cultures of Corruption and the Corruption of Culture: The East India Company and the Hastings Impeachment," 291-36 in Emmanuel Kreike and William Chester Jordan, eds., *Corrupt Histories* (Rochester: University of Rochester Press, 2004).

[41] Letter to T. H. Pope, Acting Chemical Examiner, Madras from W. S. Newman (Madras, 11 Feb. 1892), 3 in "Memorial from Newman."

[42] Statement by J. W. D. Megaw, Dept. of Education, Health and Lands (1 April 1933), 15 in "Transfer of the Imperial Serologist's Department to the direct control of the Government of India and revision of the emoluments of the Imperial Serologist," Finance: Expenditure-I, 1933, Proceedings No.83-Exl, 1933 (NAI). For a history of the Imperial Serologist's department, see Sharafi, "The Imperial Serologist."

commonly used leftover materials for their own "private purposes," in other words. But fueling one's own personal need to drink was different. If the concept underpinning corruption was the use of public goods for private gain, it was clear that Newman was guilty by his own admission.[43]

The second allegation was more complicated. Newman was accused of improper bloodstain analysis in the Triplicane murder case. On the night of 15 June 1891, two people were killed in Kistnampett, a neighborhood adjacent to the Triplicane area of Madras City. The accused, a mendicant named Ramcharan Doss, was convicted "on purely circumstantial evidence" and sentenced to death.[44] Here it was not clear whether Newman had in fact done anything corrupt. For some, his case sat at the point where corruption and negligence shaded into each other. For others, his case turned upon a fundamental disagreement over the proper role of the forensic expert. Either way, a distinctively colonial and controversial feature of Indian criminal procedure enabled Newman's dubious work to become evidence in a death penalty case.

Two and a half weeks after the Triplicane murders, the Madras police had sent a sealed packet to the Madras Chemical Examiner's lab. It contained a bloodstained iron chopper (a short-handled cleaver or axe) and two pieces of cloth worn by the murder suspect when arrested three days after the murders. The chopper was the suspected murder weapon. Three days after the murders, it was found in a sewage drain not far from

[43] For discussions of definitions of corruption, see Diego Gambetta, "Corruption: An Analytical Map," 3-28 in Kreike and Jordan; and Janine R. Wedel, "Rethinking Corruption in an Age of Ambiguity," *Annual Review of Law and Social Science* 8 (2012), 453-98.
[44] "The Triplicane Double Murder," *TI* (15 Aug. 1891), 5; and "The Memorial of William Samuel Newman, FCS, Lond., Ex-Assistant Chemical Examiner to Government," 10 in "Memorial from Newman."

the scene of the crime, but it was "secreted until recovered today." The police note asked whether any of these items bore stains of mammalian blood.[45] Newman's testing of the chopper blade would be problematic.

In 1891, a blood serum test to identify the species of origin was still a decade or two away.[46] However, the Madras Chemical Examiner's lab had other ways of answering the police's question. First, Newman ran the guaiacum test to establish that the stains on the chopper blade were in fact blood.[47] With positive results, Newman then conducted microscopic analysis of the bloodstain, comparing the size of the red blood cells or corpuscles on the blade with those of mammals. Newman found that here, too, the chopper blood was within the normal range of mammalian corpuscles.[48] Newman did not do a further test that would be recommended in hindsight by the Chemical Examiner of Calcutta, the spectroscopic test for oxyhoemoglobin.[49] Once under suspicion for misconduct, though, Newman frantically wrote to experts elsewhere in India for confirmation that spectroscopic analysis would have been unlikely to detect mammalian blood. The blade had been "subjected to the action of sewage matter by being thrown in and allowed to remain three or four days, the action of the filthy water and gases from decomposing filth tending to decompose the blood render[ing] its presence beyond detection by [our] test," in

[45] Note from Colonel T. Weldon, Commissioner of Police, Madras, to the Chemical Examiner (Madras, 2 July 1891), 6 in "Paper from Col. T. Weldon, Commissioner of Police, Madras, to the Chief Secretary to Government (Madras, 10 Sept. 1891), No.65" in "Memorial from Newman."
[46] On the history of precipitin testing, see Sharafi, "The Imperial Serologist."
[47] On the guaiacum test, see L. A. Waddell, *Lyon's Medical Jurisprudence* (Calcutta: Thacker, Spink & Co., 1904), 94-5.
[48] On the microscopic analysis of bloodstains, see Waddell (1904), 95-7; and Sharafi, "The Imperial Serologist."
[49] On spectroscopic analysis, see Waddell (1904), 98-100.

Newman's opinion.[50] The Chemical Examiner for Bengal agreed that the spectroscopic test would be unlikely to work, given the chopper's time in the sewer.[51]

But as with the alcohol issue, Newman's self-defense was focused on the wrong thing. In his written certificate, Newman had reported his finding of mammalian blood on the chopper's edge. He claimed that the rest of the blade was covered in thick mud on both sides.[52] Newman did not analyze the rest of the blade because he did not believe any of his tests could detect blood through mud (and sewage fumes), a view questioned later by the Madras Police Commissioner.[53] Rather than saying this in his certificate, though, Newman suggested that no mammalian blood was found elsewhere on the blade, implying that the rest of the blade had in fact been tested.[54]

This sloppiness mattered because the chopper had apparently been recovered from the sewer and used "for domestic purposes" before it was recovered by police. Although he did not say so in his certificate, Newman thought the blood on the edge was fresh. It could be explained if the person who found the tool had cut red meat with it, for instance.[55] Any blood under the mud, though, could have belonged to the murder victims. What mattered

