Syphilization and Its Discontents: Experimental Inoculation against Syphilis at the London Lock Hospital

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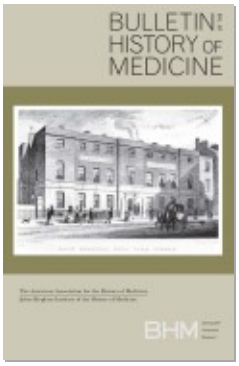

Bulletin of the History of Medicine, Volume 91. Number 1, Spring 2017, pp. 1-32 (Article)

Published by Johns Hopkins University Press

Syphilization and Its Discontents: Experimental Inoculation against Syphilis at the London Lock Hospital

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SUMMARY: In 1867 James Lane and George Gascoyen, surgeons to the London Lock Hospital, compiled a report on their experiments with a new and controversial treatment. The procedure, known as "syphilization," saw patients be inoculated with infective matter taken from a primary syphilitic ulcer or the artificial sores produced in another patient. Each patient received between 102 and 468 inoculations to determine whether syphilization could cure syphilis and produce immunity against reinfection. This article examines the theory and practice of this experimental treatment. Conducted against the backdrop of the Contagious Diseases Acts, the English syphilization experiments have been largely forgotten. Yet they constitute an important case study of how doctors thought about the etiology and pathology of syphilis, as well as their responsibilities to their patients, at a crucial moment before the advent of the bacteriological revolution.

KEYWORDS: syphilis, human experimentation, inoculation, disease immunity, medical ethics

In 1867 James Lane and George Gascoyen, surgeons to the London Lock Hospital, compiled a report on twenty-seven cases treated by the controversial procedure "syphilization." It was a procedure pioneered in the 1840s by the French doctor Joseph-Alexandre Auzias-Turenne. Syphilization required the repeated inoculation of syphilitic matter into persons already suffering from syphilis. The doctor performing the procedure made three punctures on either side of the chest and inserted infective matter that had been taken from a primary syphilitic ulcer or the artifi-

Many thanks are due to Lloyd Davies, Laura Sellers and the *Bulletin of the History of Medicine*'s anonymous reviewers for their valuable comments and suggestions. Thanks also to delegates at the 2014 British Society for the History of Science annual conference for their comments on an earlier version of this article. I am grateful to the Royal College of Surgeons of England for their kind permission to consult the records of the London Lock Hospital.

cial sores produced in a person already undergoing syphilization. If these punctures developed pustules after three days, three more inoculations were made on the torso from these original pustules. The whole procedure was then repeated, each time taking infective matter from the last-formed pustules, until a positive reaction could no longer be produced. Once the patient's torso had been syphilized, the procedure was repeated on their arms and then thighs until, again, no positive reaction could be produced. The entire process took between three and four months. Each of the twenty-four women and three men syphilized at the Lock Hospital received between 102 and 468 inoculations. It took, on average, three weeks for the sores produced from inoculation to heal and each patient was indelibly scarred. The purpose of these many painful and disfiguring inoculations was to determine whether this controversial procedure did indeed produce immunity against reinfection.

The study and treatment of syphilis encompasses important historical questions regarding medical knowledge and practice, public health policy, medical ethics, morality, eugenics, gender, and sexuality.[1] The English syphilization experiments, however, have been overshadowed by this rich historical scholarship. These experiments were conducted against the backdrop of the controversial Contagious Diseases (CD) Acts and Vaccination Acts that, for their opponents, represented the worst excesses of medical authority through compulsion and intrusion upon individual liberty.[2] The experimental inoculation of institutionalized persons at the Lock Hospital (an institution that specifically treated venereal diseases) has been overshadowed by the controversy surrounding the CD Acts and by wider shifts in the study and treatment of venereal diseases.

1. See, for example, Simon Szreter, "The Prevalence of Syphilis in England and Wales on the Eve of the Great War: Re-visiting the Estimates of the Royal Commission on Venereal Diseases 1913–1916," *Soc. Hist. Med.* 27 (2014): 508–29; Michael Worboys, "Unsexing Gonorrhoea: Bacteriologists, Gynaecologists, and Suffragists in Britain, 1860–1920," *Soc. Hist. Med.* 17 (2004): 41–59; Gayle Davis, *"The Cruel Madness of Love": Sex, Syphilis and Psychiatry in Scotland, 1880–1930* (Amsterdam: Rodopi, 2008); Mary Spongberg, *Feminizing Venereal Disease: The Body of the Prostitute in Nineteenth-Century Medical Discourse* (New York: New York University Press, 1997); Lucy Bland, "'Guardians of the Race' or 'Vampires upon the Nation's Health?' Female Sexuality and Its Regulation in Early Twentieth-Century Britain," in *The Changing Experience of Women*, ed. Elizabeth Whitelegg (Oxford: Martin Robertson, 1982), 373–88.

2. Dorothy Porter and Roy Porter, "The Politics of Prevention: Anti-vaccinationism and Public Health in Nineteenth-Century England," *Med. Hist.* 32 (1988): 231–52, quotation on 231–32; Nadja Durbach, "'They Might as Well Brand Us': Working-Class Resistance to Compulsory Vaccination in Victorian England," *Soc. Hist. Med.* 13 (2000): 45–62, quotation on 46.

The pathology of syphilis has long been a subject of controversial experimental medical practice.[3] Syphilis represented a serious threat to national health and efficiency and, through congenital transmission, the health of future generations. Many vexed questions of etiology, morphology and pathogenesis occupied English doctors who studied and treated venereal diseases during the 1850s and 1860s. Syphilis had already been identified as a disease entity distinct from gonorrhea. The *spirochæate pallida* would not be identified until 1905, but doctors were nonetheless speaking tentatively about a specific causative pathogen or virus.[4] What was less certain was the pathogenesis of syphilis. Why did symptoms reappear despite a patient's supposed cure? Was this attributable to latency, relapse or a new infection? Moreover, could a patient's new illness be linked etiologically to an earlier syphilitic infection? Doctors were familiar with the symptoms characteristic of primary-, secondary- and tertiary-stage syphilis, such as rashes, chancres, pustules, gummas, enlarged glands and urethral and vaginal discharge. However, the etiology of many other conditions, including infertility and neurological dysfunction, was less readily identifiable.[5] Joan Sherwood goes so far as to suggest that the state of knowledge was such that some patients subjected to syphilization may not have been suffering from syphilis at all.[6]

Doctors classified primary-stage syphilitic chancres according to whether they were ulcerated and suppurated or indurated. Persons who developed ulcerated chancres (also termed "soft" sores) were considered unlikely to develop constitutional syphilis; their infection would remain localized. In contrast, those persons whose chancres were indurated would develop constitutional secondary-stage infection. Doctors believed that in cases of constitutional infection the pathogen was "absorbed"

3. Among the most notorious of these episodes were the Tuskegee experiments. See Susan Reverby, *Examining Tuskegee: The Infamous Syphilis Study and Its Legacy* (Chapel Hill: University of North Carolina Press, 2009).

4. See, for example, Langston Parker, "Clinical Lectures on Venereal Diseases of the Skin," *Provincial Med. Surg. J.* 16 (October 27, 1852): 552–55; Jeffery Marston, "Practical Remarks upon the Prevalence and Treatment of Syphilis," *Brit. Med. J.* (February 21, 1863): 186–90.

5. For discussion of the uncertainties surrounding the syphilitic etiology of infertility, see Anne Hanley, "'The Great Foe to the Reproduction of the Race': Diagnosing and Treating Venereal Diseases-Induced Infertility, 1880–1914," in *Infertility in History: Approaches, Contexts and Perspectives*, ed. Tracey Loughran and Gayle Davis (London: Palgrave Macmillan, forthcoming). For the uncertainty surrounding neurological conditions that would eventually be classified as "neurosyphilis," see Davis, *"Cruel Madness of Love"* (n. 1), 83–116.

6. Joan Sherwood, "Syphilization: Human Experimentation in the Search for a Syphilis Vaccine in the Nineteenth Century," *J. Hist. Med. & Allied Sci.* 54 (1999): 364–86, quotation on 374.

throughout the body by way of the lymphatic system.[7] By the early 1860s, a number of English doctors hypothesized that once a person with indurated chancres passed through the course of secondary-stage symptoms, he or she would not be susceptible to reinfection.[8] As we shall see, these concepts had important implications for how Lane, Gascoyen and Lee thought about syphilization and how they interpreted the results of their experimental inoculations.

Throughout the latter half of the nineteenth century a growing class of public health officials and doctors became increasingly preoccupied with developing more effective methods of diagnosis, treatment and prevention.[9] Although a wide variety of different chemical agents were used to treat syphilis at midcentury, the commonest was mercury.[10] It was generally administered in three different forms: it could be absorbed through a patient's skin, in processes called "inunction" and "fumigation," or it could be ingested, in either tablet or liquid form. Doctors were increasingly dissatisfied with and concerned by the limited efficacy of traditional mercurial treatments. Mercury might alleviate symptoms but could not bring about a complete cure.[11] It could also produce dangerous and debilitating side effects.

Syphilization was addressed repeatedly by the committee appointed in 1864, following the promulgation of the first CD Acts, to inquire into the pathology and treatment of venereal diseases with the view to diminishing the effects of syphilis upon the army and navy (CVDAN). The CVDAN acknowledged that syphilization was "repugnant to the habits and feelings" of the English medical profession. But it nonetheless identified syphilization, along with the incarceration of infected prostitutes, as a potential strategy to curtail the spread of syphilis among the civilian population and military and naval personnel.[12] Syphilization was important

7. Henry Lee, "Clinical Lectures, Delivered at the Lock Hospital, London," *Brit. Med. J.* (January 6, 1854): 3–6.

8. See, for example, Jonathan Hutchinson, "Is Inherited Syphilis Protective against Subsequent Contagion," *Brit. Med. J.* (September 21, 1861): 306.

9. Dorothy Porter, *Health, Civilization and the State: A History of Public Health from Ancient to Modern Times* (London: Routledge, 1999), 111–27.