[50] Note to the Chemical Examiner, Calcutta, from W. S. Newman (The Luz, Madras, 7 July 1892), 18 (item XVIII) in "Memorial from Newman."
[51] Note to W. S. Newman from John J. W. Leslie, Chemical Examiner, Calcutta (Medical College, Calcutta, 22 July 1892), 18 (item XIX) in "Memorial from Newman."
[52] The Acting Chemical Examiner had examined the chopper with Newman, and disagreed. He reported that "a filmy layer of rust and mud" appeared on the blade, but with patches of metal exposed. [Statement from Surgeon-Major T. H. Pope, Acting Chemical Examiner, to the Chief Secretary to Government (Madras, 17 Nov. 1891), No.977, 2 in "Memorial from Newman."
[53] Paper from Col. T. Weldon, Commissioner of Police, Madras to the Chief Secretary to Government (Madras, 10 Sept. 1891), No.65, 2-3 in "Memorial from Newman."
[54] For the best summary of the mud issue, see "Order (23 Jan. 1892), No.56, Public," 14-15 in "Memorial from Newman." Newman's disciplinary file does not contain the exact words he used on the certificate.
[55] Although this speculation is my own, the cutting of mammalian (non-human) meat was a common alternative explanation considered in murder cases involving bloodstains. For examples, see W. D. Sutherland, "Blood-stains" in Waddell (1921), 203-8 (case studies 23, 36, 44, 46, and 52).

was what lay beneath the mud. This area had not been tested, although Newman's certificate suggested otherwise.

At first glance, Newman's misleading report might seem to have favored the defendant. However, Ramcharan Doss was convicted, so if Newman's certificate helped Doss, it did not help him enough. However, the prosecution argued that the chopper was not the murder weapon, advancing instead an alternative theory for Doss' guilt. According to Newman, the fact that any blood at all was found on the chopper undermined the prosecution's case.[56] Still, his certificate did report blood—and Doss was convicted all the same. Whether or not better information would have saved a man's life in the Triplicane case, what officials as far up as the Governor of Madras Presidency insisted upon was that the criminal courts get information of the highest quality. This was particularly critical in death penalty cases.

Under Indian criminal procedure, the Chemical Examiner submitted a certificate of his findings but did not have to be cross-examined in court to explain them. Center, the Punjab Chemical Examiner with whom this paper began, commented on this feature of Indian law in his 1879 report:

> The position of the chemical examiner in this country is unknown in English law. Articles are forwarded to him and his reports are received as evidence merely on his signature and without cross-examination.[57]

The rule would be crystallized in s.510 of the Indian Code of Criminal Procedure (1898). During the 1930s, the Allahabad High Court took issue with the optional nature of cross-

[56] "Memorial of the Ex-Assistant Chemical Examiner Mr. W. S. Newman clearing him of the charges by reference to enclosures, and seeking redress for his summary dismissal from the Public Service," 12 in "Memorial from Newman."
[57] *Report of the Punjab Chemical Examiner for 1879*, 10.

examination, and insisted that defendant's right to a fair trial required cross-examination of the toxicological expert.[58] This view was a mere blip. It was quickly followed by a decision of the same court confirming that s.510 did not require cross-examination of the Chemical Examiner.[59]

From the 1920s, most of the key forensic officials in India tried to get the same privilege as the chemical examiners. The Imperial Serologist, the Chief Inspector of Explosives, the Government Examiner of Documents, and Anatomists (who analyzed bones) wanted to be declared chemical examiners for the purposes of s.510.[60] Many, although not all, were granted this exceptional status.[61] The larger point was that the exemption from mandatory cross-examination was not a small exception created for a minor category of experts. It was an exception made for all of the state toxicology labs in British India. And then it was extended to others.

Newman's case showed the dangers of the s.510 exception. Had Newman been cross-examined in court, it was likely that his misleading written statement would have been clarified and corrected. Further testing could have been ordered. As Colonel T. Weldon, the Madras Commissioner of Police, observed,

[58] *Emperor v. Happu* (1933), ILR 56 Allahabad (1934) 228-36.
[59] *Emperor v. Bachcha* (1934), ILR 57 Allahabad (1935) 256-60.
[60] For instance, see "Proposal to amend s.510 of the Criminal Procedure Code so as to include Anatomist, negative," Home: Judicial, 1922, Proceeding No. 1336; "Proposed inclusion of the Chief Inspector of Explosives in s.510 of Criminal Procedure Code so as to enable his reports on bombs to be used as evidence in trials under the Code," Industries and Labor: Explosives, 1924, file no.M-830-1; and "Summoning of the Chief Inspector of Explosives to give evidence in Criminal Courts," Home: Judicial, 1928, Proc. No. 738 (all at NAI).
[61] The Anatomist and Government Examiner of Questioned Documents were unsuccessful, probably because the state regarded their fields as more interpretive than forensic toxicology, serology, and the study of explosives.

> One result of this case is to make it imperative to accept with caution bare reports of this nature by the Chemical Examiner and that when possible this officer should, like any other expert, be subject to personal examination and cross-examination.[62]

Colonel Weldon said he would insist upon cross-examination in future, and others noted that this had been the custom in Madras Presidency in murder cases, too. But it did not happen in the Triplicane murder case, and the exception only became solidified in colonial law in the years that followed.

Newman's immediate superior was the Chemical Examiner for Madras, one A. E. Grant. Grant tried to reframe the case as a disagreement over the proper role of the expert. In his view, the job of the chemical examiner was to answer the question put by the police, not more. If further explanation was needed, it was the job of those in court to call the chemical examiner for cross-examination. Had this been done in the Triplicane murder case, Grant had no doubt that valuable and "extremely important" evidence could have been given by Newman about the relative distribution of the mud and the apparently fresh stains. But as this had not been done, responsibility lay with the legal professionals in court, and not with the chemical examiner. According to Grant, offering such explanations lay "quite outside the duties of the chemical examiner in such a matter til requested to do so."[63]

Higher-ups disagreed. The Chief Secretary to Government, one J. F. Price, rejected Grant's restricted model of the expert. "It is impossible for such an officer to anticipate what discoveries will be made by the Chemical Examiner and to frame his questions

[62] Paper from Col. Weldon (10 Sept. 1891), 3.
[63] Paper to the Chief Secretary to Government from Surgeon A. E. Grant, Acting Chemical Examiner, Madras (Madras, 21 Sept. 1891), No.808, 6 in "Memorial from Newman."

accordingly," Price insisted. The "interests of justice" demanded that the Chemical Examiner "shall state fully in his report all that he has discovered or can discover." Failing to communicate all of the lab's findings to the police was "a grave error."[64] This debate over the role of experts shed light on the professional tensions between legal professionals and scientific experts in colonial India. Most importantly here, though, Newman's case illuminated the potentially grave consequences (whether through negligence or worse) of not requiring bloodstain experts to explain their findings in court.

Sex crimes and Age determinations in North India

Almost half a century later in north India, another set of corruption-related allegations emerged against a different European expert. Major Cornelius Vincent Falvey was an Irish physician with a "not very brilliant" academic record who joined the Indian Medical Service in 1922 and was superintendent of a jail and a leper hospital, among other postings, mainly in north India. Some time in the early 1930s, he was posted to Bareilly and Meerut, two adjacent districts not far from Delhi in the United Provinces of north India. In Bareilly and Meerut, Falvey was a civil surgeon, the local IMS physician who was the main liaison between the local police (and the evidence they collected) and regional chemical examiners. The civil surgeon was also tasked with conducting medical examinations of victims and those accused of crimes in his locale. Falvey had been practicing in the IMS for 17 years when allegations of corruption against him emerged. His unidentified accusers claimed that Falvey had taken bribes from criminal defendants and altered his medical findings in their favor.

[64] "Order (8 Oct. 1891). No.2068, Judicial" from J. F. Price, Chief Secretary, 7 in "Memorial from Newman."

The accusations against Falvey related to a series of cases, including two sex crimes. In the first, a six-year old girl named Phulmati had allegedly been raped by a 16-year old boy named Dalel Jat in June 1937. The girl's injuries were serious. Falvey examined the child, and noted in his report that her vagina was "badly ruptured and torn half way through to the anus." Another tear in the "fourchetta" was 1/8 of an inch deep and "septic" or putrefying. The Medical Officer at Sardhana (a town adjacent to the city of Meerut), one Dr. Bhargava, initially examined the teenaged boy. He reported that the boy had three abrasions on his body and that he was capable of committing rape. Dr. Bhargava took the view that "a man may have no mark of injury whatsoever even immediately after, or two days after, the rape on his penis."[65]

Falvey initially examined the victim and told the police, ambiguously, that injury could have been caused by rape "or otherwise," without offering any alternatives. The complaint against Falvey claimed that the boy's relatives had visited Falvey at his home, and that Falvey had offered to produce an opinion in their favor for Rs.115, instructing them to apply through their vakil (lawyer) for Falvey to examine the boy. Presumably Falvey did this exam. He agreed with Dr. Bhargava that the boy's penis showed no signs of injury, but he disagreed with Bhargava on what this fact meant. As Falvey testified in court,

> From the nature of the injuries I cannot say definitely that the injuries were due to rape. The injuries caused by a penis or any other hard substance like a stick would be similar. If a boy the accused's age commits rape with a child of six years I do not think it likely that his penis will escape injury….If the penis penetrated to the extent found in Mst. Pulmati's case I would expect it to be injured.[66]

[65] "Complaint against Major C. V. Falvey, IMS, Civil Surgeon, Bareilly" in Confidential letter No.1921/V-1 (35). From the Government of the United Provinces, 10 June 1939, 5 in "Charges of corruption and bribery against Major C. V. Falvey, Indian Medical Service (Civil Surgeon, United Provinces), Director General of the Indian Medical Service, Proc. No.79-1/39-P. (NAI).
[66] "Charge No.2" in "Complaint against Major C. V. Falvey," 6.

Falvey was charged with taking a bribe from three relatives and friends of the accused, and with falsely certifying in the accused's favor, as a result of the payment.[67]

The second sex-related crime was a sodomy case. In July 1937, Falvey examined a 15-year old boy named Mahabir Prasad. Mahabir was probably sexually assaulted, but in colonial India, the rape of a man or boy was typically governed by the anti-sodomy section of the Indian Penal Code (s.377) rather than by the rape provision (s.375), which only applied to male-female sex. Falvey examined the boy three times over the course of July and August 1937. His statements became increasingly detailed and pro-defendant over time. Falvey allegedly received bribes twice from a friend of Nem Chandra (the accused) during this time. Falvey's initial certificate (issued soon after July 10) read: "abrasion triangular, lower right side of anus." On July 21, he added on a further police report that the injury could be caused by sodomy, but that the boy was not accustomed to sodomy, meaning that the boy did not have regular anal intercourse. Falvey's next report (July 31) stated that "I do not consider it possible to commit sodomy with this boy his sphincter anus is so tight." And finally, on August 21 during cross-examination in court, Falvey testified,

> I believe that the sodomy was not committed. It is impossible to commit sodomy with this boy as his anus was so tight. The anus would not become tight if a man is examined several days after the sodomy. [68]

When defending himself later in a letter to his superiors, Falvey explained that he had been unable to insert a speculum into the boy's anus due to "the spasmodic contraction of his

[67] "Charge No.2" in "Complaint against Major C. V. Falvey," 6.
[68] "Charge No.3" in "Complaint against Major C. V. Falvey," 7.

sphincter muscle."[69] In the subsequent disciplinary process, Falvey was charged with issuing false and contradictory certificates in this case for payment.[70]

A second group of cases involved the determination of age. Falvey was accused in these cases of bumping up his estimation of girls' ages in order to make them adults. For the purposes of the crimes at issue, this meant declaring them to be over 18. As the work of Ishita Pande shows, determining age was not always a straightforward exercise in a society in which many people's births were not recorded. Pande examines forensic methods of determining age in the context of cases in which child brides died as a result of rape by their adult husbands. [71] The determination of age was relevant to a number of other areas of criminal law, too, including child abduction and child prostitution.

In a 1937 case, a defendant named Maqbool was tried for abducting a girl named Bhagwani, who had been freed by the time of the trial. Her age mattered because the abduction of a female minor was its own separate crime under the Indian Penal Code (s.366A). This provision was added to the IPC in 1923 to give effect to the International Convention for the Suppression of Traffic in Women and Children; it carried a maximum ten-year sentence (as opposed to the seven years of the more generic abduction provision, s.363), and aimed to punish the sex trafficking of girls.[72] Falvey was accused of moving his estimation of the girl's age upward over time because he took a bribe from the defendant.