10. Other common treatments for syphilis included silver nitrate, calomel ointments and vapor baths, opium, zinc oxide and potassium iodide. A doctor might employ a combination of chemical solutions according to his own clinical experience and his patient's reactions to treatment. See Marston, "Practical Remarks upon the Prevalence and Treatment of Syphilis" (n. 4), 186–90.

11. Michael Worboys, "Was There a Bacteriological Revolution in Late Nineteenth-Century Medicine?" *Stud. Hist. Philos. Biol. Biomed. Sci.* 38 (2007): 20–42, quotation on 28; Samuel Wilks, "A Lecture on Syphilis," *Lancet* (February 9, 1867): 167–70, quotation on 169.

12. Report of the Committee Appointed to Enquire into the Pathology and Treatment of the Venereal Disease, with the View to Diminish Its Injurious Effects on the Men of the

because it represented, for advocates, a potential therapeutic alternative to dreaded mercurial remedies. It might encourage more patients to seek treatment and produce immunity among inoculated persons, thereby alleviating the deleterious effects of syphilis upon national heath and military strength. Yet no one has, until now, given detailed attention to its performance, ethical implications or reception among English doctors. Syphilization is an important case study showing how doctors at midcentury thought about the pathology of syphilis and the ethical implications of their clinical practices.

Reexamining English syphilization raises key questions about the importance of scientific failures for past developments in clinical knowledge and skill and as a means for historians better to understand these developments. Syphilization may have proven ineffective and even dangerous, but it nonetheless helped to define subsequent therapeutic practices and augment knowledge of syphilis.

A study of English syphilization also highlights the nature and limitations of nineteenth-century medical ethics, specifically ideas of consent and the tensions between medical paternalism and patient autonomy. With only a few notable exceptions, discussion of these issues has been defined by ethical frameworks informed by the Nuremberg Trials.[13] These analytic frameworks cannot adequately accommodate accounts of pre-twentieth-century practices, especially research practices affecting those who were not in a position to make informed judgments or seek compensation for injury sustained through medical malpractice. Neither do these frameworks provide adequate scope for considering the complex relationships between patients and their doctors. A preoccupation with the autonomy of patients has overshadowed the ethical issues surrounding paternalistic nineteenth-century medical practice.[14] This article considers how Lane and Gascoyen balanced the autonomy, liberty and

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Army and Navy, with Appendices, and the Evidence Taken before the Committee, PP XXXVII.425 (1867–68), xx (henceforth Committee Report).

13. For important exceptions, see Kim Price, *Medical Negligence in Victorian Britain: The Crisis of Care under the English Poor Law, c.1834–1900* (London: Bloombury, 2015); Andreas-Holger Maehle, *Doctors, Honour and the Law: Medical Ethics in Imperial Germany* (New York: Palgrave Macmillan, 2009); Susan Lederer, *Subjected to Science: Human Experimentation in America before the Second World War* (Baltimore: Johns Hopkins University Press, 1994); Susan Lederer, "Experimentation and Ethics," in *The Cambridge History of Science: The Modern Biological and Earth Sciences*, ed. Peter Bowler and John Pickstone (Cambridge: Cambridge University Press, 2009), 583–601; Robert Baker, *Before Bioethics: A History of American Medical Ethics from the Colonial Period to the Bioethics Revolution* (Oxford: Oxford University Press, 2013).

14. Ruth Faden and Tom Beauchamp, *A History and Theory of Informed Consent* (Oxford: Oxford University Press, 1986), 3.

healthcare needs of individual patients against the desire for medical progress and the perceived communal health benefits of experimental practices. Syphilization effectively demonstrates the tensions between these competing concerns.

The first section of this article presents a brief discussion of the French syphilization experiments that laid the theoretical and clinical foundations for the later inoculations conducted at the London Lock Hospital. The English inoculation experiments exemplify the problems that often attended the circulation of knowledge claims and new clinical practices across national borders and between different medical communities. The second section examines the theory and practice of syphilization, looking specifically at the use of experimental inoculation as a diagnostic and therapeutic tool. It considers what these experimental practices demonstrated about the etiology and pathology of syphilis, and what they revealed about the limitations of clinical knowledge at that time. Syphilization is a key example of how knowledge of venereal diseases was built up among English doctors at a crucial moment before the advent of the bacteriological revolution. This article then moves in the third section to a discussion of the wider-reaching ethical implications of these experimental practices and the apparent tensions between medical paternalism and patient autonomy.

The Emergence of Syphilization and Its Adoption at the London Lock Hospital

The few historians who have addressed syphilization have focused exclusively upon the earlier French experiments and the accompanying controversial debates that raged in the Paris Academy of Medicine between Auzias and Philippe Ricord, the preeminent French venereologist at midcentury. Syphilitic inoculations had been used diagnostically since the 1830s. Ricord had sought to develop a reliable diagnostic tool during his early experiments with what he termed "auto-inoculation" at le Hôpital des Vénériens. He drew pus from the sores of a syphilitic patient and reinoculated that patient. If the reinoculation produced a positive result, Ricord believed that he could confidently diagnose that patient with infective syphilis.[15] Several decades later his findings were summarized by Henry Lee, surgeon to St George's Hospital and the London Lock Hospital, in the *British Medical Journal* (*BMJ*).

15. Philippe Ricord, *A Practical Treatise on Venereal Diseases; or, Critical and Experimental Researches on Inoculation, Applied to the Study of These Affections, with a Therapeutical Summary and Special Formulary* (New York: J.S. Redfield, 1849), 80–83.

> A chancre is known for certain . . . by being inoculable so as to reproduce exactly the same disease again upon the same patient an indefinite number of times. . . . The best way to produce a chancre is to inoculate some of the secretion from its surface upon another part of the same patient's body. . . . The pus taken from an inoculated pustule will reproduce a chancre of the same kind originating in the same way, and this propagation may extend from pustule to pustule without limit.[16]

Ricord was inoculating his patients to clarify uncertainties about the pathology of syphilis. Symptoms in this early stage of infection were often so obscure as to go unremarked by patients and misdiagnosed by doctors. Inoculations that produced new primary sores allowed Ricord to chart the development of primary-stage infection and the patient's eventual transition into secondary- and even tertiary-stage infection. Moreover, by auto-inoculating his patients with pus produced from syphilitic chancres, Ricord sought to demonstrate the principles of his "new doctrine": that gonorrhea and syphilis were separate diseases and that syphilis was caused by a specific pathogen. These inoculations had convinced him also that pus only from primary-stage chancres produced fresh sores and that secondary-stage syphilis was therefore not contagious.

Through the work of Auzias, syphilization was reconceptualized as a therapeutic, rather than a simply diagnostic, tool. It also gave currency to the contagiousness thesis, which posited that, contrary to Ricord's conclusions, secondary-stage syphilitic sores were inoculable.[17] Doctors had begun thinking about the process of syphilitic inoculation within a therapeutic framework akin to Jenner's smallpox vaccine.[18] Auzias inoculated his subjects with successively weaker doses of syphilitic matter, theorizing that they would slowly become immune to reinfection. This infective matter could be taken from their own sores or those of other patients.

However, by 1851, medical opinion had turned unequivocally against Auzias's procedure. The Paris Academy was critical when he presented his findings, not least because Lindemann, a young German doctor who had never previously had syphilis, died during the process of syphilization. In 1851 Ricord presented the ailing and emaciated Lindemann to the Paris Academy. This was a calculated attempt by Ricord to undermine the

16. Henry Lee, "Syphilitic Inoculation, and the Relations to Vaccination. Lecture I: The Suppurating Syphilitic Sore," *Brit. Med. J.* (April 5, 1862): 347–50, quotation on 348.

17. Alex Dracobly, "Ethics and Experimentation on Human Subjects in Mid-Nineteenth-Century France: The Story of the 1859 Syphilis Experiments," *Bull. Hist. Med.* 77 (2003): 332–66.

18. Philippe Ricord, *Letters on Syphilis, Addressed to the Chief Editor of the Union Médicale* (Philadelphia: Hart, Carey and Hart, 1852), 249–50; Sherwood, "Syphilization" (n. 6), 368.

validity of syphilization—to demonstrate that it might transmit infection but it neither cured syphilis nor produced immunity. In Ricord's opinion, "inoculation neither has been, nor can be employed, like that of vaccine, to prevent disease."[19] Although a licensed doctor, Auzias had always practiced on the periphery of orthodox medicine. The sight of Lindemann's deteriorating condition, combined with Ricord's esteemed position, was enough to set the Paris Academy against Auzias. The technique of autoinoculation had underpinned much of midcentury French syphilography. Nevertheless, Auzias's experimental inoculation of human subjects was criticized as a gross breach of accepted ethical practice and the entire process of syphilization was condemned as ineffective.[20]

This experimental procedure and its results polarized medical opinion. Only a handful of French doctors had performed these experimental inoculations. By the 1860s only Carl Wilhelm Böeck in Norway and Casimir Sperino in Turin continued to test the accuracy of Auzias's results and to observe the resulting pathological phenomena. Böeck was so confident that, during his visit to England, he requested that his theory and mode of performing syphilization be observed and tested.

> If fifty patients in one of the London hospitals, suffering from constitutional syphilis, were placed under my treatment, I would show that what I have stated is in conformity with nature. I only request that five gentlemen should be appointed to watch my mode of treatment; and whether they be advocates of, or opponents to, the system, would be immaterial to me.[21]

The CVDAN obliged Böeck by inviting him to present his findings.[22] In the absence of more detailed archival information, we can only speculate about why Böeck was called to give evidence. Neither can we know who, apart from Lane, Gascoyen and Lee, might have been involved in the experiments. Theirs are the only names recorded in surviving sources. However, it is clear that Böeck's testimony, specifically his claims of suc-

19. Ricord, *Practical Treatise on Venereal Diseases* (n. 15), 84.

20. For a more detailed account of the French debates over syphilization, see Dracobly, "Ethics and Experimentation on Human Subjects" (n. 17), 332–66; Bertrand Taithe, "The Rise and Fall of European Syphilisation: The Debates on Human Experimentation and Vaccination of Syphilis, *c.* 1845–70," in *Sexual Cultures in Europe: Themes in Sexuality*, ed. Franz X. Eder, Lesley Hall, and Gert Hekma (Manchester: Manchester University Press, 1999), 34–57; Diane Beyer Perett, "Ethics and Error: The Dispute between Ricord and Auzias-Turenne over Syphilisation, 1845–70" (Ph.D. diss., Stanford University, 1977); Sherwood, "Syphilization" (n. 6), 364–86.

21. Carl Böeck, "A Description of the Mode of Treating Constitutional Syphilis by Syphilisation: and Its Results," *Brit. Med. J.* (April 8, 1865): 339–40, quotation on 340.

22. Committee Report (n. 12).

cess with syphilization in Norway, persuaded the CVDAN to recommend that experiments according to Böeck's method be performed in England. When the Lock Hospital was proposed as the site for this clinical trial, the hospital's House Committee resolved that it "be conducted under the supervision and control of the medical officers."[23] So, in cooperation with Lane, Gascoyen and Lee, Böeck commenced the first and only systematized trial of syphilization in England. During his time at the Lock Hospital he inoculated nineteen patients. Following his departure in late 1865, Lane and Gascoyen continued the trial and reported their findings to the Medico-Chirurgical Society of London in June 1867.[24]

The English inoculation experiments exemplified the problems that often attended the transmission of knowledge claims and new clinical practices across national borders and between different medical communities. The debate between Auzias and Ricord in the Paris Academy was controversial and rancorous, but English medical contemporaries paid little attention. Joseph Sampson Gamgee and Victor de Méric were the only English doctors to write about syphilization in the wake of the 1851 debate. Although Gamgee was cautiously optimistic, concluding that there were many unanswered questions requiring further consideration, de Méric condemned syphilization as "cruel" and "repulsive."[25] It was not until Böeck's visit to England that a flurry of journal articles on experimental inoculation appeared.

Several historians have already questioned how the vehement dismissal of syphilization by the Paris Academy—one of the most prestigious medical bodies in Europe—could go unregarded by those who adopted the procedure in countries such as Norway and Britain. Lane and Gascoyen acknowledged that syphilization was received with "much ridicule and opposition" by the Academy of Medicine, but they nonetheless took up this experimental procedure.[26] Sherwood asks whether misplaced optimism or professional pride prompted them to believe they could succeed where Auzias had failed.[27] However, their report submitted to the Medico-Chirurgical Society, along with articles in the medical press,

23. Royal College of Surgeons, London Lock Hospital Board Minutes (July 27, 1865), MS0022/1/1.

24. James R. Lane and George G. Gascoyen, "Record of Cases Treated in the Lock Hospital by Syphilisation," *Medico-Chirurgical Trans.* 50 (1867): 281–328.

25. Joseph Sampson Gamgee, "Clinical Remarks on Syphilisation," *Assoc. Med. J.* (August 4, 1854): 694–96; Victor de Méric, "On Prophylactic and Curative Syphilization," *Lancet* (February 26, 1853): 195–97; Victor de Méric, "On Prophylactic and Curative Syphilization," *Lancet* (March 5, 1853): 221–23.

26. Lane and Gascoyen, "Record of Cases Treated" (n. 24), 281.

27. Sherwood, "Syphilization" (n. 6), 385.

strongly suggests another possibility. Available sources indicate that Lane and Gascoyen were not, in fact, expecting to replicate Böeck's results. They were, in their own words, curious "to watch the striking pathological phenomena which attend this novel method of treating constitutional syphilis."[28] But they were not motivated by confidence in syphilization's efficacy. Rather, they had been called upon by the CVDAN, the Lock Hospital's House Committee and the Secretary of State for War to conduct a clinical trial. The medical profession was seeking more effective treatments and preventives for syphilis, but Lane, Gascoyen and Lee were not convinced that syphilization would serve either function. They expected it neither to cure patients, nor to produce immunity.

Using Experimental Inoculation to Study the Pathology of Syphilis

Ricord's method of inoculation as a diagnostic tool had been employed in England for over a decade prior to the experiments at the Lock Hospital in 1865 and 1866. Lee had been performing experimental inoculations since at least 1854, the results of which informed his series of lectures (presented in that same year) on "syphilitic inoculation."[29] He found that secretions produced from suppurating sores might be used to inoculate either the same patient or another patient, and that these inoculations might be repeated many times. He argued that, in certain cases, "the inoculation of the secretion would furnish an additional test of the nature of the disease. If the sore were of the naturally suppurating kind, the specific pustule would be produced by the inoculation of its secretion upon the same patient."[30]

However, the potential therapeutic applications of inoculation had not been widely or systematically considered. No series of inoculations had been taken to their complete conclusion using Auzias's or Böeck's method. As Böeck asserted in the *BMJ* in 1865, "inoculation is not entitled to the name of syphilisation unless it be continued until the syphilitic matter will no longer take."[31] Although Lee's use of inoculation was influenced

28. Lane and Gascoyen, "Record of Cases Treated" (n. 24), 282.

29. Henry Lee, "Syphilitic Inoculation, and its Relations to Vaccination. Lecture IX: Syphilitic Inoculation Modified by Previous Disease," *Lancet* (September 13, 1862): 275–77; Henry Lee, "On Infecting and Non-infecting Syphilitic Sores," *Brit. For. Medico-Chirurgical Rev.* (October 1856): 497–504; Anon., "Reviews and Notices," *Brit. Med. J.* (February 21, 1863): 192.

30. B. G. Babington, "Syphilitic Inoculation and Its Relation to Diagnosis and Treatment," *Brit. Med. J.* (August 17, 1861): 181–82.

31. Böeck, "Description of the Mode of Treating Constitutional Syphilis" (n. 21), 339.

by Ricord's diagnostic work at le Hôpital des Vénériens, neither Lee nor any of his English colleagues had persisted with the therapeutic inoculation of patients to this degree of saturation.

Syphilization, as performed by Böeck and his predecessors, was eventually dismissed as ineffective, but the inoculation of patients at the Lock Hospital had far-reaching implications for the development of knowledge and clinical practice in the latter half of the nineteenth century. These experimental inoculations can also tell us much about how doctors understood syphilis. Almost a decade after the publication of their findings, Lane reflected that his and Gascoyen's experiments had thrown "considerable light on several of the vexed questions" pertaining to its etiology and pathology.[32] He concluded that although syphilization had proven "inadmissible as a curative measure, it has been of value in illustrating several moot points in the pathology of syphilis."[33]

The rise of germ theory and the identification of the *spirochæate pallida* transformed the way doctors thought about syphilis's etiology, pathology and modes of transmission. But even before the advent of the bacteriological revolution, English doctors were becoming increasingly interested in finding disease-specific therapies for syphilis. In 1866 Lee questioned whether syphilization was curative in "preventing or removing the *manifestations* of syphilis . . . [or] by *eradicating the virus* on the presence of which the disease depends?"[34] The very act of inoculation demonstrated that Lane and Gascoyen, and those who preceded them, had begun thinking about infection in terms of a pathogen, transmitted from one person to another by infective matter. Their experiments demonstrated growing awareness of the effects of syphilis, and the body's ability to fight infection, at a pathogenic level.

As a therapeutic practice, syphilization was hypothesized to speed up the natural progress of infection by stimulating the manifestation of syphilitic symptoms, helping the patient to move through the various stages of the infection more quickly, and in so doing achieve local and general immunity. According to Böeck, the introduction of syphilitic pus created a "diathesis" that was followed by a predictable and prolonged series of symptoms. Regular inoculation, he contended, would stimulate the disease, enabling it to "pass through its regular course . . . in a far shorter time than if left to itself, or if subject to any other method of

32. James R. Lane, *Lectures on Syphilis Delivered at the Harveian Society, December 1876* (London: J and A Churchill, 1878), 27.

33. Ibid., 31.

34. Henry Lee, "Syphilitic Inoculation in 1865. Lecture II: Syphilization," *Lancet* (April 7, 1866): 361–63, quotation on 361, emphasis original.

treatment."[35] Although skeptical about syphilization's ability to cure or produce immunity, Lee did concede that a patient's initial period of incubation seemed to be considerably shortened following the reinoculation of infective matter.[36]

The objective of the Lock Hospital experiments, then, was to monitor the development and disappearance of physical symptoms in conjunction with the process of continuous inoculation. The following hand-drawn diagrams, taken from Lane and Gascoyen's report to the Medico-Chirurgical Society, demonstrate the extent of the inoculations performed on patients subjected to syphilization at the Lock Hospital. Although each syphilized patient received a different number of inoculations over a unique length of time, these two diagrams are representative of the general method of syphilization. They show how, in mapping inoculations onto a patient's body, Lane and Gascoyen were also attempting to determine whether there was any correlation between inoculation and a patient's supposed progress toward immunity.

Case 2 (Figure 1), a twenty-one-year-old woman, was admitted in August 1865 suffering from a six-week-old indurated sore, a classic syphilitic rash on the torso, and glandular swelling of the groin. She had received no previous treatment. Syphilization commenced in late September with fifteen series of inoculations using infective matter taken from a male outpatient. Matter from different unspecified sources was then used until December, at which point no more reinoculable pustules could be produced. Having been inoculated 276 times in just over three months, her sores took a further two months to heal. She was discharged in February 1866 and remained until March 1867 in the Lock Asylum, where she was monitored for any syphilitic relapse.[37]

Case 9 (Figure 2), a twenty-five-year-old woman, was admitted in September 1865 suffering from severe mucous tubercles on the labia and, as in Case 2, a classic syphilitic rash on the torso and glandular swelling of the groin. She had also received no previous treatment. Syphilization commenced on November 22. She was inoculated on the chest and right arm with syphilitic matter taken from Case 4. Only the inoculation on her arm produced a positive result, and this led to nine additional generations of inoculations. On November 25 she was inoculated on the left arm using matter taken from Case 22, which had been artificially irri-

35. Lane and Gascoyen, "Record of Cases Treated" (n. 24), 283.

36. Henry Lee, "Syphilitic Inoculation, and its Relations to Vaccination. Lecture II: Syphilitic Infection," *Lancet* (April 12, 1862): 375–78.