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[69] "Letter from Major C. V. Falvey, IMS, 106 Sketty Road, Swansea, Glamorgan to the Under-Secretary of State for India, Military Department, India Office, SW1, London. 26 July 1939," 4 in "Charges of corruption and bribery against Major C. V. Falvey."
[70] "Charge No.3" in "Complaint against Major C. V. Falvey," 7.
[71] Ishita Pande, "The Case of the Bigamous 'Child Wife': Proving Age, Leaving Husbands and Performing Childhood in Colonial Law," University of Wisconsin Center for South Asia, Madison, WI (31 March 2016).
[72] Ratanlal Ranchhoddas and Dhirajlal Keshavlal Thakore, *The Indian Penal Code* (Bombay: Bombay Law Reporter Office, 1926), 312-14.

When he first examined her in July 1937, Falvey counted the girl's teeth and certified that she was about 14 years old. Three months later in October 1937, though, Falvey testified in court that the girl in front of him was 18 or 19. When confronted with the contradictory claims of his earlier certificate, he claimed, "I never saw this girl before today" and "I do not think this girl appeared before me for examination," implying that an impersonator had been sent to him earlier. However, the Finger Print Bureau reported that the thumb print of the girl he examined in July 1937 was the same as that of the girl in court in October. Falvey was charged with having changed his evidence in the interests of the accused because the latter paid him Rs 32.[73]

Age determination was also at the heart of a cluster of ten cases, all falling under the Naik Girls Protection Act of 1929. Between 1935 and 1938, Falvey had allegedly issued false certificates of majority to ten girls from the Naik community. All of the girls were subject to a statutory regime aimed at preventing them from entering the sex trade as minors. By colonial legislators' accounts (including many Indians, by the 1930s), prostitution was the hereditary profession of Naik women.[74] This list was perhaps the crowning charge against Falvey because the dubiousness of his work could so clearly be proven, and in written form. Falvey's accusers took advantage of the record-keeping practices of the colonial state. They contrasted Falvey's claims that the girls were over 18 with state records. These may have included birth certificates. They certainly included

[73] "Charge No.1" in "Complaint against Major C. V. Falvey," 5.
[74] For discussion among legislators of the working of the Act, see *Proceedings of the Legislative Council of the United Provinces* for 22 July 1931, 229-45; and for 20 Oct. 1934, 12-13, 99, 127.

vaccination records, which presumably included an estimated age. For instance, one entry from this long and repetitive list read,

> Mst. Basanti, born on 16.10.24 and vaccinated on 30.11.24 obtained a certificate from you on 2.1.38 to the effect that she was 18 years old, when according to the date of her birth in the register she was only 12 years**,** 2 months and 16 days old. You were paid Rs.32 for this certificate.[75]

Falvey had first learned of the complaints against him during a visit from Mr. Ballah, an investigating officer of the Anti-Corruption Committee in July 1938. The racial dynamics of that interview must have not been lost on Falvey, whose London-based lawyer subsequently wrote with confidence that Ballah had no evidence of any kind.[76] By June 1939, though, the charges were issued in precise, written form.

Falvey hit back with the colonial stereotype of the dissimulating native. He claimed to be "very familiar with the atrocities that can occur in India," suggesting that he was the victim of false accusations and fake charges.[77] The charges against him in the abduction case included notes of court proceedings that claimed that Falvey counted the teeth of the girl present in court. "No such count took place," he wrote, and the notes were "recorded in Babu English which is certainly not my manner of expression"—again, suggesting that they were false.[78] In the Naik cases, Falvey claimed that the girls always came to see him with at least one other female, and that this other person may have undergone the examination while the "real" girl in question gave her fingerprints.[79] He also suggested that the age

[75] "Charge No.5" in "Complaint against Major C. V. Falvey," 9.
[76] Letter to the Under Secretary of State for India, Military Dept., India Office, London from Hampsons, Bedford House, 33 Henrietta Street, Strand, London (26 July 1939), 6 in "Charges of corruption and bribery against Falvey."
[77] Letter from Falvey (26 July 1939), 4.
[78] Ibid., 2.
[79] Ibid., 3; see also 7.

certificates he allegedly issued were fake. The gap in years between these girls' actual age and his alleged certificates made their falseness seem likely: "It is always possible to make a mistake of a year or two or even three but I cannot believe that it is possible for any skilled medical man to certify a child of 11 years 7 months as being of the age of 18."[80]

Falvey's lawyer expressed outrage at the suggestion that an expert witness might be biased "in favor of those by whom he is called rather than that he should give expert views with impartiality for the assistance of the Court and the administration of justice."[81] Here was a reference to the debate raging across the common-law world since the "adversarial revolution" of the late eighteenth century over the idea of partisan experts.[82] The "battle of the experts" problem, however, was a more common phenomenon in the civil courtroom (whether in England or in India) than in the criminal. And India had taken a turn away from the English model, closing opportunities for competing experts to be produced in criminal cases. The Punjab Chemical Examiner in 1879 had likened the Indian system to the German model of the court-appointed expert:

> In many parts of Germany, both the investigation of scientific facts and the decision of the inferences to be drawn from them are confided to medical men or chemists on the part of Government who are assessors with the judges. In this country the civil surgeon has practically to perform a similar function. He is a paid official of Government, engaged in the same way as the police in ascertaining facts. *There is no possibility, as a rule, of opposing medical evidence or opinion being brought against his to allow of the judge and his assessors choosing between the two.* Altogether his position is practically the same as that of a referee in a German Court, and the

[80] Ibid., 7.
[81] Letter from Hampsons, Bedford House, 33, Henrietta Street Strand, London to the Under Secretary of State for India, Military Dept., India Office, London (26 July 1939), 17.
[82] See Christopher Hamlin, "Scientific Method and Expert Witnessing: Victorian Perspectives on a Modern Problem," *Social Studies of Science* 16 (1986), 485-513; and Tal Golan, "The History of Scientific Expert Testimony in the English Courtroom," *Science in Context* 12:1 (1999), 7-32.

> responsibility involved ought distinctly to be recognized by the officers concerned and by the law.[83]

Center's point was that the civil surgeon in India exercised heightened power: he did not have to worry about being contradicted by another expert. The medical exam and opinion of Dr. Bhargava in Falvey's child rape case was an unusual and unexplained exception (and Bhargava may not have testified in court), a result perhaps of the defendant living outside of Falvy's district. However, it was precisely Bhargava's contrary opinion—that a boy or man could commit rape without visible injury to the penis—that allowed Falvey's accusers to cast doubt upon his insistence on visible injury. The absence of similar second opinions in Falvey's other cases surely gave cover to his doubtful and contradictory statements.

Processing Corruption Charges

How were these cases processed once allegations of corruption emerged? As an "uncovenanted" civil servant, Newman was terminated much more swiftly and easily than Falvey, who enjoyed added protections as a member of the Indian Medical Service. Newman admitted he had been drinking the extra alcohol samples, and in that way confirmed the charges of corruption against him. His analysis of the Triplicane bloodstains also constituted misconduct, but whether his superiors regarded it as gross negligence or corruption was less clear. In any case, despite multiple pleas for further information, Newman was dismissed without any kind of subsistence allowance.[84]

Falvey's story ended differently. Under the stress of the charges made against him, his health deteriorated, and a Medical Board certified that he was unfit for further service.

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[83] *Report of the Punjab Chemical Examiner for 1879*, 13 (emphasis added).
[84] Letter to W. S. Newman, Mylapore from T. H. Pope, Acting Chemical Examiner (15 Feb. 1892), 3 in "Memorial from Newman."

"Invaliding recommended," read the telegram to the viceroy. Falvey then returned to Britain despite the ongoing corruption investigations in India. His superior, one R. N. Dey, commented that Falvey had "failed to rebut most of the extremely serious charges of corruption against him."[85] And yet even so, Falvey's departure from India brought the entire disciplinary process to a halt. Dey noted that ordinarily, the case would have been handled through one of three processes: criminal prosecution, a departmental enquiry, or an enquiry under the Public Servants Conduct (Inquiry) Act. In Falvey's case, though, the authorities had decided not to proceed with the charges "in view of the fact that this would involve his return to India which owing to his state of health and for other reasons is out of the question."[86] The file bore no clues about these "other reasons," nor did it explain why the IMS could not hold an enquiry from its London office, collecting evidence and conducting cross-examination in India.[87] Apparently, the fact that Falvey would be retiring prematurely on an annual pension of Rs. 4,180 was "in itself a punishment."[88]

Scholars of legal pluralism have noted preferential venue selection for elite players when more than one system of dispute resolution could govern. Students who deface university property have historically been disciplined by the university itself, while the same acts by non-students have been much more harshly processed through the criminal justice system, for instance. Similarly, Falvey's case was handled with remarkable leniency.

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[85] Letter to Secretary to Government of India, Education, Health and Labor Dept. from R.N. Dey, Secretary to Government, United Provinces, Medical Department (Lucknow, 13 Jan. 1940), 33 in "Charges of corruption and bribery against Falvey."
[86] Letter from Dey, 33.
[87] In litigation, the taking of testimony and cross-examination in other cities and countries was carried out regularly by setting up a "commission" in these other places. For the criminal version, see the Code of Criminal Procedure (V of 1898), ss.503-8. One wonders why no such process was available for IMS disciplinary proceedings.
[88] Letter from Dey, 34.

He did not even have to complete the disciplinary process for serious charges that his superiors considered "*prima facie* well established."[89] Early retirement with a sudden return to Britain buried corruption charges, allowing both the individual and the state to keep misconduct out of public view. It was not an unusual move among senior European officials who came under suspicion.[90]

The cases of Newman and Falvey were resolved quietly and out of the public eye, with almost no mention of either case in the press.[91] It was not necessarily so when the expert was Indian. In 1933, allegations of corruption emerged against Captain Jitendra Kumar Banerji. Like Newman, Banerji was an Assistant Chemical Examiner, although in Bengal, not Madras. Banerji was also a member of the IMS. Fellow IMS member Falvey would cut off the process against him by escaping to Britain. Banerji did not. ("Going home" to Britain was a move and pretext more readily available to Britons than Indians, although a handful of elite Indians did retire to Britain.[92]) The allegations against Banerji were processed through a Court of Inquiry set up under the Public Servants' Conduct Inquiry Act. Presiding over this court was a criminal court judge named T. J. Y. Roxburgh and an IMS forensic toxicologist named Lieutenant-Colonel R. N. Chopra.[93] Captain Banerji was accused

[89] Letter from Dey, 33, 34.
[90] In 1918, the *Bombay Chronicle* wrote this of a police inspector suspected of bribery and other forms of corruption: "The other day a European Police Superintendent suddenly resigned and went off to England and no public explanation had been offered of it. If they had any regard for the lives of the people they should certainly not condone such an attitude on the part of any Government." ["The Real Issue," *TI* (3 Dec. 1918), 6.]
[91] The exception was S. Gantz, "The Triplicane Murder Case," *Madras Mail* (24 August 1891). This was a letter to the editor written by the defendant's lawyer in the Triplicane case. It led to allegations of misconduct being made against Falvey, rather than representing press coverage of a case once it was moving through disciplinary channels.
[92] This was particularly true for elite Indian men educated in Britain and those who were married to British women.
[93] R.N. Chopra was the author of the classic work, *Indigenous Drugs of India* (Calcutta: The Art Press, 1933), and a leading forensic toxicologist. He was Surgeon-General with the Government of Bengal in the 1930s.