37. Lane and Gascoyen, "Record of Cases Treated" (n. 24), 287–88.

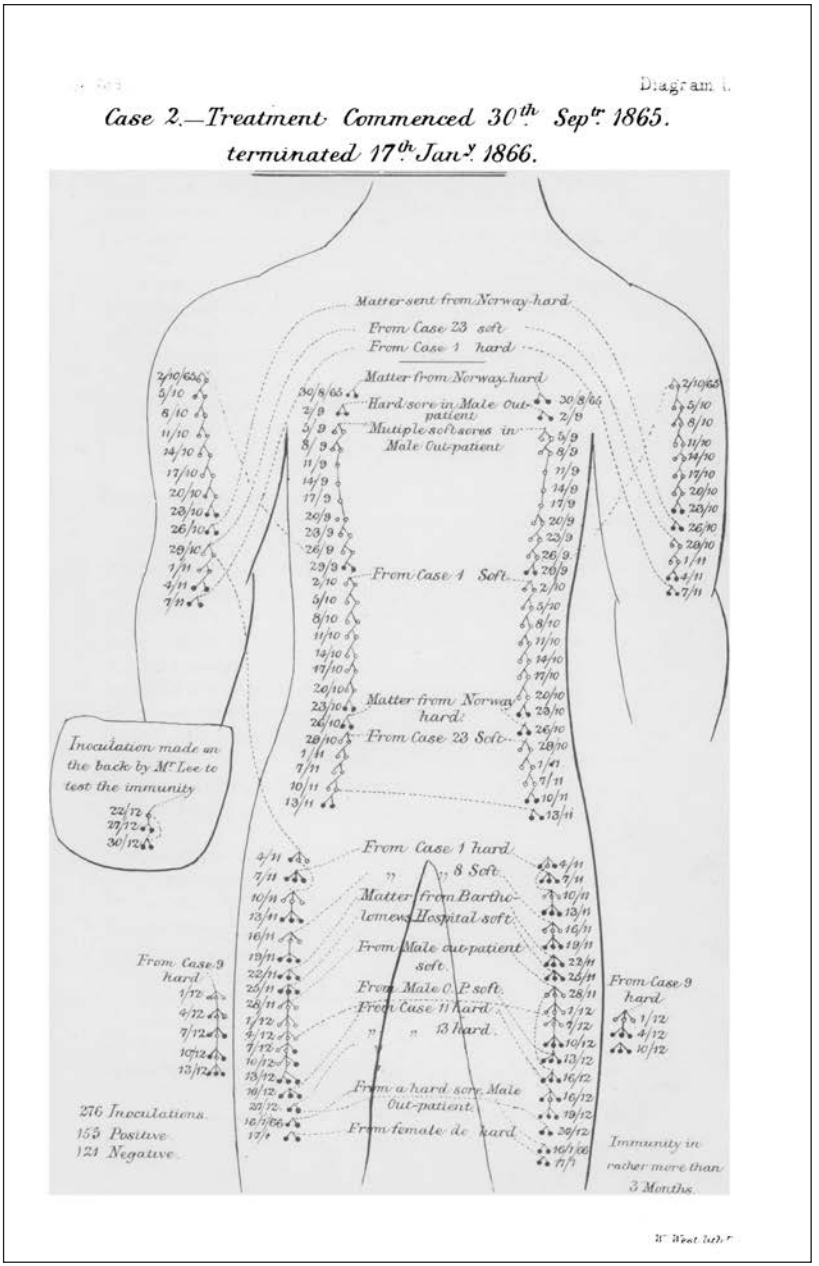

Figure 1. Case 2. James R. Lane and George G. Gascoyen, "Record of Cases Treated in the Lock Hospital by Syphilisation," *Medico-Chirurgical Transactions* 50 (1867): 281–328. By kind permission of the Royal Society of Medicine.

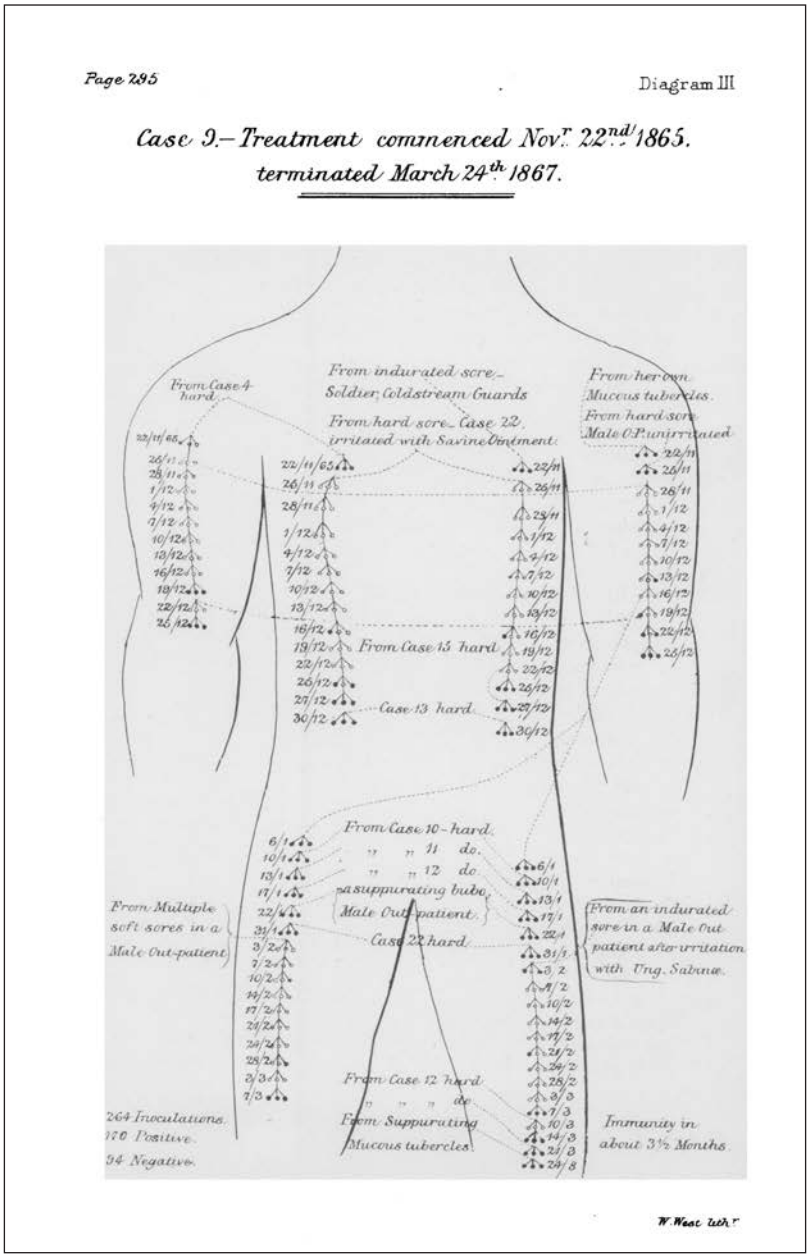

Figure 2. Case 9. James R. Lane and George G. Gascoyen, "Record of Cases Treated in the Lock Hospital by Syphilisation," *Medico-Chirurgical Transactions* 50 (1867): 281–328. By kind permission of the Royal Society of Medicine.

tated for two days (to produce inoculable pus) using savine ointment. She then received six inoculations on her chest. All of these took freely and produced well-developed pustules that went through eleven further generations until December 25. After multiple failed attempts to inoculate her thighs using matter taken from two male outpatients, large and distinctive pustules eventually resulted, which went through nine further generations until no positive reaction could be obtained. This patient was inoculated 264 times, and Lane and Gascoyen could not produce any inoculable sores after a period of four months. She was discharged in April 1866 but returned in March 1867 suffering from swelling and superficial ulceration of the labium.[38]

Before the identification of the *spirochæate pallida*, there was little appreciation for the effect of treatment at a microbial level or for the need to standardize treatments according to their optimal effect upon a causative pathogen. The practice of modifying treatment according to a patient's idiosyncratic physical responses was already well established by the time that Lane and Gascoyen began their experimental inoculations.[39] That each patient seemingly had a different physical response to the inoculations meant that, like Auzias and Böeck, Lane and Gascoyen could not rely upon standardized methods.[40] Tailoring a course of inoculations to an individual patient highlighted the importance of practical experience on the part of the doctor performing syphilization. They required sensitivity to the therapeutic needs of each patient; such sensitivity to patients' idiosyncratic responses would continue to define the treatment of venereal diseases throughout the nineteenth century and early twentieth century.[41] It was a sensitivity based upon extensive clinical experience as well as a thorough understanding of the procedure. The ability to tailor such treatment to the health and physical responses of each patient was thought by doctors to require considerable deftness of touch.[42] For advocates of

38. Ibid., 294–95.

39. See, for example, Marston, "Practical Remarks upon the Prevalence and Treatment of Syphilis" (n. 4), 188.

40. Ricord, *Letters on Syphilis* (n. 18), 252.

41. For discussion of doctors' continued reliance upon sensitivity or intuition in the treatment of patients, see, for example, Ernest S. Reynolds, "An Address on the Practice of Medicine as a Fine Art," *Brit. Med. J.* (March 9, 1912): 529–31; Christopher Lawrence, "Incommunicable Knowledge: Science, Technology and the Clinical Art in Britain 1850–1914," *J. Contemp. Hist.* 20 (1985): 503–20.