of either submitting a "deliberately false report" or committing an act of "gross and culpable negligence" in his analysis of bloodstains. A man named Hiralal Ahir had been tried and acquitted of murder in connection with the death of one Sheikh Idu during city elections. Banerji issued a certificate stating that the stains on Ahir's bloodstained clothing were not blood. After the Ahir trial, though, the clothing was sent to the Imperial Serologist for testing. He found that the stains were human blood. Another expert obtained the same result.[94]

Press coverage stressed the serious nature of the charges. The report of the Chemical Examiner or his assistant was "vested with a sanctity peculiar to itself,"a reference to the fact that its authors did not have to be cross-examined. "The law rested upon the assumption that such a report would never lie," said Deputy Legal Remembrancer, M. A. Khunkar. A false Chemical Examiner's certificate therefore threatened to erode "one of the foundations of the judicial system in this country."[95] Comments like these emphasized that the Indian criminal justice system gave experts tremendous power. And yet no such public pronouncements appeared in the Newman or Falvey case— although officials were saying the same things in their correspondence. Furthermore, while the cases of Newman and Falvey played out in the privacy of upper officialdom, Banerji's disciplinary process was reported by newspapers, not only in India

[94] "Alleged False Report. Bloodstains. Officer Charge in Bengal," *TI* (18 Aug. 1933), 2. This account of the case does not identify the procedural mechanism used to obtain a second (and third) expert opinion in this case.
[95] "Alleged False Report," 2.

but in other colonies as well.[96] He was ultimately dismissed for misconduct, although the records do not specify whether for gross negligence or corruption.[97]

Another case of a disciplined Indian medical officer illustrated the alternative of a criminal trial. In 1940, a physician named K. D. Mehta was dismissed from the subordinate medical service of the province of Bombay and convicted in a criminal trial for corruption. He had accepted Rs.210 as "illegal gratification" in return for medically examining and recommending two men for false "certificates of fitness." The context in which the men planned to use these certificates was not clear from newspaper accounts of Mehta's case, so this case may not have involved false evidence in a criminal trial specifically. However, it was a case in which the Indian Penal Code's extensive provisions on false documents were applied to a state physician.[98] Falvey's superiors noted that a criminal trial was one of three possible ways to deal with allegations of corruption in a medical officer; they did not explain when the criminal avenue ought to be pursued. Mehta himself was the target of a police sting: the two men, F. D'Souza and I. Khwaja, had been given marked bills by the police and sent to set up Mehta.[99] It may have been, then, that Mehta was given a criminal trial because the police were involved in his case from the start. Indeed, they created it. It may equally have been that Indians accused of corruption could be slotted comfortably into racialized narratives of corruption, making publicity less problematic for the colonial state. By contrast, the existence of potentially corrupt Britons threatened to unravel these

[96] For example, see "Sequel to Murder Trial. Doctor Accused of Making False Report," *Straits Times* (9 September 1933), 19.
[97] *Annual Report of the Chemical Examiner's Department Bengal for the year 1933* (Alipore: Bengal Government Press, 1934), 14 (IOR/V/24/424).
[98] Chapter XI of the Indian Penal Code (ss.191-229) governed crimes involving false evidence and offences against public justice.
[99] "Bombay High Court: Taking Illegal Gratification. Sentence on Medical Office Upheld," *TI* (3 Oct. 1940), 9.

characterizations. As a result, Indian men of science like Banerjee and Mehta may have been more likely to be processed through public and publicized venues for discipline (like a Court of Enquiry or criminal trial), than were their British counterparts, Newman and Falvy, who were discreetly dismissed or allowed to bolt for Britain. These cases suggest that there were racialized differences in the way allegations of corruption were handled.

Difference of opinion and Empire

A distinctly colonial model of the expert witness emerged by the late nineteenth century. It applied equally to Indian and British experts. As the Punjab Chemical Examiner noted in 1879, the expert in British India enjoyed heightened power and reduced accountability when compared to his metropolitan counterpart. These features revealed themselves in the fact that chemical examiners (and others granted the same status) did not have to be called to court and cross-examined on the basis of their written certificates. The problematic nature of Newman's bloodstain analysis went unnoticed until after the Triplicane murder case in part because of this rule. The Indian model of the expert also meant that the expert called into court—like the district civil surgeon—was typically the only expert who would present his opinion in a case. As Center noted, the civil surgeon was essentially a court-appointed expert, like the medical referee in German courts. This feature of Indian criminal procedure may also have smoothed Falvey's way. He could rest assured that the questionable nature of his opinions would not be revealed by opposing experts.

Why did this model of the expert develop in British India?[100] The standard explanation was distance. Forensic experts lobbying for s.510 status argued that being called to court to explain their written findings was incredibly disruptive to their ongoing testing in the lab. The chemical examiners' labs covered large territories, and the travel time to and from court could be significant. Center called it "a physical impossibility" for the Punjab Chemical Examiner to give evidence personally in all cases referred to him from a population of 18 million people: "the necessity arose of his written evidence being recorded."[101]

The Chief Inspector of Explosives made a similar argument. While lobbying for s.510 privileges, this official complained that being called to court on short notice interrupted his non-forensic inspection tours of industrial sites. He had been trying for several years in the late 1920s to visit the Burma oil fields, for instance, but could not because of court summons in bomb cases.[102] Criminal explosions were crowding out unintended ones—and in a world of blasting gelatin and flammable cinema film rolls, accidents happened.[103] The monopolization of the inspector by political explosions became a problem especially as the

[100] For a powerful critique of the Indian model (although not by name), see "The Medical Man as a witness," *Criminal Law Journal of India* 12 (1911), 71-82.
[101] *Report of the Punjab Chemical Examiner for 1879,* 10.
[102] Letter to A. G. Clow, Deputy Secretary to Government of India, Dept. of Industries and Labour, New Delhi from N. L. Sheldon, Chief Inspector of Explosives (D. O. No. C.IX, Explosives Dept., 1 Council House, Calcutta, 1 Feb. 1928), unpaginated; letter from N. L. Sheldon (31 July 1928), 13; and letter from N. L. Sheldon (3 Sept. 1928), 15; all in "Summoning of the Chief Inspector of Explosives."
[103] For examples, see "First Annual Report of the Chief Inspector of Explosives, India" (1900, Proc. No. 409), 5 (on accidents caused by blasting gelatin, a volatile nitro-compound); and "Annual Report of the Chief Inspector of Explosives in India for 1917-18," 27 (on cinema fires caused by the "spontaneous combustion" of film in storage) (both NAI).