42. For discussion of the clinical sensitivity needed in the administration of treatment, see Anne Hanley, "Venereology at the Polyclinic: Postgraduate Medical Education among General Practitioners in England, 1899–1914," *Med. Hist.* 59 (2015): 199–221.

syphilization, the required expertise and knowledge had important implications for legitimizing the study and treatment of venereal diseases within a culture of gentlemanly medical practice.

The development and application of such clinical practices helped to confirm the place of new specialisms and to solidify the professional authority of the doctors working within those specialisms.[43] By requiring a high degree of skill and knowledge, Lane and Gascoyne aimed to establish their expertise and, in so doing, increase their professional standing. This aim was particularly challenging, and the performance of syphilization was particularly problematic. Not only was venereology a questionable specialism within an English medical culture that privileged gentlemanly generalist practice, but the treatment of venereal diseases was also problematically associated with irregular practice and social stigma.[44] Lane and Gascoyen were employing an experimental procedure in an already controversial, stigmatized and professionally suspect field. They expressed skepticism over the efficacy of syphilization, but by emphasizing the skill and training required to perform their inoculation experiments Lane and Gascoyen were attempting to neutralize any imputations of irregular practice.

Given the challenges associated with the diagnosis of syphilis, especially in its latent stages, the identification and classification of disease-specific symptoms was paramount. In such an empirical framework, relapse and latency were subjects of ongoing debate. Doctors sought to explain why some patients developed fresh symptoms and others did not. In an 1865 lecture on syphilitic inoculation, Lee reminded his audience that

> in many cases treated non-mercurially, the earlier successive stages of constitutional manifestation spontaneously disappear. The health may be *apparently* completely re-established; yet, after very considerable intervals of time, the virus sometimes no longer remains latent. . . . Of this fact we have had abundant evidence. Our observations [in cases of syphilization] are, therefore, beset with many difficulties. Some of the patients treated by syphilization have exhibited tertiary symptoms; and, considering the very long interval of time at which these symptoms may appear, others may yet occur.[45]

43. Jaipreet Virdi-Dhesi, "Curtis's Cephaloscope: Deafness and the Making of Surgical Authority in London, 1816–1845," *Bull. Hist. Med.* 87 (2013): 347–77, quotation on 352–54; George Weisz, "The Emergence of Medical Specialization in the Nineteenth Century," *Bull. Hist. Med.* 77 (2003): 536–75.

44. For discussion of the tensions between generalist and specialist practice, see George Weisz, *Divide and Conquer: A Comparative History of Medical Specialization* (Oxford: Oxford University Press, 2006); Stephen T. Casper and Rick Welsh, "British Romantic Generalism in the Age of Specialism, 1870–1990," *Soc. Hist. Med.* 29 (2016): 154–74.

45. Lee, "Syphilitic Inoculation in 1865. Lecture II: Syphilization" (n. 34), 363, emphasis original.

The difficulties of latency and relapse permeated Lane and Gascoyen's experiments. In Case 9, they observed a "gradual subsidence" of symptoms that had "entirely disappeared by the time the inoculations were concluded."[46] Similar observations were made in a number of other cases. Despite Lee's assertions regarding latency and relapse in cases subjected to syphilization, there was little indication that Lane and Gascoyen accounted for such possibilities among their own patients.[47] During the latter half of the nineteenth century, the medical profession was slowly recognizing that patients might develop tertiary-stage symptoms, such as the deterioration of cranial bone, despite being symptomless for many years.[48] In 1858 Jonathan Hutchinson, who would become one of England's leading authorities on venereal diseases, reminded readers in the *BMJ* of "the pertinacity with which a syphilitic taint clings to the constitution," and might therefore reappear, even after treatment.[49] In a lecture delivered six years later at the London Hospital, he emphasized that tertiary symptoms were "irregular," appearing in some cases after years of apparent good health and a full course of treatment.[50]

In 1865 Böeck and Lee debated in the pages of the *BMJ* whether, as in the above-mentioned case, patients might also pass from primary- to tertiary-stage infection with a barely perceptible secondary stage.[51] Böeck acknowledged that "secondary symptoms may be *so slight* that the patient is not even aware of their existence, or, at all events, does not connect them with the primary syphilis from which he has previously suffered."[52] This was certainly the case for Robert S., whom Hutchinson presented before his audience at the London Hospital in 1864. Robert had experienced primary symptoms fifteen years earlier and, despite having developed tertiary-stage ocular dystrophy, claimed to have had no secondary-stage symptoms during the intervening years.[53] The absence or delayed mani-

46. Lane and Gascoyen, "Record of Cases Treated" (n. 24), 295.

47. See, for example, Committee Report (n. 12), qq. 3826–27.

48. Samuel Lane, "A Lecture on Tertiary Syphilis, or Syphilitic Cachexia," *Brit. Med. J.* (October 11, 1873): 421–23.

49. Jonathan Hutchinson, "On the Means of Recognising the Subjects of Inherited Syphilis in Adult Life," *Brit. Med. J* (October 2, 1858): 822–23, quotation on 822.

50. Jonathan Hutchinson, "Certain Rare Forms of Disease Connected with Syphilis," *Brit. Med. J* (September 3, 1864): 263–66, quotation on 264.

51. Henry Lee, "Syphilisation: Letter from Henry Lee, Esq.," *Brit. Med. J* (February 4, 1865): 128–29; Carl Böeck, "Syphilisation as a Means of Curing Constitutional Syphilis: Letter from Professor Böeck of Christiania," *Brit. Med. J* (April 1, 1865): 332–33.

52. Böeck, "Syphilisation as a Means of Curing Constitutional Syphilis" (n. 51), 332.

53. Hutchinson, "Certain Rare Forms of Disease Connected with Syphilis" (n. 50), 440.

festation of such symptoms sometimes prompted doctors to surmise that a patient was no longer suffering from a constitutional infection. Many doctors struggled to recognize the absence of symptoms as periods of disease latency, and etiologically to link the onset of new symptoms to an underlying syphilitic infection.

Advocates of syphilization contended that the introduction of new syphilitic matter would, within a varying and uncertain period of time, destroy the patient's receptiveness to the disease, thereby bringing about local as well as general immunity. They hypothesized that general immunity would last throughout the patient's life.[54] It is unclear, however, how doctors were able to draw this conclusion. Ricord had been highly critical of Sperino's claims to have successfully syphilized patients in the years following the vilification of Auzias's experiments. In his opinion Sperino's claims were premature, having not allowed for a sufficient period of post-treatment observation.[55] When asked whether a "thoroughly syphilized" patient was susceptible to reinfection, Böeck himself admitted that it was "too difficult a question to answer," possibly because periods of post-treatment observation had not been sufficiently long.[56]

Lane and Gascoyen claimed that few syphilized patients experienced any relapse. But, as at the Syphilicome, their period of post-trial observation was, in most cases, less than a year. Moreover, most patients disappeared from the Lock Hospital's records after completing their course of treatment. Case 6 was discharged in 1866, "apparently quite well," following a course of syphilization that lasted three months and twenty-three days, and was not heard from again.[57] Case 11 was also discharged in 1866, also "apparently quite well," following four months and five days of syphilization. However, she returned to the Lock Hospital the following month, having developed mucous tubercules around her anus. These were alleviated through the application of nitrate of silver and astringent lotions.[58] She was not seen again following this additional treatment. Those whose post-treatment health was monitored in the Lock Asylum, such as Case 2, remained under observation for little more than a year.[59] It is unclear whether these patients had simply entered periods of latency that

54. Lane and Gascoyen, "Record of Cases Treated" (n. 24), 283.
55. Sherwood, "Syphilization" (n. 6), 380.
56. Committee Report (n. 12), q. 4288.
57. Lane and Gascoyen, "Record of Cases Treated" (n. 24), 292.
58. Ibid., 297.
59. Ibid., 290.

would be eventually followed by the reappearance of symptoms. Gascoyen certainly believed it possible that patients demonstrating new symptoms had suffered a relapse. Moreover, he doubted whether relapses were less frequent among syphilized patients than among those receiving more traditional mercurial treatments, further calling into question the assumption that no syphilized patients experienced a relapse.[60]

By withholding mercury and constantly reinoculating their subjects with syphilitic matter, Lane and Gascoyen were testing whether syphilization could in fact produce the diathetic effect that Böeck had claimed to observe in his own patients. Yet, as demonstrated by the enforced treatment of prostitutes occurring at the same time under the auspices of the CD Acts, uncertainty surrounded the idea of disease latency. Growing knowledge of bacteriology led subsequent generations of doctors, including Lane's own son, to dismiss such clinical practices as unscientific and ineffective.[61] Lane and Gascoyen may have accepted the principle of latency and relapse, but their report did not acknowledge the possibility that syphilized patients were simply entering a period of latency in which they demonstrated few clear signs of infection. In cases where patients returned to the Lock Hospital with symptoms, Lane and Gascoyen were reluctant to link those symptoms etiologically to a prevailing syphilitic infection. For example, Case 9 was discharged in 1866 as "quite well" but returned to the Lock Hospital the following year with swelling and superficial ulceration of the labium. Her symptoms were alleviated following a fortnight of "simple treatment," but Lane and Gascoyen concluded that this "was probably not connected with her former disease."[62] When asked by the CVDAN whether syphilis "remained" in inoculated patients, Böeck asserted that such cases were "exceptional." "There may be some small rudiments of the disease; but for those it is not necessary to do anything."[63] That Lane and Gascoyen accepted the principle of latency and relapse, but hesitated to identify either phenomenon among their syphilized patients, was inconsistent and suggests uncertainty as to the pathology of syphilis and the efficacy of syphilization.

60. Ibid., 321.

61. J. E. Ross and S. M. Tomkins, "The British Reception of Salvarsan," *J. Hist. Med. & Allied Sci.* 52 (1997): 398–423, quotation on 400; James E. Lane, *The Prophylaxis of Venereal Diseases: A Paper Read before the London Medical Graduates College and Polyclinic, December 10, 1906* (London: John Bale, Sons and Danielson, 1907), 8.

62. Lane and Gascoyen, "Record of Cases Treated" (n. 24), 295.

63. Committee Report (n. 12), q. 4275.

Lane and Gascoyen observed that most patients appeared to improve "in appearance, and seemed to gain strength while the inoculations were going on." Like most of their syphilized patients, Case 6 was "much out of health when admitted," but regained weight and improved in appearance during her hospital stay.[64] When previously questioned by the CVDAN, Böeck had been forced to concede that he was unable to explain precisely why the general health of his patients improved while undergoing syphilization.[65] Lane and Gascoyen speculated that such improvements were due, in large part, to the "enforced regularity in diet and habits, and to improved hygienic influences."[66] By attributing improvements in health to such extenuating factors as nutrition and sanitation, they were implicitly questioning the efficacy of syphilization. Gascoyen concluded that

> the natural tendency to recovery which an early and uncomplicated constitutional syphilis exhibits with the lapse of time, and under circumstances favorable to the general health—such as dietary, rest, regular hours, &c. a hospital afford—is sufficient to account for the subsidence of the secondary symptoms during syphilisation.[67]

Auzias and Böeck both believed that mercury arrested the natural course of infection and diminished the curative effect of syphilization. They had been anxious therefore to confine themselves as much as possible to cases uncomplicated by mercurial treatment.[68] However, most patients at the Lock Hospital were "found to have been already subjected to a more or less complete mercurial course, either for the primary or secondary affection."[69] In consequence, fewer than half of the twenty-seven syphilized patients had not previously received mercury. No mercury was administered to any patient undergoing syphilization. Not only were patients repeatedly inoculated with syphilitic pus but the best-known mercurial treatments were withheld. Böeck's insistence on syphilizing subjects who, for the most part, had not previously received mercury resulted in an impedingly small sample from which Lane and Gascoyen could draw reliable conclusions. They readily acknowledged this limitation in their report and in subsequent publications. Although the experiments had been "fairly and impartially carried out . . . the number of patients treated

64. Lane and Gascoyen, "Record of Cases Treated" (n. 24), 292, 316.

65. Committee Report (n. 12), qq. 4269–71.

66. Lane and Gascoyen, "Record of Cases Treated" (n. 24), 316.

67. Committee Report (n. 12), q. 3623.

68. Ricord, *Letters on Syphilis* (n. 18), 253; Lane and Gascoyen, "Record of Cases Treated" (n. 24), 285; Committee Report (n. 12), qq. 4249–51.

69. Lane and Gascoyen, "Record of Cases Treated" (n. 24), 285.

was too limited to warrant the expression of a very decided opinion."[70] Keen as they were to adhere to Böeck's method, Lane and Gascoyen were nonetheless frustrated by the limitations of their findings and by the qualified statements that could be made about those findings.

Other than an absence of previous mercurial intervention, there is little indication of any criteria used to choose those patients subjected to syphilization. As will be discussed in the third section, the War Office's communication with the Lock Hospital suggests that selected subjects were simply those patients who consented to this experimental treatment. Neither is there any indication of the criteria used to select the patients from whom pus was taken to reinoculate other patients. For example, there is no indication why Case 12 was inoculated with the pus from Case 4 and Case 9, rather than pus taken from another syphilized patient or, for that matter, any other Lock Hospital patient. Similarly, Case 9 experienced six consecutive inoculation failures on her thighs with "matter from *various* sources." She was then inoculated on the right thigh with "matter from multiple soft sores in a male out-patient, and on the left thigh with matter from a well-marked indurated sore in *another* male out-patient."[71] Selection appears to have been random, the only prerequisite being that pus be obtained from suppurating sores, which, as Lee argued, had a greater propensity for successful inoculation than "uncomplicated indurated sores."

Several patients died while undergoing syphilization, but, as in those cases in which symptoms reappeared, syphilis was not identified as the causal factor. Lane and Gascoyen instead linked their deaths to liver failure, or to sloughing of the dura mater and exposure of the brain after separation of pieces of necrosed cranial bone. Conditions such as atrophy of the liver were being linked to syphilis by the time of the syphilization experiments. Although cranial gummatous deterioration was also recognized as a classic symptom of tertiary-stage syphilis, the cause of death in this instance was not attributed to syphilis.[72] There is also no indication that any of these patients had been suffering from exacerbating conditions that, irrespective of any underlying syphilitic infection, would have proven fatal.

70. Lane, *Lectures on Syphilis* (n. 32), 31.

71. Lane and Gascoyen, "Record of Cases Treated" (n. 24), 294, emphasis added.

72. See, for example, Wilks, "A Lecture on Syphilis" (n. 11), 167; Henry Goodridge, "A Case of Acute Atrophy of the Liver Complicating Early Secondary Syphilis," *Brit. Med. J* (June 10, 1871): 609–10.

It must be stressed that Lane, Gascoyen and Lee approached the procedure with varying degrees of skepticism. Although they believed that syphilization might reveal important information about the etiology and pathology of syphilis, they disagreed about its ability to produce immunity. In 1865 Lee was drawn into a heated argument in the pages of the *BMJ* with supporters of syphilization, including Böeck himself.[73] Lee had publically positioned himself as a skeptic, and his subsequent involvement with the syphilization experiments must be considered in light of this skepticism.

> The suppurating syphilitic sore has been often repeatedly inoculated for the supposed purpose of producing what has been termed *syphilisation*. But inasmuch as the disease, however often repeated, remains a local one still, no constitutional or permanent effect can be produced in this way; still less can any condition of the system be produced which would render it insusceptible to the infecting form of the disease.[74]

Samuel Lane, consulting surgeon to the Lock Hospital, admitted before the CVDAN in 1864 that he had "no faith in syphilisation as a remedy against syphilis, nor … any faith in its permanently producing immunity from the syphilitic poison."[75] This belief was later echoed by a number of correspondents to the *BMJ* in the weeks following the tense exchange between Lee and Böeck.[76]

Although Lee did acknowledge that "the so called syphilisation" might produce a form of localized immunity, it was such a protracted and inaccurate procedure that he was reluctant to employ it therapeutically.[77] Lee emphasized that only two of Böeck's original nineteen Lock Hospital patients were thought to have achieved immunity.[78] He went so far as to endorse a scathing criticism of syphilization, published in 1865 in the *British and Foreign Medical Review*.

> Woe be to the wretch who falls into the hands of a believer in syphilisation! We had occasion to see several times, both in Paris and Vienna, patients who

73. See, for example, the heated correspondence between Henry Lee and Carl Böeck published in the *Brit. Med. J* throughout 1865.

74. Lee, "Syphilitic Inoculation, and the Relations to Vaccination. Lecture I" (n. 16), 348, emphasis original.

75. Committee Report (n. 12), qq. 2834–36.

76. F. Wildbore, "Case of Syphilis, Arising Probably from Secondary Inoculation: Infection of Wife and Offspring," *Brit. Med. J* (May 4, 1861): 464–65.

77. Lee, "Syphilitic Inoculation, and the Relations to Vaccination. Lecture I" (n. 16), 350.

78. Henry Lee, "Lectures on Syphilitic Inoculation in 1865. Lecture III: Treatment of Syphilis," *Lancet* (April 14, 1866): 391–94, quotation on 392.

> had been thus treated, and whose arms, back, chest, and legs were pitted with innumerable cicatrices. . . . This syphilisation, or indefinite multiplication of simple sores by inoculation, and therefore no syphilisation at all, has been tried . . . and with the anticipated result—complete failure to cure syphilis, or to prevent its recurrence.[79]

Both Lane and Gascoyen acknowledged that syphilization "evoked extreme hostility in England," which is why it had never been thoroughly trialed.[80] Lane was prepared to concede that syphilization did "exert some beneficial and specific influence" over the progress of syphilis. By contrast, Gascoyen was unequivocal in his belief "that no effect whatever is produced either upon the disease or the system by syphilisation."[81] Like Samuel Lane, Gascoyen also expressed skepticism before the CVDAN about whether patients undergoing syphilization were actually being rendered immune from reinfection. He believed that, as the patients were already under the influence of syphilis, it was impossible to infect them further.[82] In the end, Lane and Gascoyen concluded that there was very little difference in the duration and outcome of syphilization between patients who had previously received mercury and those who had not.[83]

Yet at the same time that Gascoyen and Lee were decrying syphilization, Böeck was dismissing their criticism by asserting that "medical men in England are totally unacquainted with the whole proceeding."[84] He described Lee's attitude thus: "Like most others, he considers syphilisation such a strange and incredible mode of cure, that when the patient told him he had been restored to health by it. . . . Mr. Lee at once set it down that the patient had not tertiary syphilis at all."[85] Although open to the therapeutic *potential* of new non-mercurial treatments, Lane, Gascoyen and Lee had limited faith in the *actual* therapeutic value of syphilization. They had been obliged to oversee and assist Böeck's inoculation experiments at the Lock Hospital, but did not necessarily share the latter's enthusiasm for syphilization as a therapeutic alternative. By contrast, Böeck had agreed to syphilize patients at the Lock Hospital in the hope of educating his English counterparts and persuading them of syphilization's therapeutic

79. Henry Lee, "Correspondence: Syphilisation," *Brit. Med. J* (April 22, 1865): 418.
80. Lane and Gascoyen, "Record of Cases Treated" (n. 24), 282.
81. Ibid., 319–20, 321.
82. Committee Report (n. 12), qq. 3846–51.
83. Lane and Gascoyen, "Record of Cases Treated" (n. 24), 315.
84. Böeck, "Description of the Mode of Treating Constitutional Syphilis" (n. 21), 339.
85. Böeck, "Syphilisation as a Means of Curing Constitutional Syphilis" (n. 51), 332.

value. From the outset, these men were working at cross-purposes, and with competing and incompatible objectives.