use of bombs by extremist nationalists occupied more and more of the inspector's time from the 1920s onward.[104]

Yet exempting these figures from mandatory cross-examination was surely not the only possible solution. The colonial state might have hired more staff at the chemical examiners' labs, opened more labs, or authorized other lab employees to testify on the original tester's behalf.[105] Forensic institutions like the Imperial Serologist's department became profit-generating, and such profits might have been re-invested in the institutions themselves or in their cousin institutions.[106]

Another explanation for the Indian model of the expert reflected debates in scientific circles. Cross-examination of an expert witness, like the "battle of the experts" courtroom, invited a diversity of scientific opinion. In Victorian England, there was heated debate over whether the rise of partisan experts of the "adversarial revolution" represented a cheapening of the honorable "man of science" ideal with its belief in universal truth and impartiality—or whether a tumble of competing views wrestling it out in the courtroom was actually the best way to identify strengths and weaknesses. In the words of Chris Hamlin, this newer view regarded expert disagreement as "a normal, rather than a pathological, phenomenon." The adversarial model acknowledged that "rigorous

[104] For a chart listing the Chief Inspector's court appearances circa 1927-8, see letter to A. G. Clow, Government of India, Dept. of Industries and Labour, from N. L. Sheldon, Dept. of Explosives (1, Council House St., Calcutta, 15 Feb. 1928), 21 in "Summoning of the Chief Inspector of Explosives."
[105] In the Code of Criminal Procedure of 1973, s.293(3) authorizes the expert who conducted the testing to authorize "any responsible officer working with him" to attend court on the former's behalf, "if such officer is conversant with the facts of the case and can satisfactorily depose in Court on his behalf."
[106] For example, see "Transfer of the Imperial Serologist's Department to the direct control of the Government of India and revision of emoluments of the Imperial Serologist," Finance: Expenditure-I, 1933, Proceedings no.83-Exl, 1933 (NAI); and cover letter from Education, Health and Land Dept. to Director-General, Indian Medical Service, u. o. No.29-13/39/9 (12 Feb. 1940), 2 in *Annual Report Imperial Serologist 1938-39* (NAI).

examination of uncertainty and careful articulation of assumptions and deductions" could be "enormously useful."[107] Arguably, it was a cousin of the peer-review process. The Indian model, however, reflected the older vision of scientific inquiry. Center endorsed this approach:

> It is doubtful by scientific men whether, in the investigation of their facts and the deductions to be drawn from them, the spirit of this method [adversarialism] should be followed. It is considered that the position of the scientific evidence ought to be judicial and truth seeking and not partisan.[108]

The Indian model may have been the product of this older view in an ongoing debate between men of science.

Another explanation for the Indian model of the expert was political, and reflected the perceived imperatives of colonial rule. The right to confront an expert witness, along with the appearance of multiple expert witnesses, produced a complicated version of western science. The net result of expert adversarialism was a confusing, contradictory, and discrediting rendition of western science before an audience of colonized subjects. Adversarial experts would only undermine the credibility claims made for western science. From this perspective, a more strategic, simple, and straightforward approach was to offer one scientific expert opinion, allowing western science—or rather, one version of it—to present itself as coherent, clear, and definitive.

This mode of thinking shaped other legal institutions in the empire. The most striking example was the "no dissents" rule of the Judicial Committee of the Privy Council,

[107] Hamlin, 485, 506.
[108] *Report of the Punjab Chemical Examiner for 1879,* 13.

the final court of appeal for the British Empire.[109] Sitting in London, the judges of this court were almost the same individuals who sat as Law Lords.[110] The Law Lords manned the final court of appeal for Britain, the House of Lords sitting in its judicial capacity. These judges were allowed to issue dissenting and concurring opinions—judgments in which a judge disagreed with the majority on the bench, or agreed with the majority's conclusion, but for different reasons. Dissenting and concurring judgments enabled judges to put alternative lines of legal reasoning into circulation. These devices allowed ideas that were less popular or non-dominant to be made available to future lawyers and judges even if these ideas did not determine the outcome of the instant case.[111]

Unlike the Law Lords, judges of the Privy Council could only issue a single, collective opinion. They were not permitted to issue dissents (or concurring judgments). In the words of Lord Haldane, a Privy Council judge who spoke to a group of law students in 1921:

> The Judges do not give any judgment; one of them speaks, after they have been consultation, on behalf of the whole body of five, and there is no dissent. It is a most solemn part of the oath not to reveal what has passed in deliberation. If any Judge were to say that he had not agreed with his colleagues, the sword of the [unwritten] Constitution would descend on him. It never happens.[112]

Haldane did not explain the rationale for the "no dissents" rule. Arguably, it had everything to do with the perceived need to project uniformity, clarity, and certainty—and to avoid

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[109] See Viscount Haldane of Cloon, "The Work for the Empire of the Judicial Committee of the Privy Council," *Cambridge Law Journal* 1 (1923), 145.

[110] The key difference was that from 1909, an Indian judge joined the Privy Council judges for JCPC appeals coming from India. A similar practice developed with Canadian, South African, Australian, and New Zealander judges and appeals. The majority of the JCPC's cases were Indian appeals before the JCPC's Indian jurisdiction ended in 1949. See Haldane, 148; Sharafi, *Law and Identity,* 55-6; and Rohit De, " 'A Peripatetic World Court': Cosmopolitan Courts, Nationalist Judges and the Indian Appeal to the Privy Council," *Law and History Review* 32:4 (2014), 821-51.

[111] Although dissenting opinions did not create precedents, they could provide future lawyers with a source of ideas for similar arguments.