The Ethical Implications of Experimental Inoculation

The English syphilization experiments not only demonstrate important shifts in the way nineteenth-century doctors understood the etiology and pathology of syphilis, but, importantly, also reveal much about the tensions and limitations of the ethical framework within which those doctors defined their relationship with and responsibilities to patients. Although patient well-being underpinned much of the heated debate surrounding syphilization, patient autonomy and welfare were not defining features of nineteenth-century medical practice. Only since the Nuremberg Trials in 1945–46 has patient consent in experimental clinical practice become a foundational principle of medical ethics.[86] A number of historians have also lamented that the history of bioethics often overlooks great shifts in the concept of medical ethics. Historical medical ethics have instead been homogenized according to bioethical models codified in the latter half of the twentieth century.[87]

Earlier generations of doctors were not without well-defined ethical concerns. Rather, they were working within a different ethical framework.[88] As early as the 1840s, doctors were thinking and writing about the parameters of ethically acceptable experimentation; they defined those parameters in large part by the therapeutic potential of the experiments.[89] But as Alex Dracobly observes, there was a disconnect between the widely agreed-upon ethical principles of experimental medicine and their application in clinical practice.[90] Consent or self-determination among patients acting as research subjects was often subordinated to perceived therapeu-

86. Jenny Hazelgrove, "The Old Faith and the New Science: The Nuremberg Code and Human Experimentation Ethics in Britain, 1946–73," *Soc. Hist. Med.* 15 (2002): 109–35; Lederer, "Experimentation and Ethics" (n. 13), 595–98.

87. Roger Cooter, "Inside the Whale: Bioethics in History and Discourse," *Soc. Hist. Med.* 23 (2010): 662–72, quotation on 665; David Reubi, "The Human Capacity to Reflect and Decide: Bioethics and the Reconfiguration of the Research Subject in the British Biomedical Sciences," *Soc. Stud. Sci.* 42 (2012): 348–68.

88. Hazelgrove, "Old Faith and the New Science" (n. 86), 121.

89. See, for example, Max Simon, *Déontologie médicale, ou des devoirs et des droits des médecins dans l'état actuel de la civilisation* (Paris: Baillière, 1845); Claude Bernard, *An Introduction to the Study of Experimental Medicine* (New York: Dover, 1957).

90. Dracobly, "Ethics and Experimentation on Human Subjects" (n. 17), 353.

tic benefits, not only for the individual but also for the wider community.[91] Securing the health and welfare of the patient, and that of the wider community, was of greater concern than preserving patient autonomy.[92] Experimental medicine was underpinned by tensions between the potential development of knowledge through experimentation, and the risks posed to patients by such experimentation. Susan Lederer has described the relationship between nineteenth-century doctors and patients as an "implicit societal bargain" of reciprocal exchange.[93] The patient, in return for care, became a subject of study and experimentation through which doctors could refine their therapeutic skill and in turn improve collective medical knowledge.[94]

Despite this framework of reciprocal exchange and mutual benefit, there were few formalized ideas of responsibility for patient welfare. Doctors used the terms "etiquette" and, less commonly, "ethics" to describe their professional interactions with medical contemporaries, rather than their responsibilities to patients.[95] Throughout the nineteenth century they maintained that they should be left to determine their own ethical codes and standards of good conduct. Codes of conduct, such as those written by Thomas Percival and Jukes de Styrap, were designed to govern intra-professional relationships and thus allowed medical professionals to consolidate their spheres of authority.[96] It was sufficient for doctors to ensure that their patients' health and safety were not endangered. Indeed, de Styrap stressed in his *Code of Medical Ethics* that patients were best

91. Faden and Beauchamp, *History and Theory of Informed Consent* (n. 14), 55–56; Tom Beauchamp, *Standing on Principles: Collected Essays* (Oxford: Oxford University Press, 2010), 51.

92. Faden and Beauchamp, *History and Theory of Informed Consent* (n. 14), 76.

93. Lederer, "Experimentation and Ethics" (n. 13), 586.

94. Dora B. Weiner, *The Citizen–Patient in Revolutionary and Imperial Paris* (Baltimore: Johns Hopkins University Press, 1993), 5.

95. For discussion of mid-nineteenth-century medical etiquette, see the collections of articles and correspondence available in periodicals such as the *Provincial Medical and Surgical Journal* (and later the *BMJ*). William Reeves, "Professional Etiquette," *Provincial Med. Surg. J.* (September 10, 1842): 465; Medicus, "A Case of Medical Etiquette," *Brit. Med. J* (March 26, 1859): 260; D. Noble, "Professional Etiquette", *Brit. Med. J* (February 8, 1862): 159. Articles titled "ethics" focused principally on the *etiquette* of professional interactions between doctors. See, for example, F. Cox, "Medical Ethics: Charge against a Medical Practitioner," *Provincial Med. Surg. J.* (October 14, 1846): 494; Anon., "Medical Ethics," *Provincial Med. Surg. J.* (November 17, 1847): 639–41.

96. Duncan Wilson, *The Making of British Bioethics* (Manchester: Manchester University Press, 2014), 24; Thomas Percival, *Medical Ethics; or, A Code of Institutes and Precepts, Adapted to the Professional Conduct of Physicians and Surgeons* (Oxford: John Henry Parker, 1849).

served when they submitted to decisions made on their behalf by doctors, whose training, professional expertise and skill made them (and not their patients) the best judge of the therapeutic value of any given treatment.[97]

These seemingly contradictory medical attitudes toward patient autonomy can be best understood as a spectrum of doctor–patient interactions, defined in any given case by the attitudes of individual doctors as well as the nature of the treatments employed. In some cases doctors were dismissive of patient autonomy, instead making decisions on behalf of their patients and according to their own specialized medical knowledge. In other cases, such as Lane and Gascoyen's experimental inoculations, doctors saw advantage in respecting the autonomy of their patients. The risks and long-term harms of experimental treatments like syphilization necessitated greater consideration of patient consent. Moreover, patients who willingly submitted to treatment were preferred because they were more likely to persist with that treatment. Self-determination among patients was important because it facilitated doctors' experimental practices and research objectives and, by extension, had tangible therapeutic benefits for the wider community.

In such a framework, doctors were not necessarily accommodating their patients' sensibilities, but rather basing their professional interactions upon a utilitarian model that prioritized communal health. The medical community may have been skeptical of the efficacy of experimental procedures for treating syphilis but they were nonetheless concerned with finding the most effective treatments for their patients, and for a wider public at risk from the spread of syphilis. In the case of the syphilization experiments, the principle motivation (as demonstrated in the directives of the CVDAN in 1864) was to identify more effective therapeutic alternatives to reduce the prevalence of syphilis, among both the civilian population and military and naval personnel.[98] Lane and Gascoyen interpreted their professional obligations to syphilized patients within this utilitarian ethical framework that prioritized communal health over the welfare of individual patients. It was not, however, a framework within which they could easily resolve the ethical questions raised by syphilization.

Apart from the clinical notes included in Lane and Gascoyen's report, there is little sense of how patients experienced syphilization, how they responded emotionally to the treatment and how they interacted with medical staff. We see these patients only through the clinical gaze of Lane

97. Jukes de Styrap, *A Code of Medical Ethics* (London: J and A Churchill, 1878), 23–27.
98. Committee Report (n. 12), i–ii.

and Gascoyen, who insisted that, "after full explanation," all patients had given their consent to be inoculated. Although the pain occasioned by the inoculated sores was in some cases severe, Lane and Gascoyen dismissed this discomfort by asserting that it "was in almost every case cheerfully submitted to."[99] This assertion of volunteerism among their patients is supported by the correspondence between Earl de Grey, Secretary of State for War, and the Lock Hospital House Committee. In 1865 he informed the House Committee that he could not give official sanction to the forcible syphilization of War Department patients. However, de Grey had no objection to the medical officers exercising "discretion in having recourse to this method of care, provided the War Department patients do not themselves object after having been fully informed as to the nature and object of the inoculations."[100]

Some patients chose to terminate their inoculations and leave the Lock Hospital prematurely, suggesting that they were able to exercise autonomy over the course of their treatment. Such self-determination was not unique among syphilized patients. The Lock Hospital's committee minutes record multiple cases in which patients expressed dissatisfaction over their treatment and chose to discharge themselves prematurely. Patients were also regularly discharged by the medical staff for refusing to submit to treatment.[101] These instances were so common that the Hospital Committee gave considerable thought to various methods by which they might persuade patients to persist with their full course of treatment. On another occasion, in 1865, when patients complained about the conduct of several nurses, the House Committee requested an inquiry, suggesting that they were keen to assuage their patients' discontent.[102] Subtle methods of persuasion were likely employed at the Lock Hospital, but, despite being conducted against the backdrop of the CD Acts, there is no indication that patients were explicitly coerced into submitting to syphilization.[103]

It is unclear, however, whether these patients were fully informed and whether they were able to assess information to make autonomous decisions regarding their own medical care. Lane and Gascoyen may have explained the risks of syphilization, but the manner of these explana-

99. Lane and Gascoyen, "Record of Cases Treated" (n. 24), 285, 315.

100. London Lock Hospital Board Minutes (January 25, 1866), MS0022/1/1.

101. Royal College of Surgeons, London Lock Hospital Committee Minutes (May 8, 1866), MS0022/2/4/2; Royal College of Surgeons, London Lock Hospital Committee Minutes (September 25, 1866), MS0022/2/4/2.

102. Royal College of Surgeons, London Lock Hospital Committee Minutes (March 20, 1865), MS0022/2/4/2.

103. Committee Report (n. 12), q. 4395.

tions and their comprehensibility to the Lock Hospital's institutionalized patients remain unclear. Their patients were poor and disadvantaged, and likely lacked the necessary levels of education and autonomy to make informed judgments about the risks and implications of such experimental treatments. Although syphilization was performed upon a wide cross section of patients, with Böeck claiming that his poor and fee-paying patients alike willingly submitted to this treatment, those patients syphilized at the Lock Hospital could not exercise comparable levels of choice.[104] Moreover, their position as Lock Hospital inmates raises questions about whether they were vulnerable to subtle coercion.

Lane and Gascoyen may have omitted details in their explanations to patients, perhaps because those details were deemed to be incomprehensible, or because they might deter patients from submitting to syphilization "voluntarily." The decision to subordinate patient autonomy by withholding information is today understood as a manifestation of medical paternalism.[105] Informed consent now requires explicit permission for a specific medical intervention based upon a complete understanding of relevant information. Consent cannot be informed by external forces calculated to achieve a specific outcome.[106] For nineteenth-century doctors, selectivity in the information disseminated to patients was a pragmatic decision, designed to instill confidence to gain consent for the application of experimental treatments that, it was hoped, would prove more therapeutic than existing remedies.

Patients may not have fully understood the implications and risks of the treatments to which they voluntarily subjected themselves, but there were other (equally important) factors in their decision making. Among these were issues of confidence in and deference to the knowledge-based authority of their doctors. Although inoculation as a therapeutic and preventive tool had become accepted clinical practice within elite medical circles, it was much more difficult to persuade patients of its efficacy.[107] Moreover, the perceived links between hospitals and Poor Law institutions

104. Lee, "Lectures on Syphilitic Inoculation in 1865. Lecture III" (n. 78), 392; Sherwood, "Syphilization" (n. 6), 374; Committee Report (n. 12), qq. 4311–15.

105. Faden and Beauchamp, *History and Theory of Informed Consent* (n. 14), 10, 14.

106. Ibid., 54; Tom Beauchamp, "Autonomy and Consent," in *The Ethics of Consent: Theory and Principle*, ed. Franklin Miller and Alan Wertheimer (Oxford: Oxford University Press, 2010), 55–78, quotation on 57.

107. Matthew L. Newsom Kerr, "'An Alteration in the Human Countenance': Inoculation, Vaccination and the Face of Smallpox in the Age of Jenner," in *A Medical History of Skin: Scratching the Surface*, ed. Jonathan Reinarz and Kevin Siena (London: Pickering and Chatto, 2013), 129–46, quotation on 143.

meant that many working-class people remained wary of doctors and institutionalized forms of medical care.[108] In this atmosphere of mistrust and apprehension, the fact that patients volunteered to be syphilized indicates a degree of confidence in their doctors. Lee stressed that patients submitted to syphilization "under the idea that they would in future not be liable either to receive or to communicate disease."[109] Such volunteerism supports the arguments made by Jenny Hazelgrove and S. R. Kaufman that, in many cases, patients did not fully understand the potential therapeutic risks, but gave their consent based on trust that their doctors were acting in their best interests.[110]

Patients were suffering the painful effects of primary-, secondary- and tertiary-stage syphilis, and were likely to have been receptive to any treatment that might have alleviated their symptoms. Mercury was the best available treatment until the development in 1908 of Paul Ehrlich's arsenical-chemotherapeutic drug, salvarsan. Many nineteenth-century patients feared the debilitating and dangerous side effects of mercury and were prepared, perhaps through desperation, to try less orthodox options.[111] Anxious as they were to be cured, it is unclear how well they truly appreciated the pain and permanent disfigurement that would accompany syphilization.

"The Whole Affair Has Been Considered … a Chimera"[112]

Syphilization raised more questions than it answered. Lane and Gascoyen were divided over whether syphilization had any tangible therapeutic benefit. They both agreed, however, that any benefit "would not sufficiently compensate" patients for enduring a protracted and painful procedure that left them permanently disfigured.[113] Although they felt that their sample size was too small to draw meaningful conclusions, and although they disagreed over the efficacy of syphilization, they did agree on one important point.

108. Keir Waddington, "Unsuitable Cases: The Debate over Outpatient Admissions, the Medical Profession and late-Victorian London Hospitals," *Med. Hist.* 42 (1998): 26–46.

109. Lee, "Lectures on Syphilitic Inoculation in 1865. Lecture III" (n. 78), 392.

110. S. R. Kaufman, "The World War II Plutonium Experiments: Contested Stories and Their Lessons for Medical Research and Informed Consent," *Cult. Med. Psychiatry* 21 (1997): 161–97, quotation on 179; Hazelgrove, "Old Faith and the New Science" (n. 86), 122.

111. Roger Davidson, *Dangerous Liaisons: A Social History of Venereal Disease in Twentieth-Century Scotland* (Amsterdam: Rodopi, 2000), 18–21.

112. Böeck, "Description of the Mode of Treating Constitutional Syphilis" (n. 21), 339.

113. Lane and Gascoyen, "Record of Cases Treated" (n. 24), 321.

> We saw sufficient to convince us that if the treatment did everything that was claimed for it, the remedy was worse than the disease, and we were therefore indisposed to continue it in any more cases. We felt that it was not justifiable to subject a patient in the early stage of secondary disease to the infliction of 150 or more syphilitic ulcers . . . on different parts of the body, thus entailing a life-long marking by the cicatrices, for so very doubtful an advantage over the recognised methods of treatment.[114]

Despite his belief in the *potential* efficacy of syphilization at the time of the experiments, Lane reiterated his dissatisfaction with the procedure in a series of lectures delivered over a decade later in 1876: "The treatment is loathsome and painful to the patient, and extremely troublesome to the surgeon and attendants. Syphilisation . . . has been tried and found wanting, and is not deserving of a place within the domain of practical surgery."[115] This was the same conclusion that had been drawn by the Paris Academy fourteen years earlier, and would be repeated over the following decades by a number of respected English doctors.[116]

There is no indication in Lane and Gascoyen's report that patient consent was based upon accurate and detailed information about the nature, risks or implications of syphilization. Consent in such cases was ambiguous and problematic. Patients probably did not receive detailed information about the lifelong scaring and ongoing pain associated with the procedure. Breakdowns in communication between patient and doctor, the authority of the doctor and the weak position of institutionalized patients problematize and raise important questions about consent given by those at the Lock Hospital.

Lane and Gascoyen had based their understandings of cure and immunity upon the diminution of physical symptoms and, as in the case of smallpox vaccination, the non-appearance of subsequent infection. Doctors working in later decades and within new frameworks of bacteriological knowledge attempted to determine the effectiveness of treatments by testing for the disappearance of specific micrococci. Nevertheless, the idea of inoculation as a potential reactive therapeutic mechanism persisted. It did, for instance, have important implications for vaccine therapies (including antigonococcal vaccines), which were being developed in the

114. Lane, *Lectures on Syphilis* (n. 32), 31.

115. Ibid., 31.

116. See, for example, Charles R. Drysdale, *The Nature and Treatment of Syphilis and the Other So-Called "Contagious Diseases"* (London: Ballière, Tindall and Cox., 1880); Alfred Cooper, *Syphilis and Pseudo-Syphilis* (London: J. and A. Churchill, 1884); Jonathan Hutchinson, *Syphilis* (London: Cassell, 1887).

first decade of the twentieth century and were based on new knowledge about the microbial basis of infection.[117]

Lane and Gascoyen were very cautious in their conclusions about the actual efficacy of syphilization, emphasizing that the limited number of cases under their observation prevented them from speaking with authority on "these difficult and important questions." Nevertheless, they firmly supported the downscaling of inoculation at the Lock Hospital and unequivocally criticized the *method* of performing syphilization. On January 11, 1866, the Lock Hospital House Committee requested that, "unless under special circumstances," no more than fifteen patients be subjected to syphilization in the Lock Hospital at any given time.[118] A week later it was decided, with Lane's support, that no more than four patients in the male hospital be treated using syphilization at any given time.[119] Their conclusions and recommendations meant that syphilization never gained currency. Indeed, syphilization never gained currency anywhere in Europe. Auzias had never garnered much support in France. After Sperino disavowed his experiments with syphilization, Böeck remained the only doctor to employ therapeutic inoculations.

It is difficult to determine how widely information about the therapeutic applications of inoculation permeated wider circles of English doctors. The Lock Hospital was not used for teaching and so Lane and Gascoyen were limited in their use of patients as teaching tools. Readers of medical periodicals would have been exposed to their experimental findings and to the controversy surrounding syphilization. As Lee observed in the wake of the Lock Hospital experiments, "the interest of the profession has . . . been keenly excited."[120] However, he stressed that most doctors, especially general practitioners, were not in a position to perform syphilization themselves.

117. For discussion of early-twentieth-century vaccine therapy, see Richard T. Hewlett, *Serum and Vaccine Therapy: Bacterial Therapeutics and Prophylaxis, Bacterial Diagnostic Agents* (London: J. and A. Churchill, 1910); Almroth Wright, *Vaccine Therapy: Its Administration, Value and Limitations. A Discussion Opened by Sir Almroth E. Wright* (London: Longmans, Green and Co., 1910); Michael Worboys, "'The Wright Way': The Production and Standardization of Therapeutic Vaccines in Britain, 1902–1913," in *Evaluating and Standardizing Therapeutic Agents, 1890–1950*, ed. Christoph Gradmann and Jonathan Simon (Basingstoke: Palgrave Macmillan, 2010), 153–73.

118. Royal College of Surgeons, London Lock Hospital Board Minutes (January 11, 1866), MS0022/1/1.

119. Royal College of Surgeons, London Lock Hospital Board Minutes (January 18, 1866), MS0022/1/1.

120. Lee, "Lectures on Syphilitic Inoculation in 1865. Lecture III" (n. 78), 391.

> The method unquestionably makes great demands upon the time and patience of the sufferer and the surgeon. . . . Again, the practice can hardly be capable of general application so long as the number of Lock Hospitals and the sources for the supply of the chancre-matter is limited.[121]

The length of time required to syphilize a patient, the need for readily accessible syphilitic matter and the expertise required to perform the inoculations meant that syphilization was beyond the means of most doctors working outside institutions such as the Lock Hospital. The difficulty of the procedure, coupled with the fact that it deviated so radically from more traditional mercurial treatments, resulted in syphilization receiving little systematized attention beyond the flurry of articles and correspondence published in medical periodicals at the time of Böeck's visit to England.

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121. Ibid., 394.