[112] Haldane, 145.

complexity and contradiction. The "no dissents" rule probably grew out of the desire to project a coherent, consistent, and singular image of British authority to an imperial audience. How could British rule be justified, particularly in non-settler colonies, if the judges of the highest court in the empire could not agree on the outcome of important cases? For some, imperial authority seemed wobbly if its supreme court could not produce a single, coherent judgment.

The same reasoning could apply to science in the Indian courtroom. How could British rule, propped up rhetorically by the rule of law and western science, command respect if its forensic science was unsettled? The structural squelching of dissent among experts and adjudicators reflected the idea that like political "children" stuck in the "waiting room of history," colonized peoples required a clear and simple message.[113] What resulted was a stripped-down and impoverished version of the imperial judgments and forensic science that might have been.

Conclusions

In 1933, the Allahabad High Court overturned the conviction of a man named Happu in a death penalty case alleging murder by arsenic. The judge, one Justice Young, was troubled by the powers that s.510 of the Code of Criminal Procedure gave to chemical examiners. "The Chemical Examiner and his Assistant, both being human, are liable to err," wrote Young, warning that "these privileged persons might be half blind, incompetent, or even corrupt." As Young delivered his judgment, J. K. Banerji was being investigated for

[113] Uday Singh Mehta, *Liberalism and Empire: A Study in Nineteenth-Century British Liberal Thought* (Chicago: Chicago University Press, 1999), 31-3; and Dipesh Chakrabarty, *Provincializing Europe: Postcolonial Thought and Historical Difference* (Princeton: Princeton University Press, 2002), 8-10.

misconduct in Bengal. "No person therefore ought to be put in peril of capital, or any, punishment on a written report not given on oath and untested by cross-examination. To accept such a report—whatever it may contain—as *proof* of death by arsenic poisoning , or of anything, appears to me to be an impossible proposition in law."[114] Section 510 was dangerous. Although chemical examiners *could* be called to court under s.510, "in practice they never are in this province." In short, allowing experts to merely submit a written report was contrary "to the accumulated legal experience of centuries of what is necessary for the protection of accused persons."[115] By chance, Happu's case came from Bareilly, the same district where Falvy would be accused of taking bribes six years later.

Young's view was rejected the following year by his fellow Allahabad High Court judges in a similar case.[116] However, his opinion remained the high-water mark of a trail of criticism scattered through the case law. This cluster of judges warned that the heightened power and reduced checks on experts undermined defendants' rights.[117] Whether the product of gross negligence or corruption, dubious expert opinion in India was more likely to go undetected because chemical examiners like Newman were allowed to submit written opinions without being cross-examined and because civil surgeons like Falvey operated withouion t the risk of being contradicted by other experts. The bloodstain analysis of Newman and Banerjee highlighted the fact that it was not always easy to distinguish

[114] *Emperor v. Happu* (1933), ILR 56 Allahabad (1934) 234.
[115] *Emp. v. Happu,* 233.
[116] *Emp. v. Bachcha.*
[117] See "Proposed amendment of the form used by Chemical Examiners in recording results of analyses of the contents of human viscera," Home: Judicial, Proc. No.241-2, June 1905, 1 (NAI)(referring to criticism of a chemical examiner's certificate and s.510 by the Calcutta High Court on 25 April 1898 in a case involving arsenic); and *Ujagar Singh and others v. Crown* (1938), ILR 20 Lahore (1939) 206-15. For post-colonial criticism, see Law Commission of India, *Twenty-fifth Report (Report on Evidence of Officers about Forged Stamps, Currency Notes, etc.)* (Delhi: Ministry of Law, Government of India,1963), 12-13 (Appendix IV).

between negligence and corruption. Misbehaving experts presented a special challenge: the identification of an expert opinion as suspect could be difficult if one was not an expert oneself.[118] Amplifying this fundamental difficulty, Indian criminal procedure made experts' carelessness and bribe-taking harder to spot.

Corrupt British experts threatened to erode the narrative of the incorruptible European official. This may explain why Newman and Falvey were disciplined so discreetly, while allegations against Indian physicians like Banerjee and Mehta were processed in very public ways. Saving face for the ruling race mattered: colonial stereotypes associated corruption with Indians, and an anti-corruption ethic was a pillar of the "civilizing mission" in India.

The rule-of-law agenda and western science, fused in the new field of forensic science for India, also did ideological work in justifying British rule. This paper has suggested that to do so convincingly, forensic science had to produce a clear, coherent, and authoritative message in the courtroom. The Indian model of the forensic expert was grounded in the perceived political exigencies of colonial rule, in other words. Giving full flower to a diversity of scientific opinion, rigorously questioned, would only undermine the credibility of forensic science in the non-settler colony. Like Privy Council judgments, expert opinion had to be univocal. Indian criminal procedure minimized scientific complexity and uncertainty in the courtroom, qualities that persist today.[119] In this way,

[118] See Diego Gambetta, "Corruption: An Analytical Map," 24 in Kreike and Jordan.
[119] Under s.293 of the Code of Criminal Procedure (1973), government scientific experts may submit a written report as evidence. They may be summoned to court and cross-examined if the court thinks fit, but not otherwise. These provisions apply to any Chemical Examiner or Assistant Chemical Examiner; the Chief Inspector of Explosives; the Director of the Finger Print Bureau; the Director of the Haffkine Institute, Bombay; the Director, Deputy or Assistant Director of a Central Forensic Science Laboratory or a State Forensic Science Laboratory; and the Serologist to the Government.

criminal process for experts in India was a stunted version of a metropolitan institution, and one that compromised rule-of-law values.[120] Evidently, the risk of undetected expert misconduct was a price worth paying for the appearance of scientific certainty in the colony.

[120] On the role of rule-of-law values in colonial India, see Rohit De, "Emasculating the Executive: The Federal Court and Civil Liberties in Late Colonial India: 1942-1944," 59-90; and Mitra Sharafi, "Parsi Legal Culture, Constitutionalism, and the Rule of Law" in Nawaz B. Mody, ed., volume for the centenary of the K. R. Cama Oriental Institute (forthcoming).